2024 EVALUATION OF ENERGY EFFICIENCY AND LOAD MANAGEMENT PROGRAMS

THE PUBLIC SERVICE COMPANY OF NEW MEXICO

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TABLE OF CONTENTS

FIGURES

TABLES

ABBREVIATIONS

AC	Air Conditioner
AHRI	Air-Conditioning, Heating, and Refrigeration Institute
APS	Advanced Power Strip
APS	Arizona Public Service
BTU	British Thermal Unit
BYOT	Bring Your Own Thermostat
CBL	Customer Baseline Load
CDD	Cooling Degree Days
CF	Coincidence Factor
CIAC	Customer Incentive and Assistance Charge
DCU	Direct Control Unit
DHW	Domestic Hot Water
DLC	DesignLights Consortium
DOE	Department of Energy
EAF	Engineering Adjustment Factor
EER	Energy Efficiency Ratio
EFLH	Equivalent Full Load Hours
EM&V	Evaluation, Measurement, and Verification
EPE	El Paso Electric
EUEA	Efficient Use of Energy Act
GHG	Greenhouse Gas
HDD	Heating Degree Days
HEC	Home Energy Checkup
HER	Home Energy Report
HOU	Hours of Use
HPWH	Heat Pump Water Heater
HSPF	Heating Seasonal Performance Factor
HVAC	Heating, Ventilation, and Air Conditioning
HVAC	Heating, Ventilation, and Air Conditioning
IL TRM	Illinois Technical Reference Manual
ISR	In-Service Rate
kW	Kilowatt
kWh	Kilowatt-Hour

LI	Low-Income
LPD	Lighting Power Density
M&V	Measurement and Verification
MDUs	Multi-Dwelling Units
MF	Multifamily
NM TRM	New Mexico Technical Reference Manual
NMPRC	New Mexico Public Regulation Commission
NTG	Net-to-Gross
O&M	Operations and Maintenance
PNM	Public Service Company of New Mexico
PY	Program Year
RCx	Retrocommissioning
RR	Realization Rate
RRPS	Rio Rancho Public Schools
SEER	Seasonal Energy Efficiency Ratio
SEER2	Updated Seasonal Energy Efficiency Ratio
SEM	Strategic Energy Management
SPS	Southwestern Public Service
TRM	Technical Reference Manual
UCT	Utility Cost Test
WHFd	Waste Heat Demand Factor
WHFe	Waste Heat Energy Factor

Executive Summary

PNM Energy Efficiency and Load Management Evaluation

Gross and Net Impact Evaluation Research Objectives

- Measure total energy savings (kWh) and demand reduction (kW).
- Assess the effectiveness of data tracking and ex-ante savings.
- Estimate net-to-gross ratios and realized savings
- Assess active contractor applications and project documentation.

Impact Evaluation Findings and Recommendations

Implementation Key Findings	Recommendations
Implementers **baseline and installed wattages, HOUs, etc. impacted savings**.	**Provide standard documentation by measure** to ensure accurate estimates.
Discrepancies found in **HVAC cooling equipment types, energy savings algorithms, and interactive factors**.	**Standardize HVAC measure tracking data** with details and use consistent workpaper algorithms to enhance savings accuracy.
Adjustments for Space Conditioning Factors: Misalignment between HVAC waste heat factors for conditioned and non-conditioned spaces **led to discrepancies**.	Use site-specific HVAC space conditioning factors based on actual equipment, aligning with TRM guidelines **to improve savings accuracy**.

Outreach Key Findings

The product is well-established and **balanced** between **resources and demand**.

Experience Key Findings	Recommendations
Contractors praised program communication and support, contributing to high satisfaction.	Effective contractor relations foster program success, ensuring smooth implementation and positive outcomes.
Quick Saver respondents primarily owned their buildings, while Retrofit Rebate respondents mostly leased.	Tailor marketing strategies and program offerings **to address the needs and characteristics** of both owned and leased building owners.
Both subprograms showed a high likelihood of recommendation, with cost savings and environmental benefits highlighted as key motivators.	Leverage **participant satisfaction and positive word-of-mouth** by emphasizing cost savings and environmental impact in marketing.

Contractor Key Findings

Implementers have **effective relationships with contractors, and contractor relationships** with customers **are strong**.

All contractors said **the programs are working well**, where **unclear custom savings calculations** were the biggest concern.

Process Evaluation Research Objectives

Identify insights into the effectiveness of marketing and outreach efforts to provide decision makers with information about improving energy efficiency

Assess barriers for and characteristics of participation.

Assess how to enhance program delivery to maximize participation to achieve program goals.

Develop near-term and long-term strategies to improve program delivery.

Process Evaluation Research Findings and Recommendation

Barriers Key Findings

Contractors suggested **better transparency in rebate estimations** and faster project turnaround.

96% of Quick Saver participants were highly satisfied with installation quality and contractor performance. Continue maintaining high-quality **contractor** support and equipment installation standards for strong participant satisfaction.

Opportunities for Outreach Key Findings

Participants in both subprograms indicated a **need for broader marketing beyond contractor networks.**

Program awareness relies heavily on contractors and **word of mouth**.

Recommendation

Increase marketing efforts **targeting decision-makers directly through channels** like industry groups, events, and PNM outreach.

Cost-Effectiveness Evaluation Findings and Recommendation

Key Findings

A total of 831,787.3 MWh in ex-post net lifetime savings and a portfolio EUL of 9 years.

E.1 EVALUATION OVERVIEW

This report presents the independent evaluation results for the Public Service Company of New Mexico (PNM) energy efficiency programs for program year (PY)2024. To accomplish this, PNM contracted with EcoMetric Consulting, Evergreen Economics, Demand Side Analytics, and MDC Research (herein referred to as 'the Evaluation Team'). The team roles are as follows:

- EcoMetric was the prime contractor and managed all evaluation tasks and deliverables.
- EcoMetric provided engineering capabilities and led the review of PNM's savings estimates.
- Evergreen Economics conducted the process evaluation and conducted phone surveys.
- Demand Side Analytics conducted an impact evaluation of the load management programs; and
- MDC fielded all the phone surveys that Evergreen did not complete.

The table below outlines an overview of the evaluation in PY2024.

Table 1 PY2024 Program Evaluation Summary

Sector	Program	Impact	Process	NTG Research
Residential	Residential Comprehensive	✓	✓	✓
	Residential Lighting			
	Retail Products			
	PNM HomeWorks	✓		
	New Home Construction			
	Easy Savings	✓	✓	
	Energy Smart (LI)			
	Home Energy Reports	✓		
	Power Saver	✓		
	Peak Saver	✓		
Commercial	Commercial Comprehensive	✓	✓	✓
	Commercial SEM	✓	✓	

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 Commercial Comprehensive, New Homes Construction, and Energy Smart programs. A summary of the analysis methods for each of the PY2024 programs that were evaluated is included in the section below.

E.2 SAVINGS RESULTS

The Evaluation team compared the verified savings (ex-post) to the PNM program claimed savings (ex-ante) to determine the realization rate (RR) which we portray as the Engineering Adjustment Factor calculated as the ratio between verified and estimated savings. Each realization rate is a percentage showing how accurately the program estimated the savings. Projects or measures with a realization rate above 100% indicate that the customer is achieving more savings than initially predicted by PNM. Conversely, those projects with a realization rate of less than 100% show that customers did not realize the estimated savings amounts. The kilowatt-hour savings results of the PY2024 impact evaluation are shown in the table below, with the programs evaluated in 2024 bolded.

Table 2 PY2024 Savings Summary – kWh

Program	Sub-Program	# of Projects	Expected Gross kWh Savings	Engineering Adjustment Factor	Realized Gross kWh Savings	NTG Ratio	Realized Net kWh Savings
Commercial Comprehensive	Retrofit Rebate	155	22,157,534	0.9617	21,307,806	0.6490	13,828,766
	New Construction	53	8,369,179	0.9030	7,557,368	0.6490	4,904,732
	Quick Saver	293	9,541,179	1.0030	9,569,803	1.0000	9,569,803
	Multifamily	252	4,808,639	1.0570	5,082,731	0.6490	3,298,693
	RCx	6	159,089	1.0000	159,089	0.6490	103,249
	Midstream	11	161,626	1.0660	172,293	0.6490	111,818
Residential Comprehensive	Home Energy Checkup LI	8,233	3,227,933	0.9989	3,224,428	1.0000	3,224,428
	Home Energy Checkup	22,966	9,793,427	0.8249	8,078,150	0.9780	7,900,431
	Refrigerator Recycling	3,516	3,034,276	1.0000	3,034,276	0.6300	1,911,594
	Cooling	1,449	2,666,880	1.0038	2,676,944	0.6260	1,675,767
Residential Products		278,120	26,110716	1.0000	26,110,716	0.5100	13,316,465
Residential Lighting		10,083	259,430	1.0000	259,430	0.5100	132,309
Residential Lighting LI		152,362	3,823,204	1.0000	3,823,204	1.0000	3,823,204
HomeWorks		14,669	3,366,183	0.9127	3,072,282	1.0000	3,072,282
Energy Smart (MFA)		252	546,005	1.0000	546,005	1.0000	546,005
Easy Savings		9,125	3,779,383	0.8941	3,379,231	0.5985	2,022,470
Easy Savings LI		5,296	3,543,706	0.8552	3,030,644	1.0000	3,030,644
New Home Construction		1,437	1,714,991	1.0000	1,714,991	0.7130	1,222,789
Residential Behavioral HER		165,299	7,385,000	0.9992	7,378,830	1.0000	7,378,830
Commercial Behavioral SEM		10	5,334,588	1.0000	5,334,588	1.0000	5,334,588
Peak Saver		294	0	-	90,452	1.0000	90,452
Power Saver		66,665	0	-	91,191	1.0000	91,191
Total		740,546	119,782,968	0.9659	115,694,453	0.7484	86,590,510

Similarly, the Evaluation team compared the verified kilowatt (kW) savings to PNM's claimed kW savings to determine the RR, represented as the Engineering Adjustment Factor, for the kilowatt savings. An RR above 100% indicates greater-than-expected savings, while an RR below 100% suggests lower-than-expected savings. The table below presents the PY2024 impact evaluation kW savings results, with evaluated programs in PY2024 bolded.

Table 3 PY2024 Savings Summary – kW

Program	Sub-Program	# of Projects	Expected Gross kW Savings	Engineering Adjustment Factor	Realized Gross kW Savings	NTG Ratio	Realized Net kW Savings
Commercial Comprehensive	Retrofit Rebate	155	4,254	0.9800	4,169	0.6490	2,705
	New Construction	53	1,294	1.1020	1,426	0.6490	925
	Quick Saver	293	1,626	0.8390	1,364	1.0000	1,364
	Multifamily	252	532	1.1643	620	0.6490	402
	RCx	6	392	1.0000	392	0.6490	254
	Midstream	11	18	0.9881	17	0.6490	11
Residential Comprehensive	Home Energy Checkup LI	8,233	798	0.3604	288	1.0000	288
	Home Energy Checkup	22,966	854	0.9135	781	0.9780	763
	Refrigerator Recycling	3,516	5,400	1.0000	5,400	0.6300	3,402
	Cooling	1,449	136	1.0000	136	0.6260	85
Residential Products		278,120	3,381	1.0000	3,381	0.5100	1,724
Residential Lighting		10,083	0	1.0000	0	0.5100	0
Residential Lighting LI		152,362	0	1.0000	0	1.0000	0
HomeWorks		14,669	112	0.9295	104	1.0000	104
Energy Smart (MFA)		252	309	1.0000	309	1.0000	309
Easy Savings		9,125	1,436	1.3545	1,945	0.5985	1,164
Easy Savings LI		5,296	2,045	1.1421	2,336	1.0000	2,336
New Home Construction		1,437	361	1.0000	361	0.7130	258
Residential Behavioral HER		165,299	840	1.4905	1,252	1.0000	1,252
Commercial Behavioral SEM		10	0	1.0000	702	1.0000	702
Peak Saver		294	17,327	0.8012	13,882	1.0000	13,882
Power Saver		66,665	50,561	0.8002	40,461	1.0000	40,461
Total		740,546	91,676	0.8653	79,324	0.9126	72,392

The impact evaluation, which included engineering desk reviews for a sample of Commercial Comprehensive projects, site visits for a sample of Commercial Comprehensive projects, and a review of deemed savings values for Residential Comprehensive, HomeWorks, and Easy Savings resulted in engineering adjustment factors that varied from 1.000 for realized gross savings. Adjustments to savings based on the Commercial Comprehensive, Residential Comprehensive, HomeWorks, and Easy Savings desk reviews resulted in minor changes at the program or portfolio level.

The process evaluation activities included phone surveys with Commercial Comprehensive, Commercial Strategic Energy Management, Residential Comprehensive, and Easy Savings participants and interviews with Commercial Comprehensive and Residential Comprehensive participating contractors. Based on the data collection and analysis conducted for this evaluation, the evaluation team found that overall, PNM is operating programs that are resulting in energy and demand savings and satisfied participants.

1 Introduction

The PNM 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, PNM 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.

1.1 GROSS IMPACT RESULTS

The following report outlines the Public Service Company of New Mexico's (PNM) Program Year (PY) 2024 Preliminary Evaluation Results and Findings. The intention of this memo is to provide PNM with early findings to help improve energy efficiency programs in PY2025 and beyond. The PY2024 results are derived from evaluated projects sample chosen from projects completed in the calendar year of 2024.

The impact evaluation primarily involves engineering desk reviews of a stratified sample of projects, designed to encompass diverse measure types and energy savings levels. The evaluation team verified gross realized impacts through engineering desk reviews. The team primarily reviewed PNM's Excel-based calculators to estimate savings for lighting, refrigeration, HVAC and many other types of projects. The factors and assumptions used in these calculators were reviewed by the evaluation team and compared to source material methodologies provided. Project files were cross-

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

referenced with sources, such as the New Mexico Technical Reference Manual[2] (NM TRM), to validate their reasonableness and ensure reliable realized energy and demand savings estimates.

Evaluation efforts prioritize evaluation of savings calculation methodologies to ensure accuracy and consistency. PNM Workpapers, the NM TRM, or documented custom savings are prioritized over other resources if calculations are sufficiently sourced or applied. When applicable, evaluators rely on established TRMs in the following order: NM TRM, Texas TRM, and the Illinois TRM with appropriate weather adjustments. In instances where these resources are insufficient, other TRMs or credible sourced references are utilized to validate savings.

1.1.1 Realization Rates

Program and subprogram realization rates are shown in Table 4. Program summaries are highlighted in brown. The subprogram results, table rows italicized and white, are provided to give PNM and implementors insight to subprogram performance to understand underlying discrepancies leading to program realization rates.

[2] NM TRM https//www.nm-prc.org/wp-content/uploads/2021/07/New-Mexico-TRM-2021-Final-03-09-2021.pdf

Table 4 PY2024 Program Evaluation Summary

Program Subprogram	Reported kWh	Verified kWh	Reported kW	Verified kW	Realization Rate (kWh)	Realization Rate (kW)
Commercial Comprehensive	**45,197,246**	**43,849,091**	**8,115.12**	**7,987.53**	**0.9702**	**0.9843**
Retrofit	22,157,534	21,307,806	4,253.60	4,168.59	0.9617	0.9800
New Construction	8,369,179	7,557,368	1,293.99	1,425.97	0.9030	1.1020
QuickSaver	9,541,179	9,569,803	1,625.77	1,364.02	1.0030	0.8390
Multifamily	4,808,639	5,082,731	532.10	619.50	1.0570	1.1643
Midstream	159,089	159,089	392.00	392.00	1.0000	1.0000
RCx	161,626	172,293	17.66	17.45	1.0660	0.9881
Residential Comprehensive	**15,688,240**	**13,979,523**	**1,788**	**1,204**	**0.8911**	**0.6732**
Home Energy Checkup LI	3,227,933	3,224,428	798.22	287.66	0.9989	0.3604
Home Energy Checkup	9,793,427	8,078,150	854.45	780.57	0.8249	0.9135
Midstream Cooling	2,666,880	2,676,944	135.67	135.67	1.0038	1.0000
HomeWorks	**3,366,183**	**3,072,282**	**112**	**104**	**0.9127**	**0.9256**
HomeWorks	1,859,692	1,496,636	31.32	31.00	0.8048	0.9897
Energy Innovations	1,403,526	1,488,715	68.00	70.00	1.0607	1.0294
Energy Smart Seniors	102,966	86,931	12.90	2.88	0.8443	0.2230
Easy Savings	**7,323,089**	**6,409,874**	**3,481**	**4,280**	**0.8753**	**1.2296**
Student Kits	146,380	99,535	0	0	0.6800	1.0000
Smart Thermostats	705,924	712,932	0	0	1.0099	1.0000
Electric Kits	3,989,224	3,560,624	1,707	2,666	0.8926	1.5613
Gas Kits	2,481,562	2,036,784	1,774	1,615	0.8208	0.9103
Peak Saver	**0**	**90,452**	**17,327**	**13,882**	**-**	**0.8012**
Power Saver	**0**	**91,191**	**50,561**	**40,461**	**-**	**0.8002**
Residential Behavioral HER	**7,385,000**	**7,378,830**	**840**	**1,252**	**0.9992**	**1.4905**
Total	**78,959,758**	**74,871,243**	**82,225**	**69,171**	**0.9482**	**0.8412**

The Residential Home Energy Checkup Market Rate and Easy Savings Student Kits demonstrate the largest deviations from reported and verified kWh savings. Energy Smart Seniors contains the largest deviations from reported and verified kW savings, however, the amount of savings from the subprogram limits the impact on the program level realized savings. Additional information is provided in Section 3. Other programs are within normal ranges of recent evaluations with notable changes also provided in Section 3. Strategic Energy Management (SEM) will not undergo evaluation due to post evaluation data availability. The program will receive an evaluation in PY2025.

1.2 NET IMPACT RESULTS

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. Therefore, the evaluation team will apply the PY2023 calculated NTG ratios to the PY2024 realized evaluated savings. The NTG ratios calculated in PY2024 will then be applied to the PY2025 results.

1.2.1 Net-to-Gross Ratios

Table 5 summarizes the updates to the NTG ratios for PY2024.

Table 5 Net-to-Gross Ratio Updates for PY2024

Program	Sub-Program	PY2024 NTG Ratio	PY2025 NTG Ratio
Commercial Comprehensive	Retrofit Rebate	0.6490	0.7563
	New Construction	0.6490	0.7563
	Quick Saver	1.0000	1.0000
	Multifamily	0.6490	0.7563
	Retrocommisioning	0.6490	0.7563
	Building Tune-Up	0.6490	0.7563
	Midstream	0.6490	0.7563
Residential Comprehensive	Home Energy Checkup - LI	1.0000	1.0000
	Home Energy Checkup	0.9780	0.9863
	Refrigerator Recycling	0.6300	0.6300
	Cooling	0.6260	0.6648
Residential Products		0.5100	0.5100
Residential Lighting		0.5100	0.5100
Residential Lighting LI		1.0000	1.0000
HomeWorks		1.0000	1.0000
Energy Smart		1.0000	1.0000
Easy Savings		0.5985	0.5985
Easy Savings LI		1.0000	1.0000
New Home Construction		0.7130	0.7130
Residential Behavioral HER		1.0000	1.0000
Commercial Behavioral SEM		1.0000	1.0000
Peak Saver		1.0000	1.0000
Power Saver		1.0000	1.0000

1.3 PROCESS EVALUATION FINDINGS

The process evaluation of PNM's energy efficiency and load management programs for PY2024 focused on assessing program delivery, customer engagement, and implementation effectiveness. The evaluation included participant surveys, contractor interviews, and implementer feedback, with a goal of identifying strengths and areas for improvement across multiple programs. Key findings indicate that while customer satisfaction remains high across most programs, there are opportunities to enhance marketing outreach, streamline rebate processes, and improve program awareness among eligible participants.

A common theme across programs was the reliance on contractors and word-of-mouth referrals as primary sources of program awareness, particularly in the Commercial Comprehensive and Residential Cooling programs. While this approach has successfully driven participation, expanding direct outreach efforts to decision-makers and end-users could further enhance engagement. Additionally, some participants faced delays in rebate processing and unclear eligibility criteria, leading to lower satisfaction in specific subprograms. Standardizing contractor communication, improving rebate transparency, and increasing direct engagement efforts are recommended strategies to address these issues. The following sections provide a detailed breakdown of process evaluation findings, including participant feedback, program strengths, and actionable recommendations for improving future program cycles.

1.4 COST-EFFECTIVENESS RESULTS

Using net realized savings from this evaluation and cost information provided by PNM, the Evaluation team calculated the ratio of benefits to costs for each of PNM'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 portfolio was found to be cost effective with a UCT ratio of 1.51. Results are shown in Table 6.

Table 6 PY2024 Cost Effectiveness by Program

Program	Utility Cost Test (UCT)
Res Comp – Refrigerator Recycling	2.77
Res Comp – Home Energy Checkup	1.29
Res Comp – Home Energy Checkup LI	0.81
Res Comp – Residential Cooling	0.36
Residential Behavioral HER	1.01
Residential Lighting	1.81
Residential Products	2.05
Commercial Comprehensive	1.78
Commercial Comprehensive - Multifamily	0.79
Easy Savings	4.99
Energy Smart (MFA)	2.41
New Home Construction	0.84
PNM HomeWorks	1.59
Commercial Behavioral SEM	2.20
PNM Power Saver	0.81
PNM Peak Saver	0.75
Overall Portfolio	**1.51**

[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

2 Evaluation Methodology

This section describes the evaluation methods used to evaluate each program. An overview of evaluation activities by program can be found in the table below. The Evaluation team completed the cost-effectiveness analysis for each program in the portfolio.

Table 7 Summary of Evaluation Activities by Program

Sector	Program	Impact	Process	NTG Research
Residential	Residential Comprehensive	✓	✓	✓
	Residential Lighting			
	Retail Products			
	PNM HomeWorks	✓		
	New Home Construction			
	Easy Savings	✓	✓	
	Energy Smart (LI)			
	Home Energy Reports	✓		
	Power Saver	✓		
	Peak Saver	✓		
Commercial	Commercial Comprehensive	✓	✓	✓
	Commercial SEM	✓	✓	

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 PNM 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 PY2024. For any program that was not evaluated, the Evaluation team applied an engineering adjustment factor of 100% for that program as well as a net-to-gross (NTG) ratio that was specified in the PY2023 evaluation report. These programs have the following elements compiled and reported:

- Gross impacts (kWh, kW) using PNM'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

2.1 PROGRAM DESCRIPTIONS

Different programs require leveraging different techniques for program evaluation based on measure type and program delivery. This section describes the program offerings the team evaluated in PY2024. The table below summarizes the types of energy savings methodologies used in each of the evaluated programs.

Table 8 Summary of PY2024 Evaluation Methods by Program

Program	Prescriptive	Custom	Load Management
Residential Comprehensive			
Home Energy Checkup	✓		
Home Energy Checkup (LI)	✓		
Midstream Cooling	✓		
Commercial Comprehensive			
Retrofit Rebate	✓	✓	
Quick Saver	✓		
Building Tune-Up	✓		
Midstream	✓		
Multifamily	✓		
New Construction	✓	✓	
PNM HomeWorks	✓		
Easy Savings Kits (LI)	✓		
Residential Lighting	✓		
Residential Products	✓		
Power Saver			✓
Peak Saver			✓

Commercial Comprehensive. Most projects in the Commercial Comprehensive program are prescriptive in nature, and as such the evaluation of this program centered on a deemed savings review, phone survey verification, and project desk reviews. Custom projects were evaluated by a desk review, site visits, and participant phone survey. The deemed savings review for prescriptive measures 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. The phone survey was used to verify that program-rebated measures are still installed and functional as well as gather information to calculate a free ridership rate, as described in more detail in the Net Impacts section below. Finally, desk reviews with possible site visits conducted by engineers will examine the savings assumptions and calculations specific to each project that is selected for review and provide installation verification.

Residential Comprehensive. This is a prescriptive program serving PNM's residential customers and consists of three sub-programs Home Energy Checkup, Energy Checkup Low-Income, and Midstream Cooling. The Home Energy Checkup sub-program includes a home energy assessment and the installation of low-cost measures in addition to available equipment rebates providing qualifying programs based on household income. The Midstream Cooling program provides homeowners with an opportunity to switch heating/cooling equipment for more efficient products such as heat pumps. The impact evaluation for the Residential Comprehensive program will center on a deemed savings review and participant surveys.

In addition to impact evaluation efforts, the Evaluation Team collected information on the Midstream Cooling program specifically related to Heat Pumps. This information includes, but is not limited to, the NM PRC requested information for installed heat pump projects as defined here

- Existing heating system type and characteristics
- If the heat pump is or will be the sole source of heat
- Change-over temperature for supplementary heat sources
- Any details on heat pump water heaters that pertains to the program, installation, or evaluation efforts

HomeWorks. This program achieves energy savings from instructional material to students and children through 45-60 minute presentations after which participants are given an energy efficiency kit for home use. The evaluation team evaluated the HomeWorks program by comparing participant installation of kit contents to the NM Technical Resource Manual (TRM). The kit contains efficiency measures such as LEDs, faucet aerators, low-flow showerheads, etc. A separate participant survey provided installation rate information to accompany the deemed savings review.

Easy Savings (LI). The intention of the Energy Savings Kits program is to achieve savings through low-cost measures and simplified measure installation for low income households. The Easy Savings program provides similar energy and water savings kits as the PNM HomeWorks program. As such, evaluators quantified program impact similarly through a deemed analysis comparing participant savings to the NM TRM and fielding a survey to quantify installation rates.

Commercial SEM. The Commercial SEM program provides business customers energy use reduction through organizational training, technical support for operations and maintenance (O&M) improvements, energy monitoring, and reporting tools that track facilities energy costs. The evaluation team decided the available post data period was insufficient to evaluate during the PY2024, and the evaluation will occur during the PY2025. Net-to-gross and process surveys were completed in PY2024 with results contained within this document.

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

Power Saver and Peak Saver. These are demand response programs targeting different customer groups. The Power Saver program focuses on single family, multi-dwelling units (MDUs), and small and medium commercial customers. There are five separate Power Saver components. The Peak Saver program is for larger commercial customers that typically have unique load shapes. For Peak Saver and four of the five Power Saver components, savings were estimated based on the difference in load shapes between event and recent non-event weekdays for the same customer. For the fifth Power Saver component (residential direct load control through AC switches), impacts were estimated by comparing participants' load with load from a control group. All analyses use 5-minute intervals, load data and are consistent with what our team has done in prior evaluations of these programs.

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

2.2 PHONE SURVEYS

Phone surveys were fielded in October of 2024 through February of 2025 for participants in the Commercial Comprehensive, Residential Comprehensive, Easy Savings, and Commercial SEM programs. The phone surveys ranged from 15 to 20 minutes in length and covered the following topics:

- Verification of measures included in PNM's program tracking database.
- Satisfaction with the program experience.
- Survey responses for use in the free ridership calculations.
- Participation drivers and barriers.
- Customer characteristics.

The final survey instruments for the Commercial Comprehensive, Residential Comprehensive, Easy Savings, and Commercial SEM are included in the Appendix H.

2.3 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 program while the Residential Comprehensive, HomeWorks, and Easy Savings programs received a deemed savings review. Commercial SEM impact evaluation is delayed to PY2025 due to insufficient post-installation data. The goal of the desk reviews was to verify equipment installation, operational parameters, and estimated savings. Reviews of the deemed savings values were also completed for those program measures that used prescriptive savings values.

Deemed, prescriptive, and custom savings reviews were completed for the PY2024 Commercial Comprehensive, Residential Comprehensive, HomeWorks, and Easy Savings 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.
- 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 are 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.
- Review of New Mexico TRM algorithms to identify candidates for future updates and improvements.
- ISR calculations to determine rates at which provided kit measures were installed by kit recipients

2.4 ONSITE INSPECTIONS

In support of the engineering desk reviews, the evaluation team completed onsite inspections for five (5) of the Commercial Comprehensive projects in the evaluation sample. The evaluation team contacted selected participants by phone and email to schedule the onsite inspections. The evaluation team visited sites to verify equipment installation and operational parameters.

Site visits were conducted on a smaller timeline due to compacted evaluation timeline. We suggest that more emphasis should be placed on completing custom projects to include in the fall evaluation cycle (commonly referred to as Wave 1), so there are more site visit opportunities.

2.5 LOAD MANAGEMENT IMPACT ESTIMATION

Load management programs and how they are evaluated depend specifically on how the program is designed and how customers are engaged in the program. The details regarding how PNM's load management programs were evaluated are presented in Section 8.

2.6 NET IMPACT ANALYSIS

The evaluation team estimated net impacts for some programs using the self-report approach. This method uses responses to a series of carefully constructed survey questions to learn what participants would have done in the absence of 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 programs or utility interactions that affected the decision to choose high efficiency equipment (e.g., was there an energy audit done, had the customer participated before, was 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 NTG ratio) using the self-report approach is based on the 2017 Illinois (IL) TRM.[5] For the PNM programs, questions regarding free ridership were divided into several primary components

- A **Program Component** series of questions that asked about the influence of specific program activities (rebate, customer account rep, contractor recommendations, other assistance offered) on the decision to install energy efficient equipment.
- A **Program Influence** question, where the respondent was asked directly to provide a rating of how influential the overall program was on their decision to install high efficiency equipment.
- 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.

2.7 GROSS AND NET REALIZED SAVINGS CALCULATIONS

The final step in the impact evaluation process is calculating the realized gross and net savings based on the program-level analysis described above. The Evaluation Team will apply appropriate impact analysis methods described above and calculate gross realized savings by modifying the original ex-ante savings values from the participant tracking databases using an Installation Adjustment factor and an Engineering Adjustment factor:

[5] IL TRM can be found at http//www.ilsag.info/il_trm_version_6.html

$$Gross\ Realized\ Savings\ =\ \alpha_{install} * \alpha_{engineer} * ExAnte\ Savings$$

Installation Adjustment Factor ($\alpha_{install}$) installation rate verified by phone survey or on-sites

Engineering Adjustment Factor ($\alpha_{engineer}$) factor from engineering analysis, desk reviews, etc.

Net realized savings are then determined by multiplying the Gross Realized Savings by a free ridership adjustment factor as described in the Net Savings Estimation section.

2.8 COST EFFECTIVENESS

The 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." [6] The UCT is the method used for cost-effectiveness testing.

In preparation for the cost-effectiveness analysis, the Evaluation team requested key assumptions and inputs from PNM, 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.
- Administrative costs – all non-incentive expenditures associated with program delivery.

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

[6] https//www.srca.nm.gov/parts/title17/17.007.0002.html, Section 17.7.2.14 - D1

3 Commercial Comprehensive

The evaluation of the Commercial Comprehensive program includes a gross, net-to-gross, and process assessment, which examined the six key subprograms Multifamily, New Construction, Quick Saver, RCx (Retrocommissioning), Midstream Cooling, and Retrofit Rebate. Building Tune-Up did not have any participation on record for PY2024. The gross evaluation assessed the energy savings across these subprograms, focusing on the performance and impact of each initiative. Throughout the evaluation, the NTG/process analysis provided insights into the program's processes, identifying areas for improvement in delivery, customer participation, and engagement.

3.1 GROSS IMPACT

The impact evaluation process calculates the realized gross based on the program-level analysis described above.

3.1.1 Realized Gross Impacts

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.)

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

The ex-ante PY2024 impacts for the Commercial Comprehensive program are summarized in Table 9 and Table 10.

Table 9 PY2024 Commercial Comprehensive Savings Summary (kWh)

Program	Sub-Program	# of Projects	Expected Gross kWh Savings	Engineering Adjustment Factor	Realized Gross kWh Savings
Commercial Comprehensive	Retrofit Rebate	155	22,157,534	0.9617	21,307,806
	New Construction	53	8,369,179	0.9030	7,557,368
	Quick Saver	293	9,541,179	1.0030	9,569,803
	Multifamily	252	4,808,639	1.0570	5,082,731
	RCx	6	159,089	1.0000	159,089
	Midstream	11	161,626	1.0660	172,293
Total		**770**	**45,197,246**	**0.9702**	**43,849,091**

Table 10 Commercial Comprehensive Savings Summary (kW)

Program	Sub-Program	# of Projects	Expected Gross kW Savings	Engineering Adjustment Factor	Realized Gross kW Savings
Commercial Comprehensive	Retrofit Rebate	155	4,254	0.9800	4,169
	New Construction	53	1,294	1.1020	1,426
	Quick Saver	293	1,626	0.8390	1,364
	Multifamily	252	532	1.1643	620
	RCx	6	392	1.0000	392
	Midstream	11	18	0.9881	17
Total		770	8,115	0.9843	7,988

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

The final sample design is shown in Table 11. The resulting sample achieved a relative precision higher than the targeted 90/10 overall.

Table 11 Commercial Comprehensive Desk Review Sample

Sub-Program	Count	Average kWh	Total kWh savings	% of savings	Current Sample
Retrofit Rebate	155	142,952	22,157,534	49%	20
New Construction	53	157,909	8,369,179	19%	6
Quick Saver	293	32,564	9,541,179	21%	37
Multifamily	252	133,573	4,808,639	11%	6
RCx	6	26,515	159,089	<1%	1
Midstream	11	14,693	161,626	<1%	1

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 sampled projects. PNM 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 PNM Excel-based calculators mostly 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 impact the engineering adjustment factor. More details on desk review discrepancies are found in Appendix I.

In the evaluation of prescriptive projects, the team encountered various measures present in both the New Mexico TRM and the PNM Workpapers. However, the team observed some inconsistencies in the savings calculation methodologies between these sources. In such cases, the team conducted a review of both sources for consistency and applicability but relied on the methodology and algorithm inputs specified in the NM TRM, ASHRAE 90.1-2018 when values differed, and the IL TRM in cases where the NM TRM did not have applicable measures. Some of the other incentivized measures in older projects existed only in the latest PNM Workpapers, and in these cases, the algorithms were reviewed for accuracy and adjusted as necessary to calculate realized energy and demand savings based on project specific information. When feasible, the evaluation team relied on non-prescriptive values, as described in the project files. To ensure the validity of these values, the Evaluation Team cross-referenced documented input parameters with sources like the TRM or posted business hours, to assess their reasonableness.

The evaluation identified several recurring issues contributing to discrepancies between ex-ante and verified savings. A key issue is the lack of consistency and documentation in assumptions and inputs used for savings calculations. These include inconsistencies in baseline and installed fixture wattages, differences in Hours of Use (HOU) assumptions, and improper or undocumented algorithm inputs. Specific findings highlighted errors in cooling type selection, lighting fixture certification, space type categorization, and application of HVAC interactive factors. Variations in savings estimates often stemmed from misalignment with the New Mexico TRM or PNM Workpapers and inadequate documentation of custom inputs.

It is essential to standardize and document all algorithm inputs using NM TRM or PNM Workpaper guidelines to address these challenges. For custom inputs, provide clear justifications with supporting evidence like equipment specifications or site details. These steps will ensure energy savings accuracy and consistency across the Commercial Comprehensive implementation.

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

3.2 NET IMPACT

The following sections describe the evaluation of the 2024 PNM Commercial Comprehensive program, with a focus on verified net-to-gross (NTG) realized savings for PY2024, the PY2025 NTG values updates, and results summarizing contractor/participant perspectives. The participant section presents results from participant interviews through exploration of motivations for participation, program satisfaction, and the importance of factors like contractor recommendations and rebate amounts. The contractor section discusses results from contractor interviews who participated in the program by summarizing their background, program awareness, engagement, and satisfaction. It highlights challenges such as balancing rebates with customer satisfaction and suggests improvements like streamlining rebate processes and enhancing communication. Both sections provide valuable insights into the program's effectiveness, areas for improvement, and the overall satisfaction of contractors and participants.

3.2.1 Realized Net Impacts

The net-to-gross evaluation process calculates the Net-to-Gross (NTG) savings, which reflect the effectiveness of the program in achieving energy savings. The NTG ratio is calculated by comparing the Net Realized Savings (i.e., the savings that result directly from the program's influence on participants) to the Gross Realized Savings (the total savings from all measures installed from the impact evaluation above). This ratio accounts for factors such as free ridership (participants who would have implemented the measures without the program) and spillover (savings from participants who were influenced by the program but did not directly participate). The NTG ratio is crucial for assessing the overall impact of the program.

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

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

Table 12 and Table 13 summarize the PY2024 net impacts for the Commercial Comprehensive program using the prospective NTG ratios calculated by the evaluation team during the PY2023 evaluation.

Table 12 PY2024 Commercial Comprehensive Net Impact Summary (kWh)

Program	Sub-Program	# of Projects	Realized Gross kWh Savings	NTG Ratio	Realized Net kWh Savings
Commercial Comprehensive	Retrofit Rebate	155	21,307,806	0.6490	13,828,766
	New Construction	53	7,557,368	0.6490	4,904,732
	Quick Saver	293	9,569,803	1.0000	9,569,803
	Multifamily	252	5,082,731	0.6490	3,298,693
	RCx	6	159,089	0.6490	103,249
	Midstream	11	172,293	0.6490	111,818
Total		770	43,849,091	0.7256	31,817,061

Table 13 PY2024 Commercial Comprehensive Gross Impact Summary (kW)

Program	Sub-Program	# of Projects	Realized Gross kW Savings	NTG Ratio	Realized Net kW Savings
Commercial Comprehensive	Retrofit Rebate	155	4,169	0.6490	2,705
	New Construction	53	1,426	0.6490	925
	Quick Saver	293	1,364	1.0000	1,364
	Multifamily	252	620	0.6490	402
	RCx	6	392	0.6490	254
	Midstream	11	17	0.6490	11
Total		770	7,988	0.7089	5,663

3.2.2 Net-To-Gross Ratio Update for PY2024

For the net impact self-report analysis, the evaluation team completed customer interviews who had valid contact information and participated in the PY2024 Commercial Comprehensive Program. The net-to-gross (NTG) ratios for direct install programs is 1.00 as savings are only achieved through direct program intervention. For the non-direct install sub-programs, the Evaluation Team used the self-report approach described earlier to calculate a free ridership rate.

Table 14 shows the updated Commercial Comprehensive NTG ratios for PY2025 compared to the PY2024 NTG evaluation results.

Table 14 Commercial Comprehensive NTG Ratio Update for PY2024

Program	PY2024 NTG Ratio	PY2025 NTG Ratio
Retrofit Rebate	0.6490	0.7563
New Construction	0.6490	0.7563
Quick Saver	1.0000	1.0000
Multifamily	0.6490	0.7563
Retrocommissioning	0.6490	0.7563
Building Tune-Up	0.6490	0.7563
Midstream	0.6490	0.7563

3.3 PROCESS EVALUATION

3.3.1 Participant Interviews

The evaluation team conducted telephone interviews with 63 participating customers in the Quick Saver and Retrofit Rebate subprograms of PNM's Commercial Comprehensive program. The table below shows the distribution of completed surveys for Commercial Comprehensive subprograms.

Table 15 Survey Contacts and Completes

Subprogram	Customers with Valid Contact Info	Completed Surveys
Quick Saver	193	38
Retrofit Rebate	145	25
Total	338	63

The following subsections include analysis covering company characteristics and demographics, sources of program awareness, motivations for participation, program satisfaction, and program influence among survey respondents, as well as insights from open-ended responses about participants' experiences and recommendations for the program.

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

3.3.1.1 Company Demographics

Survey respondents were asked if their company owns or leases the building where the project was completed. Figure 3-1 shows that respondents in the Quick Saver subprogram most commonly own their building (66%) compared to Retrofit Rebate respondents, who most commonly lease their building (53%). Most respondents also reported that their companies paid their own electric bills (98% of Retrofit Rebate respondents and 96 percent of Quick Saver respondents).

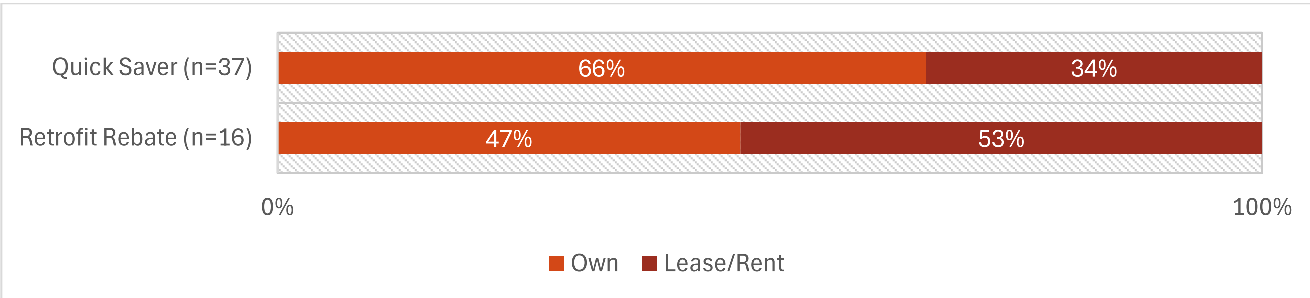


Figure 3-1 Quick Saver and Retrofit Rebate Respondent Own or Rent

Respondents were also asked about the size of the building in which their company is located. Figure 3-2 shows that most Quick Saver respondent companies are in buildings between 10,000 and 99,999 square feet (76%) and Retrofit Rebate respondents are in buildings between 10,000 and 49,999 square feet (51%) or 100,000 square feet or more (36%).

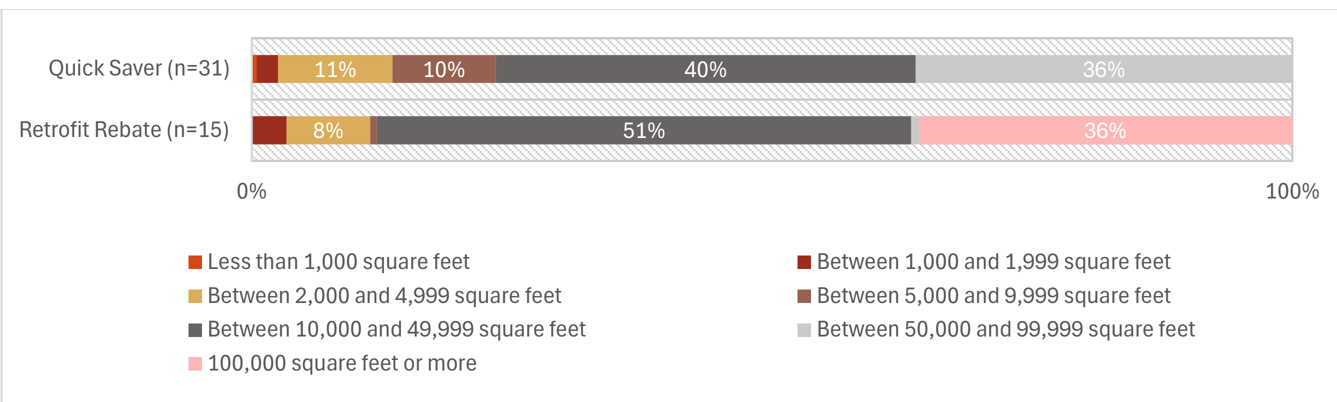


Figure 3-2 Quick Saver and Retrofit Rebate Respondent Building Size

Respondents were also asked when their current building was built. Figure 3-3 shows that building age varied among respondents. A majority (52%) of Quick Saver respondent buildings were built between 1970 to 1979, and a majority (75%) of Retrofit Rebate respondent buildings were built between 1970 and 1989.

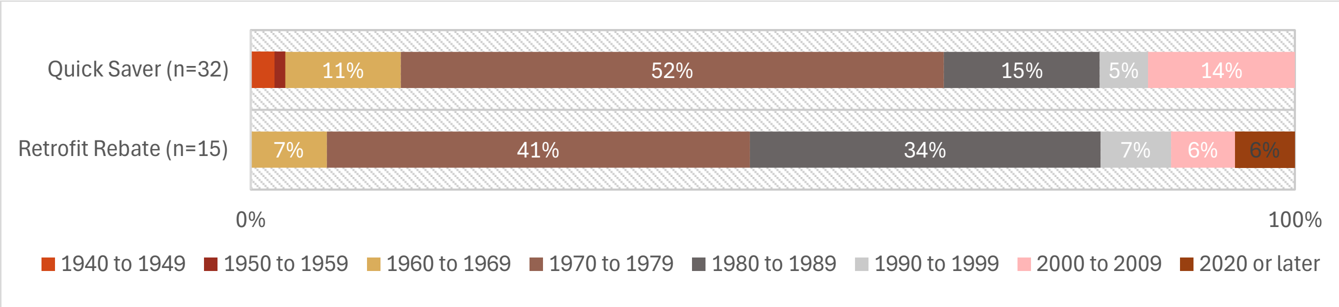


Figure 3-3 Quick Saver and Retrofit Rebate Respondent Building Age

Respondents were also asked about their companies' sizes—specifically, the number of full-time equivalent (FTE) employees in New Mexico. Figure 3-4 shows that most respondents' companies have from 5 to 19 employees (53% of Quick Saver respondents and 76% of Retrofit Rebate respondents). The average age of the businesses participating in the Quick Saver subprogram was 26 years, while the average Retrofit Rebate business was 33 years old.

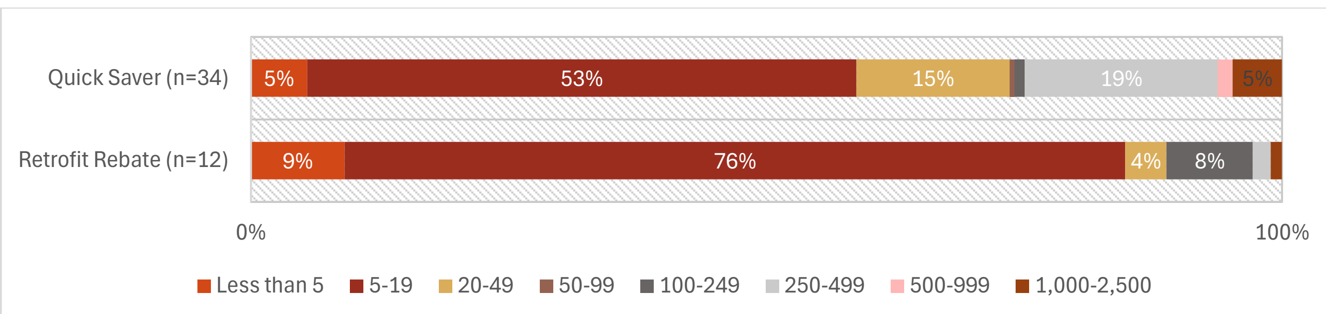


Figure 3-4 Quick Saver and Retrofit Rebate Respondent Number of Employees

3.3.1.2 Sources of Awareness

Both Quick Saver and Retrofit Rebate respondents were asked how their company initially became aware of the PNM rebate program. Companies involved became aware of the program through a variety of ways, including professional recommendations, word of mouth, the PNM staff/website, previous participation, or an event they attended.

Figure 3-5 shows that in the Quick Saver subprogram, awareness primarily came from professional recommendations (64%) such as a contractor or building assessment. For the Retrofit Rebate subprogram, word of mouth was the most common source (75%) of initial awareness.

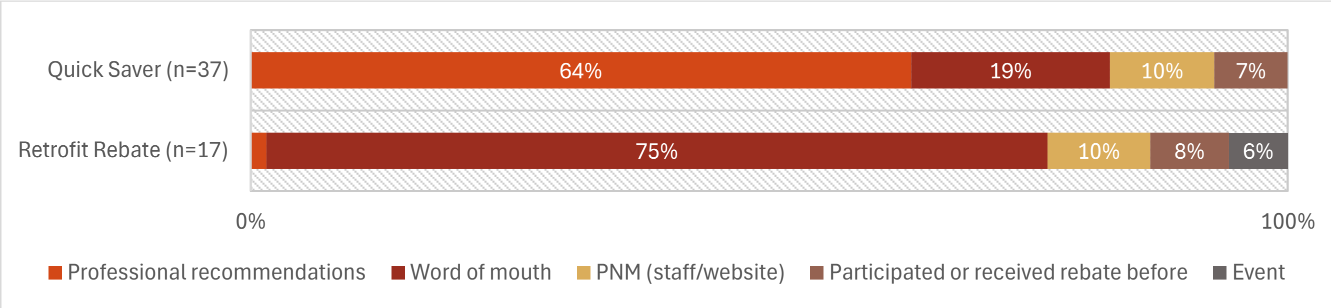


Figure 3-5 Quick Saver and Retrofit Rebate Initial Source of Awareness

Respondents were also asked what other sources they used to gather additional information about the subprograms they participated in. The most common method across both the Quick Saver and the Retrofit Rebate subprograms was contacting PNM staff or using the PNM website, with 86 percent of Quick Saver respondents and 97 percent of Retrofit Rebate respondents indicating they used these sources. Those surveyed were also asked to indicate what method they found most useful out of all the sources they had used. Five respondents indicated that the PNM staff/website was also the most useful.

3.3.1.3 Motivations for Participation

Respondents were asked to rate a variety of factors that influenced their decision to conduct their project; Figure 3-6 and Figure 3-7 show the responses of those surveyed across each subprogram.

For those in the Quick Saver subprogram (Figure 3-6), the most important factors were reducing energy bill amounts (56% reported this as extremely important) and upgrading out-of-date equipment (31% reported this as extremely important). Notably, 64 percent of those who used a contractor reported the contractor recommendation as very important (Figure 3-6).

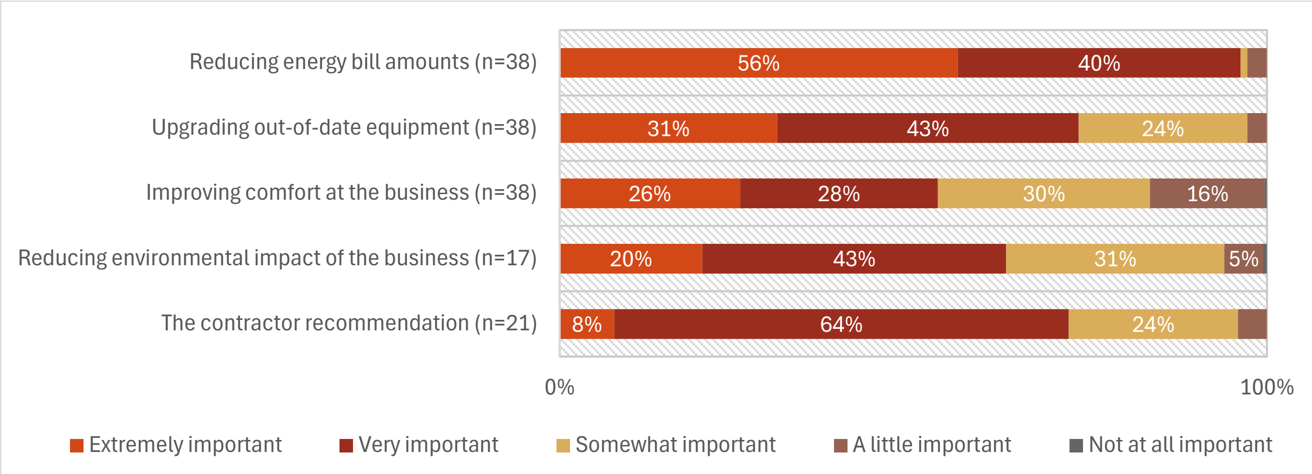


Figure 3-6 Quick Saver Motivations for Participation

Figure 3-7 shows that Retrofit Rebate respondents indicated that they place high importance on improving comfort at the business (47% rated this as extremely important) and receiving the rebate (44% rated this as extremely important). Those who installed HVAC measures noted that improving air quality was important (39% rated it as extremely important and 58% as very important). Contractor recommendations were less impactful for Retrofit Rebate respondents, with 88 percent rating them as somewhat important.

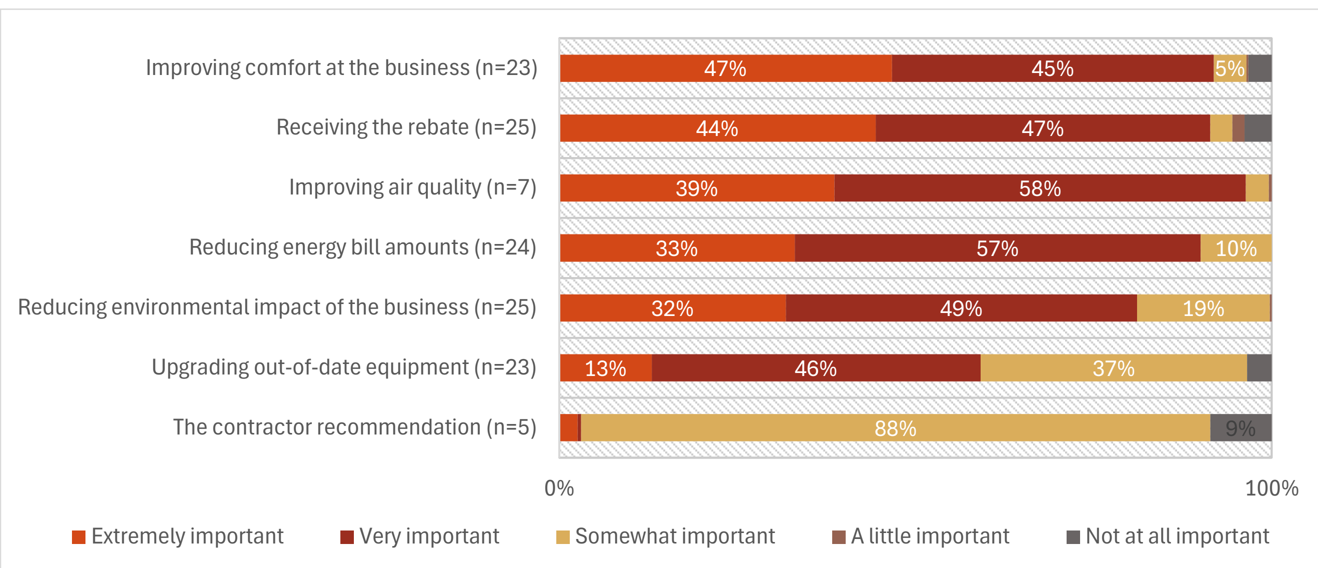


Figure 3-7 Retrofit Rebate Motivations for Participation

Respondents were also asked to rate the importance of various factors related to the rebate program itself and assess how important they were in determining how energy efficient their project would be. Figure 3-8 and Figure 3-9 show the responses of those surveyed across each subprogram. Quick Saver respondents rated the contractor who performed the work and the rebate amount as the most important factors in determining how efficient the project would be (96% and 95% rated these as extremely important, respectively).

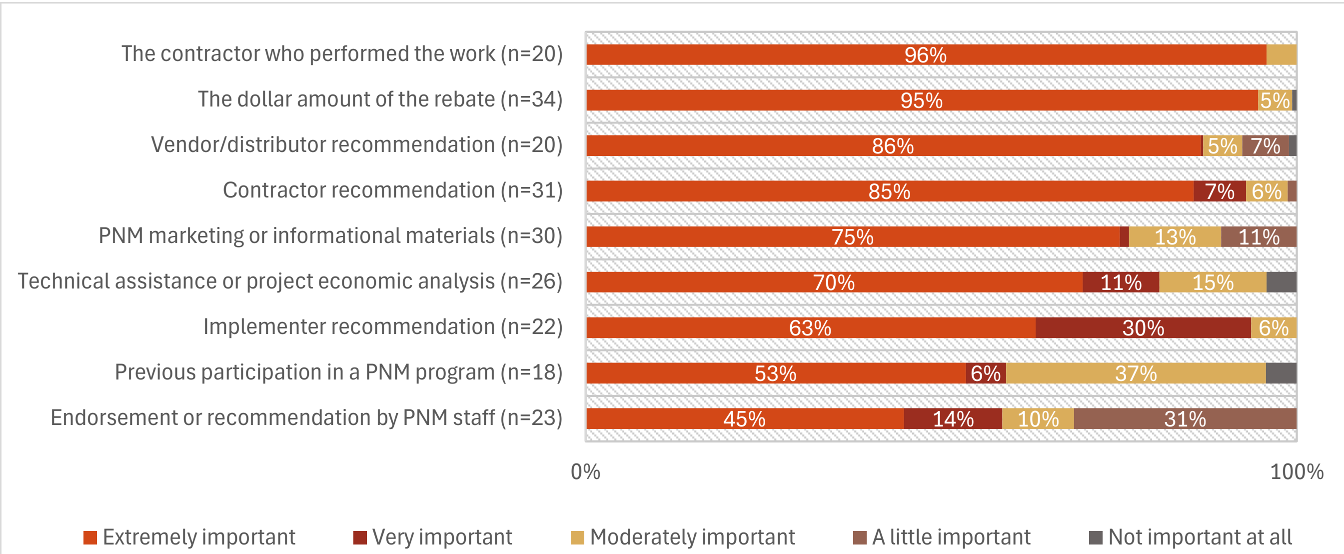


Figure 3-8 Quick Saver Importance of Program Factors

Retrofit Rebate respondents exhibited similar response distributions, with the contractor who performed the work as the most important factor (100% rated this as extremely important) and the dollar amount of the rebate as the next most important factor (75% rated it as extremely important). These results seem to contradict findings in Figure 3-6 and Figure 3-7, where respondents ranked contractor recommendations lower in importance as a motivation to participate. However, the differences may be due to how the questions were framed—the factors motivating participation versus the factors that determine project energy efficiency, where contractors likely play a greater role. Additionally, Figure 3-6 still shows relatively high importance placed on recommendations from contractors by Quick Saver respondents, while the decrease in importance as shown in Figure 3-7 among Retrofit Rebate respondents could be attributed to a very low sample size.

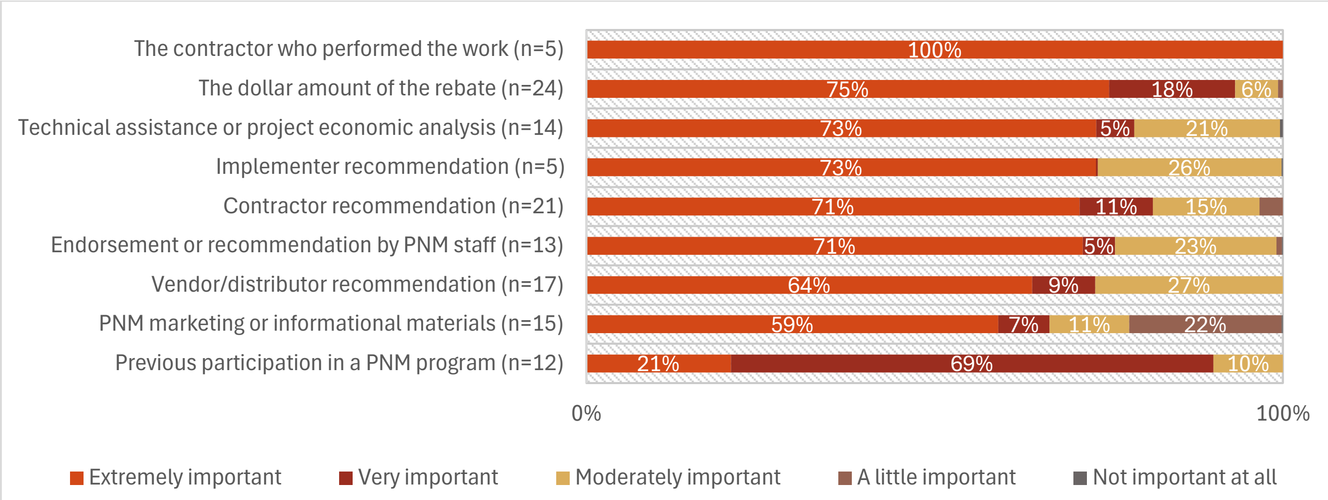


Figure 3-9 Retrofit Rebate Importance of Program Factors

The evaluation team also asked respondents about the importance of non-program factors in determining the energy efficiency of their projects. Figure 3-10 shows responses from Quick Saver subprogram participants; minimizing operating cost was reported as extremely important by 95 percent of respondents, which was the highest among all non-program factors.

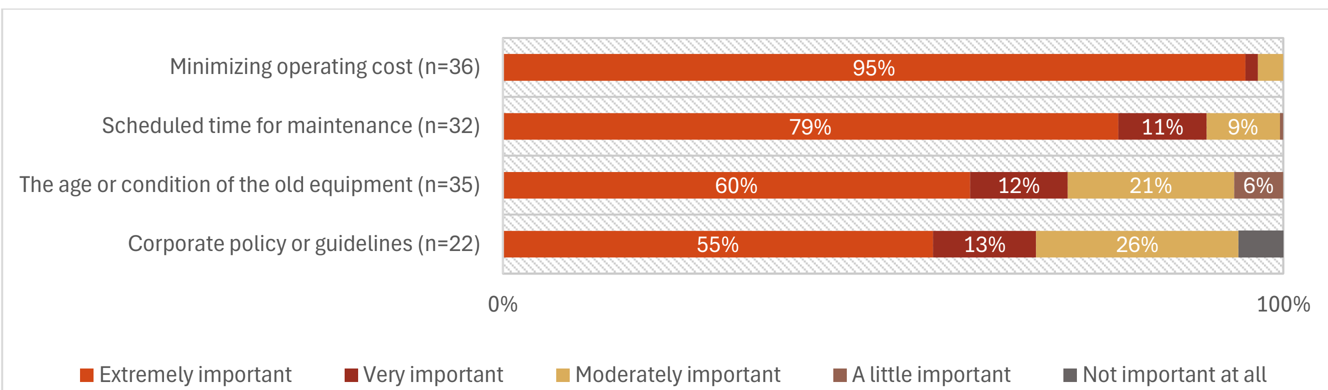


Figure 3-10 Quick Saver Importance of Non-Program Factors

For Retrofit Rebate participants, the age or condition of the old equipment was the most important non-program factor, with 99 percent rating it as extremely important. Minimizing operating costs ranked second in importance, with 83 percent rating it as an extremely important—a lower percentage than reported by Quick Saver participants, though the difference is not statistically significant (Figure 3-11).

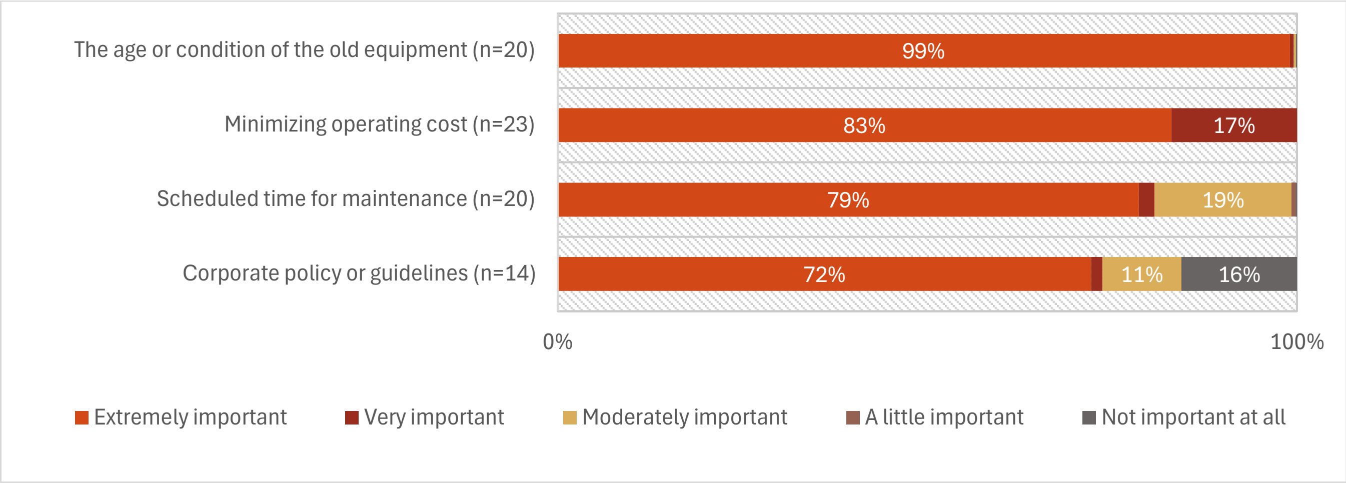


Figure 3-11 Retrofit Rebate Importance of Non-Program Factors

Respondents were asked about the condition of equipment they replaced through PNM's Commercial Comprehensive subprograms. Quick Saver participants most often replaced equipment that was either fully functional (51%) or functional but needed minor repairs (41%). In contrast, Retrofit Rebate participants mainly replaced equipment that was functional but needed major repairs (65%) (Figure 3-12). These data align with findings in Figure 3-11, which identified the age or condition of the old equipment as the most important factor in determining the energy efficiency of Retrofit Rebate projects.

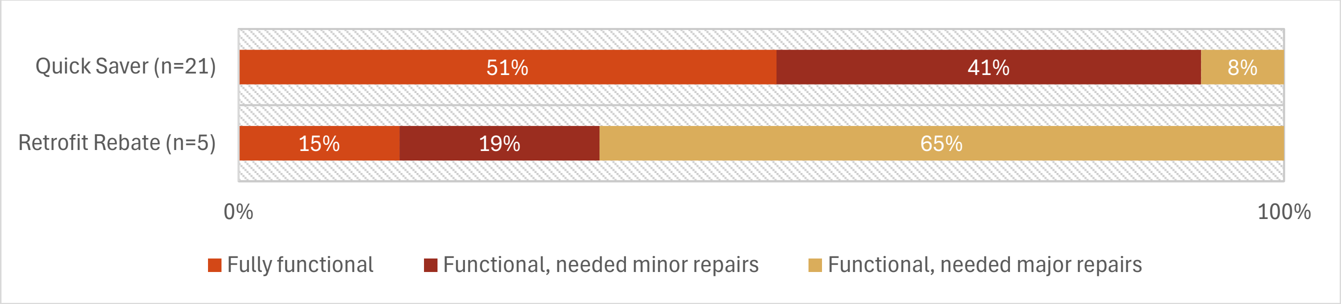


Figure 3-12 Quick Saver and Retrofit Rebate Respondents Replaced Equipment Condition

In addition to the condition of the equipment, respondents who replaced existing equipment were asked about the age of the old equipment. Figure 3-13 shows responses among the Quick Saver and Retrofit Rebate subprograms. Quick Saver respondents commonly replaced equipment that was 20 years or older (70%) while all three Retrofit Rebate respondents replaced equipment that was between 10 and 19 years old.

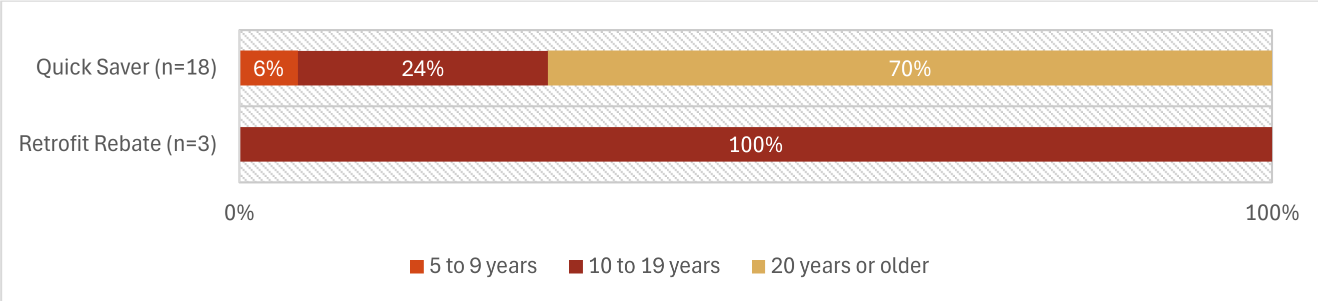


Figure 3-13 Quick Saver and Retrofit Rebate Respondent Replaced Equipment Age

Respondents were asked to estimate the remaining useful life of their replaced equipment. Figure 3-14 shows that Quick Saver participants most frequently estimated from three to five years of remaining life (48%), while Retrofit Rebate participants predominantly estimated that remaining useful life would be more than 10 years (55%). Notably, while Retrofit Rebate respondents mainly replaced equipment that needed more major repairs compared to Quick Saver respondents' projects, they said that the replaced equipment was relatively younger and estimated a relatively longer remaining useful life compared to Quick Saver respondents. This contradictory finding may be because only a handful of Retrofit Rebate respondents answered questions about replaced equipment condition (n=5) and age (n=3), while more responded to the question on remaining useful life (n=19).

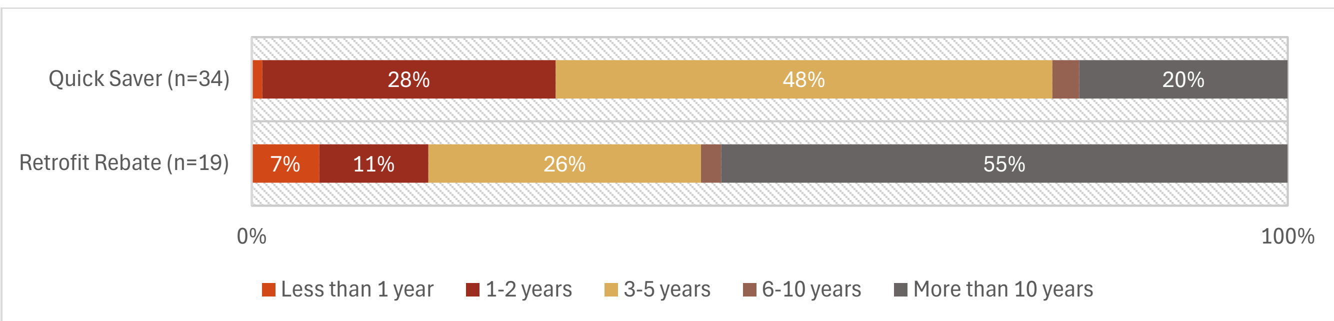


Figure 3-14 Quick Saver and Retrofit Rebate Respondent Remaining Life of Equipment

3.3.1.4 Respondent Satisfaction

All survey respondents were also asked to evaluate their satisfaction with the components of the subprogram they participated in on the following scale very satisfied, somewhat satisfied, neither satisfied nor dissatisfied, somewhat dissatisfied, and very dissatisfied. The individual components that participants were asked to rank their satisfaction with included

- PNM as an energy provider;
- The rebate program overall;
- The equipment is installed through the program;
- For those who used a contractor, the contractor who installed the equipment;
- The overall quality of the equipment installation;
- The amount of time to receive the rebate for those eligible;
- The dollar amount of the rebate for those eligible;
- Interactions with PNM;
- The overall value of the equipment was received for the price paid;
- The amount of time and effort required to participate in the program; and
- The project application process, if applicable.

The figure below shows satisfaction levels among respondents participating in the Quick Saver subprogram. Those surveyed reported consistently high satisfaction levels across all programming components, with equipment installation quality and contractor performance receiving the highest ratings (96 percent of respondents were extremely satisfied with both aspects). Notably, satisfaction remained strong across all categories, with even the lowest-rated component interactions with PNM, showing only five percent dissatisfaction.

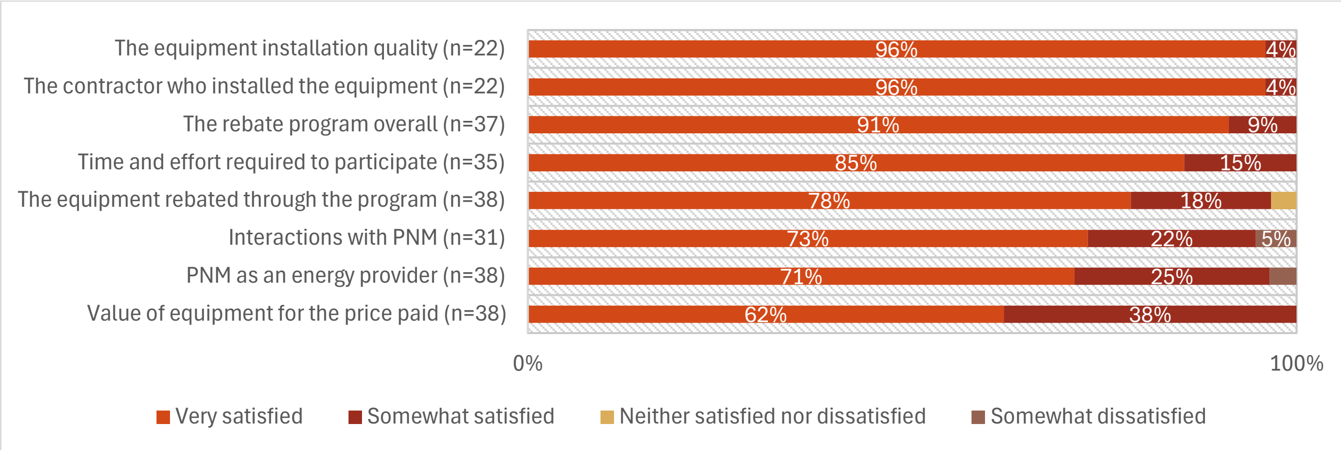


Figure 3-15 Quick Saver Subprogram Satisfaction

Retrofit Rebate participants reported relatively low (but still high) satisfaction across program components, with the overall rebate program receiving the highest rating—76 percent were very satisfied. The time it took to receive the rebate showed the most mixed response, with 48 percent of respondents very satisfied but 28 percent somewhat dissatisfied. The components that received the highest satisfaction from the Quick Saver subprogram respondents (equipment installation quality and contractor performance) were rated lower among Retrofit Rebate respondents, with 12 percent very satisfied and 88 percent somewhat satisfied for both contractor performance and installation quality (Figure 3-16).

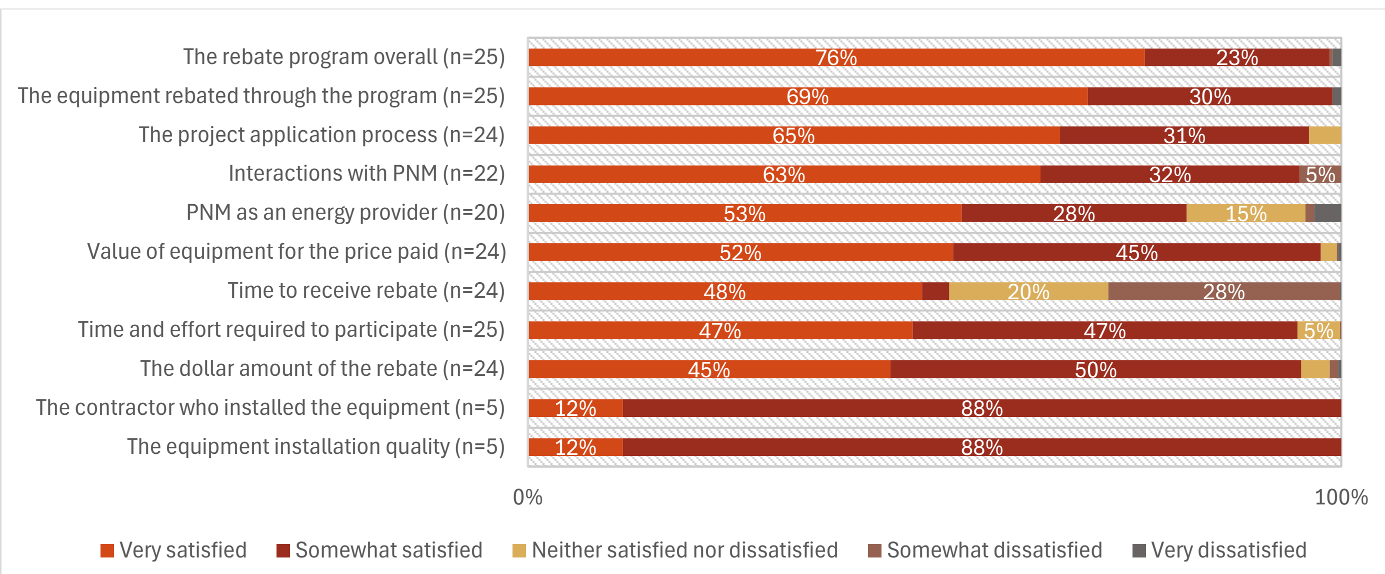


Figure 3-16 Retrofit Rebate Subprogram Satisfaction

Respondents were asked if they had any recommendations for PNM's Commercial Comprehensive program and the subprograms in which they participated. Respondents consistently emphasized the need for strengthened marketing strategies. Specifically, they recommended expanding outreach beyond contractor networks, "to make the [program] more widely known to the public rather than contractors making businesses aware about this program." One participant also noted "the only reason we knew about the program was because our neighbor business had done it."

Respondents also stressed the importance of targeting appropriate decision-makers within organizations. They suggested directing marketing efforts toward "decision makers rather than department staff who pay PNM bills and are not incentivized to pursue" these opportunities, emphasizing the need to "get information to [the decision makers] about the programs being offered." Additional recommendations focused on increasing program incentives and improving upfront communication between participants and PNM representatives.

When respondents were asked how likely they would be to recommend the Commercial Comprehensive program to a colleague or professional contact on a 0-10 scale,[7] all responded positively. Quick Saver participants were very likely to recommend the program, with 96 percent being extremely likely and three percent being moderately likely to do so. All Retrofit Rebate participants indicated they would be extremely likely to recommend the program. (Figure 3-17).

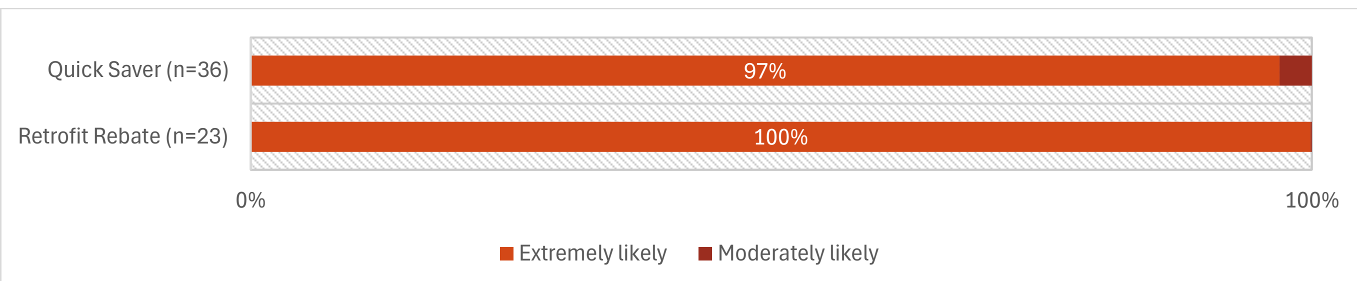


Figure 3-17 Quick Saver and Retrofit Rebate Respondent Likeliness to Recommend Program

When asked what they would tell business contacts or associates about the Commercial Comprehensive program, respondents from both the Quick Saver and Retrofit Rebate subprograms emphasized several key benefits. Initial cost savings and return on investment over time emerged as a primary advantage, with one respondent noting "the payback is great, I've seen a significant saving

[7] On the 0- to 10-point scale, 0 indicated "not at all likely" and 10 indicated "extremely likely".

over a one-year period" and another highlighting that you can get new equipment that "is energy efficient for a fraction of the cost."

Program accessibility was another theme, with respondents noting both the streamlined rebate and the user-friendly implementation processes. One participant specifically noted that "the website application portal was very user friendly," while others emphasized the quick turnaround time for rebates.

Environmental benefits were also featured prominently in responses, with participants highlighting that "it significantly reduces [our] carbon footprint and helps improve efficiency." Additional themes included the helpfulness of the contractor involved and the quality of the new rebated equipment.

3.3.2 Contractor Interviews

The evaluation team completed interviews with five contractors who participated in the 2024 Commercial Comprehensive program. The interviews were designed to investigate specific topics, listed below, while allowing for open discussion. Interviews lasted for 20 minutes on average.

The interviews focused on the following topics:

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

3.3.2.1 Contractor Background

Out of the five contractors interviewed, two were owners of their company, one was the president, one was the managing partner, and one was a project manager. All five contracting companies provide full service electrical contracting in the commercial sector either exclusively or as a main part of their business alongside residential and industrial projects. Two contractors serve customers in PNM's service area exclusively and the other contractors serve all of New Mexico, with one also serving part of West Texas.

3.3.2.2 Program Awareness, Influence, and Engagement

The evaluation team asked contractors how they first became involved in the Commercial Comprehensive program, as well as if they had any reservations or barriers to participating. Four contractors could not definitively recall how they began participating in the program due to their longstanding involvement, but believed PNM likely contacted them. One contractor discovered the program through their own research, drawing on their experience with similar rebate programs in other states.

Overall, the contractors reported that becoming involved initially was easy once they had received training and had communicated with program implementers. A common reservation of most contractors before participating was the barrier of computer program proficiency and accessibility to the Commercial Comprehensive program's online interface. One owner reported that this barrier had prevented their company from participating when the previous owner ran the company. When contractors began using the online system, these barriers were no longer a concern as they reported no significant issues. Of the three contractors serving all of New Mexico, two reported working with other utilities' energy efficiency programs and found that PNM's Commercial Comprehensive program offered larger rebates and was easier to interact with.

All contractors reported being satisfied with the communication between them and the program implementers. All five contractors described their program representative as helpful and responsive in answering any questions they had. One contractor mentioned that their representative assists by walking job sites and answering site-specific questions in person, which streamlines the installation process. Another contractor noted that their representative was helpful in clarifying rebate-eligible equipment and proactive in finding options for initially non-qualifying items. All contractors reported attending program trainings and kick-off meetings that they found helpful. Most contractors found the online system and portal easy to access. However, two contractors mentioned ongoing challenges with technological accessibility despite no specific issues with the program's online interface itself. All respondents said that no additional information or materials from PNM were needed, mostly due to the support of program representatives.

Contractors were asked how the rebate program benefits their business, and all stated that its most helpful aspect is the competitiveness and marketing advantage it gives them to secure more contracted jobs. One contractor noted that "offering the rebates makes us very competitive [and] leads to further jobs in the future." Another stated that customers who are initially hesitant to retrofitting opt for the upgrades "about 90 percent of the time" after they are made aware of the rebate and potential savings over time.

All contractors who sent in applications reported not having any issues securing a rebate. One contractor mentioned they were occasionally hesitant to participate in the program even when the project was eligible because of the slower turnaround time and extra paperwork required. All contractors indicated that customers within PNM's service territory are more likely to install efficiency measures compared to customers served by other utilities due to PNM having the largest rebate funding, which attracts and allows more customers to participate.

All contractors reported that program implementers clearly communicated which equipment was rebate eligible. All five contractors participated in kick-off meetings and trainings and maintained communication with their representative. Two contractors noted limited instances where rebates were less than originally estimated by PNM, creating a challenging situation with customers. One contractor suggested it might be due to self-error during the application process.

The rebate program had varying levels of impact on which equipment a contractor suggested to a customer. Two contractors reported that they only suggest rebate eligible equipment to a customer to ensure a rebate is possible. Another contractor reported their equipment supplier only provides rebate eligible equipment. The two other contractors reported that they always suggest "top-shelf" equipment to ensure customer satisfaction, with rebate eligibility usually a secondary consideration. The three contractors who had experience in service territories outside of PNM's reported that due to their equipment standards, there is no difference in their suggestions to customers by service region.

The contractors were asked for suggestions on how PNM could provide additional support and services. Ideas included

1. A mobile app giving contractors access to the portal on the go, as one contractor noted difficulty accessing important documents through a browser webpage on their mobile device;
2. An additional feature within the program's online interface to save specifications of previous projects, allowing contractors to refer to past work and give customers a quick and accurate estimation of possible rebates; and
3. Additional communication and transparency of rebate estimates to allow contractors to be clearer with customers about the rebate and understand why a realized rebate might differ from the estimated amount.

3.3.2.3 Program Process

All contractors reported that they completed rebate applications, paperwork, and communication entirely themselves, with only one contractor mentioning that they stayed away from larger commercial projects due to the greater amount of paperwork involved.

Contractors reported that some customers are aware of possible rebates and actively search for them, with one saying, “these jobs sell themselves.” For customers unaware of rebates, all contractors include a rebate estimate as a project discount—usually applied upfront, though some customers collect it from PNM when the project is complete. Two contractors noted that rebates make their company more competitive and help motivate hesitant customers, particularly when projected bill savings and payback periods are explained.

3.3.2.4 Market Response

Contractors agreed that the program is having a noticeable impact on the market. One described it as “having a sizable effect,” citing PNM’s “large brand awareness” and noting that “people are aware of the rebates that are available, which helps with the selling of more jobs.” Another observed a “significant impact” with increased motivation among customers to adopt LED lighting.

Contractors reported that commercial spaces are increasingly drawn to long-term savings and efficiency. For older buildings, there is growing demand for upgrades, while efficient equipment is seemingly becoming “a requirement” for new construction. One contractor noted that developers, previously uninterested in energy efficiency, now see it as a way to attract and retain tenants.

When asked about issues that could impact future program participation, two contractors highlighted a challenge in pursuing large rebates while ensuring customer satisfaction with the final product. For example, prioritizing maximum rebates over a greater light output led to dissatisfaction when an efficiency upgrade with smaller fixtures (fewer bulbs) was perceived as “less light” by the customer. One contractor reported avoiding lighting retrofits altogether due to the difficulty of balancing rebates with adequate lighting outcomes. Additionally, another contractor mentioned that inaccuracies in rebate estimates have disappointed customers in a few rare instances, potentially reducing their willingness to participate in future programs.

3.3.2.5 Satisfaction

All contractors reported high levels of satisfaction with the program, mainly attributable to the program implementers’ strong communication with contractors and the fact that the program “incentivizes the sale of their jobs.” On a scale of 1 (not at all satisfied) to 5 (very satisfied), three contractors rated their satisfaction as a 5, one contractor a 4, and another a 3. The contractors who rated their satisfaction as a 3 had limited participation in the Commercial Comprehensive program, estimating roughly five projects involving lighting retrofits. The lower satisfaction was attributable to this limited participation, some uncertainty with rebate estimation, and the rebate program slowing down their usual project completion speed.

When asked how they believed their customers would rate the program, contractors also indicated high levels of satisfaction; on a scale of 1 to 5, one of the contractors responded with a 5, and four others responded with a 4. Contractors believe this to be a result of getting efficiency upgrades at a better cost and satisfaction with the resulting equipment. One contractor shared that an LED lighting retrofit made a small business feel "modern," with their customers likening it to "a complete remodel."

3.3.2.6 Commercial Comprehensive Contractor Survey Conclusion

Overall, contractors reported that PNM's Commercial Comprehensive program has positively impacted their business and customer satisfaction. They highlighted the program's rebates as a competitive advantage, often motivating customers to proceed with energy-efficient upgrades. Effective and consistent communication with program representatives and responsive support were seen as major benefits, leading to high levels of contractor satisfaction.

Contractors noted a growing demand for energy-efficient retrofits in commercial spaces, especially in older buildings, while in new buildings, energy-efficient equipment is becoming more standard. Despite general satisfaction and demand for services, the contractors still identified challenges, including balancing rebate maximization with optimal lighting outcomes for customers. Furthermore, some contractors requested additional communication during the rebate estimation process to help them be more transparent with their customers. Overall, the program helps contractors create and secure both current and future work.

3.4 CONCLUSIONS AND RECOMMENDATIONS

3.4.1 Participant Interviews

The evaluation team conducted telephone interviews with 63 participants in PNM's Commercial Comprehensive program, including respondents from both Quick Saver and Retrofit Rebate subprograms. Most Quick Saver respondents owned their buildings (66%) while Retrofit Rebate respondents primarily leased them (53%), with both groups predominantly occupying buildings greater than 10,000 square feet. Program awareness varied between subprograms, with contractor recommendations playing a significant role, though respondents emphasized the need for expanded marketing beyond contractor networks. Both programs achieved high satisfaction levels, with 96 percent of Quick Saver respondents reporting extreme satisfaction with equipment installation quality and contractor performance, while Retrofit Rebate participants rated the overall rebate program highest with 76 percent being very satisfied. Participants across both subprograms overwhelmingly indicated they would recommend their respective subprogram to others, highlighting cost savings, quick rebate processing, environmental benefits, and user-friendly implementation as key advantages.

Quick Saver survey respondents primarily owned their buildings while Retrofit Rebate respondents typically leased, with both groups operating in mid-to-large sized facilities. Both subprograms achieved high satisfaction levels and strong likelihood of recommendation, though participants suggested expanding marketing beyond contractor networks—particularly noting the need to target decision-makers directly. Respondents highlighted the programs' significant cost savings, environmental benefits, and user-friendly interactions as key benefits.

Table 16 Key Findings and Recommendations

Finding	Recommendation
1. Marketing diversification Respondents indicated that current program awareness relies heavily on contractors and word of mouth, so it could benefit from increased targeting of companies' decision-makers.	**Recommendation:** Strengthen other marketing channels such as events, industry groups, and PNM outreach to business owners and decision-makers. Invest time in ensuring that decision-makers are reached.
2. Improve rebate processing times While overall satisfaction was high, Retrofit Rebate participants were the most dissatisfied with the time it takes to receive a rebate for a completed project.	**Recommendation:** Identify opportunities to streamline the rebate processing system specifically for the Retrofit Rebate program to reduce processing times and improve participant satisfaction.

3.4.2 Contractor Interviews

Contractors acknowledged the positive impact of PNM's Commercial Comprehensive program on their business, citing the ability to sell more jobs that are increasingly attractive through PNM's rebates. Key strengths of the program included effective communication with representatives and responsive support, which contributed to high contractor satisfaction. Below are three key findings from our interviews along with recommendations for improvement

Table 17 Findings and Recommendations from Contractor Interviews

Finding	Recommendation
1. Two contractors highlighted challenges in balancing maximum rebates with optimal lighting outcomes in lighting retrofits, as some customers prioritize both a sizable rebate and achieving their desired lighting results.	**Recommendation:** Encourage communication among contractors to share experiences about pursuing rebate goals while promoting customer satisfaction, ensuring that overly prioritizing rebates does not compromise desired lighting outcomes which would negatively affect program participation by future contractors and their customers.
2. Some contractors involved in the rebate program have encountered situations where rebate estimates have been less than originally communicated to them from PNM, which causes dissatisfaction with their customer.	**Recommendation:** Consider additional ways to maximize transparency with contractors during rebate estimation so that they can communicate with their customers accurately to ensure satisfaction with a project.
3. Two contractors reported minor aversion to participating in the program due to longer turnaround times and additional paperwork slowing down project timelines.	**Recommendation:** Streamline rebate application processes by ensuring all program representatives offer job site support to inspect equipment and address project questions, as other contractors noted this significantly sped up rebate project timelines.

Additionally, when contractors were asked for suggestions on how PNM could provide additional support and services, notable ideas included:

1. A mobile app giving contractors access to the portal on the go, as one contractor noted difficulty accessing important documents through a browser webpage on their mobile device; and
2. An additional feature within the program's online interface to save specifications of previous projects, allowing contractors to refer to past work and give customers a quick and accurate estimation of possible rebates.

3.4.3 Multifamily Gross Impact

PNM Multifamily Subprogram focuses on energy-saving measures for multifamily housing units, helping reduce energy consumption across residential buildings. The program includes incentives for improvements in lighting, appliance replacements, HVAC, and other energy-efficient upgrades specific to Multifamily housing units. The Evaluation findings highlight discrepancies with HVAC cooling equipment types, energy savings algorithms, and interactive factors like HVAC Waste Heat Factors (WHF_d and WHF_e) and Coincidence Factor (CF) values which lead to variations in reported and verified savings.

Table 18 Multifamily Evaluation Findings and Recommendations

Finding	Recommendation
1. For PRJ-35206-2024, ex-ante calculations for the Residential Refrigerator measure did not refer to the efficient refrigerator volume deemed energy savings listed in the PNM workpaper based on the installed equipment. The evaluation team used the deemed energy savings consistent with the PNM workpaper to calculate verified savings.	**Recommendation:** Utilize the deemed savings specified in the PNM work paper that aligns with the installed measures to ensure consistency in savings calculations.
2. For PRJ-350206-2024, ex-ante savings calculations for the lighting measure used HVAC Interactive Factors (Waste Heat Energy Factor (WHF$_e$), Waste Heat Demand Factor (WHF$_d$)) and Coincidence Factor (CF) values inconsistent with the PNM workpapers. The evaluation team used the respective factors, consistent with the Multifamily facility type per the PNM workpaper to calculate verified savings.	**Recommendation:** Utilize the appropriate building type (when available) from the PNM workpapers to select HVAC Interactive Factors and CF.

3.4.4 New Construction Gross Impact

The PNM New Construction Sub Program provides rebates for conducting enhanced building commissioning in new construction scenarios aiming to exceed energy efficiency standards. Key issues include discrepancies in HVAC interactive factors, inconsistencies between project documentation and reported inputs, the use of uncertified fixtures, and missing algorithm inputs for HVAC measures. Aligning with PNM Workpaper standards, ensuring complete documentation, and maintaining consistent inputs across project files will help refine the program's effectiveness and reliability.

Table 19 New Construction Evaluation Findings and Recommendations

Finding	Recommendation
1. For PRJ-34625-2023, the ex-ante calculations used an HVAC - Waste Heat Demand Factor (WHFd) equal to 1.0 for all facility types. The evaluation team utilized WHFd values specific to the facility type from the PNM workpapers in calculating verified savings.	**Recommendation:** Include HVAC interactive factors consistent with the PNM work papers based on site-specific details.
2. For PRJ-34605-2023, the COMcheck report classified all exterior areas as "Uncovered Parking Lots and Drives" with a Lighting Power Density (LPD) of 0.06 Watts/ft2, whereas the application form distinguished these areas between "Uncovered Parking Lots and Drives" (LPD – 0.06 W/ft2) and "Building Facade Area" (LPD – 0.15 W/ft2). The evaluation team considered the distinguished exterior areas from the application document for calculating the verified savings.	**Recommendation:** Ensure consistency between project files, such as the application forms and COMcheck reports, through consistent categorization and specifying ambiguous values used in savings calculations. Utilize savings calculation inputs based on site-specific details.

Finding	Recommendation
3. Ex-ante calculations for lighting measures included fixtures that were either non-Design Lights Consortium (DLC) certified or non- ENERGY STAR® certified fixtures. The evaluation team removed these fixtures and removed fixtures if marked as "not approved" or "do not qualify" in the project submittals.	**Recommendation:** Provide Interior and Exterior COMcheck, DLC or ENERGY STAR certificates for each fixture in NC lighting projects. Calculate proposed LPD from the DLC or ENERGY STAR-certified wattages. Also update fixtures that are marked as "not approved" in submittals for accurate and compliant LPD calculations.
4. For PRJ-37444-2024, the ex-ante savings calculations for the HVAC-AC measure used the deemed energy and bonus savings for the incorrect facility type. The evaluation team used the deemed savings, consistent with the Multifamily facility type based on project documents to calculate the verified savings.	**Recommendation:** Utilize the appropriate building type from the PNM workpapers to select HVAC deemed savings values.
4. For PNM-23-05045, the verified savings for the HVAC - VRF unit differed from the reported savings. The evaluation team could not identify the exact cause of these discrepancies, because the necessary calculators and input variables were unavailable. Used PNM workpaper algorithms, assumptions, baseline efficiency values, and the AHRI certificate for installed HVAC unit to calculate verified savings. For "Sports/Arena," the ex-ante savings algorithm referred to an unknown allowable lighting power density of 0.93 W/ft^2. Used an LPD of 0.87 W/ft^2 consistent with the PY2024 PNM work paper.	**Recommendation:** Provide detailed algorithm inputs and support documentation used to calculate ex-ante savings for HVAC measures. Ensure that allowable wattage values and other inputs align with NM TRM and PNM Workpaper specifications to maintain consistency in savings calculations.
5. For PRJ-36784-2024, the ex-ante calculation used the facility type "Outdoor Sales Open Area" with a Lighting Power Density (LPD) of 0.06 W/ft², assuming full outdoor area illumination. However, the installed wall packs do not provide full coverage of the outdoor space. For the ex-post calculation, the evaluation team applied the "Building Façade - Length" method with an LPD of 3.75 W/ft, using the building perimeter from project documentation to determine LPD values. This approach more accurately represents the actual lighting distribution based on the installed fixtures.	**Recommendation:** Ensure that the selected facility type and LPD calculation method align with the installed fixtures and their actual illumination coverage. Use an LPD methodology that accurately represents exterior lighting conditions to maintain consistency.
6. For PRJ-34867-2024, the ex-ante savings calculation assumed the 'Warehouse' facility type. The evaluation team corrected the facility type to 'Assembly' based on the site address and project documents to ensure a more accurate assessment.	**Recommendation:** Ensure that the facility type classification in the ex-ante analysis aligns with the site address and project documentation for all measures in the project to improve accuracy in savings calculations.

3.4.5 Quick Saver Gross Impact

The PNM QuickSaver (Direct Install) Sub Program is available for all Small Businesses with an average monthly peak demand of 100 kW or less. The Sub Program provides rebates for lighting and refrigeration upgrades and is designed for quick payback. However, gaps in fixture documentation and space type identification were observed, which affect the accuracy and consistency of savings calculations. Clearer documentation and better alignment with site-specific details are needed to enhance program effectiveness.

Table 20 Quick Saver Evaluation Findings and Recommendations

Finding	Recommendation
1. Exact model numbers or specification sheets were not provided for the installed fixtures in all sampled Quick Saver projects. The evaluation team utilized wattages based on fixture descriptions in the project documents, however, model numbers are required for approved fixture verification.	**Recommendation:** Include specification sheets and/or DLC certificates for the installed fixtures to ensure savings calculations accuracy and verify approved fixture certification.
2. For lighting project 20615, the tracking data reported the building type as "Miscellaneous," but site photos revealed the project location as exterior. Ex-ante calculations applied inputs for a Commercial/General building type while the evaluator adjusted the verified savings to reflect an exterior space type, consistent with the PNM Workpaper.	**Recommendation**: Ensure the correct space type is identified during project documentation, and appropriate inputs based on the space type are utilized in energy savings algorithms. For exterior locations, use appropriate variable inputs and baseline wattages aligned with the latest workpapers.

3.4.6 Retrocommissioning (RCx) Gross Impact

The Retrocommissioning (RCx) subprogram helps commercial customers optimize existing building systems by identifying low-cost operational and maintenance improvements that enhance energy efficiency. Through detailed building assessments, RCx focuses on tuning HVAC, lighting, and control systems to reduce energy waste without major capital investments. The program provides technical support and financial incentives to encourage businesses to implement identified energy-saving measures, leading to sustained reductions in energy consumption and operational costs.

Table 21 RCx Evaluation Findings and Recommendations

Finding	Recommendation
1. No Findings & Recommendations at this moment for the Retrocommissioning projects	**Recommendation:** N/A

3.4.7 Midstream Gross Impact

The Midstream subprogram provides instant discounts to commercial customers and distributors for purchasing energy-efficient lighting, HVAC, and refrigeration equipment. By applying incentives at the point of sale, the program reduces upfront costs, making high-efficiency equipment more accessible and encouraging widespread adoption of energy-saving technologies. This streamlined approach helps accelerate market transformation by ensuring that efficient products become the default choice for businesses

Table 22 Midstream Evaluation Findings and Recommendations

Finding	Recommendation
1. For PM-24-06132, the ex-ante savings calculations for the HVAC-VRF measure only considered the cooling tonnage of the installed equipment to estimate both primary and bonus energy savings. Additionally, the analysis applied the Coincidence Factor (CF) for an incorrect facility type. The evaluation team corrected this by incorporating both heating and cooling tonnage factors in the savings calculations and ensuring that the CF aligned with the appropriate facility type per the PNM workpaper.	**Recommendation:** Ensure consistency in the methodology used to evaluate energy savings across the program for the HAC-VRF measure. Additionally, select the appropriate facility type from the PNM workpapers for the Coincidence factor (CF).

3.4.8 Retrofit Rebate Gross Impact

The PNM Retrofit Sub Program helps businesses upgrade their existing facilities with energy-efficient equipment. It offers both prescriptive and custom rebates for measures like energy-efficient lighting, HVAC systems, motors, and refrigeration. Evaluation findings include discrepancies in deemed inputs, baseline and installed wattages, and Hours of Use (HOU) assumptions. Additionally, space conditioning factors, such as HVAC impacts, require better alignment with PNM guidelines. Improved documentation and adherence to the latest PNM Workpapers are essential to enhance the program's effectiveness and ensure reliable savings estimations.

Table 23 Retrofit Rebate Evaluation Findings and Recommendations

Finding	Recommendation
1. The deemed kWh/ft and kW/ft inputs for LED case lighting measures in project PRJ-34612-2023 do not align with the PNM workpapers for ex-ante calculations. The evaluation team referred to the PNM workpaper section of LED case lighting to calculate verified savings.	**Recommendation:** Utilize the deemed inputs as specified in the PNM workpaper that aligns with the LED case lighting measures to ensure consistency in savings calculations.
2. Installed fixture wattages were either rounded or incorrect values were used in the ex-ante savings calculations for all sampled retrofit projects. The evaluation team referred to reported DLC wattages, when available, or DLC tested wattages for calculating verified savings. Additionally, the source of the baseline wattages used in the ex-ante calculations was unclear and did not align with the values referenced from the PNM Workpapers in the ex-post analysis.	**Recommendation:** Reference the baseline fixture nomenclature provided in the latest PNM Workpapers Fixture List. If custom baseline wattages are used, ensure that proper documentation or detailed calculations are included. Additionally, use reported wattages from specification sheets and/or DLC certificates with up to two decimal places for installed fixtures to improve calculation accuracy.
3. For PRJ-34826-2024, observed differences in the Hours of Use (HOU) values applied. The ex-ante analysis used custom HOU based on specific space types within the facility, not available in the workpapers or separately provided. In contrast, the ex-post analysis adhered to the NM TRM recommendation, applying whole-building HOU values from the workpapers for the facility type.	**Recommendation:** Ensure consistency in HOU assumptions by aligning measure-level assumptions with NM TRM guidelines and workpaper values for the applicable facility type. If custom inputs are used, provide detailed evidence to support their use.

Finding	Recommendation
4. For the indoor agriculture lighting measure PRJ-35214-2024, ex-ante calculations assumed an HVAC - Waste Heat Energy Factor (WHFe) and Waste Heat Demand Factor (WHFd) equal to 1.0, which is associated with non-air conditioned spaces. The evaluation team considered WHFe and WHFd as 1.21 and 1.22 respectively, which are associated with air-conditioned spaces consistent with the NM TRM. The evaluation team considered these values based on the presence of dehumidifiers in the space, which indicated air conditioning due to their use of evaporator coils to remove moisture.	**Recommendation:** Ensure appropriate space conditioning factors are used based on site-specific conditioning equipment. If spaces are determined to contain air conditioning, use WHFe and WHFd values consistent with NM TRM recommendations. Clearly justify assumptions, such as the presence of air conditioning, with supporting evidence like equipment details.
5. For the High-Frequency Battery Chargers and Lithium-Ion Forklift Batteries measure in PRJ-38068-2024, ex-ante calculations refer to the Illinois TRM version 11. The evaluation team considered the latest Illinois TRM version12 to calculate the verified savings, which became effective from January 1, 2024.	**Recommendation:** Ensure that the latest applicable TRM version is used for savings calculations, aligning with the PNM program year.

3.4.9 Building Tune-Up Gross Impact

The Evaluation team did not evaluate the Building Tune-Up program as part of the PY2024 assessment due to a lack of participation. Specifically, there were no projects to evaluate within this program, as it experienced zero participation during the evaluation period. As a result, no data was available for analysis or review.

4 Residential Comprehensive

The evaluation of the Residential Comprehensive program involved a gross, net-to-gross, and process assessment, focusing on the various subprograms designed to improve energy efficiency in residential settings. These subprograms included Home Energy Checkup and Midstream Cooling. The gross evaluation assessed the energy savings from each of these initiatives, evaluating their performance and overall impact. The Home Energy Checkup (HEC) program achieved energy savings through residential audits, offering personalized recommendations for homeowners to improve energy efficiency. Home-mailed kits were utilized to achieve energy savings from sites that did not consent to an evaluation, and, in most cases, to achieve a higher level of participation for the home visits. The Midstream Cooling program focused on offering incentives for energy-efficient cooling equipment, such as high-efficiency air conditioners and evaporative coolers. The NTG/process analysis provided critical insights into the program's delivery, identifying areas for improvement in customer outreach, process efficiency, and overall program effectiveness to maximize energy savings and participation.

4.1 GROSS IMPACT

The impact evaluation process calculates the realized gross savings based on the program-level analysis described above.

4.1.1 Realized Gross Impacts

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.)

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

The PY2024 energy savings impacts for the Residential Comprehensive program are summarized in Table 24 and Table 25.

Table 24 Residential Comprehensive Savings Summary (kWh)

Program	Sub-Program	# of Projects	Expected Gross kWh Savings	Engineering Adjustment Factor	Realized Gross kWh Savings
Residential Comprehensive	Home Energy Checkup - LI	8,233	3,227,933	0.9989	3,224,428
	Home Energy Checkup	22,966	9,793,427	0.8249	8,078,150
	Refrigerator Recycling	3,516	3,034,276	1.0000	3,034,276
	Cooling	1,449	2,666,880	1.0038	2,676,944
Total		**36,164**	**18,722,516**	**0.9087**	**17,013,799**

Table 25 Residential Comprehensive Savings Summary (kW)

Program	Sub-Program	# of Projects	Expected Gross kW Savings	Engineering Adjustment Factor	Realized Gross kW Savings
Residential Comprehensive	Home Energy Checkup - LI	8,233	798	0.3604	288
	Home Energy Checkup	22,966	854	0.9135	781
	Refrigerator Recycling	3,516	5,400	1.0000	5,400
	Cooling	1,449	136	1.0000	136
Total		**36,164**	**7,188**	**0.9187**	**6,604**

The Residential Comprehensive Program under PNM aims to deliver energy efficiency solutions through various residential measures categorized under lighting, HVAC, weatherization, water reduction, and energy-efficient appliances. This program utilized both direct install and kit measures to claim savings.

Most of the gross impact evaluation activities were devoted to deemed savings reviews of direct install measures, mailed kit containing energy efficiency measures, or prescriptive measures for HVAC and water heaters. The Evaluation Team evaluated all measures in the HEC and HEC kit programs except for the prescriptive Midstream Cooling subprogram. The team focused on a similar measures and intended to verify AHRI certificates and overall calculation method for the majority of semi-deemed-prescriptive approach.

The Residential Comprehensive Program has demonstrated strong energy savings impacts across its key subprograms, Home Energy Checkup (HEC) and Midstream Cooling. However, the evaluation findings indicate several opportunities for refinement in program implementation, particularly regarding methodological consistency, data accuracy, and participant engagement. Addressing these areas will enhance program effectiveness, improve participant experience, and ensure that reported energy savings align with actual realized impacts.

The Home Energy Checkup (HEC) subprogram provided energy efficiency solutions to residential customers, but inconsistencies in baseline assumptions and savings methodologies have impacted the accuracy of estimated savings. Notably, baseline wattages for CFL-to-LED replacements were rounded, leading to slight deviations in reported savings. Additionally, HVAC energy demand factors and Equivalent Full Load Hours (EFLH) calculations included data from Las Cruces, a non-PNM territory, which introduced inaccuracies. This was particularly evident in measures such as smart thermostats and early replacement appliances, where adjustments were necessary to align calculations with PNM's service territory climate conditions.

Another critical issue in the HEC subprogram was the use of outdated savings reference materials. The ex-ante savings calculations relied on an older version of the Missouri TRM (2017), rather than leveraging PNM workpapers, the NM TRM, or the latest Texas or Illinois TRMs. While the Missouri TRM was used for some measures that lacked direct references in other TRMs, a more structured approach should be adopted to ensure that the most applicable and up-to-date sources are prioritized. Additionally, the savings for door sweeps, outlet gaskets, and external door weatherization were based on fixed, hardcoded values from PNM in 2021, without clear documentation supporting their continued validity.

The Midstream Cooling subprogram faced similar data integrity issues, particularly in tracking system efficiency values for refrigeration air conditioners and heat pumps. The tracking data did not specify whether the efficiency values referred to SEER, SEER2, EER, EER2, HSPF, or HSPF2, making it difficult to verify savings accurately. AHRI certificates are listed, but details remain difficult to verify as each system installation requires AHRI certificate review rather than loading details directly into the tracking data. Furthermore, discrepancies were identified between PNM's provided savings calculations and the standard efficiency conversion formulas in the NM TRM, suggesting the need for a more standardized approach to efficiency conversions and tracking. Lastly, the evaluation found that some equipment lacked defined system types and capacities, particularly for heat pumps and refrigerated air conditioners, which led to challenges in determining the appropriate baseline efficiency values.

To enhance the accuracy and reliability of program savings estimates, all baseline wattages, HVAC energy demand factors, and EFLH values should be strictly aligned with PNM's jurisdictional climate data, ensuring that non-service areas are excluded from calculations. Additionally, program implementers should adopt a structured TRM reference hierarchy, prioritizing PNM workpapers, NM TRM, and Texas TRM, before defaulting to other sources such as the Illinois or Missouri TRMs. This will prevent inconsistencies caused by outdated methodologies and ensure that savings estimates reflect current, regionally appropriate benchmarks.

For Midstream Cooling, program implementers must improve data tracking practices by requiring explicit documentation of efficiency values, clearly distinguishing SEER from SEER2, EER from EER2, and HSPF from HSPF2. Providing this level of detail will eliminate ambiguity and allow for more precise calculations of energy savings impacts. Due to the semi-deemed-prescriptive approach taken by the Midstream Cooling implementation team, the Evaluation Team strongly suggests the implementation team provide the details from the AHRI certificates into tracking data to simplify tracking data and evaluation efforts. Additionally, equipment records should specify system type and capacity for heat pumps and refrigerated air conditioners, ensuring that each installation is matched with the correct baseline efficiency values for accurate savings estimates.

4.2 NET IMPACT

The following sections summarize the evaluation of PY2024 PNM Residential Comprehensive programs, covering contractor and participant experiences across multiple components. The evaluation provides verified net-to-gross (NTG) realized savings for PY2024, the PY2025 NTG values updates, and results summarizing contractor/participant perspectives. The contractor section includes insights from interviews with HVAC contractors, exploring their engagement with the program, the challenges they face with equipment eligibility and fund allocation, and the program's impact on their business. The participant section provides survey data from individuals participating in Home Energy Checkup and Residential Cooling programs, detailing their motivations for involvement, satisfaction with the program, and the role of rebates in decision-making. It also covers the effectiveness of PNM's marketing efforts, the importance of contractors in driving participation, and participants' satisfaction with program elements. Both sections identify key areas for improvement, such as enhancing customer awareness and simplifying rebate processes, which will help optimize future program outcomes.

4.2.1 Realized Net Impacts

The net-to-gross evaluation process calculates the Net-to-Gross (NTG) savings, which reflect the effectiveness of the program in achieving energy savings. The NTG ratio is calculated by comparing the Net Realized Savings (i.e., the savings that result directly from the program's influence on participants) to the Gross Realized Savings (the total savings from all measures installed from the impact evaluation above). This ratio accounts for factors such as free ridership (participants who would have implemented the measures without the program) and spillover (savings from participants who were influenced by the program but did not directly participate). The NTG ratio is crucial for assessing the overall impact of the program.

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

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

Table 26 and Table 27 summarize the PY2024 net impacts for the Residential Comprehensive program using the prospective NTG ratios calculated by the evaluation team during the PY2023 evaluation.

Table 26 PY2024 Residential Comprehensive Net Impact Summary (kWh)

Program	Sub-Program	# of Projects	Realized Gross kWh Savings	NTG Ratio	Realized Net kWh Savings
Residential Comprehensive	**Home Energy Checkup LI**	8,233	3,224,428	1.0000	3,224,428
	Home Energy Checkup	22,966	8,078,150	0.9780	7,900,431
	Refrigerator Recycling	3,516	3,034,276	0.6300	1,911,594
	Cooling	1,449	2,676,944	0.6260	1,675,767
Total		**36,164**	**17,013,799**	**0.8647**	**14,712,220**

Table 27 PY2024 Residential Comprehensive Net Impact Summary (kW)

Program	Sub-Program	# of Projects	Realized Gross kW Savings	NTG Ratio	Realized Net kW Savings
Residential Comprehensive	**Home Energy Checkup LI**	8,233	288	1.0000	288
	Home Energy Checkup	22,966	781	0.9780	763
	Refrigerator Recycling	3,516	5,400	0.6300	3,402
	Cooling	1,248	136	0.6260	85
Total		**35,963**	**6,604**	**0.6872**	**4,538**

4.2.2 Net-to-Gross Ratio Update for PY2024

For the net impacts of the Residential Comprehensive Home Energy Checkup program, we had a target of 75 complete surveys and were able to complete surveys with 92 participants who had valid contact data. Of the 92 respondents, 74 were direct installation customers and were assigned a NTGR of 1.0. For the non-direct install respondents, the NTG ratio was calculated using the self-report method and participant phone survey data.

The Evaluation Team calculated a free-ridership rate of 0.0137 that resulted in an overall NTG ratio of 0.9863. This new value will be applied to the Residential Comprehensive Home Energy Checkup program beginning in PY2025.

Table 28 shows the updated Residential Comprehensive NTG ratios for PY2025 compared to the PY2024 NTG evaluation results.

Table 28 Residential Comprehensive NTG Ratio Update for PY2024

Program	PY2024 NTG Ratio	PY2025 NTG Ratio
Home Energy Checkup LI	1.0000	1.0000
Home Energy Checkup	0.9780	0.9863
Refrigerator Recycling	0.6300	0.6300
Cooling	0.6260	0.6648

4.3 PROCESS EVALUATION

4.3.1 Home Energy Checkup Participant Interviews

As part of the PNM Home Energy Checkup program process evaluation, the evaluation team conducted telephone interviews with 92 participating residential customers who received rebates through the program. The surveys were completed in December 2024 and were approximately 15 minutes in length.

The survey was designed to collect participant information for the following topics

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

PNM provided program participation and contact data for the program, and the evaluation team categorized participants into two groups 1) those who had direct install measures through the Home Energy Checkup program, and 2) those who had non-direct install measures through an apartment or move-in kit.

The following subsections include analysis covering demographics, sources of program awareness, motivations for participation, program satisfaction, and program influence among survey respondents, as well as insights from open-ended responses about participants' experiences and recommendations for the program.

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

4.3.1.1 Respondent Demographics

We asked survey respondents about various characteristics of their home and household, including ownership status (own or rent), home size, age, building type, household size, and the length of time they have lived in their home.

Survey responses indicated the Home Energy Checkup program is primarily involved with homeowners, with 94 percent of respondents indicating they owned their homes.

Most respondents (82%) reported living in homes ranging from 1,000 to 1,999 square feet (Figure 4-1). Specifically, 49 percent of respondents' homes were between 1,500 and 1,999 square feet, while 33 percent fell within the 1,000 to 1,499 square foot range. Respondents were also asked about their home type, with 97 percent reporting they lived in single-family homes.

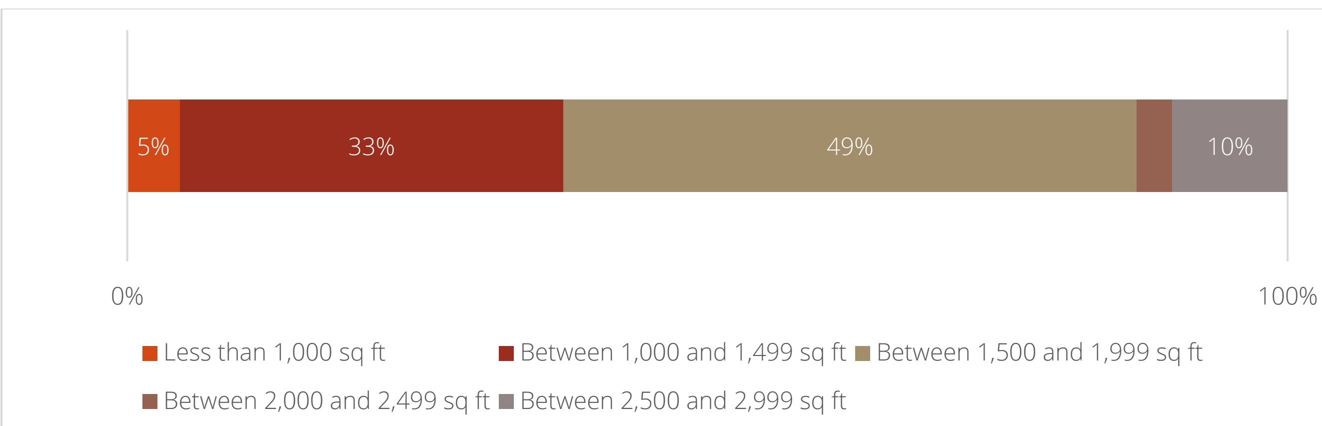


Figure 4-1 Home Energy Checkup Respondent Home Size (n=72)

Seventy-four percent of participants in the Home Energy Checkup program live either alone or with one other person (Figure 4-2).

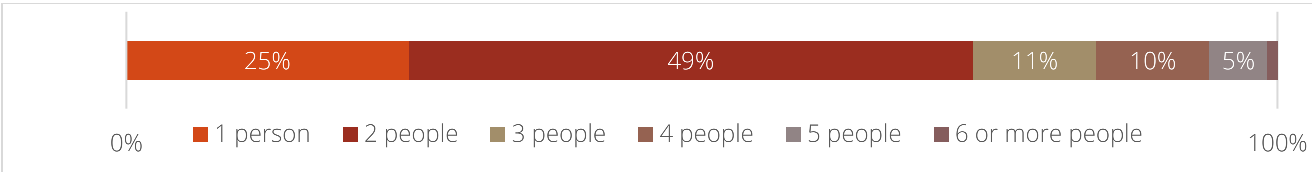


Figure 4-2 Home Energy Checkup Respondent Household Size (n=76)

The figure below shows the age of surveyed participants' homes. Responses varied, but homes built from 1990 to 2009 (48%) were the most common. Of the remaining common responses, 24 percent were built from 1970 to 1989, and 12 percent from 1950 to 1969.

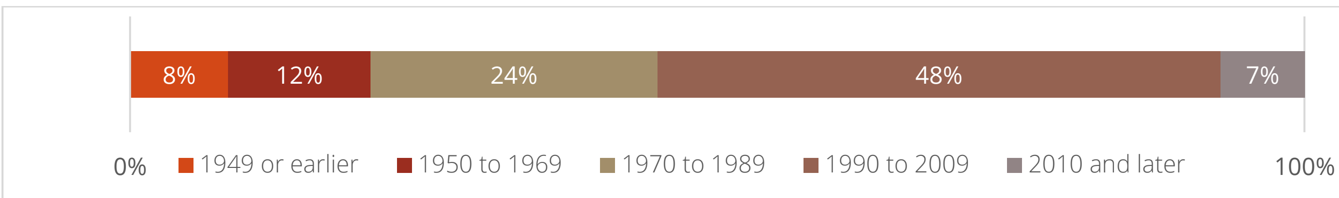


Figure 4-3 Home Energy Checkup Home Age (n=76)

In addition to their home's age, respondents were asked how long they have lived in their current home (Figure 4-4). Most responses were from relatively newer homeowners, with 64 percent of respondents having lived in their home for 10 years or less.

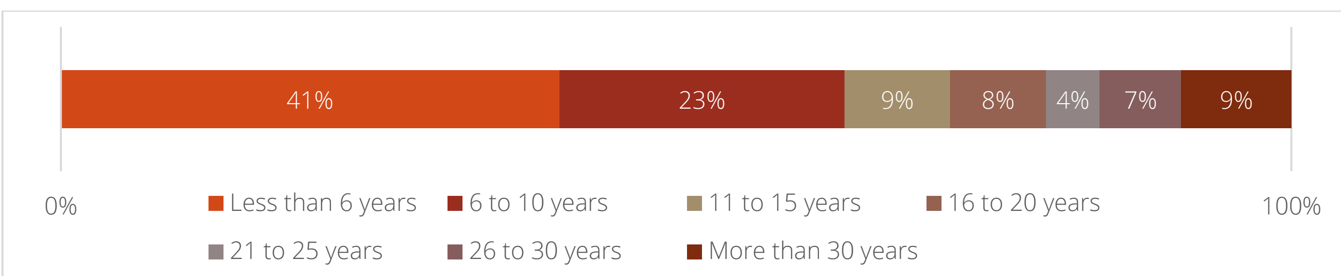


Figure 4-4 Home Energy Checkup Years Lived in Home (n=82)

4.3.1.2 Sources of Awareness

Participants who had direct install measures installed through the Home Energy Checkup program were asked how they initially became aware of the program. Eighty-four percent of these respondents became aware of the program through PNM marketing or outreach (Figure 4-5). The remaining 16 percent became aware of the program through word of mouth.

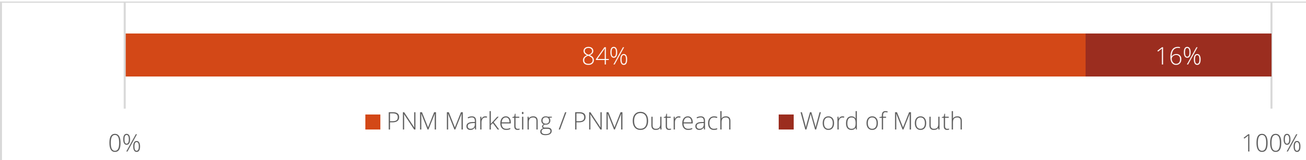


Figure 4-5 Home Energy Checkup Respondent Source of Awareness (n=48)

4.3.1.3 Motivations for Participation

Respondents were asked to rate a variety of factors that influenced their decision to participate in the program. For all respondents, reducing energy bills was the most important factor, with 35 percent indicating it was extremely important and 50 percent rating it as very important. Four factors, reducing environmental impact, improving home comfort, upgrading equipment, and replacing faulty or failed equipment, showed similar importance levels, with at least 24 percent of respondents rating them as extremely important and at least 42 percent rating them as very important. Additional levels of importance for other factors are shown in Figure 4-6.

Participants who used a contractor (n=4) or retailer (n=4) to either purchase or install equipment were also asked to rate the importance of these factors. Among those who used a contractor, all respondents indicated the contractor was extremely important in their decision to participate. In contrast, participants who used a retailer reported mixed responses two respondents rated the retailer as somewhat important; one rated the retailer as very important, and one rated the retailer as not at all important.

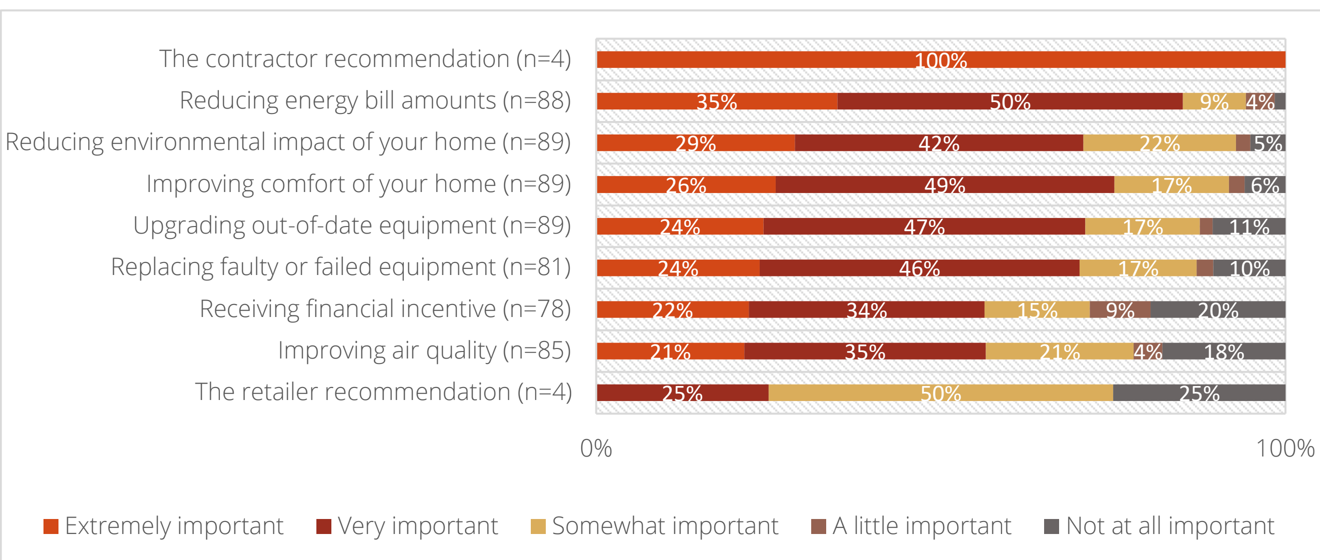


Figure 4-6 Home Energy Checkup Motivations for Participation

In addition to being asked about these factors, those surveyed were asked if there were any other reasons that they installed equipment that were more important than the reasons mentioned. Several participants noted potential health benefits of improved air quality, with one individual reporting they participated since "I have asthma, and I thought it would help me." Another respondent also mentioned that improved mental health was a motivator.

4.3.1.4 Program Process

Participants surveyed who had equipment directly installed through the Home Energy Checkup program were also asked about their interactions with the program including their scheduling method and waiting time for their Home Energy Checkup (home assessment/audit) appointment.

Figure 4-7 shows how respondents scheduled their Home Energy Checkup. Seventy percent of respondents scheduled over the phone, and the remaining 30 percent scheduled online.

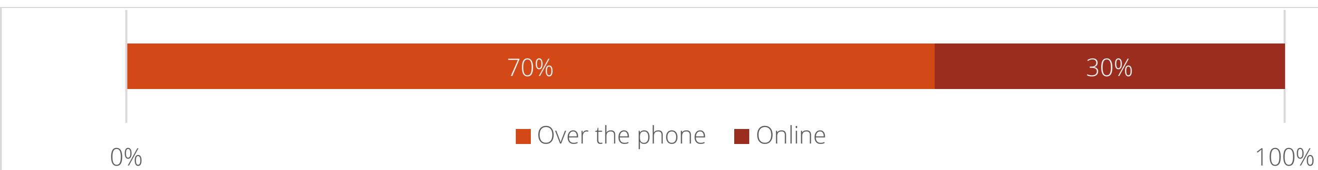


Figure 4-7 Home Energy Checkup Scheduling Method (n=62)

In addition to scheduling mode, respondents were asked how long it took to receive their Home Energy Checkup after scheduling the appointment. Sixty percent of respondents reported it took two weeks or less to receive their checkup, and 36 percent of respondents reported it took more than two weeks or up to one month (Figure 4-8).

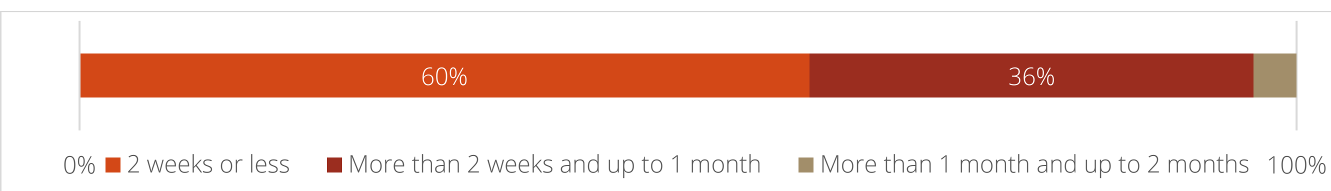


Figure 4-8 Home Energy Checkup Time to Receive Home Energy Checkup (n=60)

4.3.1.5 Program Influence

Survey respondents who received non-direct install measures through an apartment or move-in kit were asked to rate a list of program factors that may have influenced their decision to participate in the Home Energy Checkup program.[8] For all respondents, program factors saw varying levels of influence (Figure 4-9).

PNM marketing and informational materials had varying influence, with 41 percent finding this factor extremely influential, while 21 percent reported it was not influential at all. The dollar amount of the rebate showed moderate impact, with most respondents finding it either extremely (28%) or very influential (36%). Previous participation in a PNM program had the most polarized response, with 43 percent rating it not influential at all, while 31 percent found it either extremely or very influential in their decision to participate.

Additionally, if respondents receiving non-direct install measures went through a contractor (n=4) or a retailer (n=4), they were asked to rate the influence of the contractor or retailer in their decision to participate. The contractor recommendation emerged as the most influential factor, with all four respondents rating it as extremely influential. The retailer recommendation had varying influence with two respondents rating it as extremely influential, one rating it as moderately influential, and one reporting it as not being influential at all (Figure 4-9).

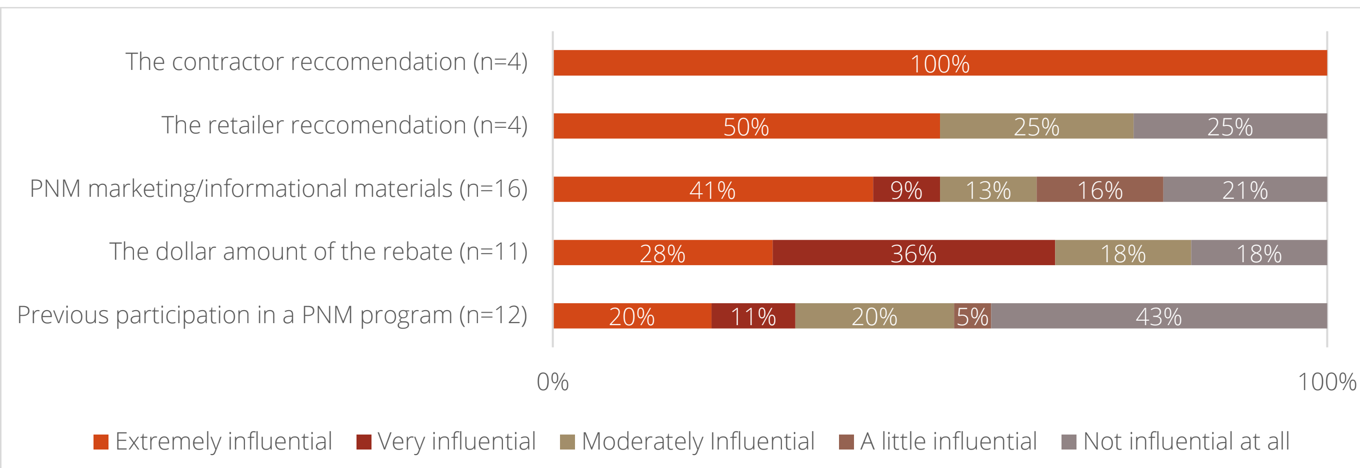


Figure 4-9 Home Energy Checkup Influence of Program Factors

Respondents receiving non-direct installation measures were also asked to comment on the influence that the Home Energy Checkup program had on their decision to install the new equipment. Two distinct themes emerged from their responses. One group of respondents reported that the program had a meaningful positive influence, with participants noting that it accelerated their purchase timeline and helped them achieve energy savings. As one respondent explained, "It

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

had a good influence; it helped me purchase equipment faster than I would have otherwise." Another mentioned that "it helped me save electricity [and] cut down uses of energy." However, the other group, which included seven respondents, indicated that the program had no influence on their decision-making process, and reported a common theme of challenges with securing a rebate for additional appliance replacements following receipt of a kit or home energy assessment. One respondent noted, “I put in a heat pump and was told I would get a rebate but then he said I did not qualify; he said the person who installed it was not on their list.” One respondent provided a recommendation, saying “More communication, I only knew about [the rebate] after the purchase, I wasn’t informed before.”

Additionally, all respondents were asked what they would tell a friend or a neighbor about the program. Major themes communicated were the financial benefits and energy savings, with one respondent noting “It is well worth it and very helpful and helped with cost of electricity." Another theme was the ease of participation, with one respondent noting “it was easy to sign up for” and “it was easy to schedule online, and they come fast.” Some also indicated the focus on energy efficiency was appealing to them and they were interested to learn about their home’s energy efficiency; one respondent noted “It’s interesting to learn about ways to make my house more efficient.” Overall, respondents seemed inclined to positively portray the program to a friend or neighbor, and some already had.

4.3.1.6 Respondent Satisfaction

All survey respondents were also asked to evaluate their satisfaction with components of the program on the following scale very satisfied, somewhat satisfied, neither satisfied nor dissatisfied, somewhat dissatisfied, and very dissatisfied. The individual components that participants were asked to rank their satisfaction with included

- Interactions with PNM;
- PNM as an energy provider;
- The overall value of the equipment for the price they paid;
- The rebate program overall;
- The equipment provided through the program;
- For those who used a contractor, the contractor who installed the equipment;
- Among those who were eligible for a rebate, the dollar amount of the rebate; and
- The amount of time to receive the rebate for those eligible.

Figure 4-10 shows the satisfaction levels of the Home Energy Checkup program respondents. Overall, satisfaction levels were high regarding all program elements, with interactions with PNM receiving the highest satisfaction rating, having 94 percent of respondents reporting being very satisfied (83%) or somewhat satisfied (11%).

Equipment value and the rebate program overall also saw high levels of satisfaction. Eighty percent of respondents were very satisfied with the overall value of the equipment for the price paid, and 16 percent were somewhat satisfied, while the rebate program overall showed the majority of respondents as being very satisfied (73%) or somewhat satisfied (23%). The equipment rebated through the program showed similarly positive responses, with 68 percent reporting that they were very satisfied.

Among those who worked with contractors (n=4), 65 percent were very satisfied, and 35 percent were somewhat satisfied. Among respondents eligible for rebates, satisfaction with the dollar amount (n=10) and time to receive the rebate (n=11) was slightly lower than other factors, with 60 percent and 55 percent being very satisfied, respectively. Comments by those eligible for rebates who expressed dissatisfaction included "I didn't receive a rebate" and "there was no rebate". Of those who received non-direct installation measures, two respondents recommended larger program incentives.

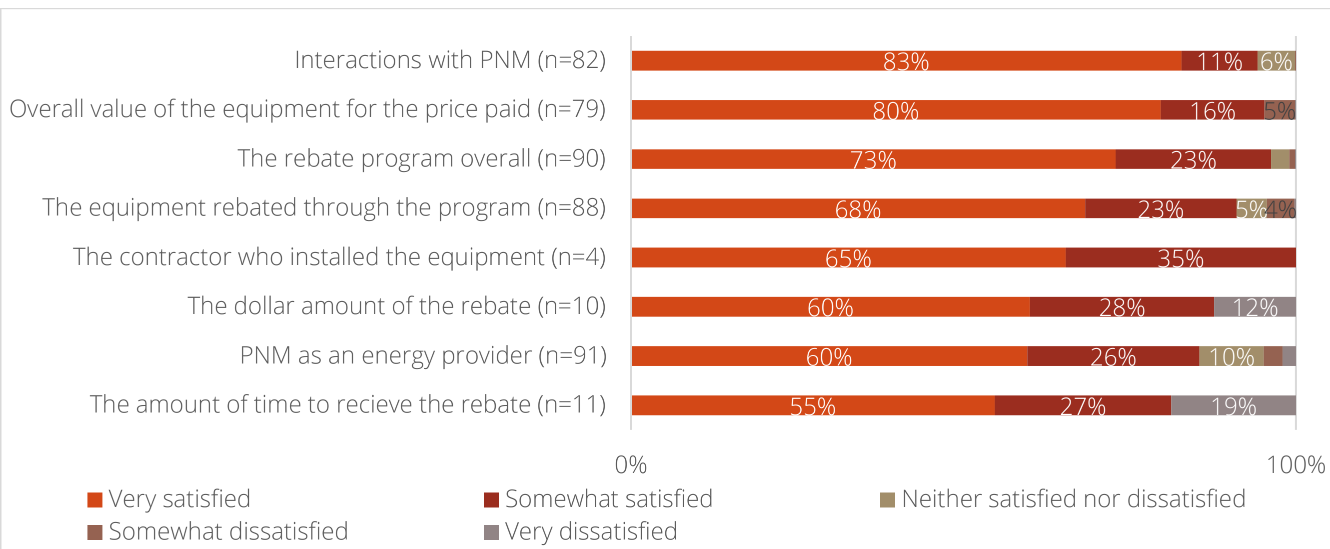


Figure 4-10 Home Energy Checkup Program Satisfaction

Respondents who received equipment directly installed through the program were also asked if they had any recommendations for the Home Energy Checkup program. One respondent said, "one thing that would be useful would be to get a better energy audit," and explained that they were specifically interested in weatherization and leakage through doors and windows and a more “thorough” audit overall. Another respondent added, “It would have been nice if they had checked the weatherstripping around the windows.” A final respondent noted they would be interested in an air filtration test, would like additional information on door and window leakage, and more information about additional rebates on appliances. A common theme among these respondents is an expressed need for handling door and window leakage.

Those surveyed who did not have equipment directly installed and received an apartment or move-in kit were asked if they had any recommendations to improve the PNM rebate program. Three individuals noted that better awareness and outreach could be beneficial. Some respondents also suggested larger financial incentives as an improvement. A common theme was equipment improvements, with suggestions including offering installation support for products such as weather stripping and gap filler and improving the durability of LED lamps. As one respondent noted, "I just wish that they would give us bulbs that would last longer. Three of my new bulbs have gone out, the old school bulbs last forever."

4.3.2 Residential Cooling Participant Interviews

The evaluation team conducted telephone interviews with 111 participating residential customers who received rebates through the Residential Cooling program for installing energy efficient HVAC equipment. The surveys were completed from October 2024 through January 2025 and were approximately 15 minutes in length.

The survey was designed to collect participant information for the following topics

- Demographic characteristics of program participants
- How participants learned about the program
- Purchase motivations and the influence of program components
- Satisfaction with the program, and installation and performance of equipment
- Participant experience with heat pumps rebated through the program

All percentages and figures below have been weighted according to the energy savings of each respondent’s measures installed through the program.

4.3.2.1 Respondent Demographics

The evaluation team asked survey respondents about various characteristics of their home, including ownership status (own or rent), building age, household size, and the length of time they have lived in their home.

Survey responses indicated the Residential Cooling program primarily serves homeowners, with 97 percent of respondents reporting they owned their homes. Surveyed respondents reported an even distribution of home sizes, per the figure below. The most common home sizes were between 1,000 and 1,999 square feet (38%). These survey data indicate that the sample of respondents represents a wide range of living environments, capturing a variety of cooling configurations.

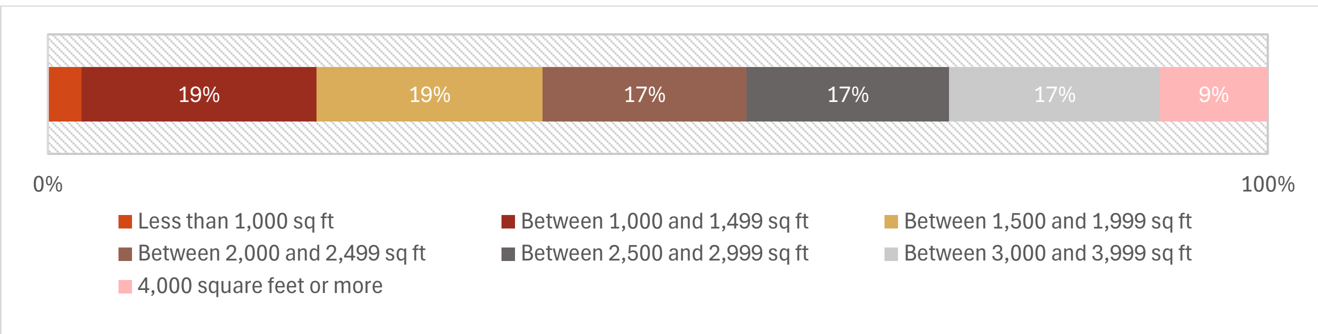


Figure 4-11 Square Footage of Respondent Homes (n=96)

The figure below shows the age of surveyed participants' homes. Responses varied, but homes built from 1990 to 2009 (40%) were the most common. Of the remaining common responses, 29 percent were built from 1970 to 1989, and 15 percent from 1949 or earlier. The diverse age of houses represented in the survey data also strengthens the results of these findings, particularly regarding the efficacy of heat pumps in a variety of residential structures.

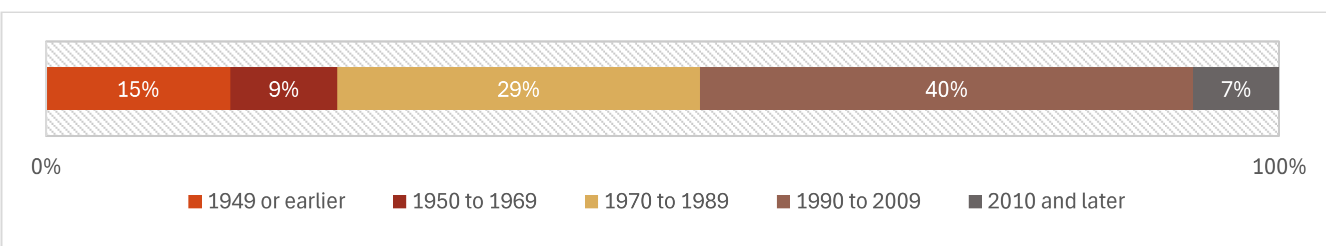


Figure 4-12 Age of Respondent Homes (n=94)

While home size varies considerably among survey respondents, most (71%) of their households consisted of 1 or 2 people.

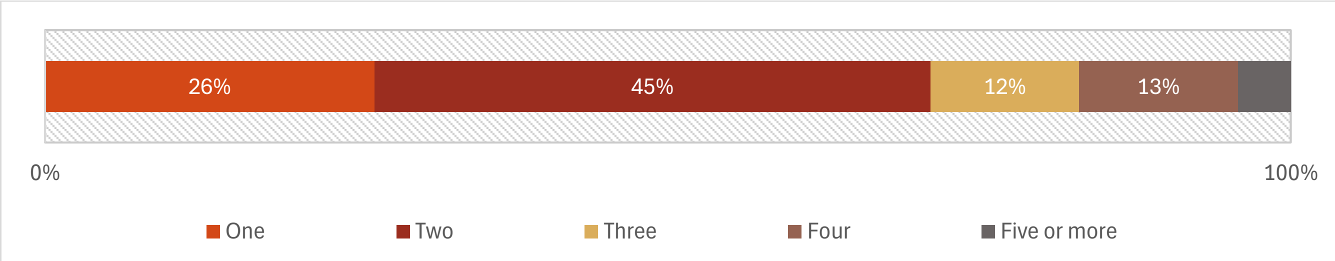


Figure 4-13 Household Size (n=94)

Respondents were also asked how long they have lived in their current residence. The figure below shows that more than half (73%) have lived in their home for less than ten years.

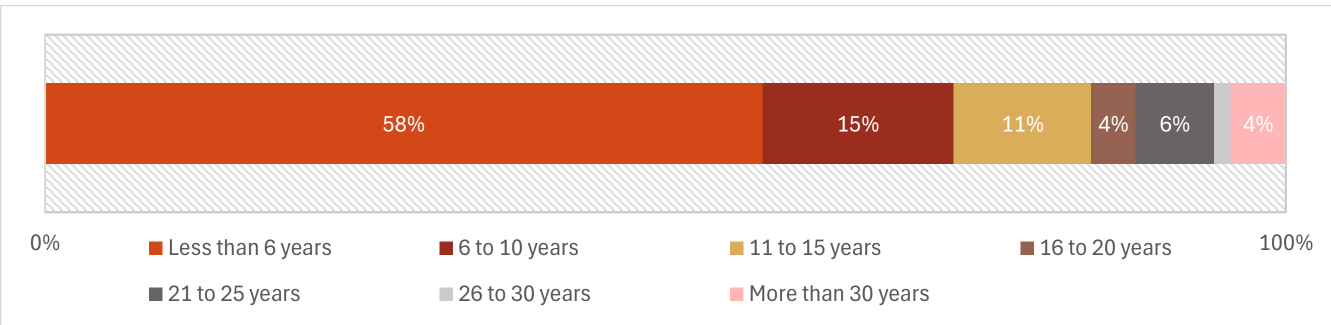


Figure 4-14 Length of Time Residing in Home (n=97)

4.3.2.2 Sources of Awareness

The evaluation team asked program participants how they initially became aware of the Residential Cooling program. Sixty-five percent of respondents reported that they learned of the program through a contractor, whereas only 28 percent became aware through PNM marketing efforts through the website, an advertisement, a bill insert, or a PNM representative. This finding aligns with the evaluation team's five interviews with contractors, who estimated that only 20 to 30 percent of customers were previously aware of the program. These findings indicate that the PNM Residential Cooling program is primarily driven by customer interaction with contractors and not through marketing efforts by the utility.

A small group of respondents (n=18) provided additional information about how they became aware of the program. The most common responses were that the respondent "just knew about it", had already engaged with a PNM energy efficiency program, or was made aware by their tax preparer. One respondent stated, "PNM should tell us what's going on with these rebates because it would be really nice to know when I would get it or if I do."

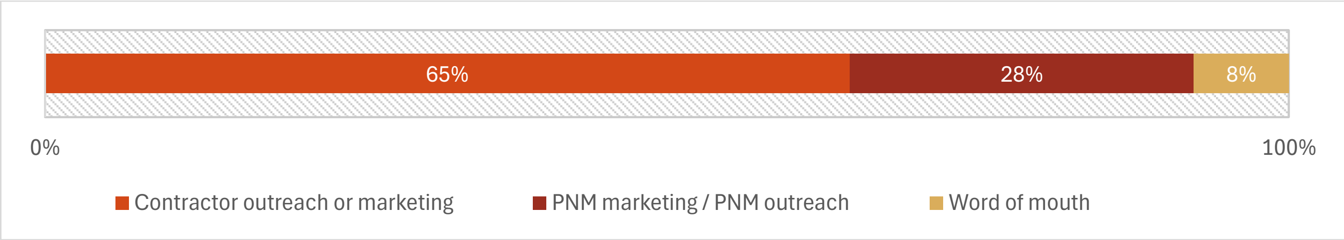


Figure 4-15 How Respondents First Learned of the Program (n=83)

4.3.2.3 Influences and Motivations

The evaluation team asked respondents to provide background on the various factors that contributed to their decision to install their new energy efficiency equipment. The figure below shows how respondents rated contributing factors in terms of importance. Ninety-four percent of respondents rated improving the comfort of their home as very important or extremely important. Respondents found contractor recommendations (61%) and updating out-of-date equipment (60%) very important or extremely important.

Notably, the financial incentive had less influence on decision-making and was rated as very or extremely important by only 38 percent of respondents. Equipment retailer recommendations had a minimal impact, which aligns with the midstream program's design where retailers typically do not interact with end users. Thirty-eight percent of respondents indicated that replacing faulty or failed equipment was not at all important in their decision. This may suggest that participants proactively choose to upgrade their equipment rather than reacting to equipment failures.

These findings indicate that program participants prioritize long-term home improvement over short-term financial gains or emergency replacements. Program administrators might consider evolving their approach to align with this customer profile, potentially emphasizing quality, comfort, and comprehensive home performance.

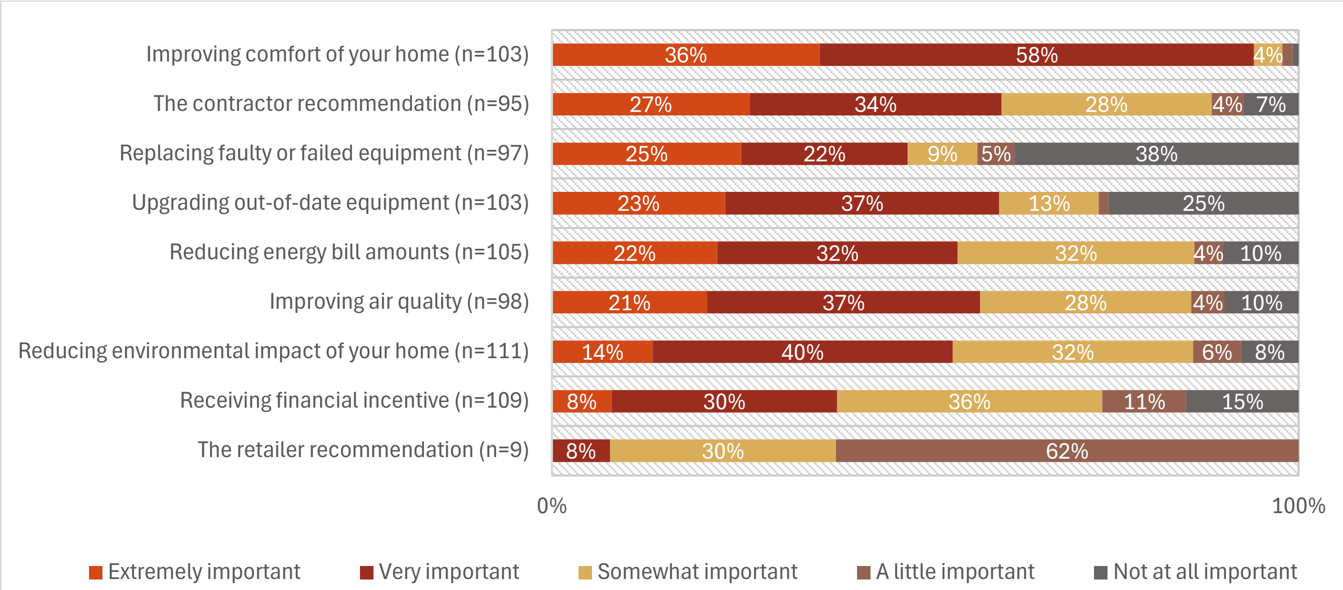


Figure 4-16 Motivations for Participation (n varies)

When asked to provide more details about their upgrade decisions, respondents emphasized the value of zonal temperature control in their homes. This functionality allows households to customize heating and cooling for different areas, potentially improving both comfort and energy efficiency by avoiding conditioning unused spaces. The impact of New Mexico's intensifying summer heat also emerged as a powerful motivating factor. Respondents consistently highlighted how rising temperatures have made efficient cooling systems not just desirable but essential for daily comfort. Their characterization of the summer of 2023 as "unbearable" and "miserable" underscores the growing importance of reliable cooling equipment in the region.

To gain deeper insight into customer decision-making, the evaluation team conducted detailed follow-up questions about the factors that most strongly influenced participants' HVAC equipment upgrade decisions. The results, presented in the figure below, reinforce findings regarding participant motivations discussed above. The survey data indicates the contractor played a crucial role in respondents' decision to make the upgrade, with 60 percent of respondents reporting that the contractor recommendation was extremely important. Conversely, neither previous participation in a PNM program nor PNM marketing were rated as important in respondents' decision to upgrade.

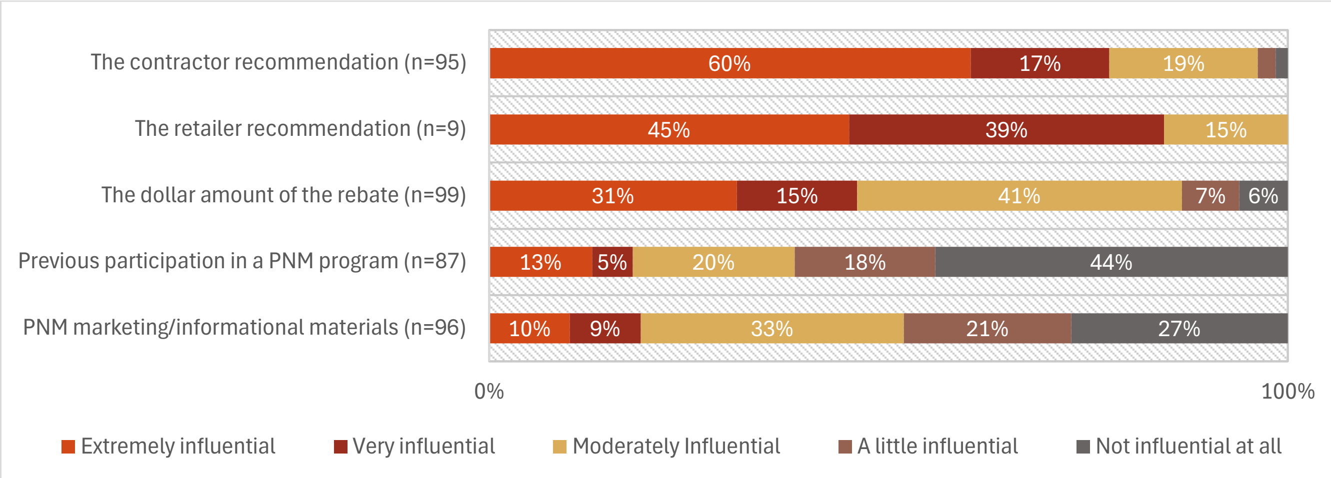


Figure 4-17 Influences Contributing to Program Participation (n varies)

4.3.2.4 Respondent Satisfaction

The evaluation team measured participant satisfaction across multiple program components using a five-point scale ranging from very satisfied to very dissatisfied. Strong overall satisfaction levels were achieved in the most recent program year, with 90 percent of respondents reporting they were somewhat or very satisfied with their program experience. Respondents reported that they were very satisfied with the upgraded equipment (86%) and the contractor who installed it (84%).

The incentive amount received more mixed feedback. Forty-seven percent of respondents reported that they were very satisfied with the incentive amount. Ten percent reported that they were very dissatisfied with the incentive amount. This very dissatisfied response group, while a minority, could signal a need to review incentive structures for certain equipment types. However, given that earlier findings showed incentives were not a primary motivator for most participants, this dissatisfaction might not significantly impact future program participation.

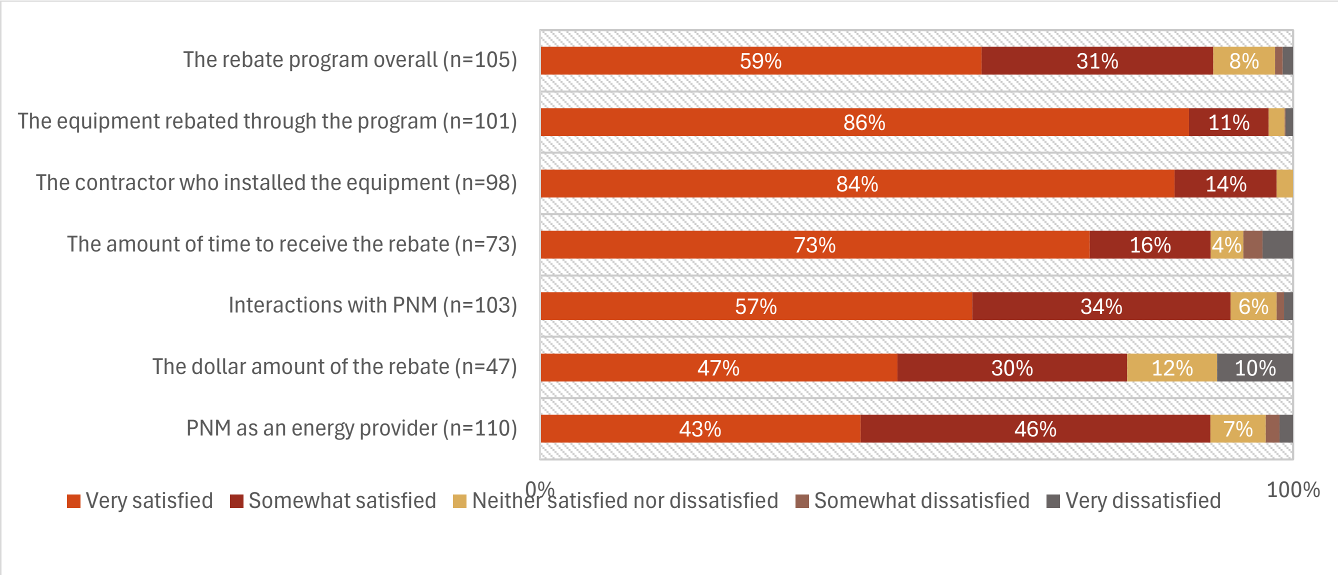


Figure 4-18 Respondent Satisfaction with the Program (n varies)

The evaluation team then asked respondents for recommendations on how to improve the Residential Cooling program. Among the 39 respondents who provided feedback, two themes emerged regarding program awareness and the rebate. Nearly half (49%) stated that they wished PNM directly promoted the Residential Cooling program to customers. Respondents emphasized the need for broader program awareness through expanded marketing efforts. Their feedback revealed gaps in program understanding and desire to have known sooner about the program, as illustrated by comments such as "I don't feel like I know all the details", and "[PNM] might want to let people know that there is a rebate program out there, I didn't even know."

Other common recommendations were to increase the rebate amount (13%) and provide more clarity regarding the timeline of the rebate (9%). One respondent recommended that PNM "show the customers how much of a rebate they would get on the equipment they purchased and show all the qualifying items." These responses indicate an opportunity for more direct communication on the PNM website regarding which equipment qualifies for the Residential Cooling program and how much each rebate is. Currently, the website directs customers to confirm equipment eligibility by referring to the ENERGY STAR buyer's guide for each equipment type.

4.3.2.5 Heat Pumps

The following section explores the program experience of the 88 respondents who had a heat pump installed through the Residential Cooling program. Given the growing adoption of heat pumps among residential customers and the subsequent energy efficiency gains, understanding these participants' experiences provides valuable insights for program implementation and future adoption of the technology. The evaluation team investigated several key aspects of heat pump adoption heat pump installation and usage, challenges and successes, and overall satisfaction with having a heat pump.

The evaluation team asked respondents if their new heat pump replaced other heating equipment in their home. Among the 86 who responded, 56 percent indicated that it had replaced other heating equipment. The team then asked which type of equipment the heat pump replaced. The figure below shows that among the 34 participants who responded, the most often-replaced heating equipment was a natural gas furnace (45%), followed by radiant heating (18%) and baseboard electric heaters (12%).

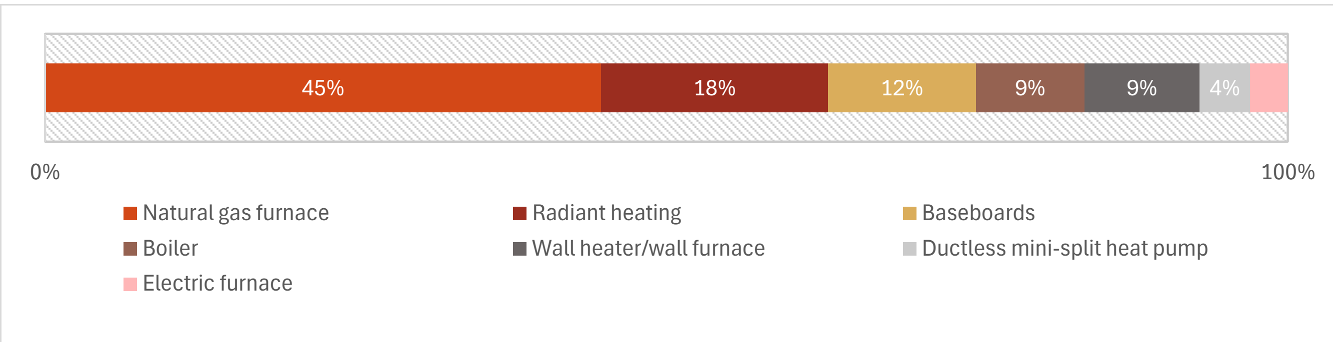


Figure 4-19 Equipment Replaced by Heat Pump (n=34)

When asked about their home heating strategy, 90 percent of respondents reported that their heat pump is not intended to be their sole heating source but rather operates in conjunction with another heating system (n=71). All 88 respondents reported that they have a furnace to heat their home (Figure 4-20). These two points align with the evaluation team's interviews with contractors, who reported that none of their customers use a heat pump as a stand-alone, primary heating source.

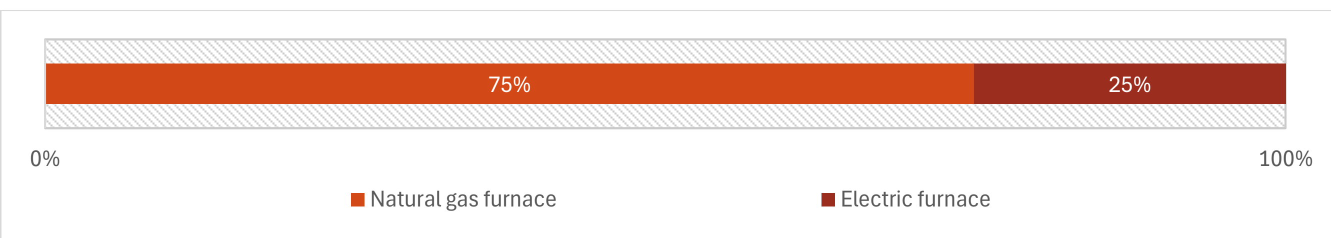


Figure 4-20 Fuel Type of Additional Heating Equipment (n=88)

Interviews with contractors about the dual-fuel configuration of homes indicate that most heating systems are configured such that the furnace will bring the home to a comfortable temperature, at which point the heat pump takes over to maintain this temperature. That is to say, the furnace acts as the primary heating source, and the heat pump is the secondary heating source. Regarding how the heat pump and furnace function together, the evaluation team asked if the respondent's other heat source is set up to automatically take over for the heat pump at a certain temperature. Respondents reported that this was not the case as 89 percent of respondents (n=58) reported that the furnace does not take over for the heat pump. This aligns with the contractors' description of how the heat pumps are configured in households with a furnace. In most cases, the heat pump takes over for the furnace. When respondents were asked to report the temperature at which the other heating source takes over for the heat pump, only five respondents responded to this question, reporting a range between 60- and 68-degrees F.

The evaluation team asked respondents to discuss challenges they have faced regarding the installation or operation of their heat pump. The table below shows the most prevalent categories of their responses. Seventy-seven percent of respondents reported a smooth experience with no significant challenges in either installation or operation of their heat pump systems. Among those who faced difficulties, installation-related issues emerged as a challenge for some participants. These included navigating the homeowner's association approval processes, adapting installation plans due to space constraints in existing structures, and modifying standard installation procedures to accommodate adobe construction materials. Several respondents who had operational challenges noted that their heat pump would go into defrost mode, or that they experienced a learning curve in controlling the heat pump system.

Table 29 Challenges of Heat Pump Installation and Operation

Response Category	Participants (n=88)
No issues	77%
Installation	9%
Operation	6%
Cost	5%
Repair	2%

When asked about their satisfaction with their experience using the heat pump, 97 percent of the respondents reported that they were satisfied (n=88). Two respondents did not provide their satisfaction rating with their heat pump, and one said it was too soon to say. Two respondents noted that while they are currently satisfied, they have not used their heat pump during the summer and therefore have only had experience using the heat pump during heating months. The evaluation team recommends conducting a follow-up assessment that captures experiences across all seasons, particularly focusing on cooling performance during peak summer periods.

4.3.3 Residential Comprehensive Contractor Interviews

The evaluation team conducted interviews with five contractors participating in the 2024 PNM Residential Comprehensive program. The interviews were designed to investigate specific topics, listed below, while allowing for open discussion. Each interview was scheduled for 20 minutes but went as long as one hour.

The interviews focused on the following topics:

- Contractor background
- Program awareness and engagement
- Program processes
- Heat pump installations
- Market response
- Overall contractor and customer satisfaction with the program

4.3.3.1 Contractor Background

The five contractors interviewed were owners or co-owners of HVAC businesses serving the Santa Fe and Albuquerque metropolitan areas. Their businesses specialize in heating, ventilation, and air conditioning services, with a focus on high-efficiency equipment installations.

The contractors exhibited considerable variation in their business models and service approaches. One contractor focuses exclusively on high-end, upper-income residential customers, predominantly installing inverter-type heat pumps in new construction and luxury homes. The remaining four contractors serve a broader customer base, including rural and lower-income communities. All contractors have been long-standing participants in the PNM Residential Comprehensive Program, with six to 10 years of involvement each.

4.3.3.2 Program Awareness and Engagement

When asked how they learned about the program, two of the contractors stated that it was so long ago that they did not recall how they got involved. The remaining contractors stated that they learned about the program through Michael Kennedy at CLEAResult or through a representative from PNM.

Contractors received information from PNM through periodic email updates and annual kick-off meetings. Three of the contractors stated that their interaction with PNM was limited or nonexistent, and that they interacted with CLEAResult when any questions or issues arose.

When the evaluation team asked how the program was helpful to their business, three of the contractors noted that the program brings in more business. One of these contractors stated that being affiliated with the program ensures that their customers can trust the contractor's workmanship and integrity. They stated that the program gives them a “lifelong customer” and that they receive repeat business from customers who have participated in the program. The contractor whose clientele is primarily high-income customers stated that the program’s impact has been “negligible” because their customers were not motivated by the savings through the program.

All of the contractors noted that program awareness among customers was relatively low, with contractors estimating that 20 to 30 percent of their customers were aware of the PNM Residential Comprehensive Program. This limited awareness presents both a challenge and an opportunity for the program. Two contractors suggested that PNM could enhance program reach through more targeted marketing and direct customer outreach. One contractor suggested that PNM include marketing content directly on their bill with an estimate of potential savings from upgrading their heating and cooling equipment.

When asked if PNM made it clear which products and services were eligible for PNM rebates, two of the contractors replied in the affirmative. One contractor said that navigating the website was straightforward “if you knew where to look,” but suggested that PNM create a more streamlined solution for looking up equipment eligibility and the rebate amount. Instead of needing to navigate through multiple pages on PNM's website, the contractor expressed a desire for a “quick, easy link” they could access to look up equipment. The remaining two contractors said that PNM did not make it clear which products were eligible. They both characterized the experience of looking up equipment based on the SEER rating as “confusing.” One of them said that the process was “a headache for distributors,” and requested a more user-friendly equipment eligibility lookup tool. The evaluation team notes that given the midstream model of the residential cooling program, any improvement to the product eligibility look-up tool would primarily benefit the supplier and/or distributor who is responsible for applying the rebate.

Contractors consistently noted that while the program did not significantly influence their equipment recommendations because they prioritized high-efficiency installations, it did provide an additional incentive for customers to invest in more efficient HVAC equipment. When asked to estimate the share of their residential projects that end up qualifying for the rebate, three of the contractors estimated 70 to 80 percent, one estimated 25 percent, and one could not provide an estimate.[9]

[9] The contractor who serves high-income customers clarified that new construction does not qualify for the program rebate. Among existing home projects, they estimated that 75 percent qualify for the program.

4.3.3.3 Program Process

All the contractors spoke about the simplicity of the application process, reporting that suppliers now handle most of the paperwork. The shift to a midstream model, where rebates are applied directly at the supplier's point of sale, significantly reduced the administrative burden on contractors. One contractor noted previous challenges, stating that the application process used to be a "pain in the neck," but the midstream model has made participation much easier and that they rarely needed to engage directly in the rebate process. This streamlined approach allows them to focus on their core business of installing high-efficiency HVAC equipment.

However, contractors did identify some process-related challenges. Multiple interviewees expressed frustration with the program's fund allocation, noting that funds were depleted quickly during the program year. One contractor speculated that the funding was distributed to suppliers unevenly. Two of the contractors reported being caught in challenging situations where they had already quoted jobs based on initial rebate levels, only to find that funding had been exhausted, or rebate amounts had changed.

One contractor stated that PNM was "too zealous with their rebates. They increased them significantly this year, so they ran out of money within…two to three months." The contractor had to be very specific when proposing a job in that they would have to say that the equipment may qualify for a rebate. The contractor added that PNM then increased the minimum BTU capacity to receive that rebate (increased to 18,000 BTU), which increased the number of systems that did not qualify because they were too small. Another contractor mentioned that PNM decreased the rebate on central heating and cooling upgrades this year. The contractor claimed that the upgraded central air systems, while not as efficient as ductless systems, still increase efficiency and therefore should receive a competitive rebate.

4.3.3.4 Heat Pump Installations

All five contractors interviewed installed heat pumps that were incentivized through the program. Four of the five contractors estimated that between 75 percent and 100 percent of their company's heat pump installations were incentivized through the program. The remaining contractor stated that only 2 percent of their heat pump installations were incentivized, explaining that most of their customers "don't really care about" or "cannot afford" high-efficiency heating and cooling equipment.

In most cases, contractors installed a heat pump as a secondary heating/cooling source in addition to the original system. They stated that many homes in the area have radiant floor heating powered by a boiler system fueled by natural gas. Contractors stated that in winter, customers prefer to use natural gas to heat their homes until a comfortable indoor temperature (around 65 degrees) is met, at which point the heat pump takes over. The prevailing observation from the five contractors was that natural gas is cheaper than electricity for heating, so customers are more inclined to use their natural gas furnace or radiant floor heating system. One contractor noted that “there might be a few times a year where there is a very quick temperature change, and they will use the heat pump to get some really rapid heat, then they will shut it off and use their existing source.” No contractor mentioned a situation when a customer uses a heat pump as a primary heating source.

4.3.3.5 Market Response

When asked about the program’s impact on the energy-efficient equipment market, three of the five contractors interviewed estimated that the program was having a low to medium effect on the market. Two of these contractors attributed the low market impact of the program to a lack of customer awareness of the program’s offerings and suggested a more direct marketing approach to PNM customers about potential energy savings. They claimed that if customers are informed and enthusiastic about upgrading their heating and cooling equipment, then suppliers will be more inclined to secure funding from PNM and sell the discounted equipment to contractors.

One contractor stated that they share information about the Inflation Reduction Act rebate for heat pumps or other energy efficiency home improvements with their customers but noted that it is up to the customer to fill out the necessary paperwork when they do their taxes.

4.3.3.6 Program Satisfaction

When asked to rate their overall satisfaction with the PNM Residential Comprehensive program on a scale of 1 (not at all satisfied) to 5 (very satisfied), two contractors rated it a 5, two contractors rated it a 4, and one rated it a 2.5. Those who gave a 4 rating both noted that the program was effective, but that they took off a point due to the funding allocation issue this year. One of them explained, “that really put our job in a bind…they really need to reevaluate how much money they are giving the customer. It was almost not worth doing it.” This contractor wished for more communication from a representative from PNM who would be available to answer questions. They said, “we hardly ever deal with PNM, it’s always CLEAResult.”

When the evaluation team asked the contractor who gave a 2.5 rating to elaborate, they expressed that the program did not have a large impact on their business, and they felt neither satisfied nor dissatisfied. They mentioned that they felt that it should not be their responsibility to promote the program, saying “I shouldn’t have to be the one advertising it.”

When asked to rate their customers' satisfaction with the program, four of the contractors rated customer satisfaction as a 5, and one rated customer satisfaction between 4.5 and 5. One of the contractors noted that the customers "don't have to do anything, they just see a huge discount on their bill." This highlights the effectiveness of the midstream model in simplifying customer participation.

One contractor mentioned that they received negative feedback from customers regarding the eligibility of thermostats in the program. They explained that customers often will want a rebate on thermostats installed after the initial HVAC upgrade, but due to the midstream model of the program, they are unable to receive a rebate.

4.4 CONCLUSIONS AND RECOMMENDATIONS

4.4.1 Home Energy Checkup Participant Survey

This survey of 92 PNM Home Energy Checkup program participants provided insights into participant demographics, program awareness, motivations, program process, influence, and satisfaction levels. Respondents were predominantly homeowners (94%) living in single-family homes (97%). Program awareness came primarily through PNM marketing and outreach (84%), with remaining respondents learning about the program through word of mouth. Reducing energy bills emerged as the strongest motivation for participation, with 85 percent of respondents rating it as extremely or very important. The program saw high satisfaction levels across all components, particularly in interactions with PNM (94% of respondents were extremely or very satisfied), equipment value (96% were extremely or very satisfied), and the overall rebate program (96% were extremely or very satisfied). Participants highlighted financial savings, improved comfort, and health benefits as key advantages of the Home Energy Checkup program. Recommendations for improvement included enhanced program awareness, increased rebate amounts, and more comprehensive energy audit services, particularly weatherization for windows and doors.

Survey respondents were primarily homeowners in single-family detached homes, and most respondents became aware of the program through PNM marketing and outreach. High satisfaction levels were reported, particularly regarding interactions with PNM, equipment value, and the overall rebate program.

Table 30 Home Energy Checkup Participant Survey Findings and Recommendations

Finding	Recommendation
1. Survey respondents showed significant interest in more comprehensive energy audits and weatherization services, specifically window weatherstripping, door and window air infiltration, and air filtration assessments.	**Recommendation:** Consider expanding the energy audit to include detailed weatherization services, particularly those related to doors and windows. **Recommendation:** Offer targeted support to respondents requesting specific weatherization measures. The evaluation team could assist in identifying these individuals. If the Home Energy Checkup program cannot fulfill these requests, consider referring them to other PNM programs. Addressing the needs of highly motivated participants may lead to increased word-of-mouth awareness of the program.
2. Some respondents, across both direct-install and non-direct-install groups, reported a disconnect between the Home Energy Checkup program components and the availability of additional appliance replacement rebates. These participants were either unaware of the rebates, only discovered them after purchasing new equipment, or encountered challenges securing a rebate due to equipment eligibility or finding an approved Trade Ally.	**Recommendation:** Improve communication between Home Energy Checkup staff and participants regarding the availability of appliance replacement rebates. Ensure participants are well-informed about the necessary steps to access these rebates, as some motivated individuals faced difficulties in securing them.
3. While satisfaction with the Home Energy Checkup program was generally high, some respondents expressed dissatisfaction with the rebate amount and the time it took to receive the rebate.	**Recommendation:** Enhance communication about rebate expectations and processing timelines to improve participant satisfaction. Proactively providing updates on rebate status and setting realistic timeline expectations can help reduce dissatisfaction.

4.4.2 Midstream Participant Survey

The evaluation team's analysis of survey responses indicates that the PNM Residential Cooling Program has successfully encouraged adoption of energy efficient HVAC equipment in the region, though opportunities exist to enhance program awareness and communication with customers. Contractors have played a critical role in the program's success. They serve as the primary channel through which customers learn about and engage with the program. This contractor-driven participation model, while effective in driving installations, points to untapped potential in direct marketing and customer engagement from PNM. Both contractors and program participants have recommended that PNM directly market the program to customers.

Financial incentives played a relatively minor role in participants' decisions to have energy efficiency measures installed. Participants strongly prioritized home comfort improvements and valued contractor recommendations. Heat pump installations predominantly serve as complementary heating solutions rather than primary heating sources, with most systems operating in conjunction with existing furnaces. The Residential Cooling program has demonstrated success in promoting residential heat pump adoption, as shown by respondents' high satisfaction levels and the minimal challenges they reported with installation and system operation.

Based on the evaluation results above, the evaluation team presents four key findings, each with a recommendation for program improvement.

Table 31 Residential Midstream Cooling Participant Survey Key Findings and Recommendations

Finding	Recommendation
1. Program awareness heavily relies on contractor channels (65% of participants learned about the program through contractors), with limited impact from utility marketing efforts (28%).	**Recommendation:** Develop a customer-facing marketing strategy to increase awareness among potential participants, including enhanced digital presence, targeted bill inserts, and customer communications about available rebates and qualifying equipment.
2. Customer adoption of energy efficient HVAC equipment is primarily driven by comfort improvements (94% rated as very/extremely important) and contractor recommendations (61% very/extremely important), while financial incentives have less influence (38% rated as very/extremely important).	**Recommendation:** Focus program marketing strategy on long-term home performance benefits, featuring customer testimonials about improved comfort and smooth HVAC system integration. Develop case studies that demonstrate the value of proactive equipment upgrades, highlighting the effectiveness and efficiency of heat pump technology for cooling in extremely hot conditions as well as zonal temperature control.

Finding	Recommendation
3. Heat pump installations are predominantly configured as supplementary heating sources working in conjunction with existing furnaces (90% of respondents with heat pumps)	**Recommendation:** Create detailed educational materials and guidelines for customers about optimal dual-system configuration and operation. Include equipment heat pump set-up guides and temperature setting recommendations, and energy-saving strategies specific to combined heating systems.
4. Respondents are highly satisfied with their heat pump system (97%, n=88). However, a minority (n=3) indicated that they have not had an opportunity to evaluate its performance in their home over the long term.	**Recommendation:** Conduct follow-up surveys with 2024 program participants in the Fall of 2025 to evaluate heat pump cooling performance and satisfaction during the summer.

4.4.3 Contractor Survey

Despite challenges in customer awareness and fund management, the five contractors found that the program successfully provides financial incentives for high-efficiency HVAC installations. Contractors appreciate the streamlined administrative process and recognize the program's value in encouraging energy-efficient upgrades. The primary sources of contractor dissatisfaction centered on fund allocation, lack of customer awareness of the program, and occasional confusion about equipment eligibility. Contractors suggested improvements such as more stable fund distribution throughout the program year, clearer communication about qualifying equipment, and more direct marketing to customers.

Contractors reported general satisfaction with the PNM Residential Comprehensive program's streamlined application and rebate process. However, they identified several challenges related to customer awareness, program funding, and equipment eligibility that affected their experience with the program. Below are three key findings from our interviews with contractors, as well as recommendations for improvement.

Table 32 Residential Comprehensive Survey Key Findings and Recommendations

Finding	Recommendation
1. Program awareness among customers remains low, with contractors estimating only 20 to 30 percent of customers know about the program. Low customer awareness of potential savings may reduce suppliers' and contractors' motivation to stock and promote rebated equipment.	**Recommendation:** Enhance program marketing through direct customer outreach. Consider developing more targeted marketing strategies to increase program visibility and customer engagement such as customized savings estimates.
2. Contractors have faced challenges with program fund allocation and rebate stability. Contractors reported that funds depleted quickly during the program year, and unanticipated changes in rebate amounts created difficulties for contractors who had already quoted jobs based on initial rebate levels.	**Recommendation:** Implement a more stable fund distribution system throughout the program year. Review and adjust rebate levels and equipment eligibility criteria to ensure sustainable program operation. Consider alerting contractors about impending changes in rebate levels or funding status. Describe rebated equipment in marketing materials as available "while supplies last" to encourage early program participation.
3. Contractors reported confusion with the equipment eligibility lookup process, characterizing it as complicated and time-consuming.	**Recommendation:** Develop a streamlined, user-friendly equipment eligibility lookup tool that provides quick access to rebate information, allowing contractors to verify equipment eligibility and rebate amounts without navigating through multiple web pages. Provide contractors with contact information of representatives from PNM contractor services and support who could assist when any questions or issues arise.

4.4.4 Home Energy Checkup Gross Impact

The Home Energy Checkup (HEC) is a subprogram under PNM's Residential Comprehensive Program designed to help households implement cost-effective energy efficiency measures. Key issues across measures include inaccuracies in savings calculations due to improper use of In-Service Rate (ISR) values sourced from TRMs from other states, rounding errors in baseline wattages, and the inclusion of areas where PNM does not provide electric services such as Las Cruces in HVAC factor and Equivalent Full Load Hours (EFLH) calculations.

Table 33 Home Energy Checkup Evaluation Findings and Recommendations

Finding	Recommendation
1. For lighting measures, such as CFL-to-LED replacements, baseline wattages sourced from the New Mexico Technical Reference Manual (NM TRM) were rounded in the savings calculation (e.g., 28.2W rounded to 28W). This rounding resulted in discrepancies compared to initial savings estimates.	**Recommendation:** Report baseline wattages exactly as specified in the NM TRM, without rounding, to maintain precision in savings calculations.
2. HVAC Energy/Demand Savings Factors, EFLH calculations for CFL-to-LED lighting, Smart Thermostats, and Early Replacement appliances measures include averages from Albuquerque, Santa Fe, and Las Cruces where Las Cruces is not within the PNM territory. The evaluators excluded Las Cruces from the averages and only calculated the above parameters based on values from PNM service territories (Albuquerque and Santa Fe).	**Recommendation:** Exclude Las Cruces from EFLH and HVAC Energy/Demand Factors. Provide averages only from PNM territories (Albuquerque and Santa Fe) to ensure values are representative of operational conditions.
3. The ex-ante gross savings calculations referred to an older version of the Missouri TRM (2017 version) for the Home Energy Checkup (HEC) Assessment Report measure. Typically, implementors and evaluators should utilize references in the following order PNM workpapers, NM TRM, Texas TRM, IL TRM, any other TRM. If a reference does not support the measure in question, then implementors and evaluators should refer to the subsequent reference. The HEC Assessment Report measure is not supported in any listed TRM. Therefore, the ex-post evaluation utilized the 2024-2026 Plan version of the Missouri TRM to verify the savings.	**Recommendation:** Ensure that all calculations are based on the most recent versions of the applicable TRM. This will improve the accuracy of savings calculations as older versions may have outdated information.
4. The ex-ante savings include hard coded values for the Door Sweeps, Outlet Gaskets, and External Door Weatherization (e.g., Heat Pump and Central AC applications). These saving values were listed as "provided by PNM in December 2021", but no further evidence was provided to support the use of these values. The evaluation team will utilize NM TRM savings algorithm and inputs to calculate verified savings for these measures unless new evidence is provided.	**Recommendation:** Utilize NM TRM savings algorithms and inputs to calculate savings. Ensure hardcoded savings values are supported by detailed documentation or calculator references if choosing a custom methodology.

4.4.5 Midstream Cooling Gross Impact

The Midstream Cooling program predominantly focuses on the Refrigerated Air System, Heat Pump, Heat Pump Water Heaters (HPWH), and Smart Thermostat measures.

The Midstream Cooling program tracking data is ambiguous when distinguishing between multiple factors to calculate savings, such as the differentiation between the SEER/SEERs2 values, EER/EER2 values, and HSPF/HSPF2 values. Also, the implementor did not define the type of system used for a few measures, particularly for Refrigeration Air Conditioners and Heat Pumps.

Table 34 Residential Midstream Cooling Evaluation Findings and Recommendations

Finding	Recommendation
1. The equipment efficiency values provided in the tracking data for Refrigeration Air Conditioner Tier 1/2/3 and Heat Pump Tier 1/2/3, do not specify whether these values correspond to the SEER, EER and HSPF values or SEER2, EER2 and HSPF2 values. The algorithms differ and, subsequently, the savings vary depending upon the efficiency values. The evaluation team referred to the equipment AHRI certificates to determine whether the listed efficiency values correspond to SEER2/HSPF2/EER2 ratings or SEER/HSPF/EER ratings for all the projects in the program.	**Recommendation:** Specify whether SEER or SEER2, EER or EER2, and HSPF or HSPF2 are used in the ex-ante analysis and clarify which calculation methodology is chosen to calculate savings for each project based on the efficiency values chosen.
2. Provided PNM workpaper algorithms yield different savings values than those provided in tracking data, and the efficiency conversion formula of SEER2 to SEER differs from the conversion formula present in the New Mexico TRM (2023). The evaluation team used algorithms, assumptions, and baseline values corresponding to appropriate measures in the New Mexico TRM (2023) by verifying the AHRI certificates for each project to calculate savings.	**Recommendation:** Specify which efficiency value savings calculation methodology is used for each project and efficiency value conversion details, if applicable.
3. Supporting Documentation does not specify the type and capacity of Refrigeration Air Conditioner or Heat Pump. Refrigeration type and capacity determine baseline SEER, EER, and HSPF values, which differ depending upon the selected equipment type (e.g. Split System with cooling capacity < 45,000 Btu/h, Split System with cooling capacity > 45,000 Btu/h, or Packaged Acs for Air Conditioner systems). Similarly, supporting documentation does not specify the heating system type for Smart Thermostat measures. The evaluation team assigned heat pump, electric furnace, or gas furnace as heating system type based on available information.	**Recommendation:** Specify the Refrigeration Air Conditioner Type and Capacity, Heat Pump Type, and Heating System used to determine the heating savings for Smart Thermostats measure.

5 HomeWorks

The evaluation of the HomeWorks program includes a gross savings impact evaluation, which examined the three subprograms HomeWorks (Elementary School Kits), Energy Innovation (High School Kits), and the Energy Smart Seniors (Senior Citizen Kits). The Energy Smart Senior program was only implemented during the fall season unlike HomeWorks and Energy Innovation were implemented in both the Spring and the Fall. The gross evaluation assessed the energy savings across these subprograms, focusing on the performance and impact of each initiative.

5.1 GROSS IMPACT

5.1.1 Realized Gross Impacts

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.)

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

The PY2024 energy savings impacts for the Residential Comprehensive program are summarized in Table 35 and Table 36.

Table 35 HomeWorks Savings Summary (kWh)

Program	Sub-Program	# of Projects	Expected Gross kWh Savings	Engineering Adjustment Factor	Realized Gross kWh Savings
HomeWorks	HomeWorks	8,568	1,859,692	0.8048	1,496,636
	Energy Innovation	5,501	1,403,526	1.0607	1,488,715
	Energy Smart Seniors	600	102,966	1.0151	86,931
Total		**14,669**	**3,366,184**	**0.9127**	**3,072,282**

Table 36 HomeWorks Savings Summary (kW)

Program	Sub-Program	# of Projects	Expected Gross kW Savings	Engineering Adjustment Factor	Realized Gross kW Savings
HomeWorks	HomeWorks	8,568	31	0.9704	30
	Energy Innovation	5,501	68	0.8798	60
	Energy Smart Seniors	600	13	0.2093	3
Total		**14,669**	**112**	**0.8279**	**93**

5.2 NET IMPACT

The HomeWorks program is designed to promote energy efficiency awareness and behavioral change through educational outreach and kit measures provided to students and senior citizens. Unlike rebate-based programs, where free ridership and market-driven adoption must be assessed, HomeWorks achieves savings entirely through program-driven participation. Because the program provides energy efficiency kits directly to participants, all realized savings are considered fully attributable to the program, and a Net-to-Gross (NTG) evaluation is not conducted. Instead, program effectiveness is assessed through installation rates, participant engagement, and measure retention, ensuring that reported savings accurately reflect program outcomes.

5.2.1 Realized Net Impacts

The net-to-gross evaluation process calculates the Net-to-Gross (NTG) savings, which reflect the effectiveness of the program in achieving energy savings. The NTG ratio is calculated by comparing the Net Realized Savings (i.e., the savings that result directly from the program's influence on participants) to the Gross Realized Savings (the total savings from all measures installed from the impact evaluation above). This ratio accounts for factors such as free ridership (participants who would have implemented the measures without the program) and spillover (savings from participants who were influenced by the program but did not directly participate). The NTG ratio is crucial for assessing the overall impact of the program.

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

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

Table 37 and Table 38 summarize the PY2024 net impacts for the HomeWorks program using the prospective NTG ratios calculated by the evaluation team during the PY2023 evaluation.

Table 37 PY2024 HomeWorks Net Impact Summary (kWh)

Program	Sub-Program	# of Projects	Realized Gross kWh Savings	NTG Ratio	Realized Net kWh Savings
HomeWorks	HomeWorks	8,568	1,496,636	1.0000	1,496,636
	Energy Innovation	5,501	1,488,715	1.0000	1,488,715
	Energy Smart Seniors	600	86,931	1.0000	86,931
Total		**14,669**	**3,072,282**	**1.0000**	**3,072,282**

Table 38 PY2024 HomeWorks Net Impact Summary (kW)

Program	Sub-Program	# of Projects	Realized Gross kW Savings	NTG Ratio	Realized Net kW Savings
HomeWorks	HomeWorks	8,568	30	100%	30
	Energy Innovation	5,501	60	100%	60
	Energy Smart Seniors	600	3	100%	3
Total		**14,669**	**93**	**100%**	**93**

The HomeWorks program does not receive a Net-to-Gross (NTG) evaluation, as it is categorized as an education-based direct install program, where savings are achieved exclusively through program intervention. Unlike rebate or incentive-based programs, where participant decision-making and free ridership must be assessed, HomeWorks provides energy efficiency kits directly to students and participants, ensuring that all savings realized are attributable to program efforts. Because participation is entirely program-driven and does not rely on market-based adoption, an NTG ratio of 1.00 (100% attribution to the program) is applied by default. While free ridership and spillover effects are critical factors in evaluating other energy efficiency programs, they are not relevant in the HomeWorks program's delivery model, making a net impact assessment unnecessary.

5.2.2 Net-to-Gross Ratio Update for PY2024

The program does not receive a Net-to-Gross (NTG) evaluation, so therefore the updated NTG ratio will continue as currently defined, 1.00 (100% net realization).

5.3 CONCLUSIONS AND RECOMMENDATIONS

5.3.1 HomeWorks (Elementary Subprogram) Gross Impact

The HomeWorks subprogram focuses on elementary school kit deliveries implementing LED lighting, weatherstripping, and water reduction measures to optimize household energy efficiency.

Table 39 HomeWorks Elementary Subprogram Evaluation Findings and Recommendations

Finding	Recommendation
1. Custom values are calculated for the Waste Heat Factor for Energy (WHFe) parameter in lighting measures; however, the implementation team did not provide a reference to support the value used. Verified savings used the average of WHFe values for Albuquerque and Santa Fe regions as outlined in the NM TRM for residential lighting measures.	**Recommendation:** Average the WHFe factor from the Albuquerque and Santa Fe regions as outlined in the NM TRM for residential lighting measures. Ensure clear references and rationale are provided, if custom values are applied.

5.3.2 HomeWorks Energy Innovation (High School Subprogram) Gross Impact

The Energy Innovation subprogram focuses on high school kit deliveries implementing water-saving devices (e.g., aerators, showerheads), weatherization enhancements (e.g., door sweeps, pipe insulation), and energy-efficient appliances (e.g., advanced power strips).

Table 40 HomeWorks High School Subprogram Evaluation Findings and Recommendations

Finding	Recommendation
1. ISR calculations for Advanced Power Strips (APS) focused only on televisions, excluding other types of equipment such as computers, which limits the comprehensiveness of adoption rates.	**Recommendation:** Expand the ISR calculations for Advanced Power Strips (APS) to include all usage types, such as televisions, computers, and other electronic equipment. This broader approach will provide a more comprehensive view of adoption rates across varied usage scenarios.

5.3.3 HomeWorks Energy Smart Seniors (Senior Citizen Subprogram) Gross Impact

The Energy Smart Seniors subprogram focuses on senior citizen kit deliveries implementing LED lighting, weatherstripping, and water reduction measures to optimize household energy efficiency.

Table 41 HomeWorks Senior Citizen Subprogram Evaluation Findings and Recommendations

Finding	Recommendation
1. The kW savings for advanced power strips were calculated using an unspecified source. The ex-post evaluation team referenced Table 230 from the NM TRM for the per-unit kW savings value.	**Recommendation:** Clearly reference all sources used in the analysis and verify the calculations against the NM TRM values.

5.3.4 HomeWorks Gross Impact

The HomeWorks program delivers a comprehensive suite of energy efficiency measures for residential customers to reduce resource consumption and enhance energy performance. The evaluator's key findings include omissions of critical adjustments, methodological discrepancies, and inconsistent ISR calculations.

Table 42 Overall HomeWorks Evaluation Findings and Recommendations

Finding	Recommendation
1. Ex-ante gross savings calculations used algorithms and inputs consistent with the Illinois TRM for Aerator measures (1.0 GPM bath aerator, 1.5 GPM kitchen aerator, and 1.5 GPM showerhead), despite these measures existing in the NM TRM. The evaluation team calculated verified savings consistent with the NM TRM algorithm and inputs, as they reflect the program's service area.	**Recommendation:** Calculate gross savings using the NM TRM for all applicable measures to ensure alignment with the program's service area and representation of local conditions.
2. For sites where ISR was included in the ex-ante net savings calculation, the algorithms used to determine ISR for the following measures were inconsistently applied, leading to discrepancies with the calculated evaluated savings - **Outlet Gaskets ISRs were calculated as a weighted average based on survey responses but unnecessarily divided by the highest scale point (10), distorting the results.** - **Water Heater Setback The ISR was calculated using a custom method of subtracting participants who raised water heater temperatures from those who lowered them. This approach reflects net behavior change rather than actual adoption rates, misrepresenting the true ISR.**	**Recommendation:** Calculate outlet gasket ISR by weighting the average of survey responses to estimate installation rate per participant. Calculate water heater setback ISR by dividing the number of participants who implemented the measure by the total number of eligible participants. This approach ensures that the ISR represents true adoption rates rather than net behavior change.
3. The ex-ante gross savings for Door Sweep, Outlet Gaskets, and Weatherstripping measures were reported directly from the IL TRM, specifically under Prescriptive Infiltration Reduction Measures. This is correct as the NM TRM does not contain estimates for these measures. However, the savings values from the IL TRM are not directly applicable to the New Mexico region due to geographically distinct climatic conditions. The evaluation team accounted for this by considering the Heating Degree Days (HDD) factor at 65°F for climate zones in Illinois and New Mexico to compare and derive verified savings values for these measures.	**Recommendation:** Adjust for New Mexico regional climatic variations and factors in Door Sweep, Outlet Gasket, and Weatherstripping savings calculated from IL TRM methodologies. Adjustments using the ratio of Heating Degree Days (HDD) between Illinois and New Mexico are required to accurately reflect savings.
4. Water heater setback savings varied due to different baseline assumptions for water heating temperatures. The ex-ante calculations referred to pre-set temperature values sourced from the IL TRM, while the ex-post evaluation considered values from the 'Efficient Water Heaters' measure in the NM TRM, which better reflect the service area conditions. This led to inconsistencies in the savings estimations	**Recommendation:** Adjust water heater setback baseline assumptions for water heating temperatures to reflect NM region conditions rather than using pre-set values from the IL TRM that hold assumptions for IL local conditions and participant behavior.

6 Easy Savings

The Easy Savings program is designed to provide low-income and income-qualified customers with no-cost energy efficiency kits containing a variety of pre-installed or self-installed measures to reduce energy consumption and lower utility costs. The program primarily serves customers who may face financial barriers to energy efficiency upgrades by distributing kits that include high-efficiency lighting, water-saving devices, and weatherization materials. By offering these direct-install and mail-in measures, the program ensures that energy-saving technologies reach households that may not otherwise have access to them. The evaluation of the Easy Savings program includes an impact assessment, net-to-gross (NTG) evaluation, and process analysis. The gross impact evaluation focuses on verifying the realized energy savings associated with installed measures, while the NTG analysis assesses the degree to which savings can be directly attributed to the program. The process evaluation examines participant satisfaction, program accessibility, and potential barriers to engagement, providing insights into opportunities for improving program delivery and expanding participation among income-qualified customers.

6.1 GROSS IMPACT

The Easy Savings program provides low-income and income-qualified customers with pre-packaged energy efficiency kits, designed to help households reduce electricity at no cost. These kits contain deemed measures such as LED lighting, faucet aerators, low-flow showerheads, weatherization materials, and advanced power strips, which are either self-installed by participants or installed by program partners. The gross impact evaluation assesses the realized energy savings from these measures by verifying installation rates, tracking data accuracy, and measure performance.

For the PY2024 evaluation, the impact analysis includes a deemed savings review, comparing reported savings to New Mexico Technical Reference Manual (NM TRM) values, while also accounting for installation rates and measure retention. Additionally, adjustments are made to align savings estimates with regional climate conditions, ensuring that heating and cooling-related measures accurately reflect usage patterns within PNM’s service territory. The findings from this evaluation will help improve program design, refine measure assumptions, and optimize future savings projections.

6.1.1 Realized Gross Impacts

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.)

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

The PY2024 energy savings impacts for the Residential Comprehensive program are summarized in Table 43 and Table 44.

Table 43 Easy Savings Savings Summary (kWh)

Program	Sub-Program	# of Projects	Expected Gross kWh Savings	Engineering Adjustment Factor	Realized Gross kWh Savings
Easy Savings		9,125	3,779,383	0.8941	3,379,231
Easy Savings LI		5,296	3,543,706	0.8552	3,030,644
Total		**14,421**	**7,323,089**	**0.8753**	**6,409,875**

Table 44 Easy Savings Savings Summary (kW)

Program	Sub-Program	# of Projects	Expected Gross kW Savings	Engineer Adjustment Factor	Realized Gross kW Savings
Easy Savings		9,125	1,436	1.3545	1,945
Easy Savings LI		5,296	2,045	1.1421	2,336
Total		**5,296**	**3,481**	**1.2297**	**4,281**

6.2 NET IMPACT

The Easy Savings program receives a Net-to-Gross (NTG) ratio of 1.00 (100% attribution to the program) because it is a kit-based initiative where energy-saving measures are provided at no cost to participants. Unlike rebate-driven programs, where free ridership must be assessed, the Easy Savings program ensures that all installed measures result directly from program intervention rather than independent customer action. Since participants do not purchase the equipment independently and only receive energy-saving kits through program outreach, all reported savings are fully attributable to the program. As a result, a net impact adjustment is not necessary, and realized savings are equal to the gross verified savings.

6.2.1 Realized Net Impacts

The net-to-gross evaluation process calculates the Net-to-Gross (NTG) savings, which reflect the effectiveness of the program in achieving energy savings. The NTG ratio is calculated by comparing the Net Realized Savings (i.e., the savings that result directly from the program's influence on participants) to the Gross Realized Savings (the total savings from all measures installed from the impact evaluation above). This ratio accounts for factors such as free ridership (participants who would have implemented the measures without the program) and spillover (savings from participants who were influenced by the program but did not directly participate). The NTG ratio is crucial for assessing the overall impact of the program.

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

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

Table 45 and Table 46 summarize the PY2024 net impacts for the Easy Savings program using the prospective NTG ratios calculated by the evaluation team during the PY2023 evaluation.

Table 45 Easy Savings Net Impact Summary (kWh)

Program	Sub-Program	# of Projects	Realized Gross kWh Savings	NTG Ratio	Realized Net kWh Savings
Easy Savings		9,125	3,379,231	0.5985	2,022,470
Easy Savings LI		5,296	3,030,644	1.0000	3,030,644
Total		**14,421**	**6,409,875**	**0.7883**	**5,053,114**

Table 46 Easy Savings Net Impact Summary (kW)

Program	Sub-Program	# of Projects	Realized Gross kW Savings	NTG Ratio	Realized Net kW Savings
Easy Savings		9,125	1,945	0.5985	1,164
Easy Savings LI		5,296	2,336	1.0000	2,336
Total		**14,421**	**4,281**	**0.8176**	**3,500**

6.2.2 Net-to-Gross Ratio Update for PY2024

The Low Income portion of the program does not receive a Net-to-Gross (NTG) evaluation, so therefore the updated NTG ratio for the LI portion will continue as currently defined, 1.00 (100% net realization).

The Evaluation Team proposes using the NTG ratio calculated from Residential Comprehensive Home Energy Checkup participants who received an apartment kit or move-in kit as a temporary NTG ratio for the Easy Savings Market Rate Expansion program until a program-specific NTG ratio can be calculated.

This NTG ratio was derived from 18 Residential Comprehensive Home Energy Checkup survey respondents who took part in the kit component of the program in 2024. The NTG ratio was developed using the self-approach method described in the Evaluation Methods section of the PY2023 and PY2024 PNM Energy Efficiency Program evaluation using participant phone survey data.

The Evaluation team calculated a free-ridership rate of 0.4015 that resulted in an overall NTG ratio of 0.5985. This is like NTG ratios calculated in 2024 for residential lighting programs in New Mexico; the EPE residential lighting program has a NTG ratio of 0.51 and the SPS Lighting & Recycling program has a NTG ratio of 0.54. Given that the Easy Savings kits are composed of lighting and power strip measures among other measures, this comparison is appropriate.

Table 47 shows the updated Easy Savings NTG ratios for PY2025 compared to the PY2024 NTG evaluation results.

Table 47 Easy Savings NTG Ratio Update for PY2024

Program	PY2024 NTG Ratio	PY2025 NTG Ratio
Easy Savings	0.5985	0.5985
Easy Savings LI	1.0000	1.0000

6.3 PROCESS EVALUATION

6.3.1 Easy Savings Participation Survey

In November 2024, a survey was conducted with low-income residents in PNM's New Mexico territory to gather insights on household demographics, energy use, and attitudes toward energy efficiency programs. The objective of this survey was to help PNM improve its Easy Savings program by understanding the barriers to participation and identifying opportunities for better serving low-income households. The survey targeted both participants (70) and non-participants (70), with a goal of obtaining 140 complete responses. This target was chosen to enable statistically significant comparisons between the two groups, with a confidence level of 90 percent and a margin of error of 10 percent. As seen in the table below, a total of 204 individuals responded to the survey, although each respondent did not answer every question.

Table 48 Survey Targets and Completes

Respondent Group	Target Completes	Completed Surveys
Participant	70	100
Non-Participant	70	104
Total	140	204

The following sections report results on low-income household demographics and characteristics, respondent appliances, utility bills, and willingness and barriers to participation in a PNM-sponsored program amongst survey respondents.

6.3.1.1 Respondent Demographics

Table 49 presents the key demographic characteristics of the survey respondents. Notably, there are no statistically significant differences between participants and non-participants in terms of household composition, housing type, or homeownership status. While non-participants are more likely to have a child in their household and are less likely to be homeowners, none of the differences in Table 49 are statistically significant. This suggests that the Easy Savings program is engaging a broad and diverse group of low-income households.

Table 49 Demographic Information by Response Type

Demographic	Participants (n=100)	Non-Participants (n=104)	Total (n=204)
Average Household Size	3.1	3.33	3.22
% of Households with Children	52%	62%	57%
% of Households with Seniors	18%	13%	16%
% Homeowners	46%	34%	39%
% Single-Family Homes	70%	60%	64%
% Non-English Language Spoken	45%	37%	40%

As shown in Figure 6-1, households who are in their homes for longer may be more willing to make energy efficiency upgrades and invest in their home, as they are less likely to move frequently. Additional Observations:

- **Home Duration** A larger percentage of non-participants (62%) have lived in their current residence for 5 years or less, compared to 55% of participants.
- **Income Distribution** A slight income skew is observed, with participants more likely to report incomes between $20,000 and $39,999 (26%) compared to non-participants (33%).

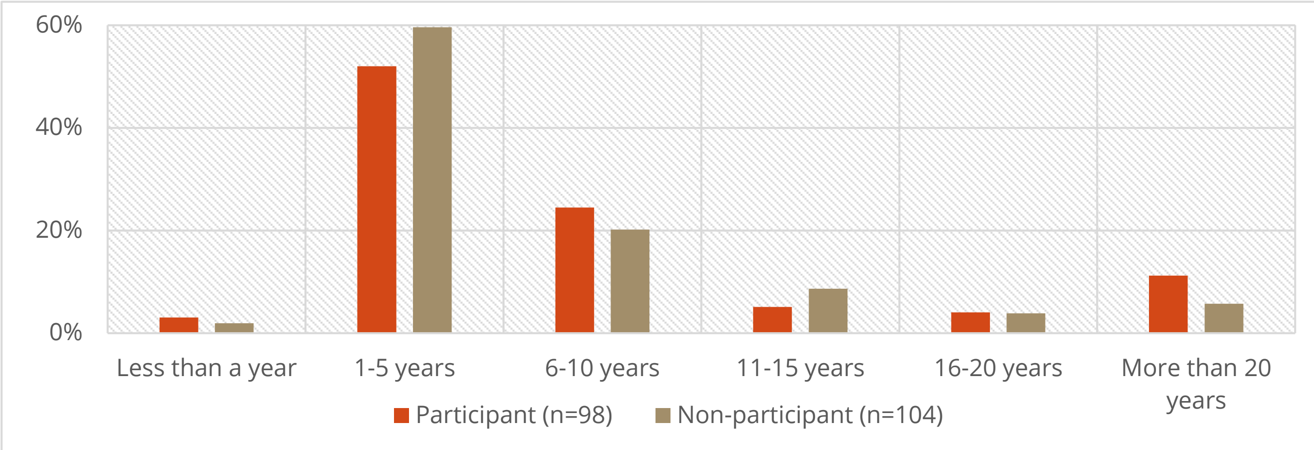


Figure 6-1 Length of Time at Current Residence

Figure 6-2 outlines building ages. Survey respondents reported residing in buildings of all ages. While there are some differences in the proportion of participants and non-participants in homes built before 1960 and buildings built between 1971 and 1980, none of these differences are statistically significant.

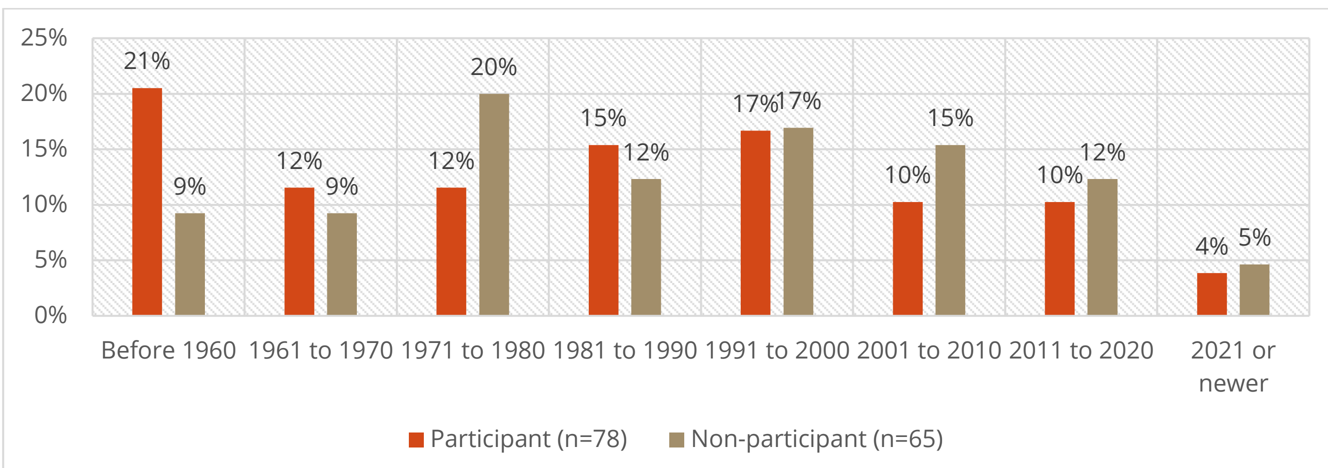


Figure 6-2 Building Age

Figure 6-3 displays the distribution of reported annual household income for the survey respondents.

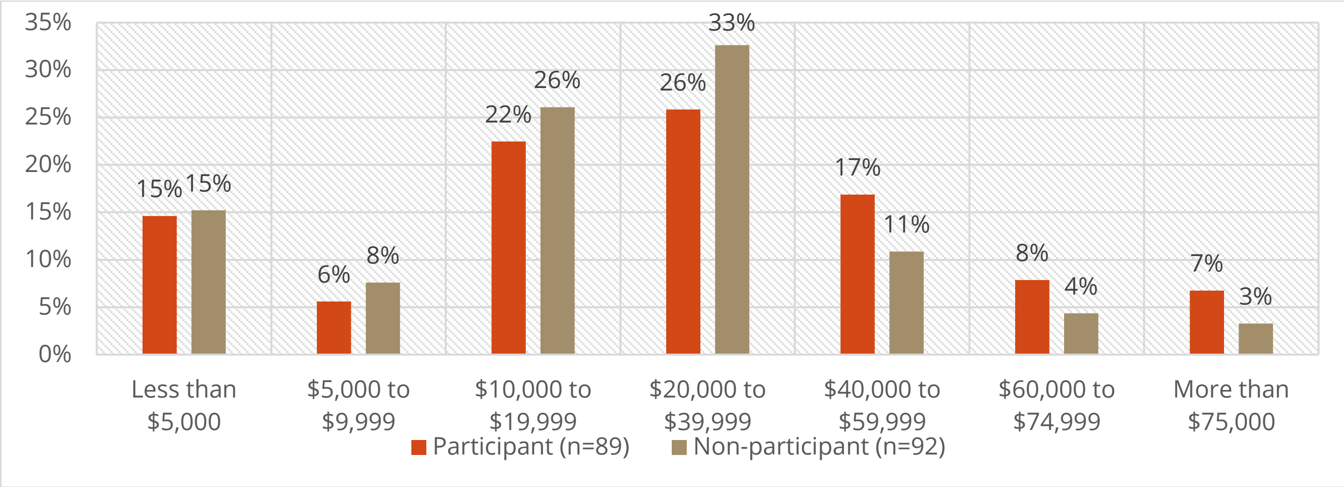


Figure 6-3 Annual Household Income

6.3.1.2 Public Assistance Enrollment

When asked about enrollment in public assistance programs, survey respondents reported the greatest level of enrollment in the Supplemental Nutrition Assistance Program (SNAP) or other kinds of food stamps (Table 50). There were no statistically significant differences in the proportion of participants and non-participants enrolled in public assistance programs. The high rates of enrollment in public assistance programs among the participant population indicate that the program has been successful in engaging with its target audience low-income households who are among those most likely to benefit from financial assistance.

Table 50 Assistance Program Participation by Response Type

Assistance Program	Participants (n=87)	Non-Participants (n=91)	Overall (n=178)
Section 8 Housing Vouchers	18%	20%	19%
SNAP/Food Stamps	83%	75%	79%
Medicaid	68%	68%	68%

6.3.1.3 Appliances and Energy Use

Survey respondents reported a variety of heating and cooling appliances. Gas furnaces were more common among participants (60%) than non-participants (43%). Space cooling appliances like central air conditioner (AC) and swamp coolers were common, with only four percent of respondents reporting no form of cooling.

Most respondents' large appliances were relatively new, with over half reporting appliances less than five years old, though many were unable to provide the exact age. The figure below outlines this information.

Figure 6-4 shows that of the survey respondents who were able to provide the ages of their large appliances, more than half of the appliances are less than five years old. While this may seem surprising given the age of respondents' buildings, it is reasonable to assume that respondents are more likely to remember recent appliance purchases. Furthermore, respondents who were unsure of their appliances' ages were excluded from this analysis, and their appliances are likely older.

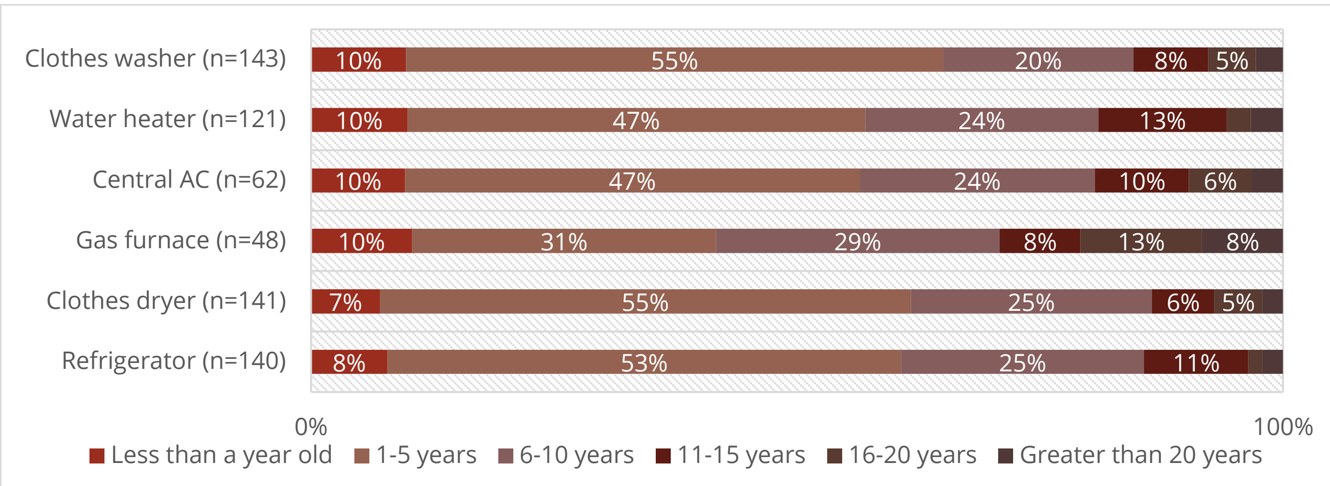


Figure 6-4 Appliance and Age

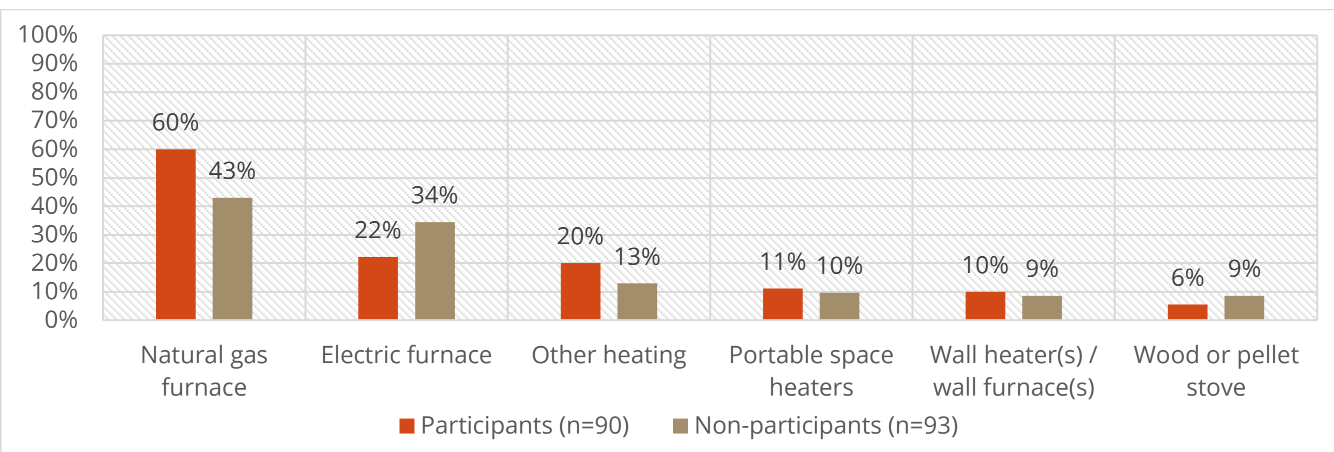


Figure 6-5 Top Five Heating Appliances (Multiple Responses Allowed)

Survey respondents were also asked about the ages of their large appliances, but a large portion of respondents were unable to provide this information. As a result, the appliance age saturation is based on respondents who could provide this information, potentially skewing the data.

Table 51 Percentage of Responses Regarding Unknown Appliance Age, by Appliance

Appliance	% of Respondents Who Chose "Don't know"	% of Respondents Who Chose "Don't know, but it was here when I moved in."
Gas furnace (n=94)	17%	32%
Air conditioner (n=112)	14%	30%
Water heater (n=203)	16%	25%
Refrigerator (n=201)	10%	20%
Clothes dryer (n=175)	9%	11%
Clothes washer (n=177)	10%	10%

6.3.1.4 Energy Burden

Survey respondents were then asked about their rent, electric bills, and gas bills. We used the responses to calculate two metrics to measure the financial burden of utility costs the percentage of monthly rent or mortgage spent on utility bills and the percentage of total income spent on utility bills (Figure 6-5 and Table 52). Excluded from this table are respondents who did not know their monthly utility bills and those whose gas and electric bills are included in their rent. Furthermore, only respondents who reported owning a gas furnace were asked about their monthly gas bill.

Table 53 shows monthly income, monthly rent or mortgage, and self-reported monthly energy bills. According to the United States Department of Energy (DOE), an energy burden of 6 percent or greater is considered a high energy burden.[10] Accordingly, the average survey respondent is in a household that is nearly experiencing high energy burden (Table 53). The greater the energy burden, the more likely households are to have trouble affording their energy bills.

Table 52 Average and Median Income, Bill and Payment

Expense	Average	Median
Monthly Household Income	$3,672	$2,500
Rent/Mortgage Payment	$1,020	$968
Monthly Gas Bill	$65	$50
Monthly Electric Bill	$134	$100

[10] US Department of Energy. Low-Income Energy Affordability Data (LEAD) tool. https//www.energy.gov/scep/low-income-energy-affordability-data-lead-tool#~text=Energy%20burden%20is%20defined%20as,a%20high%20energy%20burden%20household%20

Table 53 Energy Burden by Fuel Type

Energy Burden	Gas	Electricity
% of Household Income Spent	8.2%	14.0%
% of Rent/Mortgage Spent	9.0%	16.6%

6.3.1.5 Interactions with PNM

Respondents were asked about their interactions with PNM, with the majority having contacted PNM for billing assistance or outages. Non-participants showed significant interest in enrolling in a free energy efficiency program, with 60% indicating they would be extremely or very willing to participate.

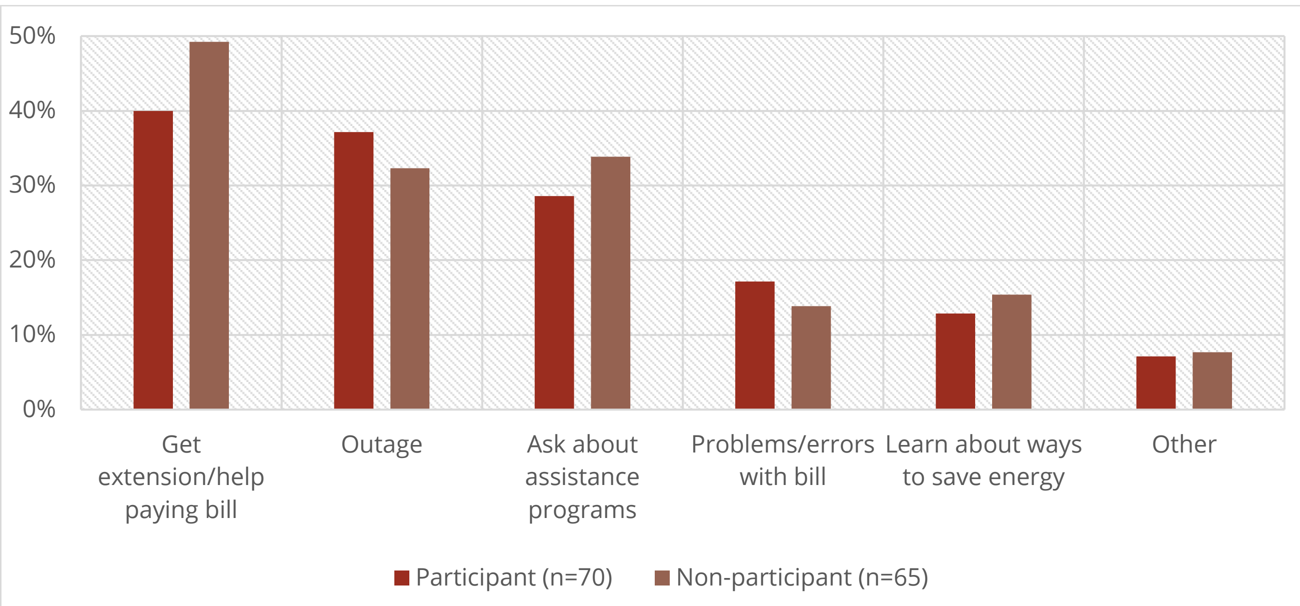


Figure 6-6 Interaction with PNM in the Past 12 Months

Non-participant survey respondents were asked how interested they would be in taking part in a PNM-sponsored program that provided them with free energy efficiency upgrades and equipment. Sixty percent of respondents indicated that they would be extremely or very willing to participate in this kind of program.

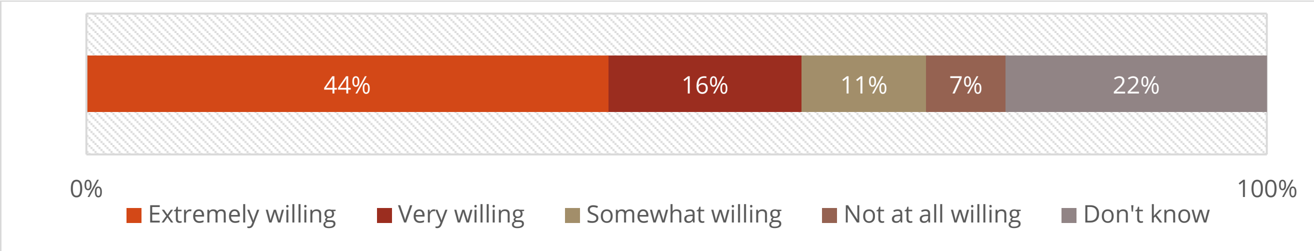


Figure 6-7 Non-Participant Willingness to Participate in a PNM-Sponsored Program (n=104)

Respondents who reported that they were "slightly willing," "not at all willing," or "don't know" about their willingness to participate in such a program were then provided with a list of factors that could make one hesitate to participate in a program similar to the one described. Respondents then reported whether the displayed factor was a small, medium, or large factor in their hesitancy.

Figure 6-8 shows that the largest barrier to participating in a PNM-sponsored program is that respondents do not want strangers in their home. Furthermore, factors such as believing there is nothing more they can do to save energy, already owning energy efficient appliances, or having energy bills that are low already are not significant factors in preventing program participation. This suggests that the Easy Savings program aligns with the respondents' needs, and they believe there are opportunities to save energy, and they are motivated to do so.

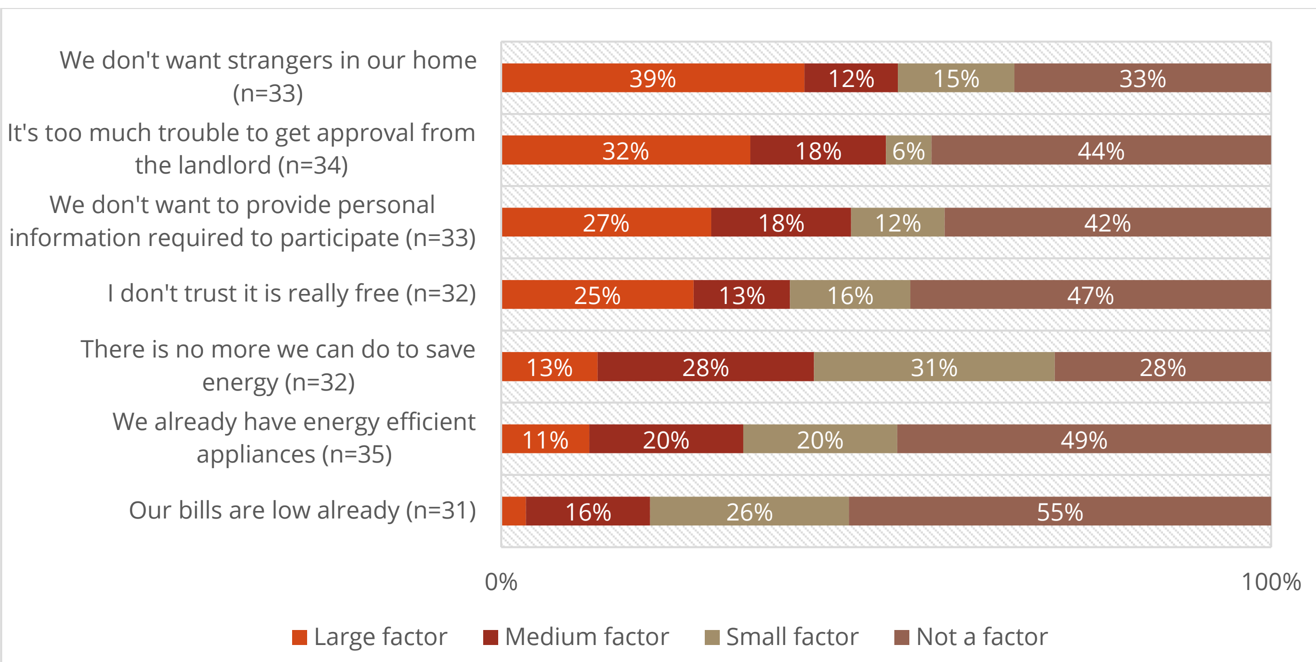


Figure 6-8 Barriers to Participating in a PNM-Sponsored Program

6.3.1.6 Market Rate NTG

The evaluation team proposes using the NTG ratio calculated from Residential Comprehensive Home Energy Checkup participants who received an apartment kit or move-in kit as a temporary NTG ratio for the Easy Savings Market Rate Expansion program until a program-specific NTG ratio can be calculated.

This NTG ratio was derived from 18 Residential Comprehensive Home Energy Checkup survey respondents who took part in the kit component of the program in 2024. The NTG ratio was developed using the self-approach method described in the Evaluation Methods section of the PY2023 and PY2024 PNM Energy Efficiency Program evaluation using participant phone survey data.

The evaluation team calculated a free-ridership rate of 0.4015 that resulted in an overall NTG ratio of 0.5985. This is like NTG ratios calculated in 2024 for residential lighting programs in New Mexico; the EPE residential lighting program has a NTG ratio of 0.51 and the SPS Lighting & Recycling program has a NTG ratio of 0.54. Given that the Easy Savings kits are composed of lighting and power strip measures among other measure types, this comparison is appropriate.

6.4 CONCLUSIONS AND RECOMMENDATIONS

6.4.1 Easy Savings Participant Survey

The survey results indicate that there is significant interest among low-income households in participating in energy efficiency programs. Barriers such as privacy concerns and the need for landlord approval should be addressed in future outreach efforts. Given the high energy burdens and the willingness to engage with PNM for financial assistance, PNM should continue refining its outreach and enrollment processes to ensure that the Easy Savings program reaches its full potential.

By implementing the above recommendations, PNM can enhance program participation and deliver greater value to the low-income community it serves.

Table 54 Easy Savings Net-to-Gross Findings and Recommendations

Finding	Recommendation
1. Demographic similarity No significant demographic differences were found between participants and non-participants.	Recommendation: Continue current marketing efforts while regularly reviewing demographic data to ensure inclusivity and broaden program accessibility.
2. Concerns about privacy and landlord approval Non-participants cited concerns about strangers in their homes and the need for landlord approval.	Recommendation: Emphasize in outreach materials that the program does not require strangers in the home or landlord approval. Limit the amount of personal information required.
3. Mobility and short-term residences do not have a significant number of participants and non-participants (50%) that have lived in their current residence for less than five years.	Recommendation: Highlight that the energy-efficient measures provided by the Easy Savings program are renter-friendly and transferable between homes, to appeal to more mobile households.
4. High energy burden Respondents reported spending a high percentage of their income and rent on utility bills.	Recommendation: Target households with a high energy burden by emphasizing the potential savings from program participation, especially in marketing outreach.
5. Interest in program participation 60% of non-participants are very or extremely willing to participate in an energy efficiency program.	Recommendation: Actively promote the program to non-participants who have expressed interest, and offer incentives for enrollment, particularly during customer service interactions.

6.4.2 Easy Savings Gross Impact

The Easy Savings Kit program is grouped within two kits the Electric Water Heating Customers and the Gas Water Heating Customers. These kits consist of different measures including Lighting, Air Sealing, and Domestic Hot Water measures depending on water heating fuel.

The kit calculations do not provide details for the type of heating or cooling equipment available, therefore the evaluation team utilized “unknown” factors from the NM TRM corresponding to the appropriate heating or cooling system. IL TRM measure savings do not adjust for NM conditions where evaluations teams use Cooling Degree Days (CDD) or heating Degree Days (HDD) ratios to accommodate. Furthermore, savings averages include territories outside of PNM territories where Albuquerque and Santa Fe are predominantly considered in verified savings.

Table 55 Easy Savings Evaluation Findings and Recommendations

Finding	Recommendation
1. The lighting savings calculator does not include interactive effects with HVAC heating and cooling loads due to the replacement of lighting equipment. A few sites utilized an HVAC energy factor, or Waste Heat Energy Factor, which accounts for adjustments to lighting savings. However, these factors only consider a single climate zone. The evaluation team utilized an average value across PNM territory climate zones (Albuquerque [0.91] and Santa Fe [0.89]), which is equal to 0.9.	Recommendation: Calculate interactivity between implemented lighting measures and on-site HVAC systems to ensure estimated savings accuracy. Provide details and references for factors (such as HVAC Energy Factor and Waste Energy factor) used to determine savings.
2. Reported savings for Silicone/Rubber Weatherstripping for Extra Large Gaps (17'), Foam Tape Windows & Doors, Foam Outlet Gaskets & 5 Foam Switch Gaskets, and Door Draft Stopper (flexible 36" with adhesive) measures refer to the Illinois TRM and do not represent New Mexico climate conditions. The evaluation team considered a ratio between Heating Degree Days (HDD) at 65OF for the climate zones in IL and NM to adapt accurate savings values.	Recommendation: If a measure is not described within the NM or Texas TRMs, the IL TRM is a valid methodology source. However, adjust for climatic differences using HDD ratios between Illinois and New Mexico as these two climates are significantly different.
3. Evolve MF Fixed Showerhead and Bathroom/Kitchen Aerator measure savings are calculated using the average savings values for all climate zones in New Mexico, including those that are not within the PNM jurisdiction. Evaluator verified savings are calculated from the average across Albuquerque and Santa Fe climate zones as those are within the PNM jurisdiction.	Recommendation: Ensure savings calculations utilize average climate zone factors only for areas within PNM jurisdiction (Albuquerque and Santa Fe) for savings calculations. This adjustment will align the savings calculations with the PNM service territory and ensure the values are representative of PNM operational conditions.
4. Bathroom Aerator and Kitchen Aerator measure savings calculations do not consider the Thermal Efficiency factor. Verified savings include the Thermal Efficiency factor as specified in the NM TRM.	Recommendation: Consider all factors and align savings methodologies with the NM TRM, when they exist, to increase the accuracy of ex-ante savings estimates.

7 Commercial SEM

The Commercial Strategic Energy Management (SEM) program is designed to support commercial customers in achieving sustained energy savings through operational and behavioral changes, ongoing energy monitoring, and engagement in strategic energy management practices. The program provides technical guidance, training, and tools to help businesses identify and implement low- and no-cost energy efficiency measures while fostering a culture of continuous improvement in energy performance. The evaluation of the Commercial SEM program includes net-to-gross (NTG) and process assessments, which analyze participant engagement, program effectiveness, and opportunities for enhancement. While the gross impact evaluation was originally planned for PY2024, it has been deferred to PY2025 to allow for a larger sample of sites with sufficient post-installation data, ensuring a more precise estimation of realized savings. The NTG and process evaluation activities conducted in PY2024 provide valuable insights into participant motivations, engagement strategies, and program delivery, which will inform the PY2025 implementation.

7.1 GROSS IMPACT

While an evaluation of gross savings impacts was planned for PY2024, the evaluation team determined that insufficient post-installation data was available to conduct a robust analysis within the required timeframe.

For a comprehensive and accurate gross impact evaluation, at least one year of post-installation data is necessary to assess the full energy savings impact across participating sites. However, as of April 1, 2025, when the PY2024 evaluation report is due, only two of the ten participating sites would have reached this post-installation milestone. Given the limited data available, the evaluation team determined that delaying the gross savings analysis to PY2025 would significantly improve the precision and reliability of savings estimates by incorporating a larger sample of sites with a full year of post-data.

By postponing the Commercial SEM Gross Impact Evaluation to PY2025, the evaluation team can include more participating sites in the analysis, leading to higher statistical confidence in realized energy savings estimates. A larger sample with more complete post-data will reduce variability, strengthen realization rate assessments, and provide more actionable insights for program improvements.

Although gross savings were not formally evaluated in PY2024, the evaluation team completed net-to-gross (NTG) and process evaluation activities during this program year. These insights should be integrated into the PY2025 implementation to improve the Commercial SEM program's effectiveness.

7.1.1 Realized Gross Impacts

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.)

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

The PY2024 energy savings for the Commercial SEM program are summarized in Table 56, and Table 57 shows peak demand savings. The program implementation team did not track peak demand savings, so the ex ante savings for this program are zero. That said, it would be virtually impossible for the program to save over 5,000 MWh of energy without producing any peak demand savings. To distribute each participant's energy savings throughout the 8,760 hours of a year, the evaluation team used load shapes from the Electric Power Research Institute (EPRI) and the National Renewable Energy Laboratory (NREL).[11] This approach relies on the assumption that demand savings are load-following. In other words, demand savings are assumed to be higher when participant loads are higher. We used an industrial load shape from EPRI for eight of the ten participants, a hospital load shape from NREL for one participant, and a flat load shape for one participant. Figure 7-1 shows what the industrial and hospital load shapes look like on a typical summer day. Realized gross kW savings are based on the expected impact between 5:00 and 6:00 PM on a summer weekday.

Table 56 Commercial SEM Savings Summary (kWh)

Program	Sub-Program	# of Projects	Expected Gross kWh Savings	Engineering Adjustment Factor	Realized Gross kWh Savings
Commercial Behavioral SEM		10	5,334,588	100%	5,334,588
Total		**10**	**5,334,588**	**100%**	**5,334,588**

[11] See https://loadshape.epri.com/enduse or https://comstock.nrel.gov/

Table 57 Commercial SEM Savings Summary (kW)

Program	Sub-Program	# of Projects	Expected Gross kW Savings	Engineer Adjustment Factor	Realized Gross kW Savings
Commercial Behavioral SEM		10	0	100%	702
Total		**10**	**0**	**100%**	**702**

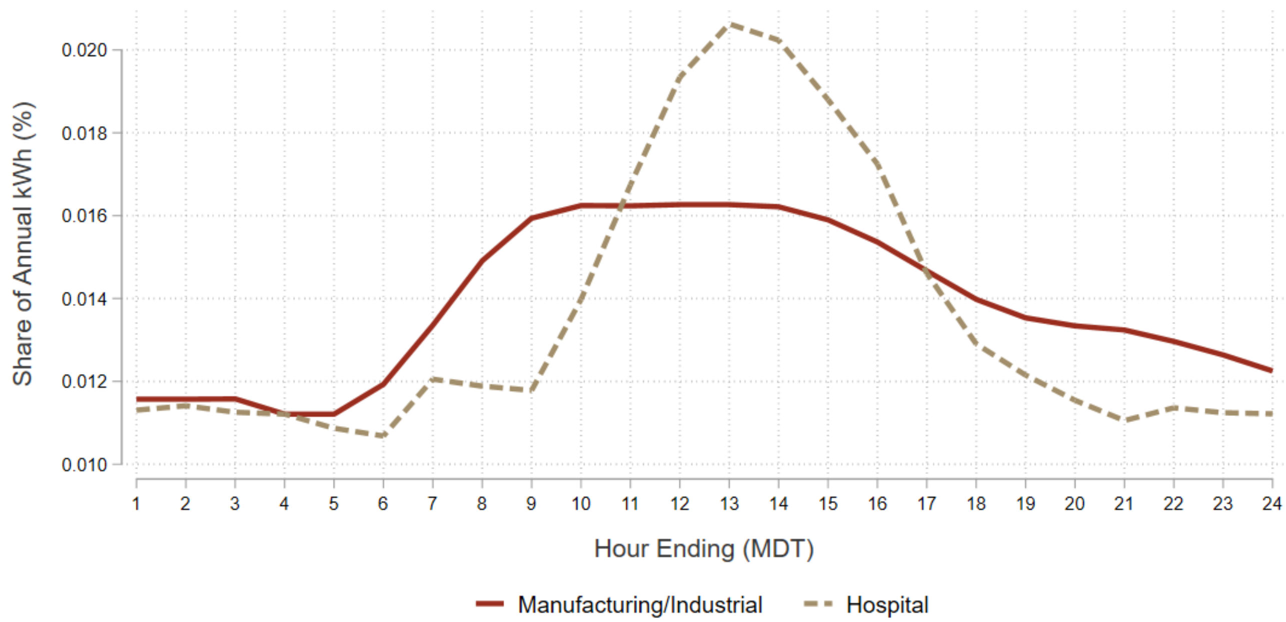


Figure 7-1 Manufacturing/Industrial and Hospital Load Shapes on a Summer Weekday

7.2 NET IMPACT

The Commercial Strategic Energy Management (SEM) program achieves energy savings through ongoing engagement, training, and operational improvements facilitated by program support. Unlike rebate-driven programs, where participant free ridership must be assessed, SEM savings are entirely program-driven, as businesses implement energy efficiency strategies, monitoring practices, and operational adjustments directly influenced by SEM participation. Because these savings result from active program intervention, an NTG ratio of 1.00 (100% attribution to the program) is applied, meaning all realized savings are considered fully attributable to SEM efforts. Program effectiveness is therefore evaluated through participant engagement metrics, energy performance tracking, and feedback from SEM cohort participants, rather than through traditional NTG adjustments.

7.2.1 Realized Net Impacts

The net-to-gross evaluation process calculates the Net-to-Gross (NTG) savings, which reflect the effectiveness of the program in achieving energy savings. The NTG ratio is calculated by comparing the Net Realized Savings (i.e., the savings that result directly from the program's influence on participants) to the Gross Realized Savings (the total savings from all measures installed from the impact evaluation above). This ratio accounts for factors such as free ridership (participants who would have implemented the measures without the program) and spillover (savings from participants who were influenced by the program but did not directly participate). The NTG ratio is crucial for assessing the overall impact of the program.

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

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

Table 58 and Table 59 summarize the PY2024 net impacts for the Commercial SEM program using the prospective NTG ratios calculated by the evaluation team during the PY2023 evaluation.

Table 58 Commercial SEM Net Impact Summary (kWh)

Program	Sub-Program	# of Projects	Realized Gross kWh Savings	NTG Ratio	Realized Net kWh Savings
Commercial Behavioral SEM		10	5,334,588	100%	5,334,588
Total		**10**	**5,334,588**	**100%**	**5,334,588**

Table 59 (kW) Commercial SEM Net Impact Summary (kWh)

Program	Sub-Program	# of Projects	Realized Gross kW Savings	NTG Ratio	Realized Net kW Savings
Commercial Behavioral SEM		10	702	100%	702
Total		**10**	**702**	**100%**	**702**

7.2.2 Net-to-Gross Ratio Update for PY2024

The program does not receive a Net-to-Gross (NTG) evaluation, so therefore the updated NTG ratio will continue as currently defined, 1.00 (100% net realization).

7.3 PROCESS EVALUATION

7.3.1 Participant Interviews Overview

The evaluation team conducted interviews with four of the ten participants who took part in the 2024 PNM Commercial Strategic Energy Management (SEM) program (herein referred to as, "the program"). The interviews were designed to investigate specific topics, listed below, while allowing for open discussion. Interviews typically lasted between 20 and 40 minutes. The interviews focused on the following topics:

- Participant background
- Program awareness and engagement
- Program process
- Program satisfaction

7.3.2 Participant Background

All four interviewed Commercial SEM participants were facilities managers at manufacturing companies, each overseeing large operations with at least 75 employees. Three of the four interviewees reported that their company owns the participating building(s), while one is currently renting.

Respondents' management roles at their facilities included being responsible for equipment and site maintenance and, in some cases, energy monitoring. Two interviewees were involved in their company's decision to participate in the Commercial SEM program, while two did not play a role in the decision. However, all respondents reported being directly involved in Commercial SEM program activities, working with engineers to explore ways to save energy, attending monthly meetings, and collecting and providing data for energy models.

7.3.3 Program Awareness and Engagement

When asked about how they learned about the program, three interviewees recalled hearing about it through PNM, with two specifically mentioning their PNM account manager. The fourth respondent did not remember the source.

One respondent was confident they had previously participated in PNM energy-saving programs while the remaining three were unsure.

All four interviewees cited reducing energy use as the primary driver for participating in the program, both for the reduction in energy costs and the environmental impact. One respondent specifically mentioned that their company's goal was to get to a zero-carbon footprint, which they believed the program could help them achieve. Beyond reducing energy use, respondents also mentioned other motivations for participating in the program. For example, one respondent noted that the professional support provided by PNM was a large driver since it would help provide more information on their energy usage.

Respondents reported implementing all types of different measures as part of their engagement with the program, with the most common measures focused on automating and centralizing systems as well as conducting leak audits.

7.3.4 Program Process

The respondents identified several key benefits associated with their participation in the program:

- A reduction in energy usage (3 out of 4 respondents)
- A better understanding of their facility's energy consumption patterns (3 out of 4 respondents)

Two respondents noted that their engagement in the program allowed them to gain insight into how their energy usage aligned with peak demand and production output. One respondent highlighted the program's application, which allowed data and energy savings to be easily visualized and shared across the company in real time.

One respondent had not yet realized a reduction in energy usage or gained deeper insights, attributing this to ongoing efforts to update their energy model to more accurately reflect the current state of their facility.

The primary challenge reported by interviewees was the time required to collect and update data for the application. Gathering this information was described as time-intensive and often involved coordinating with multiple people within the organization. However, respondents acknowledged the importance of maintaining accurate and up-to-date models, and the challenges associated with data collection were not viewed as significant obstacles.

7.3.5 Program Satisfaction

Overall, respondents expressed high levels of satisfaction with the program. When asked to rate their satisfaction with different aspects of the program, most respondents reported being very satisfied with their overall program experience, with only one respondent experiencing neutral feelings.

Respondents also reported being satisfied with the required time commitment. Additionally, three of the four respondents reported being very satisfied with the observed energy savings.

The one respondent who felt neutral about their overall program experience was actively working on achieving energy savings and was waiting to see the results. Despite their neutral stance, they still found value in working with a team and were open to continuing their participation and adapting to make the program work for them.

When asked for suggestions to improve the program, respondents had no specific recommendations. Instead, they reiterated their appreciation for the Commercial SEM team and the support they received. Two interviewees specifically emphasized the value of working with the staff and technical teams as part of the SEM program, with one of them indicating that the staff were "concerned with actually making it work and not just checking the box."

7.4 CONCLUSIONS AND RECOMMENDATIONS

Overall, the respondents are satisfied with the program, particularly appreciating the customized nature of the program and the feeling that they are making valuable changes. The primary challenge reported by respondents concerned the required time commitment and the difficulty of collecting the necessary data for the models. However, even respondents who were less satisfied with certain aspects of the program or found parts of it challenging indicated a willingness to continue their participation and fully engage with the process.

Table 60 contains two key findings from the interviewees, along with recommendations for improvement

Table 60 Commercial SEM Net-to-Gross Findings and Recommendations

Finding	Recommendation
1. Time Constraints in Data Collection Participants reported significant time constraints in gathering and updating the data required for the program's energy models, particularly for companies undergoing facility changes or restructuring. The data collection process was described as resource-intensive, often requiring coordination across multiple departments.	**Recommendation:** To mitigate the challenges associated with data collection, it is recommended that additional support be provided to participants, particularly during periods of business transition. One potential solution is to implement a tiered priority system for data fields, allowing participants to focus on the most critical data points first. This could simplify the process and expedite model development.

Finding	Recommendation
2. Value of Professional Support Participants consistently expressed appreciation for the professional support provided by PNM staff throughout their participation in the program. This support was viewed as a key factor in their engagement and satisfaction with the program.	**Recommendation:** To enhance participant engagement and attract new participants, it is recommended that the professional support aspect of the program be prominently featured in marketing and outreach materials. Emphasizing the availability of dedicated technical support will underscore the value of the program and appeal to potential participants seeking expert guidance in managing their energy usage.

8 Load Management as a Resource

8.1 INTRODUCTION

On January 31, 2018, the New Mexico Public Regulation Commission (NMPRC) issued a final order in PNM's 2017 energy efficiency case that directs the independent program evaluator for PNM's energy efficiency and load management (LM) programs to do the following:

> *In PNM's future M&V reports, the independent evaluator shall verify that load reductions from deployment of PNM's LM programs avoided or offset the need for or use of additional peaking units or power purchases or shifted demand from peak to off peak period.*

The evaluation team concludes that PNM's load management programs served as a capacity resource that avoided the need for additional supply-side peaking capacity in 2024. While the summer of 2024 had fewer extremely hot days than 2023, it still had numerous days of nearly record-breaking gross demand. However, PNM only called one event based on resource supply constraints in PY2024. This event occurred on July 31st from 5:00 PM to 9:00 PM (MDT). Three additional one-hour test events were called to prepare for the LM season. The fact that the grid called for a single event – and the timing of that event – illustrates the changing nature of reliability risk, also known as "loss load risk", or the risk that demand may exceed supply. This is due to the addition of new renewables, especially solar, shifting net demand (demand minus zero marginal cost renewables) away from summer afternoons and towards the summer evenings. In fact, PNM's most recent integrated resource plan (IRP) predicts that the highest levels of loss load risk will be in the winter mornings by 2040.[12]

Figure 8-1 illustrates the benefits of the load management programs on system load on the only non-test event day in 2024 (July 31st). On this day, metered gross load on PNM's system peaked at 2,012 MW during hour ending 7:00 PM (MDT). If we add back verified estimates of demand response performance, adjusted for line losses, the daily peak would have been 2,060 MW during hour ending 6:00 PM (MDT). The load management programs flatten out system loads at the top of the post-solar evening peak, which reduces the quantity of expensive and emissions-intensive peaking resources that are needed to balance the supply and demand.

[12] 2023 Integrated Resource Plan, section 7.3.5 https://www.pnmforwardtogether.com/assets/uploads/PNM-2023-IRP-Report-corrected-2023-12-18.pdf

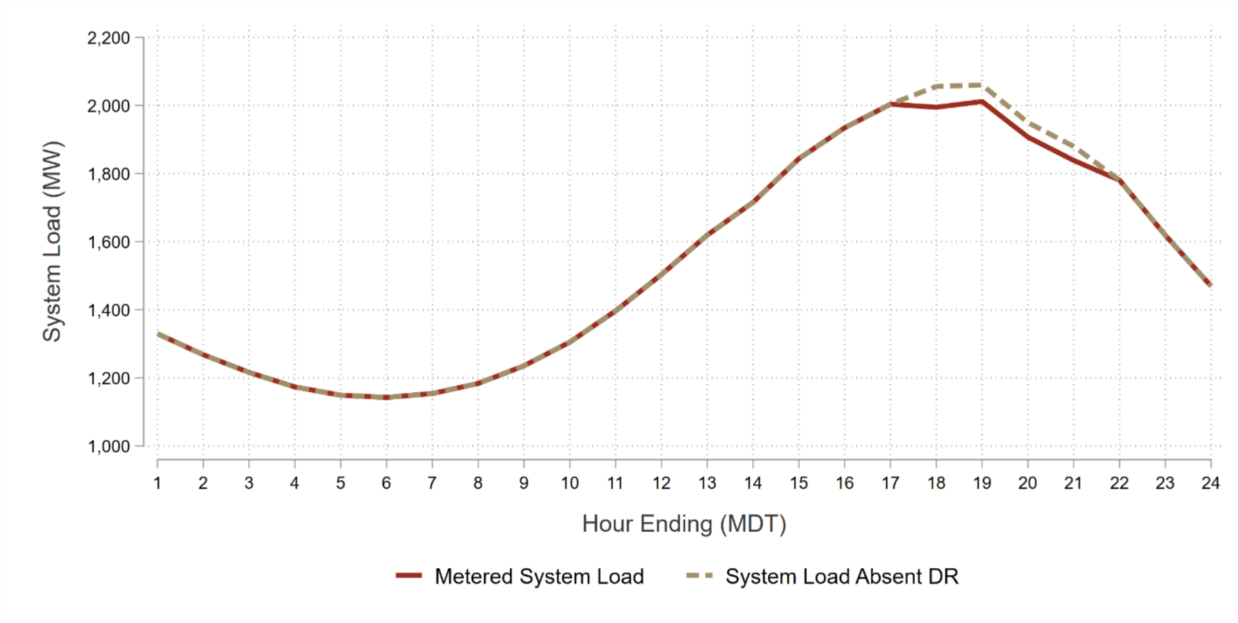


Figure 8-1 PNM System Load July 31, 2024

Details on the M&V methods used for PNM's load management programs can be found in Section 9 - Load Management.

8.2 LOAD MANAGEMENT PROGRAMS AS A RESOURCE

8.2.1 The Difference between Energy Efficiency and Demand Response

PNM's demand side management portfolio includes both energy efficiency and demand response programs. While these two categories of programs both fall under the umbrella of demand side management, it is important to understand some key distinctions with respect to the nature of the resource provided. The primary objective of energy efficiency programs is to save energy. To the extent that the affected end-uses operate coincident with the system peak, energy efficiency measures will also provide capacity benefits. Demand response programs, on the other hand, are designed to provide capacity benefits. Their value lies in being able to reduce load quickly to balance the grid if needed. The two primary benefit streams from demand side management programs are:

- **Capacity (kW)** – Capacity is the ability to provide energy when needed and assures that there will be sufficient resources to meet peak loads. In 2024, the avoided cost of capacity for demand response is $135.53 per kW.

- **Energy (kWh)** – Energy is the generation of electrical power over a fixed time period. The avoided cost of energy is largely the cost of the fuel not burned in the marginal generating unit. In 2024, the avoided cost of energy is $0.013 per kWh.

Demand response events typically result in net energy savings because the increased consumption following an event does not totally offset the reduced usage during the event. However, the distribution of benefits across resources is dominated by capacity. Table 61 shows the energy and capacity benefits for the two demand response programs in 2024. Energy benefits amounted to less than one tenth of one percent of the Utility Cost Test (UCT) benefits, while capacity benefits accounted for more than 99 percent of the UCT benefits. This is different from PNM's energy efficiency programs, where capacity accounts for less than two-thirds of UCT benefits. The distribution of PNM's energy and capacity benefits for energy efficiency programs is somewhat atypical in the industry due to its low avoided cost of energy assumptions and high avoided cost of capacity forecast.

Table 61 2024 Demand Response Program Benefits

Program	Energy Benefit ($1,000)	Capacity Benefit ($1,000)	Percent Capacity
Power Saver	1.2	5,484	99.98%
Peak Saver	1.2	1,881	99.94%
Energy Efficiency Programs	8,951	15,273	58.61%

Another important distinction between energy efficiency and demand response is that demand response is a dispatchable resource and energy efficiency is not. When PNM supports an energy efficiency measure, the demand savings will remain present until the equipment reaches the end of its useful life. Demand response programs like Peak Saver and Power Saver are event-based resources that can be dispatched when needed. A critical detail to understand about dispatchable demand response resources is that they provide capacity benefits even if no events are called in a season. How often demand response is dispatched and which units in the stack are displaced have almost no material impact on the cost effectiveness of demand response programs. In summer 2024, Peak Saver and Power Saver were dispatched due to a resource supply constraint just once (July 31st).

8.2.2 Understanding the Timing of System Peaks

Figure 8-2 provides annual load duration curves for the top 100 hours of each year. Even within this very narrow portion of the year (1.1 percent of the hours in a year), the load duration curve has a steep slope, especially at the very top. In 2024, there was a 61 MW difference between the top hour and the tenth-highest load hour for the year. These top ten hours were spread across six different days, meaning these very high peaks last for no more than two to three hours in a single day.

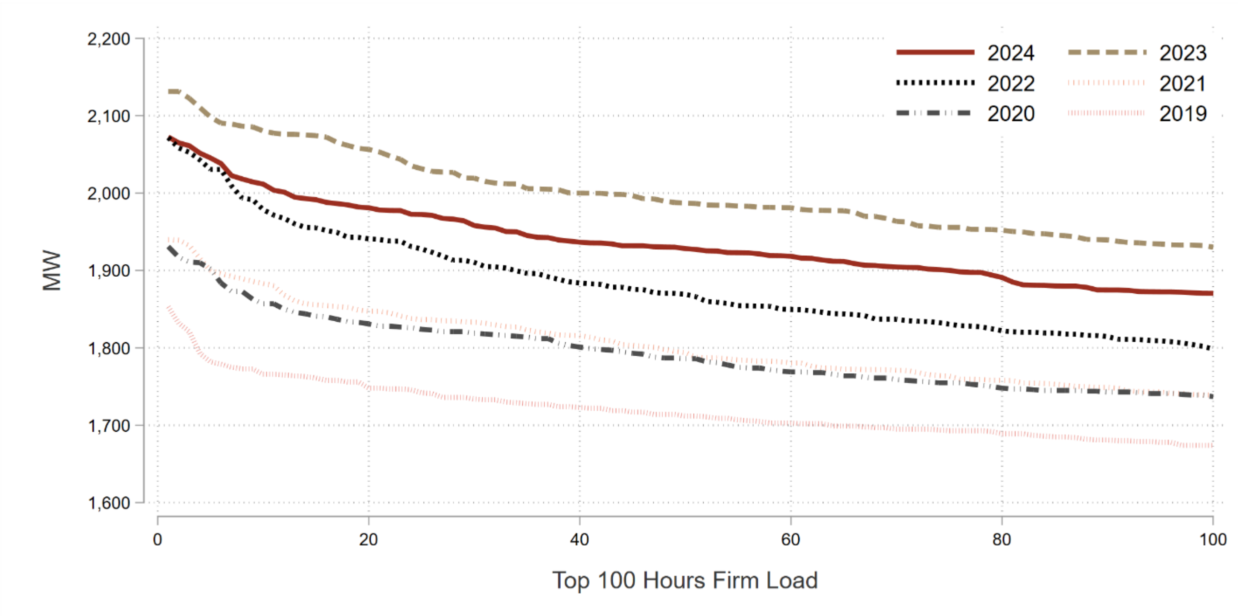


Figure 8-2 Top 100 Hour Load Duration Curves 2019-2024

Dispatchable summer capacity resources like Peak Saver and Power Saver are a good fit for the PNM system because the largest peaks occur exclusively on specific afternoon and early evening hours in the summer and last only for a few hours at most. Figure 8-3 shows hourly load shapes for PNM's top ten system load days of the last thirteen years. All ten of these days were weekdays. Seven of the top ten load days were in 2023, two were in 2024, and one was in 2022. Most of the daily peaks occur during hour ending 5:00 PM or 6:00 PM (MDT). The 2024 event day (July 31st) had the 21st highest peak among all days in the last thirteen years. If the verified estimates of demand response performance are added back to the system load, then the peak for July 31st, 2024, would rank as the 11th highest peak.

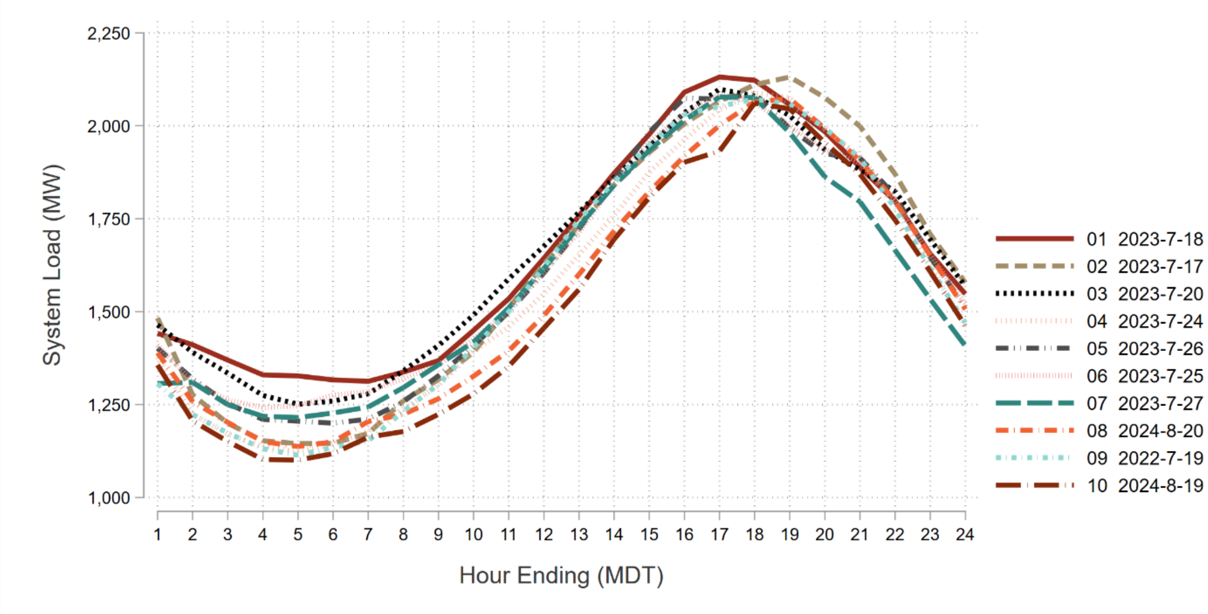


Figure 8-3 Load Days from Top 10 System Peaks 2012-2024

The reserve margin requirement is above and beyond the forecasted top hour for all of the days in Figure 8-3.[13] A supply-side resource like a natural gas peaking plant built to satisfy peaks plus reserve margin would operate very infrequently, which is not a cost-effective way to operate a power plant. Furthermore, PNM established a goal to be carbon-free by 2040. A fossil fuel peaking resource would be both economically challenged and work against PNM's stated decarbonization goals. Demand response resources work best when dispatched infrequently because it reduces fatigue of participants and limits the financial incentive the utility needs to provide. DR programs like Peak Saver and Power Saver are both aligned with PNM's environmental goals and avoid the costly capital investments of new generation resources.

8.2.3 The Role of Renewables

The value in load management programs lies in being able to dispatch the resources when needed, and PNM staff are in the best position to determine when the assets are needed from an operational standpoint. Ideally, load management programs operate like an additional peaker plant and are only deployed when most needed. Ideally, these events should be called when the grid is under the most stress, when demand is highest, and supply can barely meet demand.

[13] PNM planners maintain a reserve margin of resources above and beyond forecasted demand to ensure expected levels of reliability. In the 2023 IRP, PNM proposed a minimum reserve margin of 16 percent. This means that although peak demand was forecast at 2,018 MW in 2024, planners needed at least 2,381 MW of capacity to satisfy resource requirements.

In the past, those times would have been in the afternoons on the hottest days. But in 2024, there were a handful of days with higher demand peaks than July 31st that did not trigger an event, and the event that was called wasn't called during the hottest part of the day but instead was called from 5:00 PM to 9:00 PM (hour ending 18 to 21). Why weren't events called on August 19th or 20th when peaks were higher? The answer is likely related to the availability of zero marginal cost grid-scale renewables. In the left panel of Figure 8-4, the hourly load of the five days in 2024 with the highest peak are compared. The load shape for each day is similar. However, when grid scale solar and grid scale wind energy are subtracted from the system load (right panel), July 31st becomes an outlier. The evening net load peak on July 31st is higher and lasts longer than the other high load days, largely because the evening wind production is much lower. Zero marginal cost renewables make the system load even more peaky and difficult to predict. This makes the flexible dispatchability of demand response events more valuable when the sun doesn't shine or the wind doesn't blow.

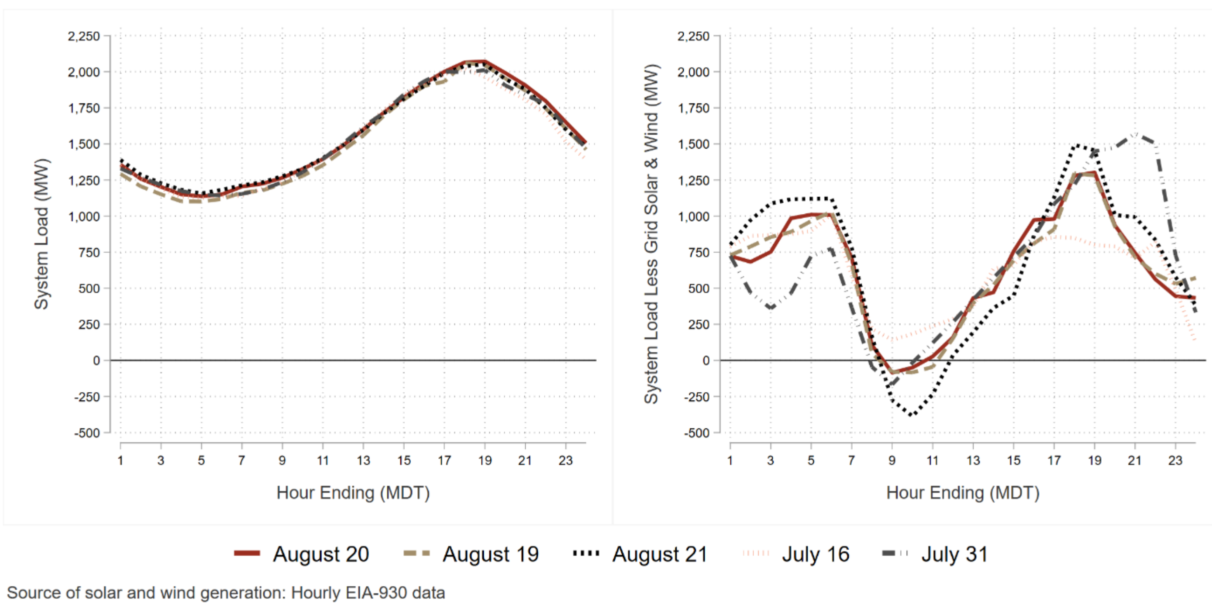


Figure 8-4 Five Highest Demand Days of 2024

According to the 2023 IRP, Utility-Scale Solar PV Capacity rose from approximately 400 MW in 2022 to approximately 800 MW in 2023 to 1,500 MW in 2024. EIA data confirms that this has indeed taken place (Figure 8-5). This is equivalent to a reduction in demand during the afternoon of spring and summer months of 1,500 MW, meaning that despite record gross demand, net demand was still manageable without deploying DR events. Events will continue to be called later into the evening hours and may not necessarily be called on the hottest days. Increasingly, load management events may be tied to low renewable production rather than high gross loads.

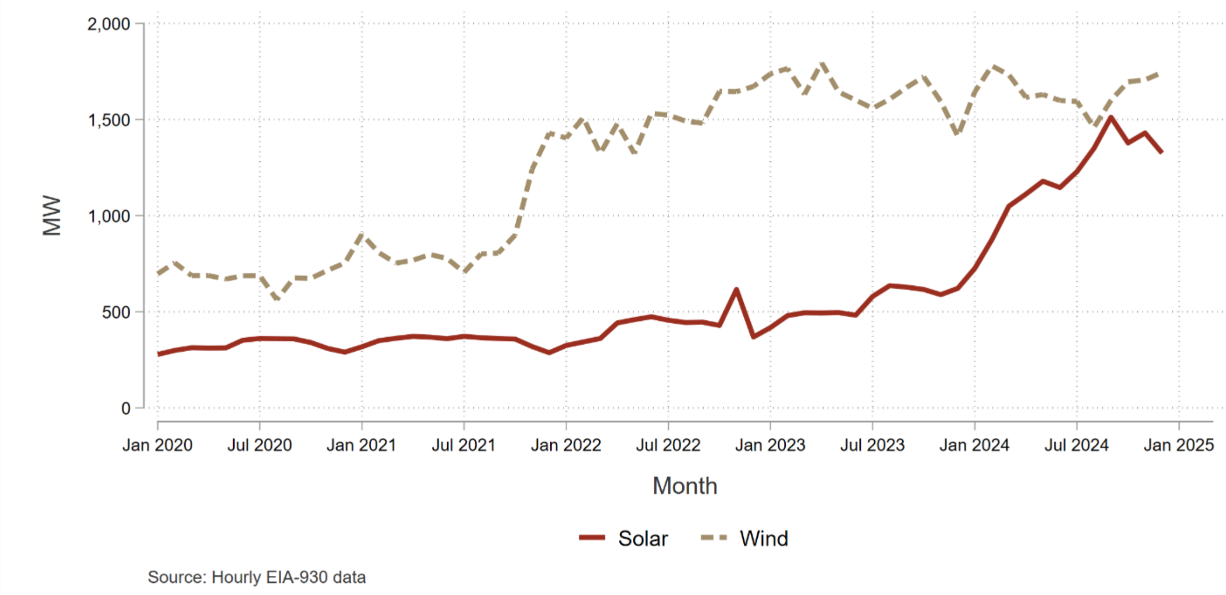


Figure 8-5 Monthly Max Grid Generation by PNM

While net demand is not resulting in many more called events, DR events could still increase in the short term because gross demand is growing independent of weather and climate trends. While 2024 had few very hot days where the maximum temperature was above 100 degrees (one in 2024 vs twelve in 2023), Figure 8-6 shows that the many days in the mid and upper 90s resulted in higher demand than in any prior year. This trend can also be seen in Figure 8-7, which illustrates the relationship between PNM system daily peaks (2019-2024) and the maximum daily temperature in Albuquerque (from KABQ's weather station) for the months of June through September.

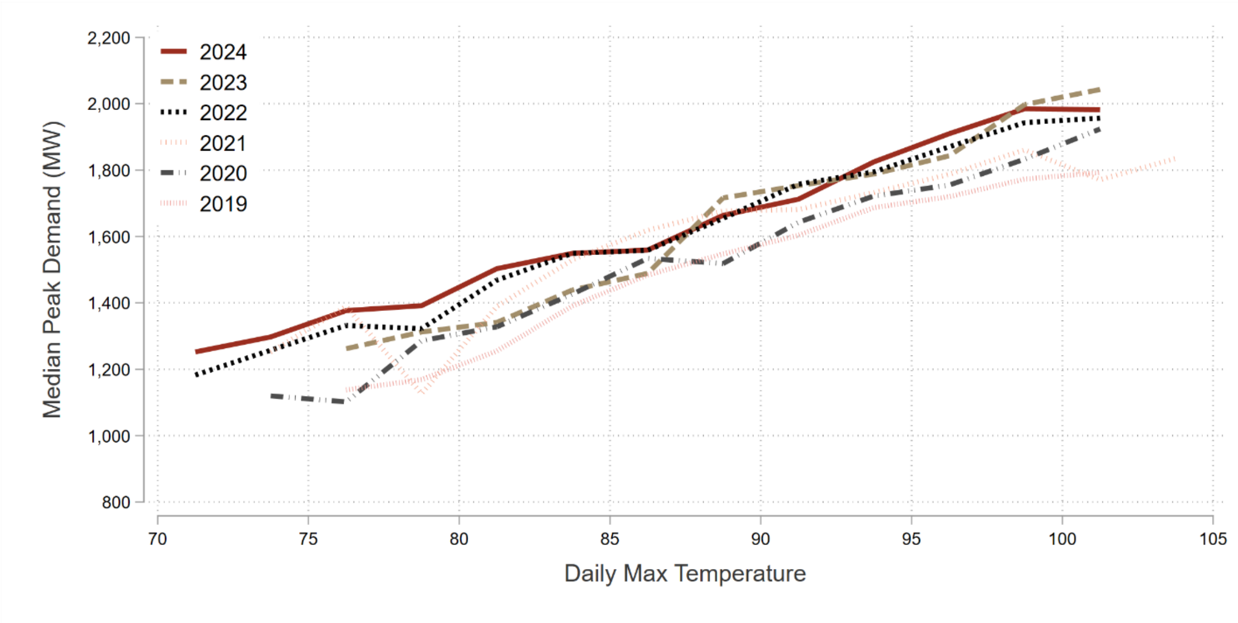


Figure 8-6 Median Daily Load Maximum by Daily Max Temp

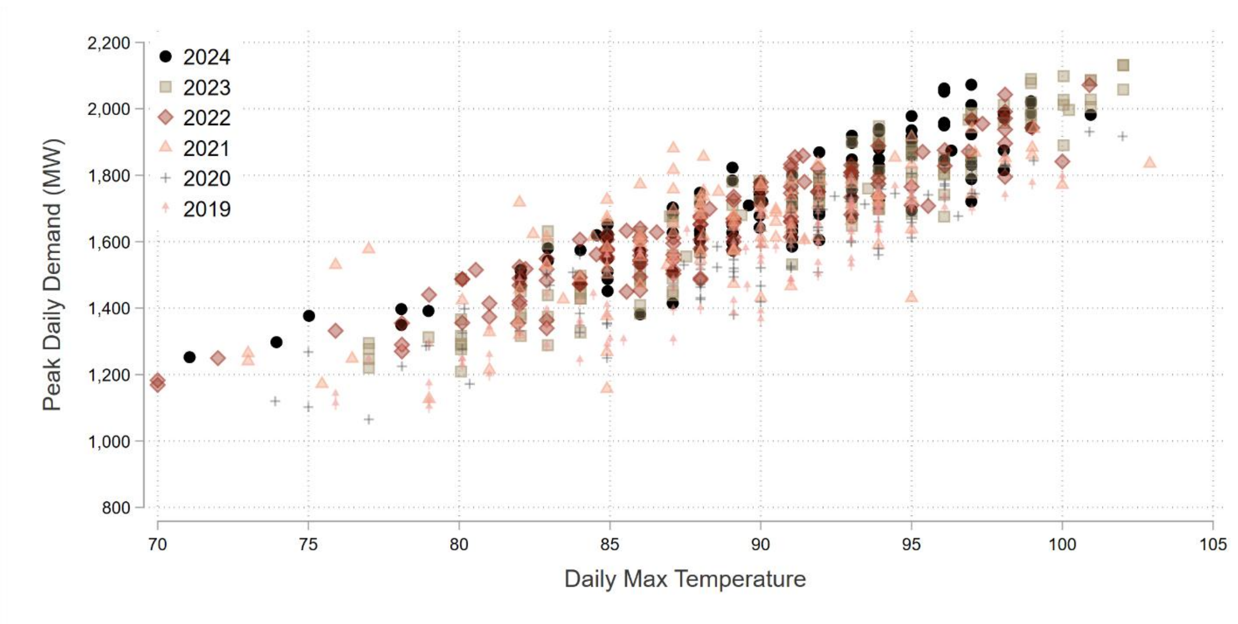


Figure 8-7 Daily PNM System Load and Temperature by Year, June-September

If this growth in gross demand continues, and temperatures above 100 degrees continue to occur more frequently, DR events could be the key to preventing the need for more thermal generation capacity to be built or kept online past its retirement date. On the other hand, if renewables can continue to go online at the planned speed, net demand will stay steady, and DR events may only be needed sparingly when renewables underdeliver due to weather conditions or base load being offline due to maintenance. Moving forward, we expect summer load management events to be:

- Dispatched later in the evening, targeting the net peak, and also later in the summer as solar production wanes
- Shorter in duration as net peaks tend to be sharper than gross peaks, although evening events may continue to last longer during nights with low wind
- Coincident with evenings with low amounts of wind generation

8.2.4 Winter Demand Response

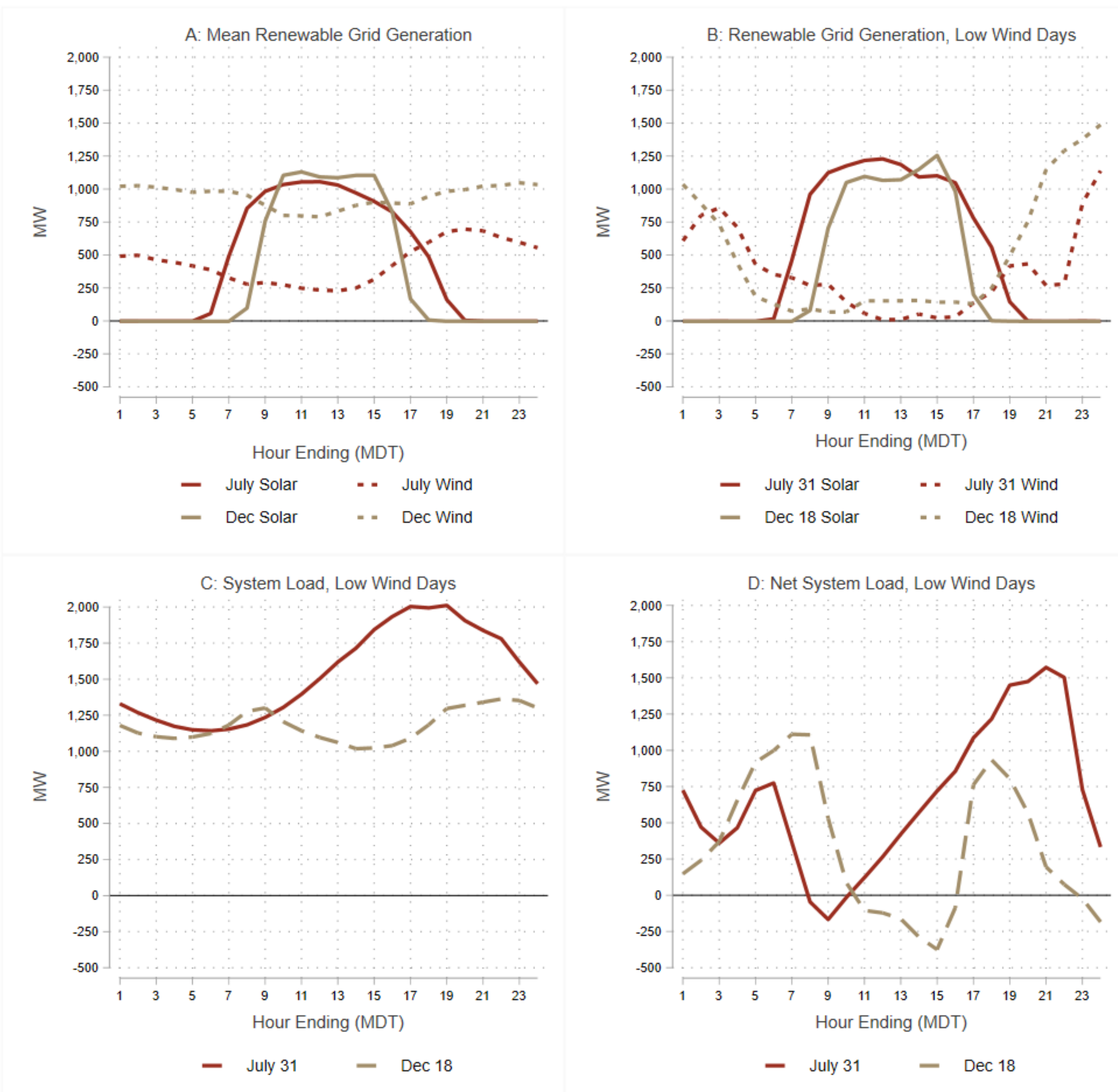
For the first time in 2024, Peak Saver events were able to be called outside of the summer months of June-September. This coincides with a record level of renewable generation. The risk of winter peaks was pointed out in the 2023 IRP:

> *At high penetrations of wind and solar generation, the greatest reliability risks occur during sustained periods of low renewable production (possibly lasting days to weeks); these events tend to occur in winter months, even when demand for electricity may be lower.*

While a winter test event was run in the early afternoon of October 10th, no winter event was called due to capacity constraints during 2024. Figure 8-8 illustrates how a winter event could be useful:

- **Panel A** shows average hourly grid scale solar and wind generation for July 2024 and December 2024. Wind generation is much higher during the winter, while summer wind generation has a noticeable increase in the evening compared to the day. Solar power starts earlier and lasts longer in the summer (the higher peak for solar in the winter is likely a result of more solar coming onto the grid between July 2024 and December 2024).
- **Panel B** compares renewable generation on July 31st (event day) and December 18th. December 18th had the second largest net demand in hour ending 8 AM all year, and the wind simply didn't blow for most of the day, just like during the July 31st event.
- **Panel C** compares hourly system loads on July 31st and December 18th. System loads look similar in the early morning, but winter demand does not rise in the late morning like it does in the summer. In fact, it dips a bit due to residential customers leaving for work or school and behind-the-meter solar increasing. As a result, winter days like December 18th have a dual peak in the morning and a peak in the evening.
- **Panel D** shows system loads on July 31st and December 18th with renewables subtracted out. The daily peaks are more drastic because the normal wind generation was missing on December 18th before and after the solar ramp-up and ramp-down. These sharp peaks offer good opportunities for DR events. Because the system load in the winter is flatter during the

day, peaks are more likely to happen in the morning than in the summer. Note the peak of the net demand on December 18th is still a few hundred MWs below the net peak on July 31st. This means winter events may not be as valuable in today's system, but as noted in the 2023 IRP, reliability risk will gradually shift to the winter season as renewable generation increases and customers electrify space heating and water heating end uses.



Source of Renewable Generation: Hourly EIA-930 data

Figure 8-8 Summer vs. Winter, 2024

In the future, we expect winter events to:

- Occur when renewable output is down due to cloud cover or a lack of wind
- Be called earlier in the evening than during the summer due to the sun setting earlier in the day
- Possibly be called in the morning

8.2.5 Expected Resource Capability

Because the capacity benefits are the dominant benefit stream for demand response programs, the primary research question for evaluation is "what kW reduction can each program be expected to provide if dispatched during system peak conditions?" This is why readers will note that the evaluation results in the Power Saver and Peak Saver impact results subchapters focus on inferences about expected capability, or *ex ante*, impacts at peaking conditions rather than simple averages of observed impacts during 2024 events. We analyzed Power Saver results from 2015 to 2024 to develop a time-temperature matrix and estimate the expected impact from 5:00 PM to 6:00 PM at 100 degrees Fahrenheit (F). Our verified savings analysis of PNM's load management program performance estimates approximately 56 MW of load reduction capability across Power Saver and Peak Saver at the system level.

The avoided cost of capacity value used to monetize capacity benefits from demand side management programs is $136/kW-year in 2024. This value is consistent with projections the evaluation team has seen in other jurisdictions of the cost a new combined-cycle natural gas plant would need in order to recover its capital investment and fixed costs, given reasonable expectations about future cost recovery over its economic life.[14] The underlying premise is that the availability of PNM's demand response programs is allowing the utility to defer or avoid the construction or purchase of additional generation capacity. However, if very high demand days are more frequent with climate change, then more events will need to be called, or the demand response programs will no longer be able to avoid adding more capacity, and their value may erode.

Looking forward, the current load management programs expire after 2026 and can be extended for another three years after that. The 2023 IRP counts them as having an Effective Load Carrying Capacity (ELCC) of 23 MW, although that is a very conservative estimate, as the non-test event in 2024 produced between 61 and 41 MW of savings across its four hours. This resource will continue to

[14] In a low-carbon planning consistent with the New Mexico Energy Transition Act, an energy storage device or combustion turbine may be more appropriate alternative sources of generation capacity.

serve PNM well when it is needed, preventing the need for maintaining expensive peaker plants that may only be needed twice a year.

8.2.6 Limitations of Load Management Programs

Load management programs do have limitations, as reflected in the 70% ELCC assigned to the LM programs in the PNM's 2023 IRP, and the Power Saver program can only be dispatched for several hours at a time and is limited to 100 total hours during non-holiday weekdays in the summer months to avoid fatigue. Starting in 2024, the Peak Saver program is available on holidays, weekends and non-summer months for a total of 300 hours, but at a reduced commitment of 67% of the summer events. This change to the Peak Saver program should improve its ELCC in the next IRP.

Like most vertically integrated utilities, PNM treats energy efficiency and demand response differently in its demand forecast and resource stack. Incremental energy efficiency (because it is not dispatchable) lowers the energy and demand forecast. Demand response programs (because they are dispatchable) are listed alongside power plants as resources available to meet demand. Like traditional supply-side resources, demand response programs have a position in the dispatch stack. Although there is no fuel cost associated with demand response programs, there is a definite relationship between how often demand response participants are dispatched and the cost of the resource.

9 Load Management

PNM offers two load management programs – Peak Saver and Power Saver. Whereas the purpose of most of PNM's programs is to provide energy efficiency and peak demand savings, the load management programs are capacity resources that can be dispatched when system loads are peaking to avoid the need for additional supply-side peaking capacity. Peak Saver serves a mix of commercial and industrial customers (including schools, retail stores, and several large industrial sites), and Power Saver primarily serves residential customers. Aside from test events, the programs were dispatched one time during the summer of 2024. The following sections detail our evaluation methods and findings for PNM's load management programs.

9.1 POWER SAVER

Power Saver is a direct load control program offered to residential, small commercial (< 50 kW), and medium commercial (50 kW – 150 kW) Public Service New Mexico (PNM) customers. There are six program components:

- Residential Digital Control Unit (DCU)
- Small Commercial DCU
- Medium Commercial DCU
- Residential Two-Way Smart Thermostat
- Residential Bring Your Own Thermostat (BYOT) – Honeywell
- Residential BYOT – Nest

To facilitate load control in the DCU program components, participants must have a digital control unit attached to the exterior of their air conditioning unit. This device can receive a radio signal that turns off the unit's compressor for an interval of time. For the smart thermostat components, load curtailment is achieved via communication with the Wi-Fi-enabled thermostat. Residential and small commercial participants receive an annual $25 incentive for their participation. Medium commercial participants receive an annual incentive of $9 per ton of refrigerated air conditioning.

There were two Power Saver events during the summer 2024 demand response (DR) season, which began May 15th and ended September 30th. Table 62 summarizes the 2024 events. For all segments other than Residential BYOT, each event used an adaptive 50% cycling strategy where curtailment is based on the runtime in the previous hour. For the BYOT Honeywell group, devices are curtailed using a 50% cycling strategy performed by the vendor. For the BYOT Nest group, thermostat setpoints are increased by three degrees.

Table 62 2024 Power Saver Event Summary

Date	Day of Week	Start Time (MDT)	End Time (MDT)	Daily High (°F)
6/13/2024	Thursday	2:00 PM	3:00 PM	101
7/31/2024	Wednesday	5:00 PM	9:00 PM	97

The average load reduction delivered by the Power Saver program during summer 2024 event hours was 40.5 MW. Under planning conditions, we estimate the load reduction capability of the Power Saver program to be 41.7 MW. The realized gross energy savings for summer 2024 was 91 MWh. The energy savings estimate for the program accounts for the load shed during the event and the post-event snapback and is a function of the number of events called.

By segment, Table 63 summarizes our findings for the 2024 summer.[15] Multiplying our per-device reduction estimates by the number of devices in each segment leads to a 2024 average total estimated load reduction of approximately 30.89 MW, 0.62 MW, 0.28 MW, 3.08 MW, 3.16 MW, and 2.44 MW for the Residential DCU, Two-Way Smart Thermostat, BYOT Honeywell, BYOT Nest, Small Commercial, and Medium Commercial segments respectively. In aggregate, the average 2024 performance is 40.46 MW. This is approximately 80% of Itron's estimate for the 2024 season (50.56 MW). Note Itron does not report on energy savings.

Table 63 Power Saver Evaluation Results

Segment	Devices	Metric	Reported	Evaluated	Realization Rate
Residential DCU	53,037	kW / device	0.72	0.58	80.9%
		Total MW	38.19	30.89	
		Total MWh	---	55	
Two-Way Smart Thermostats	653	kW / device	1.38	0.94	68.4%
		Total MW	0.90	0.62	
		Total MWh	---	2	
BYOT Honeywell	585	kW / device	0.77	0.48	62.1%
		Total MW	0.45	0.28	
		Total MWh	---	1	
BYOT Nest	3,305	kW / device	1.27	0.93	73.5%
		Total MW	4.20	3.08	
		Total MWh	---	11	
Small Commercial DCU	6,091	kW / device	0.54	0.52	96.0%
		Total MW	3.29	3.16	
		Total MWh	---	12	
Medium Commercial DCU	2,994	kW / device	1.18	0.81	68.9%
		Total MW	3.54	2.44	
		Total MWh	---	10	
Portfolio	---	Total MW	50.56	40.46	80.0%
		Total MWh	--	91	--

[15] The numbers in this table reflect operability and online adjustments. For the DCU components, there is an 86% adjustment factor to account for devices that weren't operable. For the thermostat components, there are online adjustment factors (78% for Two-Way, 76% for BYOT Honeywell, and 88% for BYOT Nest).

The last column in Table 63 shows realization rates for each Power Saver segment. Key realization rate drivers include

- Itron did not adjust their DCU results to account for inoperable devices, and they did not adjust their thermostat results to account for offline devices. The Evaluation Team did make these adjustments.
- In converting AC runtime data to load for the two BYOT components, Itron used a larger connected load assumption than the Evaluation Team. Our connected load assumption comes from the New Mexico TRM while Itron's is based on A/C nameplate information from the Two-Way Smart thermostat population.
- Itron's kW per device estimate is based on the qualifying event hours of the season's final month with an event. In 2024, there were events in June and July. Since July was the final month with an event, the July results are used for Itron's estimates. the Evaluation Team's kW per device numbers are derived from qualifying event hours across the entire summer rather than just July. (A qualifying event hour is an event hour where the outdoor temperature exceeds 94°F.)

The Evaluation Team used Power Saver results from 2015 to 2024 to estimate the load relief capability under extreme conditions. Table 64 shows the results (and reflects operability/online adjustments). We estimate the program can deliver 41.7 MW of meter-level load reduction under planning conditions of 100°F between 5:00 PM and 6:00 PM MDT. Of the estimated 41.7 MW of load reduction capability, 32.8 MW comes from the Residential DCU segment, 4.6 MW comes from the Residential Thermostat segments, 2.9 MW comes from the Small Commercial DCU segment, and 1.4 MW comes from the Medium Commercial DCU segment. At 100% operability, the total portfolio capability would be 48.5 MW.

Table 64 Power Saver Load Relief Capability under Peak Conditions

Segment	kW/Device	Total MW
Residential DCU	0.62	32.76
Residential Two-Way Thermostat	1.34	0.88
Residential BYOT Honeywell	0.62	0.36
Residential BYOT Nest	1.02	3.39
Small Commercial DCU	0.48	2.92
Medium Commercial DCU	0.46	1.36
Total	**---**	**41.67**

9.1.1 Methodology

The key steps in the Evaluation Team verified savings analysis were

1) For each DR program component, reproduce the performance estimates calculated by Itron using the contractually agreed upon Customer Baseline (CBL) method.
2) Produce independent ex-post energy and demand impact estimates (per device) for each program component.
3) Leverage historical data from 2015 through 2024 to produce ex-ante estimates of what the per-device impact at peaking conditions (5-6 PM at 100°F) will be in future summers.
4) Scale the per-device estimates by the number of active program devices to calculate the aggregate load reduction capability (MW) of the Power Saver program.
5) Perform a bias assessment to determine how the contractually agreed upon CBL method performs on non-event days when there are no demand reductions.

Additional details are provided in subsequent sections.

9.1.1.1 Data Sources

After the conclusion of the summer 2024 season, Itron provided the Evaluation Team with a series of datasets for the evaluation. These files included:

- For a sample of about 230 Residential DCU and about 40 Small Commercial sites, 5-minute load data from 6/1/2024 to 9/30/2024
- For a sample of about 50 Medium Commercial DCU sites, 5-minute load data from 6/1/2024 to 9/30/2024
- For Residential DCU and Small Commercial sites, an M&V list that provided the location type (residential or commercial) and the dates each load control device was active
- For Medium Commercial sites, an M&V list that provided the dates each load control device was active
- For the Two-Way Smart Thermostat, 5-minute runtime data from 6/1/2024 to 8/7/2024
- For the BYOT Honeywell populations, 5-minute runtime data from 6/1/2024 to 8/7/2024
- For the BYOT Nest population, 15-min runtime data from 5/28/2024 to 8/1/2024

The Evaluation Team also received Itron's Power Saver impact evaluation report, which detailed the methods Itron employed in calculating customer baselines for the six different DR program components. For each DR program component, the report also showed load impacts for each 5-minute event interval of each curtailment day.

To understand the relationship between load impacts and outdoor temperatures, we downloaded historical weather data from NOAA weather station KABQ (Albuquerque International Sunport).

9.1.1.2 Estimating Demand Impacts

The impact evaluation for all six Power Saver components relies on a “high 3-of-5” baseline approach with a multiplicative day-of adjustment. Under the high 3-of-5 approach, the average load for three of the previous five eligible days is used as a proxy for what load would have been if the DR event had not been called.[16] In selecting which three days to use, the criterion is highest average load during the event hours. For a hypothetical event that lasts from 4:00 PM until 8:00 PM, the steps to calculating the impact estimate are as follows:

1) Calculate the unadjusted baseline.

a) For each of the five eligible days prior to the event day, calculate the average demand between 4:00 PM and 8:00 PM across the entire M&V population. Select the three days with the greatest average demand (i.e., “high 3 of 5”).

b) Across the three baseline days, calculate the average demand across the entire M&V population for each 5-minute interval. This essentially collapses the three baseline days into one baseline day.

2) Calculate the adjustment factor and adjusted baseline. Note Itron uses an additive adjustment factor for their reported savings estimates. The Evaluation Team uses a multiplicative adjustment factor for our verified savings estimates.

a) For the hour preceding the event window, calculate the average demand on the three baseline days.

b) For the hour preceding the event window, calculate the average demand on the event day.

c) To calculate the multiplicative adjustment factor, divide the event day average (calculated in 2B) by the baseline day average (calculated in 2A). This quotient is the multiplicative adjustment factor. Multiply the unadjusted baseline by the multiplicative adjustment factor to yield the adjusted baseline.

d) As noted, Itron’s reported savings use an additive adjustment rather than a multiplicative adjustment. To calculate the additive adjustment factor, subtract the baseline day average (calculated in 2A) from the event day average (calculated in 2B). This difference is the additive

[16] Eligible days are weekdays that are neither holidays or DR event days.

adjustment factor. Add the additive adjustment factor to the unadjusted baseline to yield the adjusted baseline.

3) Calculate the impact.
   a) For each 5-minute interval, subtract the average demand for the entire M&V population from the adjusted baseline. This yields 12 impact estimates in each hour.
   b) For the Two-Way and BYOT components, add 0.1 kW to impacts to account for the thermostats curtailing the air handler fan in addition to the AC compressor.
   c) For each event hour, calculate the average of the 5-minute impacts.
   d) Apply the relevant operability or offline adjustment to each hourly impact. See 9.1.1.5 for more details. Note Itron does not apply these factors in their analysis, but the Evaluation Team does.
   e) The adjusted hourly impact calculated above is calculated at the device/participant level. These impacts are then scaled by the number of devices/participants.

The Evaluation team's final kW/device number for each segment is calculated as the average hourly impact (per device) during hours where the outdoor temperature exceeds 94°F. These hours are referred to as "qualifying event hours" throughout this chapter.

9.1.1.3 Estimating Energy Impacts

The Evaluation Team estimated net energy impacts for each event by summing ex-post hourly impacts from the onset of each event through the end of the event day. Including post-event hours in this calculation accounts for load shifting that occurs due to the event (i.e., snapback). We did not include pre-event hours in this calculation because we have not seen any evidence of pre-cooling or any other behaviors that shift loads to pre-event hours. Figure 9-1 visualizes this approach. The gray bars represent the energy impact for each hour at the device level. Summing, the heights of the gray bars produces the daily energy impact.

In cases where the total snapback exceeds the total energy savings during the event, we assign an energy impact of zero kWh. In other words, we assume the snapback cannot exceed the amount of energy use avoided during the event and that the demand response events will not lead to an overall increase in daily energy consumption.

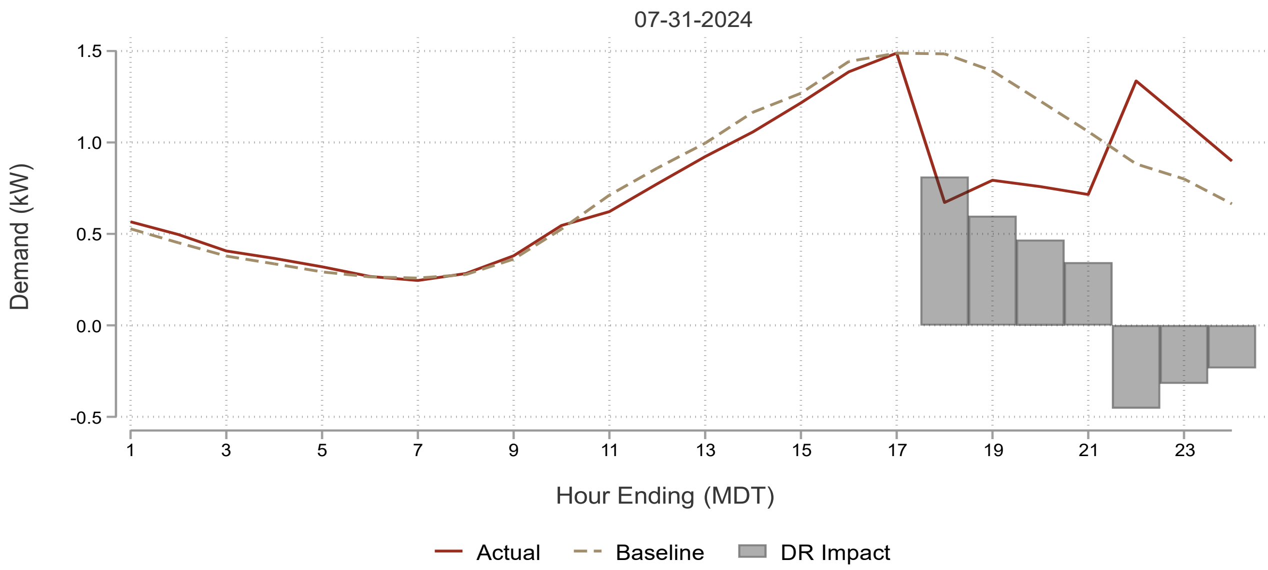


Figure 9-1 Energy Impact Illustration

9.1.1.4 Estimating Ex-Ante Impacts

While ex-post impact estimates serve to measure prior program performance, ex-ante estimates represent expected demand reduction capability in future years at peaking conditions. Of interest for ex-ante load considerations is how sensitive the program performance is to temperature and time of day. When multiple years of data are included in such an analysis, a wider range of program conditions can be investigated which leads to a more robust understanding of the capability of the program. To this end, our team compiled multiple years of event impacts for each segment and performed a regression analysis. For two segments, we performed simple averaging rather than using regression modeling due to insufficient data and poor model fit. The approach used for each segment is shown in Table 65. The general regression analysis is discussed following the table though there are component-specific nuances based on data availability.

Table 65 Ex-Ante Impact History

Segment	Years Used	Approach
Residential DCU	2015-2024	Regression
Residential Two-Way Thermostat	2019-2024	Regression
Residential BYOT Honeywell	2020-2024	Averaging
Residential BYOT Nest	2023-2024	Averaging
Small Commercial DCU	2015-2024	Regression
Medium Commercial DCU	2017-2024	Regression

Once data had been compiled for each customer segment, regression modeling was used to estimate the effect temperature and time of day have on demand reductions. The resulting regression model was used to predict impacts for a range of planning scenarios. The regression equation specified was

$$\Delta kW_h = \alpha + \beta * T_t + \sum_{h=15}^{h=20} \gamma_h * I_h + \sum_{h=15}^{h=20} \delta_h * I_h * T_h + \varepsilon_h$$

Where the variables have the following interpretations.

Table 66 Ex-Ante Regression Terms

Variable	Interpretation
α	Constant term
β	The incremental kW usage associated with a warming of 1 degree Fahrenheit
T_t	Outdoor air temperature in hour h
γ_h	Incremental kW usage associated with each hour
I_h	Indicator variable equal to 1 if the hour is 14, 15, 16, etc., and 0 if not
δ_h	Incremental kW usage associated with a 1-degree increase in outdoor temperature in hour h
ε_h	The error term

9.1.1.5 Operability Adjustments

To reach a true estimate of program capability, ex-post and ex-ante impacts in this analysis need to be adjusted for operability. While all the units in the estimation samples are operable or online, this is not the case for all units in the program population. In a previous evaluation, the Evaluation Team recommended adjusting residential DCU impacts by 85% based on operability inspections that we performed during Summer 2018. Our 2018 Evaluation Report covered the inspection process and key findings in detail. In 2024, the adjustment factor was 86% for the Residential DCU, Small Commercial DCU, and Medium Commercial DCU segments. The 86% operability adjustment value represents a weighted average of 85% and 95% where the two values correspond to sites that have not been visited in the past two years and sites that have been visited in the past two years, respectively. For Residential Thermostat segments, the adjustment factors were set to the percentage of online thermostat devices during event hours. The adjustment factors applied to Two-Way, BYOT Nest, and BYOT Honeywell were 80%, 88% and 76%, respectively. Unless otherwise noted, results in this analysis are reported without the operability adjustment applied.

9.1.1.6 BYOT Connected Load Assumption

BYOT Smart Thermostats are not installed by Itron field technicians. As a result, A/C tonnage and amperage information is missing for all participants who have enrolled in the BYOT program component. In the absence of A/C unit nameplate information, a default value is used as the connected load estimate. This value is then used to convert A/C runtime to power draw (kW) for each 5-minute interval.

Itron uses a connected load assumption of 4.19 kW (based on the Two-Way Smart Thermostat residential population). the Evaluation Team used a connected load of 3.22 kW to calculate BYOT 5-minute kW interval data based on the formulas and assumptions below drawn from the Smart Thermostat and High Efficiency Air Conditioner measures in the New Mexico 2023 Technical Reference Manual.

$$Connected\ Load = \frac{Capacity_{cool}}{1000\frac{W}{kW}} \times \frac{1}{EER} = 3.22\ kW$$

Where:

- $Capacity_{cool}$ = 36,000 BTU/hour (2023 TRM Section 4.20.3)
- EER = -0.02 * $SEER^2$ + 1.12 * SEER (2023 TRM Section 4.6.4)
- Assuming SEER = 13 (2023 TRM Section 4.20.3)

9.1.2 Replication of Reported Impacts

The first step in our analysis was to reproduce the performance estimates calculated by Itron using the contractually agreed upon (CBL) method. Itron's reported kW impacts and our replica impacts (calculated using the same approach as Itron) are shown in Table 67. Note that these estimates are at the device-level. Our replica calculations closely mirror Itron's estimates with occasional differences of about 0.01 kW.

Table 67 Validation Results

Segment	Date	Hour Ending (MDT)	Itron Impact	Evaluation Validation	Difference (kW)
Residential DCU	6/13	15	0.62	0.61	0.01
	7/31	18	0.82	0.81	0.01
	7/31	19	0.62	0.61	0.01
	7/31	20	0.52	0.51	0.01
	7/31	21	0.40	0.41	-0.01
Two-Way Smart Thermostats	6/13	15	0.86	0.87	-0.01
	7/31	18	1.11	1.10	0.01
	7/31	19	1.55	1.54	0.01
	7/31	20	1.29	1.28	0.01
	7/31	21	1.08	1.08	0.00
BYOT Honeywell	6/13	15	0.82	0.82	0.00
	7/31	18	0.85	0.85	0.00
	7/31	19	0.64	0.65	-0.01
	7/31	20	0.41	0.42	-0.01
	7/31	21	0.34	0.36	-0.02
BYOT Nest	6/13	15	1.22	1.22	0.00
	7/31	18	1.74	1.74	0.00
	7/31	19	1.00	0.99	0.01
	7/31	20	0.75	0.74	0.01
	7/31	21	0.62	0.61	0.01
Small Commercial	6/13	15	0.70	0.70	0.00
	7/31	18	0.65	0.65	0.00
	7/31	19	0.44	0.44	0.00
	7/31	20	0.41	0.41	0.00
	7/31	21	0.26	0.26	0.00
Medium Commercial	6/13	15	5.56	5.56	0.00
	7/31	18	9.51	9.51	0.00
	7/31	19	7.13	7.13	0.00
	7/31	20	7.51	7.51	0.00
	7/31	21	6.47	6.47	0.00

9.1.3 Residential DCU Results

9.1.3.1 Verified Ex-Post Impacts

For each event hour during the 2024 DR season, Table 68 shows the impact estimates produced by the Evaluation Team. Qualifying event hours are denoted with an asterisk (*). The average impact during qualifying event hours was 0.68 kW. As of the end of summer 2024, there were 53,037 active residential DCUs. Thus, the average qualifying event hour aggregate impact was 35.91 MW. Adjusted for 86% operability, the aggregate impact was 30.89 MW.

Table 68 Impact Calculations for the Residential DCU Segment

Date	Hour Ending	Temp. (F)	CBL kW	Observed kW	Impact (kW)
6/13/2024	15*	98.96	1.11	0.49	0.62
7/31/2024	18*	96.98	1.48	0.67	0.81
	19*	96.08	1.39	0.79	0.60
	20	93.02	1.23	0.76	0.47
	21	91.04	1.06	0.72	0.34

Figure 9-2 visualizes the impact estimates for each DR event.

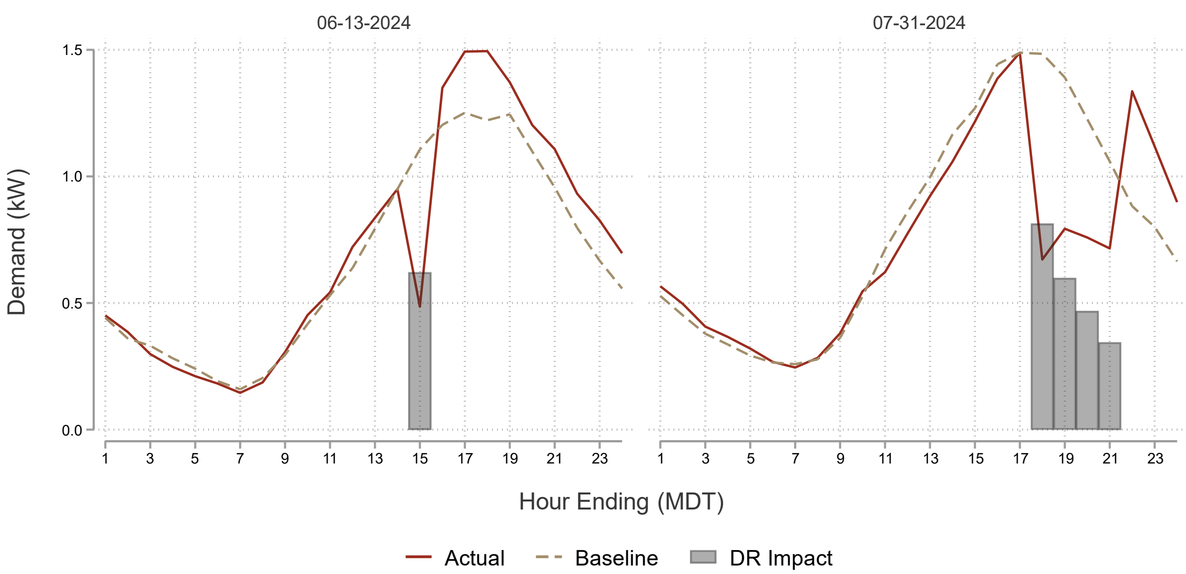


Figure 9-2 Residential DCU Impacts by Date

9.1.3.2 Net Energy Savings

The Evaluation team estimated net energy impacts for the Residential DCU program offering by summing ex-post impacts from the onset of each event through the end of the event day. The calculation of impacts is exactly as described earlier in this section. Table 69 shows the energy savings estimates (per device) for each event day. On average, net daily energy savings were 0.61 kWh per device. Multiplying by the number of events (two) and the number of active devices (53,037) yields an aggregate savings estimate of 64.50 MWh for the Residential DCU segment. After applying the operability factor of 86%, the aggregate energy savings estimate is 55.47 MWh.

Table 69 Device-Level Energy Savings by Date, Residential DCU

Date	Event Start (MDT)	Event Savings (kWh)	Snapback (kWh)	Net Savings (kWh)
6/13/2024	2:00 PM	0.62	-0.62	0.00
7/31/2024	5:00 PM	2.22	-1.01	1.22
Average		**1.42**	**-0.81**	**0.61**

9.1.3.3 Ex-Ante Impacts

Figure 9-3 highlights the relationship between historical ex-post impact estimates (2015-2024) and outdoor air temperature (in Albuquerque). There is a clear trend in the figure – the hotter it is outside, the greater the impacts tend to be.

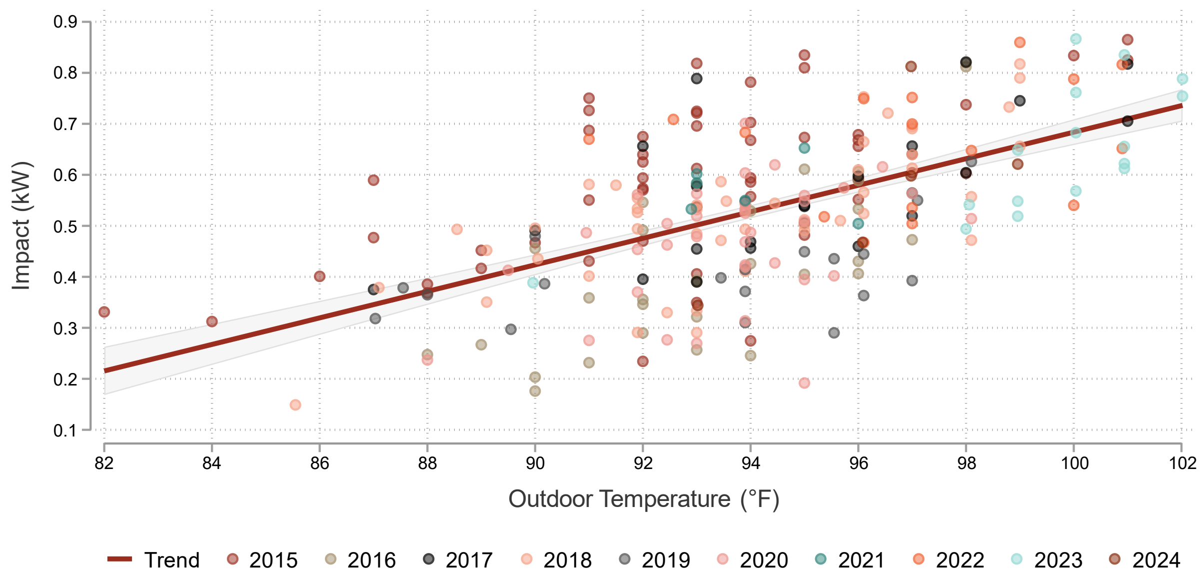
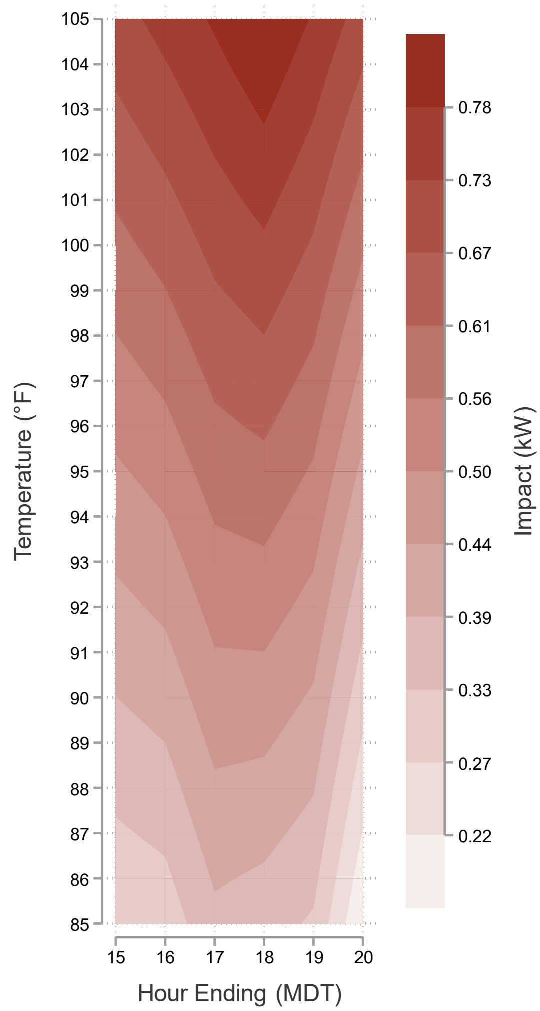


Figure 9-3 Hourly Impacts against Outdoor Temperature (F) – Residential DCU

The specification of the ex-ante regression model was shown in Section 9.1.1.4. Using the regression coefficients from the Residential DCU ex-ante model, the Evaluation Team created a time-temperature matrix (TTM) that shows expected load reductions (per device) for different outdoor temperatures and at different times of the day. The TTM is shown in Table 70. The Evaluation Team predicts that the impact of a Residential DCU DR event at peaking conditions (5:00 PM – 6:00 PM MDT when outdoor temperature is 100 degrees) is 0.72 kW per device.

Table 70 Residential DCU Time-Temperature Matrix

Temp	Hour Ending MDT					
	15	**16**	**17**	**18**	**19**	**20**
105	0.70	0.75	0.79	0.84	0.78	0.70
104	0.68	0.72	0.77	0.82	0.75	0.67
103	0.66	0.70	0.75	0.79	0.73	0.65
102	0.64	0.68	0.73	0.77	0.71	0.62
101	0.62	0.66	0.71	0.74	0.69	0.59
100	0.60	0.63	0.69	0.72	0.66	0.56
99	0.58	0.61	0.66	0.69	0.64	0.54
98	0.55	0.59	0.64	0.67	0.62	0.51
97	0.53	0.57	0.62	0.65	0.60	0.48
96	0.51	0.54	0.60	0.62	0.57	0.46
95	0.49	0.52	0.58	0.60	0.55	0.43
94	0.47	0.50	0.56	0.57	0.53	0.40
93	0.45	0.48	0.54	0.55	0.50	0.37
92	0.43	0.45	0.52	0.52	0.48	0.35
91	0.41	0.43	0.50	0.50	0.46	0.32
90	0.38	0.41	0.48	0.47	0.44	0.29
89	0.36	0.39	0.45	0.45	0.41	0.27
88	0.34	0.36	0.43	0.43	0.39	0.24
87	0.32	0.34	0.41	0.40	0.37	0.21
86	0.30	0.32	0.39	0.38	0.34	0.19
85	0.28	0.30	0.37	0.35	0.32	0.16



To estimate Residential DCU resource capability on aggregate, the number of active devices can be multiplied by the values shown in Table 70. As of the end of summer 2024, there were 53,037 active residential DCUs. Thus, the expected aggregate impact of an event hour ending at 6:00 PM (MDT) when the outdoor temperature is 100 degrees would be 38.1 MW. Residential DCU results are subject to an operability adjustment to better reflect the fact that not all devices in the population will be able to curtail load when called due to damage, wiring, or communication issues. The operability-adjusted aggregate impact is 86% of the unadjusted impact, or 32.8 MW.

9.1.4 Residential Thermostat Results

The Power Saver program includes three residential smart thermostat components Two-Way Smart Thermostats, BYOT Honeywell, and BYOT Nest. Each component has its own curtailment strategy. For the Two-Way group, an algorithm is used that bases the curtailment on runtime from the previous hour. For the BYOT Honeywell group, devices are curtailed using a 50% cycling strategy performed by the vendor. For the BYOT Nest group, thermostat setpoints are increased by three degrees. In the remainder of this chapter, we will refer to these three components as the Residential Thermostat component. We analyze them separately but report on them in aggregate where possible.

9.1.4.1 Verified Ex-Post Impacts

For each event hour during the 2024 DR season, Table 71 shows the impact estimates produced by the Evaluation Team.[17] Qualifying event hours are denoted with an asterisk (*). The device-weighted average impact during qualifying event hours was 1.02 kW (1.18 for Two-Way, 0.63 for BYOT Honeywell, and 1.06 for BYOT Nest). As of the end of summer 2024, there were 4,543 active Residential Thermostat devices (653 for Two-Way, 585 for BYOT Honeywell, and 3,305 for BYOT Nest). Thus, the average qualifying event hour aggregate impact was 4.65 MW. After applying online adjustment factors (80% for Two-Way, 76% for BYOT Honeywell, and 88% for BYOT Nest), the average aggregate impact was 3.98 MW.

Table 71 Residential Thermostat Impact Results

Segment	Date	Hour Ending (MDT)	Temp. (F)	Baseline kW	Observed kW	Impact (kW)
Two-Way	6/13/2024	15*	98.96	1.70	0.91	0.89
	7/31/2024	18*	96.98	2.30	1.29	1.11
	7/31/2024	19*	96.08	2.30	0.86	1.54
	7/31/2024	20	93.02	2.04	0.89	1.25
	7/31/2024	21	91.04	1.78	0.86	1.02
BYOT Honeywell	6/13/2024	15*	98.96	1.34	0.76	0.68
	7/31/2024	18*	96.98	2.03	1.45	0.68
	7/31/2024	19*	96.08	1.92	1.50	0.52
	7/31/2024	20	93.02	1.73	1.51	0.32
	7/31/2024	21	91.04	1.59	1.43	0.27
	6/13/2024	15*	98.96	1.26	0.39	0.96

[17] Note that the Residential Thermostat devices include a 0.1 kW adjustment to the impact to account for the thermostat curtailment on the air handler fan for systems set to "auto".

Segment	Date	Hour Ending (MDT)	Temp. (F)	Baseline kW	Observed kW	Impact (kW)
BYOT Nest	7/31/2024	18*	96.98	2.10	0.78	1.41
	7/31/2024	19*	96.08	1.95	1.23	0.82
	7/31/2024	20	93.02	1.79	1.30	0.59
	7/31/2024	21	91.04	1.70	1.32	0.48

The three figures below show event-day loads and baselines for each of the three thermostat components.

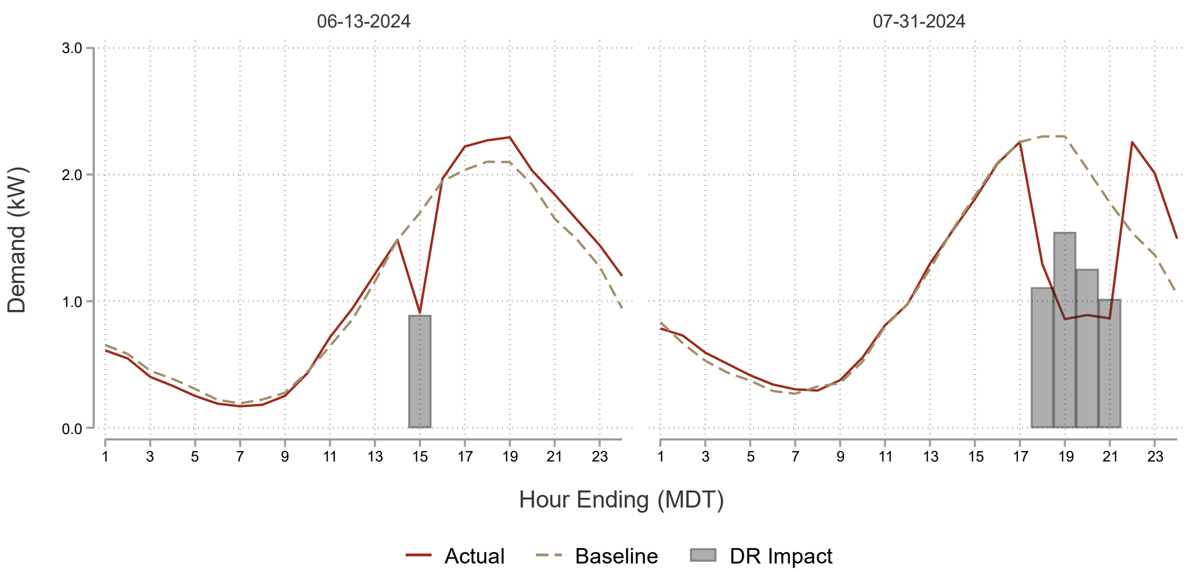


Figure 9-4 Two-Way Smart Thermostat Impacts by Date

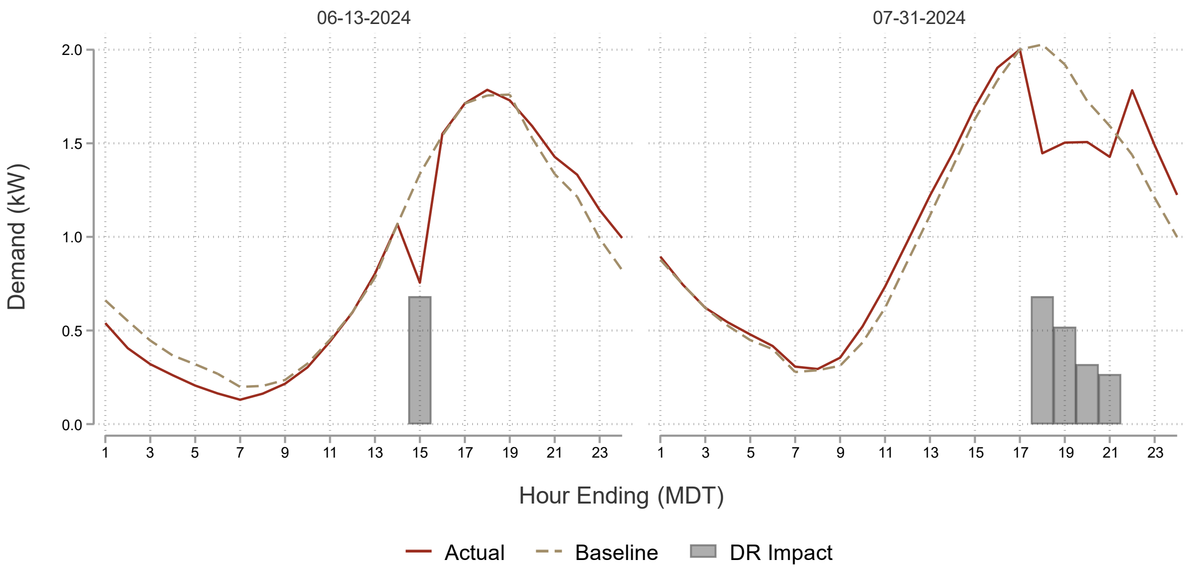


Figure 9-5 BYOT Honeywell Impacts by Date

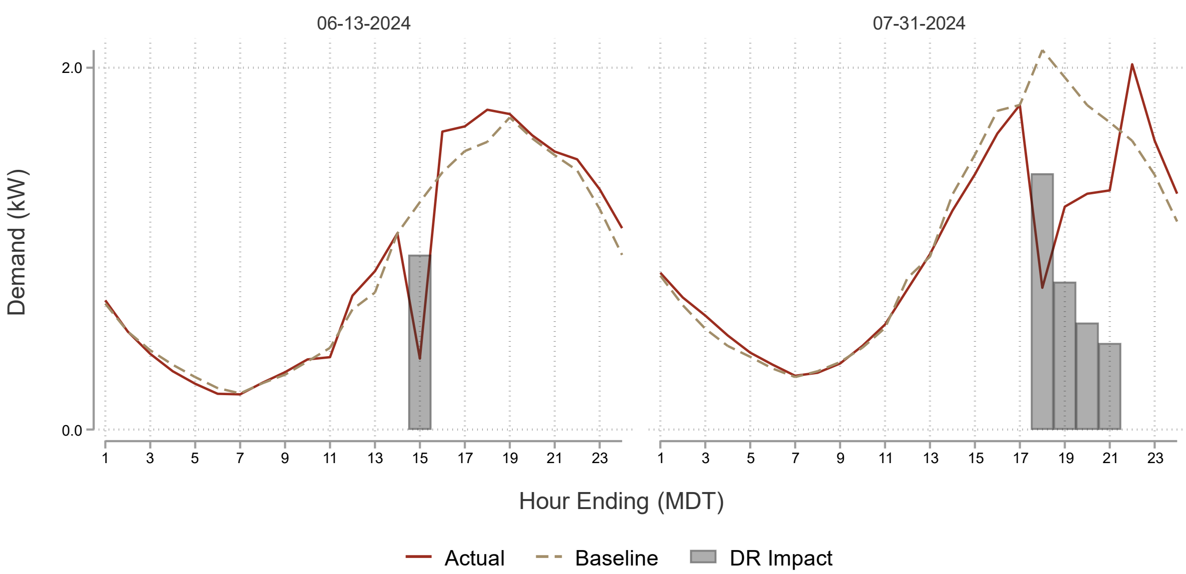


Figure 9-6 BYOT Nest Impacts by Date

9.1.4.2 Net Energy Savings

Table 72 shows the energy savings estimates for each event day. On average, net daily energy savings were 1.88 kWh per Two-Way device, 1.10 kWh per BYOT Honeywell device, and 1.89 kWh per BYOT Nest device. Multiplying these estimates by the number of event days (two) and the number of active devices (653 for Two-Way, 585 for BYOT Honeywell, and 3,305 for BYOT Nest) yields an aggregate savings estimate of 16.24 MWh for the Residential Thermostat component. After applying the relevant online factors (0.80 for Two-Way, 0.76 for BYOT Honeywell, and 0.88 for BYOT Nest), the aggregate energy savings estimate is 13.90 MWh.

Table 72 Device-Level Energy Savings by Date, Residential Thermostats

Segment	Date	Event Start	Event Savings	Snapback (kWh)	Net Savings
Two-Way	6/13/2024	2:00 PM	0.89	-0.55	0.34
	7/31/2024	5:00 PM	4.92	-1.50	3.42
	Average		**2.91**	**-1.02**	**1.88**
BYOT Honeywell	6/13/2024	2:00 PM	0.68	0.29	0.98
	7/31/2024	5:00 PM	1.78	-0.55	1.23
	Average		**1.23**	**-0.13**	**1.10**
BYOT Nest	6/13/2024	2:00 PM	0.96	-0.01	0.95
	7/31/2024	5:00 PM	3.30	-0.47	2.83
	Average		**2.13**	**-0.24**	**1.89**

9.1.4.3 Ex-Ante Impacts

Our ex-ante results for the Two-Way segment are derived from a regression model that estimates the relationship between historical impacts and outdoor temperatures. The specification of the ex-ante regression model was shown in Section 9.1.1.4. Due to insufficient data and poor model fit, our ex-ante results for the two BYOT segments are derived from simple averaging.

Figure 9-7 highlights the relationship between historical ex-post impact estimates and outdoor air temperature (in Albuquerque) for the Two-Way segment. There is some variability, but impacts tend to be larger when it is hotter outside.

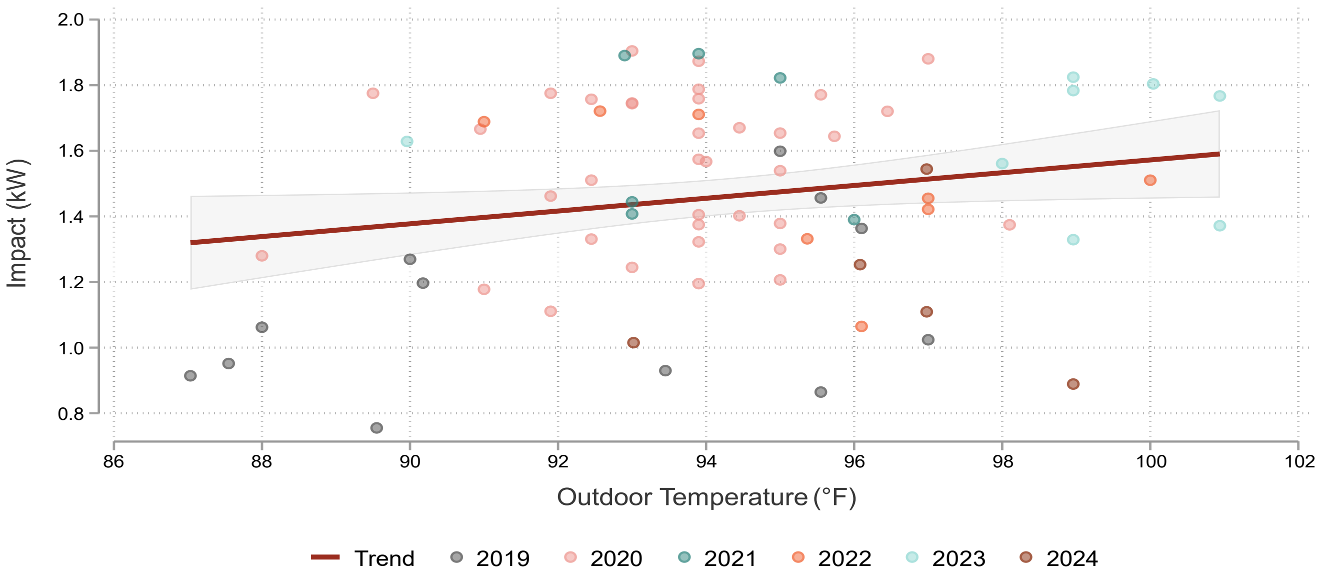
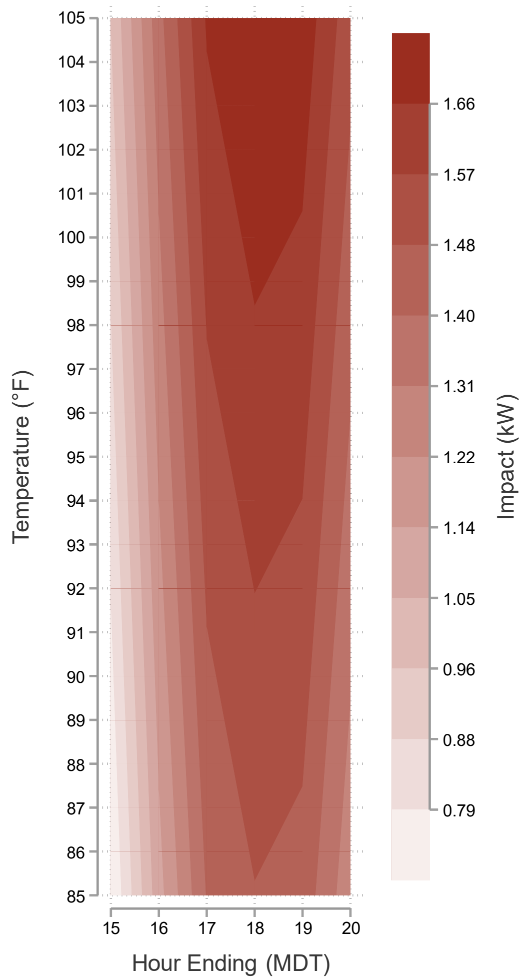


Figure 9-7 Hourly Impacts against Outdoor Temperature (F), Two-Way

Using the regression coefficients from the Two-Way ex-ante model, the Evaluation Team created a TTM that shows expected load reductions (per device) for different outdoor temperatures and at different times of the day. The TTM is shown in Table 73. The Evaluation Team predicts that the impact of a Residential Two-Way Smart Thermostat DR event at peaking conditions (5:00 PM – 6:00 PM MDT when outdoor temperature is 100 degrees) is 1.68 kW per device.

Table 73 Two-Way Smart Thermostat Time-Temperature Matrix

Temp	Hour Ending MDT				
	16	17	18	19	20
105	1.37	1.67	1.74	1.71	1.52
104	1.36	1.65	1.73	1.70	1.50
103	1.34	1.64	1.72	1.69	1.49
102	1.33	1.63	1.70	1.67	1.48
101	1.32	1.61	1.69	1.66	1.46
100	1.30	1.60	1.68	1.65	1.45
99	1.29	1.59	1.66	1.63	1.44
98	1.28	1.57	1.65	1.62	1.42
97	1.26	1.56	1.64	1.61	1.41
96	1.25	1.55	1.62	1.60	1.40
95	1.24	1.53	1.61	1.58	1.38
94	1.22	1.52	1.60	1.57	1.37
93	1.21	1.51	1.58	1.56	1.36
92	1.20	1.49	1.57	1.54	1.34
91	1.18	1.48	1.56	1.53	1.33
90	1.17	1.47	1.54	1.52	1.32
89	1.16	1.46	1.53	1.50	1.31
88	1.14	1.44	1.52	1.49	1.29
87	1.13	1.43	1.51	1.48	1.28
86	1.12	1.42	1.49	1.46	1.27
85	1.11	1.40	1.48	1.45	1.25



To estimate Two-Way Smart Thermostat resource capability on aggregate, the number of active facilities can be multiplied by the values shown in Table 73. As of the end of summer 2024, there were 653 active Two-Way Smart Thermostat devices. Thus, the expected aggregate impact of an event hour ending at 6:00 PM (MDT) when the outdoor temperature is 100 degrees would be 1.09 MW. Two-Way Smart Thermostat results are subject to an offline adjustment to reflect the fact that not all thermostats in the population will be able to curtail load when called due to being offline. The offline-adjusted aggregate impact is 80% of the unadjusted impact, or 0.88 MW.

Both BYOT segments showed a negative or flat relationship between temperature and kW impact when aggregating historical event data. These unexpected patterns indicate the possible presence of an omitted variable, such as hour-of-event or an interaction between hour-of-event and hour-of-day, which might confound ex-ante results derived from a simple regression specification. Instead of building an ex-ante regression model for these two segments, we calculated average impacts by time of day. Table 74 shows the results. The Evaluation Team predicts that the impact of a DR event at peaking conditions (5:00 PM – 6:00 PM MDT when outdoor temperature is 100 degrees) is 0.81 kW per device for the BYOT Honeywell segment and 1.17 kW per device for the BYOT Nest segment.

Table 74 Ex-Ante Impacts for BYOT Segments

Hour Ending (MDT)	Per-Device Impact (kW)	Per-Device Impact (kW)
15	0.68	0.96
16	0.73	1.25
17	0.79	1.54
18	0.81	1.17
19	0.68	0.80
20	0.32	0.59

As of the end of summer 2024, there were 585 active BYOT Honeywell devices and 3,305 active BYOT Nest devices. Thus, the expected aggregate impact of an event hour ending at 6:00 PM (MDT) would be 0.48 MW for BYOT Honeywell and 3.86 MW for BYOT Nest. Both segments are subject to an offline adjustment to reflect the fact that not all thermostats in the population will be able to curtail load when called due to being offline. The offline-adjusted aggregate impact for BYOT Honeywell is 76% of the unadjusted impact, or 0.36 MW. The offline-adjusted aggregate impact for BYOT Nest is 88% of the unadjusted impact, or 3.39 MW.

In aggregate, the offline-adjusted impact for the Residential Thermostat components during peaking conditions is 4.62 MW.

9.1.5 Small Commercial Results

9.1.5.1 Verified Ex-Post Impacts

For each event hour during the 2024 DR season, Table 75 shows the impact estimates produced by the Evaluation Team. Qualifying event hours are denoted with an asterisk (*). The average impact during qualifying event hours was 0.60 kW. As of the end of summer 2024, there were 6,091 active small commercial DCUs. Thus, the average qualifying event hour aggregate impact was 3.67 MW. Adjusted for 86% operability, the aggregate impact was 3.16 MW.

Table 75 Impact Calculations for the Small Commercial DCU Segment

Date	Hour Ending (MDT)	Temp. (F)	CBL kW	Observed kW	Impact (kW)
6/13/2024	15*	98.96	1.85	1.14	0.71
7/31/2024	18*	96.98	1.68	1.03	0.65
	19*	96.08	1.43	0.98	0.45
	20	93.02	1.30	0.88	0.42
	21	91.04	1.02	0.73	0.28

The figure below visualizes the impact estimates for each event.

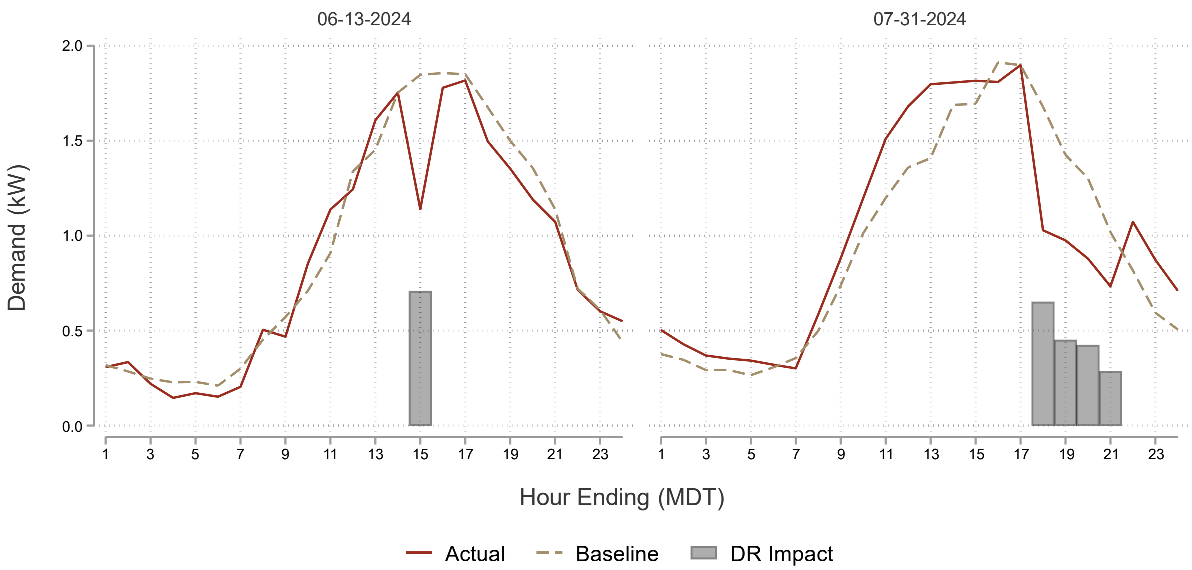


Figure 9-8 Small Commercial DCU Impacts by Date

9.1.5.2 Net Energy Savings

Table 76 shows the energy savings estimates (per device) for each event day. On average, net daily energy savings were 1.17 kWh per device. Multiplying by the number of events (two) and the number of active devices (6,091) yields an aggregate savings estimate of 14.31 MWh for the Small Commercial DCU segment. After applying the operability factor of 86%, the aggregate energy savings estimate is 12.30 MWh.

Table 76 Device-Level Energy Savings by Date, Small Commercial DCU

Date	Event Start (MDT)	Event Savings (kWh)	Snapback (kWh)	Net Savings (kWh)
6/13/2024	2:00 PM	0.71	0.57	1.28
7/31/2024	5:00 PM	1.81	-0.74	1.07
Average		**1.26**	**-0.08**	**1.17**

9.1.5.3 Ex-Ante Impacts

Figure 9-9 highlights the relationship between historical ex-post impact estimates (2015-2024) and outdoor air temperature (in Albuquerque). The trend in temperature is quite subtle; there are only slight increases in impact magnitude as temperature increases.

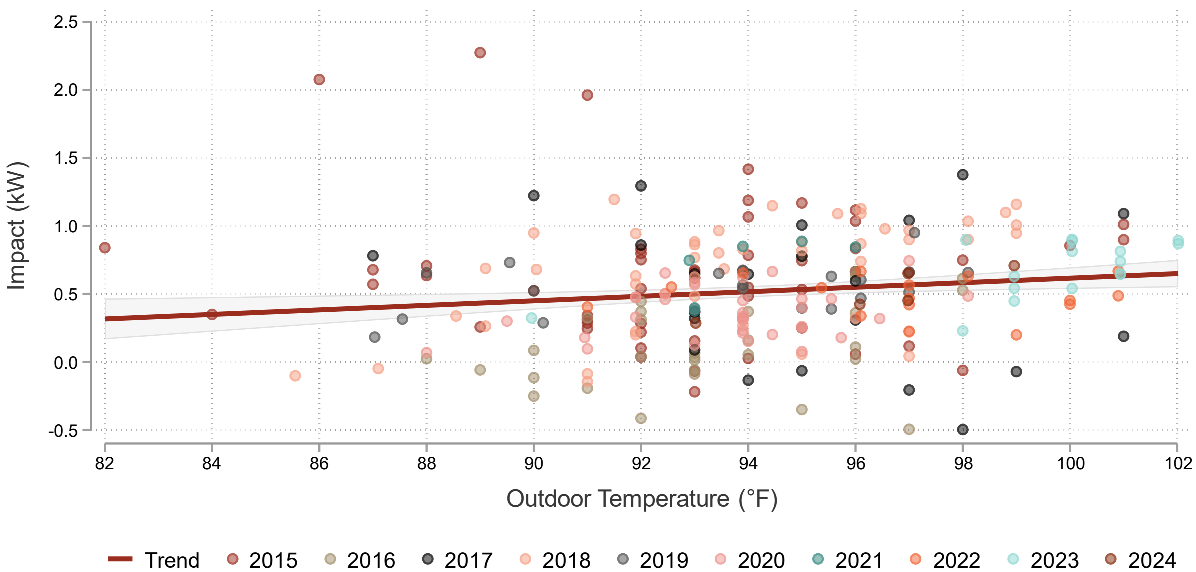
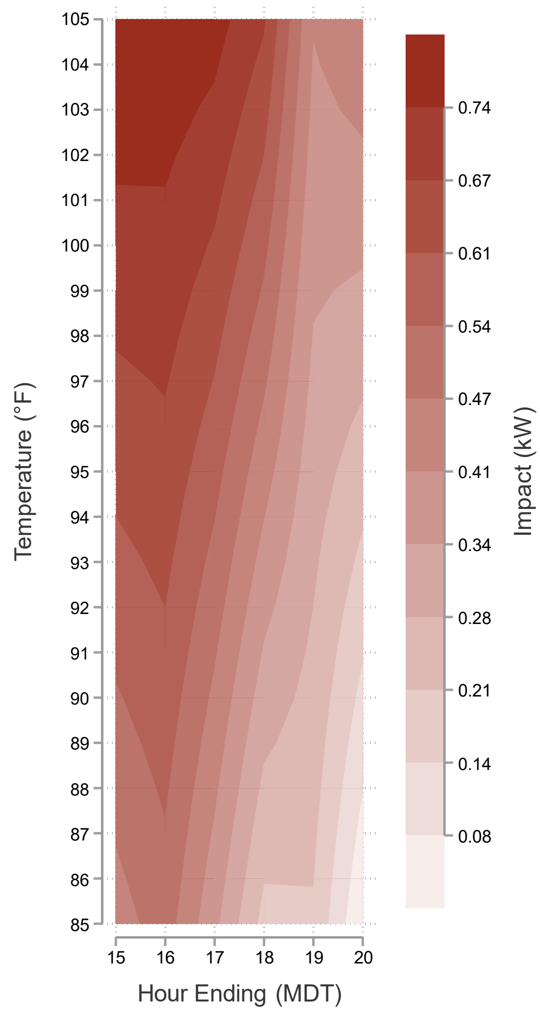


Figure 9-9 Hourly Impacts against Outdoor Temperature (F), Small Commercial

The specification of the ex-ante regression model was shown in Section 9.1.1.4. Using the regression coefficients from the Small Commercial ex-ante model, the Evaluation Team created a TTM that shows expected load reductions (per device) for different outdoor temperatures and at different times of the day. The TTM is shown in Table 77. The Evaluation Team predicts that the impact of a Small Commercial DCU DR event at peaking conditions (5:00 PM – 6:00 PM MDT when outdoor temperature is 100 degrees) is 0.56 kW per device. The expected load impact is lower for the 5-6 PM interval relative to earlier in the day because of the small commercial load profile – there is less load available for curtailment in the evening (see Figure 9-8).

Table 77 Small Commercial Time-Temperature Matrix

Temp	Hour Ending MDT					
	15	16	17	18	19	20
105	0.81	0.79	0.77	0.68	0.41	0.47
104	0.79	0.78	0.75	0.66	0.40	0.45
103	0.77	0.76	0.73	0.63	0.39	0.42
102	0.75	0.75	0.71	0.61	0.38	0.40
101	0.73	0.73	0.69	0.58	0.37	0.38
100	0.71	0.72	0.67	0.56	0.36	0.35
99	0.70	0.71	0.64	0.53	0.35	0.33
98	0.68	0.69	0.62	0.51	0.34	0.31
97	0.66	0.68	0.60	0.48	0.33	0.29
96	0.64	0.66	0.58	0.46	0.32	0.26
95	0.62	0.65	0.56	0.43	0.31	0.24
94	0.61	0.64	0.54	0.41	0.30	0.22
93	0.59	0.62	0.52	0.39	0.29	0.19
92	0.57	0.61	0.50	0.36	0.28	0.17
91	0.55	0.59	0.48	0.34	0.27	0.15
90	0.53	0.58	0.46	0.31	0.25	0.13
89	0.52	0.56	0.44	0.29	0.24	0.10
88	0.50	0.55	0.42	0.26	0.23	0.08
87	0.48	0.54	0.40	0.24	0.22	0.06
86	0.46	0.52	0.38	0.21	0.21	0.03
85	0.44	0.51	0.36	0.19	0.20	0.01



To estimate Small Commercial DCU resource capability on aggregate, the number of active devices can be multiplied by the values shown in **Table 77**. As of the end of summer 2024, there were 6,091 active small commercial devices. Thus, the expected aggregate impact of an event hour ending at 6:00 PM (MDT) when the outdoor temperature is 100 degrees would be 3.40 MW. Small Commercial DCU results are subject to an operability adjustment to better reflect the fact that not all devices in the population will be able to curtail load when called due to damage, wiring, or communication issues. The operability-adjusted aggregate impact is 86% of the unadjusted impact, or 2.92 MW.

9.1.6 Medium Commercial Results

9.1.6.1 Verified Ex-Post Impacts

For each event hour during the 2024 DR season, Table 78 shows the impact estimates produced by the Evaluation Team. Note these values are per facility, not per device. Qualifying event hours are denoted with an asterisk (*). The average impact during qualifying event hours was 6.67 kW per facility. As of the end of summer 2024, there were 2,994 active medium commercial DCUs across 425 facilities, indicating there were approximately 7.04 devices per facility. Thus, the Evaluation Team's per-device estimate during qualifying hours is 0.95 kW and the average qualifying event hour aggregate impact was 2.83 MW. Adjusted for 86% operability, the aggregate impact was 2.44 MW.

Table 78 Impact Calculations for the Medium Commercial DCU Segment (per facility)

Date	Hour Ending (MDT)	Temp. (F)	CBL kW	Observed kW	Impact (kW)
6/13/2024	15*	98.96	60.05	54.45	5.60
7/31/2024	18*	96.98	63.39	54.56	8.83
	19*	96.08	56.86	51.28	5.58
	20	93.02	53.08	47.63	5.45
	21	91.04	48.44	44.65	3.79

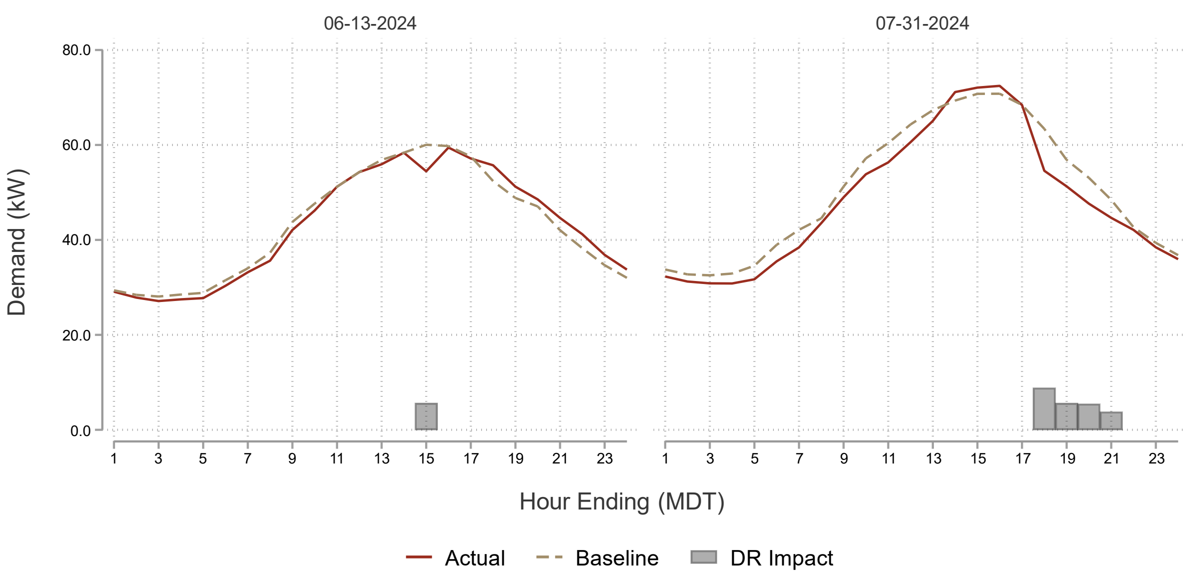


Figure 9-10 visualizes the impact estimates (per facility) for each event.

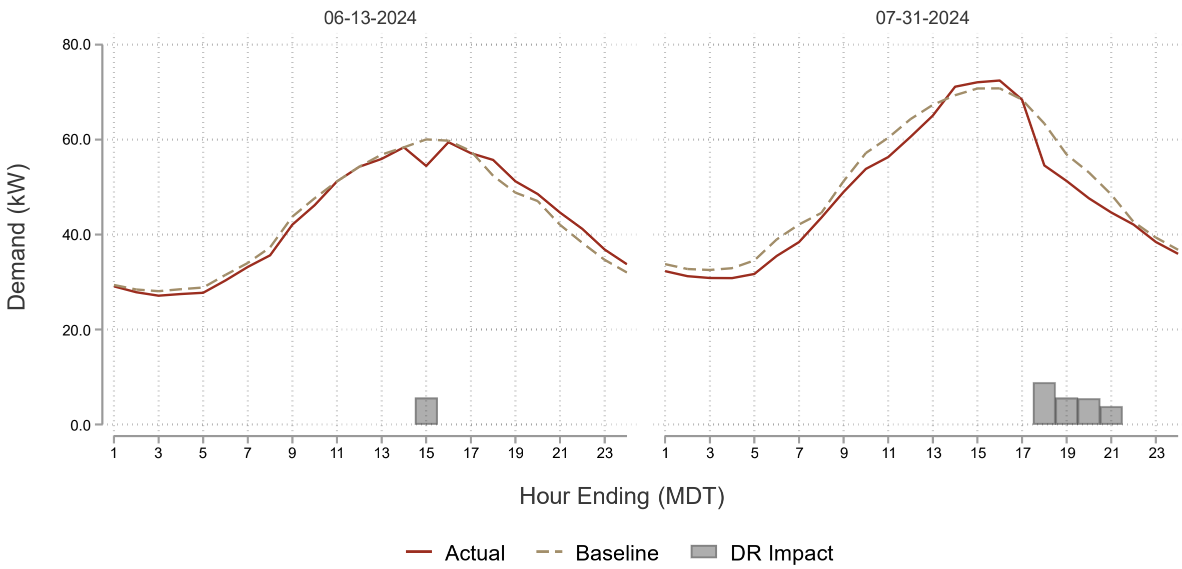


Figure 9-10 Medium Commercial DCU Impacts by Date

9.1.6.2 Net Energy Savings

Table 79 shows the energy savings estimates (per facility) for each event day. On average, net daily energy savings were 13.01 kWh per facility. Multiplying this estimate by the number of events (two) and by the number of active facilities (425) yields an aggregate savings estimate of 11.06 MWh for the Medium Commercial program offering. After applying the 86% operability factor, the aggregate energy savings estimate is 9.51 MWh.

Table 79 Facility-Level Energy Savings by Date

Date	Event Start (MDT)	Event Savings (kWh)	Snapback (kWh)	Net Savings (kWh)
6/13/2024	2:00 PM	5.60	-5.60	0.00
7/31/2024	5:00 PM	23.64	2.38	26.02
Average		**14.62**	**-1.61**	**13.01**

9.1.6.3 Ex-Ante Impacts

Figure 9-11 highlights the relationship between historical ex-post impact estimates (2017-2024) and outdoor air temperature (in Albuquerque). The trend in temperature is quite subtle; there are only slight increases in impact magnitude as temperature increases. With a small sample and large, variable customer loads, any change in sample composition can dramatically affect the overall result, meaning that any trends should be observed with caution.

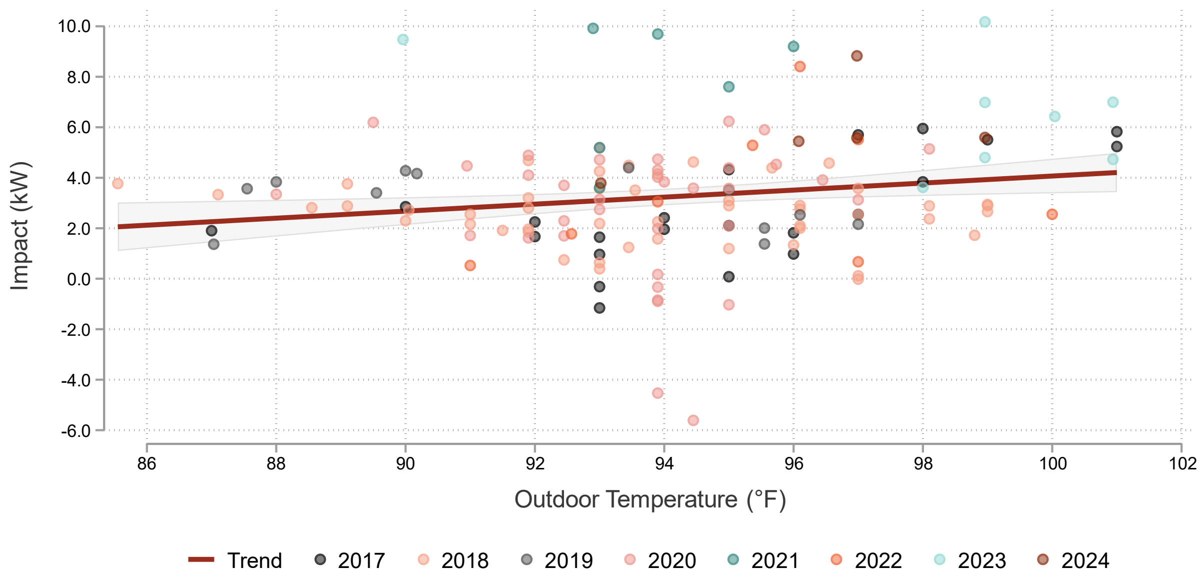
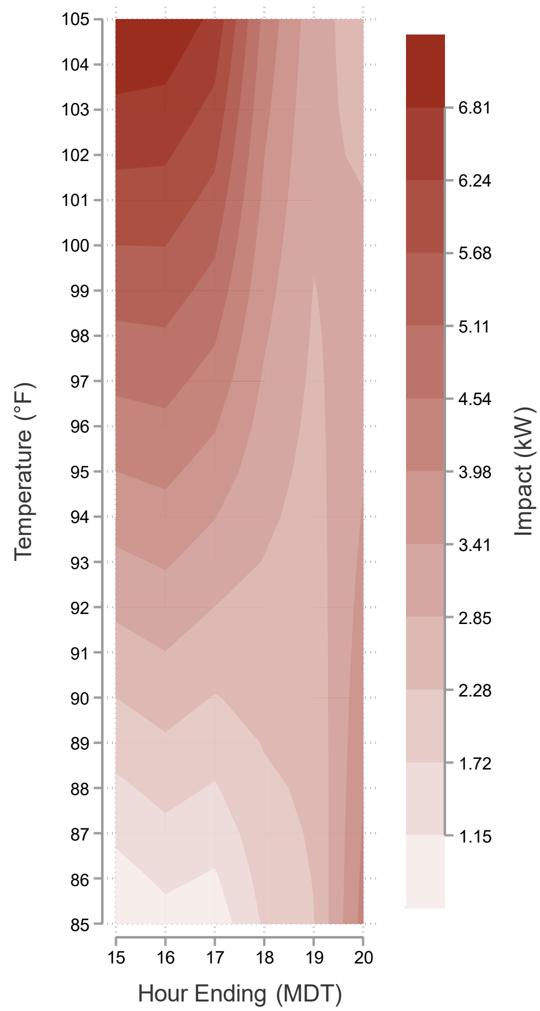


Figure 9-11 Hourly Impacts against Outdoor Temperature (F), Medium Commercial

The specification of the ex-ante regression model was shown in Section 9.1.1.4. Using the regression coefficients from the Medium Commercial ex-ante model, the Evaluation Team created a TTM that shows expected load reductions (per facility) for different outdoor temperatures and at different times of the day. The TTM is shown in Table 80. Using the model, the Evaluation Team predicts that the impact of a Medium Commercial DR event at peaking conditions (5:00 PM – 6:00 PM MDT when outdoor temperature is 100 degrees) is 3.73 kW per facility, or 0.46 kW per device.

Table 80 Medium Commercial Time-Temperature Matrix

Temp	Hour Ending MDT					
	15	16	17	18	19	20
105	7.37	7.26	6.66	4.38	3.08	2.54
104	7.03	6.95	6.37	4.25	3.04	2.62
103	6.69	6.63	6.08	4.12	3.00	2.70
102	6.35	6.32	5.78	3.99	2.96	2.79
101	6.01	6.00	5.49	3.86	2.92	2.87
100	5.68	5.68	5.19	3.73	2.88	2.95
99	5.34	5.37	4.90	3.60	2.83	3.04
98	5.00	5.05	4.61	3.47	2.79	3.12
97	4.66	4.74	4.31	3.34	2.75	3.20
96	4.32	4.42	4.02	3.22	2.71	3.29
95	3.98	4.10	3.73	3.09	2.67	3.37
94	3.64	3.79	3.43	2.96	2.63	3.45
93	3.30	3.47	3.14	2.83	2.59	3.53
92	2.96	3.16	2.85	2.70	2.55	3.62
91	2.62	2.84	2.55	2.57	2.51	3.70
90	2.28	2.53	2.26	2.44	2.47	3.78
89	1.94	2.21	1.96	2.31	2.42	3.87
88	1.60	1.89	1.67	2.18	2.38	3.95
87	1.26	1.58	1.38	2.05	2.34	4.03
86	0.93	1.26	1.08	1.93	2.30	4.12
85	0.59	0.95	0.79	1.80	2.26	4.20



To estimate Medium Commercial DCU resource capability on aggregate, the number of active facilities can be multiplied by the values shown in **Table 80**. As of the end of summer 2024, there were 425 active Medium Commercial facilities. Thus, the expected aggregate impact of an event hour ending at 6:00 PM (MDT) when the outdoor temperature is 100 degrees would be 1.59 MW. Medium Commercial DCU results are subject to an operability adjustment to better reflect the fact that not all devices in the population will be able to curtail load when called due to damage, wiring, or connection issues. The operability-adjusted aggregate impact is 86% of the unadjusted impact, or 1.36 MW.

9.1.7 Bias Assessment

Assessing the accuracy of a baseline on an event day is not possible because the counterfactual is unknown. In other words, we do not know what the demand would have been if the event had not been called. However, using the same algorithm to generate a baseline on non-event weekdays should reasonably predict the metered load. For these days, the true value of demand response is 0 kW, so non-zero impact estimates can be attributed to error. Individual errors are expected as the lookback window is not intended to be a perfect predictor of future load, but an unbiased baseline methodology should produce a distribution of errors which is centered around zero.

To evaluate the accuracy of the settlement CBL, the Evaluation Team analyzed the central tendency of prediction errors by creating placebo event days on eight event-like non-event weekdays. The placebo event days are denoted with gray circles in Figure 9-12, which also shows the event days (beige circles) and the maximum daily temperature by date. We assumed that each placebo event would start at 4:00 PM and last for four hours until 8:00 PM.

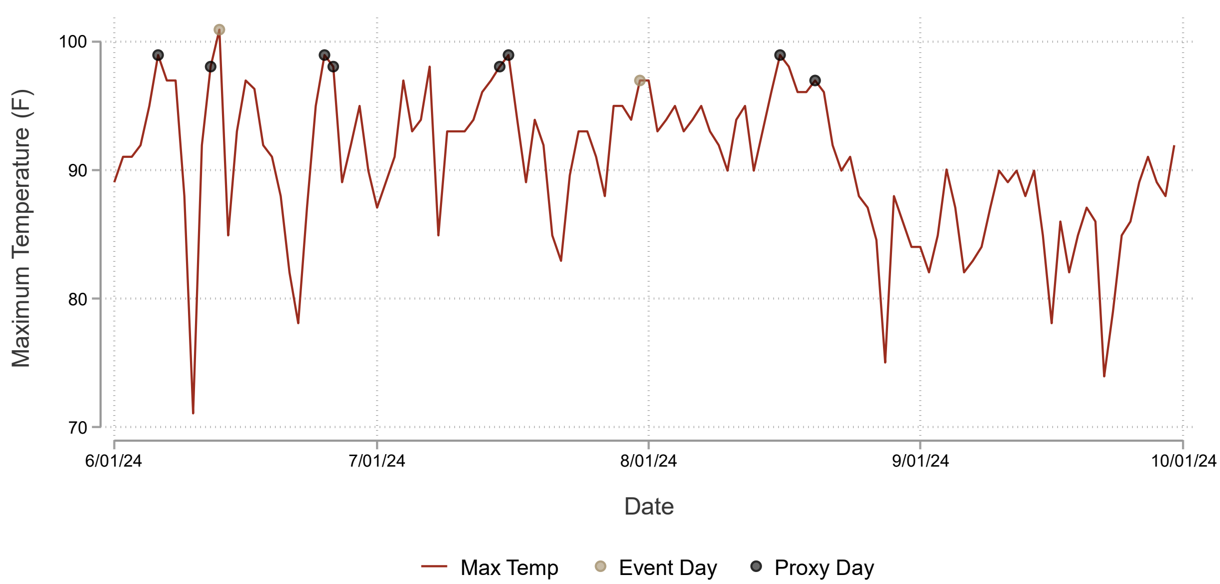


Figure 9-12 Proxy Event Days

By segment and hour, Table 81 shows the results of the bias assessment. The average error for each segment is very close to zero, meaning the baseline methodology used by Itron generally produces unbiased estimates of load during common event hours. The average error for the Medium Commercial segment looks large relative to the other errors, but the average demand for this segment during common event hours on the proxy days is nearly 60 kW.

Table 81 Bias Assessment Results

Segment	Average Error (kW)				
	4-5 PM	5-6 PM	6-7 PM	7-8 PM	Average
Residential DCU	0.02	0.02	-0.02	0.00	0.01
Two-Way Thermostat	0.08	0.05	0.10	0.08	0.08
BYOT Honeywell	0.00	-0.04	0.00	0.05	0.00
BYOT Nest	0.04	0.04	0.18	0.12	0.10
Small Commercial	0.01	-0.09	-0.07	-0.06	-0.05
Medium Commercial	-0.12	-0.95	-0.28	0.21	-0.28

Our team also tested out a multiplicative baseline adjustment in this bias assessment exercise. While both adjustment mechanisms produce baselines that perform well during common event hours, the multiplicative adjustment minimizes overall error across all hours, including non-event hours. An example of this phenomenon is shown below in Figure 9-13 for the Residential DCU group, though the same result was found in all device groups. Because the multiplicative adjusted baseline produces less error during non-event hours and our verified savings analysis looks at impacts during post-event hours (snapback), the baseline approach for the verified savings analysis uses a multiplicative adjustment instead of an additive adjustment. Itron does not estimate energy savings or depend on the accuracy of non-event hour baselines, so an additive adjustment is a reasonable choice for their baseline.

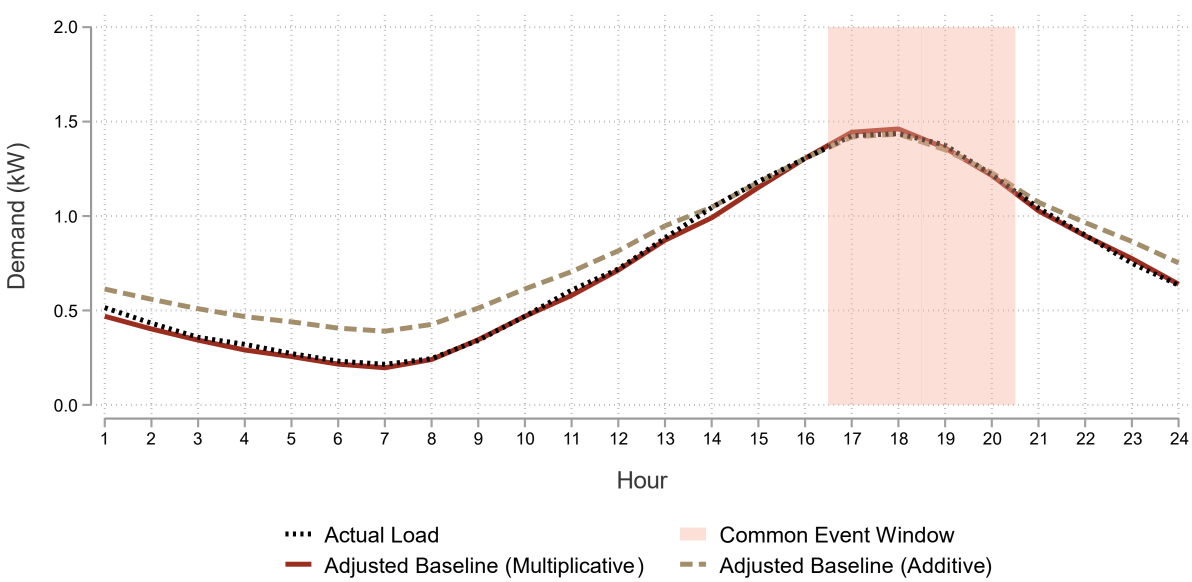


Figure 9-13 Additive vs. Multiplicative Baseline Adjustment, Residential DCU

Using the multiplicative baseline adjustment, Figure 9-14 shows error by hour where error is baseline minus observed load in kW.

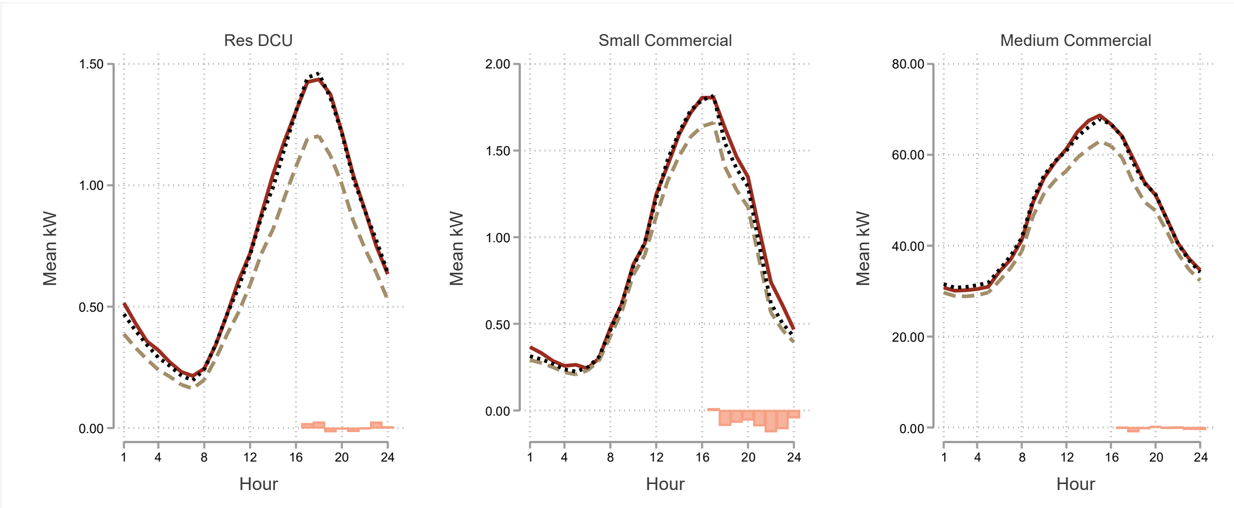


Figure 9-14 Unadjusted and Adjusted Baseline vs. Observed kW

9.1.8 Conclusions and Recommendations

After our review of the 2024 Power Saver program, a summary of our recommendations can be found in Table 82.

Table 82 Findings and Recommendations

Finding	Recommendation
1. Planning Ex post impacts provide a helpful look at historical performance but vary based on event conditions and event timing.	**Recommendation** For planning purposes, a consistent, weather-normalized impact estimate should be used. The Evaluation Team recommends that ex-ante program impacts from 5:00 PM to 6:00 PM MDT at 100°F, de-rated for operability, be used for reporting, cost-effectiveness, and planning.
2. Connected load assumption The connected load assumption Itron uses to convert air conditioner runtime to electric demand for the thermostat program components is high given the average air conditioner size in the region. It is also higher than the assumed value in the smart thermostat protocol of the New Mexico TRM.	**Recommendation** Currently the BYOT and Two-Way thermostat offerings represent a small fraction of the Power Saver resource capability, but as they grow it will be important to base the load impact calculations on sound assumptions. We revised the assumption for the ex-post analysis of the BYOT components, but not for Two-Way because Itron technicians record A/C nameplate information during installation of Two-Way thermostats.
3. Load reduction shape For the BYOT Nest component, thermostat setpoints are increased by three degrees during the event. This results in relatively large impacts in the first event hour that get increasingly smaller throughout the event.	**Recommendation** If this shape is a concern for PNM, consider discussing the curtailment algorithm with Nest. Using different offsets in each event hour (+2 in the first, +3 in the second, and +4 in the third and fourth) could flatten out the impacts, or Nest could implement a cycling strategy similar to the other thermostat components.

Finding	Recommendation
4. Operability/offline adjustments Historically, Itron has adjusted capacity estimates to account for inoperable DCUs as well as offline thermostat devices. Those adjustments were not made this year, though they improve the accuracy of impact calculations.	**Recommendation** Reintroduce the operability and offline adjustments to the analysis.
5. Baseline adjustment Currently, Itron uses an additive adjustment factor to adjust their baselines. The additive adjustment factor creates bias in non-event hours.	**Recommendation** Because Itron does not currently report on non-event hours, the fact that the additive adjustment approach creates bias in non-event hours is not an issue. If Itron were interested in calculating Power Saver energy savings of in the future, they can lower bias by adopting a multiplicative baseline adjustment instead of an additive adjustment.
6. Input data Impacts for the three DCU components currently rely on metering data for a sample M&V group.	**Recommendation** If advanced metering infrastructure (AMI) data becomes widely available, statistical confidence of M&V for the DCU components would be improved by switching to an AMI analysis of the full population. This would also eliminate the need for an operability adjustment. Likewise, AMI data could be analyzed for the thermostat segments. This would eliminate the need for an offline adjustment and a connected load assumption.

9.2 PEAK SAVER

PNM offers the Peak Saver program to non-residential customers with peak load contributions of at least 50 kW. The program compensates participants for reducing electric load upon dispatch during periods of high system load. Itron implemented the Peak Saver program in 2024, handling enrollment, dispatch, and settlement with participating customers. There were approximately 300 participants and three demand response events during the 2024 demand response season. Table 83 details the events. The June event and the October event were one-hour test events that were dispatched to establish baseline kW factors for a typical summer and winter event.

Table 83 2024 Peak Saver Event Summary

Date	Day of Week	Participants	Start Time (MDT)	End Time (MDT)	Daily High at KABQ (F)
6/25/24	Tuesday	292	3:00 PM	4:00 PM	99.0
7/31/24	Wednesday	294	5:00 PM	9:00 PM	97.0
10/10/24	Thursday	85	2:00 PM	3:00 PM	84.9

Table 84 shows a high-level comparison of reported and verified demand for each event, as well as verified energy impacts.[18] During the summer season, we estimate Peak Saver is a 13.8 MW capacity resource. Since interval consumption data was not available for some participants in the 2024 analysis, our aggregate demand reduction estimate is based on a mix of 2024 metering data and 2022-2023 performance estimates. The demand realization rate (80%) is driven primarily by how sites without metering data were accounted for in the reported and verified analyses. The realization rate for just participants with metering data was around 95%.

Table 84 Evaluation Results

Date	Demand (kW)			Energy (kWh)	
	Reported	Verified	Realization Rate	Reported	Verified
6/25/24	16,951	13,488	79.6%	N/A	28,039
7/31/24	17,544	14,122	80.5%	N/A	47,094
10/10/24	17,485	14,035	80.3%	N/A	15,318
Average	**17,327**	**13,882**	**80.1%**	**N/A**	**30,151**

[18] Itron does not report energy savings for Peak Saver.

9.2.1 Methodology

The key steps in the Evaluation Team's verified savings analysis were:

1) Validate the performance estimates calculated by Itron using the contractually agreed upon CBL method.
2) Produce independent energy and demand impact estimates for each participant/event combination.
3) Perform a bias assessment to determine how the contractually agreed upon CBL method performs on non-event days when there are no demand reductions.

Additional details are provided in subsequent sections.

9.2.1.1 Data Sources

After the conclusion of the summer 2024 season, Itron provided the Evaluation Team with a series of data sets for the evaluation.

These files included:

- One-minute interval load data for select program participants spanning a period from May 2024 through October 2024. The one-minute interval data is used to calculate 2024 impacts for the subset of participants with meters in place.
- Hourly interval data for program participants covering the 2023 and 2024 summers. The hourly interval data is used in identifying which participants have weather-sensitive loads.
- Itron's reporting workbook, which contains Itron's estimated customer baselines (CBLs) and capacity impacts for each metered participant. For each participant without metering, the annual report contains a nominated kW value, which represents the expected capacity relief the site will provide when DR is dispatched.
- Results from Itron's weather sensitivity analysis (including a description of the methods and key regression outputs for each participant).

Upon request, Itron also provided some of the R scripts used for their analysis.

9.2.1.2 Contract CBL Methodology

The settlement calculations call for a "high 3-of-5" CBL approach. A CBL is an estimate of participant load absent the DR event dispatch. Participants with weather-sensitive loads receive a weather-based additive adjustment to their baseline. Under the high 3-of-5 approach, the average load for three of the previous five eligible days is used as a proxy for what load would have been if the DR event had not been called.[19] To determine the high 3-of-5 days, the following process was used

1) Select the five non-holiday, non-event weekdays that immediately preceded the event.
2) Calculate the average demand during the event window on each of the five baseline days. Remove the day with the lowest average.
3) For the remaining four baseline days, perform a sum-of-squared error (SSE) calculation to determine which three baseline days are most similar to the event day. The SSE calculations are performed as follows
    a. By hour, compute the difference between load on the baseline day and the event day. Remove event hours, the hour before the event, and the hour after the event. Do this for each baseline day.
    b. Square the differences and then sum them by date. The day with the highest SSE is removed.

Figure 9-15 shows hourly loads on an event day and four baseline days for a 2024 participant. Event day load are the solid maroon line, and the event was dispatched during the hour ending 16 (3-4 PM). The thin lines represent the four baseline days. For the SSE calculations, hours 15-17 (2-5 PM) are ignored. Baseline days 1, 3, and 4 are clearly more like the event day than baseline day 2. Baseline day 2 ultimately gets dropped.

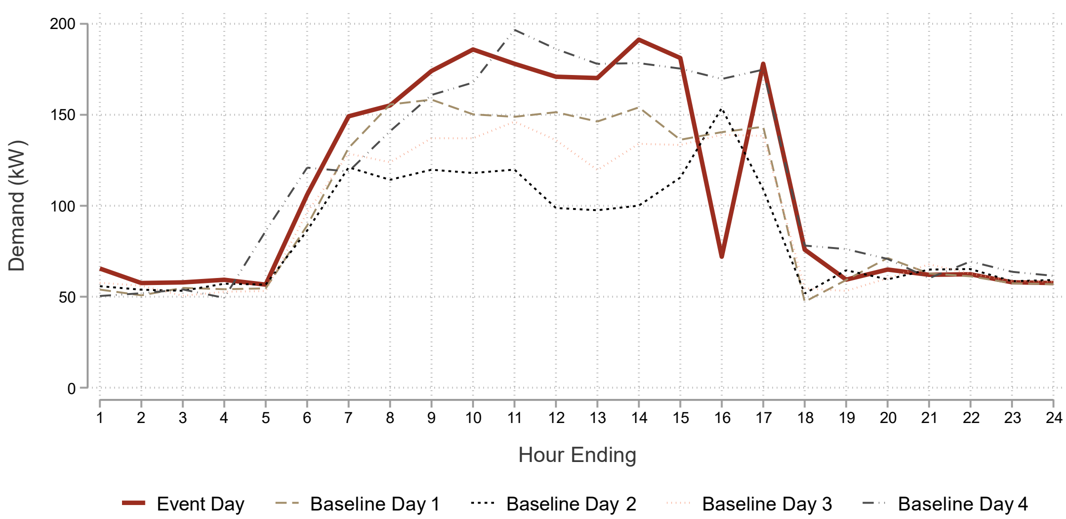


Figure 9-15 Baseline Day Selection

[19] Eligible days are weekdays that are neither holidays or DR event days.

Once the baseline days are selected, the CBL is calculated by averaging loads across the three baseline days for each 5-minute interval. If the participant's load is found to be weather sensitive, then a weather-based baseline adjustment is added to the CBL. The adjustment is calculated as

$$Adjustment = Slope * (\Delta_{Temp})$$

In the equation above, ΔTemp represents the difference between the average outdoor temperature during the event and the average outdoor temperature during the event window on the three selected baseline days. "Slope" is a value that quantifies the relationship between outdoor temperature and load for the facility (i.e., for each one-degree increase in temperature, how much does load increase on average?). This value is determined via regression modeling using hourly demand data over two summers. Note only common event hours (1:00 PM through 8:00 PM) are included in the regression. An example for one site is shown in Figure 9-16. The slope of the trend line in this example is 3.86.

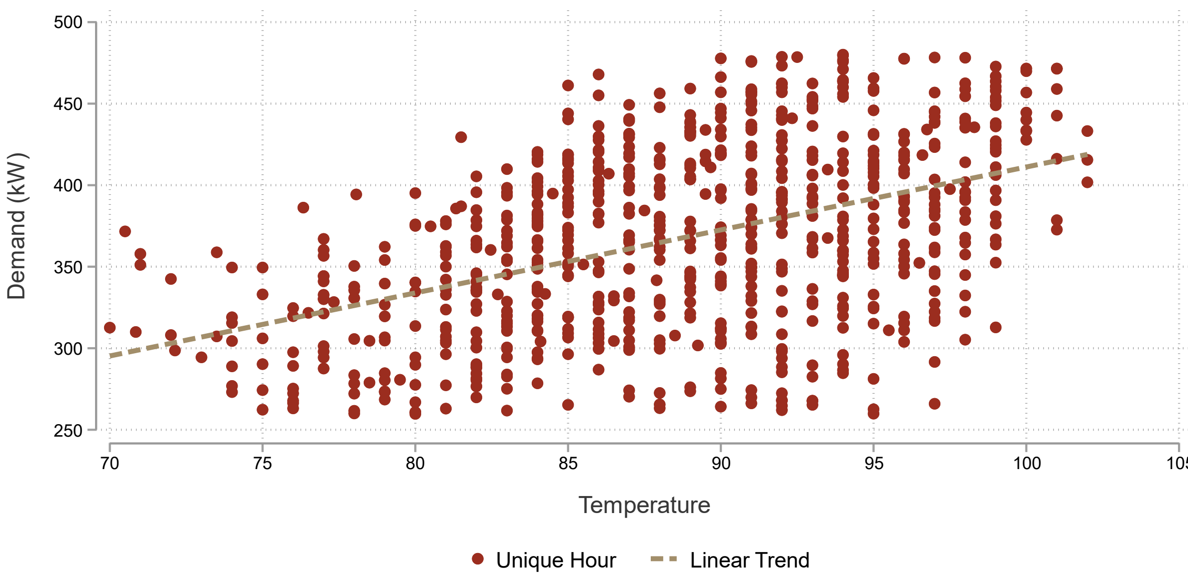


Figure 9-16 WSA Factor Determination

9.2.2 Performance Metrics

Once we validate that the baselines were calculated according to the contract method, our team replicates Itron's performance metrics

- **10-Minute Capacity Performance –** The difference between the baseline and the lowest actual electrical demand measured by a one-minute interval reading between eight and ten minutes after the start of an event.

- **Average Capacity Performance –** The average difference between the baseline and the participant's actual electric demand beginning ten minutes after the initiation of the event.
- **Participant Event Capacity Performance –** Weighted average of 10-Minute Capacity Performance (40% weight) and Average Capacity Performance (60% weight).

9.2.3 Sites Without Metering Data

Metering data was only available for approximately 10% of Peak Saver sites, though these sites represent over half of the nominated Peak Saver load reductions (Table 85 and Figure 9-17). For the metered sites, CBLs and performance metrics were calculated as described above. For sites without metering data, reported performance metrics were based on site-level kW nominations. These nominations represent how much load the site expects to curtail when DR is dispatched. Itron plans to have meters installed in at least 90% of the sites by June 1st, 2025.

Table 85 Participation Counts and Demand Reductions by Metering Status

Event Date	Participation Count			Reported kW Impact		
	With Metering	Without Metering	Total	With Metering	Without Metering	Total
6/25/24	19	290	309	8,675	8,276	16,951
7/31/24	32	277	309	10,088	7,456	17,544
10/10/24	20	67	87	14,511	2,975	17,485

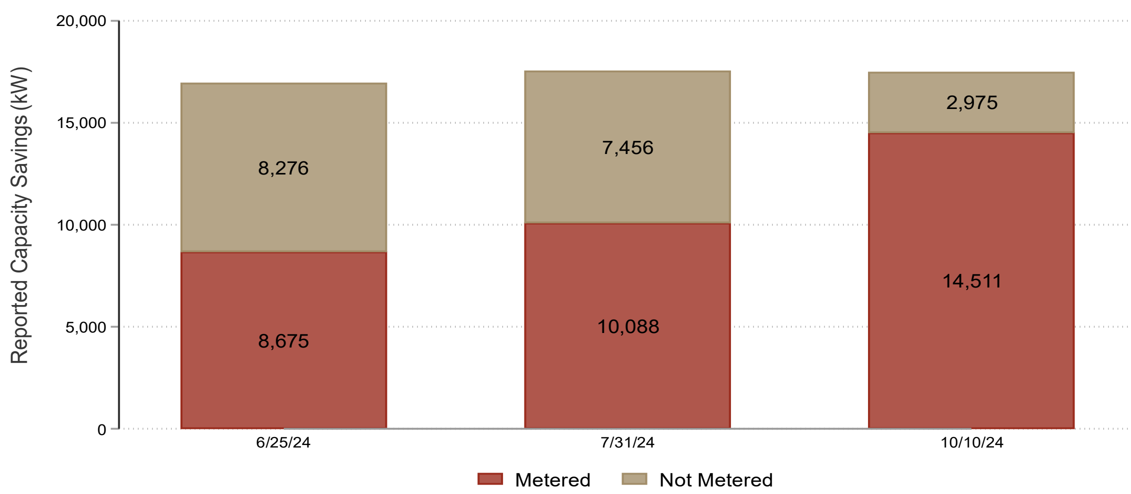


Figure 9-17 Distribution of Reported Capacity Savings by Metering Status

9.2.3.1 Estimating Demand Impacts for Sites with Metering Data

This section describes how the Evaluation Team estimated impacts for sites with metering data. Our approach for sites without metering data is described in Section 9.2.3.

Our verified savings analysis largely followed the approach laid out in Section 9.2.1.2 which details how Itron calculates baselines and demand reduction estimates per their contract with PNM.

However, the verified savings results reflect the following modifications to the Itron methodology:

- We did not use an R^2 threshold when determining which sites are eligible for the weather-sensitive baseline adjustment. We did retain the other two conditions used by Itron (positive slope and p-value < 0.05 for the temperature coefficient in the regression).
- We did not zero out negative demand reduction estimates. When settling with customers, it makes sense to zero out negative performance values. From an evaluation standpoint, zeroing out negative impact estimates creates an upwards bias in the results due to the asymmetric treatment of estimation error (favorable estimation error is attributed to the program but some unfavorable estimation error is ignored).

- The figure below presents a CBL method flow chart.

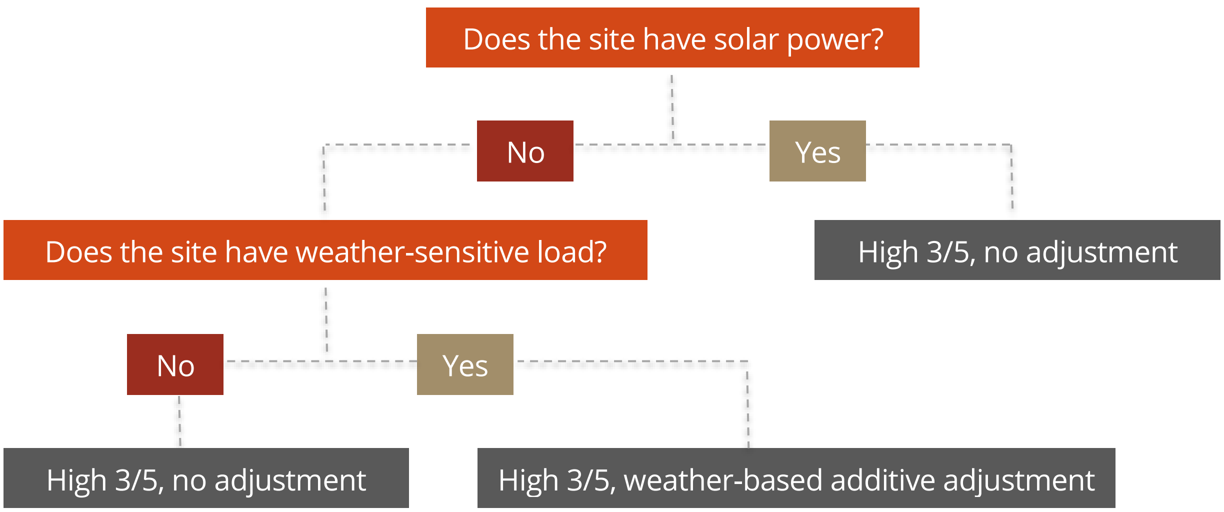


Figure 9-18 CBL Assignment Flow Chart

To determine which sites have behind-the-meter solar photovoltaic power, our team reviewed hourly load profiles for the subset of participants with metering data. Sites that showed the distinct solar net load profile, as in the figure below, were treated as solar sites. Additionally, sites that were previously designated as solar customers in 2022 Peak Saver interconnection data were marked as solar sites. In total, 13 of 34 sites with valid metering data were considered sites with solar power.

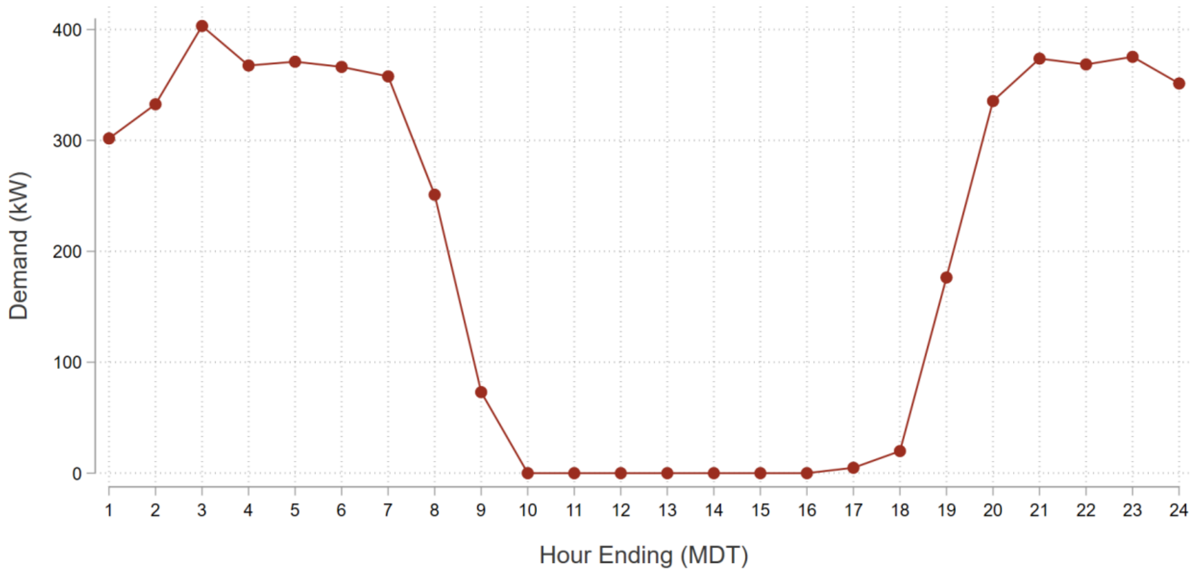


Figure 9-19 Example of Solar Load Profile

Regarding weather-sensitive loads, the Evaluation Team estimated weather sensitivity at each site by assessing the historical relationship between load and temperature during afternoon hours (1:00 PM – 8:00 PM) on non-event, non-holiday summer weekdays. Sites were weather sensitive if (1) the correlation between temperature and load was positive and (2) temperature was found to be a statistically significant predictor of load (at the 5% significance level) and (3) the site was *not* designated as using solar power. In total, 15 out of 34 sites with metering data met these criteria.

Table 86 shows the distribution of CBL methodology for the 2024 verified savings analysis.[20]

Table 86 Distribution of CBL Method for Sites with Metering Data

CBL Approach	Number of Sites
High 3/5, no adjustment	19
High 3/5, weather-based additive adjustment	15
Total	**34**

[20] For the 10/10 event, we used a "high 1-of-1" baseline approach for thirteen of the metered schools due to schools operating on a reduced schedule. This is detailed in Section 9.2.3.3.

9.2.3.2 Estimating Demand Impacts for Sites without Meter Data

For sites without metering data, Itron's reported impact is equal to the site-level nominated kW value. This nomination value is established in the participation agreement and represents the site's expected load reduction when dispatched. The underlying assumption in Itron's reported savings values is that every site without meter data delivered exactly the kW reduction they nominated. For our verified savings analysis, the Evaluation Team applied realization rates (RRs) to the nominated kW values to reflect historic performance relative to nominations. The realization rates were based on verified capacity savings estimates from the 2022-2023 Peak Saver events. More details are provided in the figure below.

1

Was the site a Peak Saver participant in 2022 or 2023?

- If yes, the nomination realization rate is the ratio of their historical average verified reduction and the 2024 nomination (capped at 100%).
- If no, proceed to step 2.

2

Can the site be assigned a business type (e.g., school, hardware store) for which we have historical performance data?

- If yes, use the 2022-2023 verified Peak Saver results to calculate the average verified reduction for the store type. The nomination realization rate is the ratio of this historical average and the 2024 nomination (capped at 100%).
- If no, proceed to step 3.

3

Using the 2022-2023 verified Peak Saver results, remove sites with nominations greater than 100 kW. Then, calculate the nomination realization rate as follows

$$RR = \frac{Sum\ of\ 2022\ and\ 2023\ Verified\ Capacity\ Reduction\ Estimates}{Sum\ of\ 2022\ and\ 2023\ Nominations}$$

Figure 9-20 Nomination Realization Rate Logic

Table 87 shows the number of sites that fall into each RR bin and the average RR for each bin. Note that nomination RRs were not applied to the sites that have meter data. The sites with metering data are not included in the table.

Table 87 Average Nomination Realization Rates for Sites without Metering Data

RR Approach	Percent of Sites	Average RR
Historical Participant (Step 1)	38%	57%
Store Type (Step 2)	12%	36%
Other (Step 3)	50%	93%
Total	**100%**	**72%**

9.2.3.3 Accounting for School Closures

Several of the Peak Saver participants are schools, and two of the school districts in New Mexico were closed on the October event day. Albuquerque Public Schools (APS) were closed to students on 10/9 and 10/10.[21] Rio Rancho Public Schools (RRPS) were closed for fall break on 10/10.[22] We reviewed aggregate loads for relevant participants to determine if there was a response to the DR dispatch on 10/10. Our findings are described below.

Figure 9-21 shows aggregate loads for APS participants. The teal bar denotes the event hour. Between 7 AM and 10 PM, loads for four of the five potential baseline days are significantly higher than the event day load. This makes sense, as those four days represent normal operating days at the schools. Baseline day 5 (10/9) looks more similar to the event day because schools were closed to students on this day too. Focusing on the hour ending 15 (2-3 PM), there does appear to be a small DR response on the event day.

Rather than assigning an impact of zero for APS participants on the 10/10 event, our approach for estimating impacts for these participants uses 10/9 as the only baseline day (not the approach laid out in Section 1.1.1.3). We applied a multiplicative adjustment to the baseline based on loads during the hour prior to the event (1-2 PM). The multiplicative adjustment was calculated as

$$Adjustment\ Factor = \frac{Average\ Load\ between\ 1\ PM\ and\ 2\ PM\ on\ 10/10}{Average\ Load\ between\ 1\ PM\ and\ 2\ PM\ on\ 10/9}$$

[21] See the school schedule at https//www.aps.edu/schools/school-calendars-and-grading-periods/24_25-printable-calendar-english
[22] See the school schedule at https//www.rrps.net/article/1171596

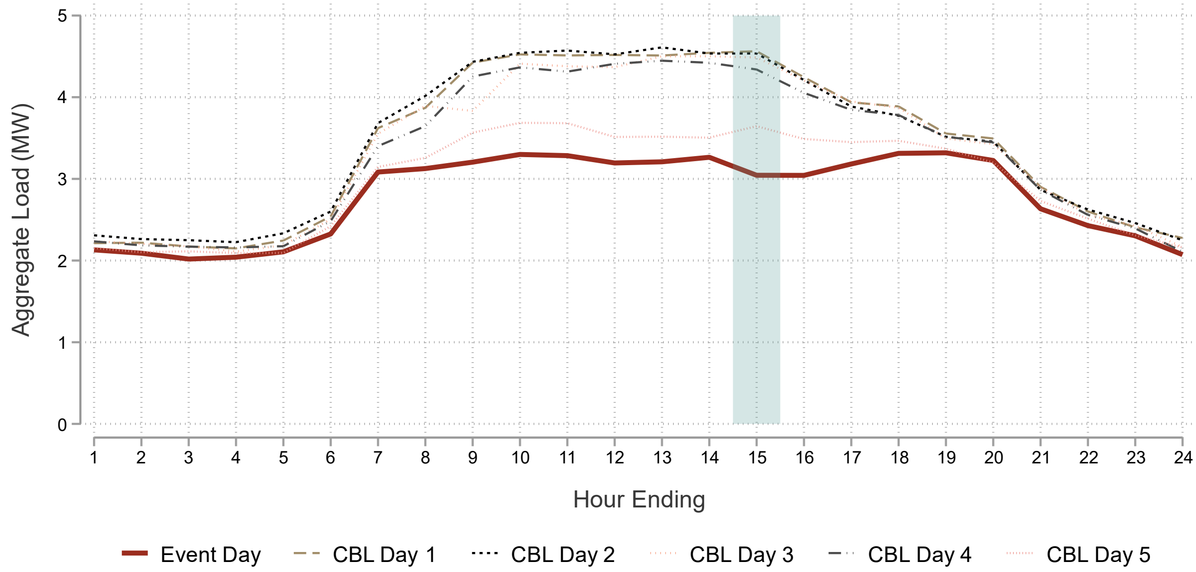


Figure 9-21 Aggregate Load on 10/10/24 for APS Participants

The figure below shows aggregate loads for RRPS participants. The teal bar denotes the event hour. The fact that the baseline days are not representative of the event day is moot, as there is no visible response to the DR dispatch for the RRPS schools on 10/10. For this reason, our verified impact estimates for all RRPS schools on 10/10 will be zero. Note we reviewed weekend load patterns for RRPS participants, and the load shape is consistent with the event day load shape in the figure below.

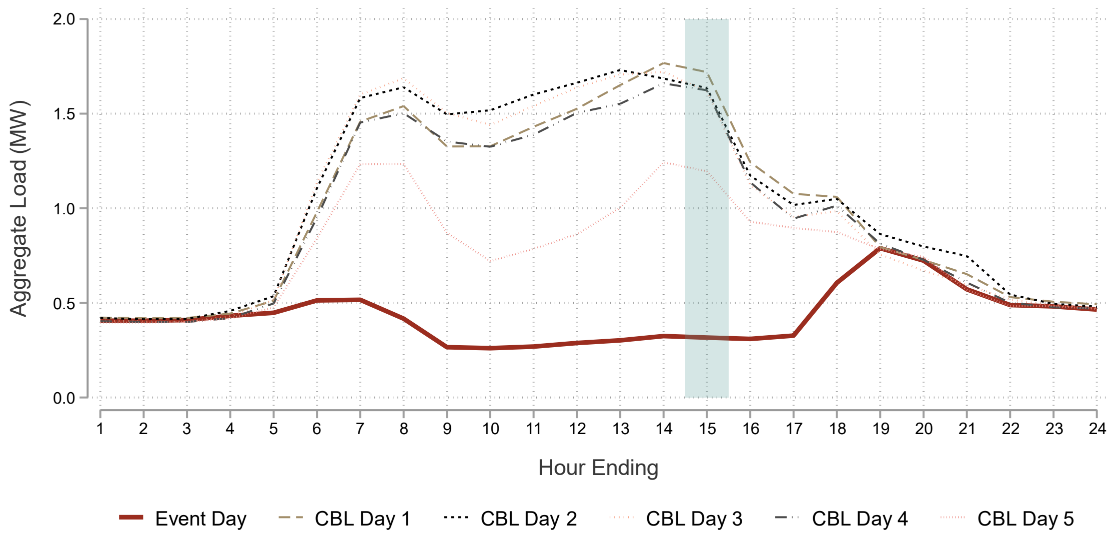


Figure 9-22 Aggregate Load on 10/10/24 for RRPS Participants

9.2.3.4 Estimating Energy Impacts

The Evaluation team estimated net energy impacts for each event by summing verified hourly impacts from the onset of each event through the end of the event day. Including post-event hours in this calculation accounts for load shifting that occurs due to the event (i.e., snapback). For sites designated as pre-pumpers, we also include the hour before the event in the daily energy impact. Note we're using "pre-pumping" as a catch-all term to identify any load-shifting behaviors that precede a DR event. Sites without metering data receive an energy impact of zero kWh (effectively assuming the event is energy neutral).

In cases where the total snapback (or pre-pumping) exceeds the total energy savings during the event, we assign an energy impact of zero kWh. In other words, we're assuming that the demand response events will not lead to an overall increase in daily energy consumption.

Regarding pre-pumping, our team reviewed hourly load profiles on event days and baseline days for the full population of program participants. The figure below illustrates this exercise. Sites with a notable incline in pre-event load, relative to load during the same hours on baseline days, were treated as pre-pumpers. This load-shifting behavior is reasonable for a demand response participant but needs to be accounted for in energy impact calculations. In our review, only one site was flagged as a pre-pumper.

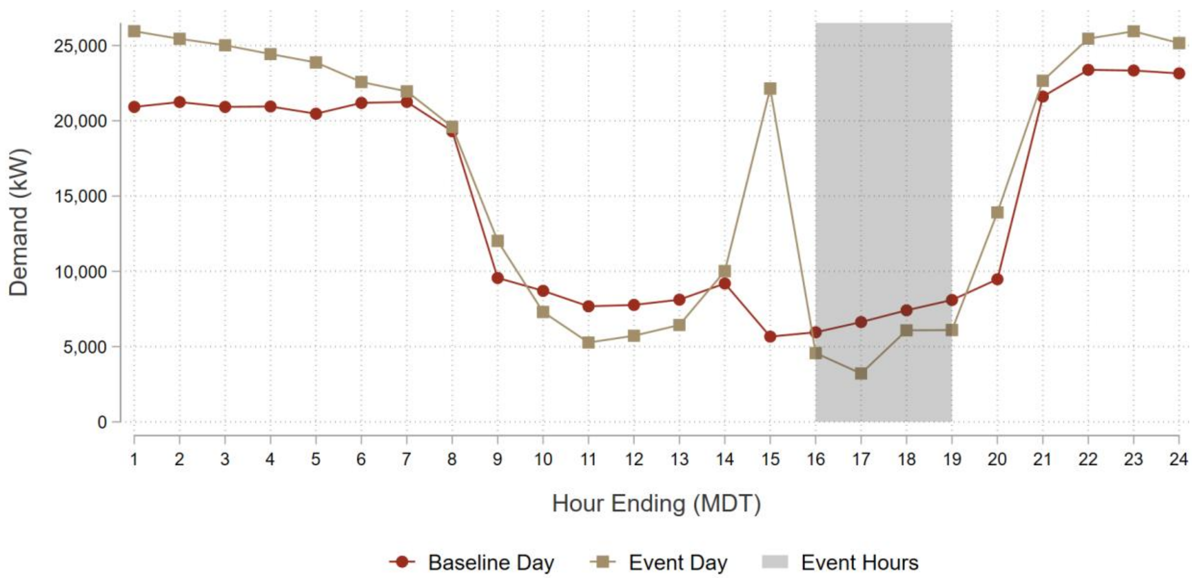


Figure 9-23 Example of Pre-Pumper Load Profile

9.2.4 Replication of Reported Metering Impacts

For the sites with metering data, our team was able to replicate Itron's weather sensitivity results and successfully replicate most of their CBL and kW reduction estimates. Results from this exercise are shown in Table 88. Note most Peak Saver participants did not have metering data available in 2024 and are not represented in the table, but the sites with metering data account for more than 50% of the reported kW reduction for each event day.

Differences observed in Table 88 are generally small and limited to just five participants.

Table 88 Replication Results for Participants with Metering Data

Date	Aggregate kW Reduction		
	Itron	Replica	% Difference
6/25/24	8,675	8,621	0.6%
7/31/24	10,088	10,054	0.3%
10/10/24	14,511	14,392	0.8%

9.2.5 Verified Results

9.2.5.1 Capacity Impacts

The results of the Evaluation Team's 2024 Peak Saver evaluation are shown in Table 89 and visualized in Figure 9-24. Our findings indicate the Peak Saver program is approximately a 13.8 MW summer capacity resource. To estimate winter resource capability, we recommend dispatching an event on a cold winter day. The high temperature on October 10th was approximately 85°F.

Table 89 Verified Impacts

Date	Demand Impact (kW)		
	Metered	Not Metered	Total
6/25/24	8,467	4,981	13,488
7/31/24	9,620	4,503	14,122
10/10/24	13,215	821	14,035
Summer Average	**9,044**	**4,742**	**13,805**

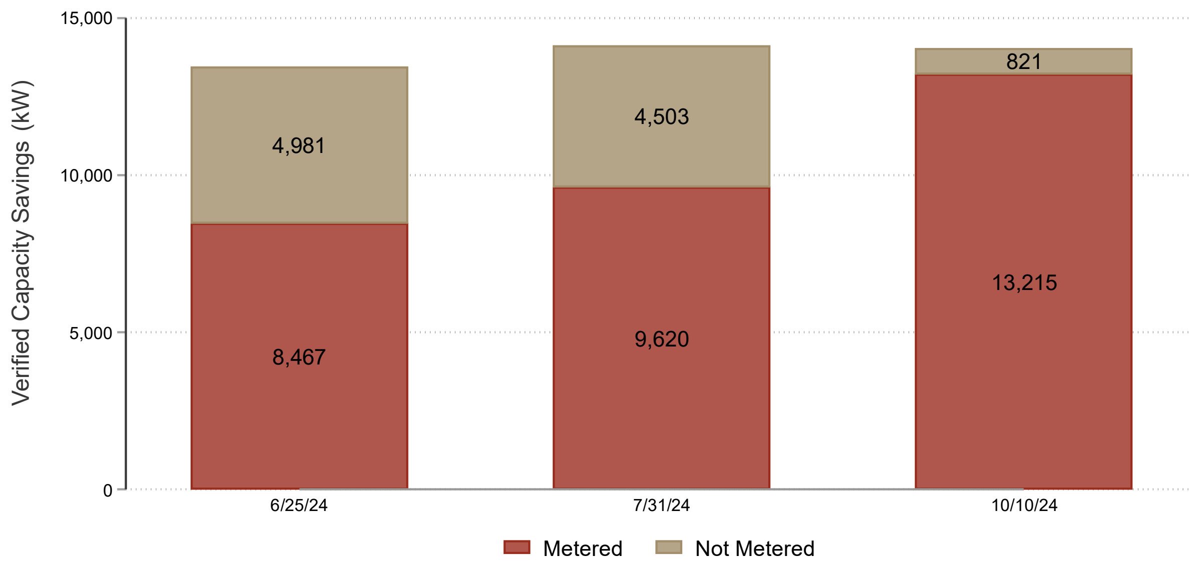


Figure 9-24 Distribution of Reported Capacity Savings by Metering Status

By date, the figure below shows aggregated hourly loads, baselines, and impacts for the sites with metering data. The difference between baseline day load and event day load during pre-event hours is due to load shifting (see figure below). The largest participant shifts load to the pre-event hours so they can reduce load during the event hours. This is the pre-event spike that shows up on the event day loads but not the baseline day loads (specifically for 6/25 and 7/31).

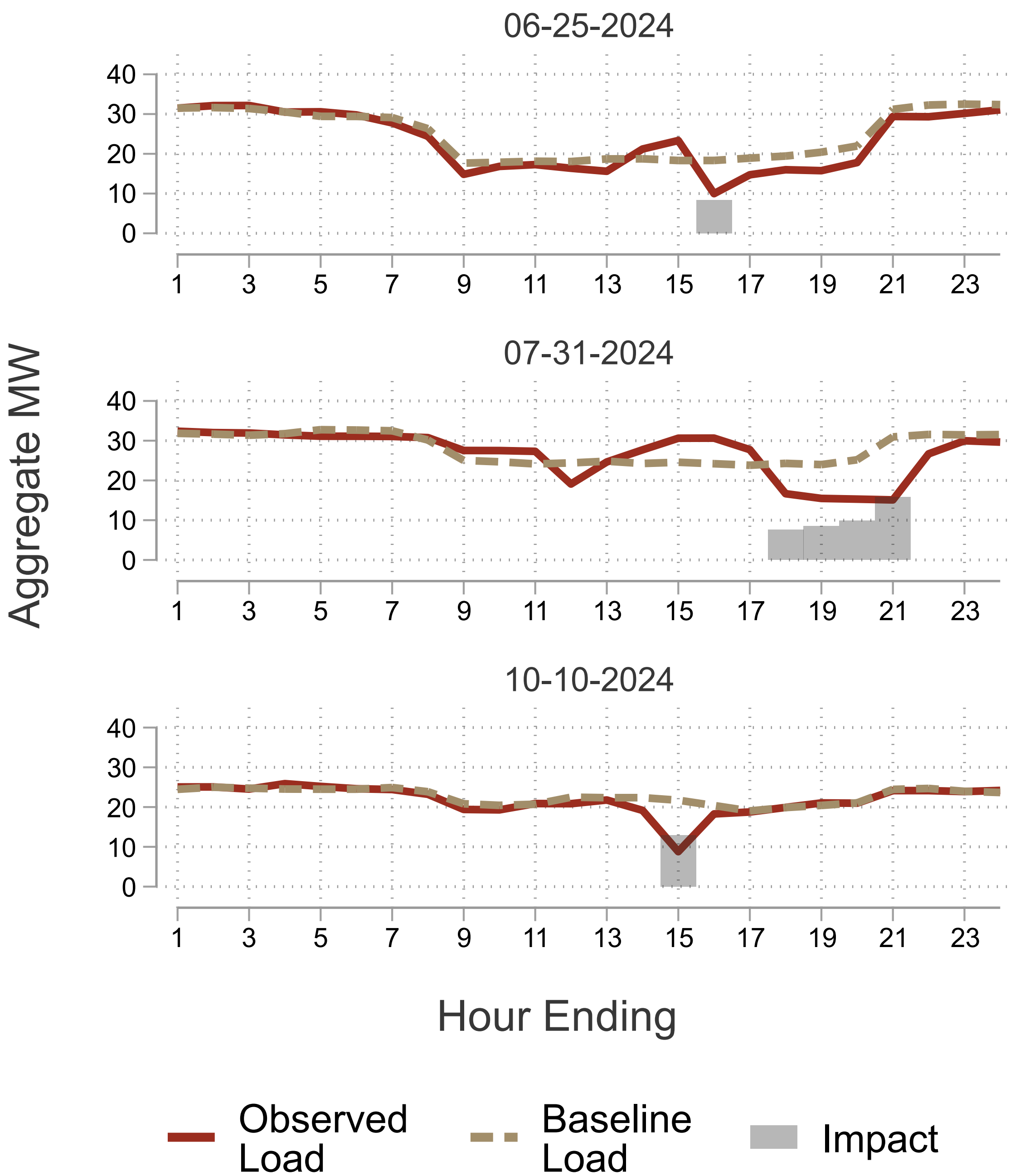


Figure 9-25 Impact Results for Sites with Metering Data

Peak Saver capacity reductions are driven by a few large sites. The top three sites accounted for over 95% of the metered load reductions on 6/25 and 7/31. Figure 9-26 shows aggregate participant load during the 7/31 event (just for sites with metering data). Note the DR event occurs during the hours

18-21 (5-9 PM). Each color in the plot represents a different participant. The height of the stacked bars is equal to aggregate demand for the metered sites. One participant tower over the rest, and the total load for three other participants is comparable to the total load of the remaining metered participants. Load shed is evident for the largest participant (see hours 18-21) but not for any others.

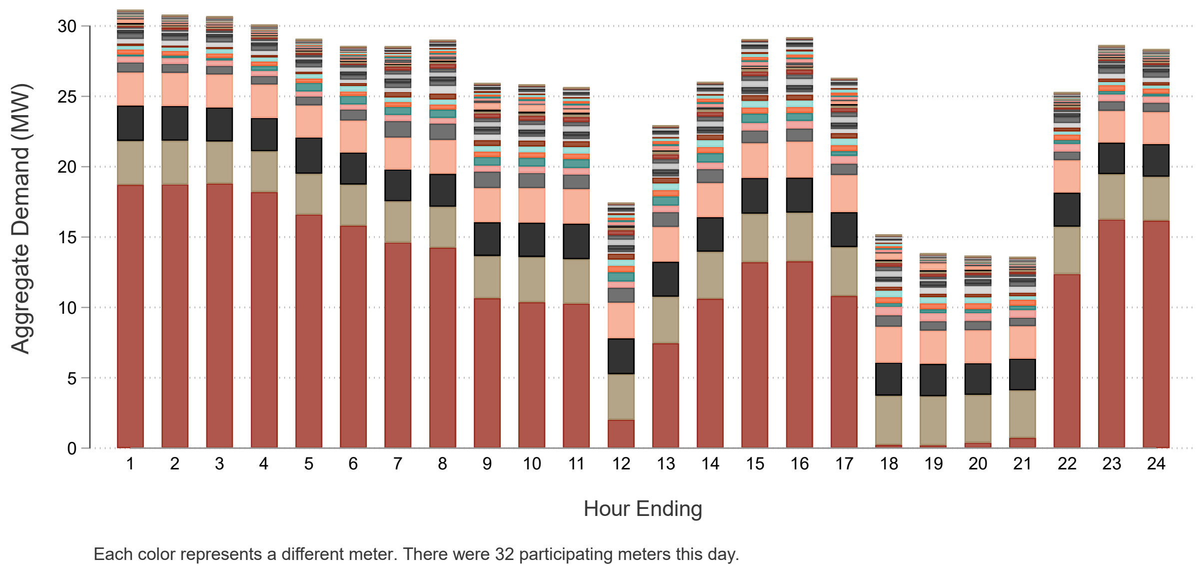


Figure 9-26 Hourly Site-Level Loads on 7/31

9.2.5.2 Energy Impacts

Table 90 compares aggregate energy savings during events with the aggregate daily energy savings. Here, a "day" is defined as all hours following the beginning of the event (including the event hours), with the adjustment factor applied to all hours. For sites designated as pre-pumpers, we also include the hour before the event in the daily energy impact. Comparing the energy savings during the event and the daily energy savings helps illustrate the extent to which event load was shifted to other hours.

Note energy impacts are only assessed at sites with metering data. For sites without metering data, we assume the event is energy neutral (i.e., no energy impact).

Table 90 Energy Savings for Sites with Metering Data

Date	Pre-Event Energy Impact (kWh)	Event Energy Impact (kWh)	Post-Event Energy Impact (kWh)	Daily Energy Impact (kWh)
6/25/24	-5,136	8,344	24,831	28,039
7/31/24	-3,022	41,874	8,242	47,094
10/10/24	198	12,941	2,179	15,318
Average	**-2,653**	**21,053**	**5,211**	**30,150**

9.2.5.3 Historical Comparison

Table 91 shows a year-over-year comparison of the Peak Saver performance metrics for the years 2018 through 2024. The relevant performance metrics are

- **10-Minute Participant Capacity Performance –** The difference between the CBL and the lowest actual electrical demand measured by a one-minute interval reading between eight and ten minutes after the start of an event.
- **Average Participant Capacity Performance –** The average difference between the CBL and the participant's actual electric demand beginning ten minutes after the initiation of the event.
- **Participant Event Capacity Performance –** Weighted average of 10-Minute Participant Capacity Performance (40% weight) and Average Participant Capacity Performance (60% weight).

Note the Peak Saver population has changed over time, and the results in any given year are a function of participant mix, event conditions, and event timing. The comparison loses some of its usefulness in 2024 since not all Peak Saver participants were metered and capacity estimates for some sites were based on historical performance. The program implementer also changed from 2023 to 2024.

Table 91 Historical Evaluated Performance, Summer Events

Year	Metered Participants	Summer Events	10-Minute Capacity Performance (kW)	Average Capacity Performance (kW)	Verified Capacity Performance (kW)
2018	86	12	17,558	13,655	15,216
2019	92	3	17,460	15,342	16,189
2020	130	10	13,433	12,528	12,890
2021	157	2	18,975	16,532	17,509
2022	159	3	17,659	13,975	15,449
2023	160	2	17,543	14,850	15,927
2024	28	2	9,291	10,512	10,023

9.2.6 Bias Assessment

This section details our review of the Itron contract CBL methodology (described at the beginning of Section 9.2.1.2). Specifically, we assess the ability of the CBL methodology to predict load on non-event weekdays.

Assessing the accuracy of a baseline on an event day is not possible because the counterfactual is unknown. In other words, we do not know what the demand would have been if the event was not called. However, using the same algorithm to generate a baseline on non-event weekdays should reasonably predict the metered load. For these days, the true value of demand response is 0 kW, so non-zero impact estimates can be attributed to error. Individual errors are expected as the lookback window is not intended to be a perfect predictor of future load. That said, an unbiased baseline methodology should produce a distribution of errors which is centered around zero.

To evaluate the accuracy of the settlement CBL, the Evaluation Team analyzed the central tendency of prediction errors by running a false experiment on non-event days. Only sites with meter data could be included in this analysis. Steps taken were as follows:

Figure 9-27 False Experiment Steps

1. Use the settlement CBL to predict hourly loads for each participant on each non-event, non-holiday weekday.
2. Sum the CBLs and metered load for all participants by date and hour.
3. Calculate error as aggregate CBL minus aggregate load.
4. Review the distribution of errors, specifically for hours in which DR has historically been dispatched.

Results for the settlement baseline, aggregated by month, are shown in Table 92. Note only hours 4:00 PM – 8:00 PM are included in the comparison. Though the settlement baseline does produce some upwards bias (+3.5%), we think the baseline method predicts load reasonably well on aggregate. Figure 9-28 shows the average aggregate load and the average aggregate CBL across all non-event, non-holiday weekdays, and Figure 9-29 shows the distribution of hourly errors during the 4:00 PM – 8:00 PM window.

Table 92 Bias Assessment Results

Month	Number of Placebo Events	Average Aggregate Load (MW)	Average Aggregate CBL (MW)	Average Error (MW)	Percent Error
June	11	18.1	18.7	0.6	3.6%
July	22	20.5	21.0	0.5	2.5%
August	22	23.1	24.0	0.9	3.8%
September	21	20.8	21.6	0.8	4.0%
Average	**76**	**21.3**	**22.0**	**0.7**	**3.5%**

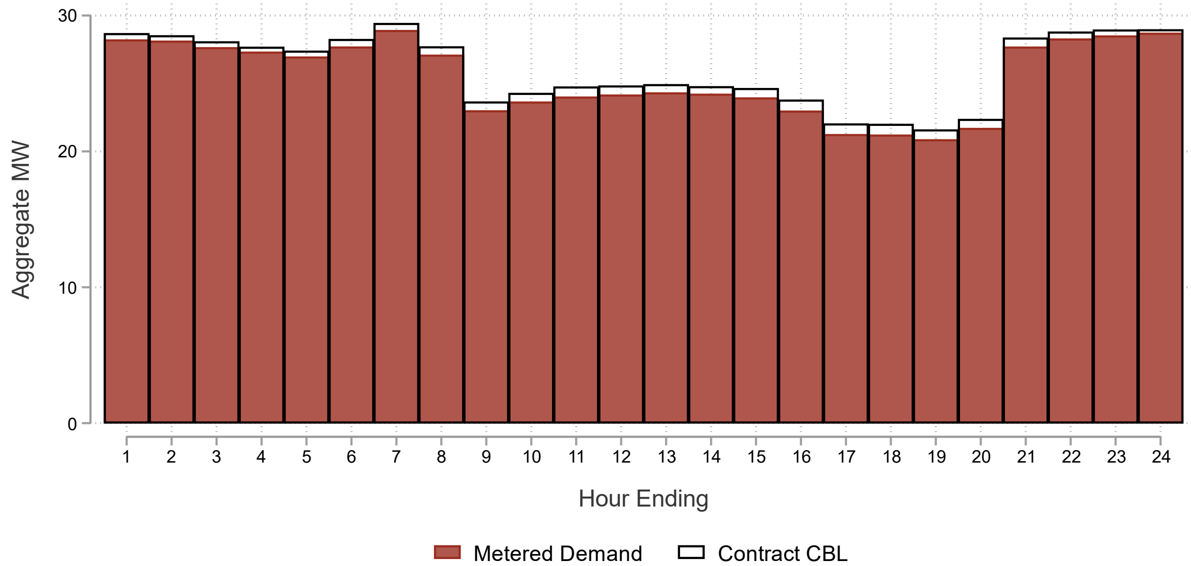


Figure 9-28 Average Aggregate Demand and CBL on Non-Event Days

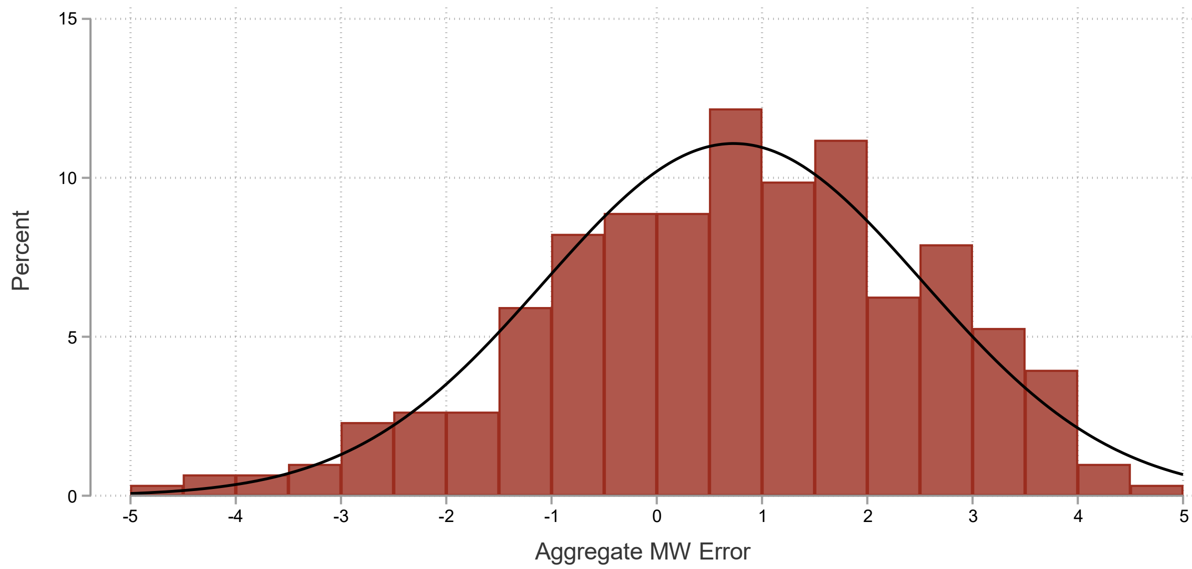


Figure 9-29 Distribution of Placebo Event Prediction Errors

In addition to the Itron-PNM contract CBL, we tested out two other CBL approaches in the bias assessment:

- No sites receive the weather-sensitive baseline adjustment.

- The R^2 filter from the weather sensitivity analysis is removed, which makes more sites eligible for the weather-sensitive baseline adjustment. Sites with solar remain ineligible for the weather-sensitive baseline adjustment.

Table 93 shows the average error produced by each of the CBL approaches we tested out. The results are similar across approaches. With an average aggregate error of 0.71 MW, the "Relaxed WSA Conditions" marginally outperforms the contract method.

Table 93 Bias Comparison – All Days

CBL Approach	Average Aggregate Error (MW)	Percent Error
Contract	0.74	3.5%
No WSAs	0.76	3.6%
Relaxed WSA Conditions	0.71	3.4%

Considering that DR events are typically dispatched on the hottest days of the summer, we also specifically examined the ten warmest non-event, non-holiday weekdays. Table 94 compares results across the three CBLs we tested. As before, the results are similar across the three approaches with the "Relaxed WSA Conditions" approach performing best (with an average aggregate error of 0.01 MW).

Table 94 Bias Comparison – Top 10 Warmest Days

CBL Approach	Average Aggregate Error (MW)	Percent Error
Contract	-0.18	-0.8%
No WSAs	-0.27	-1.2%
Relaxed WSA Conditions	0.01	0.0%

Though all methods we tested predict load well, we used the "Relaxed WSA" conditions for our verified savings analysis because this method slightly outperforms the other methods on event-like days.

9.2.7 Nominations

The following sections detail comparisons between monthly site-level DR kW commitments ("nominations"), average demand, and DR impacts. There are two central questions

1. How do nominations compare to average demand?
2. How do nominations compare with verified DR performance?

These comparisons are limited to sites with metering data (approximately 10% of participants).

9.2.7.1 Average Demand

How do nominations compare to average demand? In answering this question, we calculated the average hourly demand for each participant during afternoon hours (4:00 PM – 8:00 PM) on non-event, non-holiday weekdays. We then compared these averages to the nomination for the site. Ratios were calculated as the nomination divided by average load (and multiplied by 100%).

Figure 9-30 shows the distribution of ratios. We expect the ratios to fall between 0% and 100%. A value greater than 100 percent implies the participant's nomination exceeds their average demand. For most participants, DR nominations make sense relative to their average hourly demand on non-event summer afternoons with average temperatures over 80°F. For some others, the ratio was considerably greater than 100 percent, meaning the site is pledging to reduce more load than they typically have available. The outlier in the right tail has a nomination of 3,000 kW. Loads at this site do often exceed 3,000 kW but the daily peak for this participant typically occurs in the early afternoon. By 4:00 PM, loads are typically around 200-300 kW.

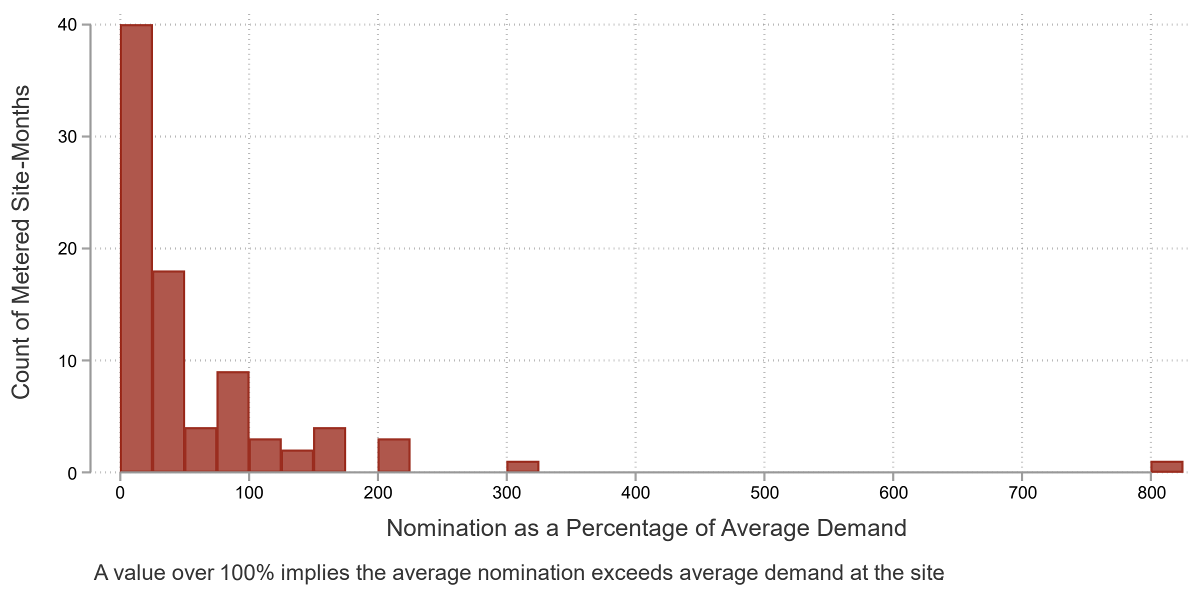


Figure 9-30 Nominations as a Percentage of Demand

9.2.7.2 DR Performance

This section compares DR nominations with verified performance metrics (as calculated by the Evaluation Team). The metric our team reviewed was the percentage of the nomination achieved, calculated as follows

$$Percent\ of\ Nomination\ Achieved = 100\% * \frac{Verified\ Reduction}{Nominated\ Reduction}$$

Figure 9-31 shows the distribution of these percentages. For each participant, unique percentages were calculated for each event, using the nomination for the relevant month. Sites that did not participate in a certain event day are not included in this analysis. Instances where actual reductions do not exceed nominated reductions result in percentages that are less than 100 percent, and vice versa. Most of the distribution falls below 100 percent, implying that most sites did not achieve their nominated load reductions. An achievement percentage less than zero means the DR performance for the event was negative (meaning event day load exceeded baseline day load during the event window).

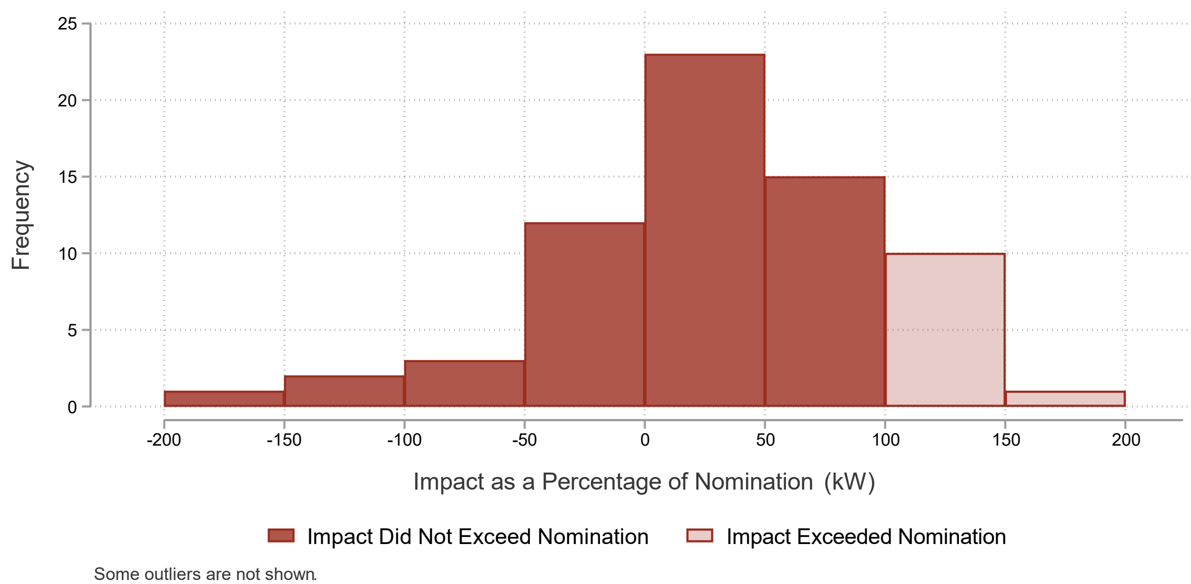


Figure 9-31 Comparison of Verified Impacts to Nominations

Table 95 groups participants based on how their verified reductions compared to their nominated reductions. Of the metered participants, only four exceeded their nomination on average but these four accounted for over 9 MWs of demand reductions. Another 19 participants – accounting for about one third of total nominations – did not exceed their nomination but did provide demand reductions. Finally, some sites did not produce any demand reductions. These sites accounted for approximately 0.8 MWs of nominated reductions. Three of the participants with negative verified reductions have solar PV.

Table 95 Nomination Bins

Results	Frequency	Aggregate Nomination (kW)
Did Not Exceed Nomination	19	4,931
Exceeded Nomination	4	9,378
Negative Performance	11	768
Total	**34**	**15,077**

9.2.8 Conclusions and Recommendations

After our review of the 2024 Peak Saver program, the Evaluation Team offers the following recommendations.

Table 96 Findings and Recommendations

Finding	Recommendation
1. The nominated demand reductions for some participants are too high. DR nominations exceed available load for some participants, meaning the site is pledging to reduce more load than they typically have available.	**Recommendation** Periodically comparing nominations and afternoon demand for each premises. For premises where the nomination seems unrealistic, revise the nomination. The timing of DR events is relevant here. One site may be able to reduce their load by 3 MW at noon but only 0.3 MW in the late afternoon when the PNM system typically experiences constraint.
2. The contract baseline works reasonably well. A bias assessment shows the contract baseline tends to overpredict load by about 3.5% across all summer weekdays and underpredict load by 0.8% on the ten warmest non-event days.	**Recommendation** Run some tests on non-event days to determine if loosening the WSA-eligibility requirements improves the load predictions. Overall, however, we did not find any issues with the baseline used by the program implementation contractor.
3. Meters were installed at just 10% of sites. Though these 10% of sites represent over half of the verified load reductions, DR impacts should be based on measured performance rather than nominations and historical performance. PNM and the Itron have no guarantee that the sites responded at all without visibility into electric demand at participating facilities.	**Recommendation** The program implementation contractor plans to have meters installed for at least 90% of participants by June 2025. If possible, we recommend Itron follow the Pareto principal when installing meters – target the sites that are expected to produce the greatest reductions. Several of the largest participants are already being metered.
4. Peak Saver is now a year-round program. To estimate winter reduction capability, a test event was run in early October. It is difficult to say whether the results from an October event when outdoor air temperatures were in the 80s are	**Recommendation** We understand timing a test event in early October is necessary for Itron's settlement with customers and PNM. Still, we think running a test event on a very cold winter day would be useful for program planning purposes. Program performance is driven by three or four large C&I sites, and it's entirely possible that loads at these sites are not highly seasonal. Even a small degree of

Finding	Recommendation
representative of what would occur on a cold winter day. The October 10th test event was further confounded by the fact that two large participating school districts were not in session due to fall break.	seasonality can move the needle for a top-heavy program. We also recommend that winter test events target a day when area public schools are in session given the prevalence of schools in the program.
5. The program is top-heavy, and the largest sites may have variable operating schedules. A handful of sites will drive program performance for each event day. These large industrial sites sometimes have two distinct load patterns – one that is energy intensive and one that is not. While these sites can deliver significant load reductions, the variable operating profiles lead to CBLs and impact estimates with a wide margin of error.	**Recommendation** Itron should review event-day load shapes for the largest sites to confirm the sites are reducing load in response to DR dispatch. See Figure 9-32 for example. Note there is no DR in this plot as this participant did not participate in the 7/31 event. But what if they had been an active participant for the 7/31 event? Or what if DR had been called 7/11 or 7/18? Regardless of which day type the event is dispatched on, the baseline will invariably reflect the energy intensive day type. If an event is dispatched on a non-intensive day, the difference between intensive and non-intensive day types would be attributed to the program. A strategy we see in other jurisdictions is to request a production schedule from industrial participants that can be used to refine the CBL calculations and better forecast event performance. For example, if it is known that the site shown in Figure 9-32 is not running its energy intensive processes on a given day, PNM grid operators would know to expect less reduction from the Peak Saver program.

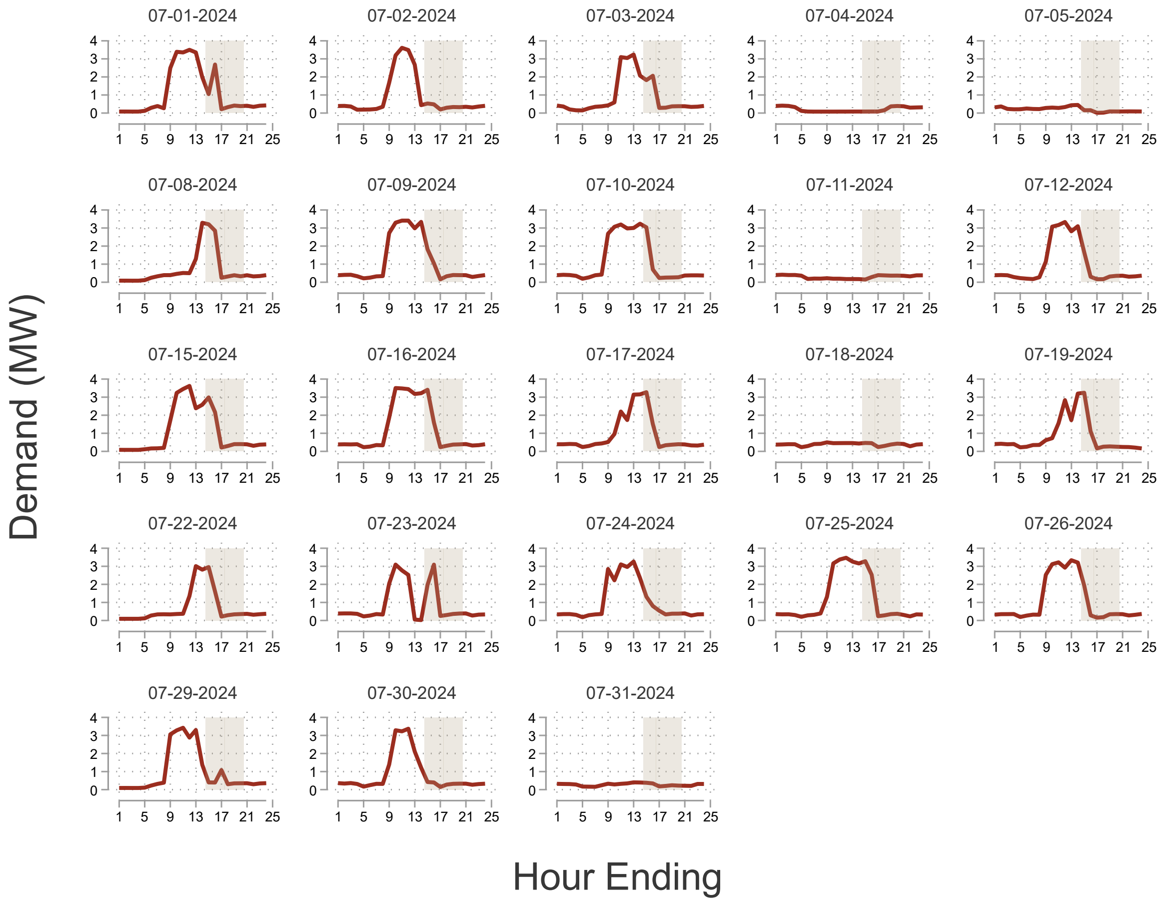


Figure 9-32 Hourly Load Shapes during Weekdays in July for One Participant

10 Home Energy Reports

The PNM Home Energy Reports (HER) program provides customers with information on their energy consumption that includes a “neighbor comparison” with a matched set of similar households. This normative comparison is delivered via email or regular mail and motivates recipients to conserve energy. The HER messaging also includes tips on how to reduce energy consumption. About one third of PNM’s 488,000 residential accounts received HERs in 2024.

In 2024, four waves (or cohorts) of households were active and received HERs. Three of the four waves were delivered as randomized controlled trials (RCTs) where the program implementer randomly assigned customers to either a treatment group (receives the HERs) or a control group (does not receive the HERs). The RCT framework facilitates the measurement of impacts. At a high level, consumption in the control group serves as a baseline for what consumption in the treatment group would be absent behavioral changes due to HER delivery. The 2023 Paper Expansion wave was a pseudo-RCT. This wave recycled some control group homes from prior waves, which means that the experimental cells for this wave are not entirely randomized. Note the 2024 Email wave re-randomized households from dissolved waves, meaning some participants in the control group were previously exposed to HER treatment, and some treatment participants were exposed to HER treatment before the 2024 Email wave launched.

Table 97 summarizes the average number of active households for these four cohorts. Some waves receive communications exclusively via email, and the other waves receive HERs papers via postal service mail.

Table 97 PNM HER Cohorts Summary

Wave	Program Start Date	Treatment Group Size	Control Group Size
2021 Email	6/3/2021	97,965	10,956
2021 Paper	6/4/2021	26,479	11,370
2023 Paper Expansion	1/21/2023	24,813	8,150
2024 Email Refill	4/1/2024	18,006	6,087

We estimate that the HER program delivered **7,379 MWh** of energy savings and **1.25 MW** of peak demand savings in program year 2024. Table 98 shows the gross energy and peak demand savings for each wave. We do not show a traditional realization rate calculation since the reported and verified savings span slightly different time periods. The reported savings span January to November 2024 while the verified savings cover November 2023 to October 2024. Additional details regarding our analysis are included in the sections that follow.

Table 98 PY2024 Gross Savings

Wave	Annual Energy Savings (MWh)		Peak Demand Savings (MW)	
	Reported	Verified	Reported	Verified
2021 Email	2,482	2,451	0.28	0.325
2021 Paper	3,985	4,058	0.45	0.854
2023 Paper Expansion	784	668	0.09	-0.007
2024 Email Refill	134	202	0.02	0.080
Total	**7,385**	**7,379**	**0.84**	**1.252**

10.1 METHODOLOGY

10.1.1 Input Data

The primary data used for this analysis was monthly electric billing data for the treatment and control group homes. Due to the timing of this analysis, we were not able to get a complete record of 2024 bills for the relevant homes. For most customers, our last bill comes from October 2024. This means we cannot directly estimate savings accrued in November 2024 or December 2024. Instead, we use savings from November 2023 and December 2023 as a proxy for November-December 2024 savings. This mimics our evaluation approach from the PY2023 evaluation, so we are not double-counting PY23 savings by using November 2023 December 2023 as a proxy for November 2024 and December 2024.

Key fields in the billing data include billed consumption, cycle start date, and cycle end date. By month, Figure 10-1 shows the distribution of billed kWh across all bills in our data set (roughly 12 million total bills). Consumption is highest in the summer months and lowest in the shoulder months.

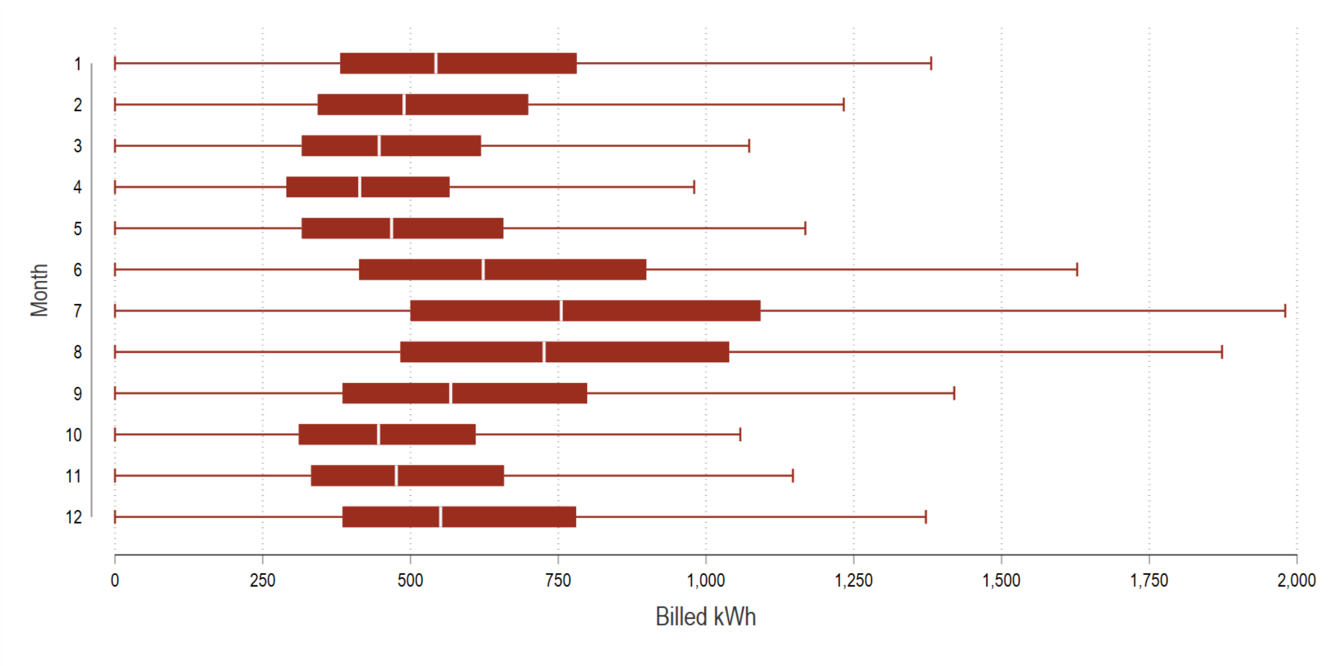


Figure 10-1 Distribution of Billed kWh by Month

10.1.2 Calendarization

Because billing cycles typically span two calendar months and read dates vary from customer to customer, we "calendarized" the billing data before estimating energy impacts. In calendarizing the data, the goal is to prorate billing data into a calendar month basis shared by all participants. This process is described through an example below. Table 99 contains four months of simulated billing data. The data and time periods are hypothetical and not from an actual PNM customer.

Table 99 Simulated Billing Data

Billing Period	Nov 12th–Dec 11th	Dec 12th–Jan 11th	Jan 12th–Feb 11th	Feb 12th–Mar 11th
Usage (kWh)	559	650	548	506
Average Daily	18.63	20.97	17.68	18.07

For each billing period, average daily usage can be calculated by dividing total usage by the number of days in the billing period. For example, there are thirty days in the November 12th – December 11th billing period, so the average daily usage is 559 / 30 = 18.63 kWh. This value can then be assigned to each day in the billing period. Table 100 shows estimated daily usage for each day in December.[23] Note that the first eleven days reflect the November 12th – December 11th billing period, and the last twenty days reflect the December 12th – January 11th billing period.

Table 100 Redistribute December Billing Data

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1 18.63	2 18.63	3 18.63
4 18.63	5 18.63	6 18.63	7 18.63	8 18.63	9 18.63	10 18.63
11 18.63	12 20.97	13 20.97	14 20.97	15 20.97	16 20.97	17 20.97
18 20.97	19 20.97	20 20.97	21 20.97	22 20.97	23 20.97	24 20.97
25 20.97	26 20.97	27 20.97	28 20.97	29 20.97	30 20.97	31 20.97

Summing the estimated daily usage values within each month yields prorated consumption values. This is illustrated in Table 101 for December, January, and February.

Table 101 Calendarized Billing Data

Value	December 2022	January 2023	February 2023
Estimated kWh	11(18.63) + 20(20.97) = 624.33	11(20.97) + 20(17.68) = 584.27	11(17.68) + 17(18.07) = 501.67
Average Daily kWh	624.33 / 31 = 20.14	584.27 / 31 = 18.85	501.67 / 28 = 17.92

10.1.3 Estimating Annual Energy Impacts

To calculate program savings for each wave, the Evaluation Team employed a Lagged Dependent Variable (LDV) regression model similar to the model Bidgely uses to calculate reported savings.

[23] 2022 calendar is used for this example.

Equation 10-1 Equation 10-1 shows the basic form of the LDV model. The LDV model is estimated exclusively using post-treatment observations ("post-only") but uses the average daily energy consumption from the month of interest prior to treatment (kWhi,m,y-n) as an independent variable.

Equation 10-1 LDV Model Specification

$$kWh_{imy} = \beta_0 + \sum_{m=1}^{12} \sum_{y=2021}^{2024} (\beta_{my} * I_{my} * kWh_{i,m,y-n}) + \sum_{m=1}^{12} \sum_{y=2021}^{2024} (\tau_{my} * I_{my} * treatment_{imy}) + \varepsilon_{imy}$$

Table 102 provides information about the terms in the LDV model specification.

Table 102 LDV Model Definition of Terms

Variable	Definition
$\mathrm{kWh}_{\mathrm{imy}}$	Customer i's average daily energy usage in bill month m in year y.
β_0	Intercept of the regression equation.
I_{my}	An indicator variable equal to one for each monthly bill month m, year y, and zero otherwise. This variable captures the effect of each billing period's deviation from the average energy use over the entire time series under investigation.
β_{my}	The coefficient on the bill month m, year y indicator variable.
$kWh_{i,m,y-n}$	The billed kWh for customer i in bill month m in the year prior to the assignment to treatment condition. The term n represents the number of years home i has been in the program. This term controls variability in customer characteristics such as home size and heating fuel.
$\mathrm{treatment}_{\mathrm{imy}}$	The treatment indicator variable. Equal to one when the treatment is in effect for the treatment group. Zero otherwise. Always zero for the control group.
τ_{my}	The estimated treatment effect in kWh per day per customer; the main parameter of interest.
$\varepsilon_{\mathrm{imy}}$	The error term.

The LDV regression model returns an estimate of the average daily savings per treated household in month m and year y. To compute the aggregate MWh savings attributable to HER delivery for a specific wave, we multiply the estimated treatment effect (saved kWh per treatment home per day) by the number of days in each month and the number of active households in the treatment group. Note treatment group homes that opt out of receiving HERs are included in the regression and the customer counts. This follows the "once randomized, always analyzed" approach.

10.1.4 Estimating Peak Demand Impacts

Since we cannot directly estimate peak demand savings with monthly billing data, the Evaluation Team used a New Mexico residential whole house electric load shape from NREL's ResStock load shape library[24] to distribute energy savings in the summer months to an hourly basis. This approach assumes that the HER effect is load-following.

Our peak demand multiplier was calculated as follows:

- We trimmed the New Mexico residential whole house electric load shape to June-August to reflect the summer peak period.[25] Figure 10-2 shows average hourly load profiles for each month. As expected, the load climbs as the outdoor temperature increases and peaks in the late afternoon.
- The ratio of average load during hour ending 18 (treating this as the peak hour) over average load for all hours and days of the summer peak period was calculated.
- The resulting value (1.519) was used as the peak demand multiplier. Peak demand savings are then calculated as:

$$Peak\ Demand\ Savings = \frac{Peak\ Months\ Energy\ Savings\ (MWh)}{2{,}208\ hours} * 1.519$$

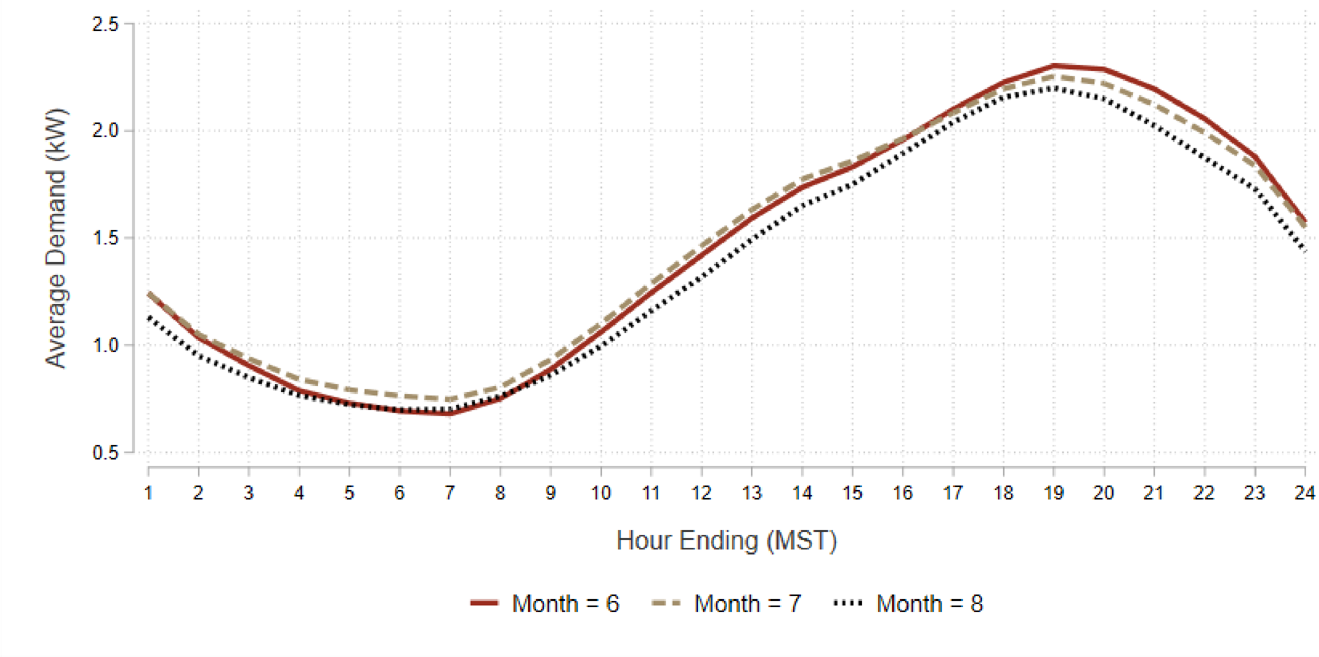


Figure 10-2 New Mexico Residential Load Profiles, June-August

[24] https//www.nrel.gov/buildings/end-use-load-profiles.html
[25] The Evaluators treat the summer peak period as June-August non-holidays weekdays during the 5-6 PM hour.

10.2 RESULTS

10.2.1 Group Equivalence

Assuming treatment and control groups consume the same amount of energy *prior* to HER delivery, differences between the groups *after* HER delivery begins can be attributed to the HERs. Thus, one important step in our analysis is to compare pre-treatment consumption in the treatment and control groups for each wave. Ideally, average daily consumption is roughly the same between the two experimental groups.

The Evaluation team assessed pre-treatment equivalence between the treatment and control groups in three ways. The first method was a visual comparison and the latter two were more scientific. Regarding the visual comparison, **Figure 10-3** compares average daily consumption (pre-treatment) between the treatment and control groups for the 2021 Email and 2021 Paper waves.

Figure 10-4 makes the same comparison for the 2023 Paper Expansion wave. Finally, **Figure 10-5** makes the comparison for the 2024 Email Refill wave. Pre-treatment differences between treatment and control groups are negligible amongst all waves.

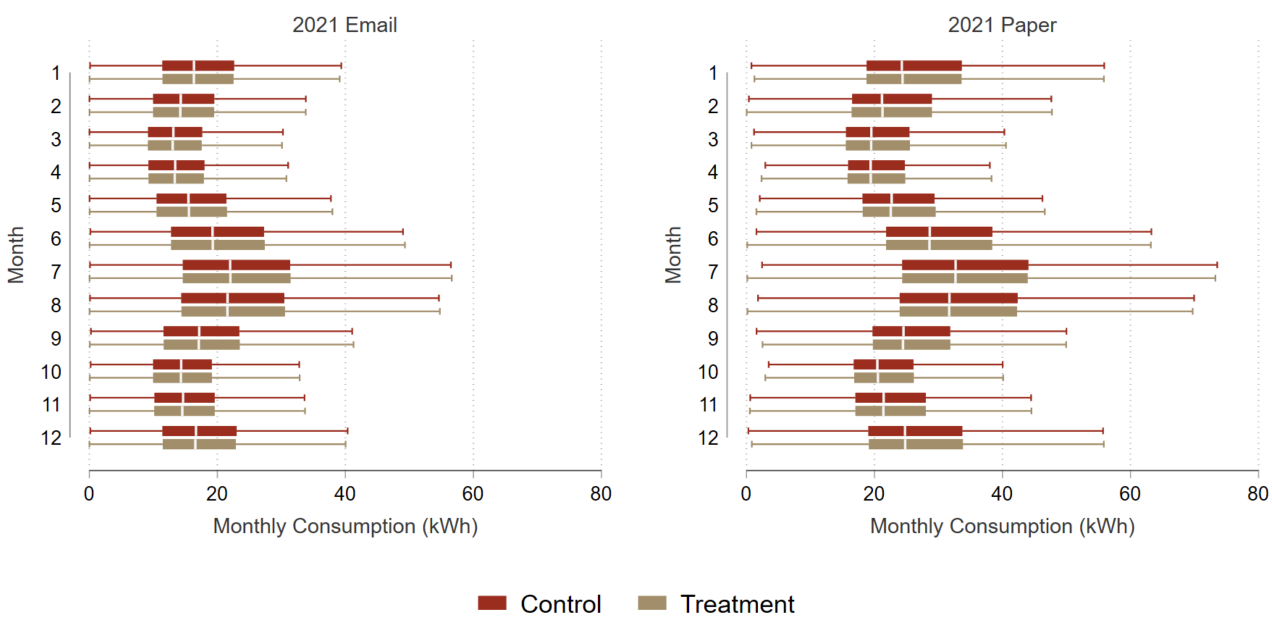


Figure 10-3 Pre-Treatment Equivalences – Initial Cohorts

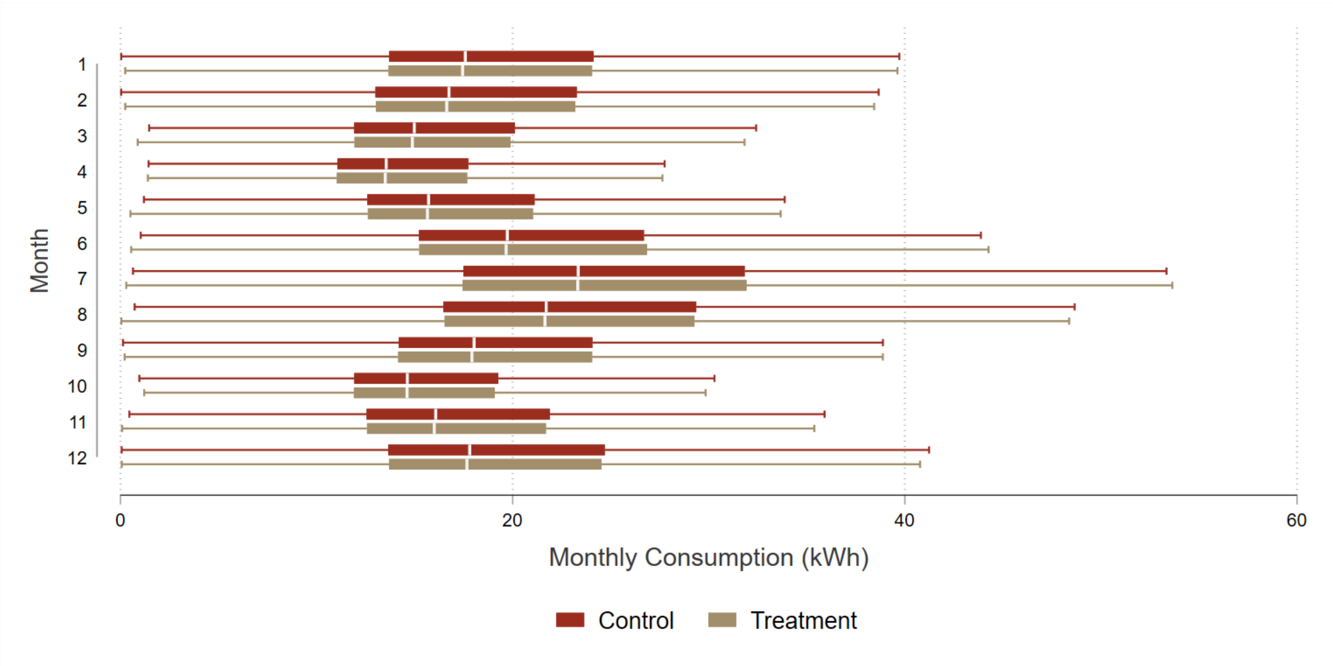


Figure 10-4 Pre-Treatment Equivalences – 2023 Paper Expansion Cohort

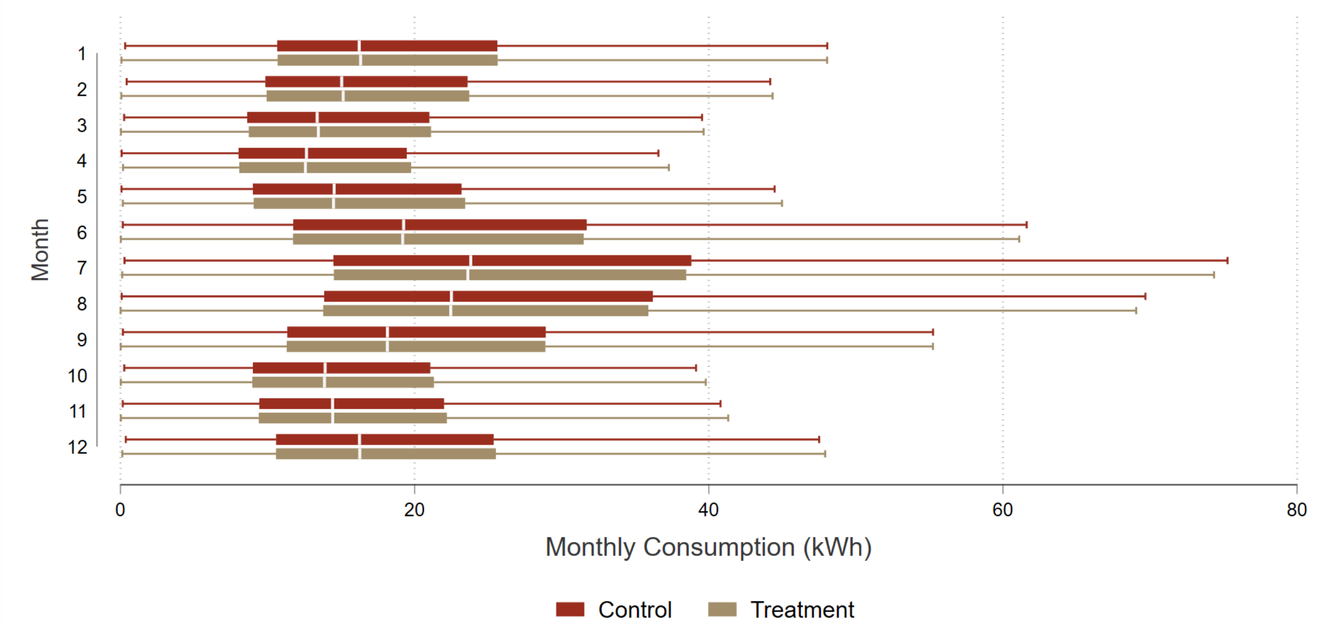


Figure 10-5 Pre-Treatment Equivalence – 2024 Email Cohort

To corroborate findings from the visual inspection, our team also performed two scientific comparisons. The first method was a fixed effects regression model that estimates the difference in average daily consumption between the two groups. The second method was a t-test that compares average daily usage between treatment and control. The results of these tests, shown in Table 103, indicate there are not statistically significant pre-treatment differences between treatment and control groups in the four waves.

Table 103 Pre-Treatment Equivalence Tests on Daily Usage

Wave	Treatment Mean	Control Mean	FE Regression		T-Test P-value[1]
			Treatment Effect	P-Value[1]	
2021 Email	17.61	17.63	-0.02	0.77	0.80
2021 Paper	26.98	26.98	0.00	0.97	0.99
2023 Paper Expansion	19.80	19.82	-0.03	0.67	0.73
2024 Email Refill	20.47	20.39	0.08	0.67	0.68

[1] A p-value less than 0.05 indicates the difference between groups is non-trivial (i.e., statistically significant).

We performed one additional check on the 2024 Email Refill wave. Since the homes in this wave were re-randomized homes from prior HER waves that have been dissolved, we compared the proportion of homes in each experimental cell that have prior HER exposure. Approximately 76% of control group homes in the 2024 Email Refill have received HER messaging in the past, and approximately 77% of treatment group homes in the 2024 Email Refill have received HER messaging in the past. This difference is not statistically significant (p-value = 0.52).

10.2.2 Annual Energy Savings

Gross MWh savings for each wave are shown in Table 104. Despite being approximately one quarter of the size of the 2021 Email wave, the 2021 Paper wave produced the most savings. The distribution of these savings throughout the evaluation period can be seen in Figure 10-6. For the 2021 Paper wave, savings tend to be highest in the summer months and lowest in the shoulder months. For the 2023 Paper Expansion wave, savings tend to be highest in the winter months and lowest in the summer months. For the other waves, there aren't obvious patterns.

Table 104 2024 Gross Energy Savings

Wave	Annual Energy Savings (MWh)
2021 Email	2,451
2021 Paper	4,058
2023 Paper Expansion	668
2024 Email Refill	202
Total	**7,379**

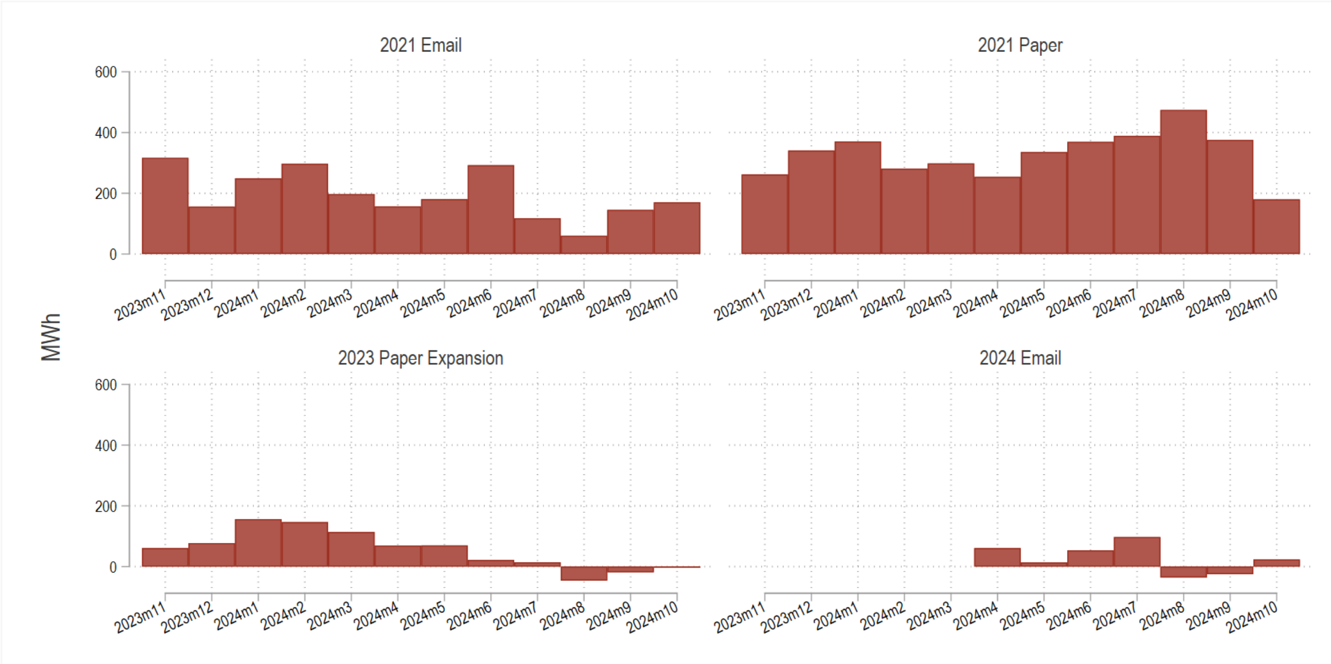


Figure 10-6 Gross Monthly MWh Savings by Wave

By month, **Figure 10-7**, **Figure 10-8** and **Figure 10-9** show the treatment effect (kWh saved per home per day) for each wave. In these figures, negative values indicate energy savings. The seasonal patterns in these figures mirror the seasonal patterns in Figure 10-6.

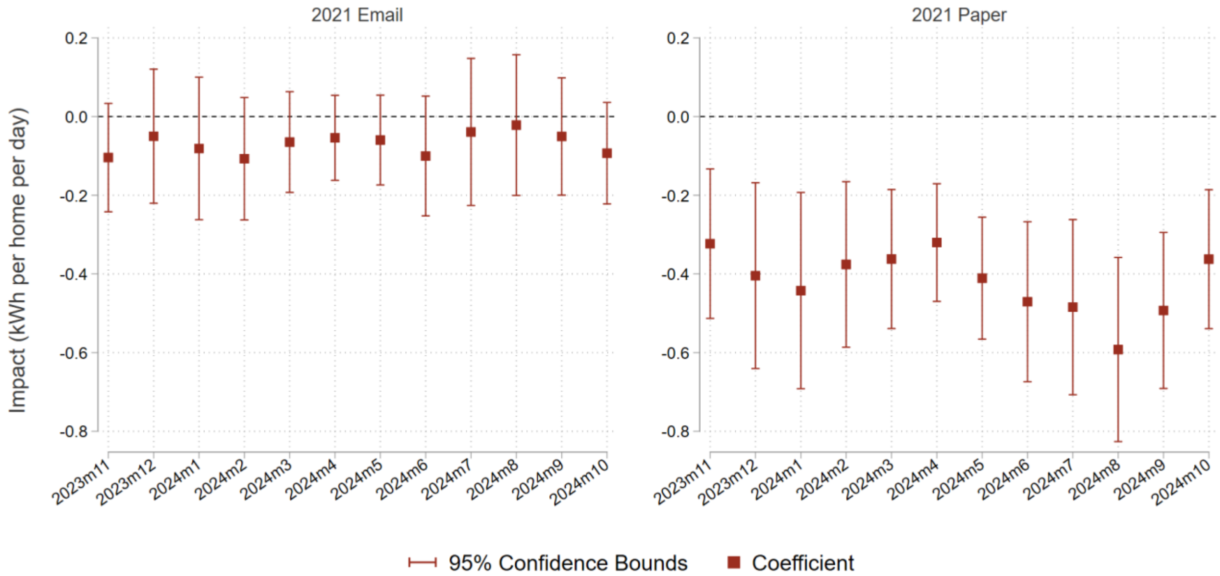


Figure 10-7 Daily Impact Estimate – Initial Cohorts

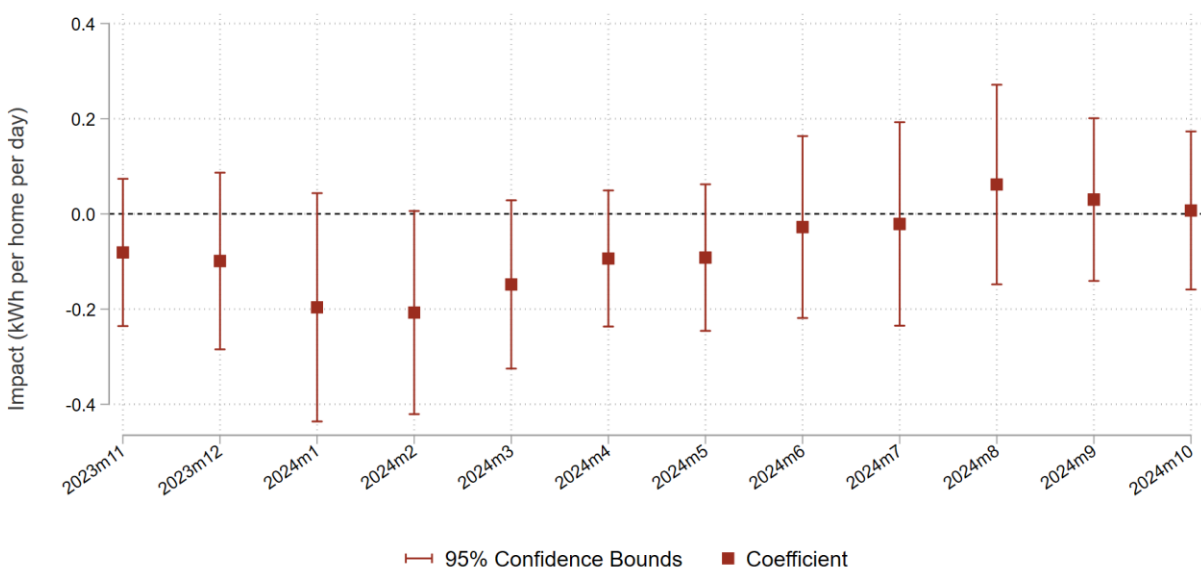


Figure 10-8 Daily Impact Estimate – Paper Expansion Cohort

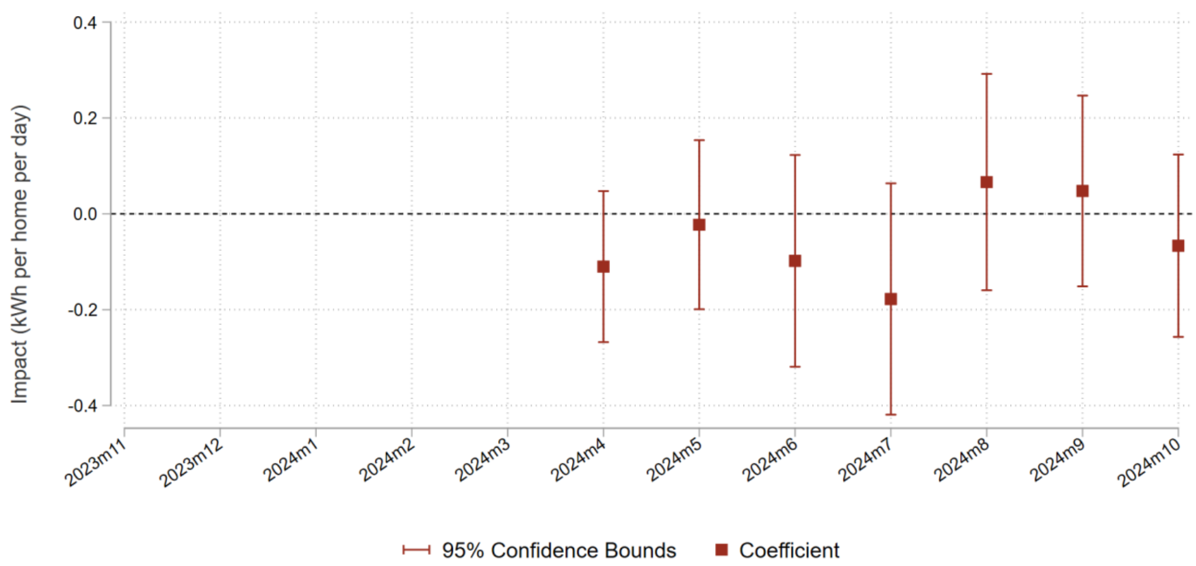


Figure 10-9 Daily Impact Estimate – Email Refill Cohort

10.2.3 Peak Demand Impacts

As discussed in the Estimating Peak Demand Impacts section, we could not use monthly billing data to directly estimate peak demand savings. Instead, we used a peak demand multiplier (1.519) to calculate peak demand savings. The calculation was as follows

$$Peak\ Demand\ Savings = \frac{Peak\ Months\ Energy\ Savings\ (MWh)}{2{,}208\ hours} * 1.519$$

The peak months energy savings (1,820 MWh) was converted to MW by dividing by 2208 hours and scaled by the peak demand multiplier (1.519). Thus, the peak demand savings estimate is 1.25 MW. Peak demand savings by wave are shown in Table 105. The estimate for the 2023 Paper Expansion wave is negative because this wave did not produce energy savings between June and August.

Table 105 2024 Peak Demand Savings

Wave	Peak Demand Savings (MW)
2021 Email	0.325
2021 Paper	0.854
2023 Paper Expansion	-0.007
2024 Email Refill	0.080
Total	**1.252**

10.2.4 Active Treatment Counts and Attrition

Our active treatments counts were calculated using the raw, non-calendarized billing data. Treatment customers are considered active through the end of the month that they received their last bill. For example, if a customer received their last bill in the middle of August 2024, then they would be counted in June, July, and August 2024, but not in September or any month following. Figure 10-10 shows the active customer counts by wave and month, and Table 106 shows the number of active treatment group homes in January 2024 and in October 2024. The attrition rate is lower for the initial waves than for the expansion waves and is around 10% on average across all four waves.

Figure 10-10 Active Treatment Counts

Table 106 Active Treatments by Month and Wave

Wave	Count of Treatment Homes in January 2024	Count of Treatment Homes in October 2024	Attrition Rate
2021 Email	100,506	93,349	8.5%
2021 Paper	27,020	25,468	6.9%
2023 Paper Expansion	25,693	23,246	11.4%
2024 Email Refill	18,674[1]	17,178	13.7%

[1] This wave was launched in April 2024. As such, this count comes from April 2024 rather than January 2024

10.3 CONCLUSIONS AND RECOMMENDATIONS

The Evaluation team offers the following observations regarding the performance of the active cohorts in 2024.

Table 107 Home Energy Reports Evaluation Findings and Recommendations

Finding	Recommendation
1. The Evaluation Team chose to estimate peak demand savings for the HER program even though PNM's implementer did not claim peak kW savings. While the load shape of behavioral savings cannot be measured without AMI, it would be virtually impossible to save 7,379 MWh amongst a diverse group of homes without lowering peak demand. We assume the savings are load following.	**Recommendation** A shortcut PNM may wish to consider in 2025 is to divide the reported June-August MWh savings by 1,454 (2208 / 1.519).
2. Verified savings for the Home Energy Reports program decreased by nearly 2,000 MWh relative to 2023. This decrease is largely driven by the 2021 Email Wave, which drives overall program performance due to its size (approximately 60% of the HER treatment homes across the four waves are in the 2021 Email Wave). In this wave, we saw a decreased rate of savings in 2024 (~0.07 kWh per home per day) compared to 2023 (~0.14 kWh per home per day). Naturally occurring attrition contributes to the decrease as well. - **There is an increase in the rate of savings in the 2021 Paper Wave (~0.36 kWh per home per day up to ~0.42 kWh per home per day), but this wave is roughly one fourth of the size of the 2021 Email Wave.**	**Recommendation:** The 2023 Paper Expansion and 2024 Email Refill waves may need more frequent or aggressive messaging to produce statistically significant savings.

11 Cost Effectiveness

Cost-effectiveness is a critical metric used to assess the efficiency of investments, programs, or interventions by comparing the benefits achieved to the costs incurred. It helps decision-makers determine the most efficient allocation of resources by identifying options that maximize impact while minimizing expenditures. By quantifying costs relative to outcomes—whether in energy savings, emissions reductions, or customer benefits—cost-effectiveness ensures that programs and policies deliver value while meeting strategic objectives. This evaluation framework is essential for balancing economic feasibility with performance, driving informed decision-making in industries ranging from energy efficiency and healthcare to infrastructure and policy design.

11.1 METHODOLOGY

To calculate the UCT ratio, the evaluation team obtained the following from PNM:

- Avoided cost of energy for energy efficiency and demand response (costs per kWh over a 20+ year time horizon)
- Avoided cost of capacity for energy efficiency and demand response (estimate cost of adding a kW/year of generation, transmission, and distribution to the system)
- Avoided transmission and distribution losses
- Discount rate
- Line loss factors; and
- Program costs (all expenditures associated with program delivery) broken down into the following categories:
  - Administration
  - Promotion
  - Measurement and verification (M&V)
  - Rebates
  - Third-party costs
  - Market transformation

Additional considerations for the UCT as applied to the PNM programs include:

- PNM does not quantify the avoided cost of transmission and distribution
- PNM provided a levelized avoided cost of capacity, to which the discount rate was not applied further

- The NMPRC allows for the benefits of low-income programs to be boosted by 20% to account for utility system economic benefits. PNM estimates the following percentages of low-income customers participate in their programs:
    - 100% of Low-Income Home Energy Checkup
    - 30% of Commercial Comprehensive – Multifamily
    - 60% of Easy Savings
    - 100% of Energy Smart
    - 47% of Home Works
    - 10% of Residential Behavioral HER
    - 3% of New Home Construction
    - 30% of Residential Products
    - 97% of Residential Lighting

11.2 RESULTS

PY2024 cost effectiveness results for all programs are shown in Table 108. Note results are based on net realized savings. PY2023 results are included in the table for comparison. Overall, the PY2024 portfolio was found to be cost effective with a UCT ratio of 1.51, meaning the relative benefits of PNM's PY2024 energy efficiency and load management programs are greater than the relative costs. The PY2024 result is slightly higher than the portfolio UCT ratio of 1.30 from PY2023. The increase in the UCT ratio is due to an increase in avoided cost of energy and capacity assumptions. Table 109 compares portfolio savings and costs between PY2023 and PY2024.

Table 108 PY2024 Cost Effectiveness Results

Program	UCT Ratio		
	PY2023	PY2024	Change
Cooling & Midstream	0.58	0.36	↓
Easy Savings	1.60	4.99	↑
Energy Smart (MFA)	1.81	2.41	↑
New Home Construction	0.95	0.84	↓
PNM Home Works	1.85	1.59	↓
Residential Behavioral HER	0.71	1.01	↑
Res Comp – HEC	1.01	1.29	↑
Res Comp – HEC LI	0.64	0.81	↑
Res Comp – Refrigerator Recycling	0.61	2.77	↑
Residential Lighting	1.86	1.81	↓
Residential Products	2.40	2.05	↓
Commercial Behavioral SEM	0.22	2.20	↑
Commercial Comp	1.58	1.78	↑
Commercial Comp – MF	1.09	0.79	↓
PNM Peak Saver	0.90	0.75	↓
PNM Power Saver	0.98	0.81	↓
Total	**1.30**	**1.51**	↑

Table 109: Portfolio Comparison with PY2023

Metric	PY2023	PY2024	Difference
Delivery Costs	$32,212,073	$35,777,138	$3,565,065
Net Verified kWh – First Year	92,023,257	86,590,600	-5,432,657
Net Verified kWh – Lifetime	848,034,260	831,787,269	-16,246,991
Net Verified kW	70,274	72,392	2,118

11.3 CONCLUSIONS AND RECOMMENDATIONS

Overall, PNM's PY2024 portfolio was found to be cost effective with a UCT ratio of 1.51. The increase in the portfolio's UCT ratio from 1.30 in PY2023 to 1.51 in PY2024 was driven by an increase in the avoided cost of energy and avoided cost of capacity assumptions.

While cost-effectiveness remains a key metric for evaluating program performance, these findings highlight the need for continuous assessment and optimization to ensure that future programs maximize benefits while maintaining financial feasibility.

Appendix A

Heat Pump and Heat Pump Water Heaters

A. Heat Pump and Heat Pump Water Heaters

As part of the regulatory oversight and energy efficiency initiatives in New Mexico, the Public Regulation Commission (PRC) has requested an evaluation of heat pump and heat pump water heater installations. This section aims to fulfill this request by providing insights into the types of heating systems that were replaced, the operational characteristics of new heat pump systems, and the anticipated energy savings and emissions reductions. The findings presented here are based on survey responses from participants in PNM's rebate program and will attempt to inform future program improvements, energy efficiency strategies, and policy decisions.

A. Methodology

The evaluation of heat pump and heat pump water heater installations was conducted through a structured survey administered to residential participants who received rebates from PNM. The survey focused on the following key aspects:

- Identification of the existing heating system before heat pump installation, including whether the heat pump was installed as a sole or supplemental heating source.
- Determination of change-over temperatures for heat pumps with supplemental heating sources to establish when backup heating systems are activated.
- Assessment of replaced water heaters, identifying whether new installations were grid-enabled.
- Collection of data to support a deemed approach analysis for estimating avoided fuel use, electricity savings, and emissions reductions.

Survey responses were analyzed to quantify heating system changes, measure customer adoption patterns, and provide insights into the impact of heat pump installations on energy efficiency and emissions reductions.

B. Results

Existing Heating Systems and Supplemental Heating

Survey results indicate that most respondents replaced at least some of the existing heating load with the newly installed heat pumps, with the most common previous heating sources being Natural gas furnaces, Radiant Flooring, Pre-Existing Heat Pumps, and Boilers, as shown in Figure A.1.

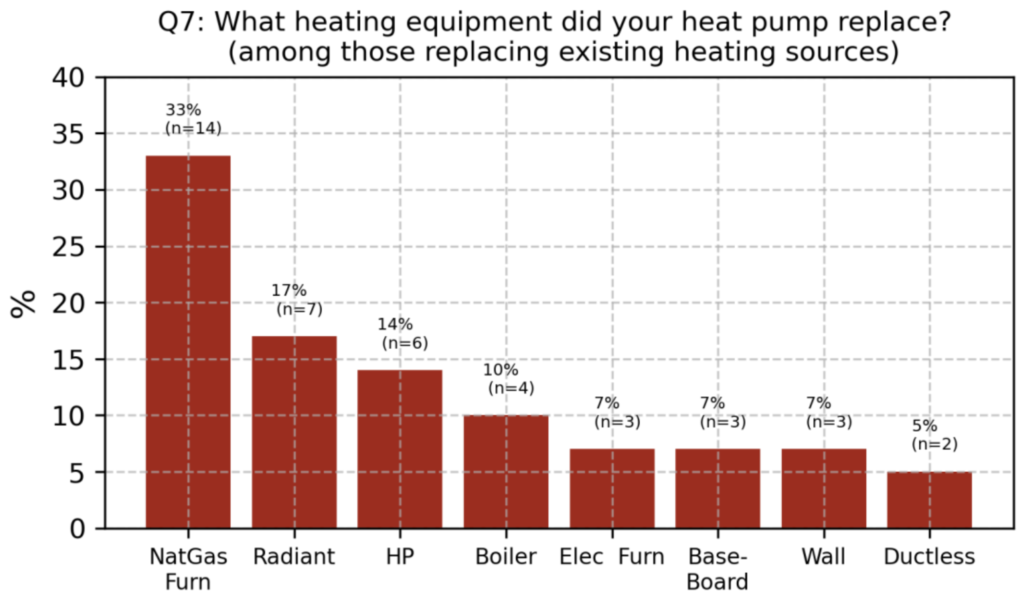


Figure 11-1 Replaced Existing Heating Equipment by Heat Pumps

However, most respondents confirmed they still have existing heating equipment in-use in their homes, and they are more likely to use their preexisting equipment over their newly installed heat pump (55 non-heat pumps are primary heating source vs. 21 heat pump is primary heating source), as shown in Figure 3-2.

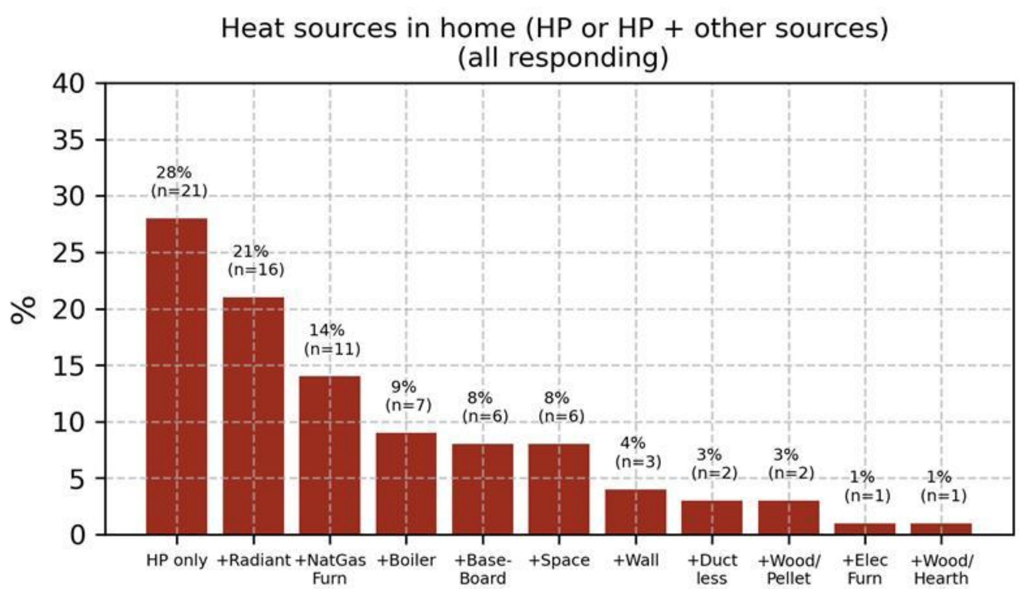


Figure 11-2 Primary Heating Source of Homes with New Heat Pumps Installed

Regardless of the primary heating source, respondents are more likely to use their heat pump in tandem with their existing system. The Evaluation Team came to this conclusion since most participants reported that the heat pump is not intended to be the sole source of heating, and contractors verified the systems did not install controls to switch between systems based on outside air temperature, see Section 4.3.2.5.

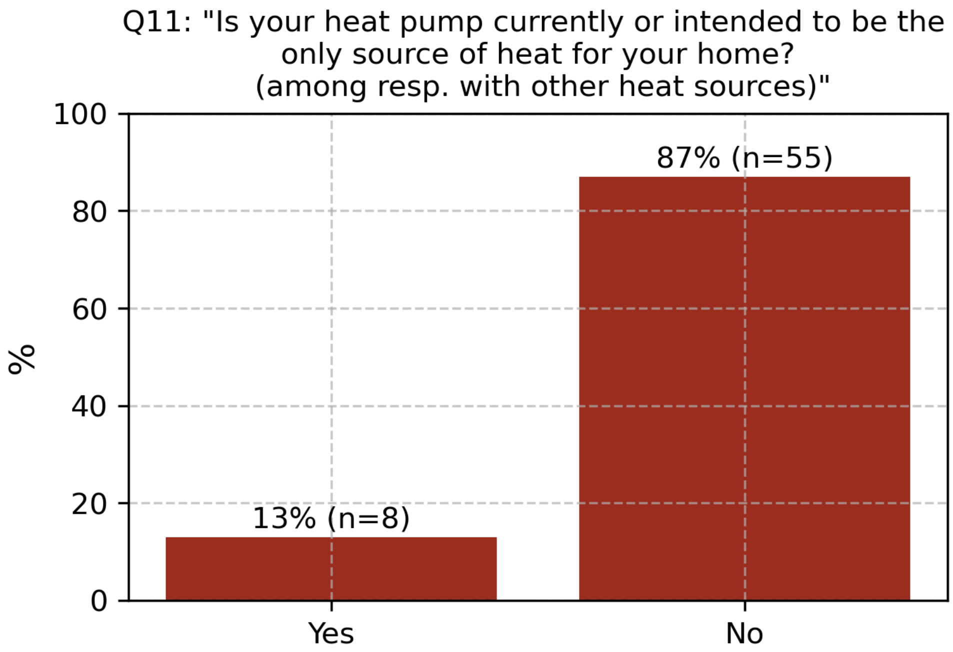


Figure-11-3 Sole Source of Heating for Heat Pumps

Heat Pump Water Heater Replacements

The survey identified the types of water heaters replaced with heat pump water heaters. The results are inconclusive as there was both a low participation count for heat pump water heater installations (n = 3), and survey completion was also low (n=1). The information from a small population is not conclusive to build a conjecture surrounding heat pump water heater installations, nor does a single respondent provide enough information to show trends or significant conclusions. However, the single respondent did mention that they replaced a preexisting electric water heater.

Avoided Fuel Use, Electricity Savings, and Emissions Reductions

A follow-up analysis will estimate the impact of these installations based on the survey data. Using a deemed approach, the study will calculate:

- Avoided fuel use by comparing energy consumption before and after installation.
- Electricity savings derived from efficiency improvements in heating and water heating systems.
- Emissions reductions based on reduced reliance on fossil fuel-based heating systems.

a. Emissions Reductions and Avoided Fuel Use

As part of this evaluation, the Evaluation team was tasked with estimating the avoided fuel use, avoided electricity use, and emissions reductions resulting from the installation of ductless heat pumps and heat pump water heaters. The calculation of emissions reductions followed a structured methodology based on established fuel savings equations and regional adjustments.

The calculation of emissions reductions from ductless heat pump and heat pump water heater installations followed a structured methodology based on established fuel savings equations from the Illinois (IL) Technical Reference Manual (TRM) v12[26] with regional adjustments. The analysis follows these steps:

- **IL TRM v12 - Fuel Savings Equations for HP and HPWHs**
  - The IL TRM v12 provided the baseline fuel savings equations applicable to heat pumps and heat pump water heaters.
- **Regional Matching to NM Conditions**
  - Identified cities with similar climate conditions to synchronize IL TRM assumptions to New Mexico's context.
  - Santa Fe was matched to Rockford, and Albuquerque to Springfield, adjusting Heat Load Factors, outdoor air temperatures (OAT), and regional variations.
- **Weighting Heat Load Factors and Switch Over Temperature Calculation**
  - Calculated a weighted Heat Load Factor for Albuquerque and Santa Fe, incorporating contractor-reported data between the two cities.
  - Due to the absence of installed controls, the switch over temperature was assumed at IL TRM's default value (17°F), representing the equivalent of no installed controls with a low setpoint.
  - Survey results indicated that most sites (89%) did switch between systems, however, that changeover temperature was not the primary driver for the switch. The IL TRM default temperature (17°F) assumes heat pumps function as the primary heating system with a temperature changeover.

[26] Illinois Statewide Technical Reference Manual (IL-TRM), Version 12.0 – Volume 3 (Residential Measures), "Fuel Savings Equations for HP and HPWHs," 108–114, effective January 1, 2024, published September 22, 2023, https://www.ilsag.info/wp-content/uploads/IL-TRM_Effective_010124_v12.0_Vol_3_Res_09222023_FINAL_clean.pdf

- *This assumption discrepancy between installed conditions and analysis is avoidable in the future by 1) Collecting more information on changeover temperature from implementors and contractors, if installed by the contractor; or 2) Including a question for respondents to provide the percentage of heat load met by the heat pump vs. the pre-existing system, if a similar survey is completed.*

- **Carbon Savings Estimation**
  - Applied IL TRM fuel switch savings algorithms to estimate carbon savings.
- **Total Greenhouse Gas (GHG) Emission Reductions**
  - The total emissions reduction calculation accounts for heating-related reductions comparing baseline to installed condition and additional savings from cooling and furnace fan operation.
  - Includes PNM specific portfolio pounds of CO_2 per MWh of electricity generated[27] and EIA pounds of CO_2 for natural gas and oil fuels[28]

The table below summarizes the estimated CO2 emissions reductions resulting from the program's fuel replacement efforts. The replaced fuel mix was derived from survey data on heating equipment replacement, as shown in Table 110. The Replaced Fuel Ratio was calculated as follows:

- Natural Gas: Includes Natural Gas Furnaces, Radiant Heating, and Boilers.
- Oil: Includes Baseboard Heaters and Wall heating systems.
- Electric: Includes Electric Furnace, Ductless Heat Pump, and Heat Pump.

The table below summarizes the estimated CO_2 emissions reductions resulting from the program's fuel replacement efforts. The analysis calculates CO_2 emissions avoided by applying the carbon intensity of each replaced fuel source savings to the proportion of heating load that was offset by heat pump installations and the total savings attributed from existing equipment. The total energy savings from the installation of heat pumps and heat pump water heaters are 27,229.31 MMBTU.

[27] 345 lbs/MWh provided directly by PNM staff for PNM generated emissions for electricity generation
[28] U.S. Energy Information Administration (EIA), "Carbon Dioxide Emissions Coefficients," accessed 3-01-2025, https://www.eia.gov/environment/emissions/co2_vol_mass.php

Table 110 Total Avoided Carbon Emissions from Installed Heat Pumps and Heat Pump Water Heaters

Pre-Existing Fuel	CO_2 pounds per MMBtu	Replaced Fuel Ratio	Avoided Tons[29] of CO_2
Natural gas	116.65	60%	952.89
Oil	163.45	14%	311.54
Electric	101.11	26%	357.91
Overall Portfolio	**119.16**	**100%**	**1,622.34**

b. Conclusions and Recommendations

Survey responses indicate that while many respondents installed heat pumps, the majority continue to use pre-existing heating systems in combination with their heat pump to provide total household heating. Specifically, 55 respondents rely on non-heat pump heating equipment, while only 21 use their newly installed heat pumps as the primary heating source. This suggests that heat pumps are largely being used in combination with other heating sources rather than as a full replacement for existing systems. Furthermore, respondents confirmed that their heat pumps were not installed with automated controls to transition between heating sources based on outdoor temperature, reinforcing the conclusion that heat pumps are operating alongside other heating systems rather than as the dominant or sole source of heat.

Regarding heat pump water heaters, the sample size was too small (n = 3 installations, n = 1 completed survey) to draw meaningful conclusions. The limited data available indicated that the single respondent who completed the survey replaced an electric water heater with a heat pump water heater, but no broader trends could be established.

The evaluation team recommends PNM collects more information on changeover temperature from implementors and contractors, if controls are installed by the contractor. If a similar participant and contractor survey is completed, the Evaluation team recommends including questions for respondents that lead towards obtaining the percentage of heat load met by the heat pump vs. the pre-existing system. For Example:

- Does each system have its own thermostat?
  - What is the set point for both systems?
  - Or if there's only thermostat, what logic is applied to sequence both machines?
- Does the participant turn off/on heating or cooling equipment depending on their need?

[29] Conversion Factor: 1 ton = 2,000 pounds

Appendix B
Commercial Comprehensive Participant Survey Instrument

B. Commercial Comprehensive Participant Survey Instrument

Introduction

Hello, my name is (YOUR NAME) from MDC Research. I am calling on behalf of PNM. May I please speak with ______________?

A. (Once correct respondent is reached) Hello, my name is (YOUR NAME) from MDC Research. I am calling on behalf of PNM.

I'm calling because our records show that you recently completed an energy efficiency project where you installed [MEASURE_1] at your business located at [SITE_ADDRESS], and received a rebate through the PNM Commercial Comprehensive program, also known as the Business Energy Efficiency Program. I'd like to ask a short set of questions about your experience with the program. Your time will help us improve this program for other customers like you. Are you the best person to talk to about the/these energy efficiency upgrade(s) and energy use at your firm?

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

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

Section A [Measure_1]

1. (A 1) Our records show in 2024 your business got a rebate through PNM for installing [MEASURE_1]. Are you familiar with this project?

- Yes
- No (SKIP TO Q.2)
- Never installed (VOLUNTEERED) (SKIP TO Q.5)
- Don't know (SKIP TO Q.2)

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

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

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

____(SKIP TO Q. 3)

- Never installed (SKIP TO Q. 5)

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

- Yes (Ask to be transferred to better contact and go back to intro)
- Yes (Unable to be transferred, record contact's and number to call back)
- No (THANK AND TERMINATE)
- Don't know (THANK AND TERMINATE)

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

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

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

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

Other (SPECIFY) ____

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

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

Other (SPECIFY) ____

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

____

____

____

(SKIP TO SECTION A [MEASURE_2]

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

- Yes
- No
- Prefer not to answer (DO NOT READ)
- Don't know (DO NOT READ)

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

- Contractor (SKIP TO SECTION A [MEASURE_2])
- Internal Staff
- Prefer not to answer (SKIP TO SECTION A [MEASURE_2])
- Don't know (SKIP TO SECTION A [MEASURE_2])
- Other (SPECIFY)________________________________(SKIP TO SECTION A [MEASURE_2])

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

____

____

____

- Prefer not to answer
- Don't know

Section A [Measure_2]

1. (A 1) Our records also show in 2024 your business got a rebate through PNM for installing a [MEASURE_2]. Do you remember this?

- Yes
- No (SKIP TO INTRO BEFORE Q. 10)
- Never installed (VOLUNTEERED) (SKIP TO Q.5)
- Don’t know (SKIP TO INTRO BEFORE Q. 10)

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

- Yes (SKIP TO Q. 3)
- No (GO TO Q. 1b)
- Never installed (VOLUNTEERED) (SKIP TO Q.5)
- Don’t know (SKIP TO INTRO BEFORE Q. 10)

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

____(SKIP TO Q. 3)

- Never installed (SKIP TO Q. 5)

2. VACANT

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

- Yes (SKIP TO Q. 6)
- No (CONTINUE TO Q. 4a)
- Prefer not to answer (SKIP TO Q. 6)
- Don’t know (SKIP TO Q. 6)

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

- Yes, it was removed (SKIP TO Q.5)
- No (CONTINUE TO Q.4b)
- Prefer not to answer (DO NOT READ) (SKIP TO Q.7)
- Don't know (DO NOT READ) (SKIP TO Q.7)
- Other (SPECIFY) ____

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

- Yes, never installed
- Prefer not to answer (DO NOT READ) (SKIP TO Q.7)
- Don't know (DO NOT READ) (SKIP TO Q.7)
- Other (SPECIFY) ____

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

____

____

____

(SKIP TO INTRO TO Q. 10)

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

- Yes
- No
- Prefer not to answer (DO NOT READ)
- Don't know (DO NOT READ)

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

- Contractor (SKIP TO Q. 9)
- Internal Staff
- Prefer not to answer (SKIP TO Q. 9)
- Don't know (SKIP TO Q. 9)
- Other (SPECIFY)____________________________________(SKIP TO Q. 9)

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

- Prefer not to answer
- Don't know

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

- Together as one project
- Separately
- Prefer not to answer (DO NOT READ)
- Don’t know (DO NOT READ)

Section B

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

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

- Word of mouth (business associate, co-worker)
- Utility program staff
- Utility website
- Utility bill insert
- Utility representative
- Utility advertising
- Email from utility
- Contractor/distributor
- Building audit or assessment
- Television Advertisement – Mass Media
- Other mass media (sign, billboard, newspaper/magazine ad)
- Event (conference, seminar workshop)
- Online search, web links
- Participated or received rebate before
- Energy consultant or performance contractor
- No way in particular
- Don't know
- Other (SPECIFY) ______________________________

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

- Word of mouth (business associate, co-worker)
- Utility program staff
- Utility website
- Utility bill insert
- Utility representative
- Utility advertising
- Email from utility
- Contractor/distributor
- Building audit or assessment
- Television Advertisement – Mass Media
- Other mass media (sign, billboard, newspaper/magazine ad)
- Event (conference, seminar, workshop)
- Online search, web links
- Participated or received rebate before
- None (SKIP TO POLLER NOTE BEFORE Q. 13a)
- Don't know (SKIP TO POLLER NOTE BEFORE Q. 13a)
- Other (SPECIFY) ____

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

____

____

____

- None in particular
- Prefer not to answer
- Don't know

Section C

POLLER NOTE:
If Respondent’s answer to Q. 9 was: Together as one project, prefer not to answer, or don’t know then READ: “For the remainder of this survey we will refer to your equipment upgrades collectively as a single project.

If Respondent’s answer Q. 9 was: Separately, READ: “For the remainder of this survey we will refer only to the project where you installed [MEASURE_1]

POLLER NOTE: WAS MEASURE INSTALLED?

- Yes (GO TO Q. 13a)
- No (GO TO Q. 13b)

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

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

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

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

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

- Fully functional and not in need of repair? (SKIP TO Q. 15a)
- Functional, but needed minor repairs? (SKIP TO Q. 15a)
- Functional, but needed major repairs? (SKIP TO Q. 15a)
- Not functional? (SKIP TO INTRO TO Q. 17)
- Prefer not to answer (DO NOT READ) (SKIP TO INTRO TO Q. 17)
- Don’t know (DO NOT READ) (SKIP TO INTRO TO Q. 17)

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

- Fully functional and not in need of repair? (SKIP TO Q. 15b)
- Functional, but needed minor repairs? (SKIP TO Q. 15b)
- Functional, but needed major repairs? (SKIP TO Q. 15b)
- Not functional? (SKIP TO INTRO TO Q. 17)
- Prefer not to answer (DO NOT READ) (SKIP TO INTRO TO Q. 17)
- Don’t know (DO NOT READ) (SKIP TO INTRO TO Q. 17)

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

- Prefer not to answer
- Don’t know

ALL ANSWERS TO 15a GO TO Q. 16

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

- Prefer not to answer
- Don’t know

ALL ANSWERS TO 15b. GO TO Q.16

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

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

(C 5a-g) Next I will read a list of reasons your firm may have considered when you decided to conduct your project. For each one, please tell me if it was not at all important, a little important, somewhat important, very important or extremely important.

How important was… on your decision to conduct your project?

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

POLLER NOTE: Was HVAC Measure installed?

- Yes (CONTINUE TO Q. 20)
- No (SKIP to Q. 21)

20. (C5d) Improving air quality 5 4 3 2 1 6

21. (C5e) Receiving the rebate 5 4 3 2 1 6

(Q21 NOT ASKED IF DIRECT INSTALL)

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

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

- Yes (CONTINUE TO Q. 23)
- No (SKIP TO INTRO Q. 24)

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

Section D (Intro to Q 24)

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

(D 1A-N). I'm going to ask you to rate the importance of each of the following factors on your decision to determine how energy efficient your project would be. Please rate the importance of each of these factors in determining your project's energy efficiency level using a scale from 0 to 10, where 0 means not at all important and 10 means extremely important. Please let me know if the factor is not applicable.

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

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

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

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

Extremely Very Somewhat A little Not important Don't Know/
(RANDOMIZE) Important Important Important Important At All Won't Say

Program Factors

24. (D1A) The contractor who performed the work
10 09 08 07 06 05 04 03 02 01 00 11 12

25. (D1B) The dollar amount of the rebate
10 09 08 07 06 05 04 03 02 01 00 11 12

26. (D1C) Technical assistance or project economic analysis (e.g. rate of return or payback analysis) received from PNM staff
10 09 08 07 06 05 04 03 02 01 00 11 12

27. (D1D) Endorsement or recommendation by your PNM account manager or other PNM staff
10 09 08 07 06 05 04 03 02 01 00 11
12

28. (D1E) Information from PNM marketing or informational materials
10 09 08 07 06 05 04 03 02 01 00 11 12

29. (D1F) Previous participation in a PNM program
10 09 08 07 06 05 04 03 02 01 00 11 12

30. (D1G) Endorsement or recommendation by a contractor
10 09 08 07 06 05 04 03 02 01 00 11 12

31. (D1H) Endorsement or recommendation by a vendor or distributor
10 09 08 07 06 05 04 03 02 01 00 11 12

32. (D1I) Endorsement or recommendation by CLEARResult, the program implementer
10 09 08 07 06 05 04 03 02 01 00 11 12

Now, I would like to read you some factors that are not related to the rebate program. Using the same scale from 0 to 10, where 0 means not at all important and 10 means extremely important, please rate the following non program factors importance in determining your project's energy efficiency.

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

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

Non-program Factors

33. (D1J) The age or condition of the old equipment

10	09	08	07	06	05	04	03	02	01	00	11	12

34. (D1K) Corporate policy or guidelines

10	09	08	07	06	05	04	03	02	01	00	11	12

35. (D1L) Minimizing operating cost

10	09	08	07	06	05	04	03	02	01	00	11	12

36. (D1M) Scheduled time for routine maintenance

10	09	08	07	06	05	04	03	02	01	00	11	12

37. (D2) Of the items I just asked you about, think of the program factors as relating to assistance provided by the utility, such as the rebate, marketing from PNM, recommendation by a contractor and technical assistance from PNM. I also asked you about some non-program factors, which included the age and condition of the old equipment, company policy, operating costs and routine maintenance.

If you had to divide 100% of the influence on your decision to determine how energy efficient your new equipment would be between the PNM program and non-program factors, what percent would you give to the importance of the program factors? [IF NEEDED: Again, these are things like the rebate, marketing from PNM, recommendation by a contractor and technical assistance from PNM]

____ ____ _____ % = Program Factors

- Prefer not to answer (SKIP TO Q.39)
- Don't know (SKIP TO Q. 39)

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

_____ _____ _____ %= Non Program Factors

- Prefer not to answer (SKIP TO Q.39)
- Don’t know (SKIP TO Q.39)

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

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

_____ _____ _____ %= Non Program Factors

- Before
- After
- Prefer not to answer
- Don’t know

40. (D6) Using a scale from 0 to 10, where 0 means not at all likely and 10 means extremely likely, please rate the likelihood that you would have installed the same equipment with the exact same level of energy efficiency if the Commercial Comprehensive program was not available.

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

GO TO Q. 41 SKIP TO Q. 43 GO TO Q. 42 SKIP TO Q. 43

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

41. (D7) You just rated your likelihood to install the same equipment without any assistance from the program as a(n) [RATE RESPONSE FROM Q. 40] out of 10. Earlier, when I asked you to rate the importance of each program factor on your decision, the highest rating you gave was a [HIGHEST RATING FROM Q.24-Q.32] out of 10 for the importance of [RE-READ WORDING FOR HIGHEST RESPONSES Q.24-Q.32, PAGE 10].

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

(SKIP TO Q. 43)

42. (D8) You just rated your likelihood to install the same equipment without any assistance from the program as a(n) [RATE RESPONSE FROM Q. 40] out of 10. Earlier, when I asked you to rate the importance of each program factor on your decision, the lowest rating you gave was a [LOWEST RATING FROM Q.24-Q.32, Page 10] out of 10.

Can you briefly explain why you said you were not likely to install the equipment without help from the program, yet did not rate the program as highly influential in your decision? (RECORD VERBATIM)

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

- Yes
- No (SKIP TO Q. 46)
- Would not have done the project at all (SKIP TO Q. 46)
- Prefer not to answer (SKIP TO Q. 46)
- Don't know (SKIP TO Q. 46)

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

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

45. (D11) Using a scale from 0 to 10, where 0 means not at all likely and 10 means extremely likely, please rate the likelihood that you would have conducted this project within 12 months of when you actually completed this project if the Commercial Comprehensive program was not available.

Extremely Likely	Not at all Likely	DK/ WS

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

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

Section E

Now I have some questions about your satisfaction with various aspects of PNM and the Commercial Comprehensive program.

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

47. (E1A) PNM as an energy provider

- Very Dissatisfied
- Somewhat Dissatisfied
- Neither Satisfied Nor Dissatisfied
- Somewhat Satisfied (SKIP TO Q. 49)
- Very Satisfied (SKIP TO Q. 49)
- Not applicable (SKIP TO Q. 49)
- Prefer not to answer (SKIP TO Q. 49)
- Don’t know (SKIP TO Q. 49)

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

49. (E1B) The rebate program overall

- Very Dissatisfied
- Somewhat Dissatisfied
- Neither Satisfied Nor Dissatisfied
- Somewhat Satisfied (SKIP TO Q.51)
- Very Satisfied (SKIP TO Q. 51)
- Not applicable (SKIP TO Q. 51)
- Prefer not to answer (SKIP TO Q. 51)
- Don’t know (SKIP TO Q. 51)

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

51. (E1C) The equipment installed through the program

- Very Dissatisfied
- Somewhat Dissatisfied
- Neither Satisfied Nor Dissatisfied
- Somewhat Satisfied (SKIP TO Q.53)
- Very Satisfied (SKIP TO Q. 53)
- Not applicable (SKIP TO Q. 53)
- Prefer not to answer (SKIP TO Q. 53)
- Don’t know (SKIP TO Q. 53)

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

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

- Yes (CONTINUE TO Q. 53)
- No (SKIP TO Q. 57)

53. (E1D) The contractor who installed the equipment

- Very Dissatisfied
- Somewhat Dissatisfied
- Neither Satisfied Nor Dissatisfied
- Somewhat Satisfied (SKIP TO Q.55)
- Very Satisfied (SKIP TO Q. 55)
- Not applicable (SKIP TO Q. 55)
- Prefer not to answer (SKIP TO Q. 55)
- Don't know (SKIP TO Q. 55)

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

____

____

____

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

- Very Dissatisfied
- Somewhat Dissatisfied
- Neither Satisfied Nor Dissatisfied
- Somewhat Satisfied (SKIP TO Q.57)
- Very Satisfied (SKIP TO Q. 57)
- Not applicable (SKIP TO Q. 57)
- Prefer not to answer (SKIP TO Q. 57)
- Don't know (SKIP TO Q. 57)

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

____

____

____

(Q57-60 NOT ASKED IF DIRECT INSTALL)

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

- Very Dissatisfied
- Somewhat Dissatisfied
- Neither Satisfied Nor Dissatisfied
- Somewhat Satisfied (SKIP TO Q.59)
- Very Satisfied (SKIP TO Q. 59)
- Not applicable (SKIP TO Q. 59)
- Prefer not to answer (SKIP TO Q. 59)
- Don't know (SKIP TO Q. 59)

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

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

- Very Dissatisfied
- Somewhat Dissatisfied
- Neither Satisfied Nor Dissatisfied
- Somewhat Satisfied (SKIP TO Q.61)
- Very Satisfied (SKIP TO Q. 61)
- Not applicable (SKIP TO Q. 61)
- Prefer not to answer (SKIP TO Q. 61)
- Don't know (SKIP TO Q. 61)

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

61. (E1H) Interactions with PNM

- Very Dissatisfied
- Somewhat Dissatisfied
- Neither Satisfied Nor Dissatisfied
- Somewhat Satisfied (SKIP TO Q.63)
- Very Satisfied (SKIP TO Q. 63)
- Not applicable (SKIP TO Q. 63)
- Prefer not to answer (SKIP TO Q. 63)
- Don't know (SKIP TO Q. 63)

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

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

- Very Dissatisfied
- Somewhat Dissatisfied
- Neither Satisfied Nor Dissatisfied
- Somewhat Satisfied (SKIP TO Q.65)
- Very Satisfied (SKIP TO Q. 65)
- Not applicable (SKIP TO Q. 65)
- Prefer not to answer (SKIP TO Q. 65)
- Don't know (SKIP TO Q. 65)

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

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

- Very Dissatisfied
- Somewhat Dissatisfied
- Neither Satisfied Nor Dissatisfied
- Somewhat Satisfied (SKIP TO Q.67)
- Very Satisfied (SKIP TO Q. 67)
- Not applicable (SKIP TO Q. 67)
- Prefer not to answer (SKIP TO Q. 67)
- Don't know (SKIP TO Q. 67)

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

____
____
____

(Q67 and Q68 NOT ASKED IF DIRECT INSTALL)

67. (E1K) The project application process

- Very Dissatisfied
- Somewhat Dissatisfied
- Neither Satisfied Nor Dissatisfied
- Somewhat Satisfied (SKIP TO Q. 69)
- Very Satisfied (SKIP TO Q. 69)
- Not applicable (SKIP TO Q. 69)
- Prefer not to answer (SKIP TO Q. 69)
- Don't know (SKIP TO Q. 69)

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

____
____
____

69. (E2) Do you have any recommendations for improving the Commercial Comprehensive program?

- Yes (RECORD VERBATIM)

____

____

____

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

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

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

SKIP TO Q. 72

- Have already recommended the program (SKIP TO Q. 72)
- Prefer not to answer (SKIP TO Q. 72)
- Don't know (SKIP TO Q. 72)

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

____

____

____

- Prefer not to answer
- Don't know

72. (E 4) If you were to tell a business contact or associate about the Commercial Comprehensive program, what would you tell them? (RECORD VERBATIM)

____

____

____

- Prefer not to answer
- Don't know

Section F: Characteristics and Demographics

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

- Own
- Lease / Rent
- Prefer not to answer (SKIP TO Q. 74)
- Don't know (SKIP TO Q. 74)
- Other (SPECIFY) ____

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

- Pay own
- Someone else pays
- Prefer not to answer
- Don't know

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

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

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

- 1939 or earlier
- 1940 to 1949
- 1950 to 1959
- 1960 to 1969
- 1970 to 1979
- 1980 to 1989
- 1990 to 1999
- 2000 to 2009
- 2010 to 2019
- 2020 or later
- Prefer not to answer (DO NOT READ)
- Don't know (DO NOT READ)

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

- Less than 5
- 5-9
- 10-19
- 20 - 49
- 50 - 99
- 100 - 249
- 250 - 499
- 500 - 999
- 1,000 - 2,500
- More than 2,500
- Prefer not to answer
- Don't know

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

____

- Prefer not to answer
- Don't know

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

NOTE TO INTERVIEWER, WAS RESPONDENT:

- Male
- Female

Unique ID #:_____ _____ _____

Respondent's Phone Number:_________________________________
Interviewer's Name:____
Interviewer's Code:____

Appendix C

Easy Savings Survey Instrument

C. Easy Savings Survey Instrument

Note: this is a low income general population web survey that will be fielded by Evergreen via Qualtrics

Thank you for taking our survey! Your responses will help PNM better understand the lives, experiences and needs of New Mexico households like yours. As a thank you for taking this survey, we will be providing a $10 Amazon gift card upon completion. This survey should take less than 10 minutes to complete.

The questions are for research purposes only. We are not selling anything, and we will not give any of your specific responses to anyone outside the research team. Your responses will remain anonymous, and we will only be sharing study results that are summarized for all families that are taking this survey.

Screener Questions

Q1. What type of building do you live in?

- Single family home
- Condo or townhome
- Apartment in a small multifamily building with 2-10 units in building
- Apartment in a medium multifamily building with 11-39 units in building
- Apartment in a large multifamily building with 40+ units in building
- Don't know

Q2. Do you own or rent your home?

- Own
- Rent
- Don't know

Q3. [IF Q2 = Rent] How comfortable would you be approaching your landlord to talk about replacing a poorly functioning appliance?

- Extremely comfortable
- Very comfortable
- Somewhat comfortable
- Not at all comfortable

Q4. Does anyone in your household speak a language other than English?

- Yes
- No [SKIP TO Q6]
- Don’t know [SKIP TO Q6]

Q5. What are ALL of the languages that are spoken in your household?

- English
- Spanish
- Mandarin
- Cantonese
- Tagalog/Filipino
- Korean
- Vietnamese
- German
- Chinese
- Japanese
- Other (please specify):_______________
- Don’t know

Building Characteristics

Next, we would like to find out more about the characteristics of the building you live in.

Q6. How many years have you lived at your current residence?
# of years: ____

Q7. Approximately when was your home/building built?

- Before 1960
- 1961 to 1970
- 1971 to 1980
- 1981 to 1990
- 1991 to 2000
- 2001 to 2010
- 2011 to 2020
- 2021 or newer
- Don’t know

Q8. What is the square footage of your home/apartment?

- Under 1,000 sq ft
- 1,000 to 1,499 sq ft
- 1,500 to 1,999 sq ft
- 2,000 to 2,499sq ft
- 2,500 to 2,999 sq ft
- 3,000 to 3,999 sq ft
- More than 4,000 sq ft
- Don't know

Q9. How many bedrooms are there?

# of bedrooms: _____

Q10. Which of these do you use to cool your home? Select all that apply.

- No cooling / windows only
- Central AC
- Window AC
- Heat pump
- Ceiling fan
- Portable fan
- Swamp cooler
- Other (please specify):______________
- Don't know

Q11. [IF Q10 = Central AC] Approximately how old is your air conditioner?

- Less than a year old
- 1-5 years
- 6-10 years
- 11-15 years
- 16-20 years
- Greater than 20 years
- Don't know, but it was here when I moved in
- Don't know

Q12. [IF Q10 = Heat Pump] Approximately how old is your heat pump?

- Less than a year old
- 1-5 years
- 6-10 years
- 11-15 years
- 16-20 years
- Greater than 20 years
- Don’t know, but it was here when I moved in
- Don’t know

Q13. Which of these do you use to heat your home? Select all that apply.

- Natural gas furnace
- Electric furnace
- Boiler
- Ductless mini-split heat pump
- Baseboards
- Wall heater(s) / wall furnace(s)
- Radiant heating (floor or ceiling)
- Wood or pellet stove
- Natural gas fireplace
- Wood burning fireplace / open hearth
- Solar heating
- Portable space heaters
- Other (specify): ________
- Prefer not to answer
- Don’t know

Q14. [IF Q13 = Natural Gas Furnace] Approximately how old is your furnace?

- Less than a year old
- 1-5 years
- 6-10 years
- 11-15 years
- 16-20 years
- Greater than 20 years
- Don’t know, but it was here when I moved in
- Don’t know

Q15. Approximately how old is your refrigerator?

- Less than a year old
- 1-5 years
- 6-10 years
- 11-15 years
- 16-20 years
- Greater than 20 years
- Don’t know, but it was here when I moved in
- Don’t know

Q16. Approximately how old is your clothes washer?

- Less than a year old
- 1-5 years
- 6-10 years
- 11-15 years
- 16-20 years
- Greater than 20 years
- I don’t have a clothes washer in my home
- Don’t know, but it was here when I moved in
- Don’t know

Q17. Approximately how old is your clothes dryer?

- Less than a year old
- 1-5 years
- 6-10 years
- 11-15 years
- 16-20 years
- Greater than 20 years
- I don’t have a clothes dryer in my home
- Don’t know, but it was here when I moved in
- Don’t know

Q18. Approximately how old is your water heater?

- Less than a year old
- 1-5 years
- 6-10 years
- 11-15 years
- 16-20 years
- Greater than 20 years
- Don't know, but it was here when I moved in
- Don't know

Engagement with Utility and Utility services

Q19. In the last 12 months, have you contacted PNM for any of the below reasons? Select all that apply.

- Outage
- Learn about ways to save energy
- Problems/errors with bill
- Get extension/help paying bill
- Ask about assistance programs
- Other (please specify): _______
- I haven't contacted them in the last 12 months

Q20. How willing would you be to participate in a PNM-sponsored program that sends customers a free energy efficiency kit to upgrade your living space?

- Extremely willing
- Very willing
- Somewhat willing
- Not at all willing
- Don't know

Q21. [IF Q20 = Somewhat willing, Not at all willing, OR Don't know] Next is a list of reasons some people may not participate in a program like this. For each one, please indicate if it would be a large factor, medium factor, small factor or not a factor in making you or your household hesitant to participate in the program.

- Our bills are low already
- I don’t trust it is really free
- There is no more we can do to save energy
- We already have energy efficient appliances
- We don’t want strangers in our home
- It’s too much trouble to get approval from the landlord
- We don’t want to provide personal information required to participate.

Monthly Mortgage/Rent and Utility Bills

Next, we have a few questions about your rent and monthly utility bills. As a reminder, we are asking these questions for research purposes only. Your responses will remain anonymous, and we will only be sharing study results that are summarized for all households that are taking this survey.

Q22. How much is your monthly rent or mortgage payment?

- [IF Q2 = Own] Monthly mortgage payment = $______
- [IF Q2 = Rent] Monthly rent = $________
- Prefer not to answer
- Don’t know

Q23. [IF Q13 = Natural Gas Furnace] Roughly what is your monthly gas bill?

- Monthly gas bill = _______
- [IF Q2 = Rent] My gas bill is included in my rent
- Prefer not to answer
- Don’t know

Q24. Roughly what is your monthly electricity bill?

- Monthly electric bill = ________
- [IF Q2 = Rent] My electric bill is included in my rent
- Prefer not to answer
- Don’t know

Final Demographic Questions

There are just a few questions left to get a little more detail about your household. For these next questions, your household is defined as adults or children who live in your home at least half the time.

Q25. For your household, please indicate how many people in your home are in the following age groups:

- Less than 5 years old: ___
- 6 to 18 years old: ___
- 19 to 40 years old: ___
- 41 to 65 years old: ___
- More than 65 years old: ___

Q26. Are any members of your household considered permanently disabled?

- Yes
- No
- Don't know

Q27. What is your zip code?

Q28. In 2024, have you received assistance from any of the following government programs? Select all that apply.

- Section 8 vouchers for housing
- SNAP, or other kinds of food stamps
- Medical assistance from Medicaid
- Other (please specify): _________
- Don't know
- None of the above

Q29. Please indicate your total household yearly income.

- Less than $5,000
- $5,000 to $9,999
- $10,000 to $19,999
- $20,000 to $39,999
- $40,000 to $59,999
- $60,000 to $74,999
- $75,000 to $99,999
- $100,000 to $124,999
- $125,000 to $150,000
- More than $150,000
- Don’t know
- Prefer not to say

Thank you very much for helping us with this survey! Your responses provide valuable feedback that will help PNM improve its energy efficiency and conservation programs.
To show our appreciation, we will be emailing you a $10 Amazon gift card.

Q31. Please provide an email where you would like the $10 gift card sent.

Appendix D

Residential Comprehensive: Home Energy Checkup Survey Instrument

D. Residential Comprehensive: Home Energy Checkup Survey Instrument

Hello, my name is (YOUR NAME) from MDC Research. I am calling on behalf of PNM. May I please speak with _______________?

A. (Once correct respondent is reached) Hello, my name is (YOUR NAME) from MDC Research. I am calling on behalf of PNM.

I'm calling because our records show that you recently received a Home Energy Checkup from PNM and installed energy efficient equipment at your home located at [SITE_ADDRESS]. I'd like to ask a short set of questions about your experience with this rebate program. Your time will help us improve this program for other customers like you. Are you the best person to talk to about these energy efficiency upgrades and energy use in your home?

- Yes
- 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)
- Never installed (VOLUNTEERED SKIP TO Q.4)

(IF NEEDED) PNM would like to better understand how residential customers like you think about and manage their energy use. The PNM Home Energy Checkup program is designed to help customers save energy and money. Your input is very important to help PNM improve its energy efficiency programs.

SECTION A: Measure Verification [IF Audit=1 AND NonDI_Measures=1] GROUP A
(Note: this section is for HEC participants who installed rebated equipment in addition to the DI measures.)

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

- Yes
- No (THANK AND TERMINATE—only if no other measures, otherwise move to next MEASURE_TYPE)
- Don’t know (THANK AND TERMINATE—only if no other measures, otherwise move to next MEASURE_TYPE)

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

- Yes (SKIP TO Q. 5)
- No (CONTINUE TO Q. 3)
- Prefer not to answer (SKIP TO Q. 5)
- Don’t know (SKIP TO Q. 5)

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

- Removed
- Never Installed (SKIP TO Q.6)
- Don't know (SKIP TO Q.6)
- Other (SPECIFY) ______________________________(SKIP TO Q.6)

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

____

____

____

(SKIP TO Q.6)

- No reason in particular (SKIP TO Q.6)

POLLER NOTE: Was measure installed?

- Yes (SKIP TO Q. 6)
- No (THANK AND TERMINATE—only if no other measures, otherwise move to next MEASURE_TYPE)

5. (A 4) Is the [MEASURE_TYPE1] still functioning properly?

- Yes
- No
- Prefer not to answer (DO NOT READ)
- Don't know (DO NOT READ)

REPEAT FOR MEASURE_TYPE2 AND MEASURE_TYPE3 IF LISTED.

SECTION A: Measure Verification [IF Audit=1 AND NonDI_Measures=0] GROUP B

(Note: this section is for HEC participants who only had DI measures and did not go on to install rebated equipment)

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

- Yes
- No (THANK AND TERMINATE—only if no other measures, otherwise move to next
- MEASURE_TYPE)
- Don’t know (THANK AND TERMINATE—only if no other measures, otherwise move to next MEASURE_TYPE)

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

- Yes (SKIP TO Q. 5)
- No (CONTINUE TO Q. 3)
- Prefer not to answer (SKIP TO Q. 5)
- Don’t know (SKIP TO Q. 5)

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

- Removed
- Never Installed
- Prefer not to answer (SKIP TO Q.8)
- Don't know (SKIP TO Q.8)
- Other (SPECIFY) ______________________________________(SKIP TO Q.8)

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

___

___

___

(SKIP TO Q.8)

- No reason in particular (SKIP TO Q.6)

POLLER NOTE: Was measure installed?

- Yes (SKIP TO Q.8)
- No (THANK AND TERMINATE—only if no other measures, otherwise move to next MEASURE_TYPE)

5. (A 4) Is the [MEASURE_TYPE1] still functioning properly?

- Yes
- No
- Prefer not to answer (DO NOT READ)
- Don't know (DO NOT READ)

REPEAT FOR MEASURE_TYPE2 AND MEASURE_TYPE3 IF LISTED.

SECTION A: Measure Verification [IF Audit=0] GROUP C
(Note: this section is for HEC participants that received a rebate but did not have an audit or DI measures installed.)

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

- Yes
- No (THANK AND TERMINATE—only if no other measures, otherwise move to next
- MEASURE_TYPE)
- Don't know (THANK AND TERMINATE—only if no other measures, otherwise move to next MEASURE_TYPE)

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

- Yes (SKIP TO Q. 5)
- No (CONTINUE TO Q. 3)
- Prefer not to answer (SKIP TO Q. 5)
- Don’t know (SKIP TO Q. 5)

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

- Removed
- Never Installed
- Prefer not to answer (SKIP TO Q.6)
- Don't know (SKIP TO Q.6)
- Other (SPECIFY) ______________________________________(SKIP TO Q.6)

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

____

____

____

(SKIP TO Q.6)

- No reason in particular (SKIP TO Q.6)

POLLER NOTE: Was the measure installed?

- Yes (SKIP TO Q.6)
- No (THANK AND TERMINATE—only if no other measures, otherwise move to next MEASURE_TYPE)

5. (A 4) Is the [MEASURE_TYPE1] still functioning properly?

- Yes
- No
- Prefer not to answer (DO NOT READ)
- Don't know (DO NOT READ)

REPEAT FOR MEASURE_TYPE2 AND MEASURE_TYPE3 IF LISTED.

Section B: Role of Contractor/Retailer [IF NonDI_Measures=1] GROUP C

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

- Used a contractor (SKIP TO Q. 9)
- Purchased at retailer
- Prefer not to answer (DO NOT READ)
- Don't know (DO NOT READ)

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

- Contractor installed
- Did it myself
- Prefer not to answer (DO NOT READ)
- Don't know (DO NOT READ)

Section C: Awareness and Motivations for Participation GROUP B

8. (C 1) How did you first hear about PNM's Home Energy Checkup program? (DO NOT READ CATEGORIES)

- Bill insert
- PNM website
- Digital/web advertisement (not on the PNM website)
- Television advertisement
- Radio advertisement
- Contractor
- Friend or family
- Social media
- PNM representative
- Prefer not to Answer
- Don't know
- Other (SPECIFY) ____

(C 2) Next I will read a list of reasons you may have considered when you decided to pursue the Home Energy Checkup/ make the energy efficiency upgrade. For each one, please tell me if it was not at all important, a little important, somewhat important, very important or extremely important.

How important was…on your decision to make the Home Energy Check Up/ Energy Efficiency upgrade?

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

9. (C2a) Reducing environmental impact
of your home 5 4 3 2 1 6 7 8

10. (C2b) Upgrading out-of-date equipment 5 4 3 2 1 6 7
8

11. (C2c) Replacing faulty or failed equipment 5 4 3 2 1 6 7
8

12. (C2d) Improving comfort of your home 5 4 3 2 1 6 7
8

13. (C2e) Improving air quality 5 4 3 2 1 6 7 8

14. (C2f) Receiving financial incentive 5 4 3 2 1 6 7 8

15. (C2g) Reducing energy bill amounts 5 4 3 2 1 6 7 8

16. [If Contractor=YES in Q. 6 ASK] GROUP C
(C2h) The contractor recommendation 5 4 3 2 1 6 7 8

17. [If Retailer=Yes in Q. 6 ASK] Group C
(C2i) The retailer recommendation 5 4 3 2 1 6 7 8

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

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

____

____

- No, none in particular
- Prefer not to answer
- Don't know

SECTION D: CUSTOMER DECISION MAKING PROCESS, FREE-RIDERSHIP [IF NonDI_Measures=1] GROUP C

(Note: this section is for HEC participants who went on to install rebated equipment beyond the direct install)

Next, I'm going to ask a few questions about your decision to participate in the PNM rebate program, and to make an efficiency upgrade at your home.

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

- Yes
- No
- Prefer not to answer
- Don't know

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

How influential was...on your decision to make the Energy Efficiency upgrade?

Extremely Not at all Don;t Prefer not
(RANDOMIZE) Influential Influential Know to answer N/A

20. [IF Audit=1] GROUP A
(D2a) The Home Energy Checkup provided by PNM 10...9 ...8...7...6...5 ...4...3...2...1...0 97 98 99

21. (D2b) The dollar amount of the rebate 10...9 ...8...7...6...5 ...4...3...2...1...0 97 98 99

22. [IF Contractor=YES in Q. 6 ASK]
(D2c) The contractor recommendation 10…9 …8…7…6…5 …4…3…2…1…0 97 98 99

23. [IF Retailer=YES in Q. 6 ASK]
(D2d) The retailer recommendation 10…9 …8…7…6…5 …4…3…2…1…0 97 98 99

24. (D2e) Information from PNM marketing or
promotional materials 10…9 …8…7…6…5 …4…3…2…1…0 97 98 99

25. (D2f) Previous participation in a PNM
program 10…9 …8…7…6…5 …4…3…2…1…0 97 98 99

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

- Before
- After
- Prefer not to answer (DO NOT READ)
- Don't know (DO NOT READ)

27. (D 4) Now I would like you to think about the efficiency level of the equipment upgrade. Using a scale from 0 to 10, where 0 means not at all likely and 10 means extremely likely, please rate the likelihood that you would have purchased the exact same efficiency level of equipment if the PNM rebate program was NOT available.

Extremely Not at all
DK/
Likely Likely WS

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

28. (D 5) Now I would like you to think about the timing of the equipment purchase. Using a scale from 0 to 10, where 0 means not at all likely and 10 means extremely likely, please rate the likelihood that you would have installed equipment of any efficiency level within 12 months of when you actually did if the PNM rebate program was NOT available.

Extremely Not at all

DK/

Likely Likely WS

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

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

SECTION E: Program Implementation and Delivery

Now I have some questions about the program processes.

30. (E 1) [ASK IF Audit=1] Did you schedule your Home Energy Checkup online or over the phone? GROUP B

- Online
- Over the phone
- Prefer not to answer
- Don't know

31. (E 2) [ASK IF Audit=1] About how long did it take to receive your Home Energy Checkup once you scheduled it with PNM? Group B

- 2 weeks or less
- More than 2 weeks and up to 4 weeks/1 month
- More than 4 weeks and up to 6 weeks
- More than 6 weeks and up to 8 weeks/2 months
- More than 8 weeks and up to 10 weeks
- More than 10 weeks and up to 12 weeks/3 months
- More than 12 weeks and up to 14 weeks
- More than 14 weeks and up to 16 weeks/4 months
- More than 16 weeks/4 months
- Prefer not to answer
- Don't know

32. (E 3) [ASK IF NonDI_Measures=1] About how long did it take to receive your rebate after the equipment was installed? (DO NOT READ CATEGORIES) Group C

- 1 week or less
- More than a week, but less than 1 month
- About 1 month
- Between 1 and 2 months
- About 2 months
- More than 2 months
- Have not received rebate yet
- Prefer not to answer
- Don't know

SECTION F: Program Satisfaction

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

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

33. (F1a) PNM as an energy provider

- Very Dissatisfied
- Somewhat Dissatisfied
- Neither Satisfied Nor Dissatisfied
- Somewhat Satisfied (SKIP TO Q. 35)
- Very Satisfied (SKIP TO Q. 35)
- Not applicable (SKIP TO Q. 35)
- Prefer not to answer (SKIP TO Q. 35)
- Don't know (SKIP TO Q. 35)

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

____

____

____

35. (F1b) The Home Energy Checkup/rebate program overall

- Very Dissatisfied
- Somewhat Dissatisfied
- Neither Satisfied Nor Dissatisfied
- Somewhat Satisfied (SKIP TO Q.37)
- Very Satisfied (SKIP TO Q. 37)
- Not applicable (SKIP TO Q. 37)
- Prefer not to answer (SKIP TO Q. 37)
- Don't know (SKIP TO Q. 37)

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

___

___

___

37. (F1c) The equipment that was rebated/provided through the program

- Very Dissatisfied
- Somewhat Dissatisfied
- Neither Satisfied Nor Dissatisfied
- Somewhat Satisfied (SKIP TO Q.39)
- Very Satisfied (SKIP TO Q. 39)
- Not applicable (SKIP TO Q. 39)
- Prefer not to answer (SKIP TO Q. 39)
- Don't know (SKIP TO Q. 39)

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

___

___

___

39. [IF Contractor=YES in Q. 6 or 7 ASK] (F1d) The contractor who installed the equipment

GROUP C

- Very Dissatisfied
- Somewhat Dissatisfied
- Neither Satisfied Nor Dissatisfied
- Somewhat Satisfied (SKIP TO Q.41)
- Very Satisfied (SKIP TO Q. 41)
- Not applicable (SKIP TO Q. 41)
- Prefer not to answer (SKIP TO Q. 41)
- Don't know (SKIP TO Q. 41)

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

____

41. [IF NonDI_Measures=1] (F1e) The amount of time it took to receive your rebate GROUP C

- Very Dissatisfied
- Somewhat Dissatisfied
- Neither Satisfied Nor Dissatisfied
- Somewhat Satisfied (SKIP TO Q.43)
- Very Satisfied (SKIP TO Q. 43)
- Not applicable (SKIP TO Q. 43)
- Prefer not to answer (SKIP TO Q. 43)
- Don't know (SKIP TO Q. 43)

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

____

43. [IF NonDI_Measures=1] (F1f). The dollar amount of the rebate GROUP C

- Very Dissatisfied
- Somewhat Dissatisfied
- Neither Satisfied Nor Dissatisfied
- Somewhat Satisfied (SKIP TO Q.45)
- Very Satisfied (SKIP TO Q. 45)
- Not applicable (SKIP TO Q. 45)
- Prefer not to answer (SKIP TO Q. 45)
- Don't know (SKIP TO Q. 45)

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

____
____
____

45. (F1g) Interactions with PNM regarding this project

- Very Dissatisfied
- Somewhat Dissatisfied
- Neither Satisfied Nor Dissatisfied
- Somewhat Satisfied (SKIP TO Q.47)
- Very Satisfied (SKIP TO Q. 47)
- Not applicable (SKIP TO Q. 47)
- Prefer not to answer (SKIP TO Q. 47)
- Don't know (SKIP TO Q. 47)

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

____
____
____

47. (F1h) The overall value of the equipment you received for the price you paid

- Very Dissatisfied
- Somewhat Dissatisfied
- Neither Satisfied Nor Dissatisfied
- Somewhat Satisfied (SKIP TO Q.49)
- Very Satisfied (SKIP TO Q. 49)
- Not applicable (SKIP TO Q. 49)
- Prefer not to answer (SKIP TO Q. 49)
- Don't know (SKIP TO Q. 49)

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

____

____

____

49. (F2) Do you have any recommendations for improving the Home Energy Check-up program? GROUP B

- Yes (RECORD VERBATIM)

____

____

____

- No
- Prefer not to answer
- Don't know

50. (F2) Do you have any recommendations for improving the PNM rebate program? GROUP C

- Yes (RECORD VERBATIM)

____

____

____

- No
- Prefer not to answer
- Don't know

51. (F3) If you were to tell a friend or neighbor about the program, what would you tell them? (RECORD VERBATIM)

____

____

____

- Prefer not to answer
- Don’t know

SECTION GEN: CHARACTERISTICS AND DEMOGRAPIHCS

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

- Own
- Rent
- Prefer not to answer
- Don't know
- Other (SPECIFY) ____________________________________

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

- Pay own
- Someone else pays
- Prefer not to answer
- Don’t know

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

- Single-family home (SKIP TO Q. 56)
- More than one residence in building
- Prefer not to answer (SKIP TO Q. 56)
- Don’t know (SKIP TO Q. 56)

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

_____ _____ _____

- Prefer not to answer
- Don't know

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

- Less than 1,000 square feet
- 1,000 to 1,499 square feet
- 1,500 to 1,999 square feet
- 2,000 to 2,499 square feet
- 2,500 to 2,999 square feet
- 3,000 to 3,999 square feet
- 4,000 or more square feet
- Prefer not to answer (DO NOT READ)
- Don't know (DO NOT READ)

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

- 1939 or earlier
- 1940 to 1949
- 1950 to 1959
- 1960 to 1969
- 1970 to 1979
- 1980 to 1989
- 1990 to 1999
- 2000 to 2009
- 2010 to 2019
- 2020 to 2022
- Prefer not to answer (DO NOT READ)
- Don't know (DO NOT READ)

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

______ _____

- Prefer not to answer
- Don't know

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

- Less than 6 years
- 6 to 10 years
- 11 to 15 years
- 16 to 20 years
- 21 to 25 years
- 26 to 30 years
- More than 30 years
- Prefer not to answer
- Don't know

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

NOTE TO INTERVIEWER, WAS RESPONDENT:

- Male
- Female

Unique ID #:_____ _____ _____

Respondent's Phone Number:_________________________________
Interviewer's Name:____
Interviewer's Code:____

Appendix E

Residential Comprehensive: Cooling/Pool Pumps Survey Instrument

E. Residential Comprehensive: Cooling/Pool Pumps Survey Instrument

Hello, my name is (YOUR NAME) from MDC Research. I am calling on behalf of PNM. May I please speak with ______________?

A. (Once correct respondent is reached) Hello, my name is (YOUR NAME) from MDC Research. I am calling on behalf of PNM.

I'm calling because our records show that you recently installed an energy efficient [MEASURE_TYPE1] and received a rebate from PNM. I'd like to ask a short set of questions about your experience with this rebate program. Your time will help us improve this program for other customers like you. Are you the best person to talk to about these energy efficiency upgrades and energy use in your home?

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

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

SECTION A: Measure Verification

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

- Yes
- No (THANK AND TERMINATE—only if no other measures, otherwise move to next MEASURE_TYPE)
- Don't know (THANK AND TERMINATE—only if no other measures, otherwise move to next MEASURE_TYPE)

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

- Yes (SKIP TO Q. 5)
- No (CONTINUE TO Q. 3)
- Prefer not to answer (SKIP TO Q. 5)
- Don't know (SKIP TO Q. 5)

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

- Removed
- Never Installed
- Prefer not to answer (SKIP TO Q.6)
- Don't know (SKIP TO Q.6)
- Other (SPECIFY) ____________________________________(SKIP TO Q.6)

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

____

____

____

(SKIP TO Q.6)

POLLER NOTE: Was measure ever installed? (Yes to Q. 1)

- Yes (CONTINUE TO Q.5)
- No (THANK AND TERMINATE—only if no other measures, otherwise move to next MEASURE_TYPE)

5. (A 4) Is the [MEASURE_TYPE1] still functioning properly?

- Yes
- No
- Prefer not to answer (DO NOT READ)
- Don't know (DO NOT READ)

REPEAT FOR MEASURE_TYPE2 AND MEASURE_TYPE3 IF LISTED.

Section B: Heat Pumps

If has_heat_pump = 1, ask questions in this section. If not, SKIP to Section C. If multiple_heat_pumps = 1, run through this section twice, once for each heat pump. First time through, for all "heat pump" references in questions below (in red) refer to the brand name heat_pump_name1 so participants know which of their heat pumps you're asking about, and second time through for all "heat pump" references refer to heat_pump_name2.

Read: Now, we have some more specific questions related to your heating system and heat pump specifically.

6. (B1) Did your heat pump replace other heating equipment?

- Yes
- No (SKIP TO Q. 8)
- Prefer not to answer (SKIP TO Q. 8)
- Don't know (SKIP TO Q. 8)

7. (B1a) What heating equipment did your heat pump replace? (don't read options, listen for the below, accept multiple)

- Natural gas furnace (poller note: a heating system that burns natural gas to produce warm air)
- Electric furnace (poller note: uses electricity to generate heat)
- Boiler (poller note: heats water or steam, distributing it via radiators or underfloor systems to heat a space)
- Ductless mini-split heat pump (poller note: provides heating without ducts, using refrigerant to transfer heat between indoor and outdoor units)
- Baseboards (poller note: electric heaters installed along walls that radiate heat directly into the room)
- Wall heater(s) / wall furnace(s) (poller note: heaters mounted in/on a wall that provide localized heat)
- Radiant heating (floor or ceiling) (poller note: uses electric or water-based systems embedded in floors or ceilings to radiate heat)
- Wood or pellet stove
- Natural gas fireplace
- Wood burning fireplace / open hearth
- Solar heating
- Portable space heaters (poller note: compact heaters that can be moved and plugged in)
- Other (specify): ________
- Other existing heat pump
- Prefer not to answer
- Don't know

8. (B 2) Other than your heat pump, do you currently have any other heating equipment in your home?

- Yes (CONTINUE TO Q. 9)
- No (SKIP TO Q. 14)

9. (B 3) What other heating equipment do you currently use for heating your home? (don't read options, listen for the below, accept multiple)

- Natural gas furnace (poller note: a heating system that burns natural gas to produce warm air)
- Electric furnace (poller note: uses electricity to generate heat)
- Boiler (poller note: heats water or steam, distributing it via radiators or underfloor systems to heat a space)
- Ductless mini-split heat pump (poller note: provides heating without ducts, using refrigerant to transfer heat between indoor and outdoor units)
- Baseboards (poller note: electric heaters installed along walls that radiate heat directly into the room)
- Wall heater(s) / wall furnace(s) (poller note: heaters mounted in/on a wall that provide localized heat)
- Radiant heating (floor or ceiling) (poller note: uses electric or water-based systems embedded in floors or ceilings to radiate heat)
- Wood or pellet stove
- Natural gas fireplace
- Wood burning fireplace / open hearth
- Solar heating
- Portable space heaters (poller note: compact heaters that can be moved and plugged in)
- Other (specify): ________
- Prefer not to answer
- Don't know

10. (B 4) [If any systems mentioned in Q9] Including your heat pump, which of your heating systems would you say is your primary heating system? [Accept one answer from above list or "heat pump"]

____

11. (B 5) [If any systems mentioned in Q9] Is your heat pump currently or intended to be the only source of heat for your home?

- Yes (SKIP TO Q. 14)
- No
- Prefer not to answer
- Don't know

12. (B 6) [If Q8 = 1 (Yes)] Are your supplementary/additional heating source(s) set up to automatically take over for your heat pump at a certain temperature?

- Yes
- No
- Prefer not to answer
- Don't know

13. (B 7) [If Q12 = 1 (Yes)] At what temperature do your supplementary/additional heating source(s) take over for your heat pump, if you know?

- _____ (record response, accept specific temperature in Fahrenheit, accept one value overall or one value per supplementary heating source, no ranges)
- Prefer not to answer
- Don't know

14. (B 8) What challenges have you faced, if any, with either the installation of your heat pump or with using your heat pump since you've had it installed? (RECORD VERBATIM)

____
____
____

15. (B 9) Are you satisfied with your experience using the heat pump since you've had it installed? (RECORD VERBATIM)

____
____
____

POLLER NOTE: Remember to repeat this section above if multiple heat pumps

Section C: Role of Contractor/Retailer

If answered Section B questions, read: Now, we have some questions related to your experience with the program more broadly, starting with questions about contractors and retailers.

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

- Used a contractor
- Purchased at retailer
- Prefer not to answer (DO NOT READ)
- Don't know (DO NOT READ)

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

- Contractor installed
- Did it myself
- Prefer not to answer (DO NOT READ)
- Don't know (DO NOT READ)

Section D: Awareness and Motivations for Participation

18. (D 1) How did you first hear about PNM's rebates for energy efficient equipment?
(DO NOT READ CATEGORIES)

- Bill insert
- PNM website
- Digital/web advertisement (not on the PNM website)
- Television advertisement
- Radio advertisement
- Contractor
- Friend or family
- Social media
- PNM representative
- Prefer not to answer
- Don't know
- Other (SPECIFY) ____

(D 2) Next I will read a list of reasons you may have considered when you decided to make the energy efficiency upgrade. For each one, please tell me if it was not at all important, a little important, somewhat important, very important or extremely important.

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

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

19. (D2a) Reducing environmental impact
of your home 5 4 3 2 1 6 7 8

20. (D2b) Upgrading out-of-date equipment 5 4 3 2 1 6 7
8

21. (D2c) Replacing faulty or failed equipment 5 4 3 2 1 6 7
8

22. [If has_heat_pump = 1 OR measure_type1 or measure_type2 = Refrigerated Air Conditioner, ASK]
(D2d) Improving comfort of your home 5 4 3 2 1 6 7 8

23. [If has_heat_pump = 1 OR measure_type1 or measure_type2 = Refrigerated Air Conditioner, ASK]
(D2e) Improving air quality 5 4 3 2 1 6 7 8

24. (D2f) Receiving financial incentive 5 4 3 2 1 6 7 8

25. (D2g) Reducing energy bill amounts 5 4 3 2 1 6 7 8

26. [If Contractor=YES IN Q.16, ASK]
(D2h) The contractor recommendation 5 4 3 2 1 6 7 8

27. [If Retailer=YES IN Q.16 ASK]
(D2i) The retailer recommendation 5 4 3 2 1 6 7 8

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

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

____
____
____

- No, none in particular
- Prefer not to answer
- Don't know

SECTION E: CUSTOMER DECISION MAKING PROCESS, FREE-RIDERSHIP

Next, I'm going to ask a few questions about your decision to participate in the PNM rebate program, and to make an efficiency upgrade at your home.

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

- Yes
- No
- Prefer not to answer
- Don't know

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

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

Extremely Not at all Don't Prefer not
(RANDOMIZE) Influential Influential Know to answer N/A

30. (E2a) The dollar amount of the rebate 10…9 …8…7…6…5 …4…3…2…1…0 97 98 99

31. [IF Contractor=YES IN Q.16 ASK]
(E2b) The contractor recommendation 10…9 …8…7…6…5 …4…3…2…1…0 97 98 99

32. [IF Retailer=YES IN Q.16 ASK]
(E2c) The retailer recommendation 10…9 …8…7…6…5 …4…3…2…1…0 97 98 99

33. (E2d) Information from PNM marketing
or promotional materials 10…9 …8…7…6…5 …4…3…2…1…0 97 98 99

34. (E2e) Previous participation
in a PNM program 10…9 …8…7…6…5 …4…3…2…1…0 97 98 99

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

- Before
- After
- Prefer not to answer (DO NOT READ)
- Don't know (DO NOT READ)

36. (E 4) Now I would like you to think about the efficiency level of the equipment upgrade. Using a scale from 0 to 10, where 0 means not at all likely and 10 means extremely likely, please rate the likelihood that you would have purchased the exact same efficiency level of equipment if the PNM rebate program was NOT available.

Extremely Not at all
DK/
Likely Likely WS

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

37. (E 5) Now I would like you to think about the timing of the equipment purchase. Using a scale from 0 to 10, where 0 means not at all likely and 10 means extremely likely, please rate the likelihood that you would have installed equipment, of any efficiency level, within 12 months of when you actually did if the PNM rebate program was NOT available.

Extremely Not at all
DK/
Likely Likely WS

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

38. (E 6) In your own words, how would you describe the influence the PNM rebate program had on your decision to install the new equipment?
(RECORD VERBATIM)

SECTION F: Program Implementation and Delivery

Now I have a question about the program processes.

39. (F 1) About how long did it take to receive your rebate after the equipment was installed? (DO NOT READ CATEGORIES)

- 1 week or less
- More than a week, but less than 1 month
- About 1 month
- Between 1 and 2 months
- About 2 months
- More than 2 months
- Have not received rebate yet
- Prefer not to answer
- Don't know

SECTION G: Program Satisfaction

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

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

40. (G1a) PNM as an energy provider

- Very Dissatisfied
- Somewhat Dissatisfied
- Neither Satisfied Nor Dissatisfied (SKIP TO Q.42)
- Somewhat Satisfied (SKIP TO Q.42)
- Very Satisfied (SKIP TO Q.42)
- Not applicable (SKIP TO Q. 42)
- Prefer not to answer (SKIP TO Q. 42)
- Don't know (SKIP TO Q.42)

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

____

____

____

42. (G1b) The rebate program overall

- Very Dissatisfied
- Somewhat Dissatisfied
- Neither Satisfied Nor Dissatisfied (SKIP TO Q. 44)
- Somewhat Satisfied (SKIP TO Q. 44)
- Very Satisfied (SKIP TO Q. 44)
- Not applicable (SKIP TO Q. 44)
- Prefer not to answer (SKIP TO Q. 44)
- Don't know (SKIP TO Q. 44)

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

____

____

____

44. (G1c) The equipment that was rebated through the program

- Very Dissatisfied
- Somewhat Dissatisfied
- Neither Satisfied Nor Dissatisfied (SKIP TO Q. 46)
- Somewhat Satisfied (SKIP TO Q. 46)
- Very Satisfied (SKIP TO Q. 46)
- Not applicable (SKIP TO Q. 46)
- Prefer not to answer (SKIP TO Q. 46)
- Don't know (SKIP TO Q. 46)

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

____

____

____

46. [IF Contractor=YES in Q. 16, ASK] (G1d) The contractor who installed the equipment

- Very Dissatisfied
- Somewhat Dissatisfied
- Neither Satisfied Nor Dissatisfied (SKIP TO Q. 48)
- Somewhat Satisfied (SKIP TO Q. 48)
- Very Satisfied (SKIP TO Q. 48)
- Not applicable (SKIP TO Q. 48)
- Prefer not to answer (SKIP TO Q. 48)
- Don’t know (SKIP TO Q. 48)

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

____

____

____

48. (G1e) The amount of time it took to receive your rebate

- Very Dissatisfied
- Somewhat Dissatisfied
- Neither Satisfied Nor Dissatisfied (SKIP TO Q. 50)
- Somewhat Satisfied (SKIP TO Q. 50)
- Very Satisfied (SKIP TO Q. 50)
- Not applicable (SKIP TO Q. 50)
- Prefer not to answer (SKIP TO Q. 50)
- Don’t know (SKIP TO Q. 50)

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

____

____

____

50. (G1g) Interactions with PNM regarding this project

- Very Dissatisfied
- Somewhat Dissatisfied
- Neither Satisfied Nor Dissatisfied (SKIP TO Q. 52)
- Somewhat Satisfied (SKIP TO Q. 52)
- Very Satisfied (SKIP TO Q. 52)
- Not applicable (SKIP TO Q. 52)
- Prefer not to answer (SKIP TO Q. 52)
- Don’t know (SKIP TO Q. 52)

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

____

____

____

52. (G1h) The overall value of the equipment you received for the price you paid

- Very Dissatisfied
- Somewhat Dissatisfied
- Neither Satisfied Nor Dissatisfied (SKIP TO Q. 54)
- Somewhat Satisfied (SKIP TO Q. 54)
- Very Satisfied (SKIP TO Q. 54)
- Not applicable (SKIP TO Q. 54)
- Prefer not to answer (SKIP TO Q. 54)
- Don’t know (SKIP TO Q. 54)

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

____

____

____

54. (G2) Do you have any recommendations for improving the PNM program?

- Yes (RECORD VERBATIM)

____

____

____

- No
- Prefer not to answer
- Don’t know

SECTION GEN: CHARACTERISTICS AND DEMOGRAPIHCS

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

- Own (SKIP TO Q. 57)
- Rent
- Prefer not to answer
- Don't know

- Other (SPECIFY) ____

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

- Pay own
- Someone else pays
- Prefer not to answer
- Don’t know

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

- Single-family home (SKIP TO Q. 59)
- More than one residence in building
- Prefer not to answer (SKIP TO Q. 59)
- Don’t know (SKIP TO Q. 59)

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

______ _____ ______

- Prefer not to answer
- Don’t know

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

- Less than 1,000 square feet
- 1,000 to 1,499 square feet
- 1,500 to 1,999 square feet
- 2,000 to 2,499 square feet
- 2,500 to 2,999 square feet
- 3,000 to 3,999 square feet
- 4,000 or more square feet
- Prefer not to answer (DO NOT READ)
- Don't know (DO NOT READ)

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

- 1939 or earlier
- 1940 to 1949
- 1950 to 1959
- 1960 to 1969
- 1970 to 1979
- 1980 to 1989
- 1990 to 1999
- 2000 to 2009
- 2010 to 2019
- 2020 to 2024
- Prefer not to answer (DO NOT READ)
- Don't know (DO NOT READ)

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

______ _____

- Prefer not to answer
- Don't know

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

- Less than 6 years
- 6 to 10 years
- 11 to 15 years
- 16 to 20 years
- 21 to 25 years
- 26 to 30 years
- More than 30 years
- Prefer not to answer
- Don't know

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

Unique ID #:____ ____ ____ ____

Respondent's Phone Number:________________________________
Interviewer's Name:____
Interviewer's Code:____

Appendix F

Commercial Comprehensive Contractor Interview Instrument

F. Commercial Comprehensive Contractor Interview Instrument

Introduction

Opener

Hello this is _____ INTERVIEWER NAME, calling from Evergreen Economics and on behalf of PNM. Is [CONTACT NAME] available? I'm calling today because I understand you are a contractor who has been involved with the installation of equipment rebated through PNM's Commercial Comprehensive program. Is this correct?

[IF YES]

We are currently calling select contractors who have worked with PNM programs in 2024 to conduct brief telephone interviews to gather your insight as part of an evaluation of PNM's Commercial Comprehensive program. Your responses will be anonymous, and will be very helpful in helping the state's utilities ensure their energy efficiency programs best serve their customers. Would you be available now or sometime this week for a brief 20 minute interview?

Interview Background Questions

A1. Let's begin with a couple of background questions. To start, please tell me a bit about your company.

[Probe to understand:]

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

Program Awareness and Engagement

B1. Do you recall how you first learned about and got involved with the commercial rebate programs through PNM?

[Listen (and probe as needed) for]

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

B2. Could you describe what involvement with PNM rebate programs as a contractor involves? [Probe as needed]

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

B3. In what ways is the PNM program helpful to you in your business? [Note to interviewers: this is a required question for all interviewees]
[If not mentioned in interviewee's response, ask specifically about these three topics]

- Rebate
  - Increases customer satisfaction with us
  - Increases business
  - Helps us up-sale to higher efficiency levels
- Ability to mention the connection with the PNM program
- PNM messaging to customers on benefits of measures offered

B4. What share of your commercial projects within PNM territory would you estimate currently end up qualifying for and receiving a PNM rebate? What could PNM do to involve you more in the program?

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

B6. Does PNM make it clear which of your products or services are eligible for PNM rebates? [Probe as needed]

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

B7. Have the programs influenced what equipment you suggest to a customer?

B7a. Does that differ depending on whether the customer is in PNM territory or outside of PNM territory?

B8. Do you have any suggestions for PNM contractor services and support – either overall or for the Commercial Comprehensive program?

Program Process

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

[Probe to understand]

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

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

[Listen for (and probe as needed)]

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

C3. Do you have any comments about the program offerings? Is there anything missing? Anything not needed? Or anything that could be better?

Market Response

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

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

D2. Are there markets* that you feel PNM commercial energy efficiency programs are reaching well? Not well?
[*Note to interviewer: if needed, examples of markets could be small businesses, or certain business sectors such as retail, office, grocery—just as a few examples]
[Probe to understand]
•Suggested approaches that might expand the reach of the program into markets that may be underserved by the program.

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

Program Satisfaction

E1. Finally, I'd like to ask about your and your customers' satisfaction with the PNM Commercial Comprehensive 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.

E1a) What is your satisfaction?

E1b) How do you think your customers would rate the program?

[IF RATING < 5] What could PNM do to increase your satisfaction with the program?
Probe, only if they do not offer an unaided response:

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

E1c) Has your involvement with this program changed your general opinion of PNM at all (better, worse, about the same)?

E2. Aside from anything we've already discussed, was there ever an occasion when the program didn't meet your expectations or, conversely, provided you and your customer an exceptional customer experience? Please explain.

Closing

F1. Is there anything else we didn't cover that you'd like to mention or discuss about your experiences with the PNM Commercial Comprehensive program?

[THANK AND END]

Appendix G

Residential Comprehensive Contractor Interview Instrument

G. Residential Comprehensive Contractor Interview Instrument

Introduction

Talking points for recruitment

- Evergreen Economics is conducting an evaluation of PNM's Residential Comprehensive program for the New Mexico Public Regulation Commission and the state's utilities.
- We have identified selected contractors that installed equipment that received rebates from the efficiency program in 2024 for brief telephone interviews.
- We would need about 20 minutes for the interview.
- Your responses will be anonymous but will be very helpful in helping the state's utilities ensure their energy efficiency programs best serve their customers.
- When would be a good time to talk?

Talking points for starting the interview

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

Interviewee Background

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

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

Probe to understand:

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

Program Awareness and Engagement

B1. Do you recall how you first learned about and got involved with the residential rebate programs through PNM?
Listen (and probe as needed) for:

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

B2. Could you describe what involvement with PNM rebate programs as a contractor involves?
Probe as needed:

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

B3. In what ways is the PNM 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 PNM program
- PNM messaging to customers on benefits of measures

B4. What share of your residential projects within PNM territory would you estimate currently end up qualifying for and receiving a PNM rebate?

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

B5. Does PNM make it clear which of your products or services are eligible for PNM rebates?
Probe as needed:

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

B6. Have the programs influenced what equipment you suggest to a customer?

B7. Do you have any suggestions for PNM contractor services and support – either overall or for the Residential Comprehensive program specifically?

Program Process

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

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

C2. When and how do you bring up either PNM 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 PNM rebates play in motivating upgrades
- What particular equipment is easier or harder to get customers to upgrade to high efficiency and why

C3. Do you have any comments about the program offerings? Is there anything missing? Anything not needed? Or anything that could be better?

Heat Pump Installations

D1. Did your company perform any heat pump installations as part of your work with the PNM Residential Comprehensive program in 2024?
If YES, continue with D2. If NO/UNSURE, skip to Market Response (section F)

D2. For customers who switched from another heating source to a heat pump, can you list the previous heating sources and the percentage of customers who switched from each, totalling 100%? (as needed: for example, electric - 20%, gas 60%, propane 20%)
Probe as needed with: Electric Source, Natural Gas, Propane, Wood Stove, Pellet Stove, etc.

Note: electric, gas, and propane will be most common, ‘other’ is fine for percentages <10%))

D3. What portion of your company's heat pump projects were incentivized as part of the PNM Residential Comprehensive program? (if needed: best guess is fine)

D4. For customers who upgraded to heat pumps, what other options were considered? Without incentives, what portion of these customers would have opted for something other than a heat pump? Does this vary based on whether they had gas or electric heating before?

D5. In cases where a customer installed a heat pump but retained their other heating equipment -- either their existing furnace as a backup or other heating sources in the house -- can you share reasons for keeping their other equipment? (as applicable)

D6. For customers who retained and use other heating equipment in addition to the heat pump (if any), what percentage have their supplementary/additional heating source(s) set up to automatically take over for their heat pump at a certain temperature?

D7. (If percentage listed for D7) What is the typical temperature at which the supplementary/additional heating source(s) take over for the heat pump for your customers?

Market Response

Interviewer note: if asked Heat Pump Installations battery, transition: Now I'll ask the remaining questions about the program more broadly.

E1. 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?

E2. Are there markets that you feel PNM residential 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.

E3. Overall, what issue(s), if any, may affect future program participation by customers? What about future program participation by contractors? [INTERVIEWER NOTE: Example issues are changes to building codes and standards being promoted and program incentive levels].

E4. Are you aware of any relevant state and federal tax incentives, for example upcoming Inflation Reduction Act (IRA) rebates? Have you shared this information with peers and/or customers?

Program Satisfaction

F1. Finally, I'd like to ask about your and your customers' satisfaction with the PNM Residential Comprehensive 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 PNM do to increase your satisfaction with the program?
Probe if needed:

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

F2. Have you had any feedback from your customers about their experiences with the Residential Comprehensive program that you think PNM should know?

F3. Aside from anything we've already discussed, was there ever an occasion when the program didn't meet your expectations? Please explain.

Closing

G1. Is there anything else we didn't cover that you'd like to mention or discuss about your experiences with the PNM Residential Comprehensive program?

[THANK AND END]

Appendix H

Commercial SEM Participant Survey Instrument

H. Commercial SEM Participant Survey Instrument

Introduction

Hello this is [INTERVIEWER NAME], calling from Evergreen Economics on behalf of PNM. Is [CONTACT NAME] available?

[IF YES] I'm calling today because I understand that you are involved in the PNM Strategic Energy Management or SEM program in 2024. Is this correct?

[IF NEEDED] The SEM program helps businesses reduce their energy use by providing training, technical support for operations and maintenance improvements, and energy monitoring and reporting tools.

[IF YES] We're currently calling SEM program participants who are participating in the program in 2024 to conduct brief phone interviews to gather your insights as part of an evaluation of PNM's commercial programs. Your response will be kept anonymous and will be very helpful in helping the state's utilities ensure their energy efficiency programs best serve their customers. Would you be available now for a brief 20-minute interview?

[IF NO] Thank and terminate.
[IF NO] Is there a time this week when they'll be available that I can call back?

Background Questions

Thank you for your time today. As a reminder, your responses will be kept anonymous so please feel free to speak candidly. Do you have any questions before we get started?

Q1. Let's begin with a couple of background questions. To start, please tell me a bit about your company.
Probe to understand:

- Industry type (i.e. manufacturing, refrigeration, wastewater, food processing, etc.)
- Number of employees
- Own or rent the participating building
- Interviewee role at company

Q2. In what ways are you involved in the SEM program?

Probe if not mentioned:

- Were you involved in your organization's decision to participate in the SEM program?
- Have you been involved with the SEM program since your organization began participating?
- Do you attend workshop meetings?
- Are you regularly in touch with SEM coaches or other staff?

Program Awareness and Engagement

Q3. How did you first learn about the PNM SEM program?

Probe if not mentioned:

- Have you previously participated in other PNM programs?

Q4. Why did you / your company decide to participate in the PNM SEM program?

Probe to understand:

- What was appealing about the SEM program?
- What questions or concerns did you have?

Q5. What types of measures is your business undertaking as part of the SEM program?

If needed: As a reminder, a measure is a behavior change made because of the SEM program.

Probe to understand:

- Around how many measures do you have in total? Is it:
  - Under 10
  - 10-20
  - More than 20
- Are you making changes to how a process or equipment is being run because of the SEM program? About what proportion of your measures fall into this category?
- Are you doing any routine maintenance to equipment because of the SEM program? About what proportion of your measures fall into this category?

Program Process

Q6. In what ways is the PNM SEM program helpful to you and your business?
Probe if not mentioned:

- Decreased energy usage
- Decreased energy costs
- Increased understanding of energy use in your facility

Q7. What are some of the most important changes you have made in your facility to save energy because of your participation in the SEM program?

Q8. Did you try making any changes that have not persisted?
Probe:

- Which ones?
- How long did you maintain those changes before shifting away from them?
- Why do you think those changes did not persist?

Q9. What have been the most challenging aspects of your engagement with the SEM program?
Listen for:

- Time commitment, staffing capacity, attending workshops, etc.

Probe if not mentioned:

- How, if at all, did you overcome these challenges?
- What support, if any, could the SEM program provide that would help you overcome these challenges?

Q10. Do you have any suggestions for the PNM SEM program?

Program Satisfaction and Closing

Q11. Finally, I'd like to ask about your satisfaction with different aspects of the PNM SEM program. I'm going to run through a few program components - please rate your satisfaction with each on a 1 to 5 scale where 1 is very dissatisfied, 2 is somewhat dissatisfied, 3 is neither satisfied nor dissatisfied, 4 is somewhat satisfied and 5 is very satisfied.

Run through list:

- Overall program satisfaction
- The required time commitment
- Observed energy savings

Probe if very dissatisfied or somewhat dissatisfied:

- Can you explain why you gave this rating?

Q12. Is there anything else we didn't cover that you'd like to mention or discuss about your experience with the PNM SEM program?
Thank you for your time today.

Appendix I

Project-Level Desk Review Result

I. Project-Level Desk Review Result

Project ID	20286	20526
Utility	PNM	PNM
Program	Commercial_Comprehensive	Commercial_Comprehensive
Subprogram	Direct Install (Quicksaver)	Direct Install (Quicksaver)
Project Description	Lighting retrofit	Lighting retrofit
Measure Type	Retrofit Lighting	Retrofit Lighting
Building Type	Office	Warehouse/ Industrial
Other Building Type	Large	0
Site Visit Being Conducted	Yes	Yes
Gross Reported First Year Energy Savings (kWh)	54201	112480
Gross Reported First Year Peak Demand Savings (kW)	13	15
Gross Verified First Year Energy Savings (kWh)	54201	112480
Gross Verified First Year Peak Demand Savings (kW)	13	15
Realization Rate: Energy Savings (%)	100%	100%
Realization Rate: Peak Demand Savings (%)	100%	100%
Ex Ante Savings Source	Utility Workpaper	Utility Workpaper
Other Savings Source	-	-
Reasons for RR(s) <> 1	-	-

Project ID	20527	20529
Utility	PNM	PNM
Program	Commercial_Comprehensive	Commercial_Comprehensive
Subprogram	Direct Install (Quicksaver)	Direct Install (Quicksaver)
Project Description	Lighting retrofit	Lighting retrofit
Measure Type	Retrofit Lighting	Retrofit Lighting
Building Type	Office	Retail
Other Building Type	Large	Small
Site Visit Being Conducted	No	Yes
Gross Reported First Year Energy Savings (kWh)	108073	29902
Gross Reported First Year Peak Demand Savings (kW)	24	2
Gross Verified First Year Energy Savings (kWh)	108073	29631
Gross Verified First Year Peak Demand Savings (kW)	24	1
Realization Rate: Energy Savings (%)	100%	99%
Realization Rate: Peak Demand Savings (%)	100%	83%
Ex Ante Savings Source	Utility Workpaper	Utility Workpaper
Other Savings Source	-	-
Reasons for RR(s) <> 1	-	Lighting: Ex-post calculations utilized the baseline wattage for 400W MH and 456W is according to workpapers. ex-ante calculations calculation used 458W, affecting the kWh savings. Anti-Sweat Heater Controls ASHC: Ex-post calculation used the deemed values from 2024 NM Workpapers for the city of Albuquerque with medium temperature display cases. Anti-Sweat Heater Controls: The horizontal linear footage of the display case with the installed ASHC could not be verified through the project documentation. Therefore, we applied a linear footage of 29 feet for the ex-post savings evaluation.

Project ID	20567	20592
Utility	PNM	PNM
Program	Commercial_Comprehensive	Commercial_Comprehensive
Subprogram	Direct Install (Quicksaver)	Direct Install (Quicksaver)
Project Description	Lighting project	Installation of Efficient Lighting fixtures
Measure Type	Lighting	Lighting
Building Type	0	0
Other Building Type	Non Profit Organization	Manufacturing – Light Industrial
Site Visit Being Conducted	No	No
Gross Reported First Year Energy Savings (kWh)	47191	38379
Gross Reported First Year Peak Demand Savings (kW)	16	13
Gross Verified First Year Energy Savings (kWh)	45031	38379
Gross Verified First Year Peak Demand Savings (kW)	17	13
Realization Rate: Energy Savings (%)	95%	100%
Realization Rate: Peak Demand Savings (%)	103%	100%
Ex Ante Savings Source	Utility Workpaper	Utility Workpaper
Other Savings Source	-	-
Reasons for RR(s) <> 1	The application form does not have details about the baseline and efficient fixture wattages, the HVAC energy and demand factor and CF used. Verifier recreated calculations based on PNM Workpaper 2024. The baseline wattages were fetched based on the description of fixture; operating hours used in the application form. CF and HVACe and HVACd factors referenced Workpaper 2024 for building type of Education – Community College as the actual building type is Nonprofit organization, which is not available in the workpaper. The reason for selecting Education - Community College facility type is that the majority of lighting retrofit was completed in the classroom area of the building.	-

Project ID	20610	20625
Utility	PNM	PNM
Program	Commercial_Comprehensive	Commercial_Comprehensive
Subprogram	Direct Install (Quicksaver)	Direct Install (Quicksaver)
Project Description	LED lighting retrofit	Installation of interior and Exterior LED lighting
Measure Type	Lighting	Retrofit Lighting
Building Type	Retail – Small	Miscellaneous
Other Building Type	0	Hotel/Motel
Site Visit Being Conducted	No	No
Gross Reported First Year Energy Savings (kWh)	7288	78011
Gross Reported First Year Peak Demand Savings (kW)	1	4
Gross Verified First Year Energy Savings (kWh)	7382	78055
Gross Verified First Year Peak Demand Savings (kW)	1	4
Realization Rate: Energy Savings (%)	101%	100%
Realization Rate: Peak Demand Savings (%)	101%	100%
Ex Ante Savings Source	Utility Workpaper	Utility Workpaper
Other Savings Source	-	-
Reasons for RR(s) <> 1	Verifier recreated ex-post calculations based on PNM Workpaper 2024. The baseline wattages were fetched based on the description of fixture and operating hours used in the application form. CF, HVACe and HVACd factors were used for building type 'Retail-Small', referencing the PNM Workpaper 2024. In calculations for the fixture-'Exit Sign (2)40W-Inc', 71W would have been considered as the baseline wattage, whereas the ex-post analysis considered 80W as according to the 2024 workpapers, resulting in a A slight variation of the RR.	A slight variation in the energy savings could be due to a difference in the baseline wattages used between ex-ante calculations and ex-post calculations. Only fixture descriptions were provided in the project documents for both the baseline and efficient fixtures. Ex-post analysis referenced the PNM workpapers for calculating baseline wattages.

Project ID	20637	20651
Utility	PNM	PNM
Program	Commercial_Comprehensive	Commercial_Comprehensive
Subprogram	Direct Install (Quicksaver)	Direct Install (Quicksaver)
Project Description	Installation of Exterior LED lighting	Installation of LED Fixture
Measure Type	Retrofit Lighting	Retrofit Lighting
Building Type	Miscellaneous	Retail
Other Building Type	Homeless Shelter	0
Site Visit Being Conducted	No	No
Gross Reported First Year Energy Savings (kWh)	3320	19308
Gross Reported First Year Peak Demand Savings (kW)	0	4
Gross Verified First Year Energy Savings (kWh)	3320	19183
Gross Verified First Year Peak Demand Savings (kW)	0	4
Realization Rate: Energy Savings (%)	100%	99%
Realization Rate: Peak Demand Savings (%)	0%	99%
Ex Ante Savings Source	Utility Workpaper	Utility Workpaper
Other Savings Source	-	-
Reasons for RR(s) <> 1	-	A slight variation in the energy savings is due to the difference in the baseline wattages used between ex-ante calculations and ex-post calculations. Only fixture descriptions were provided in the project documents for both the baseline and efficient fixtures. Ex-post analysis referenced the PNM workpapers for calculating baseline wattages.

Project ID	20653	20656
Utility	PNM	PNM
Program	Commercial_Comprehensive	Commercial_Comprehensive
Subprogram	Direct Install (Quicksaver)	Direct Install (Quicksaver)
Project Description	Lighting retrofit	Sign board light retrofit
Measure Type	Retrofit Lighting	Retrofit Lighting
Building Type	Retail	Other
Other Building Type	0	Restaurant
Site Visit Being Conducted	No	No
Gross Reported First Year Energy Savings (kWh)	5458	10483
Gross Reported First Year Peak Demand Savings (kW)	2	0
Gross Verified First Year Energy Savings (kWh)	5458	10511
Gross Verified First Year Peak Demand Savings (kW)	2	0
Realization Rate: Energy Savings (%)	100%	100%
Realization Rate: Peak Demand Savings (%)	100%	0%
Ex Ante Savings Source	Utility Workpaper	Utility Workpaper
Other Savings Source	-	-
Reasons for RR(s) <> 1	-	Ex-ante calculations calculation used 52 week per year calculation to determine HOU. According to the project document the lighting is operational 168 hours per week, and 8,736 hours per year. Ex-post calculation used the 52.14 week per year calculation, according to the TRM, which provided us with a value of 8,760 hours per year. The variation in the number of weeks is causing a A slight variation in the savings data.

Project ID	20662	20667
Utility	PNM	PNM
Program	Commercial_Comprehensive	Commercial_Comprehensive
Subprogram	Direct Install (Quicksaver)	Direct Install (Quicksaver)
Project Description	Installation of LED Fixtures	Installation of LED Fixtures
Measure Type	Retrofit Lighting	Retrofit Lighting
Building Type	0	Retail
Other Building Type	Hotel/Motel	0
Site Visit Being Conducted	0	0
Gross Reported First Year Energy Savings (kWh)	9388	2519
Gross Reported First Year Peak Demand Savings (kW)	0	1
Gross Verified First Year Energy Savings (kWh)	9479	2519
Gross Verified First Year Peak Demand Savings (kW)	0	1
Realization Rate: Energy Savings (%)	101%	100%
Realization Rate: Peak Demand Savings (%)	0%	100%
Ex Ante Savings Source	Utility Workpaper	Utility Workpaper
Other Savings Source	-	-
Reasons for RR(s) <> 1	A slight variation in the energy savings is due to the difference in the baseline wattages used between ex- ante and ex-post calculations. Only fixture descriptions were provided in the project documents for both the baseline and efficient fixtures. Ex-post analysis referenced the PNM workpapers for the baseline wattages. Exact model numbers should be provided. The closest estimates of the values were 26W for 24" T12 HO 20W lamps fixture and 120W for 72" T12HO 85W lamps - pylon sign fixtures were selected from PNM Workpaper. The facility type is selected as Lodging-Hotel to provide the corresponding values of interactive factors and CF factor.	It's recommended to provide the exact model numbers of the fixtures from the customer to identify the correct fixture wattages as the description is not very clear.

Project ID	20711	20745
Utility	PNM	PNM
Program	Commercial_Comprehensive	Commercial_Comprehensive
Subprogram	Direct Install (Quicksaver)	Direct Install (Quicksaver)
Project Description	Installation of Lighting fixtures and Refrigeration measures	Installation of LED Fixtures
Measure Type	Retrofit Other	Retrofit Lighting
Building Type	Retail	Retail
Other Building Type	0	0
Site Visit Being Conducted	0	0
Gross Reported First Year Energy Savings (kWh)	56828	60242
Gross Reported First Year Peak Demand Savings (kW)	7	15
Gross Verified First Year Energy Savings (kWh)	53341	57385
Gross Verified First Year Peak Demand Savings (kW)	6	14
Realization Rate: Energy Savings (%)	94%	95%
Realization Rate: Peak Demand Savings (%)	89%	96%
Ex Ante Savings Source	Utility Workpaper	Utility Workpaper
Other Savings Source	-	-
Reasons for RR(s) <> 1	Lighting: A slight variation exists because of the difference in the baseline wattages for ex- ante and ex-post calculations. Only fixture descriptions were provided in the project documents. For ex-post calculations, the baseline fixture wattages were 145W for (4-4' 32W T8 lamp HPEB) and 173W (2-8' 75W T12, magnetic ballast 1). The source of the values is unknown. For ex-post calculations, the fixture wattage for 4-4' 32W T8 lamp HPEB fixture type was 142W. Anti-Sweat Heater Controls: Ex-post calculation used demand savings values (0.00753 kW/ft) and energy savings values (423.9 kWh/ft) for medium temperature display case, at the Albuquerque location. LED Case Lighting: ex-post calculation used a coincidence peak kW (0.002205) and kWh/ft (128) values for application type of Freezer. The quantity is taken from the application. Calculations could not be recreated.	Ex-ante calculations used a baseline fixture wattage of 74W for the fixture type 2-4' 32W T8 lamp, high power elect ballast (1) . The evaluation team used the baseline fixture wattage of 70W for the 2-4' 32W T8 lamp, high power elect ballast (1), which was consistent with the PNM workpaper. Recommendation: EcoMetric needs the exact model numbers of the efficient fixtures from the customer to identify the correct efficient fixture wattages as the description is not clear.

Project ID	20755	20766
Utility	PNM	PNM
Program	Commercial_Comprehensive	Commercial_Comprehensive
Subprogram	Direct Install (Quicksaver)	Direct Install (Quicksaver)
Project Description	Installation of LED lighting	Installation of interior LED lighting
Measure Type	Retrofit Lighting	Retrofit Lighting
Building Type	Retail	Retail
Other Building Type	0	0
Site Visit Being Conducted	No	Yes
Gross Reported First Year Energy Savings (kWh)	13210	1282
Gross Reported First Year Peak Demand Savings (kW)	3	1
Gross Verified First Year Energy Savings (kWh)	11889	1242
Gross Verified First Year Peak Demand Savings (kW)	2	1
Realization Rate: Energy Savings (%)	90%	97%
Realization Rate: Peak Demand Savings (%)	90%	97%
Ex Ante Savings Source	Utility Workpaper	Utility Workpaper
Other Savings Source	-	-
Reasons for RR(s) <> 1	Ex-ante calculations calculation used the baseline fixture wattage of 74W after back-calculating the value (the source is unknown), and replacement fixture wattages were according to the description. Ex-post calculation used baseline fixture wattages from the workpaper as 70W for 2-4' 32W-T8-HPEB1 fixture type, and replacement fixture wattages were according to the description. The facility type is Retail-Small, selected from a dropdown to provide a corresponding CF and interactive factors. The variation in the savings is due to a difference in the baseline wattages used between ex-ante calculations and ex- post calculations. Only fixture descriptions were provided in the project documents for both the baseline and efficient fixtures. Ex-post analysis referenced the PNM workpapers for the baseline wattages. The exact model numbers should be provided.	A slight variation in the savings is due to a difference in the ex-ante and ex-post baseline wattages. Ex-ante calculations used a baseline fixture wattage of 74W for 2-4' 32W T8 lamp , high power elect ballast (1) fixture. Replacement fixture wattages were according to the description, and CF and other I.F. were from the workpaper. Operating hours were calculated using the information in the project files. Fpr ex-post calculation, the fixture wattage for 2-4' 32W T8 lamp, high power elect ballast (1) fixture is selected as 70W. The facility type Retail-Small is selected from a dropdown to provide the corresponding CF and other I.F. EcoMetric needs the exact model numbers of the fixtures to identify the correct fixture wattages. Only fixture descriptions were provided in the project documents.

Project ID	20780	20807
Utility	PNM	PNM
Program	Commercial_Comprehensive	Commercial_Comprehensive
Subprogram	Direct Install (Quicksaver)	Direct Install (Quicksaver)
Project Description	Installation of LED Fixtures	Lighting retrofit
Measure Type	Retrofit Lighting	Retrofit Custom
Building Type	Retail	Retail
Other Building Type	0	0
Site Visit Being Conducted	0	No
Gross Reported First Year Energy Savings (kWh)	11754	10317
Gross Reported First Year Peak Demand Savings (kW)	3	0
Gross Verified First Year Energy Savings (kWh)	11754	10317
Gross Verified First Year Peak Demand Savings (kW)	3	0
Realization Rate: Energy Savings (%)	100%	100%
Realization Rate: Peak Demand Savings (%)	100%	0%
Ex Ante Savings Source	Utility Workpaper	Utility Workpaper
Other Savings Source	-	-
Reasons for RR(s) <> 1	-	-

Project ID	20834	20839
Utility	PNM	PNM
Program	Commercial_Comprehensive	Commercial_Comprehensive
Subprogram	Direct Install (Quicksaver)	Direct Install (Quicksaver)
Project Description	Lighting Retrofit	Lighting Retrofit
Measure Type	Direct Install	Direct Install
Building Type	Warehouse/ Industrial	Retail
Other Building Type	0	0
Site Visit Being Conducted	No	No
Gross Reported First Year Energy Savings (kWh)	8258	2099
Gross Reported First Year Peak Demand Savings (kW)	1	0
Gross Verified First Year Energy Savings (kWh)	8258	2099
Gross Verified First Year Peak Demand Savings (kW)	1	0
Realization Rate: Energy Savings (%)	100%	100%
Realization Rate: Peak Demand Savings (%)	100%	100%
Ex Ante Savings Source	Utility Workpaper	Utility Workpaper
Other Savings Source	-	-
Reasons for RR(s) <> 1	-	-

Project ID	20843	20852
Utility	PNM	PNM
Program	Commercial_Comprehensive	Commercial_Comprehensive
Subprogram	Direct Install (Quicksaver)	Direct Install (Quicksaver)
Project Description	Lighting and refrigeration retrofit	Anti Sweat Heater Control
Measure Type	Direct Install	Refrigeration
Building Type	Retail	Retail – Small
Other Building Type	0	0
Site Visit Being Conducted	No	No
Gross Reported First Year Energy Savings (kWh)	42999	12962
Gross Reported First Year Peak Demand Savings (kW)	2	1
Gross Verified First Year Energy Savings (kWh)	39844	12717
Gross Verified First Year Peak Demand Savings (kW)	1	0
Realization Rate: Energy Savings (%)	93%	98%
Realization Rate: Peak Demand Savings (%)	64%	44%
Ex Ante Savings Source	Utility Workpaper	Other:
Other Savings Source	-	-
Reasons for RR(s) <> 1	Refrigeration: 1) Case lighting: ex-ante calculations values could not be recreated. Ex-post used deemed value from the workpaper. The quantity was taken from the application. 2) Anti- sweat heat control: ex-ante calculations values could not be recreated. Ex-post calculations used the average deemed value from the workpaper as we do not have refrigerator type defined in the project document. The quantity was taken from the application.	Ex-ante calculations calculation used 432.05 kWh/Ft for energy savings and 0.17 kW/Ft for demand savings. The source for these values is unknown. ex-ante calculations calculation followed the PNM workpaper in earlier years as a source of savings, but this year they might have used a different source. Ex-post calculations followed PNM Workpapers 2024 for anti-sweat heater control. The facility is Retail-Small based in Albuquerque, and the type of refrigerator is Cooler (Med-Temp). Verifier used 423.9 kWh/ft for energy savings and 0.00753 kW/Ft as deemed savings value is according to PNM Workpapers 2024. Recommendation: Savings should be calculated using standard source like the recent workpaper/TRM.

Project ID	20867	20882
Utility	PNM	PNM
Program	Commercial_Comprehensive	Commercial_Comprehensive
Subprogram	Direct Install (Quicksaver)	Direct Install (Quicksaver)
Project Description	Installation of Efficient Lighting fixtures	Lighting Retrofit
Measure Type	Lighting	Direct Install
Building Type	Retail – Small	Exterior
Other Building Type	0	0
Site Visit Being Conducted	No	No
Gross Reported First Year Energy Savings (kWh)	13187	13698
Gross Reported First Year Peak Demand Savings (kW)	3	0
Gross Verified First Year Energy Savings (kWh)	13187	13698
Gross Verified First Year Peak Demand Savings (kW)	3	0
Realization Rate: Energy Savings (%)	100%	100%
Realization Rate: Peak Demand Savings (%)	100%	0%
Ex Ante Savings Source	Utility Workpaper	Utility Workpaper
Other Savings Source	-	-
Reasons for RR(s) <> 1	-	-

Project ID	20909	20912
Utility	PNM	PNM
Program	Commercial_Comprehensive	Commercial_Comprehensive
Subprogram	Direct Install (Quicksaver)	Direct Install (Quicksaver)
Project Description	Installation of interior and Exterior LED lighting	Installation of LED Signage
Measure Type	Retrofit Lighting	Retrofit Lighting
Building Type	0	Retail
Other Building Type	Service-Other	0
Site Visit Being Conducted	Yes	Yes
Gross Reported First Year Energy Savings (kWh)	29244	13061
Gross Reported First Year Peak Demand Savings (kW)	7	0
Gross Verified First Year Energy Savings (kWh)	29214	13060
Gross Verified First Year Peak Demand Savings (kW)	7	0
Realization Rate: Energy Savings (%)	100%	100%
Realization Rate: Peak Demand Savings (%)	100%	0%
Ex Ante Savings Source	Utility Workpaper	Utility Workpaper
Other Savings Source	-	-
Reasons for RR(s) <> 1	-	-

Project ID	20922	20978
Utility	PNM	PNM
Program	Commercial_Comprehensive	Commercial_Comprehensive
Subprogram	Direct Install (Quicksaver)	Direct Install (Quicksaver)
Project Description	Installation of interior and Exterior LED lighting	Installation of interior LED lighting
Measure Type	Retrofit Lighting	Retrofit Lighting
Building Type	Health	Retail
Other Building Type	0	0
Site Visit Being Conducted	Yes	Yes
Gross Reported First Year Energy Savings (kWh)	65195	1741
Gross Reported First Year Peak Demand Savings (kW)	17	1
Gross Verified First Year Energy Savings (kWh)	80005	3918
Gross Verified First Year Peak Demand Savings (kW)	18	1
Realization Rate: Energy Savings (%)	123%	225%
Realization Rate: Peak Demand Savings (%)	104%	225%
Ex Ante Savings Source	Utility Workpaper	Utility Workpaper
Other Savings Source	-	Image of the facility tape taken from Google Earth
Reasons for RR(s) <> 1	Ex-ante calculations calculation used back-calculated baseline fixture wattages, using the formula in NM TRM 2021, and the replacement fixture wattages according to the description. CF and other interactive factors were taken from the workpaper. Operating hours were calculated using the information provided in the project files. It matched the kWh savings but did not match the kW savings. Ex-post calculation used baseline fixture wattages from the PNM workpaper. Replacement fixture wattages is according to the description. The facility type, Health, was selected from a dropdown to provide the corresponding CF and other interactive factors. EcoMetric needs the exact model numbers of the fixtures, to identify the correct fixture wattages. Only fixture descriptions were provided in the project documents for both the baseline and efficient fixtures. Ex-post analysis referenced the PNM workpapers for the baseline wattages.	Ex Ante calculation uses baseline fixture wattage of 216W for 6-4' 34W-T12-MB Lamp and replacement fixture wattages as per the description, C.F and I.F. are taken using workpaper. Operating hours are calculated using the information given in the project files. For ex post calculation, the fixture wattage for 6-4' 34W-T12-MB is selected as 236W. Replacement fixture wattages for the facility type Retail – Single-Story Large is selected from dropdown to give corresponding C.F and I.F.. Ecometric needs exact model numbers to identify the correct fixture wattagesIn this case ex ante calculation uses baseline fixture wattage of 216W for 6-4' 34W-T12-MB Lamp, whereas, 216W corresponds to the fixture with a Mag-ES ballast while the same fixture with a Mag-STD ballast is 236W. On how a 20W difference could lead to a large RR difference, it is because savings per fixture is only 16W per ex ante and assuming a larger baseline wattage at 236 W (instead of 216W) approximately doubles the savings.

Project ID	20984	20994
Utility	PNM	PNM
Program	Commercial_Comprehensive	Commercial_Comprehensive
Subprogram	Direct Install (Quicksaver)	Direct Install (Quicksaver)
Project Description	Lighting project-Replacement of LED Signages-DD	Installation of Lighting fixtures and Refrigeration measures
Measure Type	Lighting	Retrofit Other
Building Type	Lodging – Motel	Retail
Other Building Type	0	0
Site Visit Being Conducted	No	0
Gross Reported First Year Energy Savings (kWh)	13445	36486
Gross Reported First Year Peak Demand Savings (kW)	0	2
Gross Verified First Year Energy Savings (kWh)	15271	36445
Gross Verified First Year Peak Demand Savings (kW)	0	2
Realization Rate: Energy Savings (%)	114%	100%
Realization Rate: Peak Demand Savings (%)	0%	84%
Ex Ante Savings Source	Utility Workpaper	Utility Workpaper
Other Savings Source	-	-
Reasons for RR(s) <> 1	The ex-ante calculations values were successfully recreated. For the ex-post analysis, the baseline fixture wattage was selected based on the product description by referencing the workpapers. The difference between the ex-ante calculations baseline wattage and the ex-post baseline wattage was due to the RR.	Lighting: A slight variation in the savings is due to the difference in the ex-ante and ex-post baseline wattages. Only fixture descriptions were provided in the project documents for both the baseline and efficient fixtures. For calculations, the baseline fixture wattages were back-calculated. The source of it is unknown. 61W for 2-4' 32W HPT8-EB1, 30W for 1-4' 32W-HPT8-EB1 and 500W Quartz ,150W MH are according to the description. Efficient fixture wattages are according to the description of the fixtures. Refrigeration : Ex-post calculations used values from PNM Workpaper 2024. Anti-Sweat Heater Controls: Ex-post calculation used demand savings values (0.00868 kW/ft) and energy savings values (436.5 kWh/ft), medium temperature display case for the Santa Fe location. The quantity is taken from the application. Calculations could not be recreated for anti-sweat heat controls.

Project ID	21049	21081
Utility	PNM	PNM
Program	Commercial_Comprehensive	Commercial_Comprehensive
Subprogram	Direct Install (Quicksaver)	Direct Install (Quicksaver)
Project Description	Replacement of Lighting Fixures	Lighting project-Replacement of Lighting Fixtures
Measure Type	Retrofit Lighting	Lighting
Building Type	Other	Restaurant – Sit-Down
Other Building Type	Non-profit organization	0
Site Visit Being Conducted	No	No
Gross Reported First Year Energy Savings (kWh)	5399	16878
Gross Reported First Year Peak Demand Savings (kW)	0	0
Gross Verified First Year Energy Savings (kWh)	5399	16878
Gross Verified First Year Peak Demand Savings (kW)	0	0
Realization Rate: Energy Savings (%)	100%	100%
Realization Rate: Peak Demand Savings (%)	0%	0%
Ex Ante Savings Source	Utility Workpaper	Utility Workpaper
Other Savings Source	-	-
Reasons for RR(s) <> 1	-	-

Project ID	PM-24-06132	20531
Utility	PNM	PNM
Program	Commercial_Comprehensive	Commercial_Comprehensive
Subprogram	Midstream	Direct Install (Quicksaver)
Project Description	Installation of 1) 5.4-11.25 Tons AC & 2) 5.4-11.25 Tons VRF	Non-lighting project
Measure Type	Retrofit HVAC	Retrofit Lighting
Building Type	Health	Retail – Small
Other Building Type	0	0
Site Visit Being Conducted	No	No
Gross Reported First Year Energy Savings (kWh)	6815	61040
Gross Reported First Year Peak Demand Savings (kW)	1	4
Gross Verified First Year Energy Savings (kWh)	3713	59134
Gross Verified First Year Peak Demand Savings (kW)	1	4
Realization Rate: Energy Savings (%)	54%	97%
Realization Rate: Peak Demand Savings (%)	129%	87%
Ex Ante Savings Source	Custom Analysis	Utility Workpaper
Other Savings Source	-	-
Reasons for RR(s) <> 1	1) For ex-ante calculation, commercial facility C.F. (0.34) has been used to calculate KW, whereas ex-post analysis used the medical facility factor.F. (0.78) to calculate the savings. This is true for both the Pkg Ac and VRF units. For the Pkg AC, an attempt to recreate calculations suggested that nominal tons were used and the tables for Pkg HP were used rather than Pkg AC which results in using a different ex-ante estimate. For the VRF unit, attempts to recreate calculations suggested that nominal tons were used and the table for cooling and heating combined was used. 2) The ex-post calculations referenced the HVAC bonus savings approach for both AC and VRF measures and the parameters were referenced from the 2024 NM workpapers for the facility type, 'Medical'. For the VRF measure, cooling and heating savings were calculated separately to account for the correct tonnage and to determine the baseline requirements and appropriate bonus.	Lighting: ex-post calculations considered baseline wattage for 400W MH light fixture as 456W and 2-4' 32W-T8-HPEB1 light fixture as 70W, which is consistent with the 2024 workpaper. calculations used 458W and 74W, respectively for these fixtures. For 4-4' 32W-T8-HPEB1 light fixture, baseline wattage is 147W, consistent with Xcel input wattage guide as the 2024 workpaper did not include the fixture. This led to a slight variation in kWh and kW savings. ASHC: Ex-post used the Deemed savings values for medium temperature Display case and the Albuquerque location, i.e. 0.00753 kW/per linear ft and 423.9 kWh/per linear ft from the 2024 NM workpapers. The evaluation team was unable to replicate the ex-ante calculations savings.

Project ID	20615	PNM-23-05045
Utility	PNM	PNM
Program	Commercial_Comprehensive	Commercial_Comprehensive
Subprogram	Direct Install (Quicksaver)	Multifamily
Project Description	Installation of Exterior LED Lighting	Non-lighting project
Measure Type	Retrofit Lighting	Multifamily
Building Type	Miscellaneous	Miscellaneous
Other Building Type	Miscellaneous	College/University
Site Visit Being Conducted	Yes	No
Gross Reported First Year Energy Savings (kWh)	19530	124271
Gross Reported First Year Peak Demand Savings (kW)	9	1
Gross Verified First Year Energy Savings (kWh)	15463	123019
Gross Verified First Year Peak Demand Savings (kW)	0	1
Realization Rate: Energy Savings (%)	79%	99%
Realization Rate: Peak Demand Savings (%)	0%	118%
Ex Ante Savings Source	Utility Workpaper	Other:
Other Savings Source	-	-
Reasons for RR(s) <> 1	The ex-ante calculations and ex-post savings utilized the workpapers to evaluate the peak demand and energy savings for the lighting measure. The tracking data reported the building type as Miscellaneous. The evaluation team observed from the site photos that the space is an exterior space of a skate park. Therefore, the evaluation team used variable inputs for the exterior space type to calculate ex-post savings. Ex-ante calculations utilized variable inputs for Commercial/General building type to calculate savings. The evaluation team was able to replicate the ex-ante calculations savings, using a baseline fixture wattage of 1150W. For ex-post calculations, the evaluation team used a baseline wattage of 1100W for 1000W HPS light fixture, which is consistent with the 2024 workpaper.	Lighting New Construction: Documented building facility type is "Sports/area". Installed lighting is in the interior part of the building. Allowable watts is 0.87/Sq.Ft. for Sports/area type of facility. Ex-ante calculation considered an allowable watts of 0.93 W/Sq.Ft. from an unknown source. Custom Lighting: Ex-post calculation used tested electric wattage of 880W for TLC-LED-900, according to DLC Certificate, whereas the ex-ante calculations used 890W, leading toa slight variation in the RR. VRF: Ex-post calculation used PNM Workpaper 2024 for saving estimation. Deemed values for heating and cooling savings used for Las Cruces weather region for College/University facility type of 5.4 tons or less Equipment category. Verifier used cooling and heating deemed savings values separately. Cooling kWh is 78 kWh/ton and bonus cooling kWh used is 73 kWh/ton. For heating, qualifying and base HSPF is both 7.7. Hence only bonus kWh/ton heating savings, i.e. 76 kWh/ton, is used. For demand savings calculation, summer peak kW/ton of 0.062 and bonus summer peak kW/ton of 0.058 are used, according to the workpaper.

Project ID	20621	20786
Utility	PNM	PNM
Program	Commercial_Comprehensive	Commercial_Comprehensive
Subprogram	Direct Install (Quicksaver)	Direct Install (Quicksaver)
Project Description	Installation of Exterior LED lighting	Installation of LED Fixtures
Measure Type	Retrofit Lighting	Retrofit Lighting
Building Type	Miscellaneous	Miscellaneous
Other Building Type	Skate park	Restaurant
Site Visit Being Conducted	No	No
Gross Reported First Year Energy Savings (kWh)	48312	14411
Gross Reported First Year Peak Demand Savings (kW)	20	2
Gross Verified First Year Energy Savings (kWh)	49373	14411
Gross Verified First Year Peak Demand Savings (kW)	0	2
Realization Rate: Energy Savings (%)	102%	100%
Realization Rate: Peak Demand Savings (%)	0%	100%
Ex Ante Savings Source	Utility Workpaper	Utility Workpaper
Other Savings Source	-	-
Reasons for RR(s) <> 1	The ex-ante calculations and ex-post savings utilized the workpapers to evaluate the peak demand and energy savings for the lighting measure. The tracking data reported the building type as Miscellaneous. The evaluation team observed from the site photos that the space is an exterior space of a skate park. Therefore, the evaluation team used variable inputs for the exterior space type to calculate ex-post savings. Ex-ante calculations utilized variable inputs for Commercial/General building type to calculate savings. The evaluation team was able to replicate the ex-ante calculations savings, using a baseline fixture wattage of 920W for skate park pole fixtures and 1,150W for parking lot pole fixtures. For ex-post calculations, the evaluation team used a baseline wattage of 1100W for 1000W HPS light fixture, and this is consistent with 2024 Workpaper.	-

Project ID	PRJ-34590-2023	PRJ-34604-2023
Utility	PNM	PNM
Program	Commercial_Comprehensive	Commercial_Comprehensive
Subprogram	Building Tune-Up	Multifamily
Project Description	Retrocommissioning - VSD on Fans and Pump use reduction.	Installation of Energy star Windows replacing single pane window
Measure Type	Retrofit Custom	Multifamily
Building Type	Office	Miscellaneous
Other Building Type	0	0
Site Visit Being Conducted	No	No
Gross Reported First Year Energy Savings (kWh)	159059	91377
Gross Reported First Year Peak Demand Savings (kW)	392	7.671
Gross Verified First Year Energy Savings (kWh)	159089	96,547
Gross Verified First Year Peak Demand Savings (kW)	392	76.706
Realization Rate: Energy Savings (%)	100%	106%
Realization Rate: Peak Demand Savings (%)	100%	1000%
Ex Ante Savings Source	Custom Analysis	Utility Workpaper
Other Savings Source	-	-
Reasons for RR(s) <> 1	-	For demand savings, calculations used cooling savings for "Refrigerated air for single pane windows"

Project ID	PRJ-34605-2023	PNM-23-05056 / PRJ-34612-2023
Utility	PNM	PNM
Program	Commercial_Comprehensive	Commercial_Comprehensive
Subprogram	New Construction	Retrofit Rebate
Project Description	lighting project	Lighting and refrigeration
Measure Type	Lighting	Retrofit Lighting
Building Type	Retail – Small	Grocery
Other Building Type	0	0
Site Visit Being Conducted	No	No
Gross Reported First Year Energy Savings (kWh)	42924	403627
Gross Reported First Year Peak Demand Savings (kW)	9	64
Gross Verified First Year Energy Savings (kWh)	42830	388166
Gross Verified First Year Peak Demand Savings (kW)	9	56
Realization Rate: Energy Savings (%)	100%	96%
Realization Rate: Peak Demand Savings (%)	106%	87%
Ex Ante Savings Source	Utility Workpaper	Utility Workpaper
Other Savings Source	-	-
Reasons for RR(s) <> 1	There is a small variation in the RR as fixture details/model number and wattages were unavailable. The wattages installed are according to the application form and COMMCHECK report was different, which creates ambiguity in determining the exact wattage for each line/area. COMCHECK Report considered all exterior areas as "Uncovered Parking Lots and Drives" with LPD of 0.06, The application form had an area that was segregated in two categories "Uncovered Parking Lots and Drives " and "Building Faced-area" with LPD of 0.06 and 0.15, respectively. Recommendation: It is advisable to provide the exact details of fixture/model number/wattage in each area, which helps verifier estimate the exact savings.	Lighting: The facility type is Grocery. The area is an interior with 18 hours/day, 7 days/week operation. Ex-post followed workpapers 2024 for fixture wattage, CF of 0.69, HVACe of 1.082 and HVACd factor of 1.337, whereas ex-ante calculations calculation used the CF as 1, which is the reason for the RR variation in demand savings. Refrigeration: Ex-post calculation follows PNM Workpaper 2024. Deemed savings used is according to category, for refrigerator of 84 kWh/linear ft and freezer of 128 kWh/linear ft.

Project ID	PRJ-34625-2023	PRJ-34812-2024
Utility	PNM	PNM
Program	Commercial_Comprehensive	Commercial_Comprehensive
Subprogram	New Construction	Retrofit Rebate
Project Description	New Construction Lighting + HVAC Air Conditioning Systems	0
Measure Type	NC Lighting + HVAC	Lighting
Building Type	Storage – Conditioned	Manufacturing – Light Industrial
Other Building Type	Warehouse	0
Site Visit Being Conducted	No	No
Gross Reported First Year Energy Savings (kWh)	63542	1096400
Gross Reported First Year Peak Demand Savings (kW)	16	304
Gross Verified First Year Energy Savings (kWh)	65645	1095284
Gross Verified First Year Peak Demand Savings (kW)	17	305
Realization Rate: Energy Savings (%)	103%	100%
Realization Rate: Peak Demand Savings (%)	106%	100%
Ex Ante Savings Source	Utility Workpaper	Other:
Other Savings Source	-	-
Reasons for RR(s) <> 1	Lighting: there is a small variation in RR, as DLC wattages were used without rounding them off. Along with fixture wattages, the claimed sq.ft of the facility and the actual LPD values were also rounded off. For all interior fixtures, the ex-post used WHFd factors based on the facility type. E.g., fixtures 24FPSL2SCT3: DLC-tested wattage of 52.1W was used. Calculations used 56.3W. 4BCLED-LD4-32SL-F-UNV-L835- CD1-U: the fixture is not certified but was still considered for ex-post analysis. HC610D010 HM612830 61WDH: DLC wattage of 9.9W was used. Calculations used 10W. 4SNLED-LD5-41SL-LW-UNV-L830- CD1-U and 4SNLED-LD5-65HL-LW-UNV-L830- CD1-U: Fixture wattages were rounded off.	Lighting: ex-post calculations followed 2024 workpapers for fixture wattage, CF, HVACe, HVACd factors and HOU based on building type, Manufacturing-Light Industry. Savings for lighting controls were calculated based on occupancy sensors installed in interior application on 313 High bay LED fixtures, using 0.24 as the controls factor. Ex-post calculations used tested input wattages from DLC certificate for efficient fixtures of JWA-CPS-40W-D-WH as 37.7W, whereas calculations used 40W, and JSTR4-40W-CT-DSP as 40.5W.calculations used 40W, and JSTR8-80W-CT-DSP as 84.1W, whereas ex-post used 84W.

Project ID	PRJ-34826-2024	PRJ-34867-2024
Utility	PNM	PNM
Program	Commercial_Comprehensive	Commercial_Comprehensive
Subprogram	Retrofit Rebate	New Construction
Project Description	Installation of efficient LED Lighting	Installation of new air conditioning systems, air source heat pumps, variable refrigerant flow unit, hot food cabinet, an ice machine and lighting.
Measure Type	Retrofit Lighting	NC Lighting, Food service, Refrigeration and HVAC
Building Type	Grocery	Assembly
Other Building Type	0	0
Site Visit Being Conducted	Yes	0
Gross Reported First Year Energy Savings (kWh)	174126	60082
Gross Reported First Year Peak Demand Savings (kW)	23	5
Gross Verified First Year Energy Savings (kWh)	174902	43674
Gross Verified First Year Peak Demand Savings (kW)	22	7
Realization Rate: Energy Savings (%)	100%	73%
Realization Rate: Peak Demand Savings (%)	99%	119%
Ex Ante Savings Source	Utility Workpaper	Utility Workpaper
Other Savings Source	-	-
Reasons for RR(s) <> 1	1. The ex-post analysis referenced the DLC-listed wattages for efficient fixtures and the NM workpapers for baseline wattages. (For example: A 3L 2ft T8 EB fixture with 17W had an ex-ante value of 89W, while the workpapers listed 49W. Similarly, for MH150, the ex-ante value was 165W, compared to 167W in the workpapers, and for CMH 70, the ex-ante value was 70W, while the workpapers showed 79W.) 2. The ex-ante analysis used custom hours based on the specific space type within the facility, documents were not provided to verify the Hours of use based on the space type for the Grocery facility. So the savings have now been updated based on the 6,552 hrs. for all space type within the facility.	For NC Lighting _interior and NC Lighting exterior The ex-ante calculations referred to the workpapers for LPD, CF, WHF_e, and HOU factors. All fixtures were either DLC/EnergyStar certified. NC Lighting_interior: Interior installations include the office and exercise center. NC Lighting exterior: Exterior installations include fixtures in the canopy, uncovered parking and plaza areas. AC/ASHP/VRF: The facility installed 2 packaged AC units. Ex-post used the bonus savings approach. The baseline equipment efficiency ratings used for ex-post savings align with the facility type 'Assembly'. C.F. of 0.78, applicable to Assembly settings was referenced.

Project ID	PRJ-35048-2024	PRJ-35117-2024
Utility	PNM	PNM
Program	Commercial_Comprehensive	Commercial_Comprehensive
Subprogram	Retrofit Rebate	Retrofit Rebate
Project Description	Installation of efficient LED Lighting	RXc-like study and improvements
Measure Type	Retrofit Lighting	Custom project: Tune-Up Air Conditioning
Building Type	0	Other
Other Building Type	0	Light industry
Site Visit Being Conducted	No	Yes
Gross Reported First Year Energy Savings (kWh)	6464	694503
Gross Reported First Year Peak Demand Savings (kW)	0	167
Gross Verified First Year Energy Savings (kWh)	6464	9,51,192
Gross Verified First Year Peak Demand Savings (kW)	0	152
Realization Rate: Energy Savings (%)	100%	139%
Realization Rate: Peak Demand Savings (%)	0%	108%
Ex Ante Savings Source	Utility Workpaper	Custom Analysis
Other Savings Source	-	-
Reasons for RR(s) <> 1	-	Ex ante calculations utilized a regression model to determine savings. Ex ante calculations used separate cubic equations for pre and post installation period. Using an average CDD of 10-year period, ex ante savings were calculated. The evaluation team calculated verified savings by separating preinstall and post install time between Summer and Non-Summer months, and days of the week into Weekdays and Weekends. Average daily kWh consumption was calculated for these separate time periods and savings were calculated by subtracting Post kWh from Pre kWh.

Project ID	PRJ-35160-2024	PRJ-35161-2024
Utility	PNM	PNM
Program	Commercial_Comprehensive	Commercial_Comprehensive
Subprogram	Retrofit Rebate	Retrofit Rebate
Project Description	Installation of efficient LED Lighting	Installation of High Efficient LED Fixture
Measure Type	Retrofit Lighting	Retrofit Lighting
Building Type	Education	Education, K-12 School
Other Building Type	0	0
Site Visit Being Conducted	Yes	No
Gross Reported First Year Energy Savings (kWh)	34159	43480
Gross Reported First Year Peak Demand Savings (kW)	10	12
Gross Verified First Year Energy Savings (kWh)	34159	43480
Gross Verified First Year Peak Demand Savings (kW)	10	12
Realization Rate: Energy Savings (%)	100%	100%
Realization Rate: Peak Demand Savings (%)	100%	100%
Ex Ante Savings Source	Utility Workpaper	Utility Workpaper
Other Savings Source	-	-
Reasons for RR(s) <> 1	-	-

Project ID	PRJ-35162-2024	PRJ-35206-2024
Utility	PNM	PNM
Program	Commercial_Comprehensive	Commercial_Comprehensive
Subprogram	Retrofit Rebate	Multifamily
Project Description	Installation of High Efficient LED Fixture	Non-lighting project
Measure Type	Retrofit Lighting	Multifamily
Building Type	Education, K-12 School	Miscellaneous
Other Building Type	0	0
Site Visit Being Conducted	No	No
Gross Reported First Year Energy Savings (kWh)	188896	6758
Gross Reported First Year Peak Demand Savings (kW)	49	3
Gross Verified First Year Energy Savings (kWh)	197273	9131
Gross Verified First Year Peak Demand Savings (kW)	54	1
Realization Rate: Energy Savings (%)	104%	135%
Realization Rate: Peak Demand Savings (%)	111%	50%
Ex Ante Savings Source	Utility Workpaper	Other:
Other Savings Source	-	-
Reasons for RR(s) <> 1	Verifier used the baseline wattages from the workpaper. Metal Halide (1) 175W lamp, ex-ante calculations used 209W, whereas ex-post calculations used 215 W. Metal Halide (1) 1500W lamp, ex-ante calculations used 1608 W, whereas ex-post calculations used 1610 W. (2) 48", T8, Std Ballast, 32 Watt lamps ex-ante calculations used 60 W, whereas ex-post calculations used 71 W. (3) 48", T8, Std Ballast, 32 Watt lamps ex-ante calculations used 90 W, whereas ex-post calculations used 110 W. (4) 48", T8, Std Ballast, 32 Watt lamps ex-ante calculations used 120 W, whereas ex-post calculations used 142 W. Ex-ante calculations have used 12 Quantity for 32W CFL lamp, but ex-post calculations used 2 quantity for (6) 40W CFL lamp is according to scope of work table. For efficient fixtures, ex-ante calculations used 12 of 20W LED, and ex-post calculations used 2 of 102W LED, which are according to SOW.	Lighting: In ex-ante calculations, annual operation hours used were 1278 and 548, CF was 1.017, HVAC energy factor was 1.05 and HVAC demand factor was 1.41. The source of these values is unknown. Facility type was Multifamily, the operating hours were used as 818 , CF was 0.095, HVACe was 1.372 and HVACd was 1.237. The difference in factors resulted in varied RR for Lighting Retrofit. Refrigeration: The capacity of the refrigerator is 17.5 Cuft. Deemed savings values interpolated to capacity of 17.5 CuFt based on deemed values in the workpaper for 16.9 and 22.0 CuFt., which provided 45.95 kWh/CuFt. and 0.120 kW/Unit. The quantity was 9. Workpaper wasn't followed and the ex-ante calculations source is unknown. Recommendation: It is advisable to use the same source as the workpaper to keep consistent in calculations and savings.

Project ID	PRJ-35214-2024	PRJ-35605-2024
Utility	PNM	PNM
Program	Commercial_Comprehensive	Commercial_Comprehensive
Subprogram	Retrofit Rebate	Retrofit Rebate
Project Description	Indoor Agriculture	Ben E Keith Forklift Batteries & Chargers
Measure Type	HVAC | Lighting	Batteries
Building Type	Manufacturing – Light Industrial	Other
Other Building Type	0	Restaurant
Site Visit Being Conducted	No	No
Gross Reported First Year Energy Savings (kWh)	455833	144920
Gross Reported First Year Peak Demand Savings (kW)	66	0
Gross Verified First Year Energy Savings (kWh)	462713	144920
Gross Verified First Year Peak Demand Savings (kW)	67	0
Realization Rate: Energy Savings (%)	102%	100%
Realization Rate: Peak Demand Savings (%)	102%	100%
Ex Ante Savings Source	Utility Workpaper	Utility Workpaper
Other Savings Source	-	-
Reasons for RR(s) <> 1	Ex-post calculation followed the NM TRM for Indoor agriculture lighting measure, using variable inputs for Recreational Cannabis – Flowering Stage. Hours of Use were considered as 4200. Ex-post calculations considered WHFe and WHFd as 1.21 and 1.22 respectively, considering that the space is Air Conditioned. The reason for considering the space as air conditioned is that there were dehumidifiers present in the space. These dehumidifiers remove moisture using an evaporator coil. The presence of an evaporator coil indicated that the space is air conditioned. Ex-ante calculations considered WHFe and WHFd as 1, for spaces with no air conditioning. This was the primary reason for the variation in the RR.	-

Project ID	PRJ-35813-2024	PRJ-36521-2024
Utility	PNM	PNM
Program	Commercial_Comprehensive	Commercial_Comprehensive
Subprogram	Retrofit Rebate	Retrofit Rebate
Project Description	Installation of efficient LED Lighting	Installation of VSD on Supply & Return Fans
Measure Type	Retrofit Lighting	Retrofit HVAC
Building Type	Other	Health
Other Building Type	K-12 School	0
Site Visit Being Conducted	Yes	No
Gross Reported First Year Energy Savings (kWh)	6198	58540
Gross Reported First Year Peak Demand Savings (kW)	2	9
Gross Verified First Year Energy Savings (kWh)	6139	58540
Gross Verified First Year Peak Demand Savings (kW)	2	9
Realization Rate: Energy Savings (%)	99%	100%
Realization Rate: Peak Demand Savings (%)	99%	100%
Ex Ante Savings Source	Utility Workpaper	Utility Workpaper
Other Savings Source	-	-
Reasons for RR(s) <> 1	In ex-ante calculations, baseline fixture wattages were 164W for (2) 96", T8 Std Ballast, 86-Watt lamps and 60W for (2) 48", T8, Std Ballast, 32-Watt lamps, as referenced in the specification sheet. Installed fixtures used 46W for CSS L96 ALO4 MVOLT SWW3 80CRI and 27W CSS L48 ALO3 MVOLT SWW3 80CRI , as referenced from the specification sheet. For ex-post calculations, baseline fixture wattage was 160W for (2) 96", T8 Std Ballast, 86-Watt lamps, as referenced from the PNM workpaper. Installed fixture wattages were 45W for CSS L96 ALO4 MVOLT SWW3 80CRI and 25.3W for CSS L48 ALO3 MVOLT SWW3 80CRI, as referenced from the DLC certificates.	-

Project ID	PRJ-36534-2024	PRJ-36719-2024
Utility	PNM	PNM
Program	Commercial_Comprehensive	Commercial_Comprehensive
Subprogram	Retrofit Rebate	Retrofit Rebate
Project Description	Installation of >= 5.4 and < 11.25 Tons/ Unitary and Split Air Conditioning Systems	Lighting Retrofit
Measure Type	Retrofit HVAC	Retrofit Lighting
Building Type	Retail	Warehouse/ Industrial
Other Building Type	0	0
Site Visit Being Conducted	No	0
Gross Reported First Year Energy Savings (kWh)	1369	22386
Gross Reported First Year Peak Demand Savings (kW)	1	4
Gross Verified First Year Energy Savings (kWh)	1369	22386
Gross Verified First Year Peak Demand Savings (kW)	1	4
Realization Rate: Energy Savings (%)	100%	100%
Realization Rate: Peak Demand Savings (%)	100%	100%
Ex Ante Savings Source	Utility Workpaper	New Mexico TRM - 2020
Other Savings Source	-	-
Reasons for RR(s) <> 1	A coincidence factor (CF) of 0.34 Commercial-General was used for the calculations, whereas verifier used 0.8 as the facility for Retail-Service.	The ex-post analysis utilized HOU, coincidence factor (CF), and HVAC interactive factor from the PNM workpapers to ensure consistency with standardized methodologies. The efficient wattage was sourced from the DLC/ES certificates, providing verified performance data. When available, the baseline wattages were referenced directly from the project application documents to maintain accuracy. However, in a specific case, where the baseline CFL lamps were replaced with LEDs, the baseline lamp wattages were not provided, a back-calculation method was applied to estimate the baseline wattage values of the CFL lamps, ensuring a reasonable and data-driven approach to the savings calculations.

Project ID	PRJ-36731-2024	PRJ-35206-2024
Utility	PNM	PNM
Program	Commercial_Comprehensive	Commercial_Comprehensive
Subprogram	New Construction	New Construction
Project Description	New construction lighting	Installation of efficient LED Fixtures in a new construction facility.
Measure Type	New Construction Lighting	New Construction Lighting
Building Type	Health	Warehouse/ Industrial
Other Building Type	0	0
Site Visit Being Conducted	No	0
Gross Reported First Year Energy Savings (kWh)	12884	17441
Gross Reported First Year Peak Demand Savings (kW)	2	0
Gross Verified First Year Energy Savings (kWh)	6277	5289
Gross Verified First Year Peak Demand Savings (kW)	1	0
Realization Rate: Energy Savings (%)	49%	30%
Realization Rate: Peak Demand Savings (%)	49%	107%
Ex Ante Savings Source	Utility Workpaper	Utility Workpaper
Other Savings Source	-	-
Reasons for RR(s) <> 1	The ex-post followed the ex-ante calculations approach for evaluating the savings. Fixtures labeled F1, F2 have been delisted in 2021 based on DLC information. Fixture labeled as F3 cannot be found on DLC website and the old submittal spec sheet shows that this was DLC listed, but the currentspecification does not state this. The construction permits were signed in 2022, and these fixtures were excluded from the ex-post analysis. While it is possible that different DLC fixtures were used, the information provided does not indicate so. DLC wattages were referenced for the calculations. Also, COMMCHECKs and performance testing reports such as an LM-79 were not part of project documents, that verifies the inclusion of fixtures F1, F2 and F3. Since, a key limitation in ex-post analysis is the lack of fixture area distribution data, leading to the assumption that fixtures were evenly distributed by quantity rather than actual placement or usage patterns. If the actual distribution is uneven, ex-post may overestimate or underestimate savings compared to ex-ante calculations.	kW RR is 106.6% and kWh RR is 30.3%. The reason for kWh RR discrepancy is due to the use of the Building Façade - Length method for LPD calculations in the ex-post calculation, which led to a reduction in the savings compared to the Outdoor Sales Open Area method used in the ex-ante calculation. This was revisited after comments from DNV but to have a true comparison we would need to have a comparison photometric analysis of the baseline case). Therefore, the building facade length method is retained for analysis. Ex-ante calculation utilized WHFe of 1.048 for indoor lighting while ex post utilized WHFe of 1 as the structure is open on the sides. Ex-post calculation utilized DLC wattages for installed fixtures. Fixture MVT-8-50K-150W-F was delisted from DLC on 6/30/2022, and fixture WPC-80W-35K-XX-XXX was delisted from DLC on 2/28/2021.

Project ID	PRJ-36811-2024	PRJ-37020-2024
Utility	PNM	PNM
Program	Commercial_Comprehensive	Commercial_Comprehensive
Subprogram	Retrofit Rebate	Retrofit Rebate
Project Description	Installation of efficient LED Lighting	Lighting and HVAC retrofit
Measure Type	Retrofit Lighting	Retrofit Other
Building Type	Retail	Office
Other Building Type	0	0
Site Visit Being Conducted	No	No
Gross Reported First Year Energy Savings (kWh)	7864	43842
Gross Reported First Year Peak Demand Savings (kW)	0	12
Gross Verified First Year Energy Savings (kWh)	9614	29650
Gross Verified First Year Peak Demand Savings (kW)	0	9
Realization Rate: Energy Savings (%)	122%	68%
Realization Rate: Peak Demand Savings (%)	0%	70%
Ex Ante Savings Source	Utility Workpaper	New Mexico TRM - 2020
Other Savings Source	-	-
Reasons for RR(s) <> 1	The ex-post analysis referenced the PNM workpaper, noting that 15 lights were purchased, but only 14 were installed, with one kept as a spare. The analysis considered 14 retrofitted fixtures. Additionally, the PNM workpaper indicated that the 175W metal halide (MH) fixture with a magnetic ballast has a fixture wattage of 215W — clarifying that 175W refers to the lamp wattage, not the fixture wattage. The evaluator also used the reported DLC wattage of 51.19W for the efficient fixture, contributing to the RR variation.	Lighting: The ex-post analysis revised the baseline fixture wattage, CF, and interactive factors based on the workpaper, leading to a realization rate (RR) variation. For the 365 T8 lighting fixtures that are replaced by LEDs, Ex-Ante assumes a lower wattage for the installed fixtures. While this appears a possibility based on lighting spec sheets (which allow for selectable lumens and a different wattage based on selection), ex-post analysis used the DLC listed fixture wattage as we do not have any specific information regarding the lumens selected and in use. This leads to a significant reduction in RR For exit lighting, the ex-ante analysis applied a CF of 0.05 and an interactive factor (IF) of 1 instead of the workpaper values. However, the ex-post analysis updated these assumptions, applying an HVAC Energy Factor of 1.08, an HVAC Demand Factor of 1.3, a CF of 1, and annual operating hours of 8,766 based on the workpaper. These adjustments contributed to a realization rate (RR) variation.

Project ID	PRJ-37127-2024	PRJ-37444-2024
Utility	PNM	PNM
Program	Commercial_Comprehensive	Commercial_Comprehensive
Subprogram	Retrofit Rebate	Multifamily
Project Description	Installation of new efficient LED Lighting.	HVAC Air Conditioning Systems
Measure Type	Retrofit Lighting	HVAC
Building Type	Retail	Low Income Multifamily Dwelling
Other Building Type	0	0
Site Visit Being Conducted	No	Yes
Gross Reported First Year Energy Savings (kWh)	5,540.58	1,351.76
Gross Reported First Year Peak Demand Savings (kW)	1	1
Gross Verified First Year Energy Savings (kWh)	3,471.10	1,048.71
Gross Verified First Year Peak Demand Savings (kW)	0.84	0.63
Realization Rate: Energy Savings (%)	63%	78%
Realization Rate: Peak Demand Savings (%)	63%	100%
Ex Ante Savings Source	Utility Workpaper	Utility Workpaper
Other Savings Source	-	-
Reasons for RR(s) <> 1	kW and kWh RR discrepancies are due to the fact that ex-ante calculations utilized the DLC-reported electrical performance wattage of 36W for the new, efficient LED fixture VEKT-DP2x4 , while the ex-post calculations used the DLC-tested electrical performance wattage of 36.38W. Additionally, ex-ante calculations used an unclear baseline wattage of 120W for the indicated 3L FT8 fixture in the Final Application file, while Ex-post calculation utilized the utility workpaper wattage of 89W for F43ILL, leading to additional discrepancy.	The deemed energy and bonus savings associated with 'Multifamily' facility type is referenced for ex-post savings, causing the kWh RR discrepancy.

Project ID	PRJ-37531-2024	PRJ-37549-2024
Utility	PNM	PNM
Program	Commercial_Comprehensive	Commercial_Comprehensive
Subprogram	New Construction	Retrofit Rebate
Project Description	New construction lighting	Chiller Retrofit at Manufacturing Plant
Measure Type	New Construction Lighting	Retrofit HVAC
Building Type	Retail	Warehouse/ Industrial
Other Building Type	0	Heavy Industry
Site Visit Being Conducted	No	No
Gross Reported First Year Energy Savings (kWh)	64,200.29	8062057
Gross Reported First Year Peak Demand Savings (kW)	12	1353.84
Gross Verified First Year Energy Savings (kWh)	61,135.84	3268381.786
Gross Verified First Year Peak Demand Savings (kW)	14.80	852.9129
Realization Rate: Energy Savings (%)	95%	41%
Realization Rate: Peak Demand Savings (%)	122%	63%
Ex Ante Savings Source	Utility Workpaper	Custom Analysis
Other Savings Source	-	-
Reasons for RR(s) <> 1	Ex-ante calculations savings calculations were based on a custom Hours of Use (HOU) and Coincidence Factor (CF), while for ex-post analysis, we were using values from the PNM workpaper which is one of the reason for RR variation. Additionally, both ex-ante calculations and ex-post methodologies calculate Lighting Power Density (LPD) using the formula. A key limitation in ex-post analysis is the lack of fixture area distribution data, leading to the assumption that fixtures were evenly distributed by quantity rather than actual placement or usage patterns. If the actual distribution is uneven, ex-post may overestimate or underestimate savings compared to ex-ante calculations. This difference in methodology and assumptions may contribute to variations in the realization rate (RR), impacting both energy and demand savings calculations.	For Ex-post calculations, evaluator used Rev 1 data for regression analysis for modeled data, for the year of 2023. Implementer used total kWh for the year 2023, divided by max kW in year 2023 to estimate EFLH, i.e., 5955, whereas evaluator used total kWh for the year of 2023, divided by rated kW of installed chillers to arrive at EFLH, i.e., 2414. Evaluator used the same method of ASHRAE 90.1-2016 Standard Path A used for chiller savings.

Project ID	PRJ-37761-2024	PRJ-38068-2024
Utility	PNM	PNM
Program	Commercial_Comprehensive	Commercial_Comprehensive
Subprogram	Retrofit Rebate	Retrofit Rebate
Project Description	0	High Frequency Battery Chargers and Lithium-Ion Forklift Batteries
Measure Type	Retrofit Custom	Retrofit Other
Building Type	Other	Warehouse/ Industrial
Other Building Type	Restaurant	0
Site Visit Being Conducted	No	0
Gross Reported First Year Energy Savings (kWh)	384885	72460
Gross Reported First Year Peak Demand Savings (kW)	60.075	0.2
Gross Verified First Year Energy Savings (kWh)	384885	91426
Gross Verified First Year Peak Demand Savings (kW)	60.075	0.233
Realization Rate: Energy Savings (%)	100%	126%
Realization Rate: Peak Demand Savings (%)	100%	117%
Ex Ante Savings Source	Utility Workpaper	Other:
Other Savings Source	-	-
Reasons for RR(s) <> 1	0	For the ex-post analysis, Illinois TRM v12.0 (volume 2) section 4.8.9 High Frequency Battery Chargers and 4.8.23 Lithium-Ion Forklift Batteries were used instead of v11.0. While the methodology and assumptions values remained unchanged, the corrected deemed savings values from v12.0 for the measure 'Lithium-Ion Forklift Batteries' led to adjustments in the savings estimates, contributing to variations in the realization rate (RR).

Project ID	PRJ-38146-2024	PRJ-38150-2024
Utility	PNM	PNM
Program	Commercial_Comprehensive	Commercial_Comprehensive
Subprogram	Multifamily	Multifamily
Project Description	New Construction Lighting + Refrigeration + MF Appliances	Installation of efficient LED Lighting , Refrigerator and Dish washer
Measure Type	NC Lighting + Refrigeration + Appliances	Multifamily
Building Type	Multifamily Dwelling	Other
Other Building Type	0	Multifamily -Dwelling
Site Visit Being Conducted	Yes	Yes
Gross Reported First Year Energy Savings (kWh)	173560	25566.5489
Gross Reported First Year Peak Demand Savings (kW)	21.459	3.5832
Gross Verified First Year Energy Savings (kWh)	183256.1605	25579.73201
Gross Verified First Year Peak Demand Savings (kW)	23.65726092	3.612369125
Realization Rate: Energy Savings (%)	106%	100%
Realization Rate: Peak Demand Savings (%)	110%	101%
Ex Ante Savings Source	Utility Workpaper	Utility Workpaper
Other Savings Source	-	-
Reasons for RR(s) <> 1	The ex-post referred to the 2024 PNM workpapers. Refrigerator: The ex-post referred to the linear interpolation approach to evaluate energy and demand savings associated with capacity 20.8 cu.ft, causing minor RR discrepancy. NC Lighting _interior: The ex-post used WHF_d factor based on the facility types from the workpapers(MF and Dormitory: 1.237, Townhall: 1.247). After site visit it was observed that the fixture Royal Pacific 1062-1BN-NM (ceiling fan lights) were not present in all apartments of the multifamily facility, meaning the 281 listed in the M&V plan are incorrect. The ex-post excluded these fixtures in the savings calculations.	Ex-ante calculations savings used a rounded deemed savings value of 791 kWh per refrigerator. The evaluation team used the actual deemed savings value of 791.42 kWh to calculate verified savings. The program tracking data reported 0.001 kW savings for the Dishwasher measure. The evaluation team was unable to replicate this value. The evaluation team calculated total peak kW savings using deemed peak kW savings of 0.0027 kW per dishwasher, which are consistent with the 2024 PNM workpaper.