El Paso Electric Energy Efficiency and Load Management Market Potential Report

Prepared by: Resource Innovations

Date: 08.09.2024

Table of Contents

1 Executive Summary

In spring of 2023, El Paso Electric (EPE) retained Resource Innovations (RI), to determine the potential energy and demand savings that could be achieved by energy efficiency (EE) and load management (LM) programs in the EPE New Mexico service territory. This report describes the potential for EE and LM savings over the period 2023 – 2042, inclusive. The main objectives of the study include:

- Estimating EE and LM potential over the short term (five years), medium term (ten years), and long term (twenty years) planning horizons.
- Using the utility cost test (UCT) to identify program measures and archetypes that are likely to be cost-effective for EPE to offer customers in the New Mexico service territory.
- Exploring the sensitivity of savings estimates to changes in incentive rates (UCT costs) and utility avoided costs (UCT benefits).
- Comparing the expected savings under different benefit-cost screening criteria for utility-sponsored programs, including a modified UCT that includes the value of utility carbon reductions from EE.
- Assessing the potential impact of the 2022 Inflation Reduction Act (IRA) on EE/LM savings potential.
- Characterizing EE potential that exists in non-lighting end uses.
- Providing data to EPE for more detailed program planning and regulatory filings.
- Collecting primary data from EPE customers to support market characterization.

Following the 2007 National Action Plan for Energy Efficiency, RI estimates energy efficiency potential under three adoption scenarios: technical, economic, and achievable. Each adoption scenario represents expected savings over the study period, and all EE savings represent expected impacts to the EPE electricity sales forecast. Technical potential indicates the theoretical upper limit on savings from EE and coincident peak customer loads for LM. We estimate cumulative technical potential for 2023 - 2042 amounts to 26% of 2023 electricity sales for EPE New Mexico. Technical potential ignores measure costs to focus on energy savings wherever technically feasible. Cumulative economic potential is 16% of 2023 base year sales. This estimate uses the utility cost test (UCT) to determine if a measure is cost-effective: the test compares the costs and benefits of offering a measure to customers through a utility-sponsored EE or LM program.

UCT costs include utility incentives and program administration costs; UCT benefits stem from avoiding the energy, capacity, transmission, and distribution (T&D) costs of the electricity saved by the program measure. Economic potential with a UCT screening criterion does not examine customer benefits and costs; it assumes all customers adopt a measure that is cost-effective under the UCT screening. As constructed, this economic potential estimate using a UCT screening indicates how utility program costs and benefits affect measures' potential savings if all customers are assumed to adopt measures that are cost-effective for the utility to offer. This report includes a sensitivity scenario for EE economic potential to examine how program measures' benefit cost-ratios would differ under the Societal Cost Test (SCT). Results are comparable to the standard UCT results, but there is indication that residential and commercial potential savings move in opposite directions when applying these two tests, indicating there is likely a tradeoff between program strategies that focus on reducing emissions versus pursuing least-cost EE.

Achievable Market Potential (AMP) represents expected market response for each AMP sensitivity scenario (described below). Using the set of cost-effective measures from the UCT Economic Potential, Resource Innovations applied customer payback acceptance curves to calculate a measure's long-run market share relative to competing EE measures, including baseline technologies (e.g., current codes and standards). With the data available for this MPS, payback acceptance is the most feasible approach for estimating customers' willingness to invest in EE/LM equipment and retrofit measures. Since the payback acceptance approach considers only simple payback with utility-sponsored programs, the AMP implicitly assumes programs continually identify and reduce barriers to customer participation. EPE has a demonstrated history of applying best practices and concepts from the EE and LM program lifecycle to accomplish this by engaging with the DSM program lifecycle: planning, implementation, evaluation, and adaptation.

RI presents results for three AMP sensitivity scenarios:

- **Base** – reflects current EPE programs and program costs, incentive rates, and utility avoided cost benefits; used to calibrate first-year AMP estimates to historic EPE program achievements. This scenario includes all cost-effective measures under the UCT and expected impacts from the Inflation Reduction Act programs.
- **High Incentive Scenario** - doubles incentive rates, with a limit at 75% of measure incremental cost, or incremental cost caps applied by measure to backstop the incentive rate without causing a measure to fail the UCT test; applies utility avoided cost benefits from the base scenario and considers potential impact of IRA on program savings potential
- **UCT + Emissions Scenario** – reflects current EPE programs and program costs but includes the value of utility carbon reductions achieved by EE. Considers potential impact of the Inflation Reduction Act (IRA) on achievable savings potential and serves to explore the sensitivity of APS estimates to utility benefits.

1.1 Energy Efficiency Potential

The estimated technical and economic potential scenarios for EPE are summarized in Table 1-1, which lists cumulative energy and demand savings for each type of potential. Savings percentages are presented as a share of base year sales.

Table 1-1: EPE Energy Efficiency Technical and Economic Potential (2023 – 2042)

Scenario	Energy (GWh)	% of 2023 BaseSales	Demand (MW)	
			Summer	Winter
Technical Potential	455	26%	140	84
Economic Potential - UCT	278	16%	98	58

Table 1-2 summarizes the short-term (5-year), medium term (10-year) and long-term (20-year) EPE portfolio EE achievable market potential for the Base, High Incentive, and UCT + Emissions scenarios. These impacts are presented over each stated time horizon (5 years, 10 years, or 20 years).

Table 1-2: EPE Energy Efficiency Achievable Market Potential

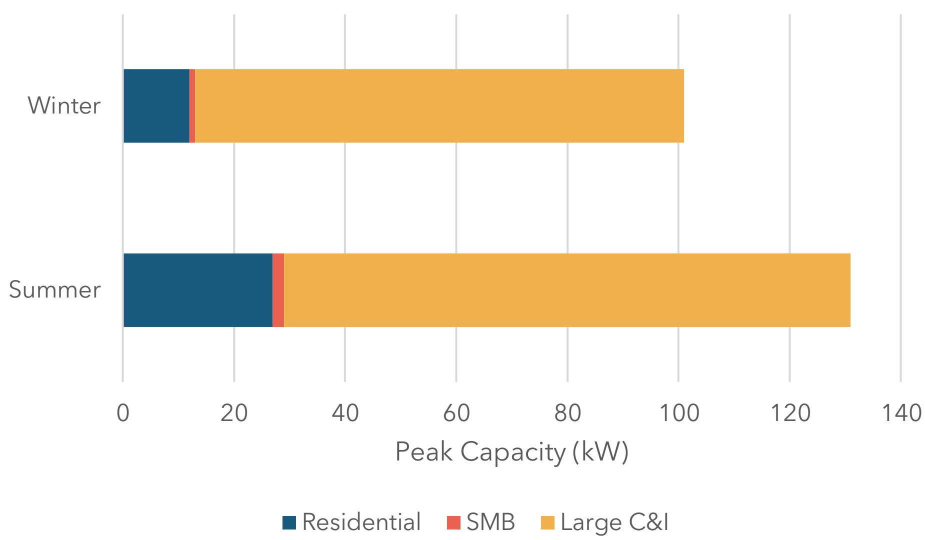
Scenario	Metric	2027	2032	2042
Base	Annual Incremental Energy (MWh)	17,364	18,925	16,374
High Incentive Case	Annual Incremental Energy (MWh)	18,665	20,235	17,374
UCT + Emissions	Annual Incremental Energy (MWh)	22,468	24,123	19,570
Base	Annual Incremental Summer Peak Demand (MW)	5	5	5
High Incentive Case	Annual Incremental Summer Peak Demand (MW)	5	6	5
UCT + Emissions	Annual Incremental Summer Peak Demand (MW)	6	7	6
Base	Annual Incremental Winter Peak Demand (MW)	4	4	3
High Incentive Case	Annual Incremental Winter Peak Demand (MW)	4	4	3
UCT + Emissions	Annual Incremental Winter Peak Demand (MW)	5	5	3
Base	Cumulative Energy (MWh)	59,494	128,485	171,591
High Incentive Case	Cumulative Energy (MWh)	65,022	140,464	189,778
UCT + Emissions	Cumulative Energy (MWh)	79,094	169,347	220,026
Base	Cumulative Summer Peak Demand (MW)	16	37	54
High Incentive Case	Cumulative Summer Peak Demand (MW)	18	39	57
UCT + Emissions	Cumulative Summer Peak Demand (MW)	23	51	68
Base	Cumulative Winter Peak Demand (MW)	14	29	36
High Incentive Case	Cumulative Winter Peak Demand (MW)	15	33	42
UCT + Emissions	Cumulative Winter Peak Demand (MW)	18	40	47

1.2 Load Management Potential

RI analyzed Load Management (LM) opportunities for the New Mexico service territory to determine the amount of summer and winter peak capacity available from the technical, economic, and achievable potential perspectives. While technical and economic potential are theoretical upper limits, participation rates are calculated as a function of the incentives offered to each customer group for utility-enabled LM. For a given incentive level and participation rate, the cost-effectiveness of each customer segment is evaluated to determine whether the aggregate LM potential from that segment should be included in the achievable potential.

The residential assessment of LM potential in EPE's territory focused on demand reduction through direct load control of HVAC, water heater, and pool pump end uses, as well as control of emerging loads from electric vehicles. For small and medium businesses (SMB), the analysis focused on HVAC and EV charging loads. For Large C&I customers, the analysis included all cost-effective loads available at the utility's system peak. Figure 1-1 summarizes the summer peak and winter peak LM potential estimated for EPE.

Figure 1-1: EPE Summer and Winter Peak Capacity Achievable Potential



2 Introduction

In spring of 2023, El Paso Electric (EPE) retained Resource Innovations to determine the potential energy and demand savings that could be achieved by energy efficiency (EE) and load management (LM) programs in the EPE (EPE) service territory. This report describes the potential for EE and LM savings in the New Mexico service territory.

2.1 Objectives and Deliverables

The main objectives of the study include:

- Estimating EE and LM potential over the short term (five years), medium term (ten years), and long term (twenty years) planning horizons.
- Using the utility cost test (UCT) to identify program measures and archetypes that are likely to be cost-effective for EPE to offer customers in the New Mexico service territory.
- Exploring the sensitivity of savings estimates to changes in incentive rates (UCT costs) and utility avoided costs (UCT benefits).
- Comparing the expected savings under different benefit-cost screening criteria for utility-sponsored programs, including a modified UCT that includes the value of utility carbon reductions from EE.
- Assessing the potential impact of the 2022 Inflation Reduction Act (IRA) on EE/LM savings potential.
- Characterizing EE potential that exists in non-lighting end uses.
- Providing data to EPE for more detailed program planning and regulatory filings.
- Collecting primary data from EPE customers to support market characterization.

RI developed the following deliverables for the MPS:

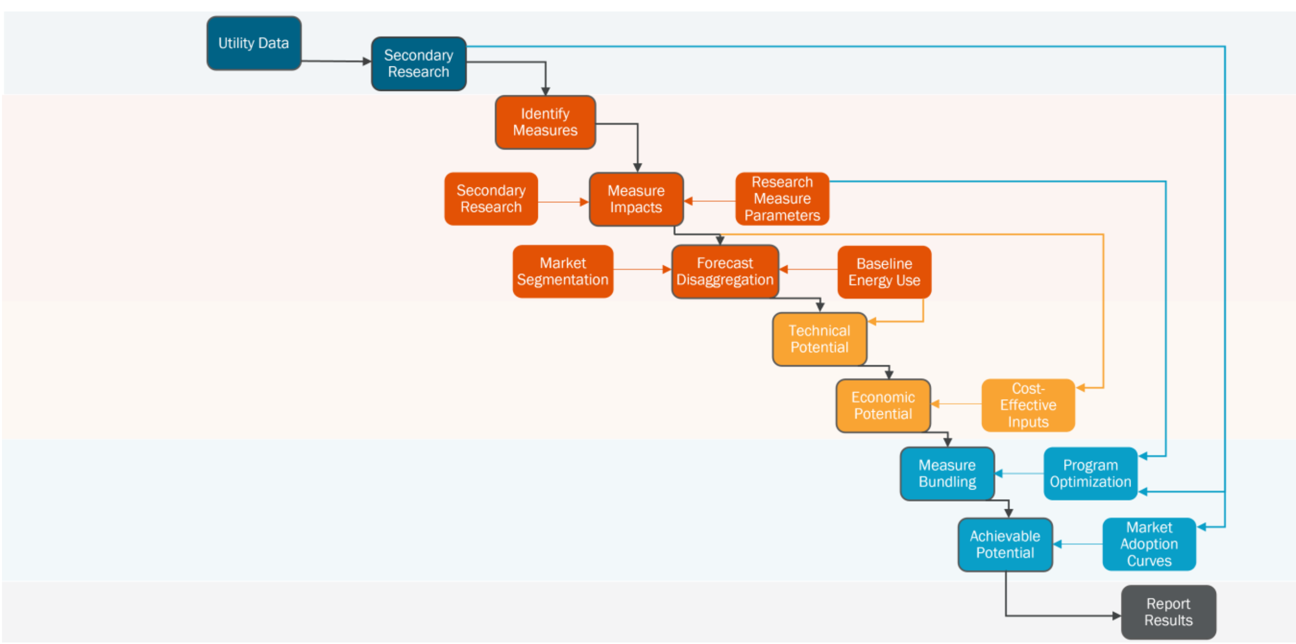
- Measure list and supporting measure research to estimate costs and energy impacts.
- Periodic presentations to EPE.
- Interim, draft results of technical and economic potential.
- Achievable potential estimates describing three APS scenarios: Base, High Incentive, and UCT+Emissions.
- This report and summary of all project activities.

2.2 Study Approach

Market potential studies describe each type of energy efficiency potential: technical, economic, and achievable. A market potential study is an assessment of current market conditions and trends, as observed with available primary and secondary data. All components of the study, such as baseline energy consumption, expected utility sales forecasts, and available EE and LM measures, among others, are determined based on available data. A market potential study is therefore a discrete estimate of EE and LM potential based on current market conditions and savings opportunities. An MPS does not contemplate potential changes in utility rates, changes in technology costs, nor changes in underlying economic conditions that provide a context for current consumption trends. This study considers existing technology and market trends as observed with currently available data and does not speculate on the potential impact of unknown, emerging technologies that are not yet commercially available.

Resource Innovations developed estimates with models, tools, and techniques refined over dozens of client engagements for EE and LM resource planning over the past two decades. RI examined multiple scenarios by changing inputs related to program incentives, utility avoided cost benefits, and eligible customers. Resource Innovations used primary data collected during this project, other primary data provided by EPE, and secondary data sources to decompose EPE sales forecasts into customer-class and end use components. Resource Innovations characterized measures for all electric end uses, accounting for end use saturation, fuel shares, technical feasibility, current efficiency levels, and costs. As illustrated in Figure 2-1, we used these results to assess the savings that could be captured by EPE customers with the full range of commercially available energy efficiency measures and practices. We estimated EE and LM savings for each customer class, market segment, and electric end use by applying measure impacts to the service territory over time.

Figure 2-1: Market Potential Study Flow Chart



We aggregated measure impacts for the technical, economic, and achievable scenarios by sorting and ranking measures according to scenario criteria and modeled the application of measures to replace equipment failures or to retrofit existing buildings. Following regulatory and stakeholder direction, we estimated economic potential by applying the utility cost test (UCT) to weigh EE and LM costs against their estimated benefits, the latter provided to us by EPE.

The savings potential for EE and LM in EPE's New Mexico territory is characterized by levels of opportunity. The ceiling or theoretical maximum savings is based on commercialized technologies and behavioral measures, whereas the realistic savings that may be achieved through LM programs reflect real world market constraints such as utility budgets, customer perspectives and energy efficiency policy. This analysis defines these levels of energy efficiency potential according to the Environmental Protection Agency's (EPA) National Action Plan for Energy Efficiency (NAPEE) as illustrated in Figure 2-2.

Figure 2-2: Energy Efficiency Potential

EPA – National Guide for Resource Planning

Technical potential is the theoretical maximum amount of energy and capacity that could be displaced by efficiency, regardless of cost and other barriers that may prevent the installation or adoption of an energy efficiency measure. Technical potential is only constrained by factors such as technical feasibility and applicability of measures. economic potential is the amount of energy saved by applying efficiency measures that pass a cost-effectiveness test. The utility cost test (UCT) is used in this study, in keeping with jurisdictional practice. Achievable market potential is the energy savings that can be achieved in a market with cost-effective, utility-sponsored programs; achievable market potential is primarily driven by the influence of incentive levels on customer adoption rates and addresses market barriers associated with customer preferences and opportunity costs. Our analysis assumed EPE will continue to adaptively manage programs, following the EE/LM program life cycle: market assessment, program design, implementation, evaluation, and adaptation.

RI explored technical, economic, and achievable market program potential over a 20-year period from January 2023 to December 2042. Savings opportunity follows the path from a theoretical maximum to realistic savings potential in a market with utility-sponsored programs. This study provides estimates of achievable potential that are based on customer payback acceptance curves; this approach describes customers' adoption decisions relative to the length of time required to recoup their investment in energy efficiency.

Owing to these MPS parameters and focus, we describe our estimates as expected EE and LM potential in a market featuring utility-sponsored programs and incentives. The estimates assume adaptive program management is applied to successfully lower market and non-market barriers to customer adoption over time; the customer payback acceptance approach addresses only the barriers of investment costs and opportunity costs.

Naturally occurring conservation and efficiency is captured in this analysis by the EPE electricity sales and load forecasts. We addressed changing energy codes and equipment standards by incorporating changes to codes and standards in the development of the base-case forecasts or with adjustment to measure savings that reflect changing baselines. The EPE forecasts account for known or planned future federal code changes and existing market trends towards more efficient equipment. RI estimated savings potential based on a combination of market research, analysis, and a review of EPE's existing programs. The programs that RI examined included both energy efficiency (EE) and load management (LM) programs; therefore, this report is organized to offer detail on both types of programs.

The remainder of the report provides describes each step in the potential analysis process, together with the results and analyses, according to the following sections:

- Market Characterization
- Measure List
- Technical Potential
- Economic Potential
- Achievable Market Potential

3 Market Characteristics

Market potential studies estimate savings potential relative to existing market conditions. This study used base year energy use and sales forecasts provided to us by EPE. We used customer segmentation and secondary data to decompose the sales forecast into its end use components and to describe the customer base in the EPE New Mexico service territory. This section presents baseline market conditions, while the subsequent sections address measure opportunities and market potential scenarios.

3.1 Customer Segments

As electricity consumption patterns vary by customer type, RI segmented customers to better describe opportunities for energy efficiency or customers' ability to provide LM grid services. Customer segmentation provides higher resolution estimates of cost-effective EE and LM programs. Significant cost efficiency can be achieved through strategic EE and LM program designs that recognize and address the similarities of EE and LM potential that exists within each customer group.

RI segmented EPE customers by economic sector to describe how much of the EPE sales, summer peak, and winter peak load forecasts are attributable to the residential, commercial, and industrial sectors. Customer segments within each economic sector are used to estimate how much electricity each customer type consumes annually and during system peaking conditions. End use disaggregation looks within a typical home or business in each segment to describe the typical equipment using electricity during periods of peak demand and estimate annual consumption within each end use for current consumption trends.

Table 3-1 lists study segments for each economic sector. We also segmented customers according to space heating fuel (electric vs. gas) and by annual consumption tertiles (that is, three groups of equal customer size). Segmentation allows for more accurate estimates of which customers exhibit consumption patterns that make them cost effective to recruit for EE programs.

Table 3-1: MPS Customer Segments by Economic Sector

Residential	Commercial		Industrial	
Single Family	Assembly	Lodging/ Hospitality	Agriculture and Assembly	Miscellaneous manufacturing
Multifamily	College and University	Miscellaneous	Chemicals and plastics	Primary resource industries
Mobile Home	Data Center	Offices	Construction	Stone, clay, glass, and concrete
	Grocery	Restaurant	Electrical and electronic equipment	Textiles and leather
	Healthcare	Retail	Lumber, furniture, pulp, and paper	Transportation equipment
	Hospitals	Schools K-12	Metal products and machinery	Water and wastewater
	Institutional	Warehouse		

From an equipment and energy use perspective, each segment has variation within each building type or sub-sector. For example, the energy consuming equipment in a convenience store will vary significantly from the equipment found in a supermarket. To account for the resolution of available baseline consumption data, the selected end uses describe energy savings potential that are consistent with those typically studied in national or regional surveys. These end uses are listed in Table 3-2.

Table 3-2: Electricity End Uses by Economic Sector

Residential End Uses	Commercial End Uses	Industrial End Uses
Space heating	Space heating	Process heating
Space cooling	Space cooling	Process cooling
Domestic hot water	Domestic hot water	Compressed air
Ventilation and circulation	Ventilation and circulation	Motors, pumps
Lighting	Interior lighting	Motors, fans, blowers
Cooking	Exterior lighting	Process-specific
Refrigerators	Cooking	Lighting
Freezers	Refrigeration	HVAC
Clothes washers	Office equipment	Other
Clothes dryers	Miscellaneous	
Dishwashers		
Plug load		
Miscellaneous		

For load management technical potential, non-residential customer segmentation is handled differently than it is for EE. Rather than using premise/business types, segments for the residential and SMB sectors are delineated based on annual consumption levels and Large Commercial & Industrial segments are defined based on maximum hourly kW.

Within each sector, we targeted end uses with controllable load for residential customers and small/medium business (SMB) customers. These include measures applicable to specific end uses that can be controlled at scale, including AC/heating loads, pool pumps, electric water heaters, and others. For large commercial and industrial (large C&I) customers who would potentially reduce large amounts of electricity consumption for a limited time, all load during peak hours was included.

Table 3-3: Load Management Customer Segments

Residential	Small & Medium Business	Large Commercial & Industrial
< 5,000 kWh	< 7,000 kWh	< 50 kW
5,001-10,000 kWh	7,001-17,000 kWh	51-100 kW
10,000-15,000 kWh	17,001-40,000 kWh	101-300 kW
> 15,000 kWh	> 40,000 kWh	> 300 kW

3.2 Forecast Disaggregation

We worked with EPE to establish a common understanding of the assumptions and granularity in the baseline load and sales forecasts. We reviewed the following:

- How are EPE's current program offerings reflected in the energy and demand forecast?
- How much of the load forecast is attributable to accounts that are not eligible for EE and LM programs?
- How are projections of population increase, changes in appliance efficiency, and evolving distribution of end use load shares accounted for in the twenty-year peak demand forecast?

RI segmented the EPE electricity consumption forecasts by customer class and end use. The resulting baseline represents the New Mexico electricity market by describing how electricity was consumed within the service territory. RI developed these forecasts for the years 2023–2042 and based them on data provided by EPE and supporting, secondary sources. The data addressed current baseline consumption, system load, and sales forecasts.

The baseline for LM potential describes loads in the absence of existing, dispatchable LM. This baseline was necessary to assess how LM can assist in meeting specific planning and operational requirements. RI used EPE's summer and winter peak demand forecast, which was developed for system planning purposes.

RI developed a list of electricity end uses by sector (Table 3-2) and examined EE and LM measures that could potentially reduce baseline consumption for each end use. RI began with EPE's estimates of average end use consumption for residential customers and shares of EPE sales to non-residential customer segments. We combined these data with EPE's 2021 residential appliance saturation surveys, U.S. Census data, data products from the Energy Information Agency (EIA) and estimates of manufacturing end use consumption from the Department of Energy (DOE).

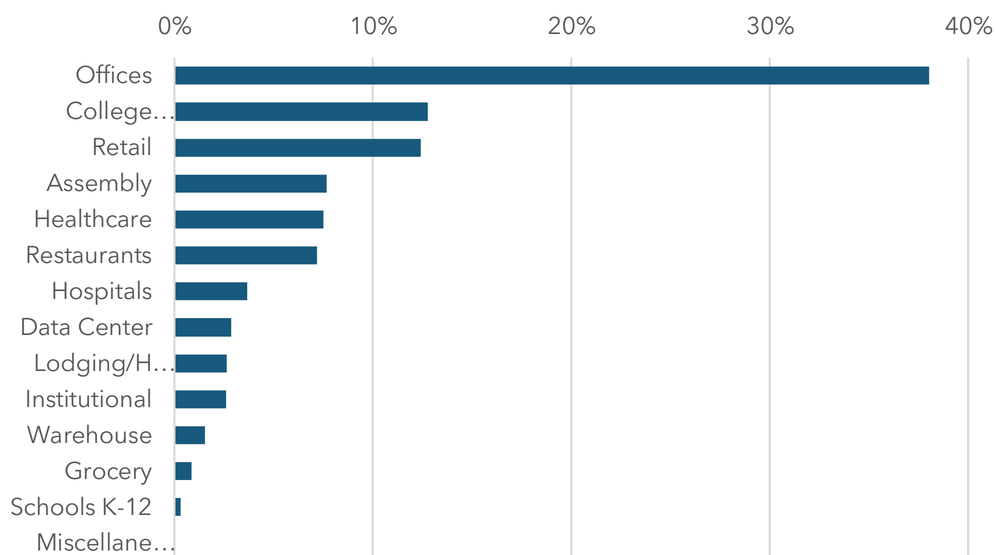
3.3 Market Description

Customer segmentation addresses the diverse energy savings opportunities for EPE's customer base. EPE provided RI with data concerning the premises type and load characteristics for all customers. RI's approach to segmentation varied slightly for commercial and residential accounts, but the overall logic was consistent with the concept of expressing the accounts in terms that are relevant to EE and LM opportunities. The following three sections describe the segmentation analysis and results for commercial and industrial C&I accounts (Section 3.3.1) and residential accounts (Section 3.3.2).

3.3.1 Commercial and Industrial Accounts

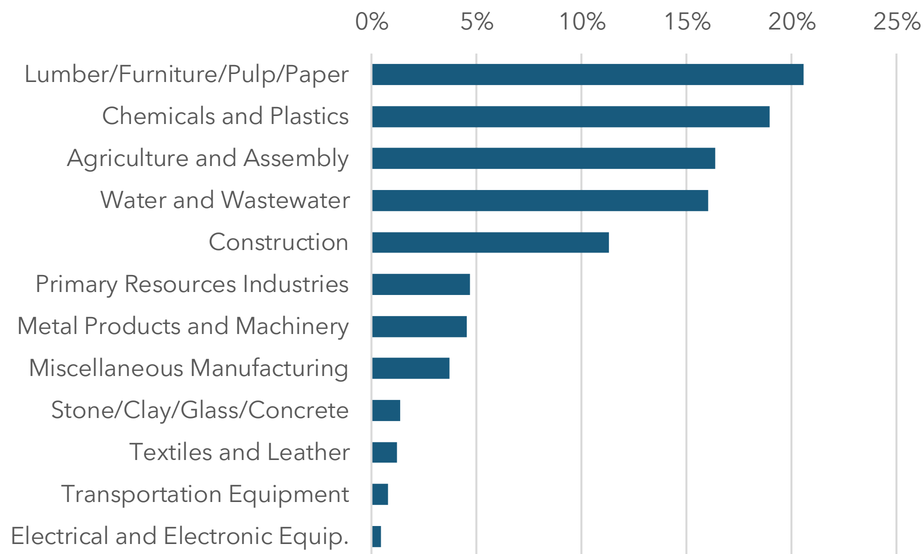
RI segmented C&I accounts according to two approaches: North American Industry Classification System (NAICS) codes and peak energy demand. EPE provided RI a forecast of residential and non-residential sales to serve as a baseline for the EE potential estimates. RI obtained data on the EPE New Mexico service territory's non-residential customers by examining the U.S. Census County Business Pattern (CBP) data for Doña Ana County. RI uses information on non-residential economic activity to identify the types of EE and DSM measures applicable to each segment. For example, agriculture and forestry EE measures are commonly considered industrial savings opportunities. RI determined customer segment sales shares based on the primary information we obtained from EPE and the secondary data obtained from the CBP data. The results for commercial business segments are presented below in Figure 3-1.

Figure 3-1: Estimated EPE Sales by Commercial Segment



These results indicate that offices and similar buildings (based on NAICS codes) have the large share of EPE electricity consumption. For industrial segments, the RI estimates are presented below in Figure 3-2, with significant consumption shares concentrated in a few key industries.

Figure 3-2: Estimated EPE Sales by Industrial Segment



RI divided the non-residential customers eligible for LM into the two customer classes: small and medium businesses (SMB) and large C&I using rate class and peak demand characteristics.

RI segmented both the SMB and Large C&I customer classes with economic activity information for each account, which was provided by EPE as part of the customer data. RI aggregated the SMB segments using data available in 2021, and the resulting customer counts are shown in Table 3-4 for SMB customers.

Table 3-4: Summary of SMB Segment

Segment	EPE Number of Accounts
< 7,000 kWh	1,948
7,001-17,000 kWh	1,835
17,001-40,000 kWh	1,986
> 40,000 kWh	2,022
Total	7,790

Large C&I customers were defined for the LM potential analysis based on account size (demand). EPE provided a sample of AMI data to RI for estimating the LM potential capacity available from these large accounts. Table 3-5 presents the resulting customer counts by customer segment.

Table 3-5: Summary of Large C&I Segment

Segment	EPE Number of Accounts
< 50 kW	1,348
51-100 kW	1,049
101-300 kW	1,161
> 300 kW	1,273
Total	4,832

3.3.2 Residential Accounts

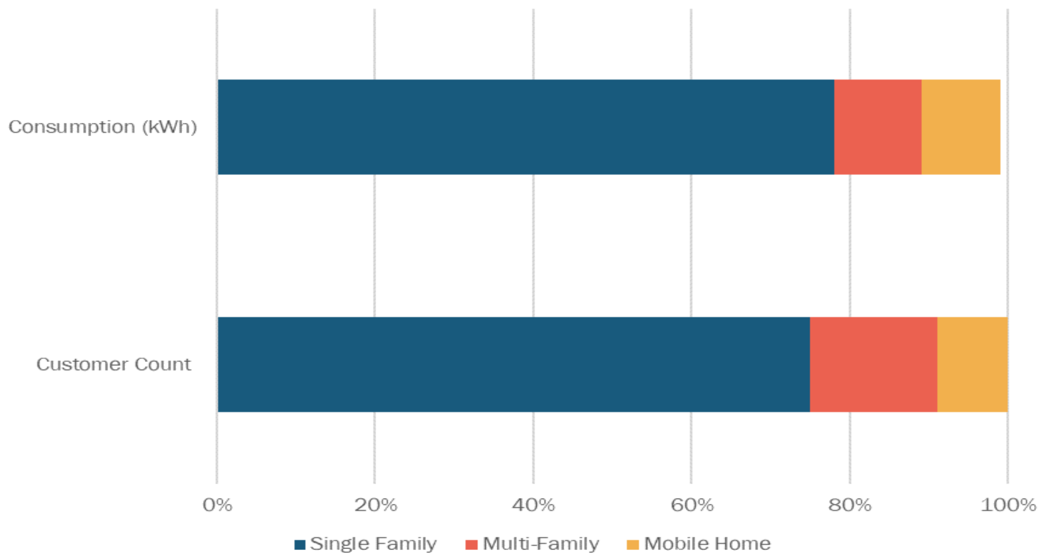
RI segmented residential accounts to align DSM opportunities with appropriate DSM measures. Residential segments are based on customer dwelling type (single family, multifamily, or mobile home). The resulting distribution of customers and total electricity consumption by each segment is presented below in Table 3-6.

Table 3-6: EPE Residential Market Characteristics by Type of Dwelling Unit

Attribute	Single Family	Multi-Family	Mobile Home
Customer Count	75%	16%	9%
Total kWh Consumption	78%	11%	10%

Figure 3-3 presents a visual representation of this information. The EPE territory in New Mexico consists primarily of single-family dwellings, which have the greater share of both accounts and consumption.

Figure 3-3: EPE Residential Market Characteristics by Type of Dwelling Unit

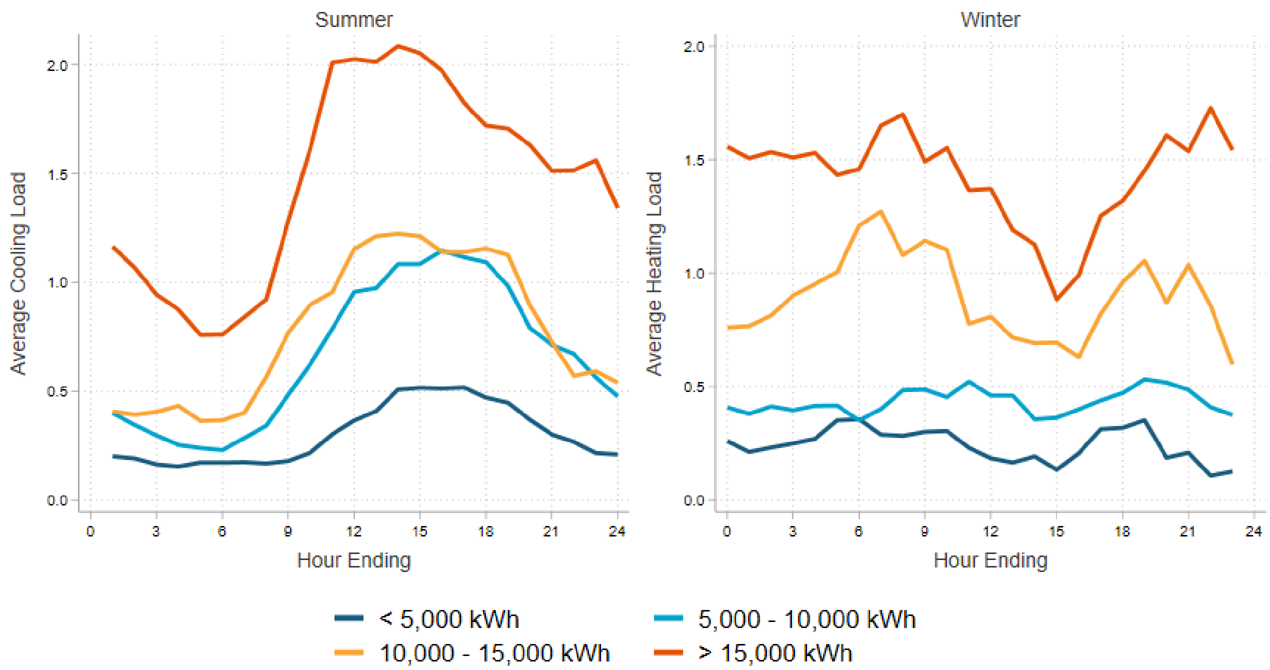


The LM assessment required the use of interval data to estimate the loads associated with space cooling, space heating, water heating, and pool pumps. For this study, interval data were available from EPE's load research sample[1].

The residential sector was segmented into four different groups based on annual consumption. Within each of these customer groups, heating and cooling load profiles were estimated using observed AMI consumption data and weather data. For illustrative purposes, Figure 3-4 shows average daily load profiles on the hottest summer days and coldest winter days for each residential LM segment.

[1] RI received a sample of premises for EPE.

Figure 3-4: Average Summer and Winter Daily Load Profiles by Residential LM Segment



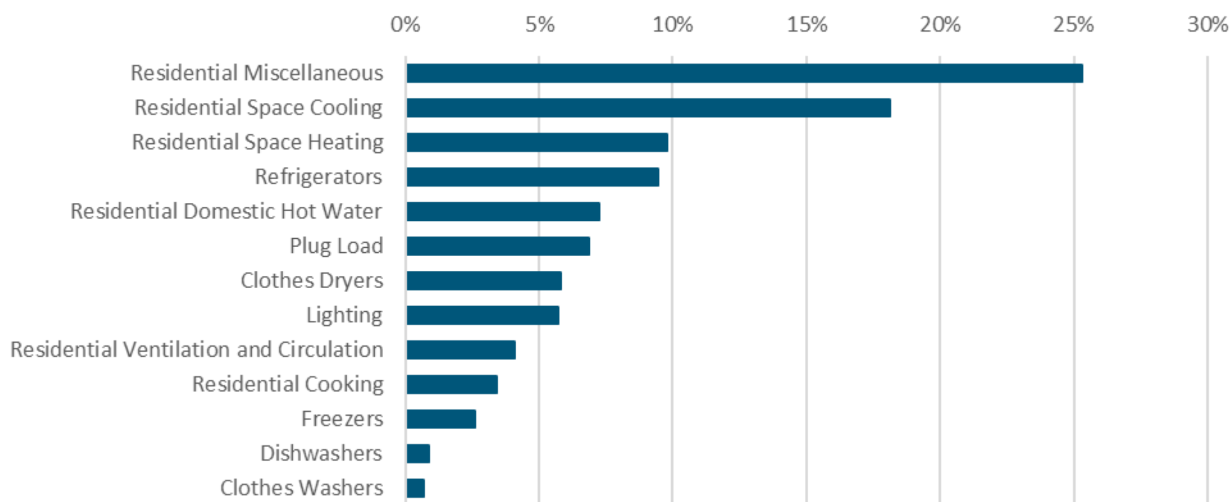
3.4 Base Year 2021 Disaggregated Sales

EPE provided Resource Innovations with an end use forecast for residential customers and a forecast of sales by customer segment for non-residential customers. These forecasts are based in part on the Energy Information Administration (EIA) research activities in the residential, commercial, and manufacturing sectors. As of the time of this study the data provided by these products represented the best available secondary data sources for end use consumption within each economic sector. The following secondary data sources were used by RI to disaggregate each sector's loads:

- Residential load disaggregation is based on EPE's estimates of residential end use load shares; this information in turn is derived from the EIA Residential End Use Consumption Survey (RECS), vintage 2020.
- Commercial load disaggregation is based on the Commercial Building Energy Consumption Survey (CBECS) and EPE estimates of sales by commercial segment, vintage 2018.
- Industrial load disaggregation is based on Manufacturers' Energy Consumption Survey (MECS), vintage 2018.

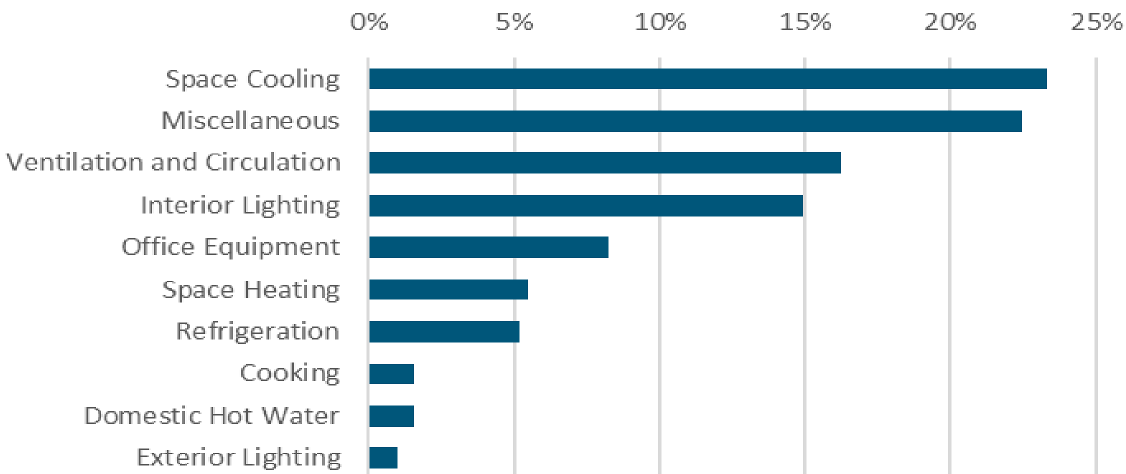
With the details provided by EPE, Resource Innovations was able to identify and categorize some miscellaneous electric loads into an end use category we labelled as "plug loads." Nevertheless, there remains a large share of residential load classified as "residential miscellaneous – other," and no further data are available at this time to further describe this end use. "Residential miscellaneous – other" is one subcategory of the broader residential miscellaneous. Residential miscellaneous also include pool pumps, spas, and ceiling fans as discrete loads that we could identify with available data. Residential miscellaneous loads have historically lacked detail because of the plethora of possible items that might use electricity in this category; in our experience this is not an issue specific to EPE. The disaggregated loads for the base year 2021 residential end uses are summarized in Figure 3-5.

Figure 3-5: EPE 2021 Residential End Uses, Baseline Consumption Shares



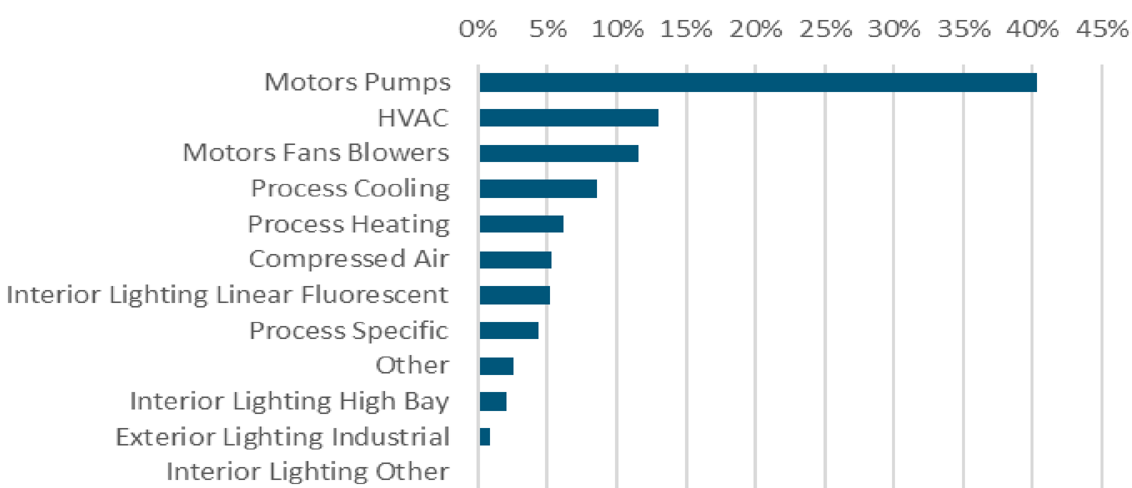
The commercial baseline load shares were constructed with a combination of end use consumption shares from CBECS data, and our estimates of 2021 annual billed consumption by commercial customer type (e.g., building type or segment). Figure 3-6 presents a summary of the end use consumption data available for the commercial sector.

Figure 3-6: EPE Commercial Baseline Load Shares



Industrial customer consumption shares are based on the 2018 EIA MECS survey and EPE billed consumption in 2021. Figure 3-7 presents a summary of industrial customers' end use consumption.

Figure 3-7: EPE Industrial Baseline Load Shares



In the base year 2021, the top end use consumption categories for each economic sector are as follows:

- ***Residential:*** Miscellaneous, space cooling, space heating
- ***Commercial:*** Space cooling, miscellaneous, ventilation and circulation
- ***Industrial:*** Motors pumps, HVAC, and motors fans blowers

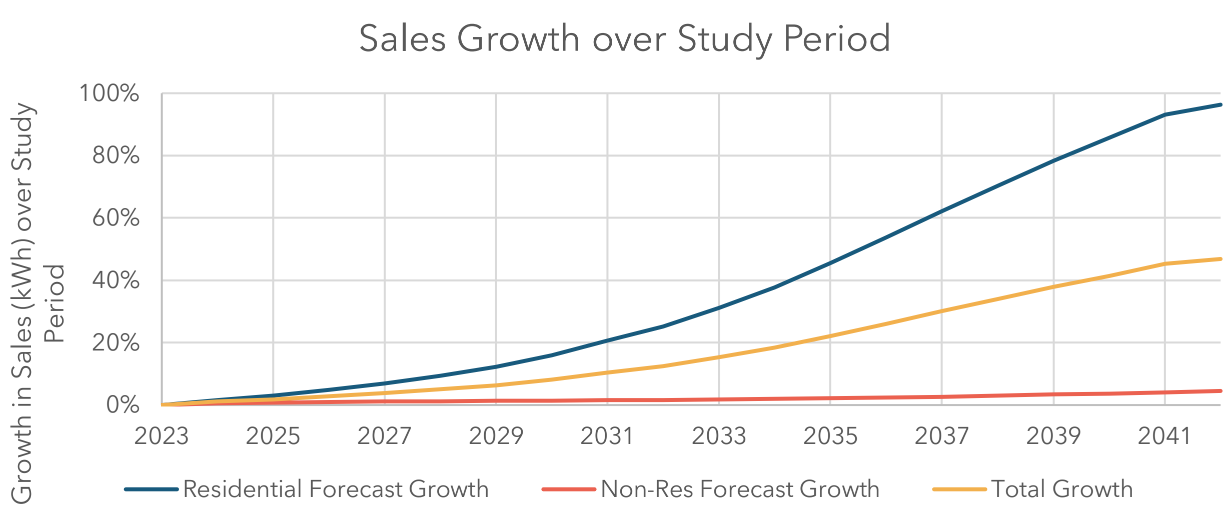
3.5 EPE Sales Forecast 2023 - 2042

3.5.1 EPE System Energy Sales

EPE provided its 2021 vintage sales forecast data to Resource Innovations. Our estimates of energy efficiency potential present savings opportunities relative to this forecast. The forecast of baseline sales used to estimate potential does not include savings from future utility-sponsored energy efficiency, and RI has adjusted sales at plant to sales at meter using a line loss factor calculated to be 6.1% on the basis of data provided by EPE.

EPE electricity sales for 2023 are forecasted to be 1,779 GWh, increasing to 2,613 GWh in 2042. This increase of 833 GWh represents a change of 49% over the period, or 1.9% average annual growth. The residential sector is expected to account for the largest share of the increase, growing by 790 GWh or 3.4% annually, to reach 1,611 GWh (an increase of 96%) over the 20-year period. Figure 3-8 illustrates the growth rate of sales for each economic sector over the period of analysis. In 2042 the residential sector accounts for 62% of total electricity sales, the non-residential accounts for 38% of expected 2042 electricity sales.

Figure 3-8: EPE Electricity Sales Growth over Base Year, by Economic Sector, for 2023 - 2042



4 Measure List

RI maintains a database of energy efficiency measures for MPS studies. Measure data are refined as new data or algorithms are developed for estimating measure impacts. The EE measure data used in this study has been reviewed many times by many MPS project stakeholders in multiple jurisdictions. Resource Innovations curates a database of EE measures that we update each time we conduct a market potential study. Updates for this project included sharing the measure list with EPE to solicit proposed measure additions.

Measures included in this study represent opportunities to reduce consumption across all major electricity end uses and customer types. The MPS does not include measures related to fuel switching (e.g., converting from gas space heating to electric space heating). This scope of measures is reasonable because the MPS applies the UCT to screen measures for economic potential; measures are assigned to utility-sponsored program concepts and screened to ensure they are cost-effective for EPE to offer in a utility-sponsored program for energy efficiency.

The measures included in the study are those currently available for purchase in today's market. The MPS does not speculate on future technologies but does include many nascent or novel savings opportunities such as smart panels, networked lighting controls, heat pump water heaters, and others. All measure impacts are modeled as a percentage reduction in baseline energy consumption. The MPS model also includes a stock and flow calculation for equipment burnouts or turnover. Future measure impacts are applied to a future baseline energy consumption estimate that reflects a continuation of historical and current trends. In this manner our estimates of savings potential are incremental to naturally occurring energy efficiency savings captured by the EPE sales forecast.

The final measure list included energy efficiency technologies and products that enable LM opportunities. DSM initiatives that do not rely on installing a specific technology, such as time-of-use rates and permanent load shifting, are not examined in the DSM potential estimates.

4.1 Energy Efficiency Measures

RI's measure data represents savings opportunities for all electricity end uses and customer types. EE program measure offers are typically more specific than those required to assess EE potential. For example, EPE programs have historically had multiple instances of LED lamps with varying characteristics (candelabra base, globe base, A-line, etc.). Although these distinctions are important during program delivery, this level of granularity is not necessary to identify the market potential for EE savings.

RI updated its online measure database to support this study. RI's database contains the following information for each measure:

- Classification of measure by type, end use, and subsector
- Description of the base-case and the efficiency-case scenarios
- Measure life
- Savings algorithms and calculations per subsector, taking weather zones and subsectors into consideration.
- Input values for variables used to calculate energy savings.
- Measure costs
- Output to be used as input in RI's TEAPOT model.

Detailed measure assumptions in this database were provided to EPE. As shown in Table 4-1, the study included 386 unique energy efficiency measures. Expanding the measures to account for all relevant combinations of segments, end uses, and construction types resulted in 9,790 measure permutations that we modeled against the market baseline.

Table 4-1: EE Measure Counts by Sector

Sector	Unique Measures	Permutations
Residential	92	856
Commercial	172	5,636
Industrial	111	2,840
Total	375	9,332

4.2 Load Management Services and Products

RI and EPE worked together to determine which LM products and services were included in the MPS, and addressed the following:

- **Direct load control.** Customers receive incentive payments for allowing the utility a degree of control over equipment, such as air conditioners or water heaters. This includes both switch-based programs and smart thermostat programs.
- **Emergency load response.** Customers receive payments for committing to reduce load if called upon to do so by the grid operator.
- **Economic load response:** Utilities provide customers with incentives to reduce energy consumption when marginal generation costs are higher than the incentive amount required to achieve the needed energy reduction.
- **Base interruptible DR**. Customers receive a discounted rate for agreeing to reduce load to a firm service level upon request.
- **Automated DR**. Utility dispatched control of specific end-uses at customer facilities.

4.3 Inflation Reduction Act

The 2022 Inflation Reduction Act recently made available approximately $360 billion for investments to reduce greenhouse gas emissions and combat climate change. Major federal programs included in the IRA are as follows:

- Home energy performance-based whole-house (HOMES) rebates through the Department of Energy (DOE)
- 179D Energy efficient commercial building deduction
- High-efficiency electric home rebate program (DOE)
- 25c Energy Efficient Home Improvement Credit

Resource Innovations developed an EE MPS modeling scenario around this legislation in an attempt to address the potential magnitude of expected impacts the program could have on achievable market potential. Significant uncertainty remains concerning how the program will be implemented, but RI's analysis included the following procedures and assumptions, describe below.

- Develop additional, "IRA measures" to supplement the original measure list developed for the MPS.
- HOMES includes a whole home retrofit measure that RI developed from the existing "residential new construction 20% improvement" measure.
- Measure saves 20% for existing construction, incremental cost is assumed to be $10,000
- Measure applies to population in a manner consistent with income distribution; two versions were applied: HOMES for customer base with <80% area median income (AMI), HOMES for customer base with 80%-150% AMI income; the <80% AMI measure was included in the specific program callout, "HOMES," whereas the 80%-150% measure was included in the EPE ENERGY STAR New Homes Program.
- All measure-level IRA rebates were applied as a model input and some EE measures include both IRA incentives and utility incentives
- EPE incentive rates were also applied to the remaining incremental cost of these measures, commensurate with the EPE income-qualified programs and the Residential Comprehensive program
- Administrative costs from relevant EPE programs, on a per-kWh basis, were used to account for the potential of increased program participation volume that may result from the IRA.
- 25c Tax Energy Efficient Home Improvement Credits apply to all shell and envelope measures, as well as many HVAC and water heating equipment measures (incl. air-source heat pumps, heat pump water heaters, among others), available to all customers.

After developing these measures and cost-estimates, Resource Innovations applied the measures within our model to estimate the potential impacts.

Our results indicate the IRA is likely to increase the total magnitude of available energy efficiency potential and accelerate the market diffusion of related EE technologies, leading to more rapid adoption and market maturation for these technologies. Given that there is some potential overlap between existing EPE Programs and the IRA measures, we believe the potential IRA impacts are best understood at this time by comparing to results of the base scenario and a model scenario with all base case assumption, plus those described above for IRA measures. While implementation of the IRA may differ substantially from the assumptions made for this analysis, we are providing these estimates in response to ongoing Federal policy efforts encapsulated within the IRA.

5 Technical Potential

Technical potential relates to base year load shares and reference case load forecasts for 2023 to 2042. Measure savings impacts are applied to the baseline data to estimate technical potential. The technical potential scenario estimates the savings potential when all technically feasible energy efficiency measures are fully implemented, while accounting for equipment turnover. This savings potential can be considered the maximum reduction attainable with available technology and current market conditions (e.g., currently available technology, building stock, and end uses as reflected in EPE forecasted sales). EE and LM potential scenarios that account for measures' costs and benefits and market adoption are discussed in subsequent report sections for economic potential and achievable potential, respectively.

5.1 Approach and Context

Technical potential represents a straightforward application of EE and LM measures to the baseline market context for EPE New Mexico. Technical potential is determined by the energy intensity of baseline consumption and the savings opportunities represented by EE and LM measures. Baseline conditions for electricity consumption inherently reflect historic and current economic conditions, the current configuration of the power system, policy context, and customer preferences.

Current and projected sales and load are based on the current and projected numbers of accounts served by economic sector. The types of loads present at these accounts are reflective of customers' economic sector, segment, and final demand for electricity services. Final demand for electricity is reflective of numerous, complex factors such as the set of available technologies that meet electricity end uses (e.g., HVAC for heating, cooling, and ultimately: comfort); the cost of technologies that produce electricity end uses; the price of electricity and other energy sources; customer demand for electricity services; and behavioral or other contextual factors that collectively drive customer decisions about energy consumption.

5.1.1 Energy Efficiency

Energy efficiency technical potential provides a theoretical maximum for electricity savings relative to the forecast baseline. Technical potential ignores all non-technical constraints on electricity savings, such as cost-effectiveness and customer willingness to adopt energy efficiency. For an EE potential study, technical potential refers to delivering less electricity to satisfy the same end uses. In other words, technical potential might be summarized as "doing the same thing with less energy, regardless of the cost."

RI applied estimated energy savings from equipment or non-equipment measures to all electricity end uses and customers. Since technical potential does not consider the costs or time required to achieve these electricity savings, the estimates provide an upper limit on savings potential. RI presents technical potential results as a single numerical value for the EPE NM service territory.

The core equation used in the residential sector energy efficiency technical potential analysis for each individual efficiency measure is shown in Equation 5-1 below, while the core equation used in the nonresidential sector technical potential analysis for each individual efficiency measure is shown in Equation 5-2, below.

Equation 5-1: Core Equation for Residential Sector Technical Potential

Technical Potential of Efficient Measures = Total Number of Households × Base Case Equipment Energy Use Intensity (kWh/unit) × Saturation Share × Remaining Factor × Applicability Factor × Savings Factor

Where:

Base Case Equipment Energy Use Intensity = the electricity used per customer per year by each base-case technology in each market segment; efficient technologies are applied to reduce this base case equipment energy use intensity.

Saturation Share = the fraction of the electricity end use consumption that may be reduced by applying efficient technology in each market segment. For example, for residential water heating, the saturation share would be the fraction of all residential electric customers that have electric water heating in their household.

Remaining Factor = the fraction of equipment that is not considered to already be energy efficient. To extend the example above, the fraction of electric water heaters that is not already energy efficient.

Applicability Factor = the fraction of the applicable units that is technically feasible for conversion to the most efficient available technology from an engineering perspective (i.e., it may not be possible to install a heat pump water heater for every home due to space constraints).

Savings Factor = the percentage reduction in electricity consumption resulting from the application of the efficient technology.

Equation 5-2: Core Equation for Nonresidential Sector Technical Potential

$$\text{Technical Potential of Efficient Measures} = \text{Total Stock Sq. Footage by Building Type by EDC} \times \text{Base Case Equipment Energy Use Intensity (kWh/unit)} \times \text{Equipment Saturation Share} \times \text{Remaining Factor} \times \text{Applicability Factor} \times \text{Savings Factor}$$

Where:

Total Stock Square Footage by Building Type = the forecasted square footage level for a given building type (e.g., office buildings).

Base Case Equipment Energy Use Intensity = the electricity used per square foot per year by each base-case equipment type in each market segment. In other words, the base case equipment energy-use intensity is the consumption of the electrical energy using equipment that the efficient technology replaces or affects.

Equipment Saturation Share = the fraction of the equipment electrical energy that is applicable for efficient technology in a given market segment. For example, for room air conditioners, the saturation share would be the fraction of all space cooling kWh in a given market segment that is associated with room air conditioner equipment.

Remaining Factor = the fraction of equipment that is not considered to already be energy efficient. For example, the fraction of electric water heaters that is not already energy efficient.

Applicability Factor = the fraction of the equipment or practice that is technically feasible for conversion to the efficient technology from an engineering perspective (i.e., it may not be possible to install VFDs on all motors in each market segment).

Savings Factor = the percentage reduction in electricity consumption resulting from the application of the efficient technology.

It is important to note that the technical potential estimate represents electricity savings potential at a specific point in time. In other words, the technical potential estimate is based on data describing *status quo* customer electricity use and technologies known to exist today. As technology and electricity consumption patterns evolve over time, the baseline electricity consumption will also change accordingly. For this reason, technical potential is a discrete estimate of a dynamic market. RI reported technical potential over a defined period, based on currently known DSM measures and observed electricity consumption patterns.

5.1.1.1.1 Addressing Naturally Occurring Energy Efficiency

EPE's baseline sale forecast includes the impacts of efficiency actions that are expected to occur in the absence of utility intervention. RI worked with EPE's forecasting group to understand how the sales forecasts incorporated two known sources of naturally occurring efficiency:

- **Codes and Standards:** The sales forecasts incorporated the impacts of known code changes. While some code changes have relatively little impact on overall sales, others— particularly the Energy Independence and Security Act (EISA) and other federal legislation—will have noticeable influence. Given the uncertainty associated with the implementation of the EISA backstop and current market trends, RI adjusted the future lighting baseline to the EISA-compliant standard.
- **Baseline Measure Adoption:** Sales forecasts typically exclude the projected impacts of future DSM efforts, but account for baseline efficiency penetration.

By properly accounting for these factors, the potential study represents the difference between the anticipated adoption of efficiency measures because of DSM efforts and the "business as usual" adoption rates absent any projected future impacts of utility-sponsored programs. This is true even in the technical and economic scenarios, where adoption was assumed to be 100%, and was particularly important in the achievable potential analysis, where RI estimated the measure adoption in a market featuring utility-sponsored programs.

5.1.2 Load Management

The concept of technical potential applies differently to load management than for energy efficiency. Technical potential for load management is effectively the magnitude of loads that can be managed during conditions when grid operators need peak capacity, ancillary services, or when wholesale energy prices are high. Which accounts are consuming electricity at those times? What end-uses are in play? Can those end-use loads be managed? Large C&I accounts generally do not provide the utility with direct control over end-uses. However, businesses will forego virtually all electric demand temporarily if the financial incentive is large enough.

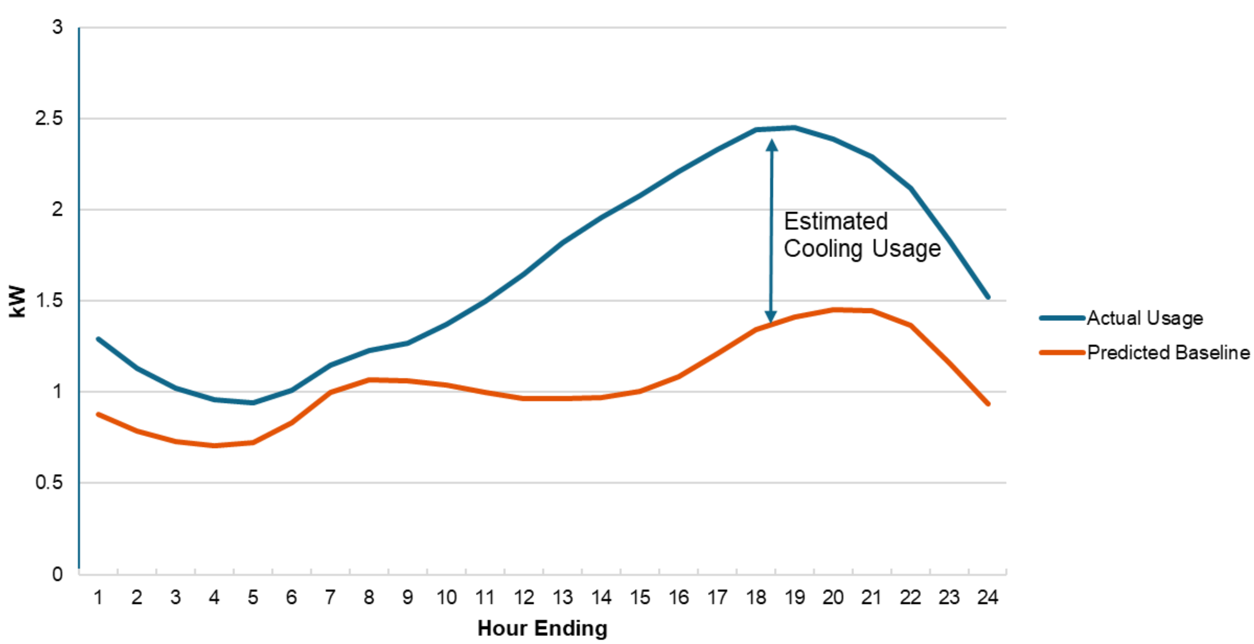
For residential and SMB accounts where LM means direct utility load control, technical potential for load management is limited by the loads that can be controlled remotely at scale. RI produced disaggregated weather-responsive load for all 8760 hours. This approach identifies weather-responsive customer loads available at times when the different grid applications are needed can vary substantially. Instead of producing disaggregated loads for the average residential customers, the study was produced for several customer segments, thereby allowing the study to identify which customers were cost-effective to recruit and which were not.

RI used interval data from EPE's load research sample for residential and non-residential customers. Technical potential, in the context of LM, is defined as the total amount of load available for reduction that is coincident with the period of interest. In the context of this study, LM capacity is defined as the system peak hour for the summer and winter seasons. Thus, two sets of capacity values are estimated: a summer capacity and a winter capacity.

As previously mentioned, all large C&I load is considered dispatchable, while residential and SMB LM capacity is based on specific end uses. For this study, it was assumed that summer LM capacity for residential customers would be comprised of AC, pool pumps, water heaters, and electric vehicle (EV) charging. For SMB customers, summer capacity would be based on AC load and EV charging. For winter capacity, residential LM capacity would be based on electric heating loads, water heaters, and EV charging. For SMB customers, winter capacity is comprised of electric heating and EV charging.

AC and heating load profiles for residential and SMB customers were generated with the load research sample provided by EPE. Loads for each sampled customer were combined with historical weather data to estimate hourly load as a function of weather conditions. AC and heating loads were estimated by first calculating the baseline load on days when cooling degree days (CDD) and heating degree days (HDD) were equal to zero, and then subtracting this baseline load. This methodology is illustrated by Figure 5-1 (a similar methodology was used to predict heating loads).

Figure 5-1: Methodology for Estimating Cooling Loads



This method was able to produce estimates for average AC/heating load profiles for several different customer segments within the residential and SMB sectors. Residential and SMB customers were segmented into four different groups based on annual energy consumption. Profiles for residential water heater and pool pump loads were estimated by utilizing end use load data from NREL's residential end use load shapes[1].

For loads eligible to provide LM services, system peak hours were identified using a seasonal peak period definition. Summer peak was defined as the period from 3:00PM to 6:00PM on summer days (June through August). Winter peak was defined as 7:00AM to 8:00AM on winter weekdays (November through March).

5.2 EPE Energy Efficiency Technical Potential

This section provides the results of the EPE energy efficiency technical potential for each of the three segments.

5.2.1 Summary

Table 5-1 summarizes the energy efficiency technical potential by sector associated with the identified potential. RI calculated levelized cost as the discounted sum of incremental cost over the study period divided by the discounted sum of lifetime energy savings over the period.

Table 5-1: EPE Energy Efficiency Technical Potential by Sector

Sector	Technical Potential (2023-2042)			
	Energy (GWh)	% of 2023 Base Sales	Demand (MW)	
			Summer	Winter
Residential	226	28%	86.9	46
Commercial	118	32%	38.4	23.7
Industrial	111	19%	14.6	14.1
Total	**455**	**26%**	**139.9**	**83.9**

[1] End-Use Load Profiles for the U.S. Building Stock from NREL and its research partners. https://www.nrel.gov/buildings/end-use-load-profiles.html

5.2.2 Sector Details

Figure 5-2 summarizes the EPE residential sector energy efficiency technical potential by end use and customer segment. The technical potential and subsequent estimates of EE potential shown in figures is expressed in energy units (kWh), unless otherwise stated.

Figure 5-2: EPE Residential EE Technical Potential– Cumulative 2042 kWh by End-Use

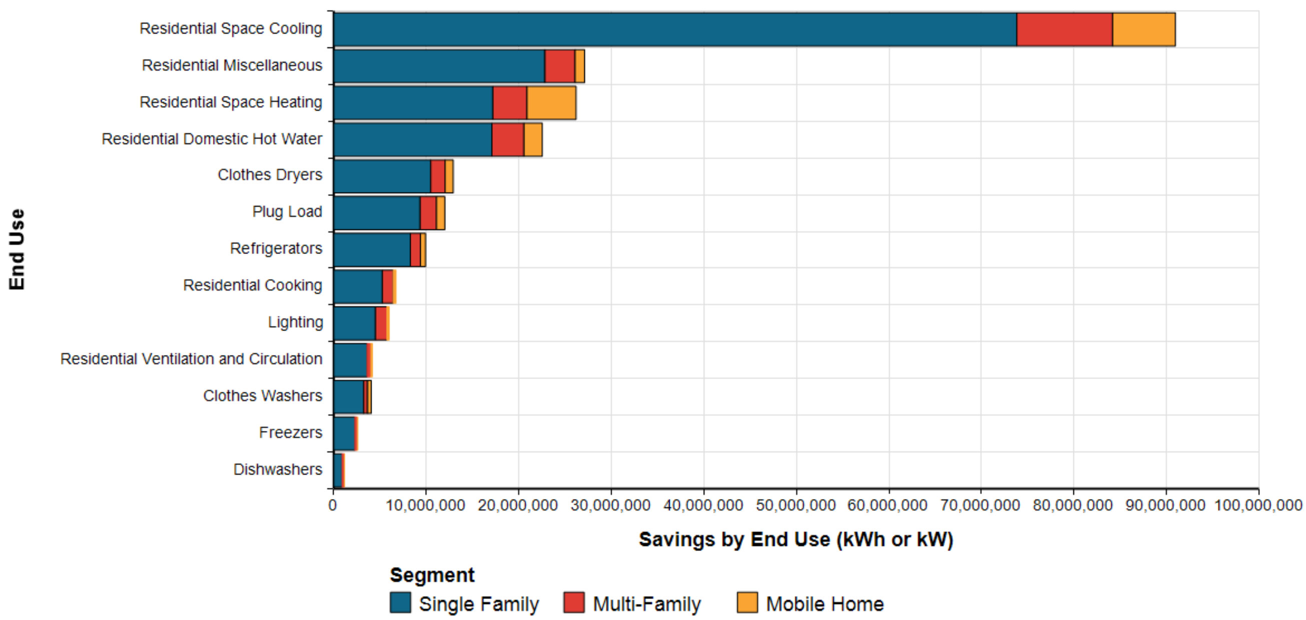


Figure 5-3 summarizes the EPE commercial sector EE technical potential by end use.

Figure 5-3: EPE Commercial EE Technical Potential – Cumulative 2042 kWh by End-Use

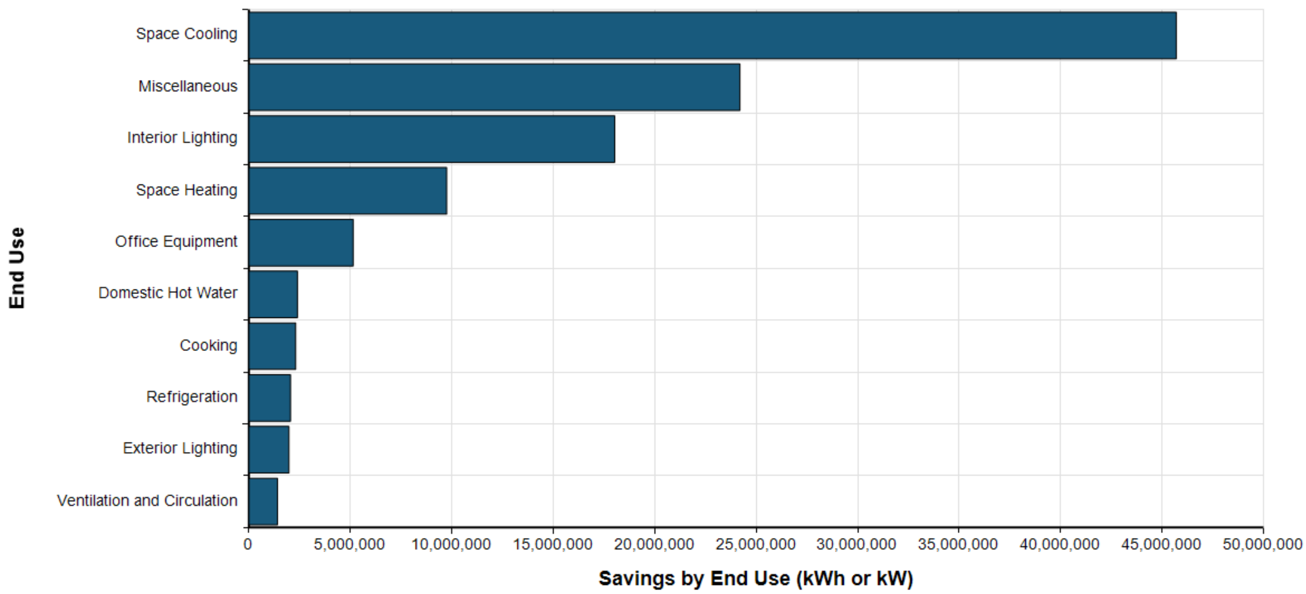


Figure 5-4 provides a summary of EPE energy efficiency technical potential contributions by commercial facility types analyzed in this study.

Figure 5-4: EPE Commercial EE Technical Potential– Cumulative 2042 kWh by Segment

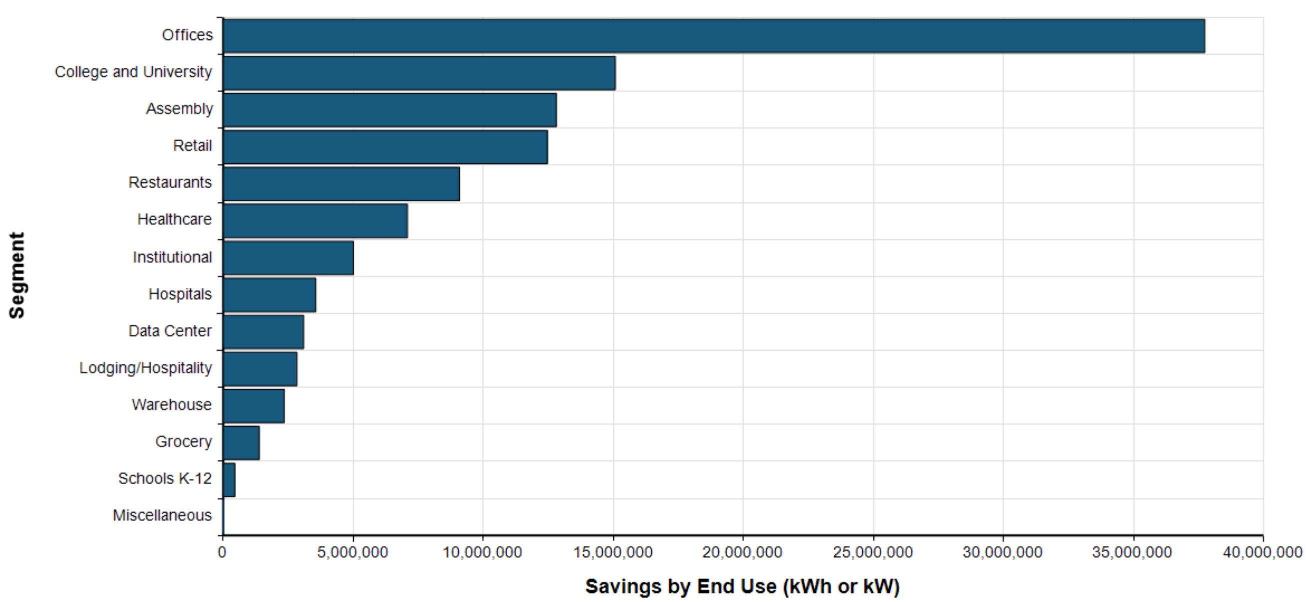


Figure 5-5 summarizes the EPE industrial sector energy efficiency technical potential by end use.

Figure 5-5: EPE Industrial EE Technical Potential – Cumulative 2042 (kWh) by End-Use

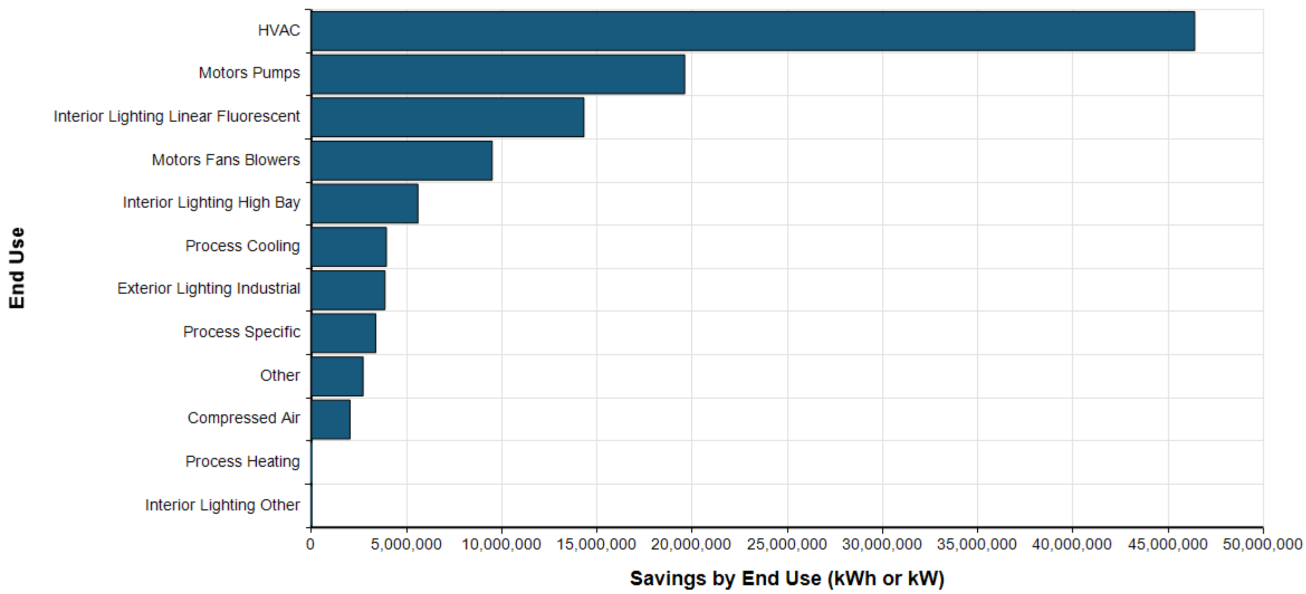
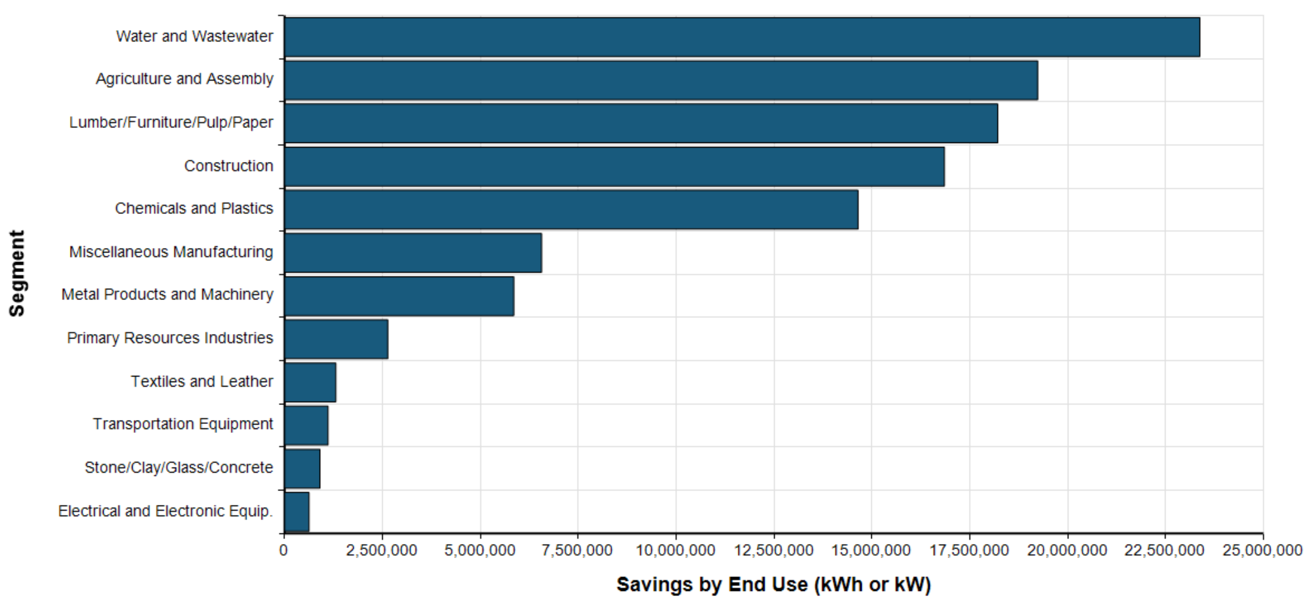


Figure 5-6 provides a summary of EPE energy efficiency technical potential contributions by industrial facility types analyzed in this study.

Figure 5-6: EPE Industrial EE Technical Potential Cumulative 2042 (kWh) by Segment



5.3 EPE Controllable Peak Load, by Customer Type

Technical potential for load management is defined for each class of customers as follows:

- Residential & SMB customers – Technical potential is equal to the aggregate load for all end uses that can participate in EPE's current and planned load management programs in which the utility uses specialized devices to control loads (i.e., direct load control programs). This includes AC/heating loads and electric vehicle charging for residential and SMB customers, and water heater and pool pump loads for residential customers.
- Large C&I customers – Technical potential is equal to the total amount of load for each customer segment. This reflects the contractual nature of most large C&I programs and the fact that for a large enough payment and small enough number of events, we assume large C&I customers would be willing to reduce their usage to zero; technical potential includes all customers, even though many have opted out of the LM rider and are therefore not actually eligible to participate in EPE programs.

As with the EE analysis, LM technical potential includes all customers, regardless of opt-out status or current participation in LM programs. Table 5-2 summarizes the seasonal DSM technical potential by sector:

Table 5-2: EPE LM Technical Potential by Sector[2]

Sector	Annual Technical Potential	
	Summer (Agg MW)	Winter (Agg MW)
Residential	104	64
SMB	11	4
Large C&I	437	353
Total	**552**	**421**

5.3.1 Residential and SMB Customers

Residential technical potential is summarized in Table 5-3. The potential is broken down by season and end use.

[2] The potentials have excluded the kW reduction from existing participation.

Table 5-3: EPE Residential LM Technical Potential

End Use	Summer MW	% of Residential Summer Peak	Winter MW	% of Residential Winter Peak
AC Cooling	84	51%	0	0%
Heating	0	0%	36	40%
Water Heater	20*	12%	28*	32%
Pool Pump	0.50*	0.3%	0.16*	0.2%
EV Charging	0.32**	0.2%	0.01**	0.01%
Total	**104**	**64%**	**64**	**72%**

*Based on NREL's end use load shapes[3]
**Based on Department of Energy (DOE) EVI-Pro Lite tool

Small and Medium Business technical potential is provided in **Table 5-4**.

Table 5-4: EPE SMB DSM Technical Potential

	Cooling		Heating		EV Charging	
SMB Segment	**Avg. kW**	**Agg. MW**	**Avg. kW**	**Agg. MW**	**Avg. kW**	**Agg. MW**
< 7,000 kWh	0.40	529	0.17	207	0.68	0.003
7,001-17,000 kWh	1.23	1,547	0.45	533	0.68	0.003
17,001-40,000 kWh	1.88	2,563	0.99	1,262	0.68	0.003
> **40,000 kWh**	4.31	5,985	1.58	2,047	0.68	0.003

5.3.2 Large C&I Customers

Table 5-5 provides the technical potential for C&I customers, broken down by LM segment. Most of the technical potential provided by large C&I customers comes from the largest class of customers.

[3] End-Use Load Profiles for the U.S. Building Stock. *The National Renewable Energy Laboratory (NREL)*. https://www.nrel.gov/buildings/end-use-load-profiles.html

Table 5-5: EPE Large C&I DSM Technical Potential

Segment	Annual Technical Potential	
	Summer (Agg MW)	Winter (Agg MW)
< 50 kW	30.8	16.2
51-100 kW	44.5	19.6
101-300 kW	104.3	83.7
> 300 kW	257.5	233.5
Total (Adjusted)	**437.1**	**353.0**

6 Economic Potential

Economic potential compares the expected costs and benefits of energy and demand savings provided by EE and LM measures and applies the utility cost test (UCT) to determine whether measures meet the scenario screening criterion of a benefit-cost ratio greater than 1. The economic potential is the sum of the energy savings associated with all measure permutations passing the economic screening.

The benefits of EE and LM measures under the UCT test represent avoided utility costs that result from energy and demand savings. These include avoided energy generation costs, avoided transmission and distribution costs, and avoided costs associated with lower peak capacity demands. The EPE and DEP system is now a winter-planning system.

6.1 DSM Cost-Effective Screening Criteria

RI applied the UCT test in this study, as directed by EPE. The UCT is calculated by comparing the total avoided electricity production and delivery costs of a measure to the cost of offering that measure in a utility-sponsored program. The utility cost is the cost of offering incentives and program administrative costs. UCT screening requires inputs for measure incentive rates and utility administrative costs. Resource Innovations used actual program cost data from EPE's 2021 program cycle.

For EE screening, the UCT test is applied to each energy efficiency measure based on installation of the measure in the first year of the study (i.e., avoided cost benefits begin in year one and extend through the useful life of the measure; incremental costs are incurred in year one). The screening aligns with EPE's avoided cost forecast and allows for a direct comparison of measure costs with these avoided cost benefits. The screening included measures with a UCT ratio of 1.0 or higher for determining economic potential.

For this analysis, the non-incentive and incentive costs for each sector is detailed in Table 6-1. These values are based on actual program spending from EPE and represent reasonable cost estimates in today's dollars with current technology.

Table 6-1: Utility Costs

Sector	Measure(s)	Start-up Incentive	Equipment & Install	Other (Acquisition Marketing, etc)	Incentive	Other Cost	Maintenance Marketing
Residential	HVAC switches Water heater switches Pool pump switches EV charging switches	$50	$257	$14	$30	$141	$0
Residential	Smart thermostats	$25	$335	$14	$25	$107	$0
Residential	Critical Peak Pricing (CPP) + technology	$0	$418	$0	$50	$25	$0
SMB	HVAC switches EV charging switches	$0	$163	$144	$	$3	$0
SMB	Smart thermostats	$0	$333	$47	$	$17	$0
SMB	CPP + technology	$0	$407	$144	$	$17	$0
Large C&I	Automated DR CPP Guaranteed Load Drop	$0	$911	$103	$	$4.20	$0

The cost of enrolling customers from each customer segment is compared to the marginal benefits provided by enrolling customers in that segment. Because LM programs are called relatively infrequently, very little benefit is derived from avoided energy costs to the point where they are insignificant. Instead, LM derives its value from avoided generation capacity and avoided transmission and distribution capacity. RI also assumes an attrition rate of 7.5% annually with a measure life of 15 years.

6.2 EPE Energy Efficiency Economic Potential

This section provides the results of the EPE energy efficiency economic potential for each of the three sectors.

6.2.1 Summary

Table 6-2 summarizes the EPE's cumulative energy efficiency economic potential by sector and levelized cost associated with the identified potential:

Table 6-2: EPE EE Economic Potential by Sector

Sector/Scenario		Energy (GWh)	% of 2023 Base Sales	Demand (MW)	
				Summer	Winter
Residential	UCT	168	21%	141	69
	SCT	150	18%	68	32
Commercial	UCT	48	13%	34	23
	SCT	56	15%	17	11
Industrial	UCT	61	10%	18	17
	SCT	77	13%	10	10
Total	UCT	**278**	**16%**	**193**	**110**
	SCT	**283**	**16%**	**95**	**52**

6.2.2 Sector Details

Figure 6-1 summarizes the EPE residential sector energy cumulative efficiency economic potential by end use.

Figure 6-1: EPE Residential EE Economic Potential (UCT) – Cumulative kWh 2042 by End-Use

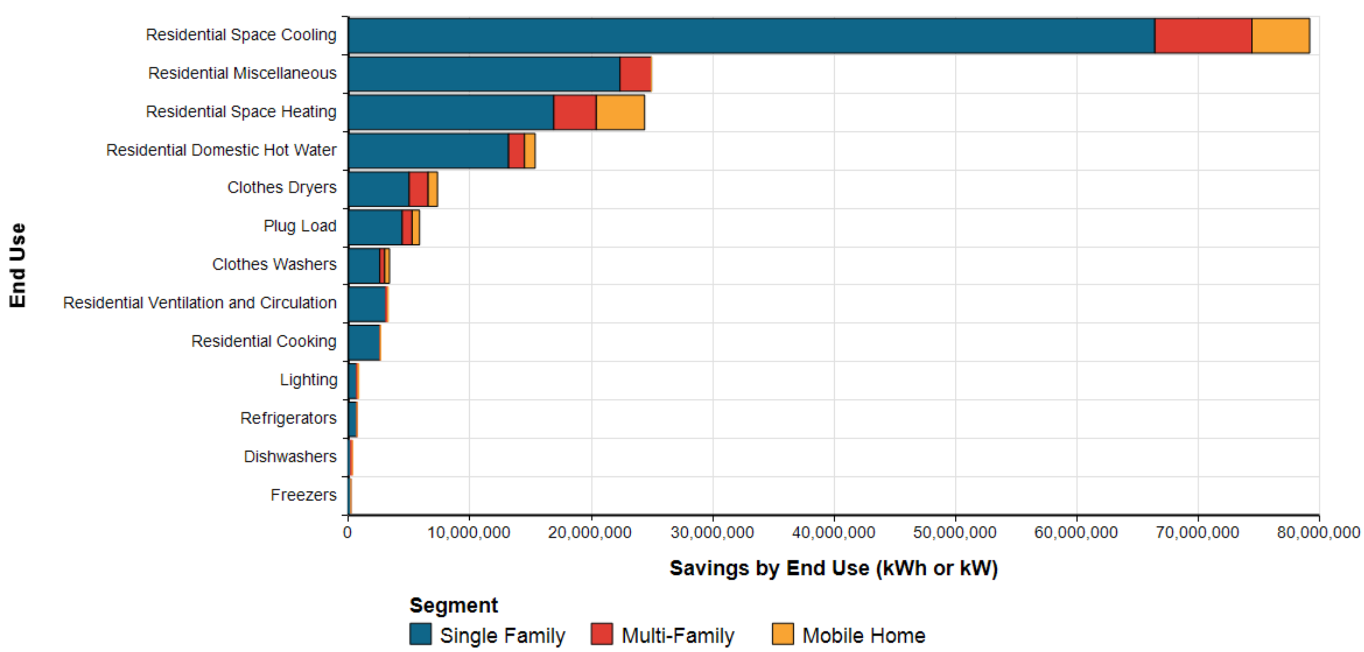


Figure 6-2 summarizes the EPE commercial sector EE economic potential by end use.

Figure 6-2: EPE Commercial EE Economic Potential – Cumulative 2042 (kWh) by End-Use

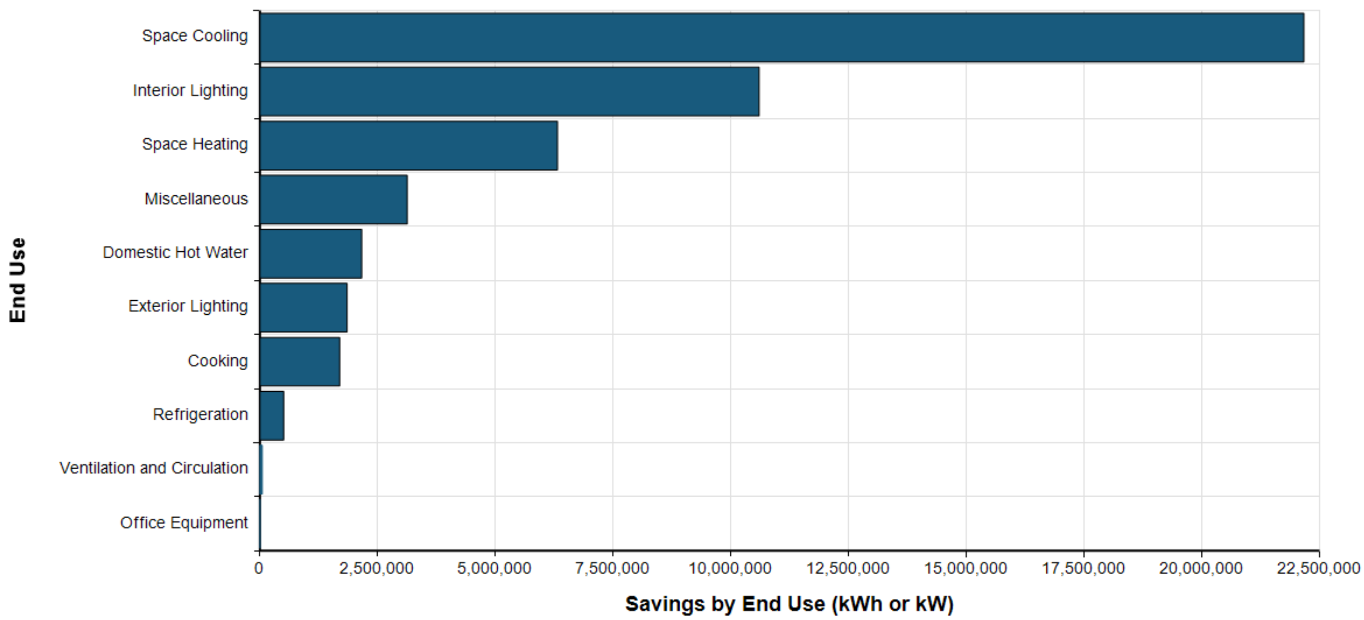


Figure 6-3 provides a summary of EPE energy efficiency economic potential contributions by commercial facility types analyzed in this study.

Figure 6-3: EPE Commercial EE Economic Potential – Cumulative 2042 (kWh) by Segment

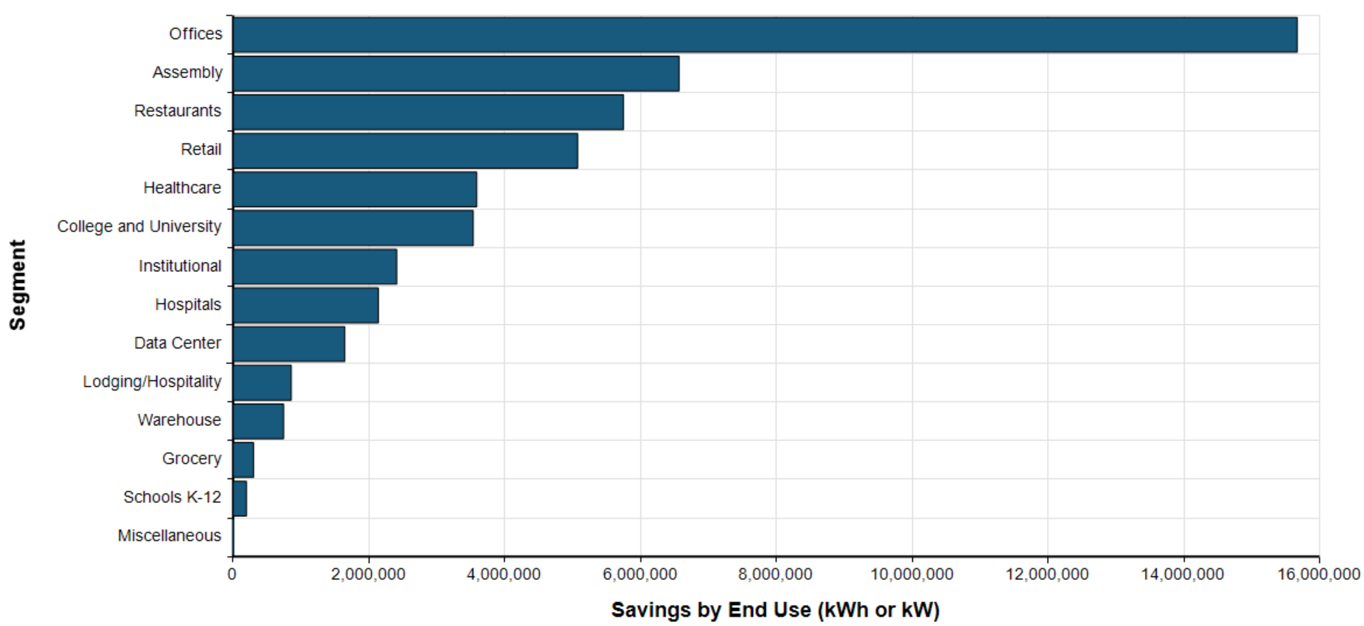


Figure 6-4 summarizes the EPE industrial sector energy efficiency economic potential by end use.

Figure 6-4: EPE Industrial EE Economic Potential – Cumulative 2042 (kWh) by End-Use

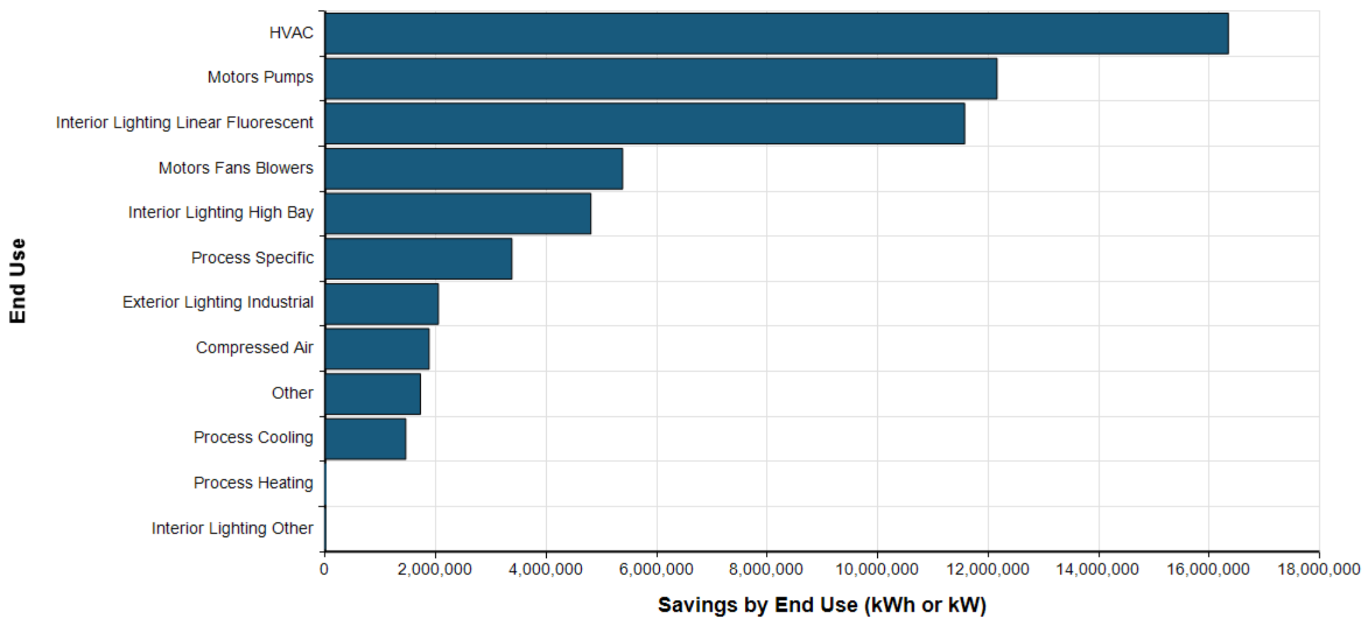
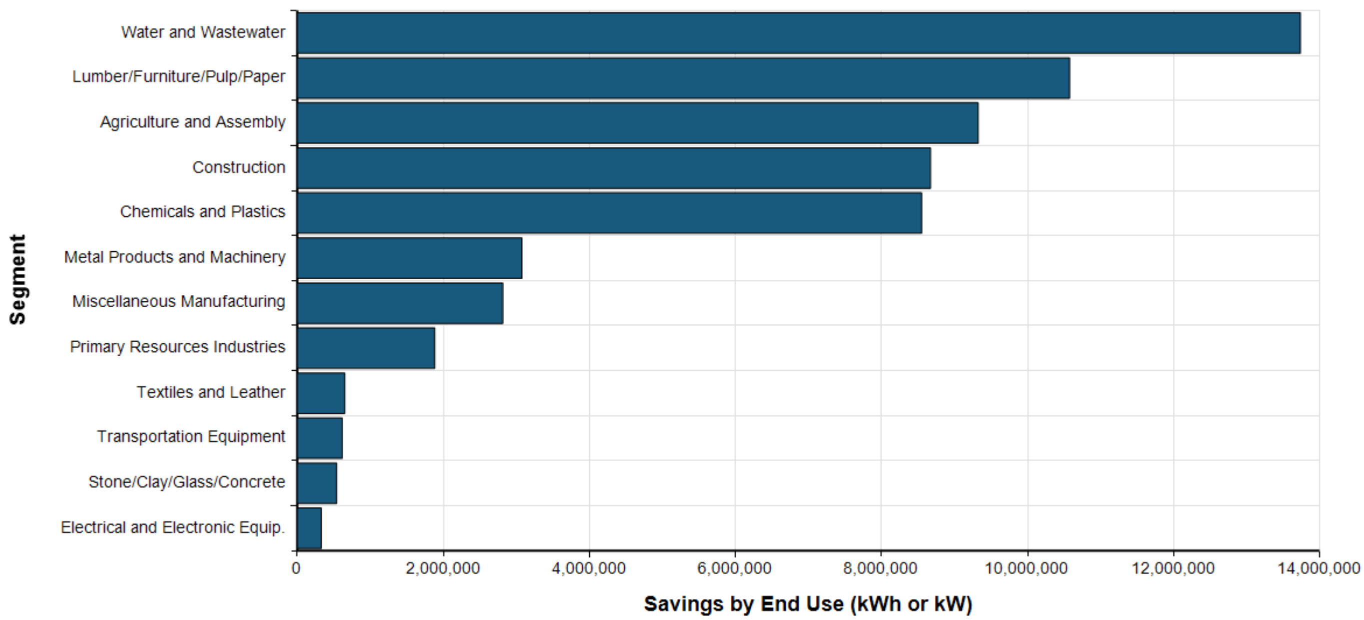


Figure 6-5 provides a summary of EPE energy efficiency technical potential contributions by industrial facility types analyzed in this study.

Figure 6-5: EPE Industrial EE Economic Potential – Cumulative 2042 (kWh) by Segment



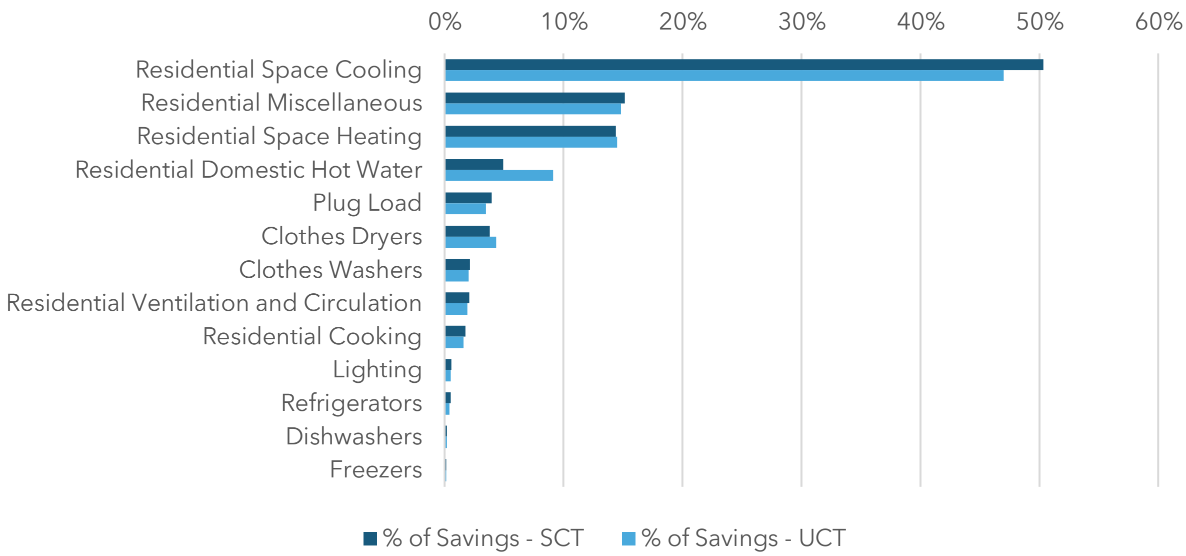
6.2.3 Societal Cost Test (SCT) Sensitivity

Resource Innovations conducted a Societal Cost Test (SCT) sensitivity analysis on the EPE result. We applied a starting year cost for carbon emissions equivalents at $130, based on recent guidance from EPA and at the direction of EPE. We used EPE's 2022 emissions rate from the utility's 2022 Corporate Sustainability Report. The results are as follows:

Item	Residential	Commercial	Industrial	System
2023 Base Load (GWh)	820,292	365,293	593,481	1,779,066
Economic Potential Energy Savings (GWh)	150,380	55,714	76,712	282,805
% of 2023 Base Load	18%	15%	13%	16%

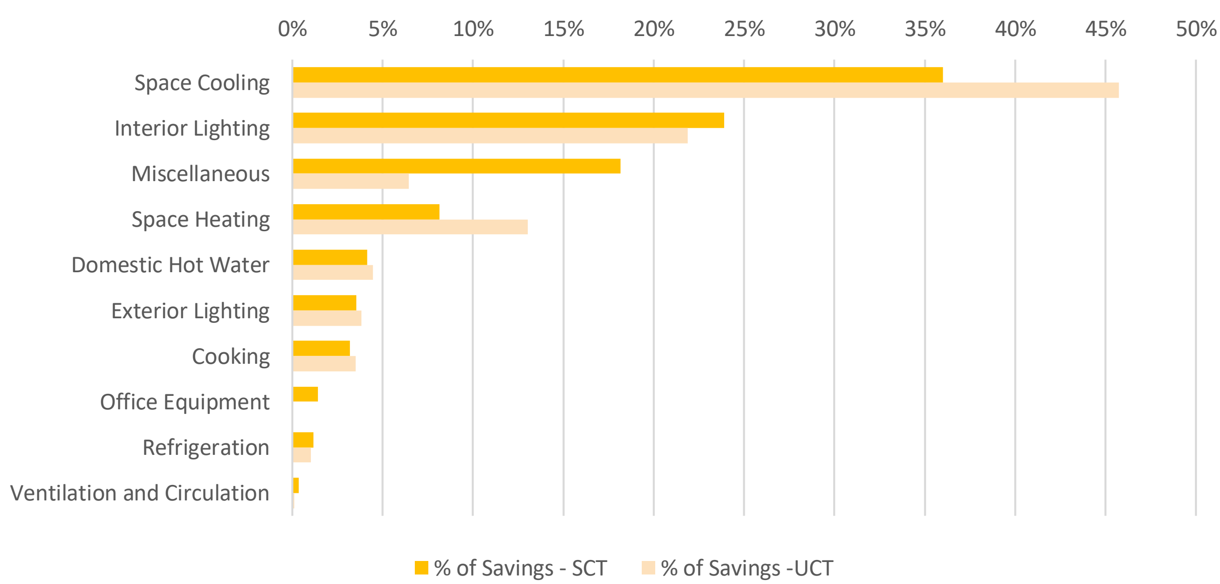
The SCT sensitivity indicated a preference for measures that have a higher energy savings rate versus those with a higher demand savings value; this led to increased estimates of energy savings potential but reduced estimates of capacity savings. The following figures illustrate the relatively minor differences in cost-effective energy end use potential for each sector.

Figure 6-6: Comparison of Residential End Use Potential Share: SCT vs. UCT



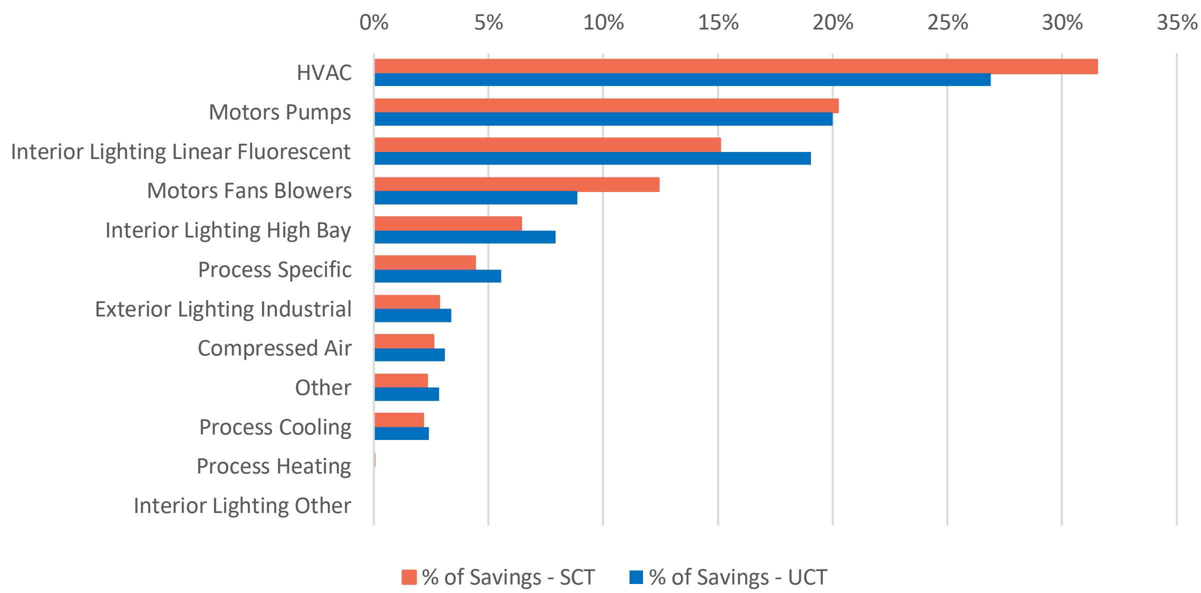
The following figure describes differences in Commercial End Use Potential:

Figure 6-7: Comparison of Commercial End Use Savings Potential, SCT vs. UCT



Results for the industrial sector are presented in the following figure. The industrial sector showed the largest difference in potential when comparing the two economic screening criteria.

Figure 6-8: Comparison of Industrial End Use Savings Potential, SCT vs. UCT



At the request of EPE, Resource Innovations conducted a follow-on analysis to examine the potential SCT benefits and costs for a residential customer converting from natural gas space heating and water heating to electric space heating and water heating. RI conducted additional research on carbon emissions equivalents from natural gas consumption, relying primarily on EPA sources, and focusing on single family homes. Input assumptions for emissions rates, in pounds per million standard cubic feet of delivered natural gas were as follows: 120,000 lbs/Mscf for carbon dioxide, 2.3 lbs/Mscf for methane, and 2.84 lbs/Mscf for nitrous oxide. RI used global warming potential factors of 28 and 298 for methane and nitrous oxide, respectively. RI also applied the EPE emissions factor and carbon cost used previously in the economic potential scenario to estimate the SCT ratio and equivalent annual costs (from the SCT perspective) for two fuel switching cases: 1) replacing a natural gas furnace with an air-source heat pump, and 2) replacing a natural gas water heater with a heat pump water heater. Average annual energy consumption was taken from the 2020 RECS data for New Mexico.

RI found that the increase in expected cost for purchasing and installing an air-source heat pump outweighed the emissions benefits created by avoiding natural gas consumption for single family residential space heating. These results are presented below in Table 6-3.

Table 6-3: Summary of Fuel Switching Sensitivity for Single-Family, Natural Gas Equipment Baseline

Societal Cost Test	EUL	SCT Benefit	SCT Cost	SCT
ASHP	15	$3,946.72	$5,331.00	0.74
HPWH	15	$1,794.70	$1,389.50	1.29

Since the various types of equipment examined in this sensitivity scenario have different effective useful life (EULs), RI also examined the SCT cost components on an equivalent annual basis. The equivalent annual costs are not a benefit cost ratio, so an alternative decision criterion is necessary. Instead of comparing benefits and costs to express a benefit-cost ratio greater than or equal to 1, the decision criterion for equivalent annual costs is to simply choose the lower cost option. The results yield the same conclusion as above, but the equivalent annual costs approach adjust for the differences in measure lives for different technologies. Table 6-4 expresses equipment purchase and install costs, fuel/energy delivery costs, and emissions costs on an equivalent annual basis.

Table 6-4: Comparing Equivalent Annual Costs of the SCT Perspective

Equipment/Technology	EUL	Discounted Sum of All Costs	Equivalent Annual Costs
NG Furnace	18	$11,435.12	$831.43
ASHP	15	$11,695.63	$979.70
Electrification of Space Heating, annualized cost savings:			-$148.27
NG Water Heater	10	$3,644.13	$427.20
HPWH	15	$2,995.82	$250.95
Electrification of DHW, annualized cost savings:			$176.25

These estimates rely on simple assumptions and actual impacts may differ from those presented here, which are based on data available at the time of this analysis. Both the SCT ratio and Equivalent Annual SCT Costs show positive net benefits for converting domestic hot water from natural gas to electricity in the EPE service territory. But, in the case of space heating, the increased costs of the ASHP equipment outweighs these benefits. Focusing on relative carbon equivalent emissions alone, electrifying natural gas space heating has the potential to generate an equivalent annualized benefit of $229 per converted home. The equivalent annualized benefit from carbon reduction achieved by electrifying natural gas water heating is $95 per converted home.

6.3 EPE Load Management Economic Potential

LM cost-effectiveness screening for economic potential determines whether the benefits of enrolling a marginal customer for a given customer segment into a load management program will outweigh the costs. This study uses UCT as screening criteria that considers program administrative and incentive costs. Since economic potential ignores the participation rate in the program (this is taken into account when determining the achievable potential), cost-effectiveness screening at this point only considers whether a marginal customer for a given customer segment is worth pursuing for participation in the program.

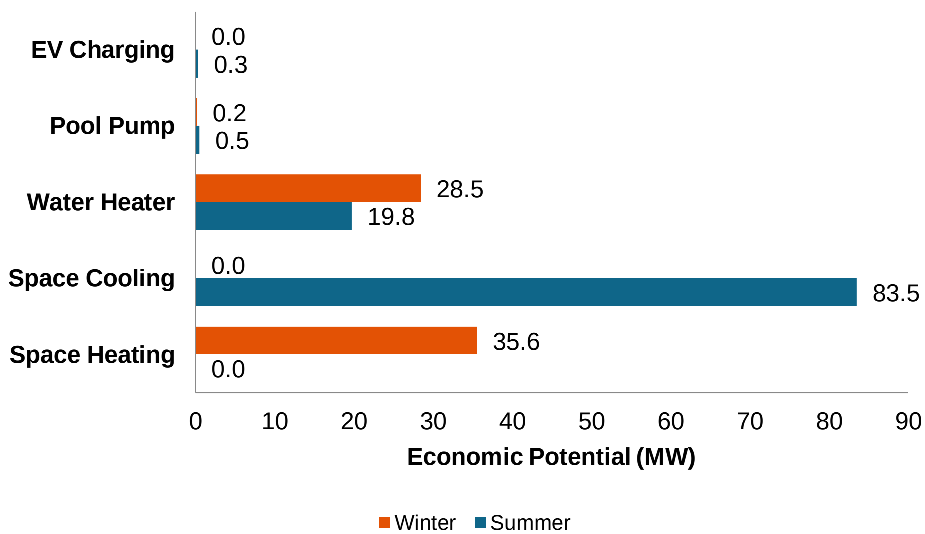
Cost effectiveness screening for economic potential revealed that virtually all of the technical potential presented in the prior chapter is cost-effective on a marginal basis. Therefore, economic potential for LM is the same as the technical potential. Summary results for the economic potential for EPE are presented in Table 6-3.

Table 6-3: EPE LM Economic Potential by Sector

Sector	Economic Potential	
	Summer (Agg MW)	Winter (Agg MW)
Residential	104	64
SMB	11	4
Large C&I	437	353
Total	**552**	**421**

Results for residential customer segments are presented in Figure 6-9. Note that each of the residential customer segments has a positive marginal net benefit, indicating that customers of each segment provide more benefit in the form of generation, transmission, and distribution capacity than they cost to enroll in the program and enable for load reduction.

Figure 6-9: Residential LM Economic Potential by End Use



Similar figures are presented for SMB and LCI customers.

Figure 6-10: SMB LM Economic Potential by End Use

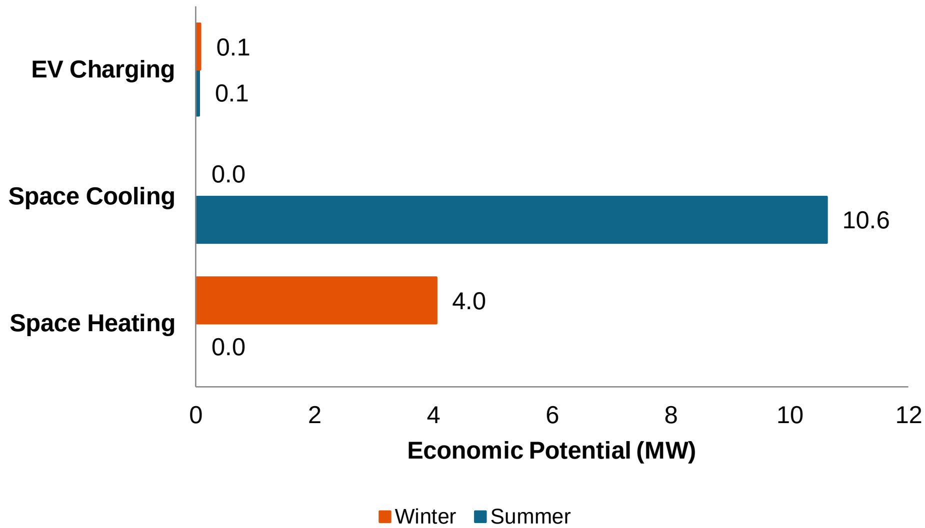
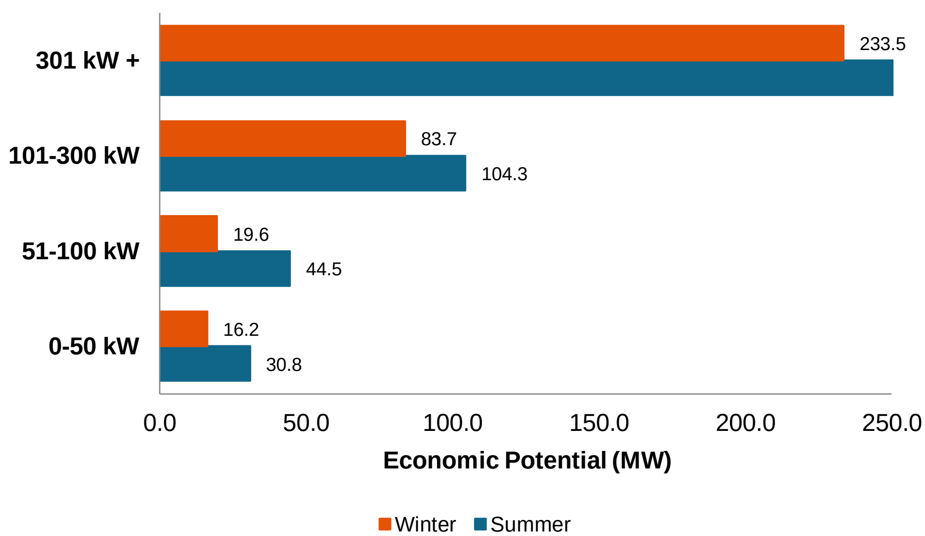


Figure 6-11: LCI LM Economic Potential



7 Achievable Market Potential

Achievable market potential estimates customer adoption rates for cost-effective measures in a market featuring utility-sponsored programs. We calibrated start year adoptions to recent EPE program performance (2020 – 2022), but future adoption of measures cost-effectively offered by EPE programs is driven by customer payback. Customer payback describes the number of years required for a customer to save an amount of energy equal to measure first costs (fewer incentive payments from utility programs). Utility-sponsored programs are typically focused on addressing market barriers and thereby boosting customer adoption of energy efficiency.

Customers may forego cost-effective EE and LM for a variety of reasons, some of which may include customer preferences for benefits arising from other types of investments; time and effort required to engage with program administration or satisfy program requirements; high initial costs, lack of time to identify, evaluate, acquire, and install new measures, long investment payback times, payback uncertainty, or even for the inconvenience. Customers may need to overcome non-economic barriers such as: lack of knowledge about electricity consumption and associated technology; principal-agent issues, a.k.a. "split incentive," problems; inability to capture non-market benefits; or economic conditions that potentially limit availability of some measures, increases measure costs, or affects customers' incomes. In addition to these economic tradeoffs and market barriers, economic research increasingly demonstrates the strong role that human behavior plays in affecting purchase decisions.

The EE/LM program lifecycle is designed explicitly to address the need for adaptive management of utility programs and continuously improve upon programs' ability to effectively confront market barriers. It also engages stakeholders to collaborate with utilities around program iterations and offer ideas from outside perspectives. The scope of this MPS does not include program design, as EPE has been offering EE and LM programs and has consistently followed the adaptive management principles of the EE/LM program lifecycle: market assessment, program design, program implementation, program evaluation, and adaptation. This study represents the market assessment component of this adaptive management cycle.

7.1 Customer Adoption Assumptions

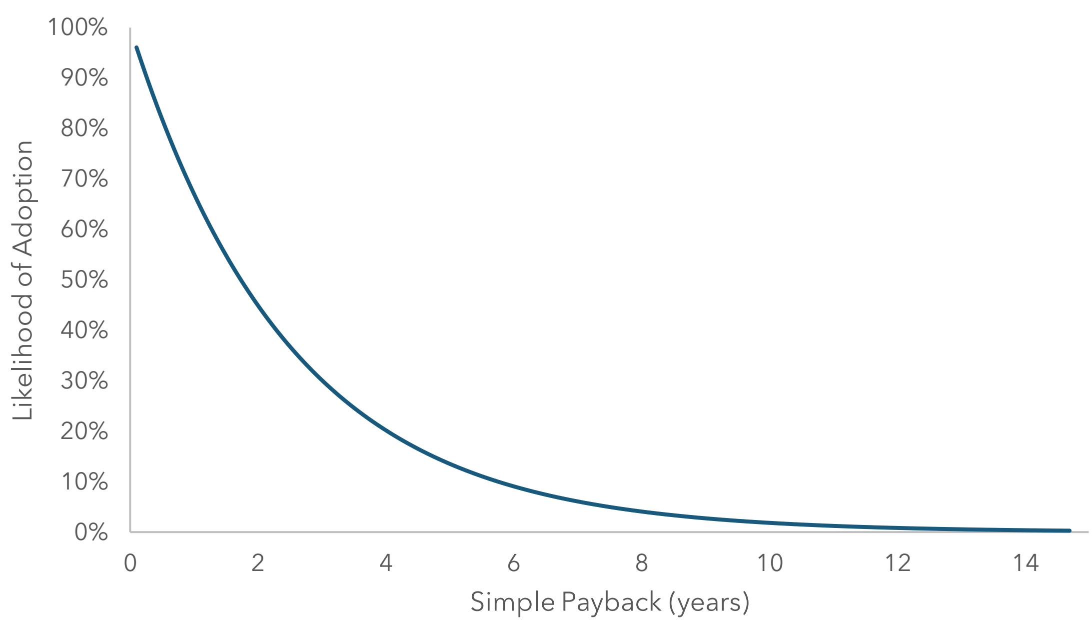
Describing the magnitude and degree of influence exerted by market barriers is not easily addressed in a quantitative manner, as attested by industry research. Market adoption estimates have been derived from econometric analysis of historic data, and researchers suggest the results may imply the presence of market barriers or reflect lower customer demand than projections from benefit-cost analysis.

7.1.1 MPS Adoption Curves

We apply customer payback acceptance curves to all cost-effective measures, which addresses one major market barrier: time preferences for money. Customers value immediate monetary savings much more than future savings, whether due to economics of behavioral factors. Additional barriers may exist, they may lead to lower-than-expected adoption rates, and payback acceptance curves may not fully describe the impacts of market barriers. The magnitude or degree of influence market barriers currently exert in the New Mexico service territory is not readily measured by existing data, though EM&V reports describe ongoing efforts to cost-effectively identify and address them though the EE/LM lifecycle.

The payback acceptance function that was applied is presented below in Figure 7-1. This function relates measures' simple payback time, in years, to the likelihood of the measure being adopted by a typical customer. At one year payback 67% of customers are estimated to adopt the measure; 45% would adopt at payback of two years, 30% would adopt at payback of three years, and adoption likelihood drops to 14% or lower after five or more years.

Figure 7-1: Payback Acceptance Curve for Achievable Potential



We used the customer payback acceptance curve to represent the ideal case of well-informed, rational customer decisions with low transaction costs. Owing to these MPS parameters and focus, we describe our estimates as expected EE and DSM potential in a market featuring utility-sponsored programs and incentives. The estimates assume adaptive program management is applied to successfully lower market and non-market barriers to customer adoption over time; the customer payback acceptance approach addresses only the barriers of investment costs and opportunity costs.

7.2 Achievable Market Potential Scenarios

The achievable market potential scenarios reflect customer adoption of measures that are cost-effective for EPE to offer within an existing program. Customer adoption rates are independent of the program design, as previously described, except for reducing customer first costs by the utility incentive amount. The three scenarios developed for this study are as follows:

- **Base** – reflects current EPE programs and program costs, incentive rates, and utility avoided cost benefits generated by the program; used primarily to calibrate first-year APS estimates to historic EPE program achievements. This scenario includes all cost-effective measures under the UCT and estimates of how the Inflation Reduction Act funds may impact programs.
- **High Incentive Scenario** – doubles incentive rates, with a limit at 75% of measure incremental cost limit and/or incremental cost caps applied, by measure, to backstop the incentive rate to one that provides an increase over the base scenario without causing the measure to fail the UCT test; applies utility avoided cost benefits from the base scenario and considers potential impact of IRA on program savings potential.
- **UCT + Emissions Scenario** - reflects current EPE programs and program costs, but includes the value of utility carbon reductions achieved by EE. Considers potential impact of the Inflation Reduction Act (IRA) on achievable savings potential and serves to explore the sensitivity of APS estimates to utility benefits.

7.3 Market Diffusion

Achievable market potential describes a subset of customers expected to take advantage of EPE EE and DSM programs. Data concerning individual customer purchases of EE and DSM equipment are not widely available and may be sparse in their coverage of EE and DSM measure opportunities. EPA's ENERGY STAR program estimates the market penetration of certified products, and EIA's periodic market assessments provide the primary basis for understanding current market penetration of EE technology.

In addition to these sources, EPE conducts residential appliance saturation surveys (RASS) to better understand the energy consumption of residential customers in the EPE service territory. Commercial and industrial building and equipment baselines are limited to the modeling and analysis available from EIA, EPE forecasting, and EPE customer data.

We apply the Bass diffusion model to estimate technology market penetration from customer adoptions over time. The Bass model is a widely accepted description of how new products and innovations spread through an economy over time. It was originally published in 1969, and in 2004 was voted one of the top 10 most influential papers published in the 50-year history of the peer-reviewed publication *Management Science*[5]. More recent publications by Lawrence Berkeley National Laboratories have illustrated the application of this model to conservation and demand management (CDM) in the energy industry[6].

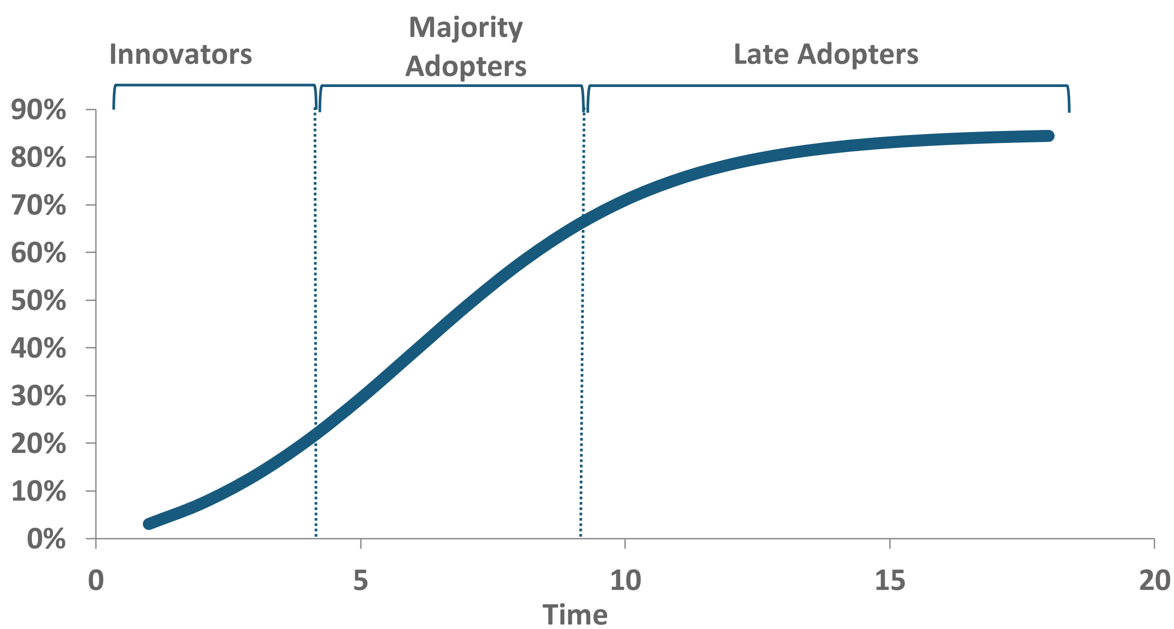
RI applied general technology diffusion curves describing expected market familiarity with EE measures, which will be enhanced by the ongoing efforts of EPE and stakeholders. The curves represent effective program marketing and sophisticated customer recruitment of cost-effective measures that meet customer payback acceptance criteria.

According to product diffusion theory, the rate of market adoption for a product changes over time. When the product is introduced, there is a slow rate of adoption while customers become familiar with the product. When the market accepts a product, the adoption rate accelerates to relative stability in the middle of the product cycle. The end of the product cycle is characterized by a low adoption rate because fewer customers remain that have yet to adopt the product. This concept of cumulative market saturation is illustrated in Figure 7-2.

[5] Bass, F. 2004. Comments on "A New Product Growth for Model Consumer Durables the Bass Model" (sic). *Management Science* 50 (12_supplement): 1833-1840. http://pubsonline.informs.org/doi/abs/10.1287/mnsc.1040.0300. Accessed 01/08/2016.

[6] Buskirk, R. 2014. Estimating Energy Efficiency Technology Adoption Curve Elasticity with Respect to Government and Utility Deployment Program Indicators. LBNL Paper 6542E. Sustainable Energy Systems Group, Environmental Energy Technologies Division. Ernest Orlando Lawrence Berkeley National Laboratory. http://escholarship.org/uc/item/2vp2b7cm#page-1. Accessed 01/14/2016.

Figure 7-2: Bass Model Cumulative Market Penetration



The Bass Diffusion model is a mathematical description of how the rate of new product diffusion in a market changes over time. Figure 7-2 depicts the cumulative market adoption with respect to time, $S(t)$. The rate of adoption in a discrete time period is determined by external influences on the market, internal market conditions, and the number of previous adopters. The following equation describes this relationship:

$$\frac{dS(t)}{dt} = \left(p + \frac{q}{m} * S(t-1)\right) * (m - S(t-1))$$

Where:

$\frac{dS(t)}{dt}$ = the rate of adoption for any discrete time period, t

p = external influences on market adoption

q = internal influences on market adoption

m = the maximum market share for the product

$S(t-1)$ = the cumulative market share of the product, from product introduction to time period *t-1*

Marketing is the quintessential external influence. The internal influences are characteristics of the product and market; for example: the underlying market demand for the product, word of mouth, product features, market structure, and other factors that determine the product's market performance. RI's approach applied literature reviews and analysis of secondary data sources to estimate the Bass model parameters. We then extrapolated the model to future years; the historic participation and predicted future market evolution serve as the program adoption curve applied to each proposed offering.

7.4 LM Achievable Market Potential

7.4.1 Participation Rates for DSM Programs

While economic potential examines marginal net benefits provided by customers, achievable program potential takes into account the estimated participation rate and how that affects the overall cost-effectiveness of the customer segment. The magnitude of resources that can be acquired is fundamentally the result of customer preferences, program or offer characteristics (including incentive levels), and how programs are marketed. How predisposed are specific customers to participate? What are details of specific offers and how do they influence enrollment rates? What is the level of marketing intensity and what marketing tactics are employed?

For program-based LM, participation rates are calculated as a function of the incentives offered to each customer group. For a given incentive level and participation rate, the cost-effectiveness of each customer segment is evaluated to determine whether the aggregate LM potential from that segment should be included in the achievable program potential. The following subsections describe how marketing/incentive level, participation rates, and technology costs are handled by this study.

7.4.2 Marketing and Incentive Levels for Programs

Several underlying assumptions are used to define three different marketing levels. The number of marketing attempts and the method of outreach are varied by marketing level, as described in Table 7-1. The enhanced case assumes a high marketing level for program-based LM, while the base case assumes a medium marketing level (the low marketing level was not utilized for this study). Within each marketing level, the participation rate for each customer segment is a function of the incentive level.

The specific tactics included in the low, medium, and high marketing scenarios are not prescriptive but are instead designed to provide concrete details about the assumptions used in the study. There is a wide range of strategies and tactics that can attain the same enrollment levels and the best approach for a jurisdiction is best developed through testing and optimizing the mix of marketing -tactics and incentives.

Table 7-1: Marketing Inputs for Residential Program Enrollment Model

Input	Marketing Level			
	No Marketing	Low	Medium	High
Number of marketing attempts (Direct mail)	0	5	5	8
Outreach mode	No marketing	Direct Mail	DM + Phone	DM + Phone
Installation required (%)	0%	100%	100%	100%
Attrition Rate	7.5%	7.5%	7.5%	7.5%

The incentive level and marketing inputs for each scenario determine the participation rate, assuming that the incentive is uniform across all customer segments within a given customer class.

7.4.3 Participation Models

The participation models for the residential and nonresidential customer segments use a bottom-up approach to estimate participation rates. These estimates have been crosschecked with mature programs in other jurisdictions to ensure that the estimated participation rates are reasonable.

Many DSM potential studies rely on top-down approaches which benchmark programs against enrollment rates that have been attained by mature programs. However, aggregated program results often do not provide enough detail to calibrate achievable program potential. In many cases, programs are not marketed to all customers, either because it is not cost-effective to market to all customers or budgets are capped by regulators. Enrollment rates are a function of specific offers and the extensiveness of marketing over many years. They also vary based on the degree to which DSM resources are utilized and tend to be higher when payments are high but actual events are infrequent, particularly among large C&I customers.

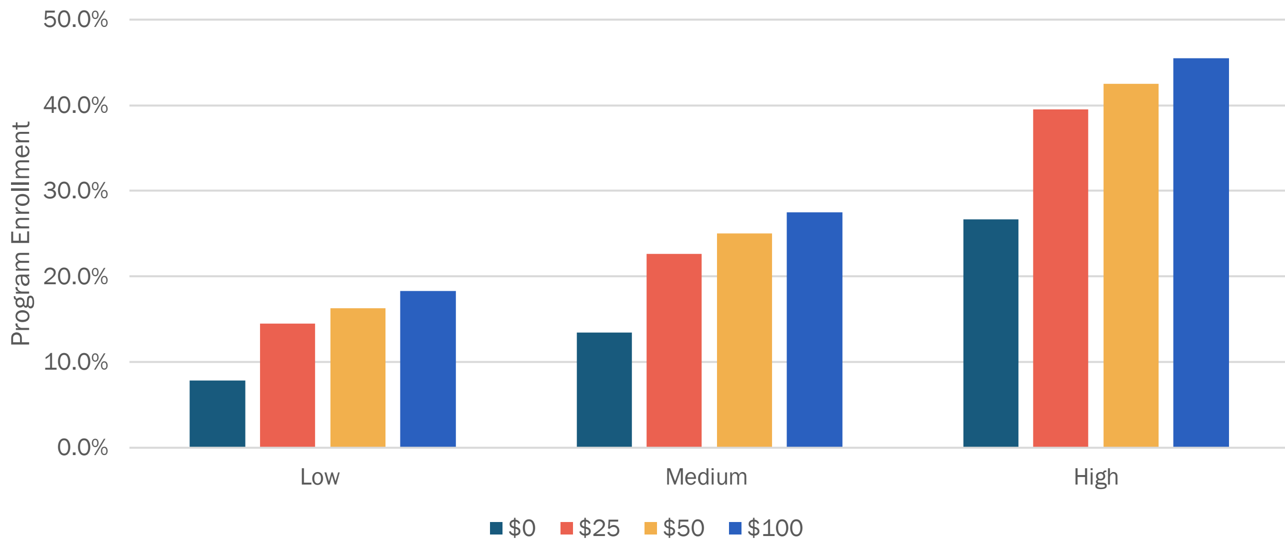
For residential customers, the RI approach to estimate participation rates involves five steps. The initial step required some modification due to available data:

- Estimate an econometric choice model based on who has and has not enrolled in DSM programs. The goal is to estimate the pre-disposition or propensity of different customers to participate in DR based on their characteristics. Because micro-level acquisition marketing data were not provided, we relied on differences in participation rates by usage level and electric heating. This information is based on prior micro-level analysis of program participation by RI.
- Incorporate information about how different offer characteristics influence enrollment likelihood. What is the incremental effect of incentives? How do requirements for on-site

installation affect enrollment rates? The two questions above have been analyzed using mature market specific data for residential customers. In each case, regression coefficients describe the incremental effect of each of the above factors on participation rates. It is important to note that while this element of the participation model was derived using non-EPE specific data, it is only being used to determine the incremental impact of additional incentives on participation (i.e., how does increasing the sign-up incentive increase participation in DSM programs). The underlying assumption is that customers' response to incremental financial incentives is similar across various geographic regions. Finally, as will be described in subsequent steps, the final participation model is calibrated too, so the baseline level of enrollment reflects the EPE New Mexico territory.
- Incorporate information about how marketing tactics and intensity of marketing influence participation rates. What is the effect of incremental acquisition attempts? Is there a bump in enrollment rates when phone and/or door-to-door recruitment is added to direct mail (including email) recruitment? This relies on data from side-by-side testing designed to explicitly quantify the effect of marketing tactics on enrollment rates.
- Calibrate the models to reflect actual enrollment rates attained by programs in EPE New Mexico territory used for benchmarking.
- Predict participation rates using specific tactics and incentive levels for programs with and without installation requirements. The enrollment estimates were produced for low, medium, and high marketing levels, where specific marketing tactics are specified for each scenario. All estimates reflect enrollment rates for eligible customers.

As a demonstration of how marketing level and incentive affects participation in DSM programs, Figure 7-3 shows an example of how the range of participation rates for each marketing level varies at several different incentive levels.

Figure 7-3: Program Enrollment for Residential Customer Segments Under Different Marketing and Incentive Levels



For SMB customers, a similar approach was used to estimate participation levels. However, these customers tend to have lower enrollments than larger nonresidential customers and were scaled accordingly. SMB customers tend to exhibit roughly 40% of the uptake of residential customers, based on data from other utilities, which have extensively marketed these programs. We noted that current EPE enrollments are somewhat lower than projections based on benefit cost analysis, but we adhered to the approach of focusing on benefit cost analysis and assuming programs lower market barriers over time. A description of this approach is presented in the introduction to Section 7. We also learned from EPE that the SMB program focus will shift to a "bring-your-own-kW' approach for recruiting participants to provide winter DSM capacity. This change reflects a shift from direct utility load control to more of a price-response program. While this change increases the total available capacity to all coincident winter loads from SMB customers, price-response programs have historically been roughly half as effective as direct load control programs; we therefore expect enrollment rates to decline while the program contemporaneously expands to recruit load from additional end uses.

For large nonresidential customers, enrollment levels were predicted as a function of load rather than the number of customers, since large customers tend to have relatively high participation rates and commit to relatively large demand reductions on a percentage basis. For these customers, publicly available data on DSM programs offered by other utilities were used to model program participation rates. For each large non-residential customer segment, participation was estimated as a function of incentive level and number of dispatch hours, based on publicly available information on program capacity, dispatch events, and incentive budgets.

7.5 EPE Energy Efficiency Program Potential

This section provides the results of the EPE EE achievable program potential for each of the three segments.

7.5.1 Summary

Table 7-2 summarizes the short-term (5-year), medium (10-year) and long-term (20-year) EPE portfolio EE program potential for the Base, High Incentive, and UCT + Emissions scenarios. Impacts are presented as both cumulative impacts and annual incremental impacts at each time step. The cumulative impacts view is important when using MPS results for resource planning purposes because it accounts for how the incremental addition of EE savings will impact the overall system load and load impacts likely to occur as measures reach the end of their useful lives. Annual impacts align with how utilities report their EE achievements in annual cost recovery filings.

Table 7-2: EPE EE Program Potential

Scenario	Metric	2027	2032	2042
Base	Annual Incremental Energy (MWh)	17,364	18,925	16,374
High Incentive Case	Annual Incremental Energy (MWh)	18,665	20,235	17,374
UCT + Emissions	Annual Incremental Energy (MWh)	22,468	24,123	19,570
Base	Annual Incremental Summer Peak Demand (MW)	5	5	5
High Incentive Case	Annual Incremental Summer Peak Demand (MW)	5	6	5
UCT + Emissions	Annual Incremental Summer Peak Demand (MW)	6	7	6
Base	Annual Incremental Winter Peak Demand (MW)	4	4	3
High Incentive Case	Annual Incremental Winter Peak Demand (MW)	4	4	3
UCT + Emissions	Annual Incremental Winter Peak Demand (MW)	5	5	3
Base	Cumulative Energy (MWh)	59,494	128,485	171,591
High Incentive Case	Cumulative Energy (MWh)	65,022	140,464	189,778
UCT + Emissions	Cumulative Energy (MWh)	79,094	169,347	220,026
Base	Cumulative Summer Peak Demand (MW)	16	37	54
High Incentive Case	Cumulative Summer Peak Demand (MW)	18	39	57
UCT + Emissions	Cumulative Summer Peak Demand (MW)	23	51	68
Base	Cumulative Winter Peak Demand (MW)	14	29	36
High Incentive Case	Cumulative Winter Peak Demand (MW)	15	33	42
UCT + Emissions	Cumulative Winter Peak Demand (MW)	18	40	47

We assigned measures to EPE programs for all achievable market potential scenarios; programs apply to either residential or non-residential customers, so we will combine the commercial and industrial economic sectors in subsequent reporting. Participant and program costs associated with achievable program potential scenarios include the following:

- **Program incentives:** Financial incentives paid by energy-efficiency programs to subsidize purchases of energy-efficiency measures.
- **Program administration costs:** Administrative, marketing, promotional, and other costs associated with managing programs designed to achieve energy-efficiency savings.
- **Total program acquisition costs:** Total incentive and non-incentive program costs per sum of annual incremental energy savings achieved.
- **Participant costs:** Incremental costs to purchase, install, and maintain energy-efficiency measures, less utility incentives.

Table 7-3 lists estimated participant and program costs associated with the theoretically achievable scenarios over the first 5 program years.

Table 7-3: EPE Participation and Program Costs by Scenario (cumulative through 2027)

Scenario	Program Sector	Program Incentives ($M)	Program Admin ($M)	Participant Costs ($M)	Levelized Cost ($/kWh)
Base	Residential	$4.87	$4.43	$7.05	$0.07
Base	NonRes	$2.28	$4.33	$2.94	$0.07
Base	Total	$7.15	$8.77	$9.99	$0.07
High Incentive Case	Residential	$10.44	$4.86	$4.05	$0.12
High Incentive Case	NonRes	$4.79	$5.00	$1.60	$0.08
High Incentive Case	Total	$15.22	$9.86	$5.65	$0.10
UCT + Emissions	Residential	$9.34	$6.03	$13.73	$0.09
UCT + Emissions	NonRes	$3.88	$5.79	$5.01	$0.07
UCT + Emissions	Total	$13.22	$11.81	$18.74	$0.08

7.5.2 Residential Program Details

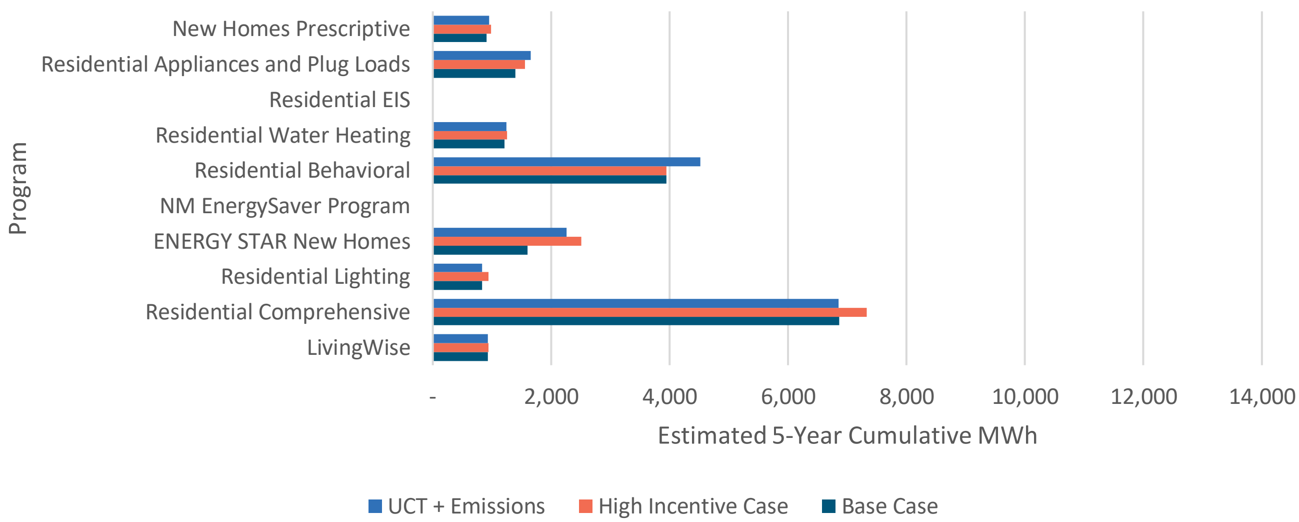
Table 7-4 summarizes the short-term (5-year), medium term (10-year) and long-term (20-year) cumulative residential energy efficiency program potential for the Base, High Incentive, and UCT + Emissions scenarios. Impacts are presented as both cumulative impacts and annual incremental impacts over the stated time horizon (5 years, 10 years, or 20 years):

Table 7-4: EE Residential Program Potential

Scenario	Metric	2027	2032	2042
Base	Annual Incremental Energy (MWh)	11,298	12,940	11,685
High Incentive Case	Annual Incremental Energy (MWh)	11,677	13,339	11,962
UCT + Emissions	Annual Incremental Energy (MWh)	14,362	16,080	13,084
Base	Annual Incremental Summer Peak Demand (MW)	4	4	4
High Incentive Case	Annual Incremental Summer Peak Demand (MW)	4	4	4
UCT + Emissions	Annual Incremental Summer Peak Demand (MW)	5	6	4
Base	Annual Incremental Winter Peak Demand (MW)	3	3	2
High Incentive Case	Annual Incremental Winter Peak Demand (MW)	3	3	2
UCT + Emissions	Annual Incremental Winter Peak Demand (MW)	4	4	2
Base	Cumulative Energy (MWh)	33,159	72,279	100,476
High Incentive Case	Cumulative Energy (MWh)	34,684	75,723	107,017
UCT + Emissions	Cumulative Energy (MWh)	44,087	96,050	127,860
Base	Cumulative Summer Peak Demand (MW)	11.3	26	40
High Incentive Case	Cumulative Summer Peak Demand (MW)	12	27	41
UCT + Emissions	Cumulative Summer Peak Demand (MW)	16	37	52
Base	Cumulative Winter Peak Demand (MW)	9.6	21	25
High Incentive Case	Cumulative Winter Peak Demand (MW)	11	23	29
UCT + Emissions	Cumulative Winter Peak Demand (MW)	14	29	34

Figure 7-4, illustrates the relative contributions to the overall residential program potential by program for the Base, High Incentive, and UCT + Emissions scenarios.

Figure 7-4: EPE Residential 5-Yr Cumulative Potential by Program



Detailed program results for the short-term residential EE programs are provided in Table 7-5.

Table 7-5: EPE Residential Program Potential (cumulative through 2027)

Program Scenario	Metric	Living Wise	Residential Comprehensive	Residentia l Lighting	ENERGY STAR New Homes	NM EnergySaver Program	Residential Behavioral	Residential Water Heating	Residen tial EIS	Residential Appliances and Plug Loads
Base	Energy (MWh)	934	6,862	837	1,602	0	3,946	1,210	0	1,399
High Incentive Case		940	7,325	945	2,509	0	3,946	1,249	0	1,552
UCT + Emissions		934	6,850	837	2,258	0	4,515	1,241	0	1,652
Base	Summ er kW	134	3,384	104	563	0	1,044	186	0	202
High Incentive Case		135	3,220	119	932	0	1,044	191	0	241
UCT + Emissions		134	3,386	104	645	0	1,116	190	0	232
Base	Winter kW	147	2,038	76	371	0	730	240	0	177
High Incentive Case		147	2,724	85	679	0	729	247	0	201
UCT + Emissions		147	2,024	76	443	0	798	245	0	206
Base	Progra m Cost ($T)	143	1,258	106	950	0	481	265	0	119
High Incentive Case		144	2,328	158	1,866	0	481	304	0	200
UCT + Emissions		143	1,269	106	1,348	0	596	270	0	159
Base	Leveliz ed Cost ($/kWh)	$0.04	$0.05	$0.03	$0.16	0	$0.03	$0.06	$0.47	$0.02
High Incentive Case		$0.04	$0.08	$0.04	$0.20	0	$0.03	$0.06	$0.48	$0.03
UCT + Emissions		$0.04	$0.05	$0.03	$0.16	0	$0.03	$0.06	$0.44	$0.03

To analyze the costs and benefits of the program potential scenarios, RI used a number of common test perspectives in the MPS, consistent with the California Standard Practice Manual[7]:

- Total resource cost (TRC): Calculated by comparing the total avoided electricity production and the avoided delivery costs from installing a measure, to that measure's incremental cost. The incremental cost is relative to the cost of the measure's appropriate baseline technology.
- Utility cost test (UCT): Calculated by comparing total avoided electricity production and avoided delivery costs from installing a measure, to the utility's cost of delivering a program containing that measure. Costs include incentive and non-incentive costs.
- Participant cost test (PCT): Calculated by dividing electricity bill savings for each installed measure, by the incremental cost of that measure. The incremental cost is relative to the cost of the measure's appropriate baseline technology.
- Ratepayer Impact Measure (RIM): Calculated by comparing the total avoided electricity production and the avoided delivery costs from installing a measure, to the utility's revenue impacts from lost sales and program delivery.

[7] California Standard Practice Manual: Economic Analysis of Demand-Side Program and Projects. California Public Utilities Commission. San Francisco, CA. October 2001.

- Societal Cost Test (SCT): Calculated by comparing the total avoided electricity production, delivery, and emissions costs of associated CO2 equivalents with incremental measure and utility program administration costs.

RI shows achievable program potential estimates and benefits cost ratios according to current administrative cost data provided to RI by EPE. Detailed program design is not part of this scope of work; RI therefore examined the components of the administrative costs provided by EPE and applied them on a dollar-per-kilowatt-hour basis. Table 7-6 provides the net benefits and benefit-to-cost ratios of the UCT + Emissions Scenario scenario, by sector:

Table 7-6: EPE Cost-Benefit Results – Residential Programs (cumulative through 2027)

Cost-Effectiveness Test	LivingWise	Residential Comprehensive	Residential Lighting	ENERGY STAR New Homes	NM EnergySaver Program	Residential Behavioral	Residential Water Heating	Residential EIS	Residential Appliances and Plug Loads	New Homes Prescriptive
UCT Net Benefits	$0.23	$9.22	$0.24	$1.26	$0.00	$1.11	$0.57	$0.00	$0.51	$1.10
UCT Ratio	2.60	5.05	3.30	1.81	N/A	2.54	2.82	0.42	4.21	2.74
TRC Net Benefits	$0.23	$7.28	$0.17	-$0.05	$0.00	$1.11	$0.24	$0.00	$0.30	$0.60
TRC Ratio	2.60	2.73	1.96	0.98	N/A	2.54	1.38	0.14	1.82	1.52
PCT Net Benefits	$0.38	$2.94	$0.34	$0.57	$0.00	$1.56	$0.92	$0.00	$0.44	$0.35
PCT Ratio	5.81	1.91	3.37	1.28	N/A	3.16	2.94	0.40	2.47	1.45
RIM Net Benefits	-$0.146	$4.34	-$0.17	-$0.63	$0.00	-$0.44	-$0.68	$0.00	-$0.14	$0.25
RIM Ratio	0.72	1.61	0.67	0.82	N/A	0.81	0.57	0.33	0.83	1.16
SCT Net Benefits	$0.495	$13.033	$0.506	$2.979	$0.000	$2.543	$1.151	$0.000	$0.928	$1.753
SCT Ratio	8.57	14.21	16.10	4.47	N/A	N/A	7.63	3.28	14.33	5.83

7.5.3 Non-Residential Program Details

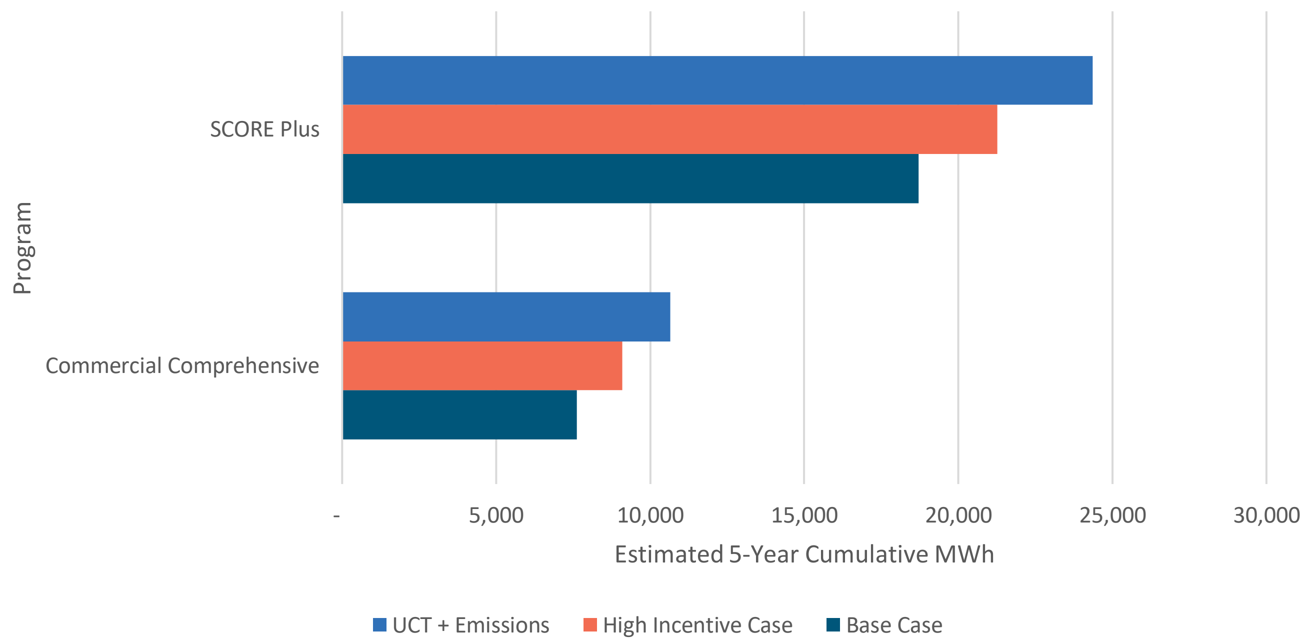
Table 7-7 summarizes the short-term (5-year), medium term (10-year) and long-term (25-year) cumulative residential energy efficiency program potential for the Base, High Incentive, and UCT + Emissions scenarios, presented as both cumulative and sum of annual impacts:

Table 7-7: EPE EE Non-Residential Program Potential

Scenario	Metric	2027	2032	2042
Base	Annual Incremental Energy (MWh)	6,066	5,985	4,689
High Incentive Case	Annual Incremental Energy (MWh)	6,987	6,896	5,411
UCT + Emissions	Annual Incremental Energy (MWh)	8,105	8,043	6,486
Base	Annual Incremental Summer Peak Demand (MW)	1	1	1
High Incentive Case	Annual Incremental Summer Peak Demand (MW)	1	1	1
UCT + Emissions	Annual Incremental Summer Peak Demand (MW)	2	2	1
Base	Annual Incremental Winter Peak Demand (MW)	1	1	1
High Incentive Case	Annual Incremental Winter Peak Demand (MW)	1	1	1
UCT + Emissions	Annual Incremental Winter Peak Demand (MW)	1	1	1
Base	Cumulative Energy (MWh)	26,335	56,206	71,115
High Incentive Case	Cumulative Energy (MWh)	30,338	64,741	82,761
UCT + Emissions	Cumulative Energy (MWh)	35,007	73,297	92,166
Base	Cumulative Summer Peak Demand (MW)	5	11	13
High Incentive Case	Cumulative Summer Peak Demand (MW)	6	12	16
UCT + Emissions	Cumulative Summer Peak Demand (MW)	7	13	17
Base	Cumulative Winter Peak Demand (MW)	4	8	10
High Incentive Case	Cumulative Winter Peak Demand (MW)	5	10	12
UCT + Emissions	Cumulative Winter Peak Demand (MW)	5	10	13

Figure 7-5 illustrates the relative contributions to the overall non-residential program potential by program for the Base, High Incentive, and UCT + Emissions scenarios.

Figure 7-5: Non-Residential 5-Yr Cumulative Potential by Program



Detailed program results for the short-term non-residential EE programs are provided in Table 7-8.

Table 7-8: EPE Non-Residential Program Potential (cumulative through 2027)

Program Scenario	Metric	Commercial Comprehensive	SCORE Plus
Base	Energy (MWh)	7,621	18,714
High Incentive Case		9,083	21,255
UCT + Emissions		10,652	24,355
Base	Summer kW	2,582	2,454
High Incentive Case		3,117	2,785
UCT + Emissions		3,331	3,195
Base	Winter kW	1,528	2,369
High Incentive Case		1,894	2,689
UCT + Emissions		1,827	3,084
Base	Program Cost ($T)	2,419	4,003
High Incentive Case		3,560	5,329
UCT + Emissions		3,626	5,908
Base	Levelized Cost ($/kWh)	$0.08	$0.06
High Incentive Case		$0.10	$0.07
UCT + Emissions		$0.09	$0.06

Table 7-9 provides the net benefits and benefit-to-cost ratios by sector for UCT + Emissions scenario.

Table 7-9: Net Benefits and Benefit Cost Ratios for Non-Residential UCT + Emissions Case Programs

Cost-Effectiveness Test	Commercial Comprehensive	SCORE Plus
UCT Net Benefits	$4.57	$10.04
UCT Ratio	2.22	2.70
TRC Net Benefits	$2.95	$6.65
TRC Ratio	1.55	1.71
PCT Net Benefits	$51.96	$82.52
PCT Ratio	17.03	15.60
RIM Net Benefits	-$49.01	-$75.87
RIM Ratio	0.15	0.17
SCT Net Benefits	$9.40	$20.165
SCT Ratio	5.41	6.52

7.6 EPE Load Management Achievable Market Potential

This section presents the estimated overall achievable market potential for LM opportunities. The results are provided separately for summer and winter peaking capacity. The results are further broken down by customer segment and presented in the form of supply curves. All results presented reflect the projected achievable LM potential by 2042.

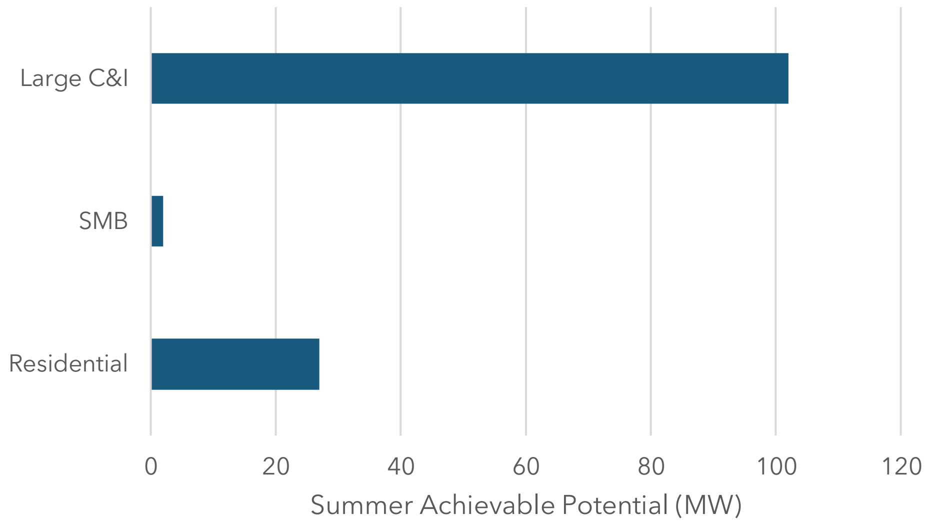
Table 7-10: LM Achievable Potential

	Summer Peak Demand (MW)	Winter Peak Demand (MW)
Residential	27	12
Non-Residential	104	89
Total	131	101

7.6.1 EPE Summer Peaking Capacity

Figure 7-6 presents the overall summer peak capacity results broken down by sector. The capacity is what is expected to be available during the peak hour of system demand. Overall, the estimated magnitude of peak capacity comes out to 131 MW. This equates to 21% of EPE's peak load. Most of the peak capacity potential comes from LCI customers.

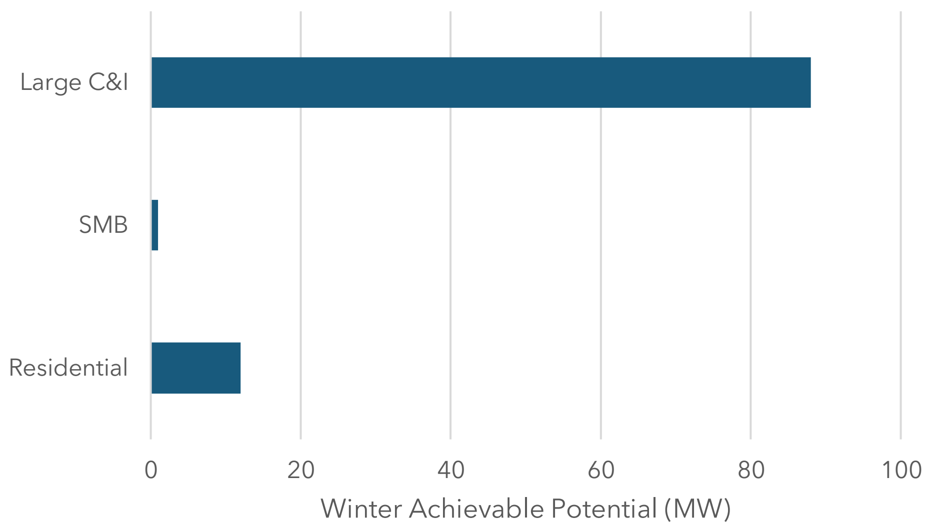
Figure 7-6 EPE LM Summer Peak Capacity Achievable Potential



7.6.2 EPE Winter Peaking Capacity

Figure 7-7 presents the overall winter peak capacity results for both scenarios, broken down by sector. The capacity is what is expected to be available during the peak hour of system demand. Overall, the estimated magnitude of peak capacity is 101 MW, which equates to 22% of EPE's winter peak load.

Figure 7-7 EPE LM Winter Peak Capacity Achievable Potential



7.6.3 Segment specific results

A total of 12 different customer segments were individually analyzed. This includes four segments for residential customers, four segments for SMB customers, and four segments for large commercial and industrial customers. This section presents the segment-level results, focusing on the customer segments that are most attractive to pursue, allowing for prioritization and targeted marketing of those customer segments.

Residential customers were segmented based on annual consumption levels. HVAC related measures (cooling/heating direct load control, smart thermostats) were the only measures that passed UCT. Maximum achievable potential for each customer segment in Figure 7-8.

Figure 7-8: Residential AP by Customer Segment

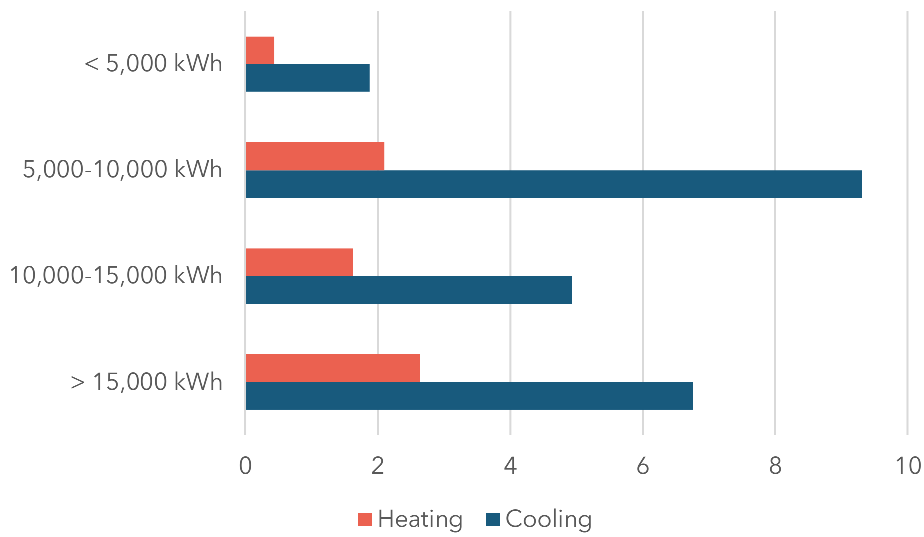
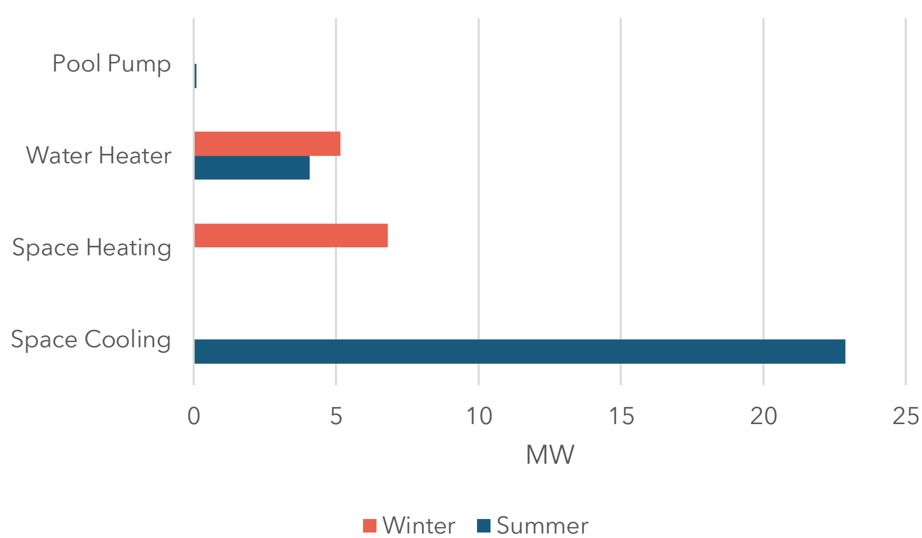


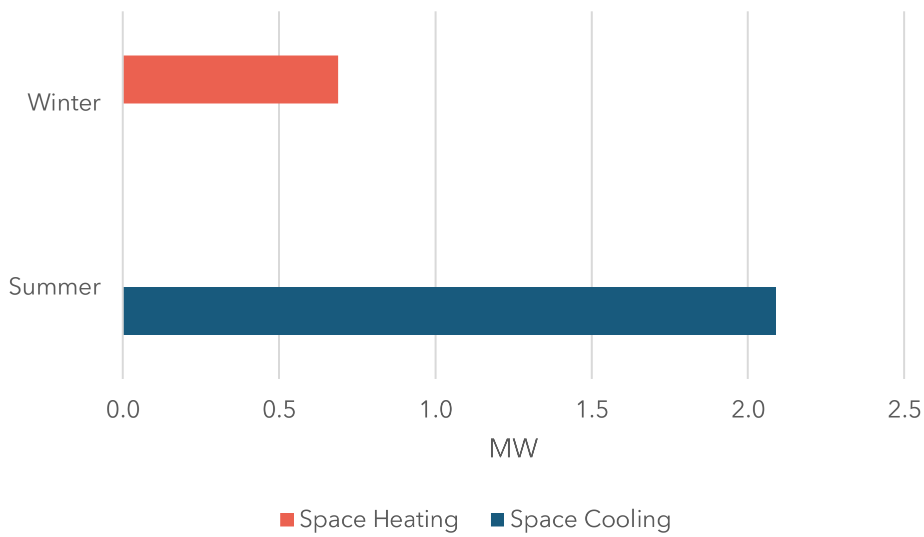
Figure 7-9 summarizes residential LM potential by end use.

Figure 7-9: Residential AP by End Use



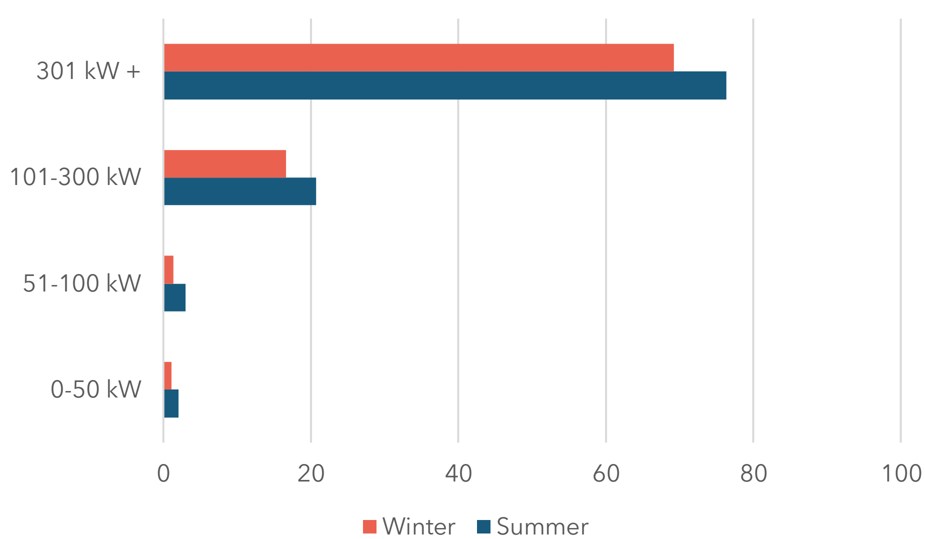
SMB customers do not provide much DSM capacity comparably, due to their being a relatively small portion of the overall system load and having lower participation rates.

Figure 7-10: SMB AP by End Use



The majority of the LM potential comes from the Large C&I sector. These customers comprise a large portion of the overall system load and are expected to have high participation rates if incentive levels are sufficiently high.

Figure 7-11: Large C&I AP by Segment



7.6.4 Key Findings

The overall LM potential is estimated to be 131 MW of peak summer capacity and 101 MW of the peak winter capacity. These estimates are based on an in-depth, bottom-up assessment of load reduction potential of all customer segments and includes an analysis of pricing and program-based LM.

The extent to whether these potential figures can be attained in a cost-effective manner by 2042 depends on the ability to implement programs that target all possible end-uses and cost-effective customer segments. These estimates rely upon assumptions around the future value of capacity.

The customer segment-level analysis of the program- and pricing-based LM potential sheds light on which customer segments can provide the greatest magnitude of capacity, as well as which customer segments are most cost-effective to pursue. Unsurprisingly, the most attractive customer segments from a benefit/cost perspective are customers who have more load available for reduction during peak hours. In general, these customers are more capable of shifting load with little inconvenience/cost, and therefore tend to have higher participation levels in LM programs as well as greater willingness to shed a higher percentage of their load.

8 Surveys

As previously noted, the Resource Innovations team developed residential and commercial customer surveys to gather primary data to support market characterization.

8.1 Residential Survey

This section provides the results of the residential survey. This survey was conducted during July 2023 through the online platform Qualtrics and a total of 1,000 responses were gathered. The survey was distributed by El Paso Electric and reminders were sent to respondents until the target of 1,000 responses was reached. After the survey was closed, 4 respondents were chosen at random to receive $250 gift cards as incentives for completing the survey.

8.1.1 Demographics

91% of all survey respondents reported owning their homes, with only 9% respondents reporting that they rent (n=998). Additionally, all but two of the respondents who rent reported that they pay their own electric bill, while the others said their bill is included in their rent payment (n=88).

In addition, respondents most often reported that 1-2 people live in their home year-round (72%), followed by between 3-4 (21%, n=1,000). 78% of the respondents reported living in a single-family detached home, as shown in Table 8-1.

Table 8-1: Participant Housing Type

Housing Type	Total (n=992)
Mobile home or manufactured home	13%
Single-family detached house	78%
Single-family attached house	5%
Apartment building or condo with 2 to 4 units	2%
Apartment building or condo with 5 or more units	2%

Demographics indicated that the participant sample was highly educated, with almost half of respondents having a graduate degree (26%) or a bachelor's degree (25%). Of respondents who reported their income, the highest proportion earned between $50,000 and $75,000 a year (21%). Additionally, respondents were most often born between 1950-1959 (31%). Table 8-2, Table 8-3, and Table 8-4 show the full breakdowns of each of these results.

Table 8-2: Respondent Education Level

Education Level	Total (n=960)
Doctorate	7%
Graduate degree, professional degree	26%
Some graduate school	6%
College degree (Bachelor's degree)	25%
Some college (including Associate degree)	18%
Trade or technical school	5%
High school graduate or equivalent (such as GED)	20%
Some high school	1%
Less than high school	1%

Table 8-3: Income Distribution

Income Range	Total (n=800)
Under $15,000	5%
$15,000 to under $25,000	10%
$25,000 to under $35,000	8%
$35,000 to under $50,000	15%
$50,000 to under $75,000	21%
$75,000 to under $100,000	15%
$100,000 to under $150,000	15%
$150,000 to under $200,000	8%
$200,000 or more	4%

Table 8-4: Birth Years of Respondents

Years	Total (n=949)
Before 1940	3%
1940-1949	20%
1950-1959	31%
1960-1969	17%
1970-1979	15%
1980-1989	9%
1990-1999	4%
2000-present	0%

The majority of homes measured between 1,000 – under 2,000 square feet (54%), or 2,000 – under 3,000 (32%) square feet, as shown in Table 8-5. Additionally, the most common range of years in which these homes were built was between 2000-2009, as shown in Table 8-6.

Table 8-5: Home Square Feet

Home Square Feet	Total (n=950)
Under 1,000 square feet	6%
1,000 to under 2,000 square feet	54%
2,000 to under 3,000 square feet	32%
3,000 to under 4,000 square feet	7%
4,000 to under 5,000 square feet	1%
Greater than 5,000 square feet	1%

Table 8-6: Year in Which Home was Built

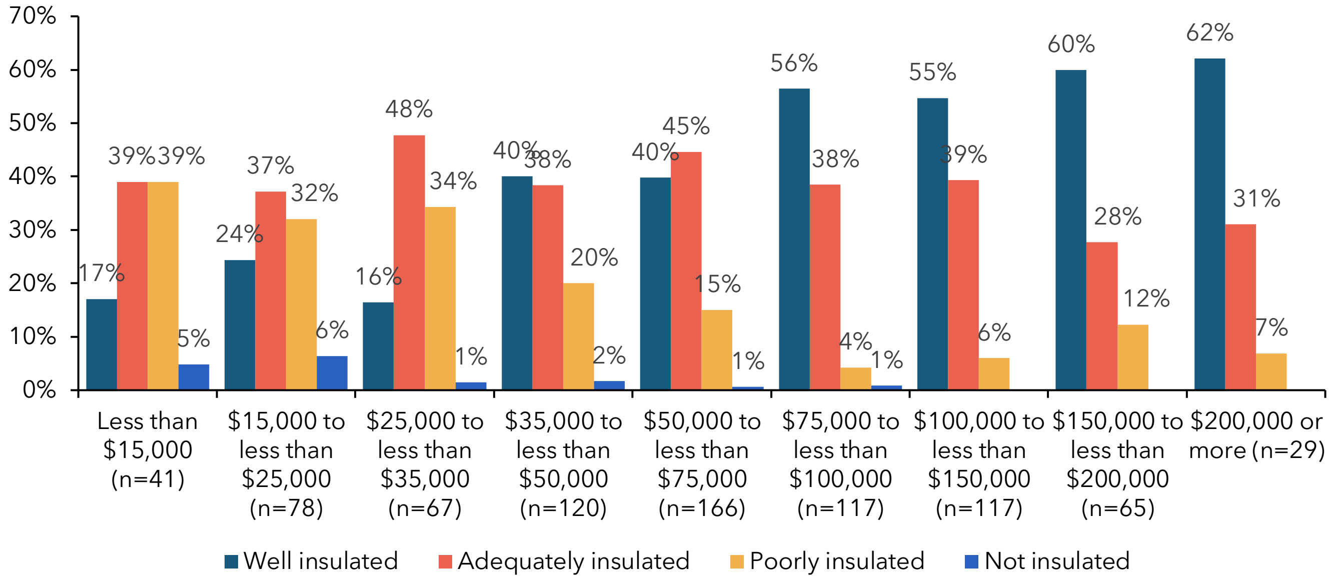
Year	Total (n=960)
Before 1960	8%
1960-1969	4%
1970-1979	9%
1980-1989	12%
1990-1999	16%
2000-2010	27%
2010-2019	19%
2020-2023	5%

8.1.2 Home Characteristics

One of the primary purposes of the survey was to investigate various home characteristics of the respondents. This included areas such as insulation levels, air leaks, and other envelope measures.

Overall, most respondents felt their home was either well insulated (44%) or adequately insulated (40%), while only 16% of respondents said their home was poorly insulated or not insulated at all (n=1,000). When broken out by income level, the Resource Innovations team found that respondents with high income were more likely to say their home was well insulated, as shown in Figure 8-1.

Figure 8-1: Level of Insulation Across Income



El Paso Electric Market Potential Study: Phase 1 Residential Survey Question 1: "Which of the following best describes the insulation level of your home?"

Additionally, 85% of respondents said they did not feel that their home was too drafty (n=941). When asked about any air leaks in their homes, respondents most often identified windows (81%) and doors (81%) as the most common areas that have leaks, while some also noted ceilings (23%) and walls (21%, n=139). Of these respondents who noticed air leaks in their homes, they most often had added weatherstripping (50%) or caulk (32%) to help address these. Notably, 26% said they had not taken any measures to reduce air leakage (n=139).

Respondents said they most often had double-pane glass windows in their home (75%). In terms of roof type, the most common was a sloped roof with shingles (39%). Additionally, the most common type of space under respondents' homes was a slab (81%). Table 8-7, Table 8-8, and Table 8-9 show the breakdowns for each of these results.

Table 8-7: Window Type

Window Type	Total (n=1,000)
Single-pane glass	24%
Double-pane glass	75%
Triple-pane glass	1%

Table 8-8: Roof Type

Roof Type	Total (n=978)
Flat roof with tar and paper	20%
Flat rubber roof	20%
Sloped roof with shingles	39%
Sloped roof with tiles	16%
Metal roof	8%
Other	8%

Table 8-9: Type of Space Under Home

Type of Space	Total (n=957)
Slab	81%
Crawl space with floor insulation	6%
Crawl space with no insulation	7%
Encapsulated crawl space	1%
Finished basement	1%
Unfinished basement	0%
Other	3%

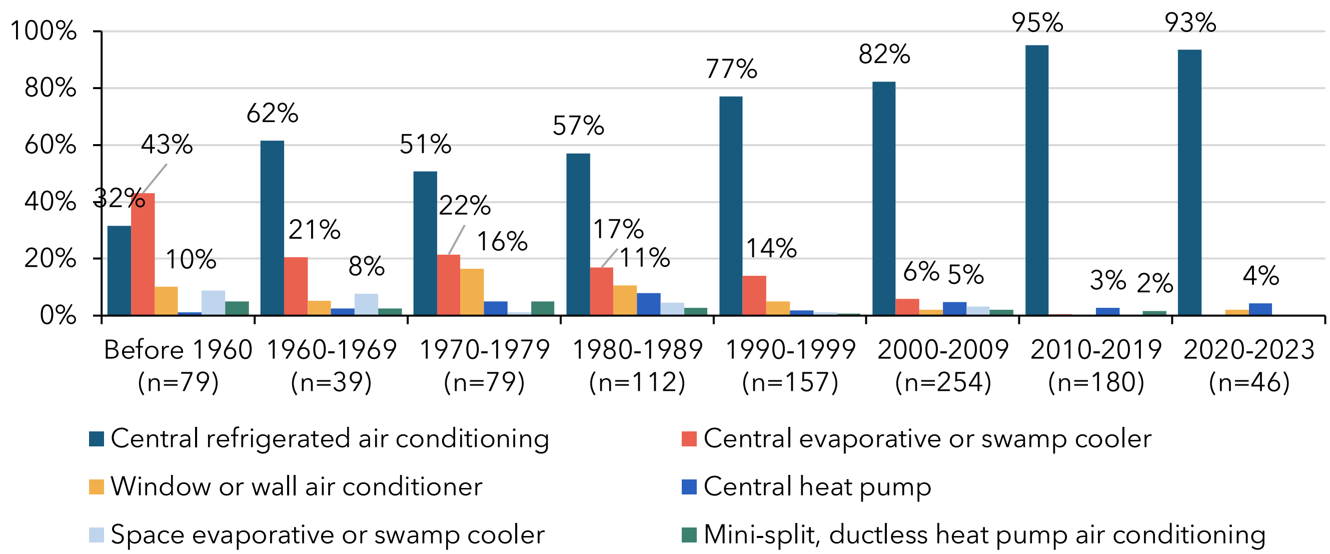
8.1.3 Measure Characteristics

Cooling Equipment

The primary portion of the survey focused on respondents answering various questions regarding household appliances and their willingness to upgrade to more efficient alternatives. 73% of respondents said they use central refrigerated air conditioning as their primary cooling source (n=984). As shown in Figure 8-2, respondents in newer homes were far more likely to report having central air conditioning than any other type. Additionally, 49%

of respondents indicated they did not have a secondary cooling source. Those that did most commonly had a window or wall unit (27%, n=469).

Figure 8-2: Cooling Equipment by Age of Home

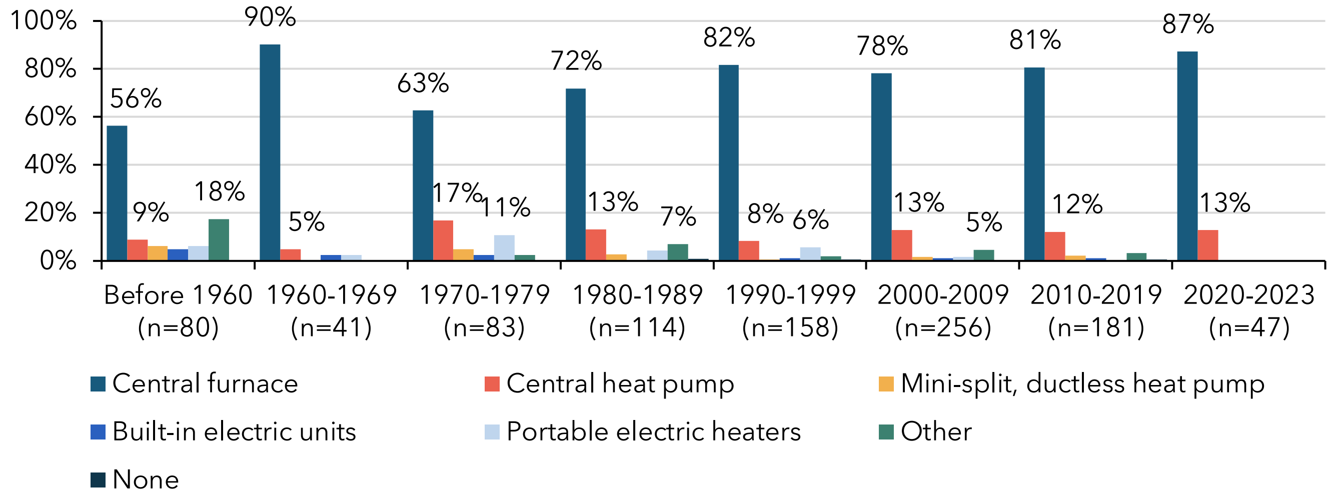


El Paso Electric Market Potential Study: Phase 1 Residential Survey Question 11: "What is the main type of air conditioning used to cool your home?"

Heating Equipment

In terms of heating, most respondents indicated they use a central furnace as their primary heating source (n=1,000). Similar to air conditioning (and shown in Figure 8-3), respondents in newer homes were more likely to report having a central furnace. Additionally, 74% of respondents said their main heating equipment used natural gas, 18% said it used electricity, and 8% said it used propane or another source (n=983).

Figure 8-3: Heating Equipment by Age of Home



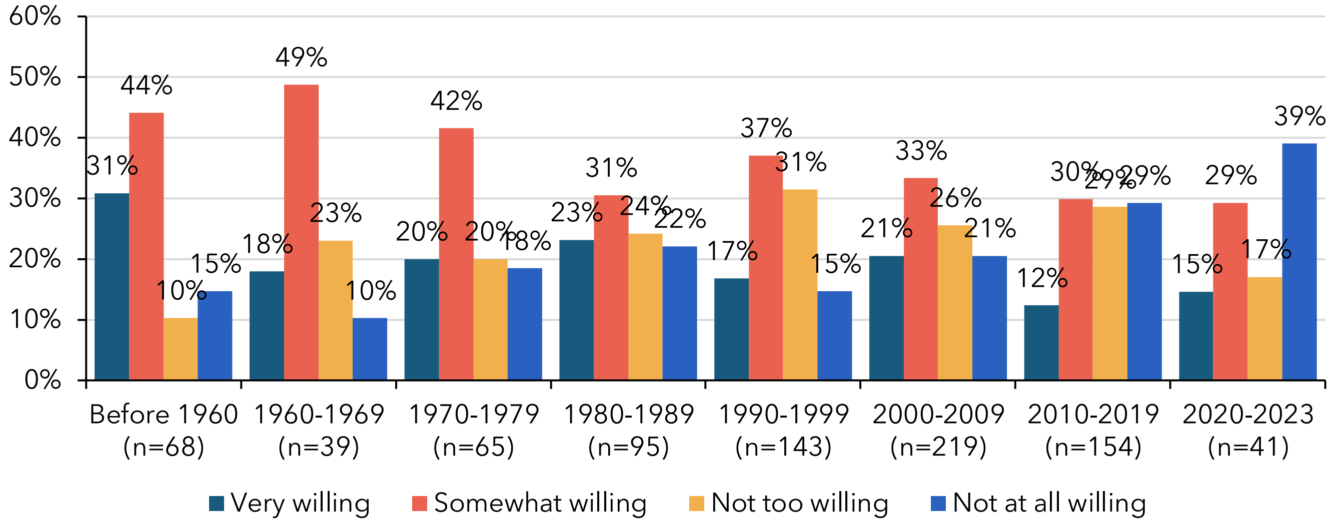
El Paso Electric Market Potential Study: Phase 1 Residential Survey Question 14: "What is the main type of heating equipment used to heat your home?"

Heat Pumps

Following these questions about heating and cooling, respondents were asked questions relating to their willingness to switch to a heat pump. Overall, 19% of respondents said they were very willing to switch to a central or ductless heat pump, 35% said they were somewhat willing, 25% said they were not too willing, and the remaining 22% said they were not at all willing (n=860). When looking at this data across the five zip codes with the largest number of respondents (88011, 88012, 88007, 88005, and 88001), there was a slight level of variation in willingness to adopt. Just under half (47%) of respondents in the 88005 zip code said they would be very or somewhat willing to switch to a heat pump whereas 61% of respondents in the 88001 zip code said they would be very or somewhat willing. In the other zip codes, 49% of respondents in 88012, 53% in 88007, and 54% in 88011 indicated willingness to switch.

Notably, as shown in Figure 8-4, respondents with older homes were more likely to be willing to switch to a heat pump. Additionally, respondents who expressed willingness to switch most often said they would like to do so within 1 year (21%), 2 years (19%), or 5 years (18%, n=463).

Figure 8-4: Willingness to Switch to a Heat Pump by Age of Home

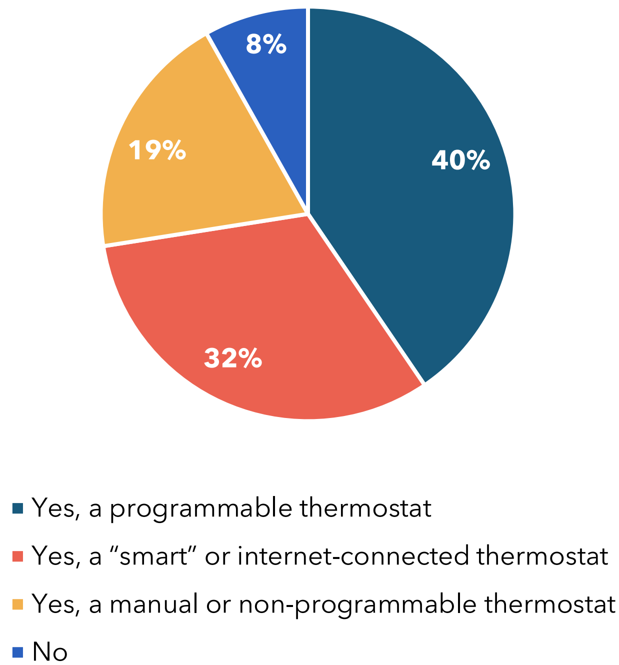


El Paso Electric Market Potential Study: Phase 1 Residential Survey Question 17: "How willing would you be to switch to a central heat pump or ductless heat pump?"

Thermostats

In terms of thermostats, respondents said they most often had programmable thermostats (40%). As shown in Figure 8-5, respondents also had "smart" or internet-connected thermostats and manual thermostats.

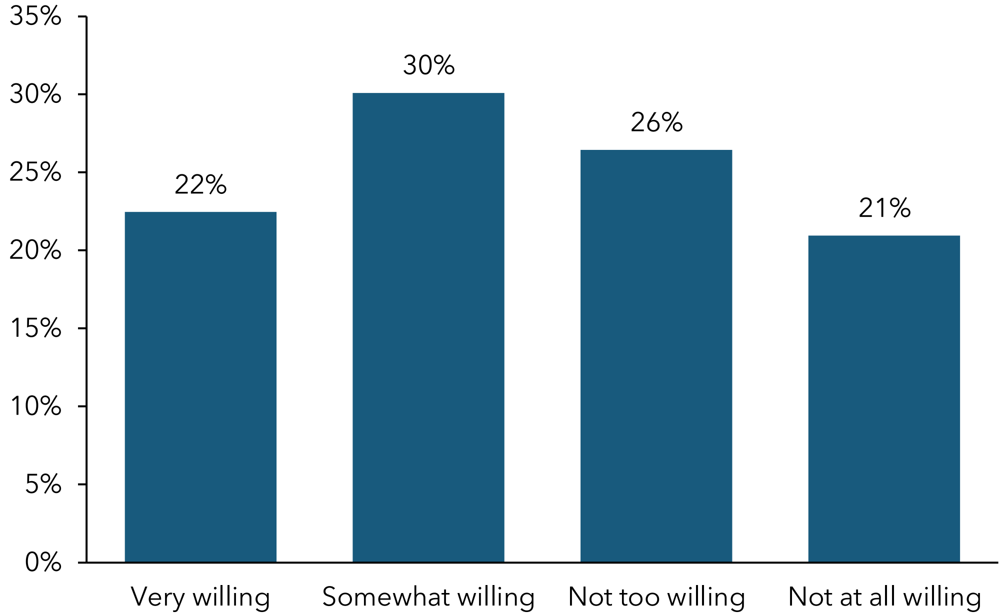
Figure 8-5: Thermostat Type



El Paso Electric Market Potential Study: Phase 1 Residential Survey Question 19: "Does your household use a thermostat to control the temperature inside your home?" (n=993).

Additionally, just over 50% of respondents who did not currently have a smart thermostat said they would be very or somewhat willing to switch to one, as shown in Figure 8-6. Of these respondents, 40% said they would be willing to switch in less than a year, 29% said within 1 year, and 15% said within 2 years.

Figure 8-6: Willingness to Switch to a Smart Thermostat

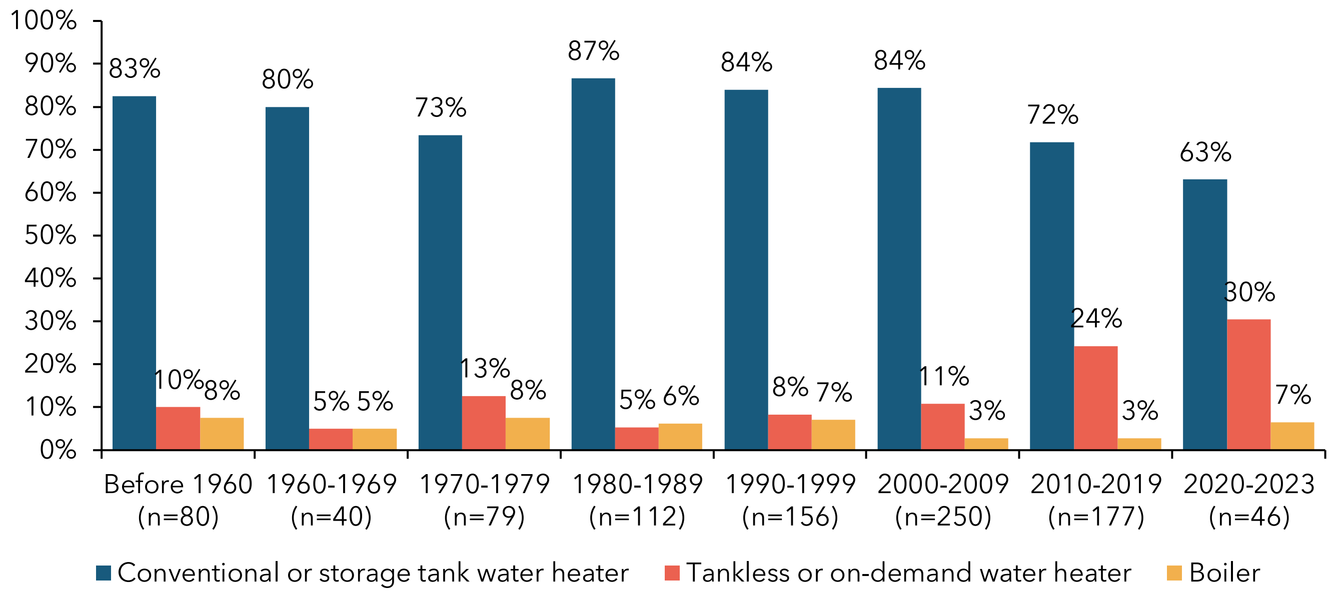


El Paso Electric Market Potential Study: Phase 1 Residential Survey Question 20: "How willing would you be to switch to a "smart" or internet-connected thermostat?" (n=601).

Water Heating

Respondents most often reported the main type of water heater in their home was a conventional or storage tank water heater (80%) followed by a tankless or on-demand water heater (13%, n=976). As shown in Figure 8-7, respondents in newer homes were more likely to have tankless water heaters. Additionally, respondents said their water heater most often held between 31 to 49 gallons (53%, n=773). Respondent's water heater most often used natural gas (71%) followed by electricity (21%, n=975).

Figure 8-7: Type of Water Heater by Age of Home

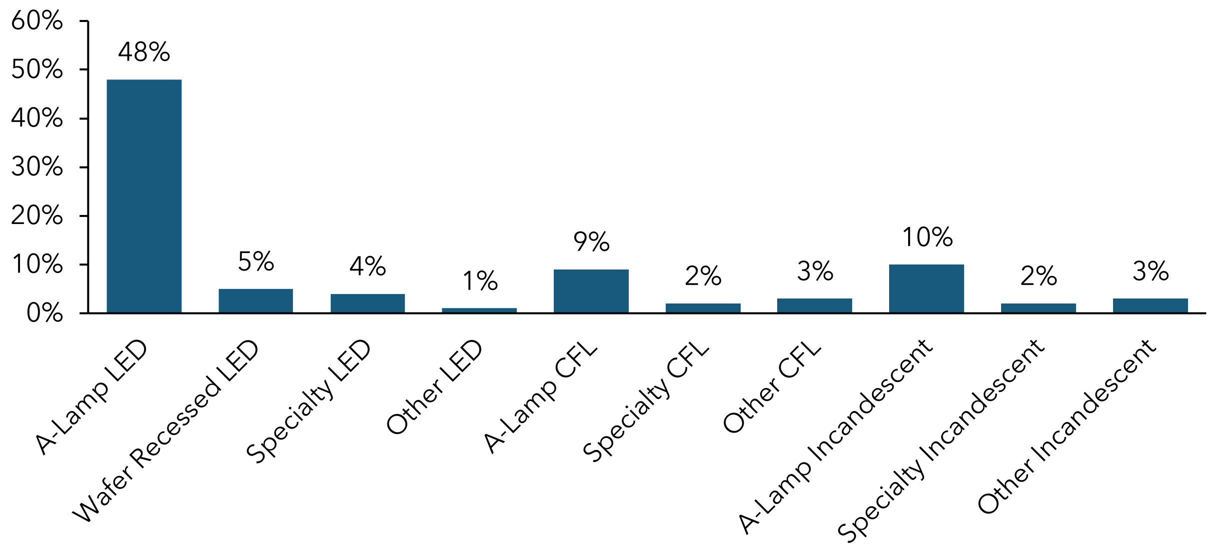


El Paso Electric Market Potential Study: Phase 1 Residential Survey Question 26: "What is the main type of water heater in your home?"

Lighting Equipment

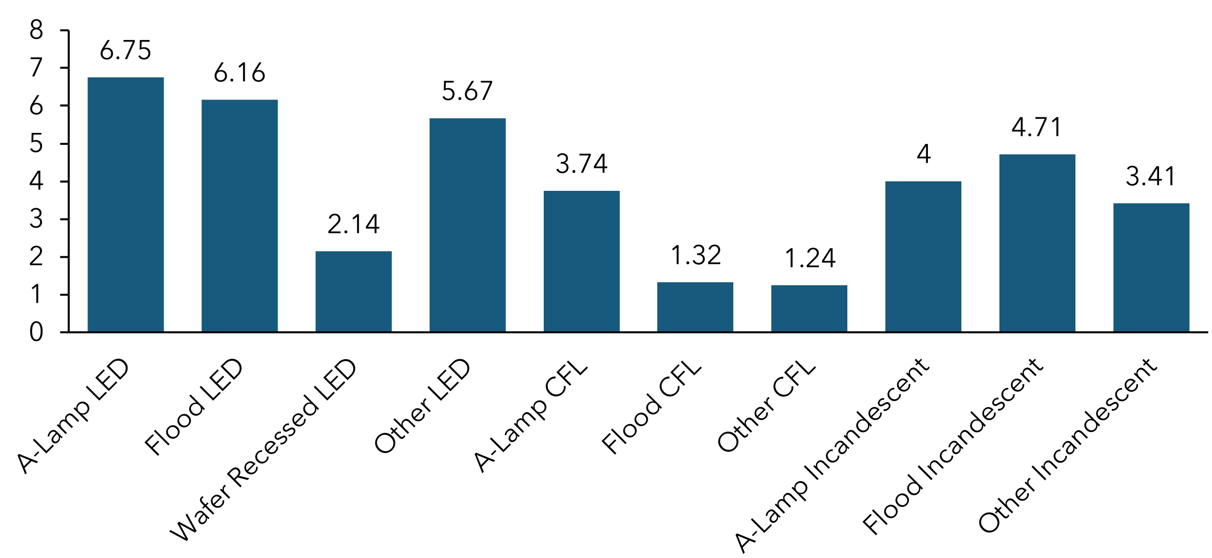
In terms of interior lighting, respondents most often reported having A-lamp LEDs. Figure 8-8 shows the breakdown of the average percentage of interior lighting. Similarly, in terms of exterior lighting, respondents also most often reported having A-lamp LEDs. Figure 8-9 shows the breakdown of the average number of each type of exterior lighting.

Figure 8-8: Average Percentage of Interior Lighting



El Paso Electric Market Potential Study: Phase 1 Residential Survey Question 30: "Thinking about only the interior of your home, what percentage of light bulbs in your home are…?" (n=1,000)

Figure 8-9: Average Number of Exterior Lighting



El Paso Electric Market Potential Study: Phase 1 Residential Survey Question 31: "Home many light bulbs on the exterior of your home are…?" (n=1,000)

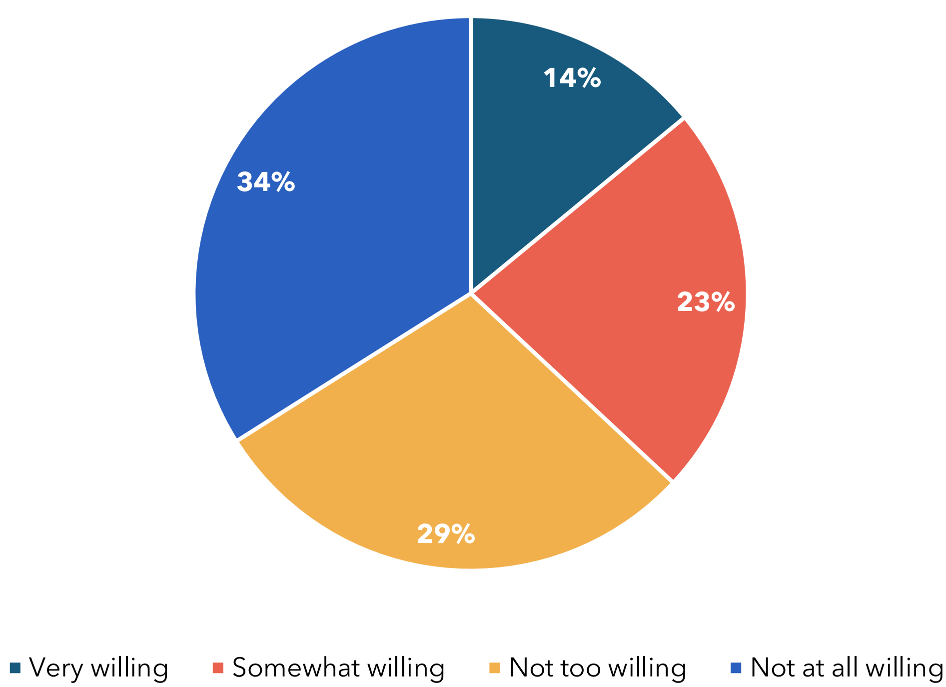
Of the respondents who indicated they had lighting control systems, most reported they had motion sensors (36%), timers (19%), or photosensors (18%, n=1,000). 35% of respondents indicated they did not have any types of lighting control systems.

Household Appliances

Finally, respondents were asked about various home appliances. Overall, 97% of respondents said they had clothes washers and 94% said they had clothes dryers in their homes. Additionally, 58% of respondents said they had 1 refrigerator in their home and 33% said they had 2. In terms of freezers, 53% said they did not have a standalone freezer in their home while 41% said they had one.

For cooking ranges, 82% of respondents said they had 1 cooking range in their home. 75% said they had 0 separate cooktops and 77% said they had 0 separate wall ovens in their home. As shown in Figure 8-10, 37% of respondents said they would be willing to switch to an electric induction range. Of these respondents, they most often said they would be willing to switch within the next year (21%) or within 2 years (20%, n=221).

Figure 8-10: Willingness to Switch to an Electric Induction Range

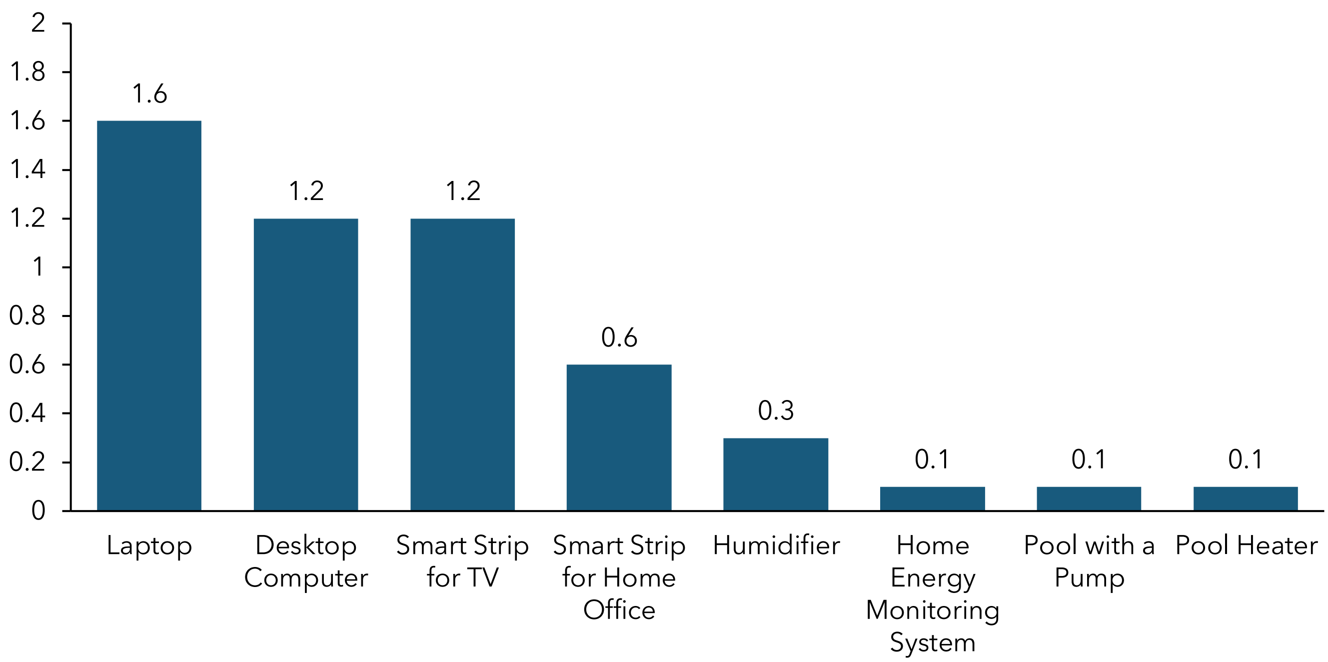


El Paso Electric Market Potential Study: Phase 1 Residential Survey Question 48: "How willing would you be to switch to an electric induction range" (n=598)

8.1.4 Miscellaneous Technologies

In addition to the measures discussed above, the survey also asked respondents about various other technologies they may have or plan to purchase in the future. As shown in Figure 8-11, of the various other technologies asked about in the survey, laptops were the most common that respondents owned while home energy monitoring systems, pools with a pump, and pool heaters were the least common.

Figure 8-11: Average Number of Technology Owned

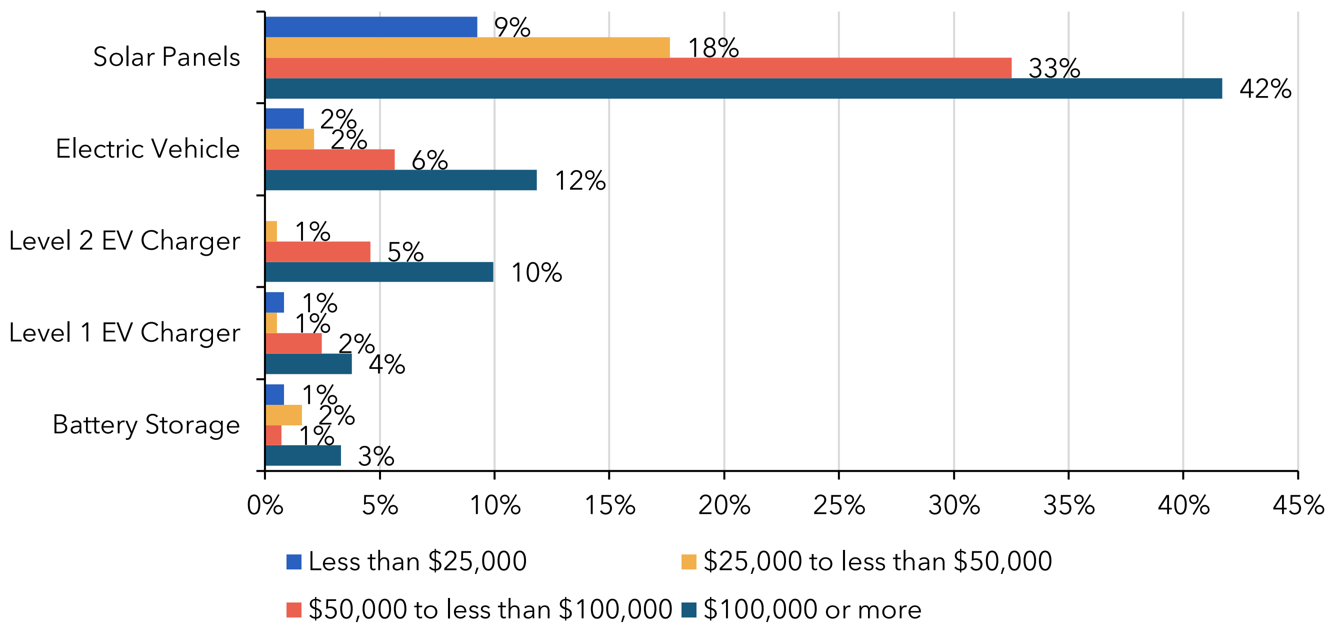


El Paso Electric Market Potential Study: Phase 1 Residential Survey Question 52: "How many of each type of equipment do you use?" (n=1,000).

Of the respondents who reported owning a pool pump, 68% said it does not have a multi-speed drive (n=126). Additionally, of the respondents who reported owning a pool heater, 70% said it was gas powered, 23% said it was electric resistance, and 8% said it was a heat pump pool heater (n=53).

Additionally, the survey asked about some more advanced technologies and if respondents planned to purchase these in the future. Overall, 70% of respondents said they did not currently own any of these technologies while solar panels were the most common at the time of the survey (28%). As shown in Figure 8-12, solar panels were the most commonly owned technology and ownership levels increased with income. Additionally, 69% of respondents said they did not plan to purchase any of these technologies in the future. Of those that said they did plan to purchase any of these, the most common technologies with electric vehicles (15%) and solar panels (12%, n=1,000).

Figure 8-12: Technology Ownership Compared by Income Level



El Paso Electric Market Potential Study: Phase 1 Residential Survey Question 55: "Do you have any of the following technologies? Select all that apply" (n=1,000).

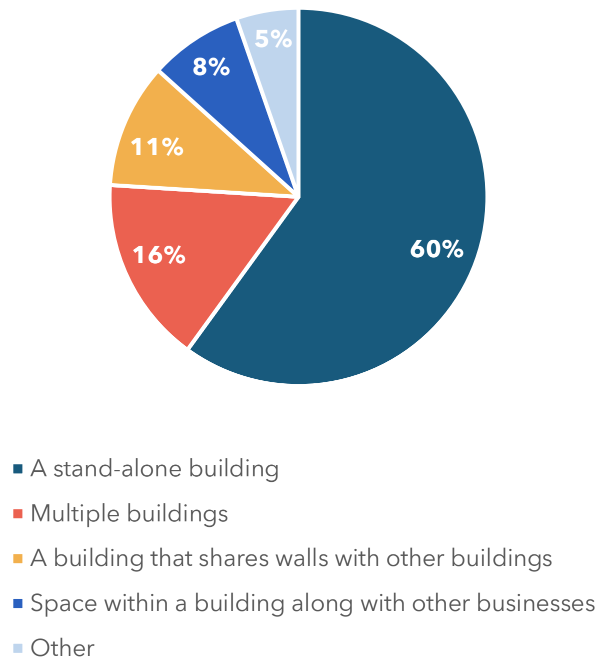
8.2 Commercial Survey

This section provides the results of the commercial survey. This survey was conducted first during September and October 2023 through the online platform Qualtrics, then supplemented with phone surveys conducted in April 2024 by the Resource Innovations team with assistance from El Paso Electric. A total of 75 responses were gathered. The online version of the survey was distributed by El Paso Electric and 2 reminders were sent to respondents. After the survey was closed, 4 respondents were chosen at random to receive $250 gift cards as incentives for completing the survey.

8.2.1 General Organization Characteristics

A significant majority (79%) of the 75 participating organizations currently occupy the entirety of their facilities, with 88% managing the facilities they occupy. In terms of the types of occupied buildings, 60% of the organizations operated in stand-alone buildings, while 11% share walls with other buildings, and 8% shared space within a building along with other businesses. A small percentage, 16%, occupied multiple buildings.

Figure 8-13: Description of the Facility



El Paso Electric Market Potential Study: Commercial Survey Question 8. "How would you describe your facility?" - Selected Choice (n=75)

When looking at the number of employees, most organizations (75%) reported to have between 1-10 employees. Organizations with 11-25 employees account for 18% of the total, and those with 26-50 employees represent 11% of the surveyed population.

The sizes of the facilities also differed across the organizations. Facilities less than 1,000 square feet accounted for 11% of the total. Those that ranged from 1,001 to 2,000 square feet made up 18% of the facilities. Both the 2,001 to 3,000 square feet and 3,001 to 4,000 square feet categories each constituted 11% of the total facilities. Facilities sized between 4,001 and 5,000 square feet represented 9% of the total. Notably, the largest category were facilities greater than 5,000 square feet, making up a significant 40% of the total.

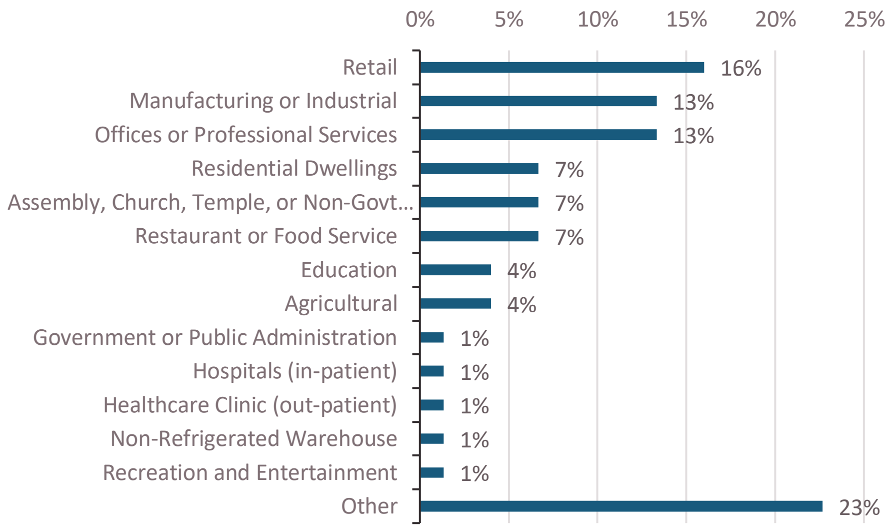
Table 8-10: Square Footage of the Facilities

Square Footage (n=75)	Percentage
Less than 1,000 sq ft	11%
1,001-2,000 sq ft	18%
2,001-3,000 sq ft	11%
3,001-4,000 sq ft	11%
4,001-5,000 sq ft	9%
Greater than 5,000 sq ft	40%

El Paso Electric Market Potential Study: Commercial Survey Question 99. "What would you estimate the facility's square footage to be?" (n=75)

The survey revealed that 61% (n=75) of all organizations owned the facilities they operated from. The most common facility types were retail (16%), followed by both manufacturing and offices at 13%. Some of the businesses were used as residential dwellings (7%), religious facilities (7%), restaurants (7%), while others were used for educational purposes (4%) or had agricultural usage (4%). The 'Other' category had the highest reported facility type at 23%, including but not limited to: auto repair businesses, dance and music schools, equipment repair businesses, gym, horse stable and dog training services.

Figure 8-14: Types of Businesses



El Paso Electric Market Potential Study: Commercial Survey Question 14. "What is the primary use of your facility?" - Selected Choice (n=75)

In terms of operating hours, on weekdays 39% (n=74) of organizations operated for 9-12 hours a day, 36% for 9-12 hours, 15% for 13-16 hours, and a small 5% operated for 17-24 hours. On weekends, however,64% (n=75) operated for 1-8 hours,14% for 9-12 hours, 5% for 13-16 hours, and 8% for 17-24 hours. The survey highlighted the fact that businesses tend to have shorter operating hours on weekends compared to weekdays.

Figure 8-15: Operation Hours on Weekdays

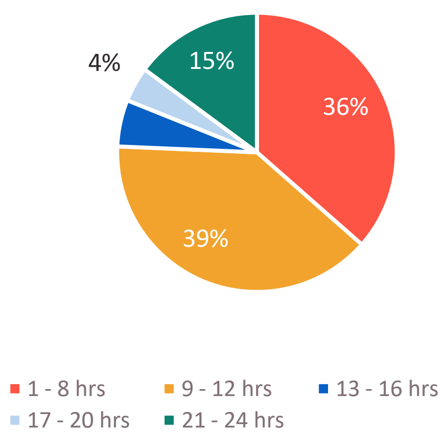
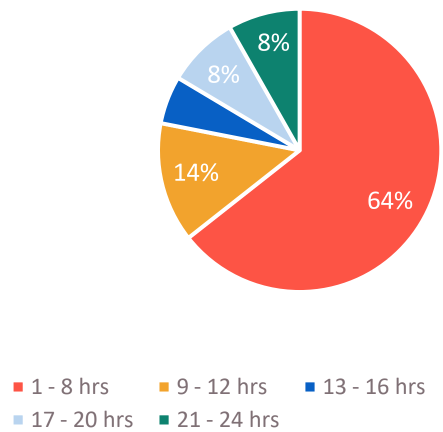


Figure 8-16: Operation Hours on Weekends



El Paso Electric Market Potential Study: Commercial Survey Question 6. "Approximately how many hours per day is this facility typically occupied on weekdays?"

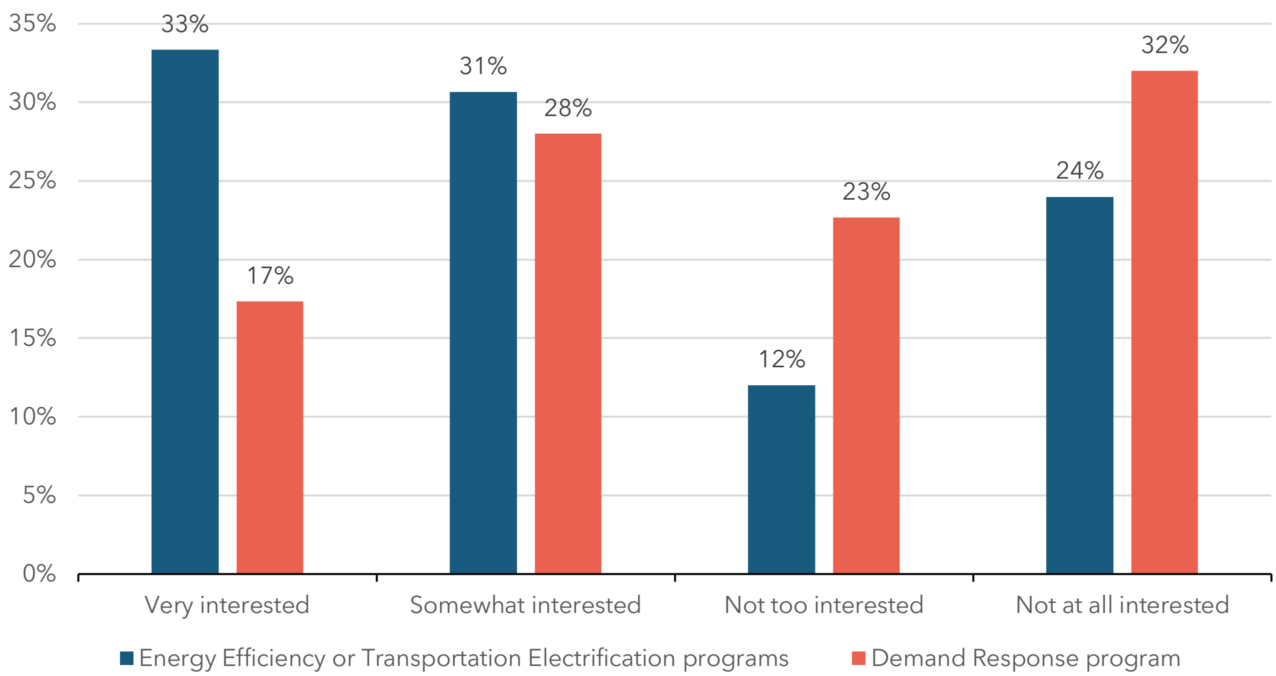
El Paso Electric Market Potential Study: Commercial Survey Question 17. "Approximately how many hours per day is this facility typically occupied on weekends?"

8.2.2 Equipment Saturation Awareness and Interest

Interest in Energy Efficiency Programs

The survey results indicated that over the past five years, a significant majority (91%, n=75) of organizations did not engage in any energy efficiency or transportation electrification programs offered by EPE. However, the respondents demonstrated a higher level of interest in energy efficiency and transportation electrification programs compared to demand response programs. When queried about their interest in participating in energy efficiency and transportation electrification programs, 33% of respondents expressed a high level of interest, 31% were somewhat interested, while 12% were not too interested, and 24% showed no interest at all. In contrast, interest in demand response programs was lower, with only 17% of respondents very interested, 28% somewhat interested, 23% not too interested, and a notable 32% not interested at all.

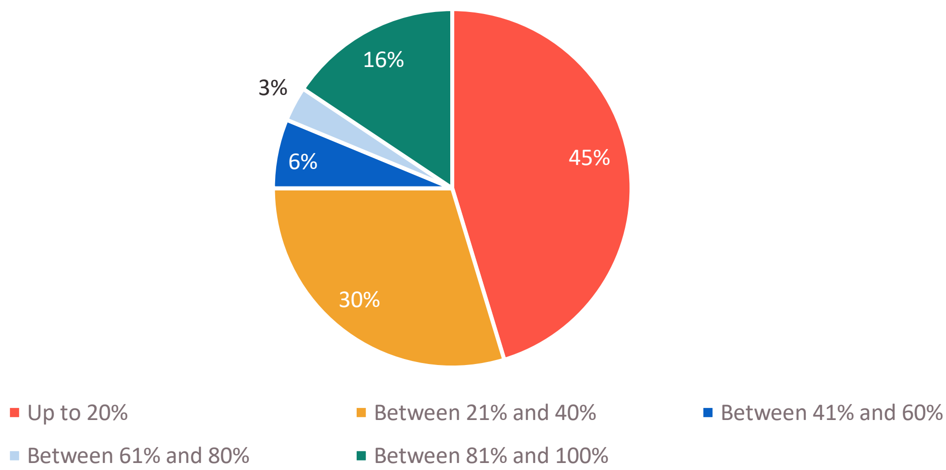
Figure 8-17: Interest in Energy Efficiency Programs



El Paso Electric Market Potential Study: Commercial Survey Question 105. "How interested would your business be in participating in an energy efficiency or transportation electrification programs through El Paso Electric?" (n=75); El Paso Electric Market Potential Study: Commercial Survey Question 06. "How interested would your business be in participating in a demand response program through El Paso Electric?" (n=75)

45% of the participants attributed up to 20% of their operating costs to electric energy use, 30% indicated that cost of electricity is 21% and 40% of their operation costs, while 16% indicated that it was between 81% and 100% of their operating costs.

Figure 8-18: Share of Electric Energy Use



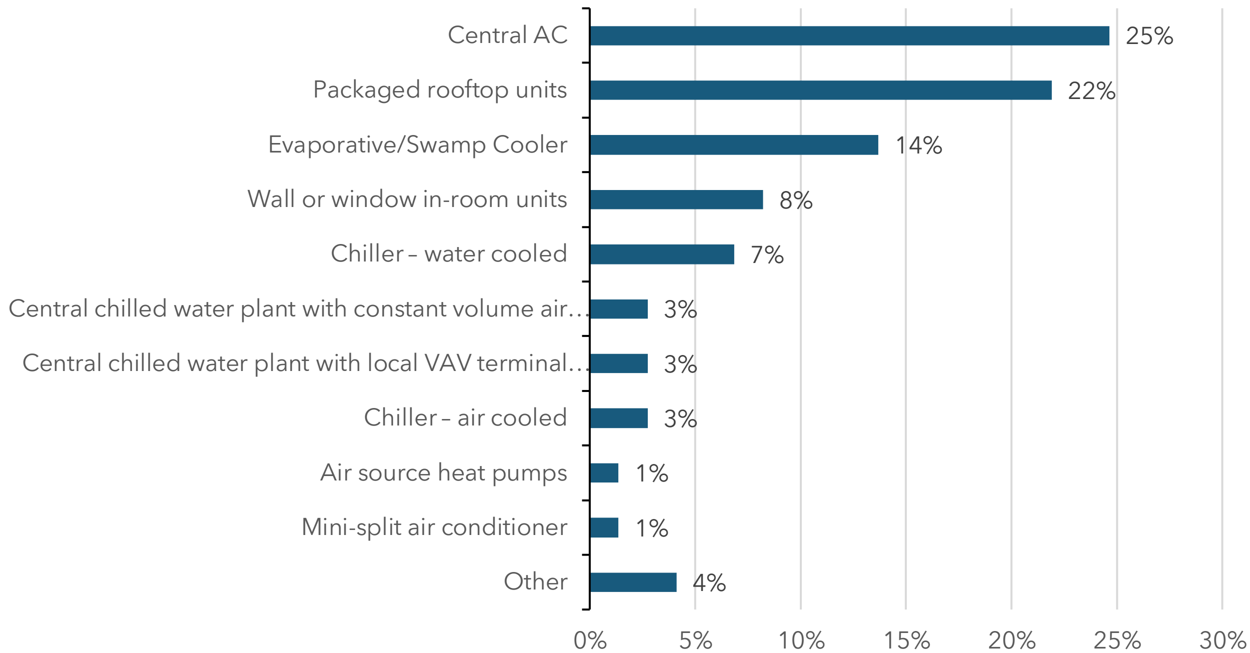
El Paso Electric Market Potential Study: Commercial Survey Question 102. "About what percentage of the operating costs of this facility come from electric energy use?" (n=75)

Cooling

The survey provided a comprehensive overview of cooling equipment used in various facilities. The results indicated that 10% (n=73) of the businesses that responded do not have any space cooling in their facilities, though they are primarily non customer-facing facilities such as warehouses or industrial spaces. Of those who had facility cooling, 53% reported to cool 100% of the facility's space, 36% cooled between 50-99% of the facility's space, and the remaining 11% cooled less than half of their facility's space.

The main equipment for cooling included central HVAC (25%), packaged rooftop units (22%), evaporative/swamp coolers (14%) and wall or window AC units side coolers (8%).

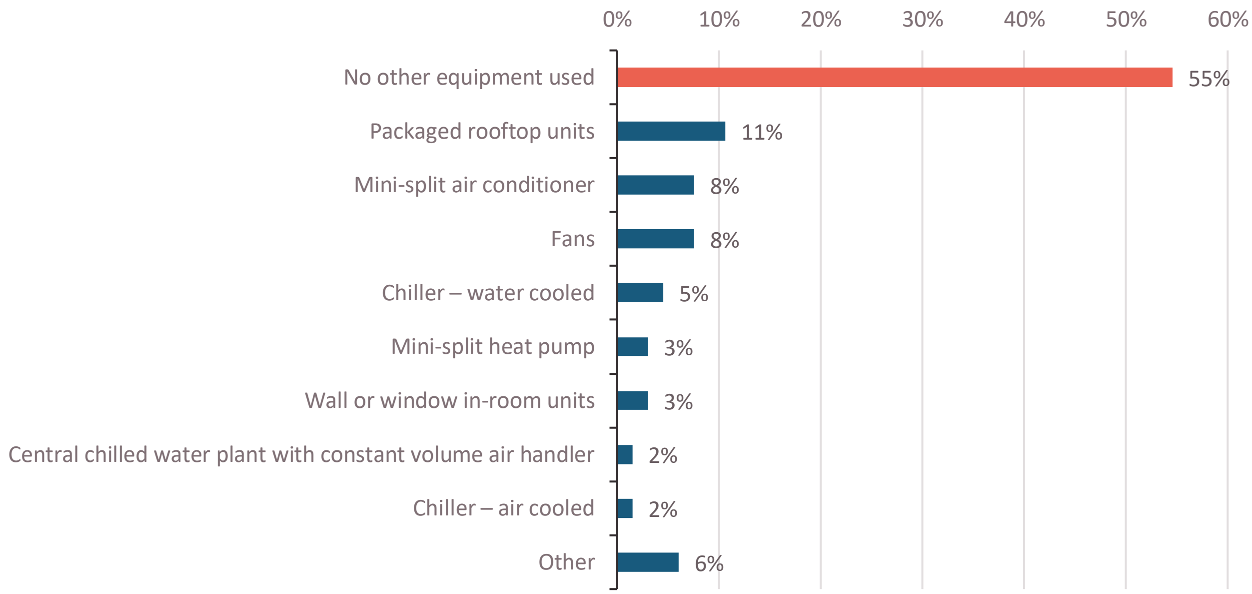
Figure 8-19: Main Equipment for Cooling



El Paso Electric Market Potential Study: Commercial Survey Question 18. "What is the main type of equipment used for cooling in your facility?" - Selected Choice (n=75)

In terms of secondary equipment for cooling, a majority of respondents (55%) reported not using any other equipment. The rest of the respondents use packaged rooftop units (11%), mini-split air conditioner (8%), water cooled chillers (5%) and mini-split heat pump (3%).

Figure 8-20: Secondary Equipment for Cooling



El Paso Electric Market Potential Study: Commercial Survey Question 20. "In addition to your main air conditioning equipment, which of the following is used as a second source for cooling your facility? If more than one, select the type most frequently used." - Selected Choice (n=66)

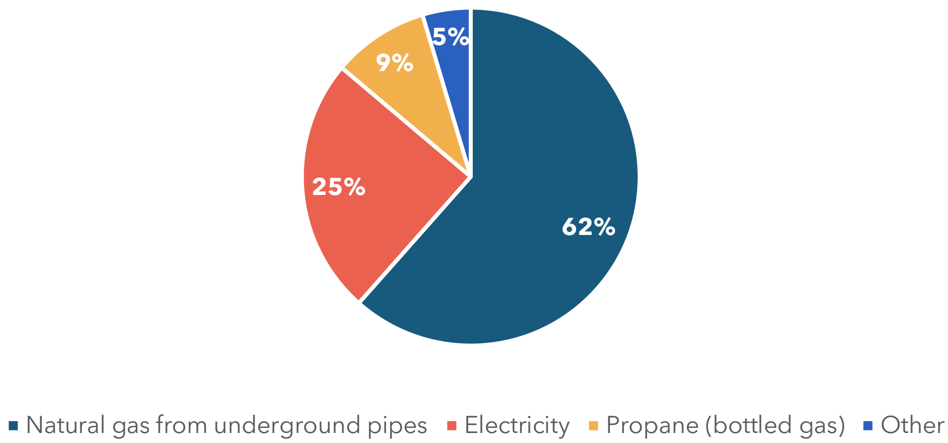
The age of the facility's main air conditioning equipment varies, with 35% (n=55) being less than 5 years old, 11% between 5-9 years, 13% between 10-14 years, 25% between 15-19 years, and 16% being 20 years or older.

Ventilation, Heating, and HVAC Controls

In the realm of ventilation and demand control, a significant 81% (n=73) of respondents reported that their facilities do not incorporate demand control ventilation. Furthermore, only 32% of participants indicated the presence of ventilation hoods in their establishments. Interestingly, among these facilities equipped with ventilation hoods, a substantial 68% do not feature variable fan speed.

For fuel used for heating equipment, natural gas is the predominant choice, accounting for 62% (n=65) of usage. Electricity is the second most common, making up 25% of the fuel source, propane accounts for 9% and other fuels, including fuel oil and various others, account for 5% of use.

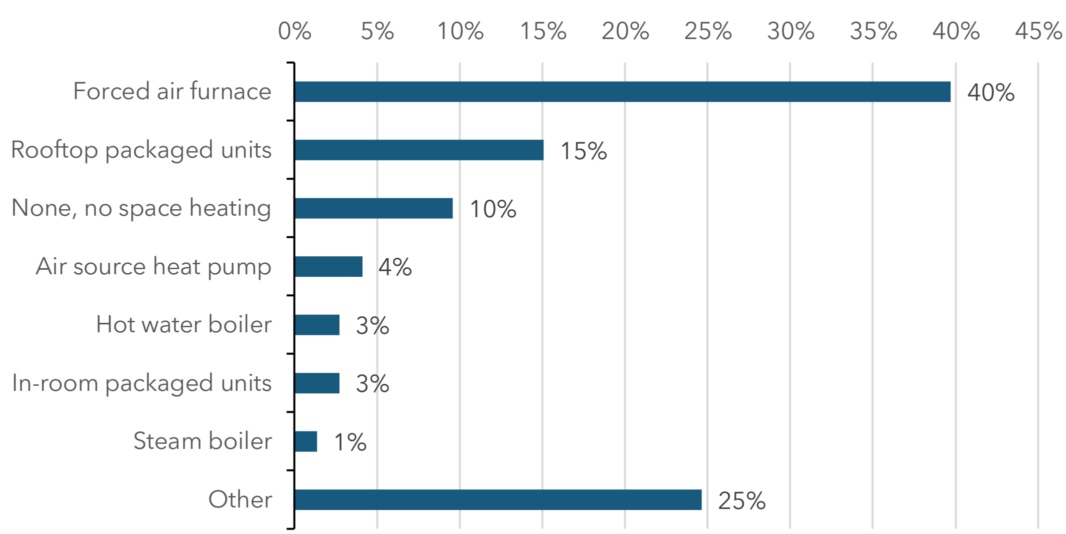
Figure 8-21: Fuel for Heating Equipment



El Paso Electric Market Potential Study: Commercial Survey Question 27. "What fuel is used by your facility's main heating equipment?" - Selected Choice (n=65)

The main equipment used for heating was forced air furnaces which comprised 45% of the total. That was followed by other sources at 25%, and rooftop packaged units at 15%The full breakdown of results is shown below in Figure 8-22.

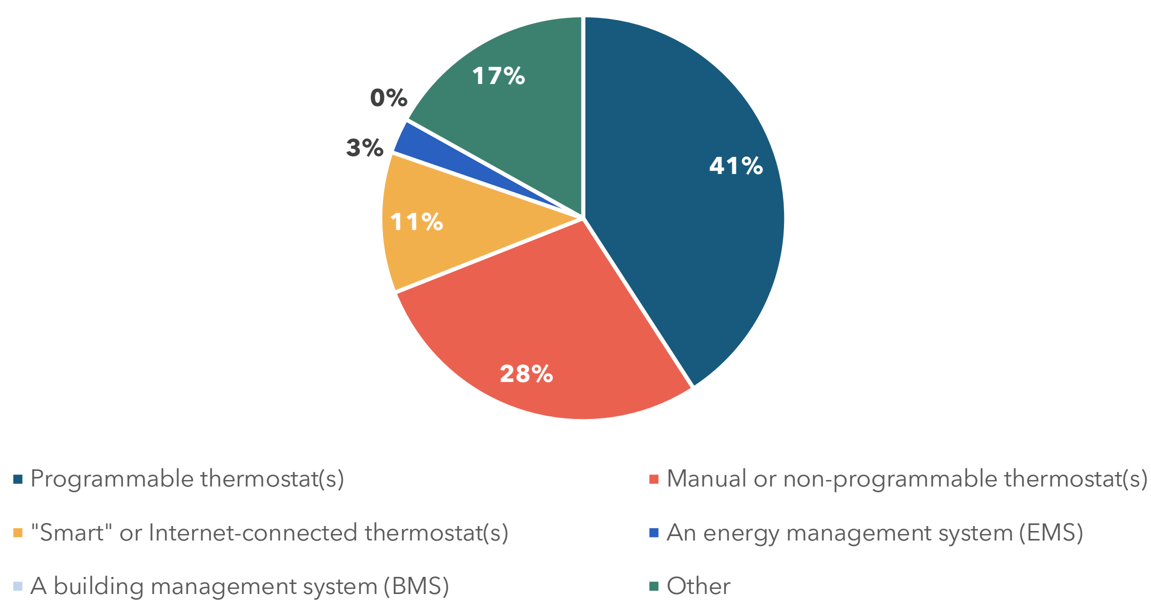
Figure 8-22: Main Equipment for Heating



El Paso Electric Market Potential Study: Commercial Survey Question 26. "What is the main type of heating equipment used to provide heat for your facility?" - Selected Choice (n=73)

As for HVAC system controllers, programmable thermostats are the most popular, making up 41% (n=71) of the controllers. Manual or non-programmable thermostats account for 28% of the total, while smart or internet connected thermostats account for 11% of the total. Energy management systems (EMS) constitute about 3% of the controllers. Businesses that reported others mostly reported to have a manual switch some of which are not connect to any thermostat.

Figure 8-23: HVAC System Controller



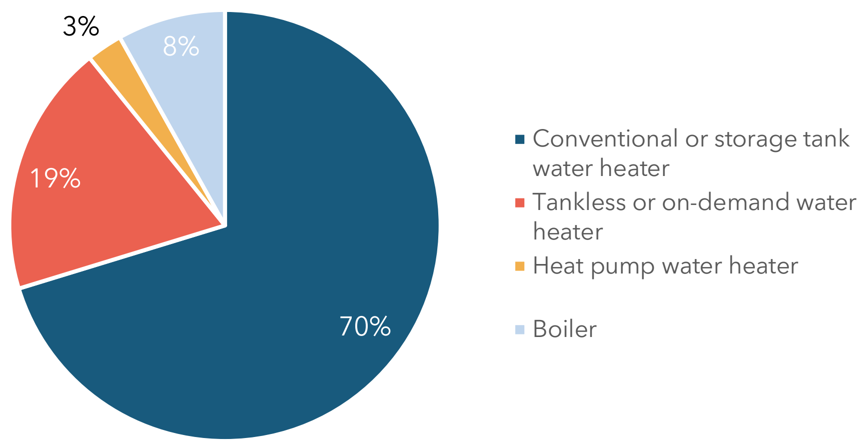
El Paso Electric Market Potential Study: Commercial Survey Question 29. "How is your HVAC system controlled?" - Selected Choice (n=71)

Water Heater

77% (n=73) of respondents reported water heating equipment in their facilities. 68% use hot water for personal use like hand washing/showers, followed by 21% that use hot water for kitchen operations. 70% of respondents have conventional or storage tank water heaters.

The most prevalent type of water heater is the conventional storage tank, accounting for 70% of the total. Other types include tankless or on-demand water heaters and heat pump water heaters.

Figure 8-24: Type of Water Heater



El Paso Electric Market Potential Study: Commercial Survey Question 34. "What is the main type of water heater in your facility?" (n=37)

The age of the water heater varied, with 44% of the main water heaters less than 5 years old, while 19% fell into the 6-10 years and 11-15 years categories. Only a small percentage, 7%, aged between 16-20 years, and 11% have been in use for more than 21 years.

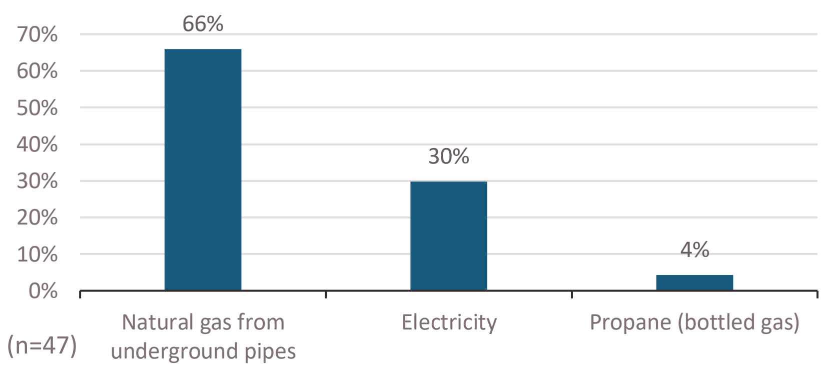
Table 8-11: Age of Water Heater

Number of Years (n=27)	Percentage
< 5	44%
6 - 10	19%
11 - 15	19%
16 - 20	7%
21+	11%

El Paso Electric Market Potential Study: Commercial Survey Question 37. "About how old is your facility's main water heater?" (n=27)

Organizations reported natural gas as the most common fuel for the water heaters, used by 66% (n=47) of respondents, followed by electricity (30%). Propane (bottled gas) were also used, though less frequently at 4%.

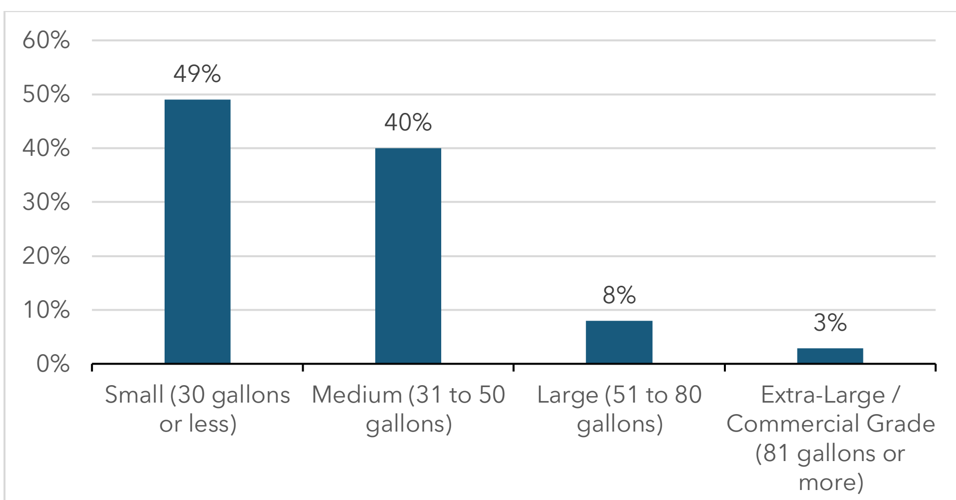
Figure 8-25: Fuel for Main Water Heater



El Paso Electric Market Potential Study: Commercial Survey Question 36. "What fuel does your main water heater use?" - Selected Choice (n=47)

The size of the main water heater is categorized by gallon capacity. Both small (30 gallons) and medium (31-50 gallons) sizes are equally popular, together accounting for 89% (n=35) of the total. Large (51-80 gallons) and extra-large (more than 80 gallons) water heaters are less common, together making up 11% of the total.

Figure 8-26: Size of the Main Water Heater

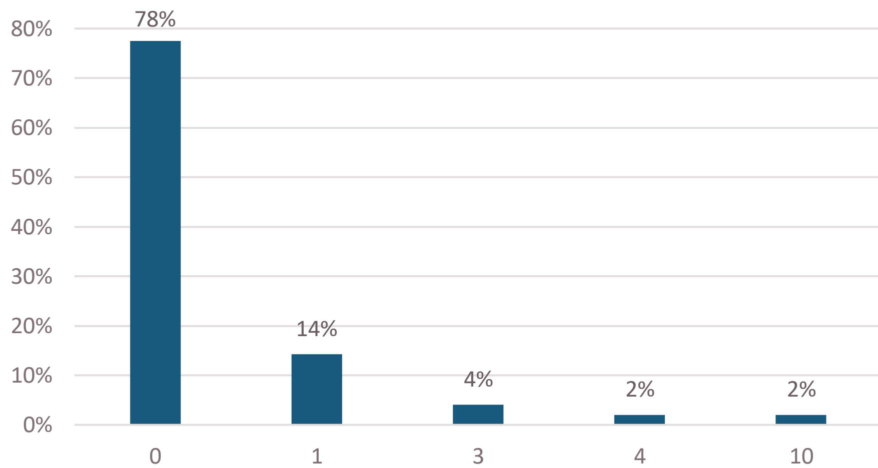


El Paso Electric Market Potential Study: Commercial Survey Question 35. "What is the approximate size of your main water heater?" (n=35)

Clothes Washer and Dryer

The commercial survey found that 78% (n=49) of the facilities have no clothes washer & dryer. About 14% of the facilities are equipped with one washer or dryer, while a mere 2% have two or more of these appliances.

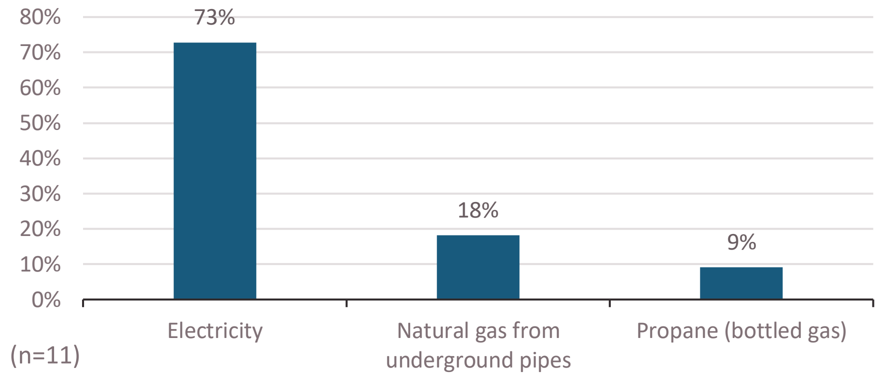
Figure 8-27: Number of Clothes Washer and Dryer



El Paso Electric Market Potential Study: Commercial Survey Question 39. "How many clothes dryers does your facility have?" (n=49)

The survey also investigated the types of fuel used for the main clothes dryer. Electricity emerges as the most common fuel type, powering 73% (n=11) of the dryers. Natural gas piped in was the second most common, used in 18% of dryers. Propane, also known as bottled gas, fuels approximately 9% of the dryers. Note the very small sample size of this segment.

Figure 8-28: Fuel for Main Clothes Dryer



El Paso Electric Market Potential Study: Commercial Survey Question 40. "What fuel do your clothes dryer(s) use?" (n=11)

Lighting and Lighting Controls

The survey also focused on lighting and lighting controls used in the facilities of the surveyed organizations. Linear LEDs are reported to be the most widely used type of light bulb for interior lighting, with linear fluorescent lights and screw-in LEDs follow closely in usage.

50% of respondents reported paying for exterior lighting at their facilities. Parking lot pole lights with LEDs are the most popular choice among respondents. Other exterior lighting options include HID parking lot pole lights, LED canopy lights, landscape/pathway lights (LED), and more.

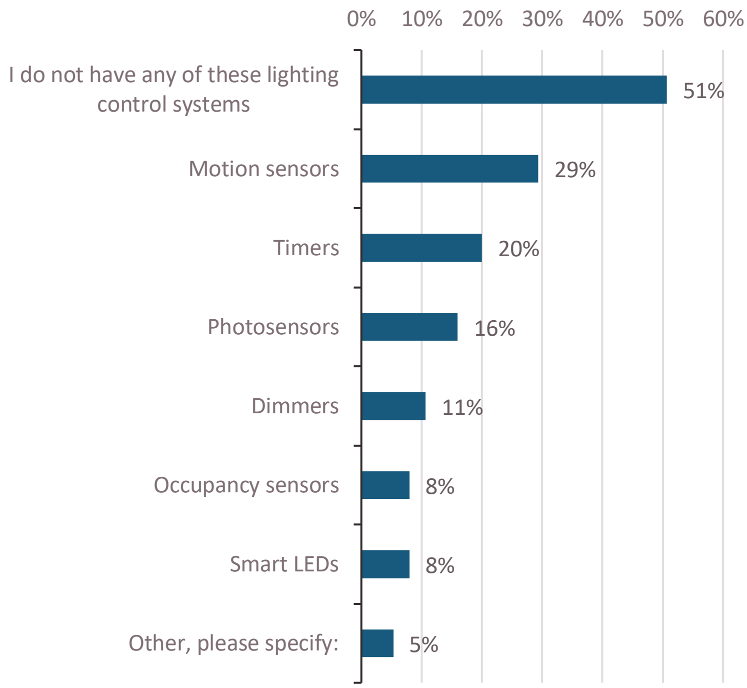
Table 8-12: Count of Share of Light Bulbs in the Facilities

Share of light bulbs in the Facility	Linear fluorescent lights (n=75)	Compact fluorescent lights / CFLs (n=75)	Incandescent bulbs (n=75)	Halogen bulbs (n=75)	Screw-in LEDs (n=75)	Linear LEDs (n=75)	High Intensity Discharge (n=75)
None	45	66	70	72	47	43	72
1-50%	10	6	4	3	**13**	9	2
51-99%	7	1	0	0	9	**11**	0
100%	**13**	2	1	0	6	**12**	1

El Paso Electric Market Potential Study: Commercial Survey Question 41. "Thinking about the interior lighting of your facility, what percentage of light bulbs in your facility are…" (n=75)

The survey provides valuable insights into the distribution and usage of different types of lighting and control systems across different facilities. It is worth noting that 51% (n=75) of respondents do not have any lighting control systems. Motion sensors are the most commonly used control system, with 29% of the respondents reported its usage, followed by timers (18%), photosensors (16%), and dimmers (11%).

Figure 8-29: Lighting Control System

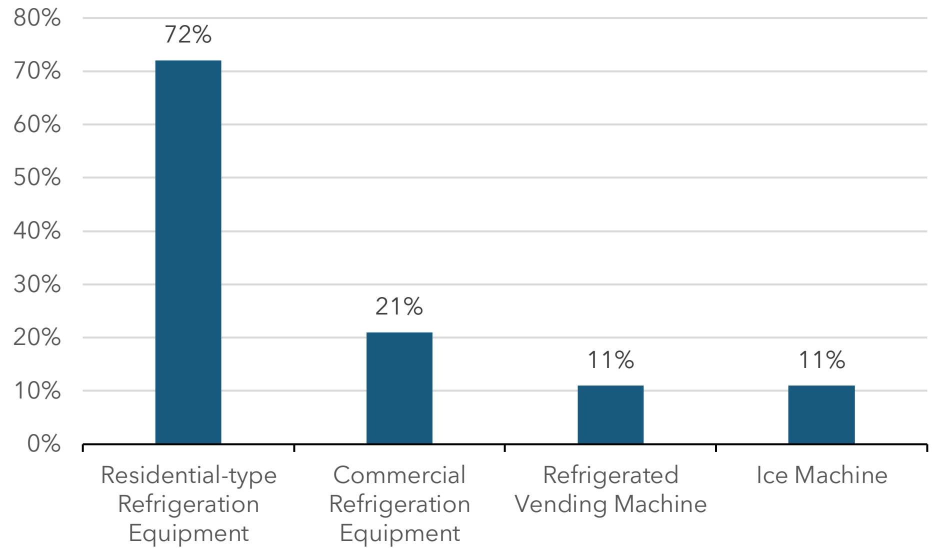


El Paso Electric Market Potential Study: Commercial Survey Question 44. "Do you have any of the following types of lighting control systems?" (n=75)

Refrigeration

Approximately 72% (n=74) of participating organizations have residential-type refrigeration equipment, 21% have commercial or industrial grade refrigeration,11% have both refrigerated vending machines and ice-machines and 7% have commercial dishwashers or food service equipment.

Figure 8-30: Types of Refrigeration Equipment

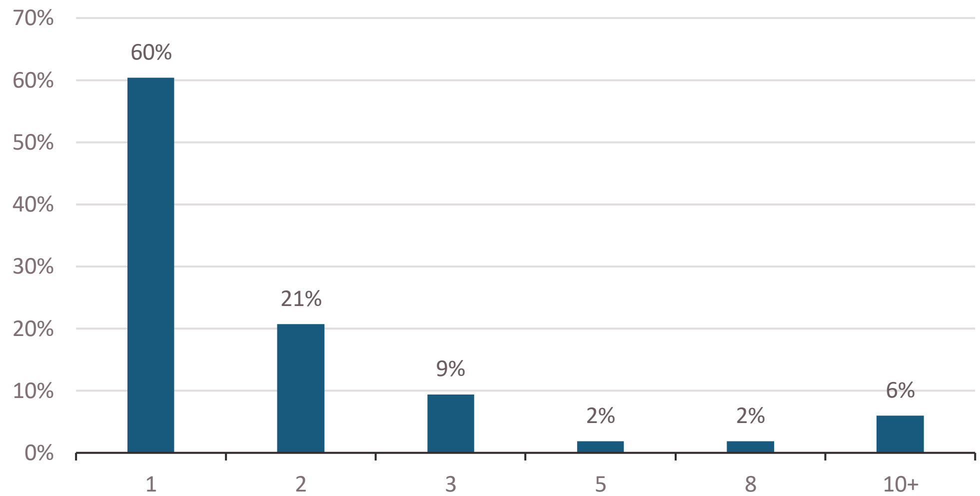


El Paso Electric Market Potential Study: Commercial Survey Question 45. "Does your facility have commercial or industrial refrigeration equipment?" (n=75); El Paso Electric Market Potential Study: Commercial Survey Question 54. "Does your facility have refrigerated vending machines?" (n=75); El Paso Electric Market Potential Study: Commercial Survey Question 56. "Does your facility have any standalone or dedicated ice machines?" (n=75)

Among facilities with commercial or industrial grade refrigeration, 53% (n=15) of them reported to own standalone or free-standing refrigeration systems that are not connected to any larger system while 27% of them reported to be a part of a larger refrigeration system. Around 20% (n=15) of these facilities have both stand-alone and connected refrigeration systems.

Figure 8-31 below provides insights into the distribution of residential-type refrigerators in the surveyed facilities (n=53). Facilities with just one unit account for approximately 60% of respondents, while those with more than 10 units represent less than 5%.

Figure 8-31: Number of Residential-type Refrigerators in the Facilities



El Paso Electric Market Potential Study: Commercial Survey Question 53. "How many residential-type refrigerators does your facility have?" (n=53)

Commercial Dishwasher and Food Service Equipment

There are only 7 (9%, n=75) participating organizations that have commercial dishwasher or food service equipment. Out of these, only 5 of the facilities have commercial dishwashers, they are single tank dishwasher (1), under the counter dishwasher (1), commercial cafeteria dishwasher (1), and commercial glass washer (1).

The survey reported that most facilities with kitchen equipment used natural gas as fuel for the food service equipment. Table 8-13 shows the type of fuel used by the food service equipment.

Table 8-13: Type of Fuel used by the Food Service Equipment

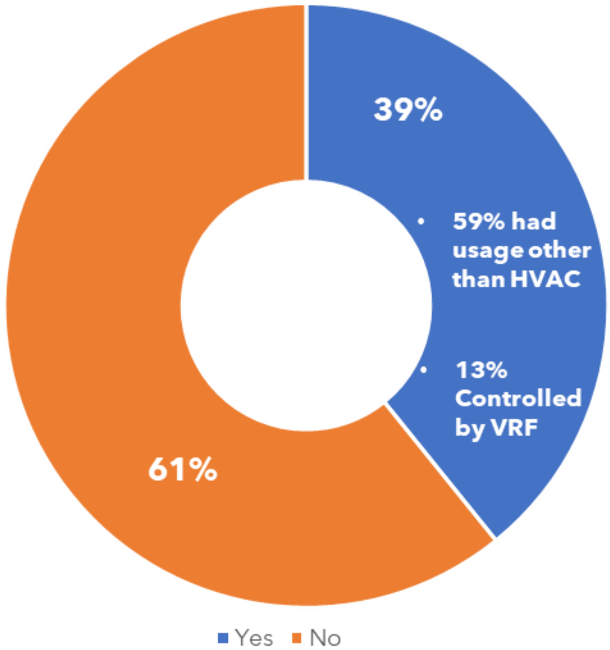
	Conveyor oven (n=3)	Convection oven (n=4)	Combination oven (n=4)	Griddle (n=4)	Commercial fryer (n=3)	Steam cooker (n=3)	Holding cabinet (n=4)	Rack oven (n=2)
Electricity	1	0	0	1	1	1	**3**	0
Natural gas	2	**4**	**4**	**3**	2	2	1	**2**
Propane	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0

El Paso Electric Market Potential Study: Commercial Survey Question 62. "For each type of food service equipment you mentioned, please select what fuel it uses from the drop-down menu."

Compressed Air and Energy Management System

In the survey of various organizations, it was found that approximately 39% (n=74) of all participating organizations utilize compressed air in their operations. It was also identified that 59% (n=29) use motors for purposes other than HVAC systems. 53% (n=17) of the motors in the latter group and 13% in the former group are equipped with variable speed drives, also known as adjustable speed drives, enhancing their efficiency and adaptability. The motors were used for process exhaust or dust ventilation, pumping of water or other liquid, conveyor, hydraulics, process lines and other purposes.

Figure 8-32: Compressed Air



El Paso Electric Market Potential Study: Commercial Survey Question 63. "Does your facility use compressed air?" (n=74); 64. El Paso Electric Market Potential Study: Commercial Survey Question 64. "Are any of these air compressors controlled by adjustable speed drives?" (n=24); El Paso Electric Market Potential Study: Commercial Survey Question 65. "Does your facility use motors for anything other than equipment that's part of your heating, cooling, and ventilation systems?" (n=24)

In the survey conducted across various facilities, it was found that only 7% have an Energy Management System (EMS) installed. Interestingly, in every instance where an EMS is present, it exercises complete control, managing 100% of the facility. The facilities that have implemented EMS span a range of sectors, including retail, manufacturing, hospitals, and warehouses. It's noteworthy that all these systems were installed more than 4 years ago, indicating a long-term commitment to energy management.

The survey also shed light on the types of equipment managed by energy management systems. The list includes heating (5 facilities), cooling (4 facilities), lighting (4 facilities), refrigeration (3 facilities), motors/drives/pumps (2 facilities), on-site generation (1 facility), miscellaneous processes (3 facilities), and district steam system (1 facility). This diverse range of equipment underscores the comprehensive nature of EMS in managing and optimizing energy use across different systems. Table 8-14 below shows the equipment managed by the EMS system control in the surveyed facilities.

Table 8-14: Equipment Managed by the EMS System Control

Equipment managed by the EMS system control (n=5)	
Cooling	4
Heating	4
Lighting	2
Refrigeration	1
Motors/industrial processes	3
On-site generation	1
District steam system	1

El Paso Electric Market Potential Study: Commercial Survey Question 70. "What type of equipment does your EMS system control? Please select all that apply." (n=5)

Office Equipment and Computer Server

15 (21%, n=73) respondents mentioned that their organizations have onsite computer servers in their facilities and 13 of them have space cooling systems. 5 of these facilities reported dedicated cooling servers cooled by computer room air conditioners, or CRACs, 6 of these are cooled by the building's central AC system and 2 are cooled by both dedicated and space cooling systems.

Other than space cooling systems for office equipment, the survey also collected information on various other equipment used in the facilities. Table 8-15 below shows all the types of equipment used in the facilities.

Table 8-15: Type of Equipment used in the Facilities

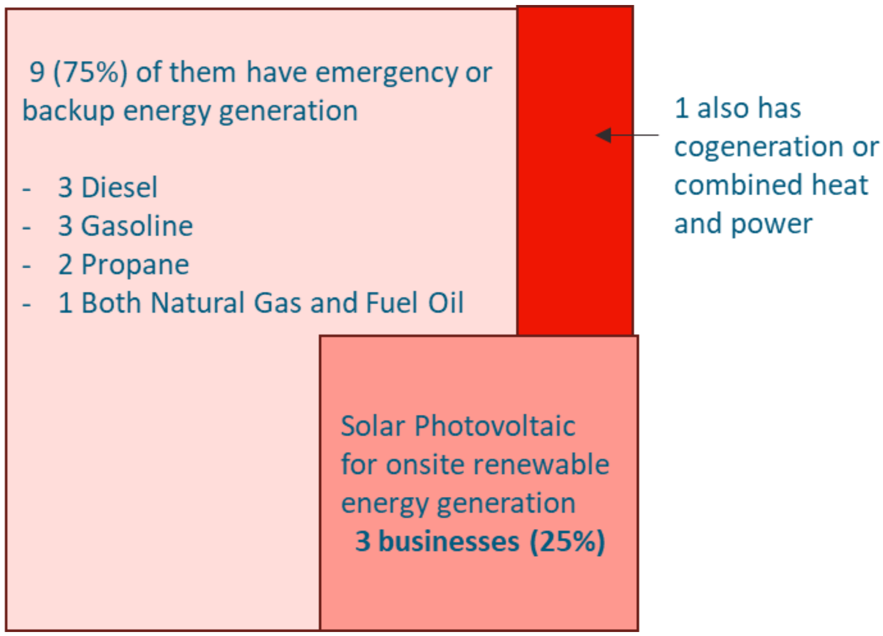
Quantity	Desktop Computer (n=67)	Laptop or notebook Device (n=62)	Humidifier (n=55)	Smart power strip for TV / entertainment setup (n=61)	Smart power strip for office setup (n=59)	Energy use monitoring system (n=51)	Pool with a pool pump (n=52)	Pool Heater (n=52)
None	*17*	*19*	*45*	*40*	*28*	*50*	*49*	*50*
1 to 5	39	34	7	20	29	1	3	2
6 to 10	7	5		1	2			
11 to 20	1	1	1	-	-	-	-	-
21 to 50	3	3	2	-	-	-	-	-

El Paso Electric Market Potential Study: Commercial Survey Question 72. “How many of each type of equipment is used at your facility?”

On-Site Electricity Generation Equipment

The survey data revealed that 12 (17%, n=72) of the respondents have on-site electricity generation equipment at their organizations. A significant 75% of these facilities rely on emergency or backup energy generation systems. The types of emergency energy sources vary, with 3 facilities using Diesel, 3 using Gasoline, 2 using Propane, and 1 using both Natural Gas and Fuel Oil. In addition to these, 25% of the facilities use solar photovoltaic systems for on-site renewable energy generation. Furthermore, one organization has taken a step further by implementing a combined heat and power (cogeneration) system, showcasing an innovative approach to energy management.

Figure 8-33: On Site Electricity Generation



El Paso Electric Market Potential Study: Commercial Survey Question 91. "Which of the following types of on-site renewable generation equipment does your facility have? Please select all that apply." (n=3); El Paso Electric Market Potential Study: Commercial Survey Question 92. "What fuel does your emergency/back-up generation equipment use?" - Selected Choice (n=9)

Pool with a Pool Pump

The survey also asked about pool pump used at the facility. Out of 52 respondents, 49 (94%) reported not using any pool pumps. Two respondents (4%) reported using two pool pumps, and one respondent reported using a single pool pump. Among the three respondents, one (33%) answered "Yes" to having a multi-speed drive (variable-speed) for their pool pumps. The remaining two respondents (67%) answered "No." All three respondents reported owning pool heaters, but only two respondents reported using gas pool heaters.

Electric Vehicle (EV) Ownership

The survey data provides a view of the current state of electric vehicle (EV) ownership and the future intentions of the surveyed organizations. It reveals that 51% (38, n=75) of the organizations, own vehicles. While only 3 of these organizations own electric vehicles today, 50% (n=38) of these organizations (who own vehicles) are considering making the switch to an electric vehicle, indicating a strong trend towards environmentally friendly transportation options.

The survey also shed light on the timeframes that these organizations had in mind for their transition to electric vehicles. A small percentage, 11% or 2 organizations, plan to make the switch within the next year. The majority, 42% or 8 organizations, anticipate transitioning to EVs in the next 1-3 years. One organization plans to switch in the 3 to 5 years, and 26% (5 organizations) intend to switch as soon as their existing vehicle reaches the end of its lifecycle. Finally, 16% (3 organizations) are still unsure about their timeframe for switching to an electric vehicle. Table 8-16 shows the timeframes within which the organizations are interested in switching to an electric vehicle.

Table 8-16: Timeframe to Switch to Electric Vehicle

Time	Number of Responses	Percentage
Within a year	2	11%
1-3 years	8	42%
3-5 years	1	5%
As soon as existing vehicle reaches its lifecycle	5	26%
Unsure	3	16%

El Paso Electric Market Potential Study: Commercial Survey Question 81. "How soon would you like to change your vehicles to electric?" (n=16)

26% (17, n=72) of respondents expressed interest in installing EV charging stations at their facilities. The majority of respondents fell into two categories: 35% were interested in installing at least one charging station, and 53% were interested in installing 2-4 charging stations. Additionally, 25% (4, n=17) of respondents planned to install charging stations within a year, while 50% of respondents had a timeline of 1-3 years for installation, followed by 19% (3 responses) of respondents expected to install charging stations within this timeframe. The following tables, Table 8-17 and Table 8-18, show the interests among the survey respondents on installing EV charging stations and its timeline.

Table 8-17: Number of Interested Charging Stations

Number of New Charging Station Interested in (n=17)	Number of Responses	Percentage
1	6	35%
2-4	9	53%
4-8	1	6%
More than 8	1	6%

El Paso Electric Market Potential Study: Commercial Survey Question 87. “How many charging stations would you like to install at your facility in the future?” (n=17)

Table 8-18: Timeframe to Install Charging Station

When to Install Charging Station (n=17)	Number of Responses	Percentage
Within 1 year	4	25%
1-3 years	8	50%
4-6 years	3	19%
7-10 years	1	6%

El Paso Electric Market Potential Study: Commercial Survey Question 88. “How soon would you be likely to install charging equipment on your property?” (n=16)