Residential Wi-Fi Thermostat Demand Response Participation Study (MA25DR01-E-RWT)

Final Report

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Executive Summary

Introduction

This report summarizes the results of the Massachusetts (MA) Residential Wi-Fi Thermostat Demand Response (DR) Participation Study, and is intended to support enhancements to program marketing, outreach, databases, and collaborating with OEMs, vendors, and other programs to increase participation in the MA Electric Program Administrators' (PAs') Wi-Fi Thermostat DR offering.

The Residential Wi-Fi Thermostat DR offering, known to customers as ConnectedSolutions, aims to reduce peak demand of residential cooling systems by directly controlling the scheduled setpoints of Wi-Fi Thermostats on specific days during the summer, June 1 through September 30. Participating DR customers are provided incentives for providing the right to adjust their temperature setpoint during events, as well as access to their thermostat data. Table ES-1 summarizes the characteristics of the program.

Table ES-1. Residential Wi-Fi Thermostat DR Program Characteristics

Program Attributes		2025
Program Participants	**Customer Segment**	Residential
	Eligibility Requirements	Customers with a previously installed internet-connected thermostat that is connected to a central air conditioners or heat pumps
DR Incentive	**Enrollment Incentive**	Market Rate: $50 Low-income: $100
	Performance Incentive (Annual)	$20
	Event Participation Requirement	None
DR Events	**DR Season**	June 1 to September 30
	Typical Event Days	Non-holiday weekdays
	Potential Event Times	3 p.m. to 8 p.m.
	Potential Duration of Events	Two to three hours per event
	Number of Events	Typically, 10-15 dispatch events annually
	Event Dispatch Criteria	Days forecasted to be high demand days

Source: Guidehouse

There is ongoing interest by the MA PAs to increase DR participation overall and among historically underrepresented subpopulations (e.g., low-income customers, moderate-income customers, renters, customers in designated equity communities, or DECs). This study identified opportunities to expand participation in the Wi-Fi Thermostat DR offering.

The study explored three major analysis areas.

- **Program Participation Data Analysis** that leveraged existing data to understand and characterize the populations being reached and not being reached by the DR offering.

- **Wi-Fi Thermostat DR Enrollment Pathways and Process Review** was aimed at better understanding how current DR participants may have joined the program and the extent to which EE channels are leveraged.

- **Non-Participant Research** consisting of a non-participant survey to assess non-participant awareness of Wi-Fi Thermostats and DR and willingness to participate in DR.

Additionally, the study identified opportunities to leverage other EE programs that offer Wi-Fi Thermostats for more DR adoption, such as Residential Turnkey Services and the Low-Income Program. The specific research questions answered through this study are included in Table ES-2.

Table ES-2. Wi-Fi Thermostat Demand Reduction Participation Study Objectives

Study Analysis Area	Research Questions	Study Approach
Program Participation Data Analysis	• Who is participating in the Wi-Fi Thermostat DR program? Who is *not* participating in the DR program and has received a Wi-Fi Thermostat EE rebate? Who is *not* participating in the DR program and has *not* received a Wi-Fi Thermostat EE rebate? • Are we seeing any geographic and/or demographic commonalities or differences across these three cohorts?	Wi-Fi Thermostat EE rebate tracking data analysis DR offering enrollment tracking data analysis Residential customer data analysis
Wi-Fi Thermostat DR Enrollment Pathways and Process Review	• Through what pathways (incl. EE pathways) are customers most often learning about and enrolling in the Wi-Fi Thermostat DR program? What pathways are less successful? • What are some opportunities to better leverage other Mass Save programs or activities for more adoption of Wi-Fi Thermostats and DR program enrollments? • What are the DR program enrollment steps and how might they create unintended challenges / barriers to enrollment?	Wi-Fi Thermostat EE rebate tracking data analysis DR offering enrollment tracking data analysis Wi-Fi Thermostat EE rebate and DR offering marketing communications tracking data analysis Interviews with program staff and/or vendors

Non-Participant Research	• What types of cooling do customers have?
	• How common are Wi-Fi Thermostats outside of the EE program incentives? *Those without central cooling or those without a Wi-Fi thermostat limit the population that could participate in ConnectedSolutions.*
	• What are the primary motivations/barriers:
	  ○ To obtaining a Wi-Fi Thermostat?
	  ○ For DR participation?
	• How do answers to the above vary by subpopulation of interest (i.e., those in a designated equity community)?
		Surveys of non-participants who have received EE rebate for Wi-Fi Thermostat
		
		Surveys of non-participants who have not received an EE rebate for Wi-Fi Thermostat

^ We also asked customers about knowledge of and openness to micro-shifting. *Source: Guidehouse*

Key Findings

1. **There is substantial opportunity to increase enrollment among central cooling customers who already own Wi-Fi Thermostats.**

Despite more than 100,000 customers having engaged with the Wi-Fi Thermostat DR offering since 2016, the program is capturing only a fraction of the overall eligible market. Of the 900,000 DR non-participants with central cooling, 400,000 own Wi-Fi Thermostats. There is substantial opportunity to increase enrollment among these customers.

2. **Current Wi-Fi Thermostat EE rebate tracking data is limited in its usefulness for DR purposes.**

The PAs incentivize Wi-Fi Thermostats using the Energy Star qualified product list, and not every device is eligible can integrate or can be integrated with the PAs' distributed energy resource management system. However, neither Wi-Fi Thermostat nor heating system installation (with Wi-Fi Thermostats) rebates' tracking data can readily facilitate analysis of DR program eligibility.

3. **DR enrollment is driven overwhelmingly by OEM marketing, with limited traction from coordinated DR-EE efforts to-date.**

By one PA's estimate, 80-85% of DR enrollments have been the result of thermostat partner (OEM) marketing. Additionally, 73% of current DR enrollees have not received a Mass Save rebate for a Wi-Fi Thermostat. However, Cape Light Compact, Eversource, and National Grid provide a strong example of co-marketing through the Mass Save Online Marketplace. There is a Marketplace feature which allows for DR "pre-enrollment" at point-of-sale. Despite this, overall integration between EE programs and DR remains inconsistent and underleveraged.

4. **DR participation barriers include some that the PAs can improve upon and some that are outside of the PAs' control.**

The primary DR participation barriers identified through this study include:

- **Lack of central cooling** – Only an estimated 20% of low-income DR non-participants and 42% of non-low-income DR non-participants have central cooling.
- **Lack of Wi-Fi Thermostat** – Of those with central cooling, 35% of low-income DR non-participants and 54% of non-low-income DR non-participants have a Wi-Fi Thermostat.
- **Lack of interest in Wi-Fi Thermostats and/or lack of awareness in available rebates –** The most frequently reported reasons for not having a Wi-Fi Thermostat among survey respondents were that the current thermostat works fine and the cost of the thermostat. 76% of respondents who do not have a Wi-Fi Thermostat because of costs indicated they were unaware of the Mass Save rebates for Wi-Fi Thermostats.
- **Lack of awareness in DR program** – In terms of awareness of the ConnectedSolutions program, about half of those with central AC who received a rebate for a Wi-Fi Thermostat reported being aware.
- **Concerns about giving control to utility** – Respondents who reported being aware of ConnectedSolutions and who have a Wi-Fi Thermostat (16% or 74 of 461 survey respondents with central cooling controlled by the thermostat) did not enroll in the program for various reasons, particularly not liking the idea of utility thermostat control.

5. **DR non-participants who are low-income are much less likely to have central cooling and Wi-Fi Thermostats than non-low-income customers, and those with Wi-Fi Thermostats are less likely to have purchased it themselves.**

Only 20% of low-income DR non-participants have central cooling compared to 42% of non-low-income DR non-participants. Additionally, when asked why their home had a Wi-Fi Thermostat, low-income customers with a Wi-Fi Thermostat more often reported that the thermostat was already there when they moved in (37% v. 24% of non-low-income customers).

6. **The vast majority of eligible DR non-participants are comfortable with English.**

Less than 10% of DR non-participants with central cooling (both those with and without Wi-Fi Thermostats) speak a language other than English 100% of the time at home. Of these, only 3% indicated they are not at all comfortable reading English, suggesting that multilingual DR program marketing and resources may not be critical to increasing program enrollments.

7. **DR participant and eligible non-participant demographics are largely similar to one another.**

Relative to DR participants, DR non-participants with central cooling *and* Wi-Fi thermostats are approximately the same proportion of low-income customers (DR non-participant: 3% v. DR participant: 4%), skew slightly more concentrated in DECs (29% v. 22%), and skew slightly more urban (36% v. 34%).

Considerations

Based on the findings from this study, Guidehouse has formulated the following considerations:

Enhance Outreach to Customers with Wi-Fi Thermostats

1. **Conduct outreach to Wi-Fi Thermostat rebate recipients regardless of the EE pathway.** Although central cooling status and DR-eligibility of the thermostat may be unknown for rebate recipients, marketing can be crafted to accommodate this. PAs incentive offers should clearly state which ones are eligible for ConnectedSolutions.

2. **Consider cross-PA promotional DR marketing campaigns.** For customers who received a Wi-Fi Thermostat rebate through their gas account and have a different electric PA, the gas and electric PAs should consider how they can collaborate to market the DR program. ADR implementation vendor could facilitate this effort.[1]

3. **Continue to deepen OEM partnerships and explore ways of influencing OEM marketing efforts.** To make inroads with customers with Wi-Fi Thermostats who have not yet enrolled in DR, advocate for additions and/or enhancements to OEM marketing efforts, with a particular focus on the most popular DR-eligible thermostat brands. Different messaging and marketing strategies than what have been used historically may

[1] Process needs to include which gas customers are served by municipal utilities. It would be a much larger effort to coordinate with the public utilities.

be necessary to gain traction with certain customer segments, including those who feel uncomfortable with utility control of their thermostat.

Strengthen DR-EE Coordination to Increase Wi-Fi Thermostats Installed / DR Enrollments

4. **Integrate DR promotion into all relevant EE touchpoints.** Ensure that every relevant EE touchpoint (in particular, market rate and low-income home energy assessments and heat pump installations) is leveraged to assess applicability of the home for a Wi-Fi Thermostat and includes information and encouragement to install a Wi-Fi Thermostat and enroll in DR.
    a. **Develop a strategy for DR-EE coordination with heat pump installations.** In the near- to medium- term, this would focus on central heat pumps. This could involve creating guidance and expectations for heat pump installers that are part of the Heat Pump Installers Network and offering customer and/or installer enhanced incentives for bundling DR-eligible Wi-Fi Thermostats with central heat pumps.
    b. **Continue to leverage the Residential Turnkey Services touch-point** despite Wi-Fi Thermostats not being installed through the program. Establish and communicate clear expectations for Lead Vendors (LVs) and Home Performance Contractors (HPCs) regarding when and how to cross-promote both Wi-Fi Thermostats and the DR program to customers receiving HEAs.
    c. **Continue to work with the Low-Income Program implementation LVs to encourage low-income customers to install Wi-Fi Thermostats.** Wi-Fi Thermostats are installed at no cost for low-income customers through the Low-Income Program; however, penetration is still quite low likely due to a combination of the measure not being prioritized during home energy assessments and customer preferences.

Encourage and Monitor Participation by Underrepresented Customer Subgroups

5. **Educate Wi-Fi Thermostat owners about the value of Wi-Fi Thermostats.** Develop marketing that speaks to customers who were not responsible for purchasing their Wi-Fi Thermostat (i.e., situations where the thermostat was already present in the home upon move-in) and may not engage much with the device.

6. **Conduct continuous tracking & improvement.** Through periodic survey efforts or other means, collect and analyze data on DR participation by income status, race/ethnicity, and home ownership status to identify gaps and measure progress.

Considerations for Future Evaluations

Future evaluations on this topic would be aided by the following enhancements to data collection and/or tracking:

1. **Cleanly track thermostat Make and Model Number in stand-alone data fields within EE Wi-Fi Thermostat rebate tracking data.** This will ensure that there is sufficient information to determine eligibility of customers who have received an EE rebate for a Wi-Fi Thermostat in the past but who have not enrolled in DR.

2. **Establish a method of cleanly linking customer electric and gas accounts (via PA coordination with data management vendor).** This would allow for a more accurate assessment of DR opportunity size among electric customers who received a Wi-Fi Thermostat rebate through their gas account.

3. **Conduct a periodic review of Do Not Contact flag** to ensure percentage of customers flagged as DNC is as expected. This will help to avoid systematic bias in customer research, particularly general population research.

1. Introduction

This document summarizes the results of the Massachusetts (MA) Residential Wi-Fi Thermostat Demand Response (DR) Participation Study. The intent of the study is to provide information that can be used in designing program changes, changes to marketing, outreach, databases and in working with OEMs, vendors, and through other programs to increase participation in the MA Electric Program Administrators' (PAs') Wi-Fi Thermostat DR offering.

The Residential Wi-Fi Thermostat DR offering, known to customers as ConnectedSolutions, aims to reduce peak demand of residential cooling systems by directly controlling the scheduled setpoints of Wi-Fi Thermostats on specific days during the summer, June 1 through September 30, to a maximum differential of four (4) degrees. Participating DR customers are provided incentives for providing the right to adjust their temperature setpoint during events, as well as for access to their thermostat data. Table 1-1 summarizes the characteristics of the program.

Table 1-1. Residential Wi-Fi Thermostat DR Program Characteristics

Program Attributes		2025
Program Participants	**Customer Segment**	Residential
	Eligibility Requirements	Customers with a previously installed internet-connected thermostat that is connected to a central air conditioners or heat pumps
DR Incentive	**Enrollment Incentive**	Market Rate: $50 Low-Income: $100
	Performance Incentive (annual)	$20
	Event Participation Requirement	None
DR Events	**DR Season**	June 1 to September 30
	Typical Event Days	Non-holiday weekdays
	Potential Event Times	3 p.m. to 8 p.m.
	Potential Duration of Events	Two to three hours per event
	Number of Events	Typically, 10-15 dispatch events annually
	Event Dispatch Criteria	Days forecasted to be high demand days

Source: Guidehouse

The MA PAs also offer energy efficiency (EE) rebates for Wi-Fi Thermostats through various channels. In addition, there is ongoing interest by the MA PAs to increase DR participation overall and among historically underrepresented subpopulations (e.g., low-income customers, moderate-income customers, renters, customers in designated equity communities, or DECs). This study identified opportunities to expand participation in the Wi-Fi Thermostat DR offering.

The study explored three major analysis areas.

- **Program Participation Data Analysis** in which Guidehouse leveraged existing data to understand and characterize the populations being reached and not being reached by the DR offering.

- **Wi-Fi Thermostat DR Enrollment Pathways and Process Review** was aimed at better understanding how current DR participants may have joined the program and the extent to which EE channels are leveraged.

- **Non-Participant Research** consisting of a non-participant survey to assess non-participant awareness of Wi-Fi Thermostats and DR and willingness to participate in DR.

Throughout these analyses, the study identified opportunities to leverage other EE programs for more adoption, such as Residential Turnkey Services and the Low-Income Program. The specific research questions answered through this study are included in Table 1-2.

Table 1-2. Wi-Fi Thermostat Demand Reduction Participation Study Objectives

Study Analysis Area	Research Questions	Study Approach
Program Participation Data Analysis	• Who is participating in the Wi-Fi Thermostat DR program? Who is *not* participating in the DR program and has received a Wi-Fi Thermostat EE rebate? Who is *not* participating in the DR program and has *not* received a Wi-Fi Thermostat EE rebate (i.e., may or may not have a Wi-Fi Thermostat)? • Are we seeing any geographic and/or demographic commonalities or differences across these three cohorts?	Wi-Fi Thermostat EE rebate tracking data analysis DR offering enrollment tracking data analysis Residential customer data analysis
Wi-Fi Thermostat DR Enrollment Pathways and Process Review	• Through what pathways (incl. EE pathways) are customers most often learning about and enrolling in the Wi-Fi Thermostat DR program? What pathways are less successful? • What are some opportunities to better leverage other Mass Save programs or activities for more adoption of Wi-Fi Thermostats and DR program enrollments? • What are the DR program enrollment steps and how might they create unintended challenges / barriers to enrollment?	Wi-Fi Thermostat EE rebate tracking data analysis DR offering enrollment tracking data analysis Wi-Fi Thermostat EE rebate and DR offering marketing communications tracking data analysis Interviews with program staff and/or vendors

Non-Participant Research	• What types of cooling do customers have?
	• How common are Wi-Fi Thermostats outside of the EE program incentives? *Those without central cooling or those without a Wi-Fi thermostat limit the population that could participate in ConnectedSolutions.*
	• What are the primary motivations/barriers:
	  ○ To obtaining a Wi-Fi Thermostat?
	  ○ For DR participation?
	• How do answers to the above vary by subpopulation of interest (i.e., low-come, renters, those in a designated equity community)?
		Surveys of non-participants who have received EE rebate for Wi-Fi Thermostat
		
		Surveys of non-participants who have not received an EE rebate for Wi-Fi Thermostat

^ We also asked customers about knowledge of and openness to microshifting.

Source: Guidehouse

2. Data Sources and Data Review

This section describes the data sources used for this evaluation and the steps taken to prepare the data for analysis.

2.1 Data Received from PAs and Vendors

The sources of data received from the PAs and their vendors that were leverage for this study are summarized in Table 2-1 below and subsequent text.

Table 2-1. Data Sources

Data Requirement	Providing Party
Residential Customer Data (i.e., name, address, email address, income status, customer account number)	PA Data Management vendor
Wi-Fi Thermostat DR Program Tracking Data (i.e., enrollment date, incentive date, equipment type, customer enrollment status, name, customer account number, address, email address, enrollment pathway[1])[2]	Individual PAs
Wi-Fi Thermostat EE Rebate Tracking Data (i.e., transaction date, customer name, customer address, customer account number, program/ pathway)	PA Data Management vendor
DR Marketing Data (i.e., marketing communication tracking data, marketing campaign analytics)	Individual PAs
DR Enrollment Process Flow Information (i.e., screen shots of Wi-Fi Thermostat manufacturer apps enrollment flows, copies of screens that appear and/or communications that occur following enrollment by pathway)	Individual PAs
Staff and Vendor Contact Information (i.e., name, company, email address, phone number)	Individual PAs
Recent Research Studies (i.e., any DR participant surveys and/or analysis of participation data that have been conducted by the PAs)	Individual PAs

Source: Guidehouse Data Request

Residential Customer Data: Guidehouse ultimately required both the residential electric active customer list (ACL) and the residential gas ACL for this study. Guidehouse received ACLs for 2023.

Wi-Fi Thermostat DR Program Tracking Data: Guidehouse received Wi-Fi Thermostat DR program tracking data, which is maintained by the DR program vendor, for each PA. The date ranges covered by each data set are below:

- Cape Light Compact: August 25, 2020 - May 29, 2025[2]
- Eversource: June 10, 2019 - December 31, 2024
- National Grid: May 15, 2016 - December 31, 2024
- Unitil: July 15, 2019 - December 31, 2024

[2] The Wi-Fi Thermostat DR tracking data Guidehouse received for CLC extended into 2025. In the analysis we truncated CLC's dataset to the end of 2024 so that each PA's DR tracking data has the same end date.

Wi-Fi Thermostat EE Rebate Tracking Data: Guidehouse received EE rebate tracking data associated with all Wi-Fi Thermostat rebates paid to residential customers (both gas and electric) between 2017 and 2023.

DR Marketing Data: The study team received and reviewed marketing analytics data from Eversource and National Grid for marketing efforts they conduct in-house but, since we did not have similar information for OEM marketing, this data was ultimately not leveraged for this study.

DR Enrollment Process Flow Information: The PAs provide Guidehouse with documentation on customer journey by participating thermostat manufacturer compiled by the PAs' DR vendor.

Staff and Vendor Contact Information: The PAs provided the study team contact information for PA staff and partner vendors who are knowledgeable about factors affecting participation in the DR program, including the extent to which efforts to coordinate with EE programs/initiatives is taking place.

Recent Research Studies: The PAs have conducted their own DR participant research in recent years and provided the results of this research to Guidehouse for this study. Specifically, results of participating customer surveys conducted by the PAs' DR vendor on behalf of the PAs were provided for Eversource (for 2020, 2021, 2022, and 2023), Cape Light Compact (for 2023), and Unitil (for 2023). Eversource also provided the results of its "Tristate Thermostat Demand Response Survey" from 2024. National Grid provided the results of a ConnectedSolutions thermostat propensity analysis conducted in 2025.

Data produced from primary data collection activities (staff/vendor interviews and non-participant survey) conducted for this study are described in section 3.2 and 3.3.

2.2 Data Review

Guidehouse performed a preliminary QA/QC of the data received, including DR program data, EE program data, and customer data. The preliminary QA/QC review assessed data completeness, data convention (consistency across datasets/PAs), and data validity. The results of the QA/QC were documented in an interim deliverable shared with the PAs, and some follow-up was required.

Two notable data validity issues encountered during this project were:

1) **Eversource DR Tracking Merge w/ Residential Electric ACL –** Guidehouse was initially unable to fully merge Eversource's DR tracking data with the residential ACL. It was discovered that this was related to Eversource's shift to a new customer information system (CIS) system. A crosswalk from the PAs' data management vendor was required to link account numbers in the new format with legacy account numbers.
2) **National Grid Do-Not-Contact (DNC) Flag –** In the residential ACL received for this study, the number of customers flagged as DNC was very large, and significantly higher than it had been earlier in the year. Upon further investigation, this was attributed to a large increase in National Grid customers being flagged as DNC. This issue is being investigated by the PAs and the PAs data management vendor. For the purposes of this study and the non-participant survey sample, Guidehouse had to make adjustments to account for this issue. This is described in section 3.3.1.

3. Study Methods

3.1 Participation Data Analysis

For the Participation Data Analysis, Guidehouse leveraged Wi-Fi Thermostat DR Program Tracking Data, Wi-Fi Thermostat EE Rebate Tracking Data, and Residential Electric Customer Data.

The Participation Data Analysis task sought to address the following research questions:

- Who is participating in the Wi-Fi Thermostat DR program? Are we seeing any common geographic and/or demographic attributes across participants?
- Who received a Wi-Fi Thermostat EE rebate but is not participating in the DR program?[3] Are there any defining characteristics of these customers?
- Among the population of residential customers, who has not received a Wi-Fi Thermostat EE rebate and is not participating in the DR program? Are there any defining characteristics of these customers?

This analysis explores the participation data through several lenses, such as:

- **Participation Cohort –**
  - **DR Program Participants:** Electric customers who have a Wi-Fi Thermostat and participate in the DR offering. Within this cohort, we look at who received a rebate for a Wi-Fi Thermostat through their Electric *or* Gas utility's EE offerings and who has not.
  - **DR Non-Participants – Wi-Fi Thermostat Rebate Recipients:** Electric customers who received a Wi-Fi Thermostat through their Electric *or* Gas utility's EE program and have not participated in the DR offering.[4]
  - **DR Non-Participants – Those who have not received a Wi-Fi Thermostat Rebate (i.e., may or may not have Wi-Fi Thermostat):** Electric customers who have not participated in the DR offering *and* who have not received a Wi-Fi Thermostat through their utility's EE program.
- **Thermostat Characteristics –** Providers and number per customer[5]

[3] Customers can get rebates for Wi-Fi thermostats that are not eligible for the ConnectedSolutions program. Through this analysis, the team learned that the EE Wi-Fi thermostat rebate tracking data does not provide sufficient information to determine DR eligibility. This finding is described in section 4.1.1.

[4] Ibid.

[5] To protect anonymity of individual thermostat providers, Guidehouse's analysis of participation by thermostat provider, which was shared for an interim deliverable, is excluded from this report. Analysis of number of thermostats by DR participant is included in Appendix A.

- **Subgroups of Interest –** Low-income customers and those in DEC[6]
- **Regional Characteristics –** Distribution by urban / suburban / rural

3.2 Enrollment Pathways and Processes Review

Guidehouse conducted a review of enrollment pathways and processes for the Wi-Fi Thermostat DR program. The goal was to identify how customers are currently enrolling, assess coordination with EE programs, and uncover barriers to participation.

The Enrollment Pathways and Processes Review task sought to address the following research questions:

- What are the residential EE Wi-Fi Thermostat incentive pathways and go-to-market approaches?
- What are the DR program go-to-market strategies?
- Through what pathways are customers most often learning about and enrolling in the Wi-Fi Thermostat DR program? What pathways are less successful?
- What are some opportunities to better leverage other Mass Save programs or activities for more adoption of Wi-Fi Thermostats and DR program enrollments?
- What are the DR program enrollment steps and how might they create unintended challenges / barriers to enrollment?

The Enrollment Pathways and Process Review used three research methods:

1) Program Materials Review
2) Staff Interviews, and
3) Program Data Review & Analysis.

3.2.1 Program Materials Review

A comprehensive review of existing documentation was conducted, including:

- Customer journey process flow documentation from EnergyHub (January 2025).
- Surveys of participating customers from 2020–2023 across multiple PAs, including Eversource, Cape Light Compact, Unitil, and National Grid.
- Propensity analysis from National Grid's ConnectedSolutions program (2025).

This review provided insights into what the DR enrollment journey looks like for customers once they own a Wi-Fi Thermostat.

[6] Subgroups such as renters and moderate-income customers were also of interest for this study. Fields that would allow for the identification of these subgroups in the population of residential customer data were not available. Therefore, Guidehouse was unable to incorporate these subgroups into the participation data analysis and non-participant survey sampling. Guidehouse does provide estimates of the percentage of renters with central cooling and Wi-Fi Thermostats based on renters who responded to the survey in section 4.4.6.

3.2.2 Staff Interviews

Guidehouse conducted interviews and email-based information collection with key stakeholders, including:

1. DR and EE program managers from Cape Light Compact, Eversource, National Grid, and Unitil.
2. The PAs' DR implementation vendor.
3. Two of three Residential Turnkey Services' Lead Vendors (LVs)
4. Eight Residential Turnkey Services Home Performance Contractors (HPCs) – feedback summarized and provided by the vendor that manages the HPCs.

These interviews helped clarify EE-DR coordination practices and vendor perspectives on customer engagement and enrollment challenges.

3.2.3 Program Data Review & Analysis

Guidehouse analyzed multiple datasets to quantify enrollment trends and overlaps between EE and DR participation:

- **Wi-Fi Thermostat DR Program Tracking Data**: Enrollment counts, pathway attribution, and timing of enrollment.
- **EE Rebate Tracking Data**: Participation counts by initiative, overlap with DR participants, and timing of rebate receipt.
- **Residential Customer Data**: Used to identify electric accounts associated with rebate recipients.

This data-driven analysis enabled identification of enrollment patterns and gaps in coordination between EE and DR programs.

3.3 Non-Participant Survey

Guidehouse delivered the DR Non-Participant survey in an online format to residential electric customers who have not participated in the ConnectedSolutions DR program. This survey targeted both DR non-participants who have received a Wi-Fi Thermostat through the EE program and those who have not. The DR Non-Participant Survey was fielded in October 2025.

Guidehouse reached out to customers via email invitation. The median duration for respondents to complete the survey was 5 minutes. Survey respondents received a $20 e-gift card for completion. The survey was offered in English, Spanish, and Brazilian Portuguese. Of the 2,042 customers who completed the survey, 99 took the survey in Spanish and 15 took it in Portuguese. Of the 261 respondents who did not ultimately get screened, eight took the survey in Spanish and two took the survey in Portuguese.

The objectives of the DR Non-Participant survey were to gain insight into the types of cooling electric customers have, understand the availability of Wi-Fi Thermostats outside of EE program incentives, and understand awareness, barriers and motivators to enroll in DR programs. For

customers without a Wi-Fi Thermostat, Guidehouse asked additional questions to understand the barriers and motivators to install a Wi-Fi Thermostat.

Table 3-1. Non-Participant Survey Characteristics

Survey Characteristic	Description
Key Research Questions	• What types of cooling do customers have? How common are Wi-Fi Thermostats outside of the EE program incentives? Those without central cooling or those without a Wi-Fi thermostat limit the population that could participate in ConnectedSolutions. • For those without a Wi-Fi Thermostat - what are the barriers to Wi-Fi Thermostat adoption? What factors would motivate the purchase of a Wi-Fi Thermostat? • What is the general awareness of DR among customers? What is the awareness of the DR program among customers? What are the barriers to participating in a DR program? • What changes in the DR program would motivate participants to enroll in the program? • How do answers to the above vary by subpopulation of interest (i.e., low-come, renters, those in a designated equity community)?
Survey Length	Approx. 30 questions, depending on applicable survey skip logic
Incentive	$20
Implementation Method	Email invitation to an online survey
Language	English, with translations to Spanish and Brazilian Portuguese

Source: Guidehouse

3.3.1 Sampling

The data cleaning and filtering steps used to prepare the non-participant survey sample frame are outlined below. The resulting non-participant sample frame represents all unique residential electric customers (DR non-participants) that are not on the do-not-contact (DNC) list, have an email address and service address populated, and are likely the home occupant (either owner or renter).

Table 3-2. Non-Participant Survey – Sample Data Cleaning Steps

Cleaning Step	Accounts Removed	Cumulative Accounts
Residential Electric Active Customer List	--	2,480,035
Remove DR Participants[1]	76,309	2,403,726
Flag Customers who received a Wi-Fi Thermostat Rebate[2]	N/A	2,403,726 (Flagged 53,815 accounts that received rebate through electric PA and 45,757 through gas PA and 1,466 through both)
Remove Customers with email addresses that appear across multiple accounts[3]	185,244	2,218,482
Remove Customers on Do Not Contact (DNC) list	801,985[4]	1,416,497
Remove Customers with missing email addresses[5]	374,764	1,041,733
Remove Customers with missing service address[6]	7,004	1,034,729
Total	**1,437,575**	**1,034,729**
Total known to have Wi-Fi t-stat	*N/A*	*43,193*
Total w/ Wi-Fi t-stat status unknown	*N/A*	*991,536*

Source: Guidehouse
[1] Includes customer who were *ever* associated with the DR program (i.e., appear in the DR tracking data with Accepted, Unenrolled, Rejected, Removed status). Such customers were removed from the active customer list by cross checking DR program tracking data using account number. DR customers without an account number in the tracking data were removed by cross-checking email addresses against those listed in the ACL.
[2] Joined the gas ACL with the EE Wi-Fi Thermostat tracking data by account number. Filtered this data set to gas accounts that received an incentive for a Wi-Fi Thermostat (102,186). Then, filtered this list to unique accounts by address, secondary address, and city name (97,656). Took the unique address, secondary address and joined it into the electric ACL.45,757 gas accounts were joined in this way. Some gas accounts did not join because the address is covered by a municipal electric utility. Other gas accounts likely have an electric PA counterpart, but we could not match due to inconsistencies in how the addresses are stored between the gas and electric ACLs.
[3] Assumption is that these are multifamily building owners/mgmt. companies.
[4] Based on the ACL w/ DNC flag provided by DNV on July 21, 2025, a very large number of customers are classified as DNC – approximately 1/3 of the 2023 ACL; this is a significant increase in the number of 2023 residential electric ACL customers flagged as DNC relative to a version of the 2023 ACL received in early 2025. The source of the change appears to primarily be National Grid whose proportion of customers on the DNC list increased from 5% to 55% between January and July 2025. DNV is investigating this issue.
[5] Includes blank, “NULL”, and clearly incorrect values (i.e., numbers). Note, the team pulled in 2,776 in emails from the EE rebate tracking data based on matching account numbers.
[6] This is to enable verification in the survey that respondents are the occupant at a specific service address.

Guidehouse developed a stratified random sample for the Non-Participant Survey. The sample was stratified by income status based on rate code (low-income rate v. non-low-income rate) and Wi-Fi Thermostat ownership as obtained through EE program, or Wi-Fi Thermostat ownership status unknown.

Guidehouse assumed a conservative proportion estimate (PE) of 0.5 for the purposes of determining sample sizes by strata. We based the targeted completes on population counts, response rates based on the MA Residential Building Use and Equipment Characterization

Study (RBUECS) – Phase 7 customer survey, as well as assumed saturation of central cooling equipment (also from the RBUECS Phase 7 customer survey).[7]

For this survey, our strata level targets were larger than what would be necessary to achieve 10% absolute precision at a 90% confidence interval at the strata level. This was to account for the fact that, for the respondents in each stratum, only a subset will currently own a Wi-Fi Thermostat. Since self-reported Wi-Fi Thermostat ownership status impacted which questions a respondent was prompted to answer, only a subset of respondents received certain questions (specifically, Modules B and C). Accordingly, we designed the sample with the aim of achieving at least 70 completes per strata to Modules B and C.

Finally, given the disproportionate impact of the DNC customer removal on National Grid, we oversampled National Grid participants, within each stratum, such that the sample for each strata was representative of the strata population in terms of the distribution by PA.

Table 3-3 below shows the final number of survey completes, inclusive of those who were ultimately screened and those who partially completed the survey, by strata for the Non-Participant Survey. The response rates were similar to that of the RBUECS Phase 7 customer survey.

Table 3-3. Non-Participant Survey – Completion Summary (Includes Screened & Partials)

Rate Code-Based Income Level / Wi-Fi Thermostat Rebate Status	Population	Sample	Sample Less Bounced / Failed	Completes (incl. Screened and Partials)	Completes as % of Contacted[8]
LIR / Rebate	2,651	2,651[1]	2,460	153	6.5%
LIR/ No Rebate	149,300	52,861	48,023	1,288	2.8%
Non-LIR / Rebate	40,542	3,588	3,458	138	4.2%
Non-LIR / No Rebate	842,236	30,032	28,210	463	1.7%
Total	**1,034,729**	**89,132**	**82,151**	**2,042**	**2.6%**

Note: LIR = Low-income rate

[1] Unlike for the other three strata where a sample was pulled, the Low-income rate code, Wi-Fi Thermostat rebate recipient strata population was low enough that we contacted the entire population for that stratum.

Source: Guidehouse analysis of Non-Participant Survey data

The table below shows the number of customers who fully completed the survey (i.e., did not get screened out or exit the survey before finishing) relative to the target by strata.

[7] Source: RBUECS Phase 7 Final Report and appendices and raw survey data associated with Phase 7.

[8] These response rates are comparable to that of RBUECS Phase 7 customer survey, upon which the sampling plan for this survey was based. Response rates for the RBUECS Phase 7 customer survey were as follows: 2.6% overall response rate among "new" customers (customers who did not complete a previous RBUECS survey) and 6.8% response rate for new customers who were past Mass Save program participants. Customers were invited to take the RBUECS Phase 7 customer survey through a combination of mailed postcards and emails. Respondents to the RBUECS Phase 7 survey were provided a $25 gift card ($5 more than the non-participant survey administered for this study). The combination of mailed postcards and higher survey incentive may explain the slightly higher response rates for the RBUECS customer survey for previous EE participants compared to this study's non-participant survey for previous EE rebate recipients.

Table 3-4. Non-Participant Survey – Summary of Full Survey Completes

Rate Code-Based Income Level / Wi-Fi Thermostat Rebate Status	Full Completes Target	Full Completes	Full Completes % of Target
LIR / Rebate	52	44	85%
LIR / No Rebate	204	228	112%
Non-LIR / Rebate	70	54	77%
Non-LIR / No Rebate	157	135	86%
Total	**483**	**461**	**95%**

LIR = Low-income rate
Source: Guidehouse analysis of Non-Participant Survey data

Table 3-5 below provides the disposition associated with the Non-Participant Survey sample.

Table 3-5. Non-Participant Survey – Sample Disposition

Rate Code-Based Income Level / Wi-Fi Thermostat Rebate Status	Sample Less Bounced / Failed	Screen Reason			Partial Completes	Full Completes
		Wrong Address	No Central Cooling	No T-stat *		
LIR / Rebate	2,460	10	87	9	6	44
LIR / No Rebate	48,023	162	838	53	69	228
Non-LIR / Rebate	3,458	6	68	7	6	54
Non-LIR / No Rebate	28,210	70	244	12	28	135
Total	**82,151**	**248**	**1,237**	**81**	**109**	**461**

LIR = Low-income rate
* 81 respondents who reported having central cooling also reported “No” or “Don’t know” to having a thermostat connected to their cooling system. For this reason, these people were ultimately screened. However, we do not believe there are situations where central cooling is not thermostat-controlled, so we do not factor these respondents in to denominators when penetration of central cooling and Wi-Fi thermostats.
Source: Guidehouse analysis of Non-Participant Survey data

3.3.2 Re-Categorization of Low-Income v. Non-Low-Income

Table 3-6 summarizes how Guidehouse adjusted the counts of completes by strata based on participants’ self-reported income status.

Table 3-6. Strata Re-Assignments Based on Self-Reported Income Level

Strata	Completes Based on PA Data (Rate Codes)	Income Status Based on Self-Report			Adjusted Completes	Adjusted Denominator for Saturation Values
		LI	Non-LI	No Income Information		
LI / Rebate	44	14	17	13	30	117
LI / No Rebate	228	133	42	53	197	1,035
Non-LI / Rebate	54	3	29	22	68	136
Non-LI / No Rebate	135	11	77	47	166	410
Total	**461**	**161**	**165**	**135**	**461**	**1,698**

LI = Low-income based on self-reported income level
Source: Guidehouse analysis of Non-Participant Survey data

To provide an example of how adjustments were made for a given stratum, for the "LI / Rebate" strata, starting with an initial 44 completes based on PA rate code data, Guidehouse then:

- Subtracted the 17 respondents who indicated they are actually *not* low income *(44–17 =27),* and then
- Added the 3 respondents initially classified as "Non-LI / Rebate" who reported they are *actually low income* (27+3=30).

The resulting adjusted count of completes for the "LI / Rebate" strata is 30.

The last field of the table "Adjusted Denominator for Saturation Values" is the count of *adjusted* completes (Table 3-6) plus the individuals screened out due to not having a central cooling system (Table 3-5). These are the values used as the denominators for central cooling and Wi-Fi Thermostat saturation percentages shown in section 4.4.1.[9]

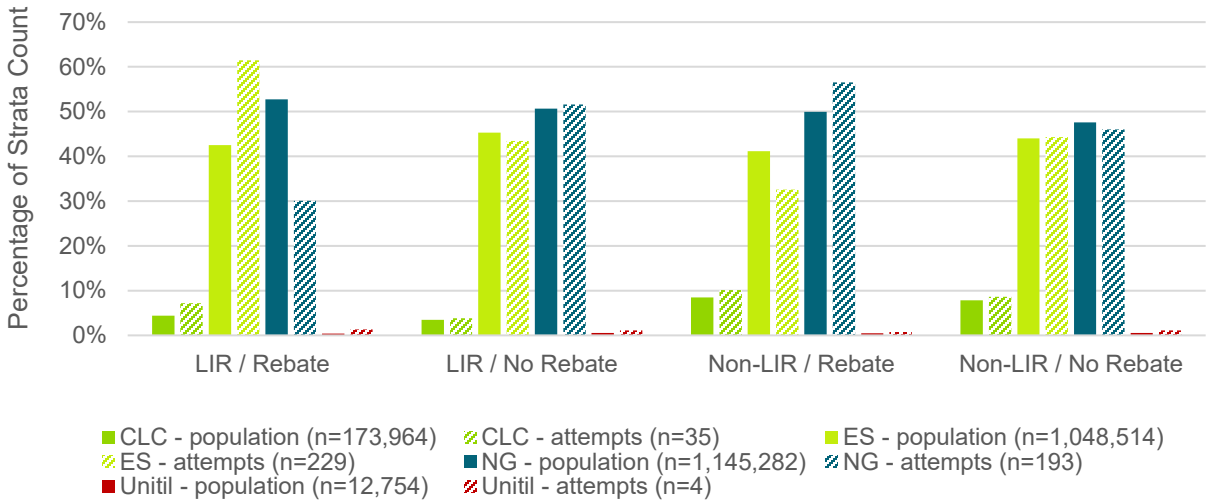
3.3.3 Representativeness of Respondents

Guidehouse conducted representativeness checks by comparing the population (pre-removal of DNC flagged customers) to respondents who opened/attempted the survey (including those that completed it) across certain metrics.

Figure 3-1 below shows how the PA distribution of the population compares with that of survey respondents for each sampling/analysis strata. The PA distribution is very close for the two No Rebate strata. For the LIR / Rebate strata, Eversource is somewhat overrepresented in the survey and National Grid is somewhat underrepresented. The opposite is true (to a lesser extent) for the Non-LIR / Rebate strata.

[9] Guidehouse did not make any adjustments to account for the fact that some of those who ultimately got screened out for not having central cooling were likely mis-classified into the incorrect strata to begin with based on the data available from the PAs. We only made adjustments related to customers who completed (did not get screened from) the survey (since they answered the income questions).

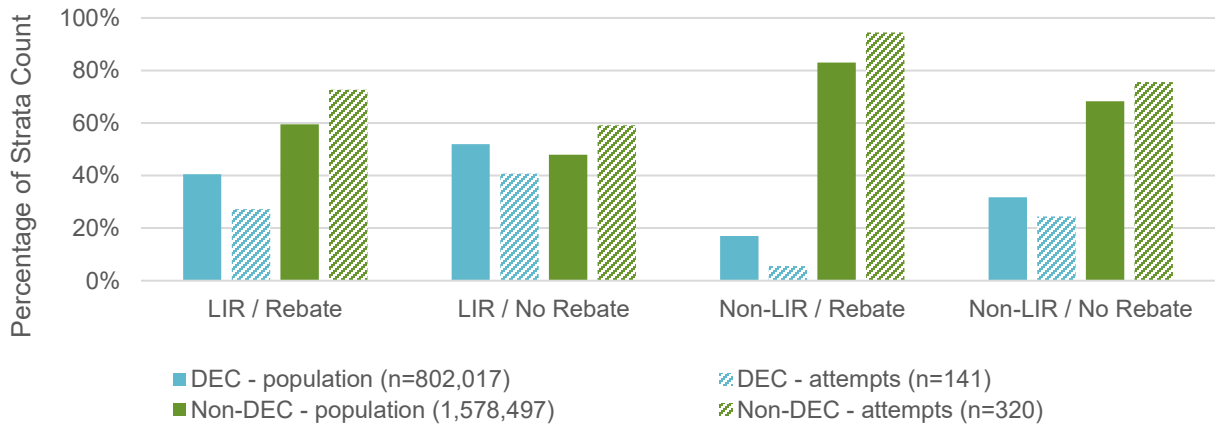
Figure 3-1. Distribution by PA – Population v. Attempted Survey



LIR = Low-income rate
CLC = Cape Light Compact, ES = Eversource, NG = National Grid
Source: Guidehouse analysis

Similarly, Figure 3-2 shows how the breakdown of DEC v. non-DEC of the population compares with that of survey respondents for each sampling/analysis strata. There are some modest differences between population and survey respondent proportions across all strata, again with the largest differences seen for the LIR / Rebate strata.

Figure 3-2. Distribution by DEC Status – Population v. Attempted Survey



LIR = Low-income rate
DEC = Designated Equity Community
Source: Guidehouse analysis

4. Analysis and Results

This section summarizes study findings for each study task. The discussion of evaluation findings is divided into the following sections:

1) **Participation Data Analysis.** This section provides detailed findings from the Program Participation Data Analysis activity, which leveraged existing data to understand and characterize the populations that the DR offering reaches and does not reach.
2) **Enrollment Pathways and Process Review.** This section provides findings from the Enrollment Pathways and Process Review activity, which aimed to better understand how current DR participants may have joined the program and the extent to which EE channels are leveraged.
3) **Non-Participant Survey.** This section provides findings from the DR non-participant survey effort, which assessed awareness of Wi-Fi Thermostats and DR as well as customers' willingness to participate in a DR program.

4.1 Participation Data Analysis

This section provides detailed findings from the Program Participation Data Analysis activity, which leveraged existing data to understand and characterize the populations that the DR offering reaches and does not reach. This section summarizes findings by topic as follows:

1) Data Constraints and Limitations
2) DR Participation
3) DR Non-Participants

4.1.1 Data Constraints and Limitations

Through this task, Guidehouse identified some notable data constraints and limitations. These are described below in Table 4-1.

Table 4-1. Data Constraints and Limitations Summary

Data Set	Constraint / Limitation	Additional Note(s)	Implications for Analysis
EE Wi-Fi Thermostat Rebate Tracking Data	The EE tracking data used for the analysis supporting this task only goes through 2023.	DR tracking goes through 2024 for each PA.[10]	Estimates of the population of electric account holders who received a Wi-Fi Thermostat rebate may be underestimated.
	Data received does not readily facilitate analysis of DR program eligibility of rebated thermostats.	• The data does not track thermostat model number • The data does not contain a clean thermostat make/provider field (that is populated)[11]	• Estimates of the percentage and number of non-participating customers that are currently eligible for DR do not account for portion of Wi-Fi Thermostats that are presently incompatible with the DR program.

[10] Initially, the Wi-Fi Thermostat DR tracking data for CLC extended into 2025. For this final report, we truncated CLC's dataset to the end of 2024 so that each PA's DR tracking data has the same end date.

[11] A field "end_use_verbose_dnv" contains text strings that often include thermostat manufacturer name, but this information needs to be parsed (not a clean process). Additionally, there is a manufacturer field that is not populated.

Data Set	Constraint / Limitation	Additional Note(s)	Implications for Analysis
			• For rebate recipients who are also enrolled in DR, there is no way to determine if the specific rebated Wi-Fi Thermostats are enrolled in DR.
	Data received does not readily facilitate counts of rebated thermostats per customer.	This relates to the lack of model number tracking.	For non-participating rebate recipients, cannot quantify number of non-participating Wi-Fi Thermostats, only customers.
	Wi-Fi Thermostat rebates that came in through the online marketplace cannot be differentiated from rebates received through other Residential Retail pathways.	Were told that it is possible to identify marketplace rebates by searching for the marketplace vendor in a program vendor field (we did not request or receive this field for this study).	Reduces accuracy of estimate of population of customers who received a rebate for a Wi-Fi Thermostat via the online marketplace and the associated DR participation rate.
	Wi-Fi Thermostat rebates associated with heating system installations cannot be identified in the data received.	Since 2019, heating systems/heat pumps have been offered through several programs (Residential Coordinated Delivery / Residential Turnkey Services, Low Income / Income-Eligible, and Residential Retail / Residential Rebates).	Cannot quantify the population of customers who have received a rebate for a Wi-Fi Thermostat at the time of heating system upgrade and the associated DR participation rate.
Residential ACL	The ability to identify customers who received a Wi-Fi Thermostat rebate through their gas account is challenging, as there is no clean way to link electric and gas accounts in the active customer list.	• To do this, Guidehouse used address, secondary address, and city name. • Although some gas accounts did not join to the electric ACL because the address is covered by a municipal electric utility, other gas accounts likely have an electric PA counterpart but could not be matched due to inconsistencies in how the addresses are stored between the gas and electric ACLs.	Estimates of the population of electric account holders who received a Wi-Fi Thermostat rebate may be underestimated (specifically, the population who received the rebate through their gas account).
	Based on the ACL w/ DNC flag provided by DNV on July 21, 2025, a very large number of customers are classified as DNC – approximately 1/3 of the 2023 ACL; this is a significant increase in the number of 2023 residential electric ACL customers flagged as DNC relative to a version of the 2023 ACL received in early 2025.	The source of the change appears to primarily be National Grid whose proportion of customers on the DNC list increased from 5% to 55% between January and July 2025. The PAs' data management vendor is investigating this issue.	Given the disproportionate impact of the DNC customer removal on National Grid, we oversampled National Grid participants, within each stratum, such that the sample for each stratum was representative of the stratum population in terms of the distribution by PA.

Source: Guidehouse findings through the analysis of the PAs' EE tracking data and Residential ACL.

4.1.2 DR Participation

The launch dates for the DR program vary by PA. National Grid has been administering the Wi-Fi Thermostat DR program since 2016, while the other PAs did not begin implementing the program until several years later. The date ranges of the Wi-Fi Thermostat DR program tracking data leveraged for this analysis vary by PA, as follows:

- Cape Light Compact: August 25, 2020 - December 31, 2024[12]
- Eversource: June 10, 2019 - December 31, 2024
- National Grid: May 15, 2016 - December 31, 2024
- Unitil: July 15, 2019 - December 31, 2024

It is important to keep this in mind when looking at DR enrollment numbers by PA.

On an overall basis, there are currently approximately 70,250 customers enrolled ("Accepted") in the Wi-Fi Thermostat DR offering. Since 2016, over 100,000 customers have interacted in some way with the offering (i.e., "DR Applicants"), as shown in Table 4-2 below.

Table 4-2. DR Enrollment Statuses - By PA (Accounts)

Electric PA	Count of DR Applicants[1,2]	Accepted	Pending	Rejected	Removed	Unenrolled
Cape Light Compact	3,225	77%	0%	<1%	6%	16%
Eversource	54,682	68%	<1%	16%[4]	7%	8%
National Grid	47,726[3]	63%	<1%	14%[4]	8%	14%
Unitil	312	100%	0%	0%	0%	0%
Total Count	**105,945**	**70,252**	**569**	**15,271**	**8,085**	**11,723**
Total %	**100%**	**66%**	**1%**	**14%**	**9%**	**11%**

1. This represents all customers who have ever been enrolled or attempted enrollment in the DR offering (i.e., all Current Statuses). DR data provided by Unitil only included enrolled participants.
2. There are repeated Customer Accounts in the DR tracking data. Most often, duplicate account IDs are associated with multiple Device UUIDs, but in some cases they are associated with the same Device UUID (but different PAs). In all cases, to count unique account IDs, we prioritized observations with "Accepted" status. If there was no Accepted status, we removed duplicates at random.
3. This number is inclusive of the 45 National Grid accounts with an "NA" status.
4. The majority of rejections from National Grid and Eversource are accounts where the name on the application did not match the respective utility's record.

Source: DR tracking data provided by Cape Light Compact, Eversource, National Grid, and Unitil all through December 31, 2024.

There are approximately 110,000 devices currently enrolled in the Wi-Fi Thermostat DR offering, as shown in Table 4-3 below.

[12] Initially, the Wi-Fi Thermostat DR tracking data for CLC extended into 2025. For this final report, we truncated CLC's dataset to the end of 2024 so that each PA's DR tracking data has the same end date.

Table 4-3. DR Enrollment Statuses - By PA (Thermostats)

Electric PA	Count of DR Thermostat Applicaations[1,2]	Accepted	Pending	Rejected	Removed	Unenrolled
Cape Light Compact	5,730	75%	0%	>1%	9%	15%
Eversource	108,280[3]	56%	>1%	26%	10%	8%
National Grid	73,541[4]	61%	>1%	13%	12%	13%
Unitil	318	99%	1%	0%	0%	0%
Total Count	**187,869**	**110,041**	**1,086**	**38,410**	**19,336**	**18,925**
Total %	**100%**	**59%**	**1%**	**20%**	**10%**	**10%**

1. This represents all thermostats that have ever been enrolled or attempted enrollment in the DR offering (i.e., all Current Statuses). DR data provided by Unitil only included enrolled participants.
2. In some cases, there are repeated Device UUIDs across multiple PAs. In these cases, to count unique thermostats, we prioritized observations with "Accepted" status.
3. This number is inclusive of the 119 Eversource thermostats with an "NA" Customer Account Number
4. This number is inclusive of the 45 National Grid thermostats with an "NA" status.

Source: DR tracking data provided by Cape Light Compact, Eversource, National Grid, and Unitil all through December 31, 2024.

4.1.3 DR Non-Participants

Through this task, Guidehouse characterized two categories of DR non-participants – those who have received a Wi-Fi Thermostat rebate in the past through the PAs' EE programs and those who have not.

4.1.3.1 EE Wi-Fi Thermostat Rebate Recipients

Table 4-4 shows the percentage DR applicants (current enrollees and those that have been enrolled or attempted to enroll in the past) that have also received a Wi-Fi Thermostat rebate through the PAs' EE offerings. The table shows that 23% of all DR applicants since 2016 across all PAs (who have an active electric account as of 2023) have also received a Wi-Fi Thermostat rebate. When looking at only customers who are currently enrolled in the DR program, the overall percentage of those who received an EE rebate is slightly higher at 27%.

Table 4-4. Percentage of DR Applicants (Accounts) who Received an EE Wi-Fi Thermostat Rebate

Electric PA	Count of DR Applicants[1,2]	Received EE Rebate (Count)	Received EE Rebate (%)
Cape Light Compact	3,225	867	27%
Eversource	54,682	11,533	21%
National Grid	47,726	11,998	25%
Unitil	312	71	23%
Total	**105,945**	**24,469**	**23%**

1. This represents all customer accounts who have ever been enrolled or attempted enrollment in the DR offering (i.e., all Current Statuses). DR data provided by Unitil only included enrolled participants.
2. There are repeated Customer Accounts in the DR tracking data. Most often, duplicate account IDs are associated with multiple Device UUIDs, but in some cases they are associated with the same Device UUID (but different PAs). In all cases, to count unique account IDs, we prioritized observations with "Accepted" status. If there was no Accepted status, we removed duplicates at random.

Source: DR tracking data provided by Cape Light Compact, Eversource, National Grid, and Unitil (through December 31, 2024) joined with statewide electric and gas Wi-Fi Thermostat EE rebate tracking data provided by DNV (the PAs' data management vendor) (PY 2017-2023) via the 2023 ACL.

Table 4-5 shows the percentage of Wi-Fi Thermostat rebate recipients who are also DR applicants and those that are not. Overall, 19% of customers who have received an EE rebate for Wi-Fi Thermostat are participating (or attempted to participate at some point) in the DR offering. This leaves a large pool of *potential* DR participants – 101,038 customers have a Wi-Fi Thermostat and *may* be eligible to participate in DR. However, it is important to note that this does not take into account the percentage of customers who have central cooling along with a DR-eligible Wi-Fi Thermostat. It is important to note that the PAs incentivize Wi-Fi thermostats using the Energy Star qualified product list, and not every device is eligible / has an integration with the PAs' distributed energy resource management system.

The non-participant survey (results summarized in section 4.4) obtained information from respondents to allow for the estimate of central cooling system saturation. Based on the survey, the percentage of rebate recipient respondents with central cooling was 26% and 50% for LI Rebate respondents and Non-LI Rebate respondents, respectively. The weighted average (that takes into account both population and survey respondent counts) of these is approximately 49% for rebate recipients overall. Applying this percentage to the total number of DR non-participants who received a Wi-Fi Thermostat rebate provides a more realistic estimate of eligible non-participants – an estimated 49,527 electric customers have received a rebate for a Wi-Fi Thermostat, have a central cooling system, and are not enrolled (have never attempted enrollment) in DR. This number does not account for the fact that some Wi-Fi Thermostats rebated through Mass Save may not currently be eligible for the DR program (see section 4.2.1 on data limitations).

Table 4-5. DR Participation Status of EE Wi-Fi Thermostat Rebate Recipients

Electric PA	Count of EE Wi-Fi Participants	DR Applicants[1]		DR Non-Participants w/ Wi-Fi Thermostat Rebate	
		Count	%	Count	%
Cape Light Compact	9,247	867	9%	8,380	91%
Eversource	52,798	11,255	21%	41,543	79%
National Grid	62,435	11,967	19%	50,468	81%
Unitil	756	71	9%	685	91%
Total	**125,236**	**24,160**	**19%**	**101,076**	**81%**
Survey-Based Percentage with Central Cooling[2,3]				**49%**	
Estimated Number of Wi-Fi Thermostat Rebate Recipients Eligible for DR				49,527	

1. This represents all customers who have ever been enrolled or attempted enrollment in the DR offering (i.e., all Current Statuses). DR data provided by Unitil only included enrolled participants.
2. The survey sample was stratified by income and rebate status. This table relates only to rebate recipients. The percentage for rebate recipient respondents with central cooling was calculated by weighting responses where each respondent's weight reflected the ratio of the total population in their income category to the number of survey responses in that category.
3. 46% (14 of 30) of the LI and 31% (21 of 68) of the Non-LI survey respondents in the Wi-Fi Thermostat rebate strata did not self-report having a Wi-Fi Thermostat. For these respondents, we assume that the tracking data correctly categorized them as having a Wi-Fi Thermostat. Accordingly, 100% of the DR Non-Participant – Rebate cohort is assumed to have a Wi-Fi Thermostat.

Source: DR tracking data provided by Cape Light Compact (through May 29, 2025), Eversource (through December 31, 2024), National Grid (through December 31, 2024), and Unitil (through December 31, 2024) joined with statewide electric and gas Wi-Fi Thermostat EE rebate tracking data provided by DNV (PY 2017-2023) via the 2023 ACL.

Table 4-6. DR Participation Counts[1] of EE Wi-Fi Thermostat Rebate Recipients by Rebate Source

Electric PA	All EE Wi-Fi Rebate Recipients	EE Wi-Fi Rebate Recipients via *Electric Account*	EE Wi-Fi Rebate Recipients via *Gas Account*	EE Wi-Fi Rebate Recipients via *Both Accounts*
Cape Light Compact	9,247	3,667	5,403	177
Eversource	52,798	26,234	25,534	1,030
National Grid	62,435	35,248	26,277	910
Unitil	756	538	212	6
Total	**125,236**	**65,687**	**57,426**	**2,123**

1. The counts of customers who received a Wi-Fi Thermostat rebate through their gas account is underestimated due to the fact that we could not fully map gas rebate recipients to electric accounts in the ACL (outside of cases where electricity is through a muni). For this reason, the DR participation rate is a more accurate metric.

Source: DR tracking data provided by Cape Light Compact, Eversource, National Grid, and Unitil (through December 31, 2024) joined with statewide electric and gas Wi-Fi Thermostat EE rebate tracking data provided by DNV (PY 2017-2023) via the 2023 ACL.

Table 4-7 and Table 4-7. DR Participation Rate[1] of EE Wi-Fi Thermostat Rebate Recipients by Rebate Source show that, although the number of DR participants among Wi-Fi Thermostat rebate recipients who received their rebate through their electric account is greater than number of DR participants who received their rebate through their gas account, the rate of DR

participation is slightly higher for the latter (20% v. 18%, a difference that is statistically significant at the 99% confidence level).[13]

Table 4-6. DR Participation Counts[1] of EE Wi-Fi Thermostat Rebate Recipients by Rebate Source

Electric PA	All EE Wi-Fi Rebate Recipients	EE Wi-Fi Rebate Recipients via *Electric Account*	EE Wi-Fi Rebate Recipients via *Gas Account*	EE Wi-Fi Rebate Recipients via *Both Accounts*
Cape Light Compact	9,247	3,667	5,403	177
Eversource	52,798	26,234	25,534	1,030
National Grid	62,435	35,248	26,277	910
Unitil	756	538	212	6
Total	**125,236**	**65,687**	**57,426**	**2,123**

2. The counts of customers who received a Wi-Fi Thermostat rebate through their gas account is underestimated due to the fact that we could not fully map gas rebate recipients to electric accounts in the ACL (outside of cases where electricity is through a muni). For this reason, the DR participation rate is a more accurate metric.

Source: DR tracking data provided by Cape Light Compact, Eversource, National Grid, and Unitil (through December 31, 2024) joined with statewide electric and gas Wi-Fi Thermostat EE rebate tracking data provided by DNV (PY 2017-2023) via the 2023 ACL.

Table 4-7. DR Participation Rate[1] of EE Wi-Fi Thermostat Rebate Recipients by Rebate Source

Electric PA	All EE Wi-Fi Rebate Recipients	EE Wi-Fi Rebate Recipients via *Electric Account*	EE Wi-Fi Rebate Recipients via *Gas Account*	EE Wi-Fi Rebate Recipients via *Both Accounts*
Cape Light Compact	9%	10%	9%	11%
Eversource	21%	18%	24%	35%
National Grid	19%	19%	19%	31%
Unitil	9%	9%	11%	<1%
Total	**19%**	**18%**	**20%**	**30%**

3. The counts of customers who received a Wi-Fi Thermostat rebate through their gas account is underestimated due to the fact that we could not fully map gas rebate recipients to electric accounts in the ACL (outside of cases where electricity is through a muni). For this reason, the DR participation rate is a more accurate metric.

Source: DR tracking data provided by Cape Light Compact, Eversource, National Grid, and Unitil (through December 31, 2024) joined with statewide electric and gas Wi-Fi Thermostat EE rebate tracking data provided by DNV (PY 2017-2023) via the 2023 ACL.

Table 4-7 shows the counts of DR non-participants who received a Wi-Fi Thermostat rebate by the source of the rebate (electric account, gas account, or both). Note that the count of DR non-participants who received a Wi-Fi Thermostat rebate through their gas account is likely underestimated (see table note).

[13] The counts of customers who received a Wi-Fi Thermostat rebate through their gas account is underestimated due to the fact that we could not fully map gas rebate recipients to electric accounts in the ACL (outside of cases where electricity is through a muni). For this reason, the DR participation rate is a more accurate metric.

Based on the survey, the percentage of rebate recipient respondents with central cooling is shown in the table below, by source account, along with the estimated number of Wi-Fi Thermostat rebate recipients eligible for DR. As shown, customers who received a Wi-Fi Thermostat rebate through their gas account have approximately the same percentage of central cooling as those who received a rebate through their electric account (52% v. 49%). Based on this, there are an estimated 26,377 DR non-participants with central cooling and with Wi-Fi Thermostat rebates obtained through their electric account and at least 23,805 DR non-participants with central cooling and rebates through their gas account. The table excludes DR non-participants who received a Wi-Fi Thermostat through both accounts due to a low number of associated survey respondents. Again, these estimates do not account for the fact that some Wi-Fi Thermostats rebated through Mass Save may not currently be eligible for the DR program (see section 4.2.1 on data limitations).

Of the DR non-participants with Wi-Fi Thermostat rebates obtained through their gas account, 47% (or 21,640 of 45,778) are associated with customers who's electric and gas accounts are through two separate PAs. Those with municipal electric accounts were excluded from the analysis.

Table 4-8. DR Non-Participants with EE Wi-Fi Thermostat Rebates - Source of Rebates

	DR Non-Participants w/ Wi-Fi Thermostat Rebate	
Electric PA	**Rebate via *Electric* Account**	**Rebate via *Gas* Account[1]**
Cape Light Compact	3,305	4,917
Eversource	21,394	19,475
National Grid	28,614	21,198
Unitil	491	188
Total	**53,831**	**45,778**
Survey-Based Percentage with Central Cooling[2,3]	49%	52%
Estimated Number of Wi-Fi Thermostat Rebate Recipients Eligible for DR	**26,377**	**23,805**

1. The counts of customers who received a Wi-Fi Thermostat rebate through their gas account is underestimated due to the fact that we could not fully map gas rebate recipients to electric accounts in the ACL (outside of cases where electricity is through a muni). However, it provides a lower bound for the estimated number of non-participating rebate holders who received the rebate through their gas account.
2. The survey sample was stratified by income and rebate status. This table relates only to rebate recipients. Percentages for rebate recipient respondents with central cooling by rebate source account were calculated by weighting responses where each respondent's weight reflected the ratio of the total population in the source account category to the number of survey responses in that category (for each income category).
3. 46% (14 of 30) of the LI and 31% (21 of 68) of the Non-LI survey respondents in the Wi-Fi Thermostat rebate strata did not self-report having a Wi-Fi Thermostat. For these respondents, we assume that the tracking data correctly categorized them as having a Wi-Fi Thermostat. Accordingly, 100% of the DR Non-Participant – Rebate cohort is assumed to have a Wi-Fi Thermostat.

Source: DR tracking data provided by Cape Light Compact, Eversource, National Grid, and Unitil (through December 31, 2024) joined with statewide electric and gas Wi-Fi Thermostat EE rebate tracking data provided by DNV (PY 2017-2023) via the 2023 ACL.

4.1.3.2 All Non-Participants

Table 4-9 below provide counts of DR Non-Participants (both EE rebate recipients and non-rebate recipients),[14] along with the percentage and count that are eligible for DR based on the presence of central cooling. The table includes breakouts for income status (LIR v. non-LIR), DEC status (DEC vs. non-DEC), and urbanicity classifications (urban/suburban/rural).

Overall, Guidehouse estimates that there are over 900,000 DR non-participants with central cooling systems that would be eligible for DR if they install an eligible Wi-Fi Thermostat or have one already.

Table 4-9. All DR Non-Participants with Central Cooling

	DR Non-Participants – No Rebate			DR Non-Participants – Rebate			
	Overall	Survey-Based % w/ Central Cooling[1]	Count w/ Central Cooling	Overall	Survey-Based % w/ Central Cooling[1,4]	Count w/ Central Cooling & Wi-Fi T-stat	Total DR-Eligible[2]
LIR	299,451	19%	56,896	5,234	26%	1,361	**58,257**
Non-LIR	1,980,413	41%	811,969	96,608	50%	48,304	**860,273**
Total	2,279,864		868,865	101,842		49,665	**918,530**
DEC	793,199	35%	277,620	18,457	36%	6,645	**284,264**
Non-DEC	1,509,643	39%	588,761	82,619	51%	42,136	**630,896**
Total	2,302,842		866,380	101,076		48,780	**915,161**
Urban[3]	934,515	36%	336,425	26385	51%	13,456	**349,882**
Suburban	1,195,862	41%	490,303	68,401	52%	35,569	**525,872**
Rural	151,029	27%	40,778	6120	26%	1,591	**42,369**
Total	2,281,406		867,507	100,906		50,616	**918,123**

LIR = Low-income rate

1. The survey sample was stratified by income and rebate status. Percentages for respondents with central cooling by DEC status and urbanicity were calculated by weighting responses where each respondent's weight reflected the ratio of the total population in their DEC/urbanicity category to the number of survey responses in that category (for each stratum).
2. The Totals shown here are slightly different across the categories due to the presence of NULLs/NAs in the data. Specifically, income status was NULL for 22,978 No Rebate customers and 234 Rebate customers. Urbanacity which is based on zip code was NA for 21,436 No Rebate customers and 170 Rebate customers.
3. Urban/Suburban/Rural classifications were assigned by zip code using the same mapping that is used for RBUECS.
4. 46% (14 of 30) of the LI and 31% (21 of 68) of the Non-LI survey respondents in the Wi-Fi Thermostat rebate strata did not self-report having a Wi-Fi Thermostat. For these respondents, we assume that the tracking data correctly categorized them as having a Wi-Fi Thermostat. Accordingly, 100% of the DR Non-Participant – Rebate cohort is assumed to have a Wi-Fi Thermostat.

Source: DR tracking data provided by Cape Light Compact, Eversource, National Grid, and Unitil (through December 31, 2024) joined with statewide electric and gas Wi-Fi Thermostat EE rebate tracking data provided by DNV (PY 2017-2023) via the 2023 ACL.

[14] Defining DR non-participants here as customers who have not been a DR Applicant.

The table below compares DR participants and DR non-participants *with central cooling* (both those who received a Wi-Fi Thermostat rebate and those who did not) looking at the following metrics:

- Percentage that is low-income and non-low-income
- Percentage that is located in a DEC and a non-DEC
- Percentage that is located in an urban, suburban, and rural area

DR-eligible non-participants who did not receive a rebate for a Wi-Fi Thermostat have the highest percentage of low-income customers (7%), followed by DR participants (4%) and DR-eligible non-participants who received a Wi-Fi Thermostat rebate (3%).

DR-eligible non-participants who did not receive a rebate for a Wi-Fi Thermostat have the highest percentage of customers located in a DEC (32%), followed by DR participants (22%). Only 14% of DR-eligible non-participants who received a Wi-Fi Thermostat rebate are located in a DEC.

DR-eligible non-participants who did not receive a rebate for a Wi-Fi Thermostat have the highest percentage of customers located in urban areas (39%), followed by DR participants (34%) and DR-eligible non-participants who received a Wi-Fi Thermostat rebate (27%).

Table 4-10. DR Non-Participants with Central Cooling v. DR Participants[1]

	DR Non-Participants – No Rebate (w/ Central Cooling)		DR Non-Participants – Rebate (w/ Central Cooling + Wi-Fi T-stat)		DR Participants	
	Count	%	Count	%	Count	%
LIR	56,896	7%	1,361	3%	2,807	4%
Non-LIR	811,969	93%	48,304	97%	73,104	96%
Total	868,865	100%	49,665	100%	75,911	100%
DEC	277,620	32%	6,645	14%	17,046	22%
Non-DEC	588,761	68%	42,136	86%	59,071	78%
Total	866,380	100%	48,780	100%	76,117	100%
Urban[2]	336,425	39%	13,456	27%	25,987	34%
Suburban	490,303	57%	35,569	70%	47,685	63%
Rural	40,778	5%	1,591	3%	2,125	3%
Total	867,507	100%	50,616	100%	75,797	100%

LIR = Low-income rate

1. The Totals shown here are slightly different across the categories due to the presence of NULLs/NAs in the data. Specifically, income status was NULL for 22,978 No Rebate customers, 234 Rebate customers, and 206 for DR participants. Urban/Suburban/Rural classifications which is based on zip code was NA for 21,436 No Rebate customers, 170 Rebate customers and 320 for DR participants.
2. Urban/Suburban/Rural classifications were assigned by zip code using the same mapping that is used for RBUECS.

Source: DR tracking data provided by Cape Light Compact, Eversource, National Grid, and Unitil (through December 31, 2024) joined with statewide electric and gas Wi-Fi Thermostat EE rebate tracking data provided by DNV (PY 2017-2023) via the 2023 ACL.

The table below provide counts of DR Non-Participants (both EE rebate recipients and non-rebate recipients), along with the percentage and count that are eligible for DR based on the presence of central cooling *and* Wi-Fi Thermostat. The table includes breakouts for income status (LI v. non-LI), DEC status (DEC v. non-DEC), and urbanicity classifications (urban/suburban/rural).

Overall, Guidehouse estimates that there approximately 400,000 DR non-participants with central cooling systems *and* Wi-Fi Thermostats that may already be eligible for DR if their Wi-Fi Thermostat is compatible with the program.

Table 4-11. All DR Non-Participants with Central Cooling and Wi-Fi Thermostat[1]

	DR Non-Participants – No Rebate			DR Non-Participants – Rebate			
	Overall	Survey-Based % w/ Central Cooling & Wi-Fi T-stat[3]	Count w/ Central Cooling & Wi-Fi T-stat	Overall	Survey-Based % w/ Central Cooling[2,3]	Count w/ Central Cooling & Wi-Fi T-stat	Total DR-Eligible
LIR	299,451	4%	11,978	5,234	26%	1,361	**13,339**
Non-LIR	1,980,413	17%	336,670	96,608	50%	48,304	**384,974**
Total	2,279,864		348,648	101,842		49,665	**398,313**
DEC	793,199	14%	111,048	18,457	36%	6,645	**117,692**
Non-DEC	1,509,643	16%	241,543	82,619	51%	42,136	**283,679**
Total	2,302,842		352,591	101,076		48,780	**401,371**
Urban[4]	934,515	14%	130,832	26385	51%	13,456	**144,288**
Suburban	1,195,862	17%	203,297	68,401	52%	35,569	**238,865**
Rural	151,029	10%	15,103	6,120	26%	1,591	**16,694**
Total	2,281,406		349,232	100,906		50,616	**399,848**

LIR = Low-income rate

1. The Totals shown here are slightly different across the categories due to the presence of NULLs/NAs in the data. Specifically, income status was NULL for 22,978 No Rebate customers and 234 Rebate customers. Urban/Suburban/Rural classifications which are based on zip code was NA for 21,436 No Rebate customers and 170 Rebate customers.
2. 46% (14 of 30) of the LI and 31% (21 of 68) of the Non-LI survey respondents in the Wi-Fi Thermostat rebate strata did not self-report having a Wi-Fi Thermostat. For these respondents, we assume that the tracking data correctly categorized them as having a Wi-Fi Thermostat. Accordingly, 100% of the DR Non-Participant – Rebate cohort is assumed to have a Wi-Fi Thermostat.
3. The survey sample was stratified by income and rebate status. Percentages for respondents with central cooling by DEC status and urbanicity were calculated by weighting responses where each respondent's weight reflected the ratio of the total population in their DEC/urbanicity category to the number of survey responses in that category (for each stratum).
4. Urban/Suburban/Rural classifications were assigned by zip code using the same mapping that is used for RBUECS.

Source: DR tracking data provided by Cape Light Compact, Eversource, National Grid, and Unitil (through December 31, 2024) joined with statewide electric and gas Wi-Fi Thermostat EE rebate tracking data provided by DNV (PY 2017-2023) via the 2023 ACL.

The table below compares DR participants and DR non-participants *with central cooling and Wi-Fi Thermostat* (both those who received a Wi-Fi Thermostat rebate and those who did not) looking at the following metrics:

- Percentage that is low-income and non-low-income
- Percentage that is located in a DEC and a non-DEC
- Percentage that is located in an urban, suburban, and rural area

Relative to Table 4-10, only the numbers for "DR Non-Participants – No Rebate" have changed.

This time DR participants have the highest percentage of low-income customers (4%), followed by both DR-eligible non-participant cohorts (3%).

Again, DR-eligible non-participants who did not receive a rebate for a Wi-Fi Thermostat have the highest percentage of customers located in a DEC (31%), followed by DR participants (22%). Only 14% of DR-eligible non-participants who received a Wi-Fi Thermostat rebate are located in a DEC.

DR-eligible non-participants who did not receive a rebate for a Wi-Fi Thermostat have the highest percentage of customers located in urban areas (37%), followed by DR participants (34%) and DR-eligible non-participants who received a Wi-Fi Thermostat rebate (27%).

Table 4-12. DR Non-Participants with Central Cooling and Wi-Fi Thermostat v. DR Participants[1]

	DR Non-Participants – No Rebate (w/ Central Cooling & Wi-Fi T-stat)		DR Non-Participants – Rebate (w/ Central Cooling & Wi-Fi T-stat)		DR Participants	
	Count	%	Count	%	Count	%
LIR	11,978	3%	1,361	3%	2,807	4%
Non-LIR	336,670	97%	48,304	97%	73,104	96%
Total	348,648	100%	49,665	100%	75,911	100%
DEC	111,048	31%	6,645	14%	17,046	22%
Non-DEC	241,543	69%	42,136	86%	59,071	78%
Total	352,591	100%	48,780	100%	76,117	100%
Urban[2]	130,832	37%	13,456	27%	25,987	34%
Suburban	203,297	58%	35,569	70%	47,685	63%
Rural	15,103	4%	1,591	3%	2,125	3%
Total	349,232	100%	50,616	100%	75,797	100%

LIR = Low-income rate

1. The Totals shown here are slightly different across the categories due to the presence of NULLs/NAs in the data. Specifically, income status was NULL for 22,978 No Rebate customers and 234 Rebate customers. Urbanicity which is based on zip code was NA for 21,436 No Rebate customers and 170 Rebate customers.
2. Urban/Suburban/Rural classifications were assigned by zip code using the same mapping that is used for RBUECS.

Source: DR tracking data provided by Cape Light Compact, Eversource, National Grid, and Unitil (through December 31, 2024) joined with statewide electric and gas Wi-Fi Thermostat EE rebate tracking data provided by DNV (PY 2017-2023) via the 2023 ACL.

4.2 Enrollment Pathways and Process Review

This section provides findings from the Enrollment Pathways and Process Review activity, which aimed to better understand how current DR participants may have joined the program and the extent to which EE channels are leveraged. This section summarizes findings by topic as follows:

1) Enrollment Pathways
2) Enrollment Processes

4.2.1 Enrollment Pathways

Guidehouse undertook an investigation into the theoretical pathways that could be leveraged for increasing participation/enrollment in the DR program. As a first step, we theorized what the possible pathways are. Then we conducted research to assess the current state of each pathway with a particular emphasis on the extent to which the DR recruitment efforts are coordinated with EE programs.

4.2.1.1 Theoretical Pathways

Figure 4-1, below, displays the theoretical DR enrollment pathways Guidehouse used as a framework for assessing current state and identifying opportunities to enhance efforts. The descriptions bulleted under each pathway do not necessarily represent the future state that are desired by the PAs, but rather a theoretical state envisioned by Guidehouse against which to compare the actual current state, which is described in the next section. For each pathway, not all bullets would be relevant for every customer or experienced in the order listed.

Figure 4-1. DR Enrollment Pathways – Theoretical

Pathway	Description
Got Wi-Fi Thermostat via Residential Turnkey	• Wi-Fi Thermostat was recommended and potentially installed as part of Home Energy Assessment • Installer may have walked through how to use / program the thermostat • Assessor or installer mentioned the DR opportunity
Got Wi-Fi Thermostat via Low-Income Program	
Got Wi-Fi Thermostat with New Heating System	• Wi-Fi Thermostat was installed with new heating system • Installer may have walked through how to use / program the thermostat • Installer mentioned the DR opportunity

Sought out Wi-Fi Thermostat Rebate Independently	• Saw marketing for Wi-Fi Thermostat rebate
	• And/or viewed relevant Mass Save webpage
	  • Downstream
	  • Online Marketplace
	• And/or viewed PA's relevant webpages (ex. PA Smart Thermostats webpage)
	• And/or viewed relevant thermostat webpage (ex. OEM rebate finder)
	• And went to purchase on the online marketplace or at a participating retailer (website or in-store)

Already had a Wi-Fi Thermostat	• Sees ConnectedSolutions marketing (email, socials, in-app) • Views Mass Save ConnectedSolutions webpage • Views PA's ConnectedSolutions webpage (ex. PA webpage)

Pathway	Description
	• Views PA-specific EnergyHub ConnectedSolutions webpage (ex. PA webpage)

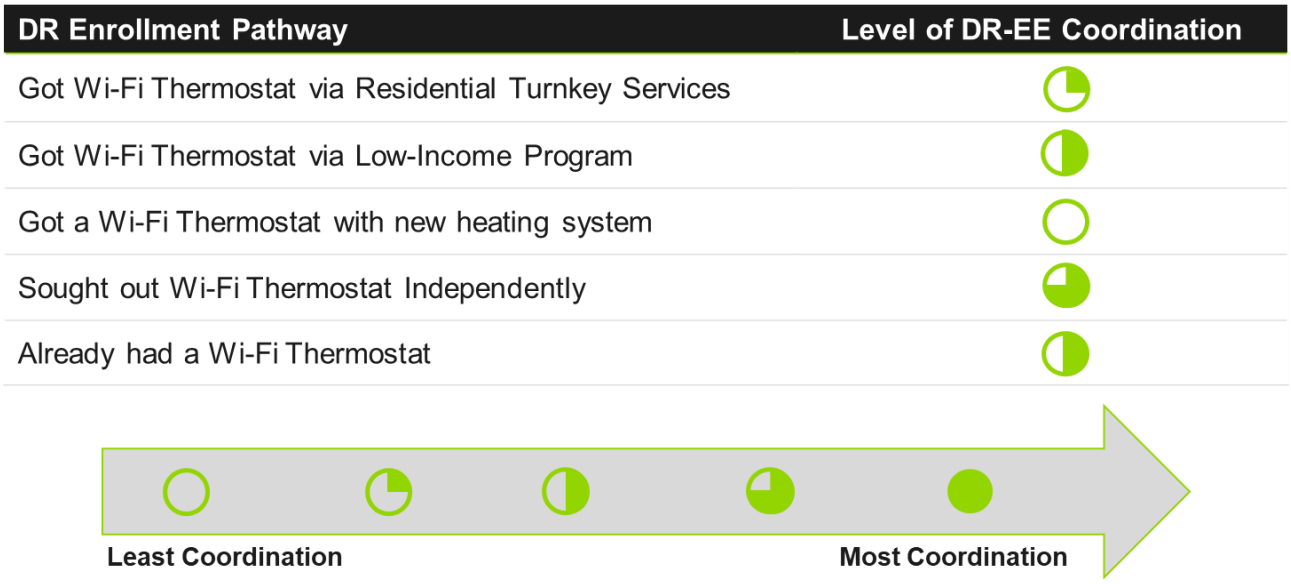
Note: There is some overlap between "Got Wi-Fi Thermostat with new heating system" and the other pathways given new heating systems/heat pumps are offered through several programs including Residential Turnkey Services, the Low-Income Program, and Residential Rebates.

Source: Guidehouse

4.2.1.2 Current State

This section provides current state findings for each DR enrollment pathway. Since a primary focus of this review was to assess the current state of DR-EE coordination for DR enrollments, the figure below provides a directional summary of the state of coordination by pathway.

Figure 4-2. Current State of DR-EE Coordination by DR Enrollment Pathway



Source: Guidehouse

Table 4-13. Pathway #1 – Got Wi-Fi Thermostat Via Residential Turnkey Services (RTS)

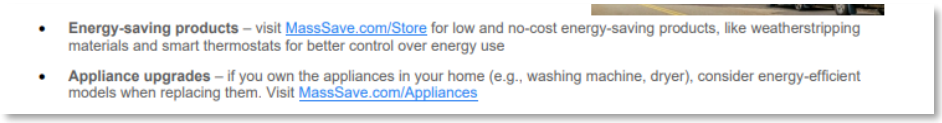
Got Wi-Fi Thermostat via Residential Turnkey Services (RTS)	
Population (n)	27,097
% of Relevant Population that are DR Applicants	18%
Current State Findings	**Wi-Fi Thermostat Rebates:** • Wi-Fi Thermostats used to be installed as part of a home energy assessment (HEA), but this is longer the case. According to feedback from program staff, Wi-Fi Thermostats are no longer a measure offered and installed through RTS (there may be exceptions), but the

Got Wi-Fi Thermostat via Residential Turnkey Services (RTS)

extent to which Wi-Fi Thermostat rebates available through the retail pathway are promoted during HEAs varies by vendor/auditor.

- The Decarbonization Action Plan that customers receive at the end of an HEA (excerpt below) mentions Wi-Fi Thermostat rebates available on the online marketplace by default.
- In terms of active promotion of Wi-Fi Thermostats, LVs indicate that the measure is discussed on a case-by-case basis for good-fit customers. Some HPCs report that they promote Wi-Fi Thermostat rebates to every customer who qualifies. Others report that they do not proactively promote Wi-Fi Thermostats due to a lack of time but will always provide rebate information when a customer inquires.
- HPCs report that they are not successful in selling Wi-Fi Thermostats. When promoted, they find that customers often report concerns related to Wi-Fi Thermostats and prefer their current thermostat.

Table 4-14. Excerpt from HEA Report – Smart Thermostat

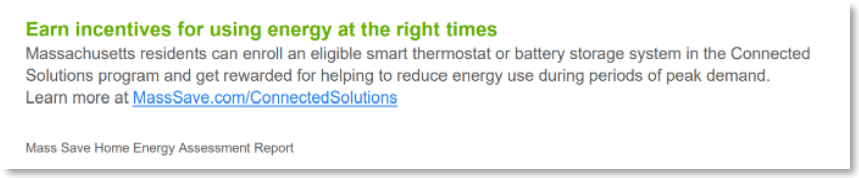


- **Energy-saving products** – visit MassSave.com/Store for low and no-cost energy-saving products, like weatherstripping materials and smart thermostats for better control over energy use
- **Appliance upgrades** – if you own the appliances in your home (e.g., washing machine, dryer), consider energy-efficient models when replacing them. Visit MassSave.com/Appliances

DR Offering:

- An estimated 18% of those who received a Wi-Fi Thermostat rebate through the RTS (or RCD/HES) program are currently enrolled in DR (see Table 4-21).
- The Decarbonization Action Plan that customers receive at the end of an HEA mentions ConnectedSolutions by default (excerpt below).
- LVs reported that the DR program is likely only discussed if Wi-Fi Thermostats and additional ways to save are discussed. HPCs report not currently channeling customers into the DR offering.
- LVs indicated they can proactively channel eligible customers into DR if they are provided talking points.
- HPCs reported that they would need additional training on the DR program in order to incorporate this into their HEA.

Table 4-15. Excerpt from HEA Report – ConnectedSolutions



Earn incentives for using energy at the right times

Massachusetts residents can enroll an eligible smart thermostat or battery storage system in the Connected Solutions program and get rewarded for helping to reduce energy use during periods of peak demand. Learn more at MassSave.com/ConnectedSolutions

Mass Save Home Energy Assessment Report

Source: Guidehouse

Table 4-16. Pathway #2 – Got Wi-Fi Thermostat Via Low-Income Program

Got Wi-Fi Thermostat via Low-Income Program	
Population (n)	892
% of Relevant Population that are DR Applicants	3%

Got Wi-Fi Thermostat via Low-Income Program	

Current State Findings	• Wi-Fi Thermostats are installed at no cost as part of the Low-Income Program, if the customer is eligible and desires it. According to multiple PAs, feedback from program vendor is that low-income customers still generally prefer programmable thermostats, and penetration of Wi-Fi Thermostats among this cohort is still quite low.
	• An estimated 3% of those who received a Wi-Fi Thermostat rebate through the Low-Income Program are DR applicants (currently enrolled or applied/enrolled in the past). This accounts for <1% of total DR applicants.
	• All PAs recently increased DR enrollment incentive for low-income customers from $50 to $100. (The higher/separate enrollment incentive for low-income customers allows for tracking of all low-income DR enrollments, not only those coming in through the Low-Income Program.)
	• According to one PA, the only meaningful DR-EE coordination attempts (apart from the online marketplace) have been related to the Low-Income Program.
	• Customers who receive a Wi-Fi Thermostat through the Low-Income Single-Family program or with a new heating system are supposed to be made aware of ConnectedSolutions by the Energy Specialist. Unclear if this is also true when a HPC is installing the measure as part of the Lead Vendor-led component of low-income.
	• Additional efforts underway include:
	  ○ Development of multilingual (Spanish) DR-specific marketing collateral to leave behind.
	  ○ Conversations with program vendor about further promotion of program-eligible thermostats, and, if installing, could also program the thermostats and enroll the customer in DR.
	• Cited barriers to DR:
	  ○ Low penetration of / interest in Wi-Fi Thermostats.
	  ○ Not all Mass Save-rebated Wi-Fi Thermostats are eligible for the DR offering.
	  ○ DR ranks low among many competing priorities for program vendor. Unclear extent to which program vendor is utilizing or plans to utilize DR marketing collateral and proactively discuss the offering with participants.

Source: Guidehouse

Table 4-17. Pathway #3 – Got Wi-Fi Thermostat with New Heating System

Got Wi-Fi Thermostat with New Heating System	
Population (n)	Unknown
% of Relevant Population that are DR Applicants	Unknown
Current State Findings	• There is currently no notable coordination with the various programs that offer heating systems/heat pumps. This was identified as an area of opportunity by the PAs. • Since 2019, heating systems/heat pumps have been offered through several programs (Residential Coordinated Delivery / Residential Turnkey Services, Low Income / Income-Eligible, and Residential Retail / Residential Rebates). There is no way to determine from the EE rebate tracking data the number of Wi-Fi thermostat rebates associated with heating system installations. Prior to 2019, heating systems and associated thermostats were offered through the Heating and Cooling initiative (part of Residential Products) - an estimated 22% of those who received a Wi-Fi Thermostat rebate through the Heating &

Got Wi-Fi Thermostat with New Heating System	

	Cooling initiative, have been DR applicants. The vast majority of these were associated with gas heating system replacements and all were received in 2017-2018.
	• Currently, the only heating systems incentivized through Mass Save for Market Rate customers are heat pumps.
	• There are not currently any enhanced incentives to customers for installing a Wi-Fi Thermostat with a heat pump, but these measures are often installed at the same time, particularly for central heat pumps.
	• "Partial Home" rebates require a thermostat (integrated control) which is very likely going to be Wi-Fi-enabled; "Whole Home" rebate does not require a thermostat.
	  ○ According to one vendor, fossil fuel heating equipment forms used to list thermostat rebate levels; the heat pump rebate forms do not. Similarly, PAs noted that bundling was happening more with fossil fuel systems.
	  ○ Interviewees noted a common barrier related to minisplits is that they typically come with built-in thermostats that are incompatible with the DR program vendor (e.g., may not be Wi-Fi-connected).
	• One vendor believes that Heat Pump Installer Network (HPIN) contractors are generally not promoting Wi-Fi Thermostats and likely never promoting DR. Feedback from HPCs who are also part of the HPIN is split – some say that they promote Wi-Fi Thermostats in most cases when installing a heat pump; others say compatibility can be a challenge.
	• As with HEAs, contractors indicate that some training on the DR program would be needed to integrate it into their customer engagement process.

Source: Guidehouse

Table 4-18. Pathway #4 – Sought out Wi-Fi Thermostat Rebate Independently

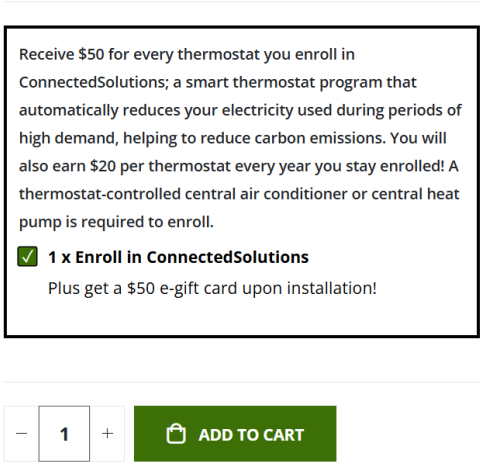
Sought out Wi-Fi Thermostat Rebate Independently	
Population (n)	81,439
% of Relevant Population that are DR Applicants	19%
Current State Findings	• With the lower emphasis on Wi-Fi Thermostats through the Residential Turnkey Services program, the Residential Retail core initiative represents the main way customers are seeking rebates for Wi-Fi Thermostats. Analysis of EE rebate tracking data indicates that 65% of EE Wi-Fi Thermostat rebate recipients (81,439 of 125,236) received their rebate through the Residential Retail initiative. • According to multiple PAs, the majority of customers who get Wi-Fi Thermostats rebates through Residential Retail purchase them through the Mass Save Online Marketplace (as opposed to through the traditional downstream pathway).[1] • The Residential Retail core initiative also represents the main way that EE is currently being leveraged for DR enrollments. Analysis of DR tracking and EE rebate tracking data indicates that 65% of EE Wi-Fi Thermostat rebate recipients that are also DR applicants got their rebates through the Residential Retail core initiative. This represents 15% of DR applicants (15,660 of 105,945). • Cape Light Compact, Eversource, and National Grid conduct co-marketing of the rebates available on the marketplace and the DR program. • Customers who purchase an eligible Wi-Fi Thermostat through the online marketplace see a description of ConnectedSolutions and a check box that is checked by default - "pre-

Sought out Wi-Fi Thermostat Rebate Independently	

enrolling" the customer (see image below). Based on DR tracking data, this feature appears to have been added in 2022.

- Not all Wi-Fi Thermostats incentivized by the PAs are eligible for the DR program.

Table 4-19. Snapshot from Online Marketplace



[1] Guidehouse is unable to determine the percentage of Wi-Fi Thermostat rebated through the Residential Retail program that came in through the online marketplace given the tracking data we received but were told that this is possible by searching for the marketplace vendor in a program vendor field (we did not request or receive this field).
Source: Guidehouse

Table 4-20. Pathway #5 – Already had a Wi-Fi Thermostat

Already had a Wi-Fi Thermostat	
Population (n)	Unknown
% of Relevant Population that are DR Applicants	Unknown
Current State Findings	• Although we do not know the total population or rate of DR participation of eligible Wi-Fi Thermostat owners who did not get an EE rebate, this cohort represents 77% of DR applicants (81,785 of 105,945). • One PA estimated that 80-85% of DR enrollments result from OEM marketing (and the remaining ~15% from marketing for the online marketplace). This was generally supported by feedback from other PAs. Given the data indicates that 73% of current DR participants did not get an EE rebate for a Wi-Fi Thermostat, this would imply that at least 73% enrolled through an OEM (either via the app or website link). Interestingly, results of an internal Eversource survey of DR participants conducted in 2024 found that only 26% of new participants enrolled through a thermostat app v. 58% enrolled through the "Eversource website" – which could encompass the OEM process that starts at the Eversource website). • Certain PAs have also been working to leverage existing data to target customers who may be more likely to have a Wi-Fi Thermostat and participate in DR. Our understanding is that such efforts are still in development.

Already had a Wi-Fi Thermostat

• Cited barriers to fully leveraging existing data for targeting:
  ○ Not knowing who has central air conditioning – one PA noted using CIS data to try to determine this
  ○ Wi-Fi Thermostats installed with heat pumps – one PA believes that the type of thermostat installed with the system is not tracked (this also appears to the case in general for tracking of Wi-Fi t-stat rebates; there is no great way to determine DR eligibility of thermostats rebated through EE)
  ○ An additional barrier identified by Guidehouse (not mentioned during interviews) is the difficulty identifying electric account holders who got a Wi-Fi Thermostat rebate through their gas account
• One PA mentioned that some OEMs make DR program enrollment a default upon initial thermostat setup and that this has been seen to cause small spikes in unenrollments (or removals) after the first event following a marketplace marketing push/promotion (i.e., customers don't know they are enrolled and unenroll once they find out).

[1] Guidehouse is unable to determine the percentage of Wi-Fi Thermostat rebated through the Residential Retail program that came in through the online marketplace given the tracking data we received but were told that this is possible by searching for the marketplace vendor in a program vendor field (we did not request or receive this field).
Source: Guidehouse

An estimated 19% of customers who have received an EE Wi-Fi Thermostat rebate are currently enrolled in DR or have applied in the past. When considering only those rebate recipients with central cooling (leveraging the non-participant survey self-reported information), **over 30% of rebate recipients with central cooling are currently enrolled in the DR program.**

Table 4-21. EE Wi-Fi T-Stat Rebate Participation Pathways (PY 2017-2023) – DR Applicants v. DR Non-Participants[1]

Program Sector | Core Initiative	EE Wi-Fi T-Stat Rebate Recipients	% who are DR Applicants	% who are DR Non-Participants[5]
Market Rate | Residential[2] Coordinated Delivery	13,426	16% (2,109)	84% (11,317)
Market Rate | Home Energy Services - Measures[2]	13,671	21% (2,819)	79% (10,852)
Market Rate | Heating & Cooling Equipment[3]	15,803	22% (3,549)	78% (12,254)
Market Rate | Multi-Family Retrofit	2	0% (0)	100% (2)
Market Rate | Residential Retail[4]	81,439	19% (15,660)	81% (65,779)
Income Eligible | Income Eligible Coordinated Delivery	892	3% (23)	97% (869)
Income Eligible | Low-Income MF Retrofit	1	0% (0)	100% (1)
Income Eligible | Low-Income SF Retrofit	2	0% (0)	100% (2)
Total	**125,236**	**19% (24,160)**	**81% (101,076)**
Survey-Based Percentage with Central Cooling			49%
Estimated Number of Wi-Fi Thermostat Rebate Recipients Eligible for DR			49,527

1. Total DR Applicants represents all customers who have ever been enrolled or attempted enrollment in the DR offering (i.e., all Current Statuses). DR data provided by Unitil only included enrolled participants. Counts shown in the table for each EE pathway reflect number of electric accounts associated with customers who received an EE Wi-Fi Thermostat rebate through their electric and/or gas account through that pathway.
2. Statistics for the RTS program cited elsewhere are based on the combination of Residential Coordinated Delivery and Home Energy Services – Measures in this table (i.e.,14% enrolled in DR overall).
3. Prior to 2019, heating systems and associated thermostats were offered through the Heating and Cooling initiative (part of Residential Products). The vast majority of these were associated with gas heating system replacements and all were received in 2017-2018. Since 2019, heating systems/heat pumps have been offered through several programs (Residential Coordinated Delivery / Residential Turnkey Services, Low Income / Income-Eligible, and Residential Retail / Residential Rebates). There is no way to determine from the EE rebate tracking data the number of Wi-Fi thermostat rebates associated with heating system installations from 2019 onwards.
4. Guidehouse is unable to identify the percentage that came through the Mass Save Online Marketplace with the EE rebate tracking data we received.
5. 46% (14 of 30) of the LI and 31% (21 of 68) of the Non-LI survey respondents in the Wi-Fi Thermostat rebate strata did not self-report having a Wi-Fi Thermostat. For these respondents, we assume that the tracking data correctly categorized them as having a Wi-Fi Thermostat. Accordingly, 100% of the DR Non-Participant – Rebate cohort is assumed to have a Wi-Fi Thermostat.

Source: DR tracking data provided by Cape Light Compact (through May 29, 2025), Eversource (through December 31, 2024), National Grid (through December 31, 2024), and Unitil (through December 31, 2024) joined with statewide electric and gas Wi-Fi Thermostat EE rebate tracking data provided by DNV (PY 2017-2023) via the 2023 ACL.

Of the 105,945 DR applicants, 15% received a Wi-Fi Thermostat rebate through the Residential Retail / Rebates core initiative (this is 18% when looking at current DR enrollees only). Looking at only those who receive a Wi-Fi Thermostat rebate, 65% of DR applicants received their rebate through the Residential Retail / Rebates core initiative. Based on interviews, the online marketplace accounts for the majority of this.

Table 4-22. EE Wi-Fi T-Stat Rebate Participation Pathways (PY 2017-2023) of DR Applicants[1]

Program Sector | Core Initiative	DR Applicants	
	Count	%
Market Rate | Residential Coordinated Delivery	2,109	2%
Market Rate | Heating & Cooling Equipment[2]	3,549	3%
Market Rate | Home Energy Services – Measures	2,819	3%
Market Rate | Multi-Family Retrofit	0	0%
Market Rate | Residential Retail[3]	15,660	15%
Income Eligible | Income Eligible Coordinated Delivery	23	0%
Income Eligible | Low-Income MF Retrofit	0	0%
Income Eligible | Low-Income SF Retrofit	0	0%
No EE rebate received	81,785	77%
Total	**105,945**	**100%**

1. Total DR Applicants represents all customers who have ever been enrolled or attempted enrollment in the DR offering (i.e., all Current Statuses). DR data provided by Unitil only included enrolled participants. Counts shown in the table for each EE pathway reflect number of electric accounts associated with customers who received an EE Wi-Fi Thermostat rebate through their electric and/or gas account through that pathway.
2. Prior to 2019, heating systems and associated thermostats were offered through the Heating and Cooling initiative (part of Residential Products). The vast majority of these were associated with gas heating system replacements and all were received in 2017-2018. Since 2019, heating systems/heat pumps have been offered through several programs (Residential Coordinated Delivery / Residential Turnkey Services, Low Income / Income-Eligible, and Residential Retail / Residential Rebates). There is no way to determine from the EE rebate tracking data the number of Wi-Fi thermostat rebates associated with heating system installations from 2019 onwards.
3. Guidehouse is unable to identify the percentage that came through the Mass Save Online Marketplace with the EE rebate tracking data we received.

Source: DR tracking data provided by Cape Light Compact (through May 29, 2025), Eversource (through December 31, 2024), National Grid (through December 31, 2024), and Unitil (through December 31, 2024) joined with statewide electric and gas Wi-Fi Thermostat EE rebate tracking data provided by DNV (PY 2017-2023) via the 2023 ACL.

4.2.2 Enrollment Processes

4.2.2.1 OEM-Driven DR Enrollment Pathway

The majority of enrollees follow the OEM-driven enrollment process which varies slightly, depending on the OEM. The DR program implementer provides support for customers during the process via a support email address.

Table 4-23. OEM-Driven DR Enrollment Pathway

	1. Marketing	2. Account Login*	3. Enrollment Form & Device Selection*	4. Acceptance / Rejection
Description	The customer receives marketing either via email or in-app.	The customer is then directed to the enrollment landing page and has the option to click "Sign Up" and log in to their thermostat account.	The customer then enters limited information (name, utility service address, email address, and potentially utility account number). Most OEMs share a submission confirmation on the webpage, via email, and/or in-app.	Customers receive an acceptance or rejection email. Most OEMs provide a reason why they rejected a customer from enrollment.
Potential Pain Points	One thermostat provider has its own name / branding for DR program. Sometimes both this and MA branding are shown as two seemingly different options. Another thermostat provider has two different enrollment links depending on device model.	One thermostat provider's process is much more involved than the other OEMs – customers must download the provider's app if they have not already, as the provider only offers enrollment via app, not the web. They are then prompted to sign up for the provider's feature set that is integrated into their firmware and app, accept those Terms & Conditions (Terms & Conditions, which are different than utility DR program Terms & Conditions), and enter their utility.	For certain OEMs, enrollment is so seamless upon initial thermostat setup such that some people are not aware they've enrolled. Customers' name and address entered into enrollment page needs to match name and address on electric account.	One thermostat provider seemingly does not offer a reason for rejection nor option to resubmit.

*Order of steps 2 and 3 varies by OEM.
Source: BYOT Customer Journey - January 2025 (1), provided by the PAs.

4.2.2.2 EE Marketplace-Driven DR Enrollment Pathway

A customer who purchases a Wi-Fi Thermostat off the Mass Save Online Marketplace follows a shortened process to enroll in the DR program.

Table 4-24. EE Marketplace-Driven DR Enrollment Pathway

	Marketing	Marketplace Purchase	Installation and Follow-Up
Description	The customer receives marketing for Wi-Fi Thermostat rebates available through the marketplace via email, bill inserts, paid socials.	A description of the DR program and check box (checked by default) appear at point of purchase for eligible thermostats.	The customer receives a PA-branded, automated follow-up email (via the DR program implementer) confirming enrollment and reminding purchasers to install their thermostat & activate app. Customers must enter their installation address to link their new thermostat to their electric account to officially complete enrollment.
Potential Pain Points	N/A.	Since check box is pre-checked by default, some enrollments may occur without customers being aware of what they are signing up for.	It is unclear if all the PAs provide this via follow up (via the DR program implementer). We only received a screenshot of this from Eversource. Installation address must match their utility service address exactly.

Source: BYOT Customer Journey - January 2025 (1), provided by the PAs.

4.3 Non-Participant Survey

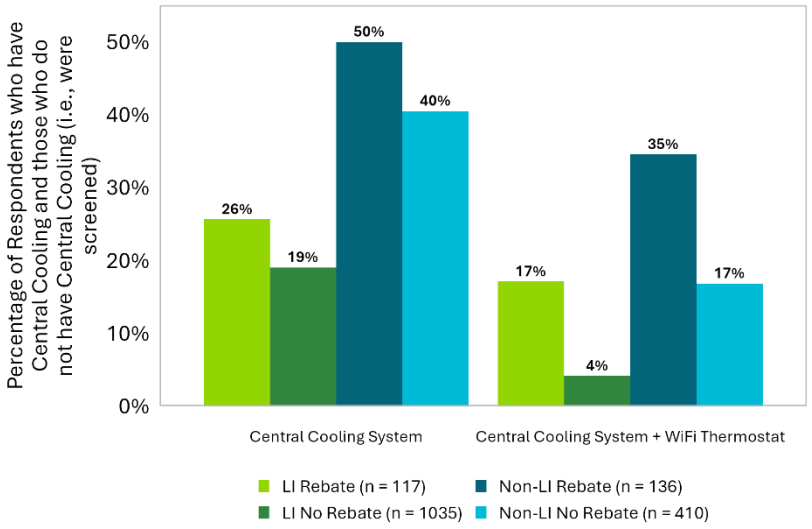
This section provides findings from the DR non-participant survey effort, which assessed awareness of Wi-Fi Thermostats and DR as well as customers' willingness to participate in a DR program. This section summarizes findings by topic as follows:

1) Central Cooling and Wi-Fi Thermostat Customers
2) Cooling System Types
3) Thermostat Types
4) Wi-Fi Adoption
5) DR Program Participation
6) Demographics

4.3.1 Central Cooling and Wi-Fi Thermostat Customers

The prevalence of central cooling and a Wi-Fi Thermostat varies by income level and rebate status, as shown in Figure 4-3 below. Non-LI (as determined by self-reported income level) customers who received a Wi-Fi Thermostat rebate are most likely to have central cooling connected to that thermostat, while LI customers without a rebate are least likely to have central cooling connected to that thermostat.

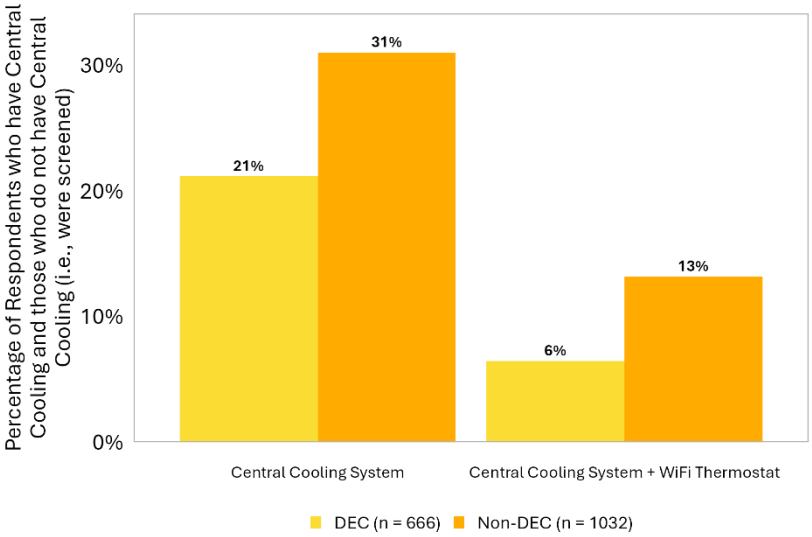
Figure 4-3. Central Cooling and Wi-Fi Thermostat Penetration[1,2]



1. LI = Low-income based on self-reported income level; overall 29% of the 461 respondents with central cooling systems did not answer the income question (including those that did not get the question).
2. The denominators for the percentages shown on the chart represent the combination of respondents who indicated they have central cooling and respondents who were ultimately screened out of the survey for not having central cooling. These denominators are shown in Table 3-6 within section 3.3.2.
Source: Guidehouse analysis of Non-Participant Survey, questions A2 and A4.

Looking into DEC, customers not located in DECs are more likely than those located in a DEC to have central cooling connected to a Wi-Fi Thermostat, as shown in Figure 4-4 below.

Figure 4-4. Central Cooling and Wi-Fi Thermostat Penetration (Unweighted) – By DEC Status[1,2]

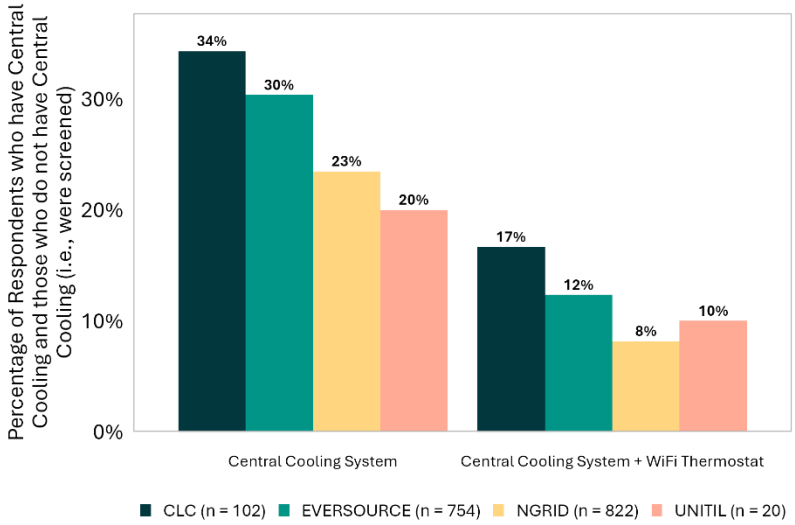


1. The denominators for the percentages shown on the chart represent the combination of respondents who indicated they have central cooling and respondents who were ultimately screened out of the survey for not having central cooling. These denominators are shown in Table 3-6 within section 3.3.2.

2. Guidehouse did not make any adjustments to account for the fact that the sample was stratified by (adjusted) LI v. Non-LI and rebate status. For example, rebate recipients (and their attributes) are likely overrepresented relative to the true population within the series shown in the chart.
Guidehouse analysis of Non-Participant Survey output, question A2.

Figure 4-5 displays central cooling and Wi-Fi Thermostat penetration by PA. Cape Light Compact customers are the most likely to have central cooling connected to a Wi-Fi Thermostat. National Grid and Unitil customers are the least likely.

Figure 4-5. Central Cooling and Wi-Fi Thermostat Penetration (Unweighted) – By PA[1,2]

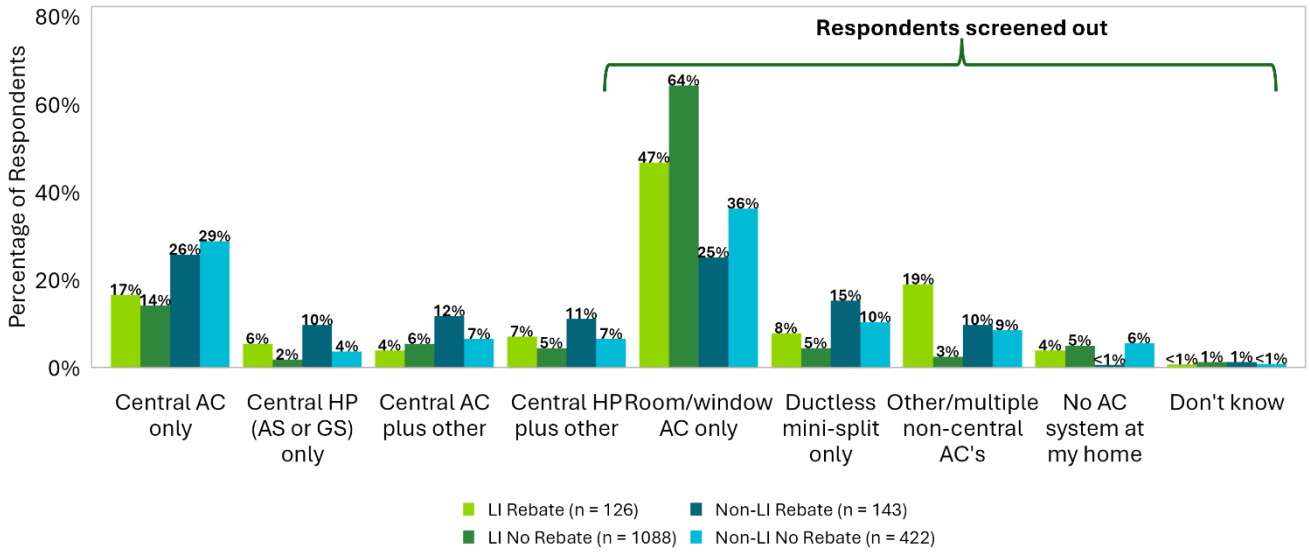


1. The denominators for the percentages shown on the chart represent the combination of respondents who indicated they have central cooling and respondents who were ultimately screened out of the survey for not having central cooling. These denominators are shown in Table 3-6 within section 3.3.2.
2. Guidehouse did not make any adjustments to account for the fact that the sample was stratified by (adjusted) LI v. Non-LI and rebate status. For example, rebate recipients (and their attributes) are likely overrepresented relative to the true population within the series shown in the chart.
Guidehouse analysis of Non-Participant Survey output, question A2.

4.3.2 Cooling System Types

The survey first established what AC systems customers who began the survey own. Figure 4-6 displays the combinations of responses selected and indicates whether participants were screened out based on their choices.

Figure 4-6. Which AC system type(s) does your home have? Select all that apply.



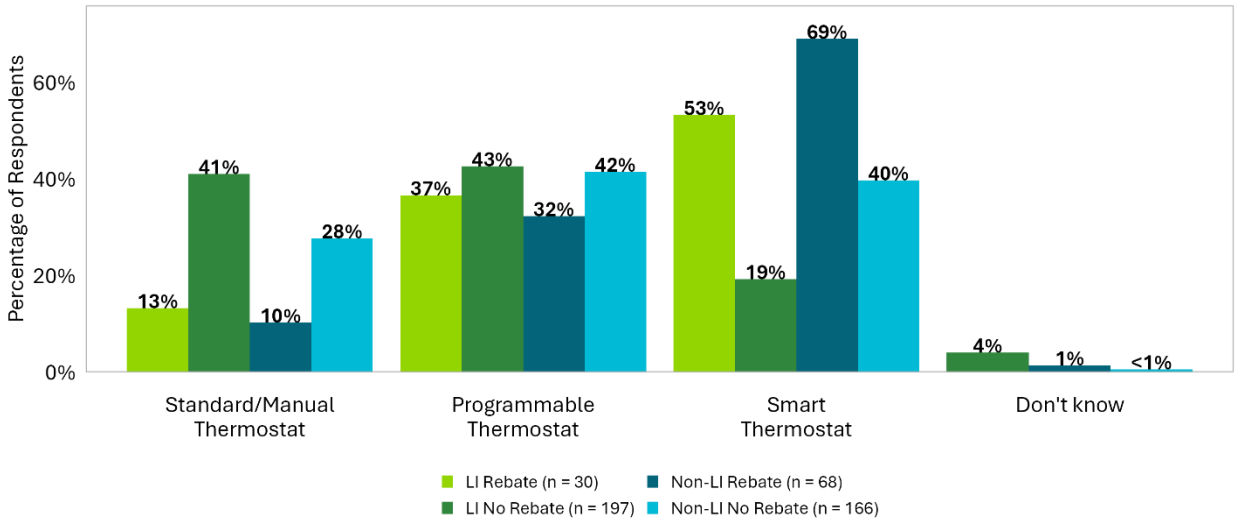
1. LI = Low-income based on self-reported income level; overall 29% of the 461 respondents with central cooling systems did not answer the income question (including those that did not get the question).
Source: Guidehouse analysis of Non-Participant Survey output, question A2.

Ninety-five percent of customers who began the survey have some form of AC in their home. With the exception of Non-LI Rebate, all strata most frequently reported that a room/window AC was their only AC system, with LI No Rebate being the highest at 64%. Additionally, LI customers reported room/window AC units as the sole source of cooling at a higher rate than Non-LI respondents, while Non-LI customers reported central cooling more frequently than LI customers. 36% of Non-LI Rebate and 33% of Non-LI No Rebate customers have central cooling only. Finally, 9% of customers overall have a form of central heat pump (8% for LI respondents and 14% for Non-LI respondents).

4.3.3 Thermostat Types

The survey then asked respondents who confirmed that they have central cooling and a thermostat controlling their central cooling system what type of thermostat they use. Figure 4-7, below, shows the breakdown between Standard/Manual Thermostats, Programmable Thermostats, and Smart Thermostats.

Figure 4-7. Which type(s) of thermostat(s) control your home's AC system(s)? Select all that apply.



1. LI = Low-income based on self-reported income level; overall 29% of the 461 respondents with central cooling systems did not answer the income question (including those that did not get the question).
Source: Guidehouse analysis of Non-Participant Survey output, question A4.

Of respondents who have central cooling and did not receive a rebate for their Wi-Fi Thermostat, Non-LI respondents are more than two times as likely to have a Wi-Fi Thermostat than LI respondents. Notably, less than 100% of those in the rebate recipient strata reported having a Wi-Fi Thermostat, with LI respondents at 53% (16 of 30) and non-LI at 69% (47 of 68). Some of this may be due to misclassification by the respondent (reporting programmable instead of Wi-Fi).

Overall, the majority of respondents have just one thermostat in their home. Non-LI respondents are slightly more likely to have more than one thermostat.

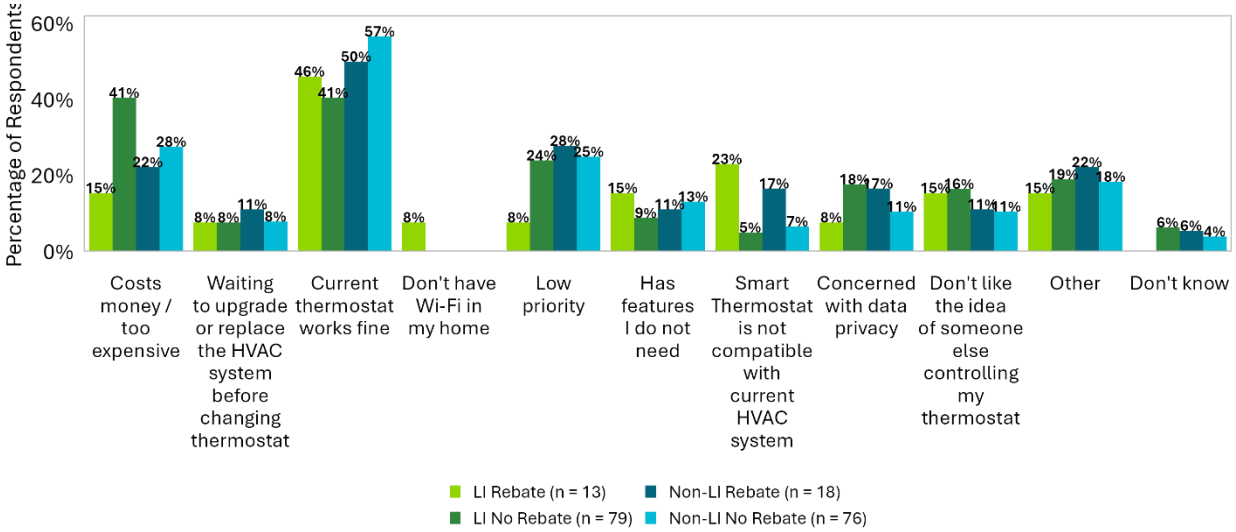
4.3.4 Wi-Fi Thermostat Adoption

4.3.4.1 Respondents without a Wi-Fi Thermostat

The results in this section are from customers who did not receive a Wi-Fi Thermostat, or, in other words, from customers who reported having a standard/manual and/or programmable thermostat. (64% of overall respondents reported do not have a Wi-Fi Thermostat).

After first asking respondents without a Wi-Fi Thermostat if they have heard of them, the survey then asked respondents who have indeed heard of them why they did not receive one (63% of respondents without a Wi-Fi Thermostat have heard of them). Figure 4-8 displays respondents' selections.

Figure 4-8. Why does your home not have a Smart Thermostat? Select all that apply.

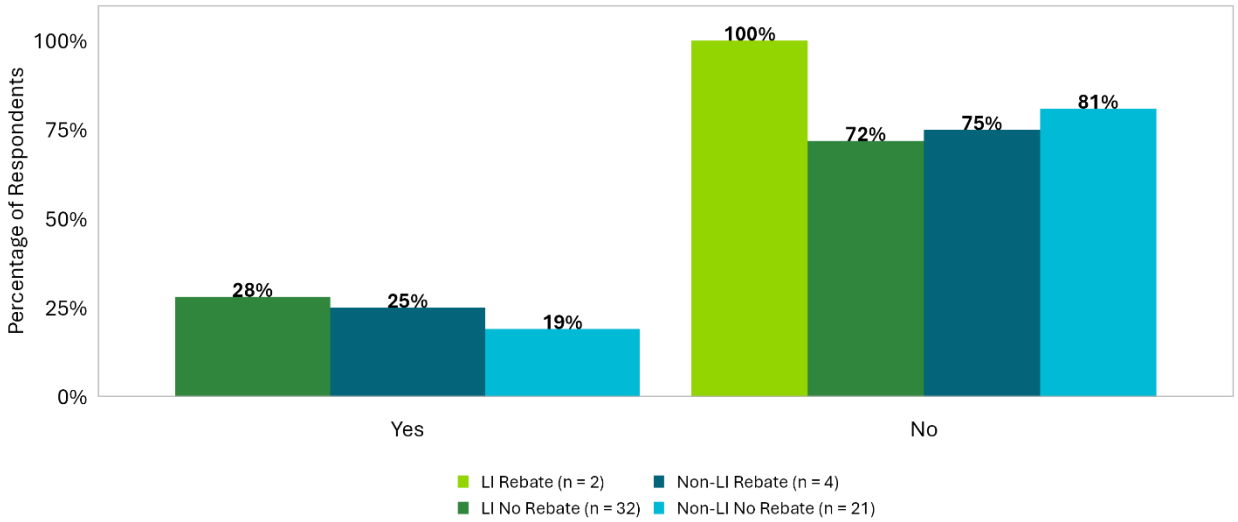


1. LI = Low-income based on self-reported income level; overall 29% of the 461 respondents with central cooling systems did not answer the income question (including those that did not get the question).
2. This chart includes the LI Rebate and Non-LI Rebate strata because a portion of respondents in these strata reported *not* having a Wi-Fi Thermostat, and, therefore, were prompted to respond to this question. This indicates discrepancies between EE rebate tracking data and self-reported thermostat types. Some of this may be due to misclassification by the respondent (reporting programmable instead of Wi-Fi).
Source: Guidehouse analysis of Non-Participant Survey output, question B2.

Across all strata, the most frequently reported reason for not having a Wi-Fi Thermostat was that respondents' current thermostat works fine. As an exception, for LI No Rebate respondents, an equal number reported that Wi-Fi Thermostats are cost prohibitive. The most common explanation within the 'Other' category was that respondents are renters and therefore do not have control over the decision to install a Wi-Fi Thermostat.

For respondents who reported not having a Wi-Fi Thermostat because of costs, the survey asked about their awareness of the rebates for qualifying Wi-Fi Thermostats that the Sponsors of Mass Save offers. Figure 4-9 displays awareness levels.

Figure 4-9. Are you aware that the Sponsors of Mass Save provide rebates for qualifying Smart Thermostats (of $100 for up to three thermostats?)



1. LI = Low-income based on self-reported income level; overall 29% of the 461 respondents with central cooling systems did not answer the income question (including those that did not get the question).
2. This chart includes the LI Rebate and Non-LI Rebate strata because a portion of respondents in these strata reported *not* having a Wi-Fi Thermostat, and, therefore, were prompted to respond to this question. This indicates discrepancies between EE rebate tracking data and self-reported thermostat types. Some of this may be due to misclassification by the respondent (reporting programmable instead of Wi-Fi).
Source: Guidehouse analysis of Non-Participant Survey output, question B3.

76% (45 of 59) of respondents who do not have a Wi-Fi Thermostat because of costs indicated they were unaware of the Mass Save rebates for Wi-Fi Thermostats. 62% (28 of 45) of the respondents who were unaware of the rebate said that the Mass Save incentive would be enough to make them interested in getting a Wi-Fi Thermostat for their home. These respondents were most interested in the following aspects of a Wi-Fi Thermostat:

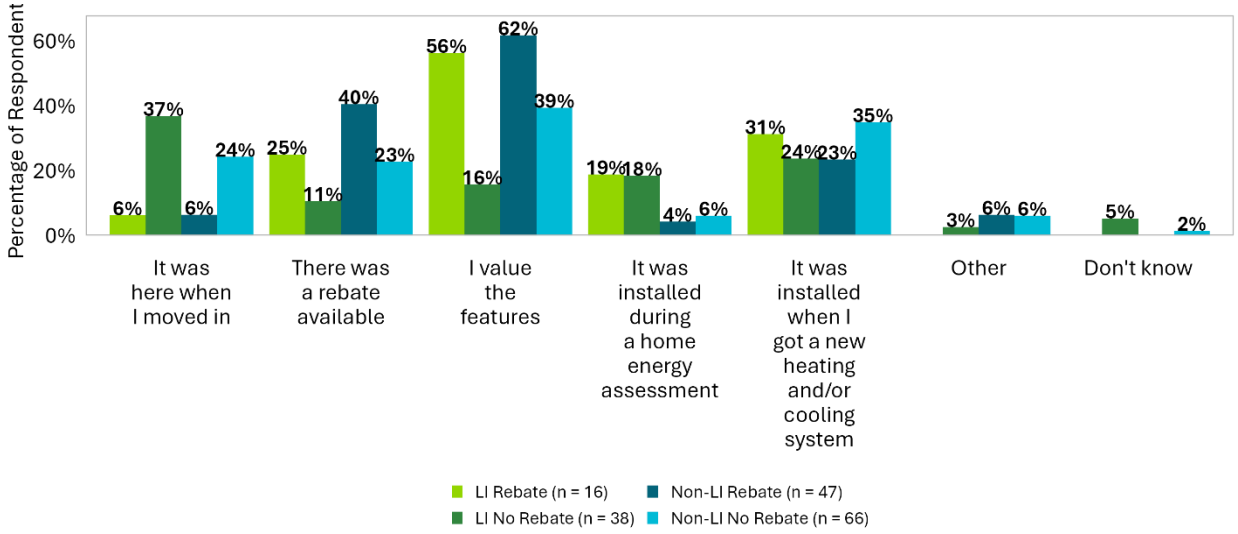
- Control temperature remotely via smartphone, computer, or tablet (64%)
- Automatically adjust settings to habits and weather (57%)
- Improve EE and savings (57%)

4.3.4.2 Respondents with a Wi-Fi Thermostat

The results in this section are from customers who received a Wi-Fi Thermostat (36% of overall respondents reported they have a Wi-Fi Thermostat).

The survey asks respondents who have a Wi-Fi Thermostat why they have one. Figure 4-10 displays respondents' selections.

Figure 4-10. Why does your home have a Smart Thermostat? Select all that apply.



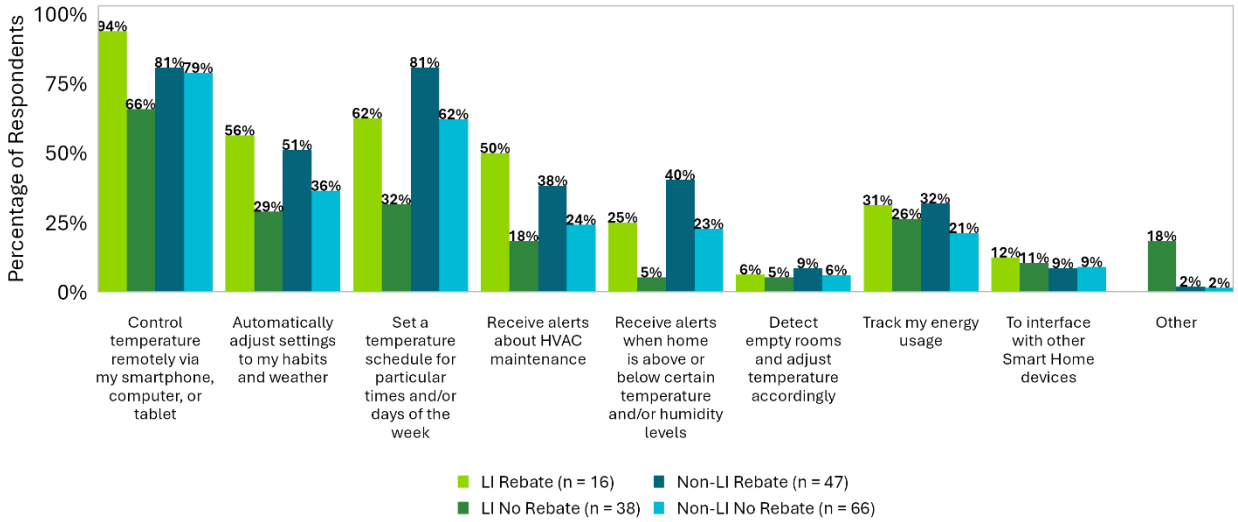
1. LI = Low-income based on self-reported income level; overall 29% of the 461 respondents with central cooling systems did not answer the income question (including those that did not get the question).
Source: Guidehouse analysis of Non-Participant Survey output, question C1.

For all but the LI No Rebate strata, the most common reason for having a Wi-Fi Thermostat was that respondents value the thermostat's features. This is particularly true for the LI and Non-LI rebate recipients. LI No Rebate respondents most often indicated that the thermostat was already installed when they moved in.

Additionally, many of those who purchased their thermostat independent of an energy assessment or HVAC system installation bought it through the Mass Save Online Marketplace (and received a rebate).

The survey then asks respondents what features of the Wi-Fi Thermostat they use most; Figure 4-11 displays responses.

Figure 4-11. Which features of your Smart Thermostat do you use? Select all that apply.



1. LI = Low-income based on self-reported income level; overall 29% of the 461 respondents with central cooling systems did not answer the income question (including those that did not get the question).
Source: Guidehouse analysis of Non-Participant Survey output, question C1b.

The Wi-Fi Thermostat feature that respondents across all strata most commonly indicated they use is the ability to control temperature remotely via their smartphone, computer, or tablet. The other two most valued aspects were setting a temperature schedule for particular times and/or days of the week and automatically adjusting settings to their habits and weather.

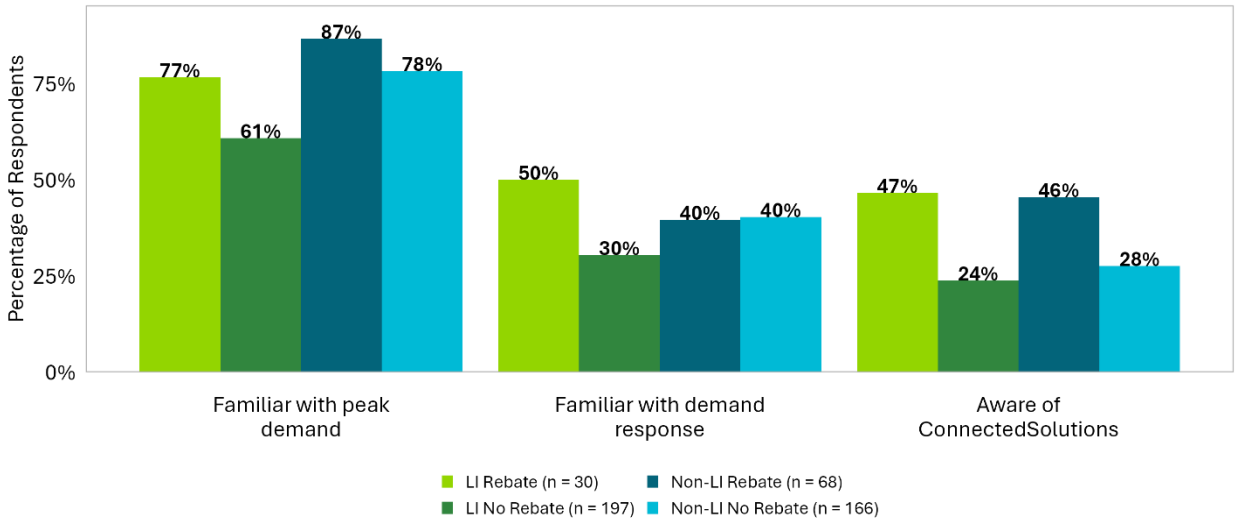
76% of respondents were extremely satisfied (40%) or moderately satisfied (36%) with their Wi-Fi Thermostat. Those who reported being dissatisfied most often cited issues such as limited features and unreliable Wi-Fi connectivity.

4.3.5 DR Program Participation

The survey asked all respondents, regardless of Wi-Fi Thermostat status, about DR and ConnectedSolutions.

The survey first asked whether customers were familiar with peak demand, familiar with DR, and aware of ConnectedSolutions. Figure 4-12 displays respondents' responses to these three questions.

Figure 4-12. DR Program Awareness



1. LI = Low-income based on self-reported income level; overall 29% of the 461 respondents with central cooling systems did not answer the income question (including those that did not get the question).
Source: Guidehouse analysis of Non-Participant Survey output, question D1, D1a, and D2.

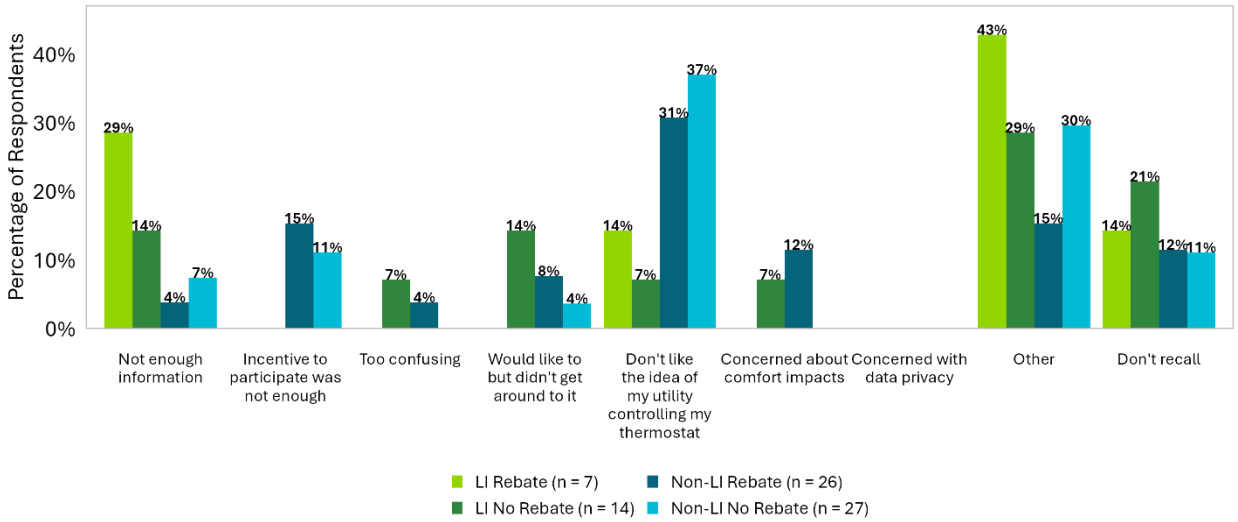
Over three-quarters of LI Rebate, Non-LI Rebate, and Non-LI No Rebate respondents and nearly two-thirds of LI No Rebate respondents were familiar with “peak demand”. Respondents across all four strata were less familiar with the term “demand response”.

In terms of awareness of the ConnectedSolutions program, about half of rebate recipients reported being aware. Only a quarter of those who have not received a Wi-Fi Thermostat rebate were aware of the program.

For respondents who were aware of ConnectedSolutions, the most common way they found out about the program was through an email from their utility / PA (32%) or the Sponsors of Mass Save (29%) or on the Mass Save website (23%). 74% of respondents who were aware of the program (102 of 138) reported they received sufficient enough information about ConnectedSolutions. Those who did not referenced wanting more details.

The survey then asked respondents who have a Wi-Fi Thermostat and who were aware of ConnectedSolutions why they did not enroll. Figure 4-13 displays responses.

Figure 4-13. Why did you not enroll in the program?



1. LI = Low-income based on self-reported income level; overall 29% of the 461 respondents with central cooling systems did not answer the income question (including those that did not get the question).
Source: Guidehouse analysis of Non-Participant Survey output, question D8.

34% (18 of 53) of Non-LI respondents did not like the idea of their utility controlling their thermostat. Of the 19 "Other" responses, across all four strata:

- Seven indicate the respondent believes they are already enrolled in the program.
- One indicates respondent just enrolled and is awaiting confirmation.
- Two indicate respondents have attempted to enroll unsuccessfully in the past.

4.3.6 Demographics

The final section of the survey asked respondents about their demographics. Respondents represented a range of backgrounds and home types, summarized below. Detailed outputs for each demographic question are included in the Appendix.

- **Home Details:** Most Non-LI Rebate, Non-LI No Rebate, and LI Rebate respondents own their homes (96%, 75%, and 90%, respectively). LI No Rebate respondents are evenly split between owning (49%) and renting (51%). LI customers tend to live in older homes, while Non-LI customers skew toward newer homes. Mid-century homes (1950-1979) remain significant across all strata. Single-family homes are the primary housing type across all strata, though notably, 25% of LI No Rebate respondents live in 20+ unit buildings. In terms of size, Non-LI households tend to be smaller.
- **Ethnicity/Race and Language:** White respondents are the majority across all strata. English is overwhelming the most spoken language at home, with Spanish as the next most prevalent. Most respondents are extremely comfortable speaking and reading English.
- **Education:** Most respondents have received some college or an Associate's degree or hold a Bachelor's degree. Post-graduate degrees are most common for Non-LI respondents.

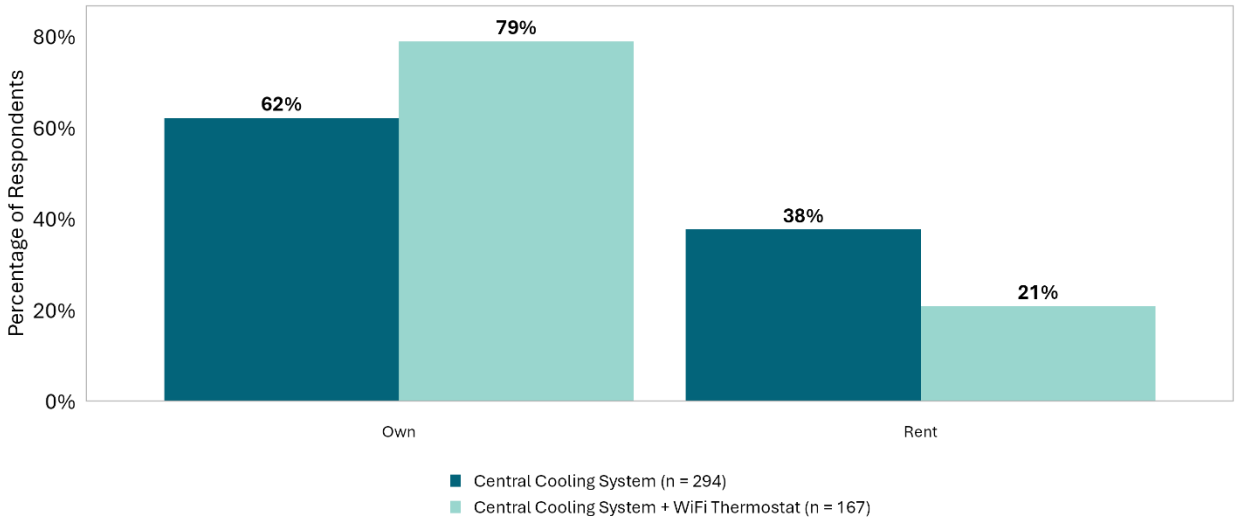
- **Age:** Respondents aged 30-49 represent the largest share overall, while younger (<30) and older (>70) respondents are least represented.

Additionally, Figure 4-14 through Figure 4-19 present key demographic questions segmented by respondents' central cooling system type, using the following categories:

- Central Cooling System: Respondents with a central cooling system *but no Wi-Fi Thermostat*
- Central Cooling System + Wi-Fi Thermostat: Respondents *with both a central cooling system and a Wi-Fi Thermostat*

Figure 4-14 below illustrates the differences between owners and renters. Across both groups - those with central cooling only and those with central cooling plus a Wi-Fi Thermostat - owners make up a larger share than renters. Notably, the proportion of renters decreases among respondents with Wi-Fi Thermostats (38% of those with central cooling are renters, and 21% of those with have central cooling and a Wi-Fi Thermostat are renters).

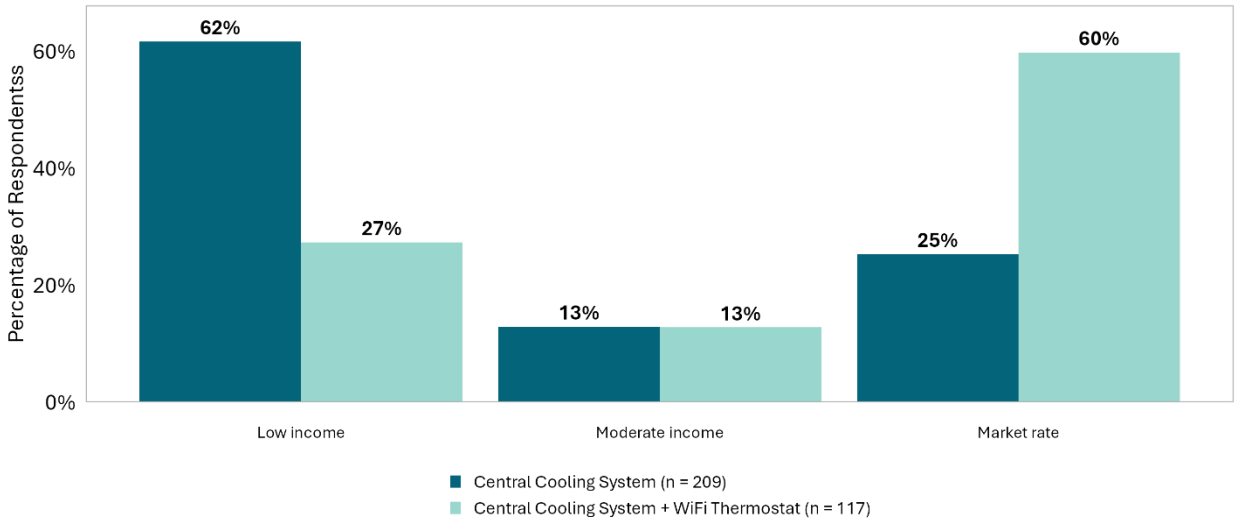
Figure 4-14. Respondent Home Ownership Status (Unweighted[1])



1. We did not make any adjustments to account for the fact that the sample was stratified by (adjusted) LI v. Non-LI and rebate status. For example, rebate recipients (and their attributes) are likely overrepresented relative to the true population within the series shown in the chart.
2. For context, the distribution of home ownership status of MA residents is as follows: Owner-occupied - 62.4%, Renter-occupied – 37.6%. *Source: US Census Bureau, American Community Survey, 2024, Table DP04.*
Source: Guidehouse analysis of Non-Participant Survey output, question E1.

The figure below shows the two groups broken out by income category. Notably, close to two-thirds of those with central cooling only qualify as low-income (based on self-reported data), whereas two-thirds of those with central cooling plus a Wi-Fi Thermostat are market rate. The two groups have the same proportion of moderate-income respondents.

Figure 4-15. Respondent Income Category (Unweighted[1])

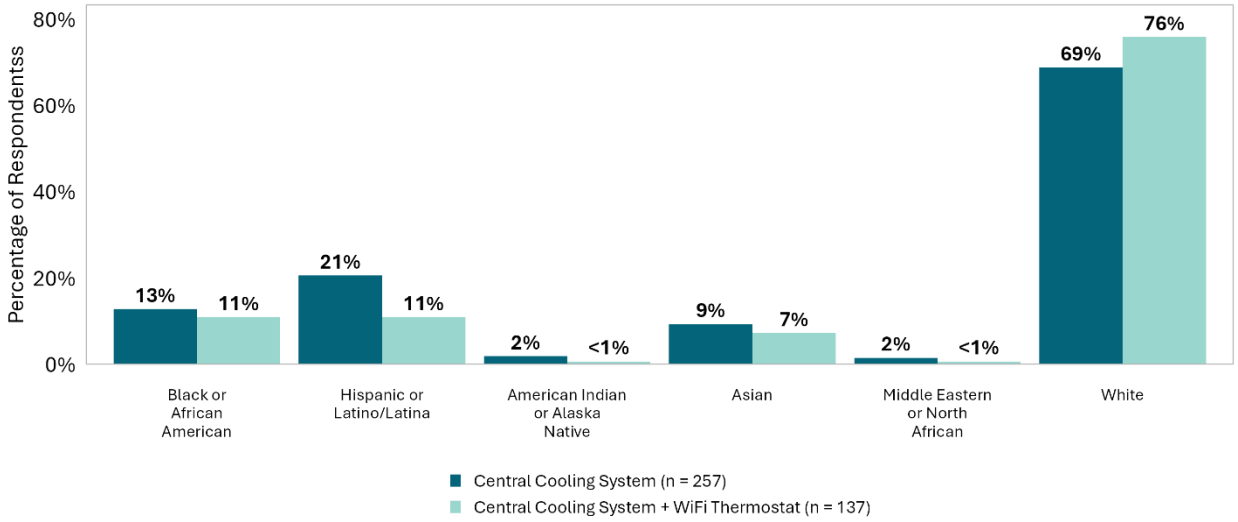


1. We did not make any adjustments to account for the fact that the sample was stratified by (adjusted) LI v. Non-LI and rebate status. For example, rebate recipients (and their attributes) are likely overrepresented relative to the true population within the series shown in the chart.

Source: Guidehouse analysis of Non-Participant Survey output

Next, the figure belowFigure 4-16 highlights differences in ethnicity across the two groups. For both groups, respondents identifying as White represent the largest share. This share increases among respondents with Wi-Fi Thermostats (69% of those with central cooling identify as White, and 76% of those with have central cooling and a Wi-Fi Thermostat identify as White).

Figure 4-16. Respondent Race/Ethnic Background (Unweighted[1])

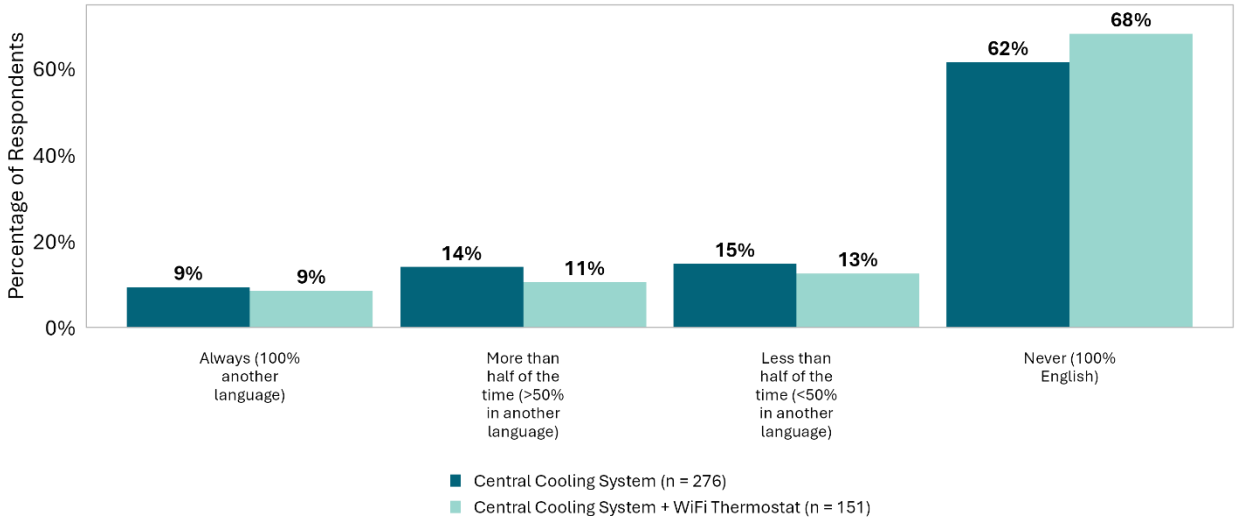


1. We did not make any adjustments to account for the fact that the sample was stratified by (adjusted) LI v. Non-LI and rebate status. For example, rebate recipients (and their attributes) are likely overrepresented relative to the true population within the series shown in the chart.

2. For context, the distribution of ethnicities of MA residents is as follows: Black or African American – 7%, Hispanic or Latino/Latina – 13%, American Indian or Alaska Native - <1%, Asian – 7%, White – 68%, Other or multiple – 6%. *Source: US Census Bureau, Decennial Census, 2020, Table P9.*
Source: Guidehouse analysis of Non-Participant Survey output, question E5 (select all that apply).

The figure below shows language use at home across the two groups. For both groups, about two-thirds of respondents always speak English at home. This proportion is even higher among those with Wi-Fi Thermostats (62% of those with central cooling report always speaking English and 68% of those with have central cooling, and a Wi-Fi Thermostat report always speaking English).

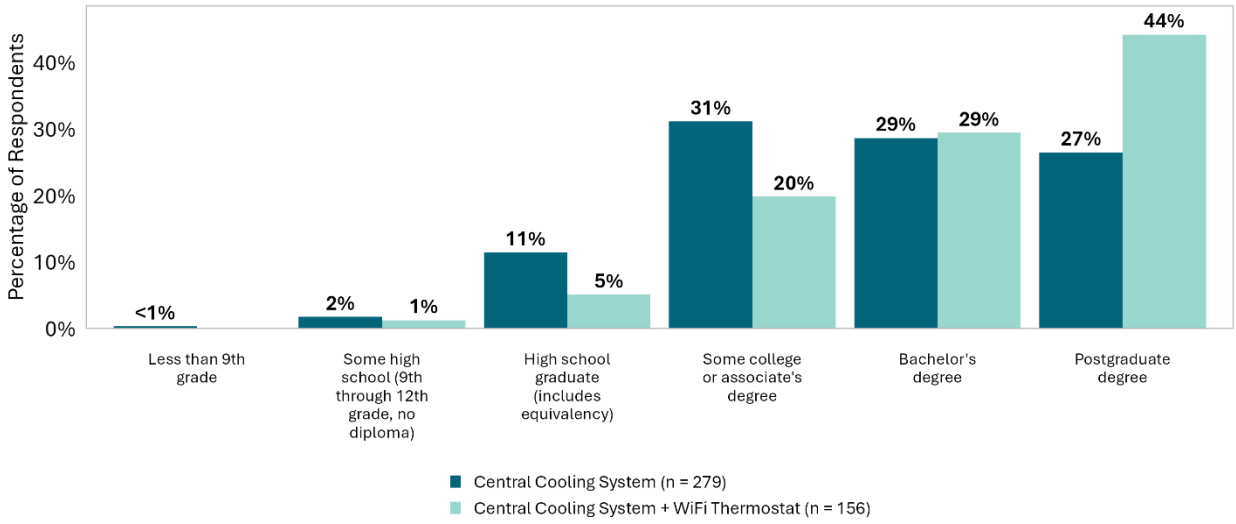
Figure 4-17. Respondent Frequency of Non-English Spoken (Unweighted[1])



1. We did not make any adjustments to account for the fact that the sample was stratified by (adjusted) LI v. Non-LI and rebate status. For example, rebate recipients (and their attributes) are likely overrepresented relative to the true population within the series shown in the chart.
2. For context, the statewide percentage of MA residents who only speak English v. speak a non-English language is as follows: Only English – 74.2%, Language other than English – 25.8%. *Source: US Census Bureau, American Community Survey, 2024, Table S1601.*
Source: Guidehouse analysis of Non-Participant Survey output, question E7.

The figureFigure 4-18 below compares education levels across the two groups. Among respondents with central cooling only, the highest education level varies, with the most common being some college (31%). For those with a Wi-Fi Thermostat in addition to central cooling, the highest education level is most frequently a postgraduate degree (44%).

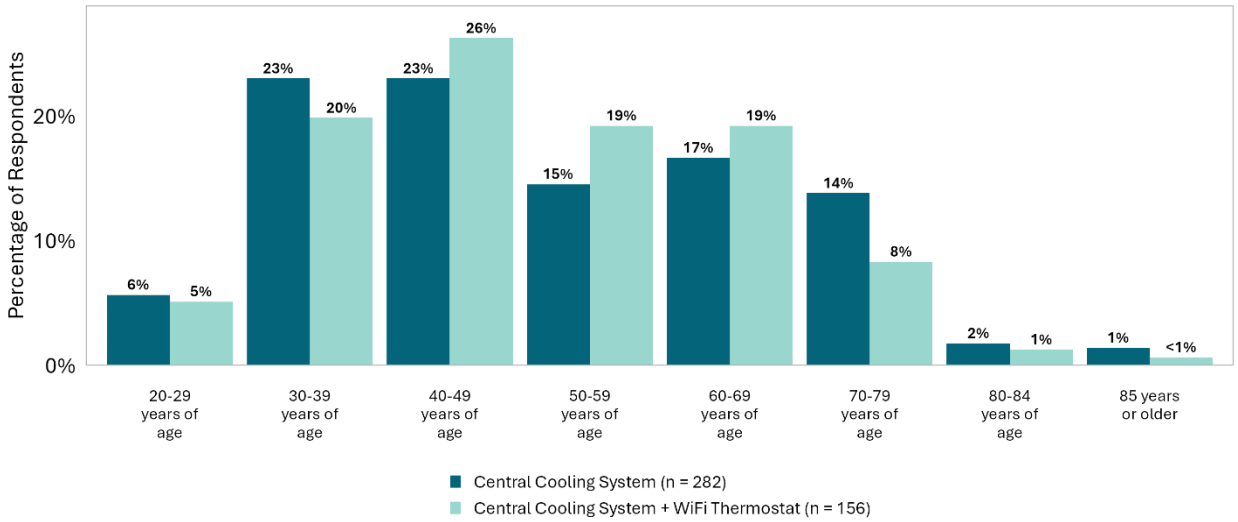
Figure 4-18. Respondent Highest Level of Education (Unweighted[1])



1. We did not make any adjustments to account for the fact that the sample was stratified by (adjusted) LI v. Non-LI and rebate status. For example, rebate recipients (and their attributes) are likely overrepresented relative to the true population within the series shown in the chart.
2. For context, the statewide distribution of educational attainment of MA residents is as follows: Less than 9th grade – 4.5%, 9th to 12th grade, no diploma – 4.1%, High school graduate (includes equivalency) – 22%, some college, no degree or Associate's degree – 20.9%, Bachelor's degree – 25.7%, Graduate or professional degree – 22.6%.
Source: US Census Bureau, American Community Survey, 2024, Table S1501.
Source: Guidehouse (Non-Participant Survey Results), question E6.

Finally, the figure belowFigure 4-19 compares age distribution across the two groups. Respondents with central cooling and a Wi-Fi Thermostats are most commonly in the 40–49 age range and tend to be slightly older overall than those with only central cooling.

Figure 4-19. Respondent Age (Unweighted[1])



1. We did not make any adjustments to account for the fact that the sample was stratified by (adjusted) LI v. Non-LI and rebate status. For example, rebate recipients (and their attributes) are likely overrepresented relative to the true population within the series shown in the chart.
2. For context, the statewide distribution of ages of MA residents is as follows: 20-29 years - 18.6%, 30-39 years - 17.3%, 40-49 years – 15.2%, 50-59 years – 17.7%, 60-69 years – 15.9%, 70-79 years – 9.9%, 80-84 years – 2.6%, 85 years or more – 2.9%. *Source: US Census Bureau, Decennial Census, 2020, Table DP1.*

Source: Guidehouse analysis of Non-Participant Survey output, question E11.

5. Findings and Considerations

5.1 Key Findings

1. **There is substantial opportunity to increase enrollment among central cooling customers who already own Wi-Fi Thermostats.**

Despite more than 100,000 customers having engaged with the Wi-Fi Thermostat DR offering since 2016, the program is capturing only a fraction of the overall eligible market. Of the 900,000 DR non-participants with central cooling, 400,000 own Wi-Fi Thermostats. There is substantial opportunity to increase enrollment among these customers.

2. **Current Wi-Fi Thermostat EE rebate tracking data is limited in its usefulness for DR purposes.**

The PAs incentivize Wi-Fi Thermostats using the Energy Star qualified product list, and not every device is eligible can integrate or can be integrated with the PAs' distributed energy resource management system. However, neither Wi-Fi Thermostat nor heating system installation (with Wi-Fi Thermostats) rebates' tracking data can readily facilitate analysis of DR program eligibility.

3. **DR enrollment is driven overwhelmingly by OEM marketing, with limited traction from coordinated DR-EE efforts to-date.**

By one PA's estimate, 80-85% of DR enrollments have been the result of thermostat partner (OEM) marketing. Additionally, 73% of current DR enrollees have not received a Mass Save rebate for a Wi-Fi Thermostat. However, Cape Light Compact, Eversource, and National Grid provide a strong example of co-marketing through the Mass Save Online Marketplace. There is a Marketplace feature which allows for DR "pre-enrollment" at point-of-sale. Despite this, overall integration between EE programs and DR remains inconsistent and underleveraged.

4. **DR participation barriers include some that the PAs can improve upon and some that are outside of the PAs' control.**

The primary DR participation barriers identified through this study include:

- **Lack of central cooling** – Only an estimated 20% of low-income DR non-participants and 42% of non-low-income DR non-participants have central cooling.
- **Lack of Wi-Fi Thermostat** – Of those with central cooling, 35% of low-income DR non-participants and 54% of non-low-income DR non-participants have a Wi-Fi Thermostat.
- **Lack of interest in Wi-Fi Thermostats and/or lack of awareness in available rebates –** The most frequently reported reasons for not having a Wi-Fi Thermostat among survey respondents were that the current thermostat works fine and the cost of the thermostat. 76% of respondents who do not have a Wi-Fi Thermostat because of costs indicated they were unaware of the Mass Save rebates for Wi-Fi Thermostats.
- **Lack of awareness in DR program** – In terms of awareness of the ConnectedSolutions program, about half of those with central AC who received a rebate for a Wi-Fi Thermostat reported being aware.

- **Concerns about giving control to utility** – Respondents who reported being aware of ConnectedSolutions and who have a Wi-Fi Thermostat (16% or 74 of 461 survey respondents with central cooling controlled by the thermostat) did not enroll in the program for various reasons, particularly not liking the idea of utility thermostat control.

5. **DR non-participants who are low-income are much less likely to have central cooling and Wi-Fi Thermostats than non-low-income customers, and those with Wi-Fi Thermostats are less likely to have purchased it themselves.**

Only 20% of low-income DR non-participants have central cooling compared to 42% of non-low-income DR non-participants. Additionally, when asked why their home had a Wi-Fi Thermostat, low-income customers with a Wi-Fi Thermostat more often reported that the thermostat was already there when they moved in (37% v. 24% of non-low-income customers).

6. **The vast majority of eligible DR non-participants are comfortable with English.**

Less than 10% of DR non-participants with central cooling (both those with and without Wi-Fi Thermostats) speak a language other than English 100% of the time at home. Of these, only 3% indicated they are not at all comfortable reading English, suggesting that multilingual DR program marketing and resources may not be critical to increasing program enrollments.

7. **DR participant and eligible non-participant demographics are largely similar to one another.**

Relative to DR participants, DR non-participants with central cooling *and* Wi-Fi thermostats are approximately the same proportion of low-income customers (DR non-participant: 3% v. DR participant: 4%), skew slightly more concentrated in DECs (29% v. 22%), and skew slightly more urban (36% v. 34%).

5.2 Considerations

Based on the findings from this study, Guidehouse has formulated the following considerations:

Enhance Outreach to Customers with Wi-Fi Thermostats

1. **Conduct outreach to Wi-Fi Thermostat rebate recipients regardless of the EE pathway.** Although central cooling status and DR-eligibility of the thermostat may be unknown for rebate recipients, marketing can be crafted to accommodate this. PAs incentive offers should clearly state which ones are eligible for ConnectedSolutions.

2. **Consider cross-PA promotional DR marketing campaigns.** For customers who received a Wi-Fi Thermostat rebate through their gas account and have a different electric PA, the gas and electric PAs should consider how they can collaborate to market the DR program. ADR implementation vendor could facilitate this effort.[15]

3. **Continue to deepen OEM partnerships and explore ways of influencing OEM marketing efforts.** To make inroads with customers with Wi-Fi Thermostats who have

[15] Process needs to include which gas customers are served by municipal utilities. It would be a much larger effort to coordinate with the public utilities.

not yet enrolled in DR, advocate for additions and/or enhancements to OEM marketing efforts, with a particular focus on the most popular DR-eligible thermostat brands. Different messaging and marketing strategies than what have been used historically may be necessary to gain traction with certain customer segments, including those who feel uncomfortable with utility control of their thermostat.

Strengthen DR-EE Coordination to Increase Wi-Fi Thermostats Installed / DR Enrollments

4. **Integrate DR promotion into all relevant EE touchpoints.** Ensure that every relevant EE touchpoint (in particular, market rate and low-income home energy assessments and heat pump installations) is leveraged to assess applicability of the home for a Wi-Fi Thermostat and includes information and encouragement to install a Wi-Fi Thermostat and enroll in DR.

    a. **Develop a strategy for DR-EE coordination with heat pump installations.** In the near- to medium- term, this would focus on central heat pumps. This could involve creating guidance and expectations for heat pump installers that are part of the Heat Pump Installers Network and offering customer and/or installer enhanced incentives for bundling DR-eligible Wi-Fi Thermostats with central heat pumps.

    b. **Continue to leverage the Residential Turnkey Services touch-point** despite Wi-Fi Thermostats not being installed through the program. Establish and communicate clear expectations for Lead Vendors (LVs) and Home Performance Contractors (HPCs) regarding when and how to cross-promote both Wi-Fi Thermostats and the DR program to customers receiving HEAs.

    c. **Continue to work with the Low-Income Program implementation LVs to encourage low-income customers to install Wi-Fi Thermostats.** Wi-Fi Thermostats are installed at no cost for low-income customers through the Low-Income Program; however, penetration is still quite low likely due to a combination of the measure not being prioritized during home energy assessments and customer preferences.

Encourage and Monitor Participation by Underrepresented Customer Subgroups

5. **Educate Wi-Fi Thermostat owners about the value of Wi-Fi Thermostats.** Develop marketing that speaks to customers who were not responsible for purchasing their Wi-Fi Thermostat (i.e., situations where the thermostat was already present in the home upon move-in) and may not engage much with the device.

6. **Conduct continuous tracking & improvement.** Through periodic survey efforts or other means, collect and analyze data on DR participation by income status, race/ethnicity, and home ownership status to identify gaps and measure progress.

Considerations for Future Evaluations

Future evaluations on this topic would be aided by the following enhancements to data collection and/or tracking:

1. **Cleanly track thermostat Make and Model Number in stand-alone data fields within EE Wi-Fi Thermostat rebate tracking data.** This will ensure that there is sufficient information to determine eligibility of customers who have received an EE rebate for a Wi-Fi Thermostat in the past but who have not enrolled in DR.

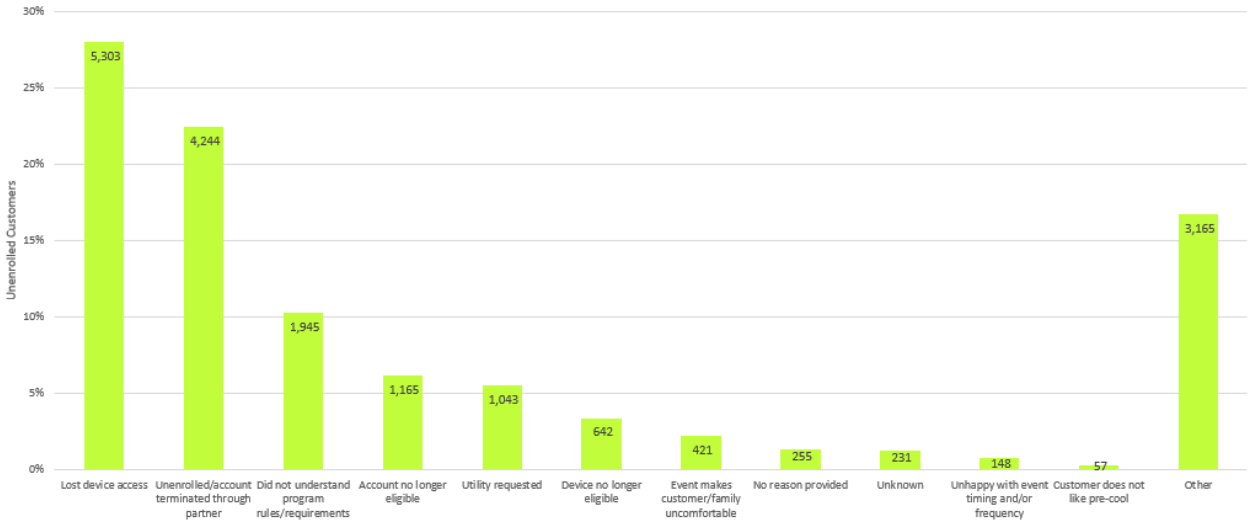
2. **Establish a method of cleanly linking customer electric and gas accounts (via PA coordination with data management vendor).** This would allow for a more accurate assessment of DR opportunity size among electric customers who received a Wi-Fi Thermostat rebate through their gas account.

3. **Conduct a periodic review of Do Not Contact flag** to ensure percentage of customers flagged as DNC is as expected. This will help to avoid systematic bias in customer research, particularly general population research.

Appendix A. Additional Participation Data Analysis Output

The top reasons for unenrolling are “Lost Device Access” and “Account terminated through Partner”.

Figure 5-1. Unenrollment Reasons (n=18,921)



1. 18,921 is the total number of thermostats unenrolled since 2016.
2. “Lost device access” represents Wi-Fi Thermostats that are disconnected from the internet and cannot receive control signals.
3. The “Other” column includes “Other”, “Device Offline”, “eco+ confusion,” “Did not mean to apply,” etc.

Source: DR tracking data provided by Cape Light Compact, Eversource, National Grid, and Unitil all through December 31, 2024.

Most current DR participants (62%) have only one thermostat enrolled in the DR offering. 12% of DR participants have 3 or more thermostats enrolled in the program.

Table 5-1. Number of Enrolled Thermostats Per Customer – By PA

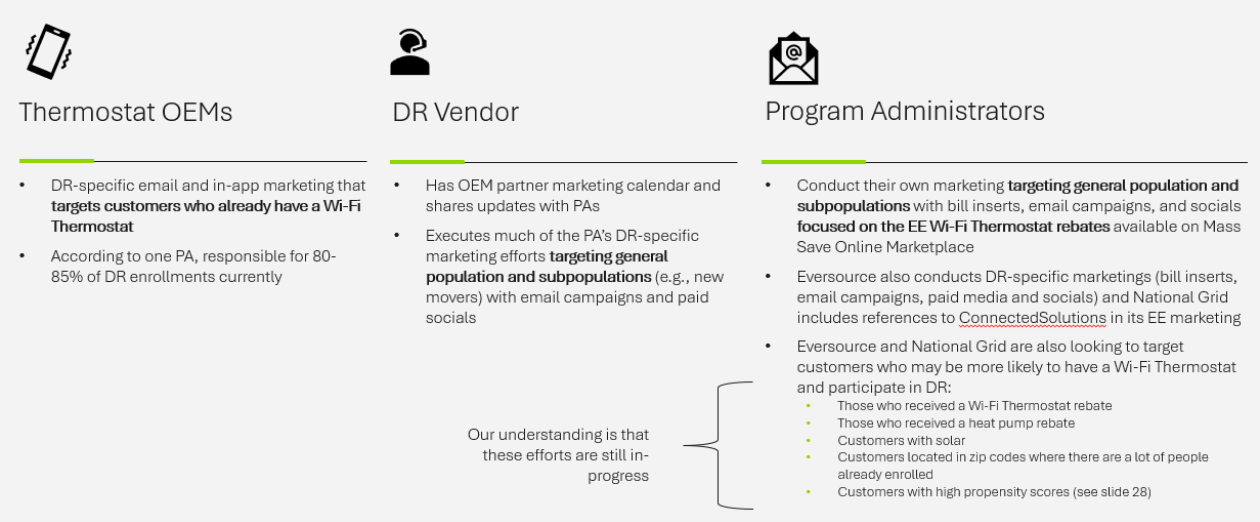
		Number of Thermostats per Customer			
PA	**Count of Current DR Enrollees**	**1**	**2**	**3**	**4 +**
Cape Light Compact	2,762	56%	27%	10%	7%
Eversource	37,356	61%	24%	8%	5%
National Grid	30,086	64%	27%	7%	2%
Unitil	309	98%	1%	0%	0%
Total Count	**70,513**[1]	**43,982**	**18,318**	**5,323**	**2,890**
Total %	**100%**	**62%**	**26%**	**8%**	**4%**

1. The difference between the count here and the total DR enrollees (5 accepted customers) is due to some accepted customers having 'NA' in the Device UUID field: 4 for Unitil, 1 in CLC

Source: DR tracking data provided by Cape Light Compact, Eversource, National Grid, and Unitil all through December 31, 2024.

Appendix B. Additional Enrollment Pathways Output

Figure 5-2. Residential Wi-Fi Thermostat DR Marketing Roles



Appendix C. Non-Participant Survey Instrument

C.1 Survey Landing Page

You have been selected for this survey because you are part of the general electric residential customer population in Massachusetts. Thank you in advance for your participation in this survey. Your feedback helps the Mass Save® Sponsors gain a deeper understanding of how customers cool their homes, and their awareness and interest in ways to reduce energy use during periods of high demand.

Your feedback will be reported to the Mass Save Sponsors anonymously and in aggregate with other customers' responses. There are no right or wrong answers; please share your honest thoughts. This survey will take about 15–20 minutes to complete. As a thank you, you will receive a **$20 e-gift card** via email through Tango Card within 7 business days after completing the survey. The e-gift card can be redeemed at numerous retailers or donated to a charity of your choice.

C.2 Module A: Customer Profile

A1. Please confirm you are a current occupant of **[ADDRESS]**.

1) Yes
2) No **[END SURVEY, GO TO "SCREENED OUT" TEXT]**

A2. Which AC system type(s) does your home have? Select all that apply.

1) Room, window, or through-the-wall air conditioner
2) Central air conditioner (ducted)
3) Ductless air conditioner (mini split)
4) Central Heat Pump (Air Source)
5) Central Heat Pump (Ground Source)
6) No AC system at my home **[MUTUALLY EXCLUSIVE] [END SURVEY, GO TO "SCREENED OUT" TEXT]**
7) Other, please specify: _____ **[OPEN TEXT RESPONSE]**
8) Don't know **[MUTUALLY EXCLUSIVE]**

[IF A2 <> 2,4,5, END SURVEY, GO TO "SCREENED OUT" TEXT]

A3. Do you use a thermostat to control at least one of your AC system(s)? ("Thermostat" here refers to a thermostat that is separate from your AC system(s), i.e., not built-in)

1) Yes
2) No **[END SURVEY, GO TO "SCREENED OUT" TEXT]**
3) Don't know **[END SURVEY, GO TO "SCREENED OUT" TEXT]**

[IF A3 = 1, CONTINUE. ELSE GO TO "SCREENED OUT" TEXT]

A4. Which type(s) of thermostat(s) control your home's AC system(s)? Select all that apply.

1) Standard/Manual Thermostat
2) Programmable Thermostat
3) Smart Thermostat (also known as Wi-Fi Thermostat) **[IF SELECTED, WIFI_TSTAT_CUSTOMER = 1, ELSE WIFI_TSTAT_CUSTOMER = 0]**
4) Don't know **[MUTUALLY EXCLUSIVE]**

C.3 Module B: Wi-Fi Thermostat Adoption (Respondents without Wi-Fi Thermostats)

[IF WIFI_TSTAT_CUSTOMER = 0, CONTINUE. ELSE SKIP TO MODULE C]

B1. Before today, had you heard of Smart Thermostats?

1) Yes
2) No **[SKIP TO MODULE D]**

[IF B1 = 1, CONTINUE. ELSE SKIP TO MODULE D]

B2. Why does your home **not** have a Smart Thermostat? Select all that apply.

1) Costs money / too expensive
2) Waiting to upgrade or replace the HVAC system before changing thermostat
3) Current thermostat works fine
4) Don't have Wi-Fi in my home
5) Low priority
6) Has features I do not need
7) Smart Thermostat is not compatible with current HVAC system
8) Concerned with data privacy
9) Don't like the idea of someone else controlling my thermostat
10) Other, please specify: _____ **[OPEN TEXT RESPONSE]**
11) Don't know **[MUTUALLY EXCLUSIVE]**

[IF B2 = 1, CONTINUE. ELSE SKIP TO MODULE D]

B3. Are you aware that the Sponsors of Mass Save provide rebates for qualifying Smart Thermostats (of $100 for up to three thermostats?)

1) Yes
2) No

[IF B3 = 2, CONTINUE. ELSE SKIP TO MODULE D]

B4. Is the Mass Save incentive enough to make you interested in getting a Smart Thermostat for your home?

1) Yes
2) No

[IF B4 = 1, CONTINUE. ELSE SKIP TO MODULE D]

B5. For what reason(s) are you interested in having a Smart Thermostat for your home? Select all that apply.

1) Control temperature remotely via my smartphone, computer, or tablet
2) Automatically adjust settings to my habits and weather
3) Set a temperature schedule for particular times and/or days of the week
4) Receive alerts about HVAC maintenance
5) Receive alerts when home is above or below certain temperature and/or humidity levels
6) Improve energy efficiency and savings
7) Detect empty rooms and adjust temperature accordingly
8) Track my energy usage
9) Interface with other Smart Home devices such as air quality monitors, humidifiers, air purifiers and in-home assistants like Siri or Alexa.
10) Other, please specify: _____ **[OPEN TEXT RESPONSE]**

C.4 Module C: Wi-Fi Thermostat Adoption (Respondents with Wi-Fi Thermostats)

[IF WIFI_TSTAT_CUSTOMER = 1, CONTINUE. ELSE SKIP TO MODULE D]

C1. Why does your home have a Smart Thermostat? Select all that apply.

1) It was here when I moved in
2) There was a rebate available
3) I value the features
4) It was installed during a home energy assessment
5) It was installed when I got a new heating and/or cooling system
6) Other, please specify: _____ **[OPEN TEXT RESPONSE]**
7) Don't know **[MUTUALLY EXCLUSIVE]**

[IF C1=2, CONTINUE. ELSE SKIP TO C1b]

C1a. What rebate(s) did you receive for the purchase of your Smart Thermostat(s)?
_____ **[OPEN TEXT RESPONSE]**

C1b. Which features of your Smart Thermostat do you use? Select all that apply.

1) Control temperature remotely via my smartphone, computer, or tablet
2) Automatically adjust settings to my habits and weather
3) Set a temperature schedule for particular times and/or days of the week
4) Receive alerts about HVAC maintenance
5) Receive alerts when home is above or below certain temperature and/or humidity levels
6) Detect empty rooms and adjust temperature accordingly
7) Track my energy usage
8) To interface with other Smart Home devices such as air quality monitors, humidifiers, air purifiers and in-home assistants like Siri or Alexa
9) Other, please specify: _____ **[OPEN TEXT RESPONSE]**

[IF respondent selects more than one answer choice in C1b, CONTINUE. ELSE SKIP TO C2]

C1c. What features of your Smart Thermostat do you value most? Select all that apply.

1) **[PIPE IN FROM C1b SELECTION]**

[IF C1 <> 1,4,5, CONTINUE. ELSE SKIP TO C3]

C2. How did you purchase your Smart Thermostat?

1) Mass Save Online Marketplace
2) In-person at a retailer (e.g., Home Depot). Please specify retailer: _____ **[OPEN TEXT RESPONSE]**
3) Online from a retailer (e.g., Home Depot, Amazon). Please specify retailer: _____ **[OPEN TEXT RESPONSE]**
4) Thermostat provider website
5) Other, please specify: _____ **[OPEN TEXT RESPONSE]**

C3. Please rate your satisfaction with your Smart Thermostat**.**

1) Extremely dissatisfied
2) Moderately dissatisfied
3) Neither dissatisfied nor satisfied
4) Moderately satisfied
5) Extremely satisfied

C4. What are the primary reasons you gave your satisfaction with your Smart Thermostat this rating? _____ **[OPEN TEXT RESPONSE]**

C.5 Module D: DR Program Awareness and Sentiment

D1. Are you familiar with the concept of "peak demand" for electricity?

1) Yes
2) No

D1a. Are you familiar with the concept of "demand response"?

1) Yes
2) No

D2. *Peak electricity demand* is when the demand for electricity is at its highest for the electrical system, which puts stress on the system – for example on hot, humid summer days.

Demand response is used by utilities to manage peak electricity demand by incentivizing customers to reduce or shift their electricity usage during periods of high demand to reduce the need for higher cost power.

The Sponsors of Mass Save offer incentives for reducing your air conditioning usage through your Smart Thermostat during periods of peak electricity demand. The program is called ConnectedSolutions. Are you aware of the program?

1) Yes
2) No **[SKIP TO D10]**

[IF D2 = 1, CONTINUE. ELSE SKIP TO D10]

D3. How did you first hear about ConnectedSolutions? Select all that apply.

1) Email from Smart Thermostat company
2) Email from Energy Hub
3) Email from my utility / program administrator
4) Email from the Sponsors of Mass Save
5) Home energy assessor
6) Smart Thermostat provider app
7) A contractor. Please provide additional detail: _____ **[OPEN TEXT RESPONSE]**
8) Internet search
9) Mass Save website
10) Utility / program administrator website
11) Word of mouth
12) Social media
13) Other, please specify: _____ **[OPEN TEXT RESPONSE]**
14) Don't recall **[MUTUALLY EXCLUSIVE]**

[IF C1=4, CONTINUE. ELSE SKIP TO D5]

D4. Did your home energy assessor and/or thermostat installer tell you about the opportunity to enroll in ConnectedSolutions?

1) Yes
2) No
3) Don't recall

[IF C1=5, CONTINUE. ELSE SKIP TO D6]

D5. Did your heating and/or cooling system contractor tell you about the opportunity to enroll in ConnectedSolutions?

1) Yes
2) No
3) Don't recall

D6. Did you receive sufficient enough information about ConnectedSolutions to allow you to make an informed decision about whether to enroll?

1) Yes
2) No
3) Don't recall

[IF D6=2, CONTINUE. ELSE SKIP TO D8]

D7. How could the information provided to you about ConnectedSolutions have been improved?
_____ **[OPEN TEXT RESPONSE]**

[IF A4=3, CONTINUE. ELSE SKIP TO D9]

D8. Why did you not enroll in the program?

1) Not enough information
2) Incentive to participate was not enough
3) Too confusing
4) Would like to but didn't get around to it
5) Don't like the idea of my utility controlling my thermostat
6) Concerned about comfort impacts
7) Concerned with data privacy
8) Other, please specify: _____ **[OPEN TEXT RESPONSE]**
9) Don't recall

D9. What would entice you to enroll in ConnectedSolutions?

1) Please describe: _____ **[OPEN TEXT RESPONSE]**
2) Nothing
3) Unsure

D10. Are you familiar with the concept of "microshifting"?

1) Yes
2) No

D11. Related to demand response, microshifting focuses on small adjustments to a home's energy usage through smart home devices (such as Smart Thermostats) with the goal of shifting energy use away from peak times **without compromising comfort and lifestyle (i.e., without the homeowner noticing)**, which is an important requisite for all demand response offerings.

What would you think about a microshifting program that provided an incentive for participation?

1) I would definitely sign up
2) I would want to learn more
3) I definitely wouldn't sign up

C.6 Module E: Demographics

The survey is almost complete. We have just a few more questions about your household.

E1. Do you own or rent your home?

1) Own
2) Rent

E2. Please select the range of years in which your home was built.

1) 2020 or later
2) 2010 to 2019
3) 2000 to 2009
4) 1990 to 1999
5) 1980 to 1989
6) 1970 to 1979
7) 1960 to 1969
8) 1950 to 1959
9) 1940 to 1949
10) 1939 or earlier
11) Don't know

E3. Which of the following best describes your current type of housing?

1) Single family (stand-alone home with no adjacent walls to another house)
2) Duplex
3) Triple decker (e.g., three story house with each floor being a separate unit)
4) Townhouse or row house (adjacent walls to another house)
5) Apartment/condo in a 2-unit building
6) Apartment/condo in a 3–4-unit building
7) Apartment/condo in a 5–9-unit building
8) Apartment/condo in a 10–19-unit building
9) Apartment/condo in a 20+ unit building
10) Manufactured home or mobile home
11) Other, please describe: _____ **[OPEN TEXT RESPONSE]**

E4. How many individuals typically occupy this home? Enter zero if appropriate. Please note this question is optional.

Occupant Type	Number	
a. Children under 18	**[RECORD NUMBER]**	Prefer not to answer
b. Adults, 18 to 65	**[RECORD NUMBER]**	Prefer not to answer
c. Adults, 65 and older	**[RECORD NUMBER]**	Prefer not to answer

E5. Which of the following best describes the race/ethnic background you identify with? Select all that apply.

1) Black or African American
2) Hispanic or Latino/Latina
3) American Indian or Alaska Native
4) Asian
5) Middle Eastern or North African
6) Native Hawaiian or Pacific Islander
7) White
8) Not Listed, please specify: _____ **[OPEN TEXT RESPONSE]**
9) Prefer not to answer **[MUTUALLY EXCLUSIVE]**

E6. What is your highest level of education?

1) Less than 9th grade
2) Some high school (9th through 12th grade, no diploma)
3) High school graduate (includes equivalency)
4) Some college or associate's degree
5) Bachelor's degree
6) Postgraduate degree
7) Prefer not to answer

E7. How often do members of your household speak a language other than English in your home?

1) Always (100% another language)
2) More than half of the time (>50% in another language)
3) Less than half of the time (<50% in another language)
4) Never (100% English)
5) Don't know
6) Prefer not to answer

[IF E7 <> 4, CONTINUE. ELSE SKIP TO E11]

E8. Which languages are spoken in your home? Select all that apply.

1) English
2) Spanish
3) Portuguese
4) Cape Verdean Creole
5) Mandarin
6) Cantonese
7) Haitian Creole
8) French
9) Arabic
10) Vietnamese
11) Russian
12) Hindi
13) Italian
14) Korean
15) Other, please specify: **[OPEN TEXT RESPONSE]**

[IF E8 = 3, CONTINUE. ELSE SKIP TO E10a]

E9. Which Portuguese dialect do you speak?

1) European
2) Brazilian
3) Other, please specify: **[OPEN TEXT RESPONSE]**

[IF E7 <> 4, CONTINUE. ELSE SKIP TO E11]

E10a. How comfortable are you speaking English? On a scale of 1 to 5, with 1 being not at all comfortable and 5 being extremely comfortable.

1) 1 = Not at all comfortable
2) 2
3) 3
4) 4
5) 5 = Extremely comfortable

[IF E7 <> 4, CONTINUE. ELSE SKIP TO E11]

E10b. How comfortable are you reading English? On a scale of 1 to 5, with 1 being not at all comfortable and 5 being extremely comfortable.

1) 1 = Not at all comfortable
2) 2
3) 3
4) 4
5) 5 = Extremely comfortable

E11. How old are you?

1) Under 20 years of age
2) 20-29 years of age
3) 30-39 years of age
4) 40-49 years of age
5) 50-59 years of age
6) 60-69 years of age
7) 70-79 years of age
8) 80-84 years of age
9) 85 years or older
10) Prefer not to answer

[IF E4 <> (Blank or 0), CONTINUE. ELSE SKIP TO E13]

E12. What was your estimated total annual household income reported in 2024 before tax?
[DYNAMIC RESPONSE OPTIONS BASED ON NUMBER OF OCCUPANTS OVER 18]

1) Less than $24,600
2) $24,601 - $49,200
3) $49,201 - $57,400
4) $57,401 - $65,600
5) $65,601 - $73,800
6) $73,801 - $82,000
7) $82,001 - $90,200
8) $90,201 - $98,400
9) $98,401 - $123,000
10) $123,001 - $164,000
11) Greater than $164,000

12) Prefer not to answer

E13. Please type the email address where you would like us to send your e-gift card.

_____ **[OPEN TEXT RESPONSE]**

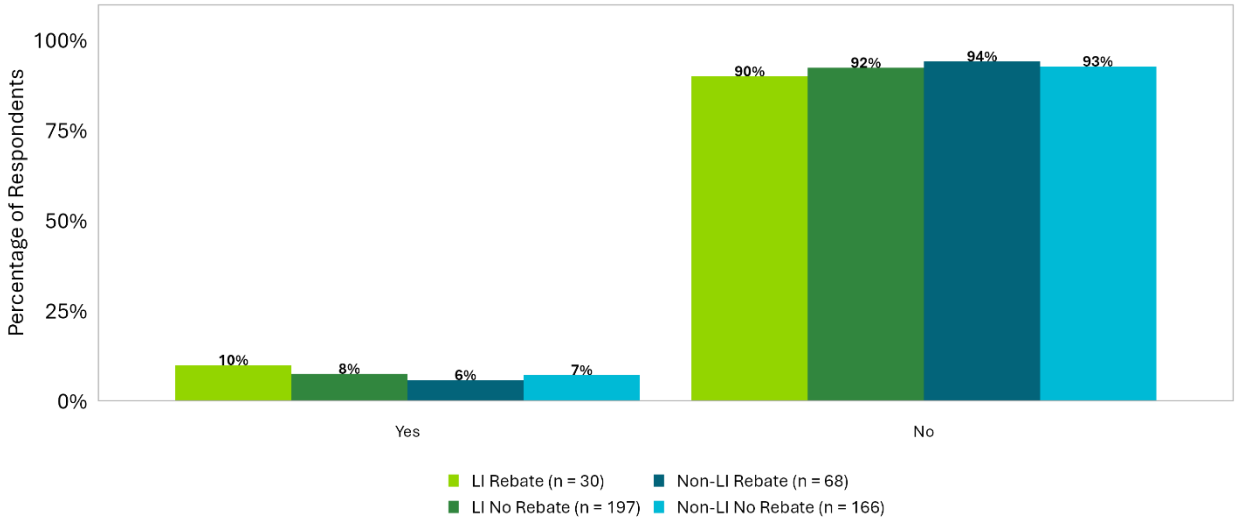
CLOSE: This concludes the survey that we have prepared for you today. You can expect to receive your e-gift card directly from noreply@tango.com within 7 business days. Thank you for your participation!

For more information related to the ConnectedSolutions program, click this link: https://www.masssave.com/residential/programs-and-services/connectedsolutions

IF SCREENED OUT: Thank you for your time. Unfortunately, you are not eligible to take this survey.

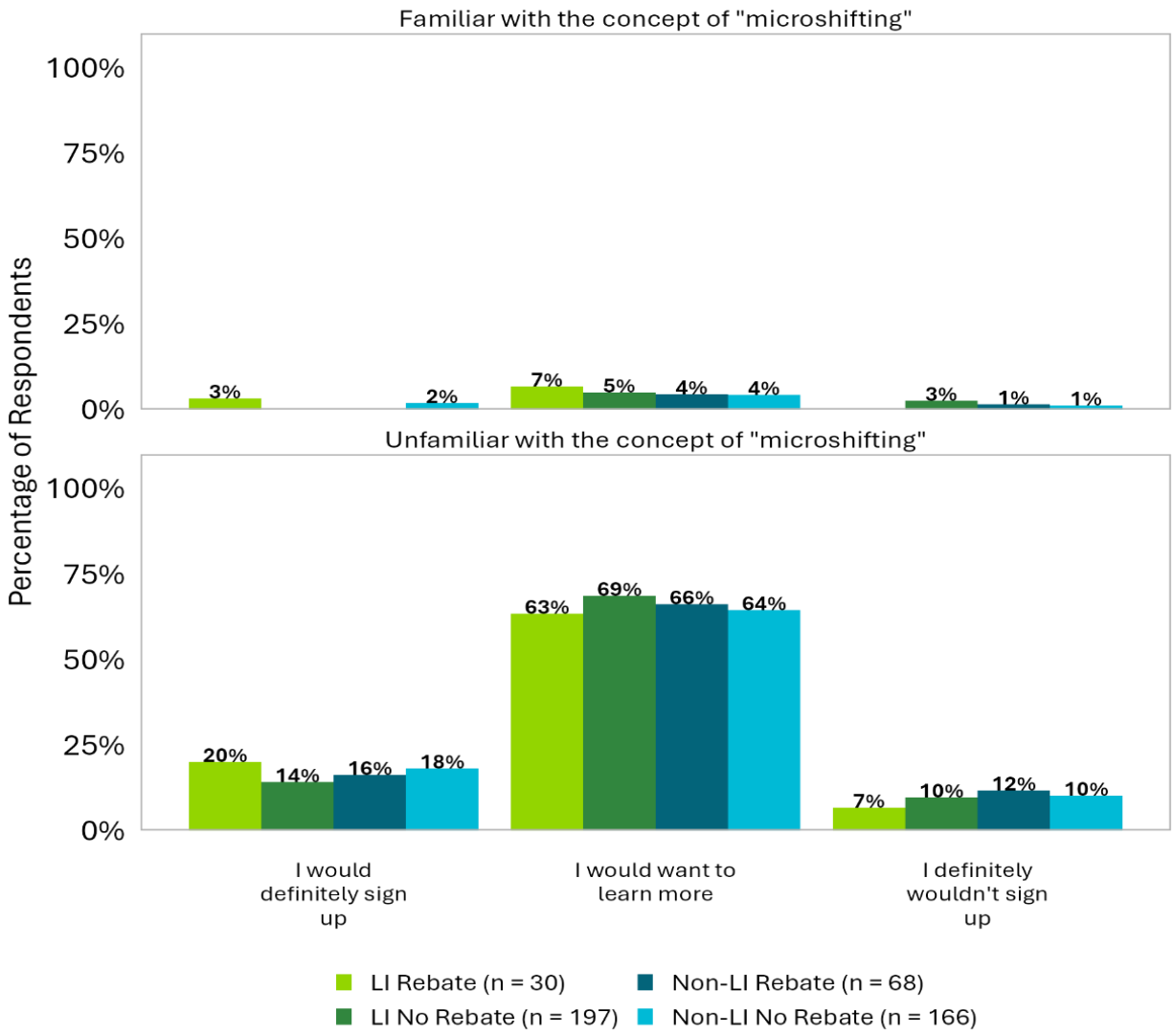
Appendix D. Non-Participant Survey Instrument

Figure 5-3. Are you familiar with the concept of "microshifting"?



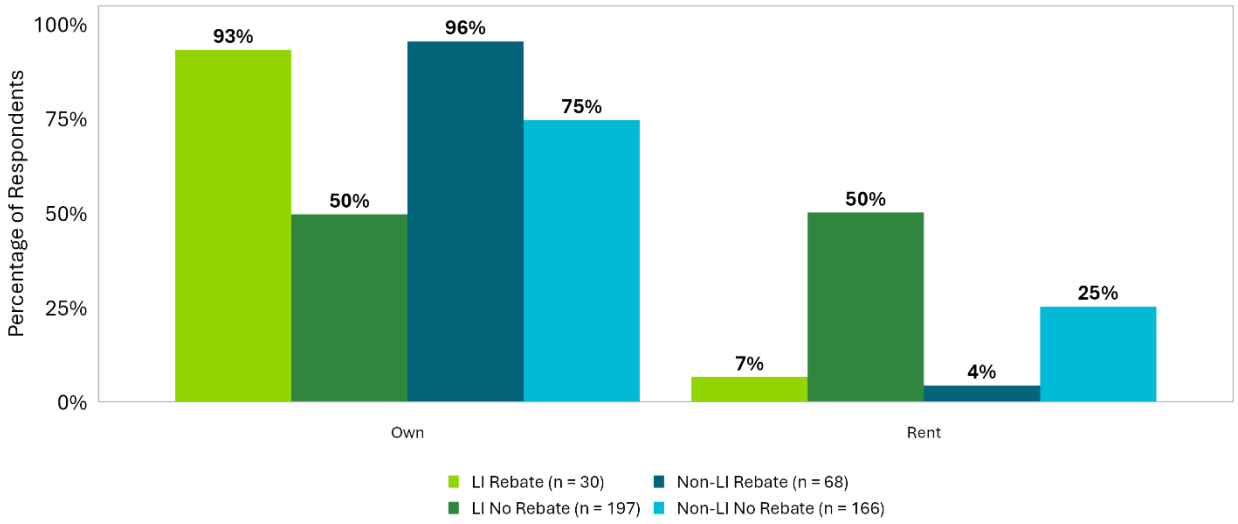
1. LI = Low-income based on self-reported income level; overall 29% of the 461 respondents with central cooling systems did not answer the income question (including those that did not get the question).
Source: Guidehouse (Non-Participant Survey Results), question D10.

Figure 5-4. What would you think about a microshifting program that provided an incentive for participation?



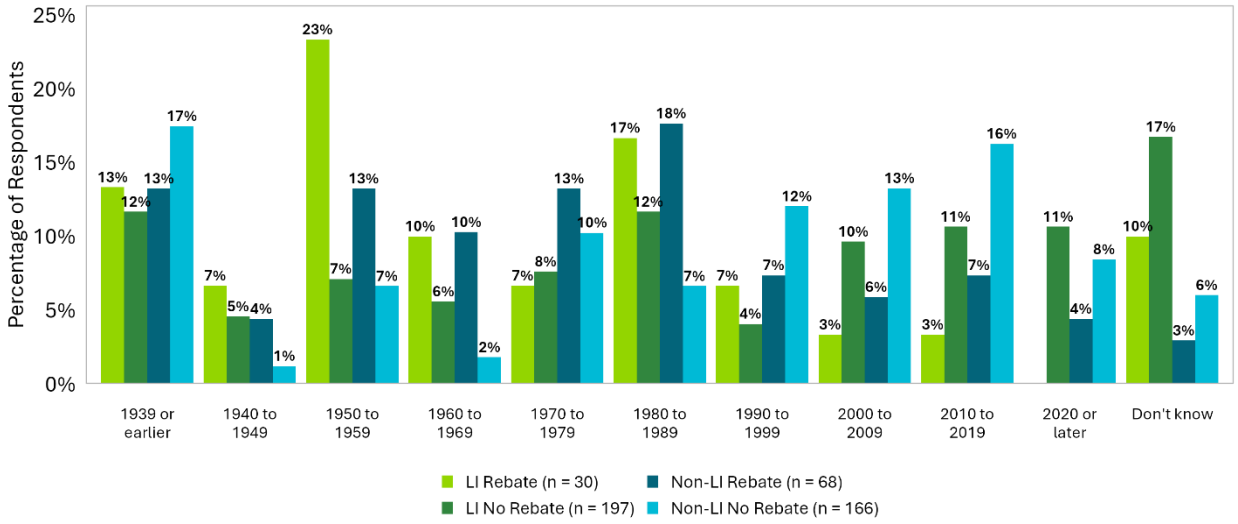
1. LI = Low-income based on self-reported income level; overall 29% of the 461 respondents with central cooling systems did not answer the income question (including those that did not get the question).
Source: Guidehouse (Non-Participant Survey Results), question D11.

Figure 5-5. Do you own or rent your home?



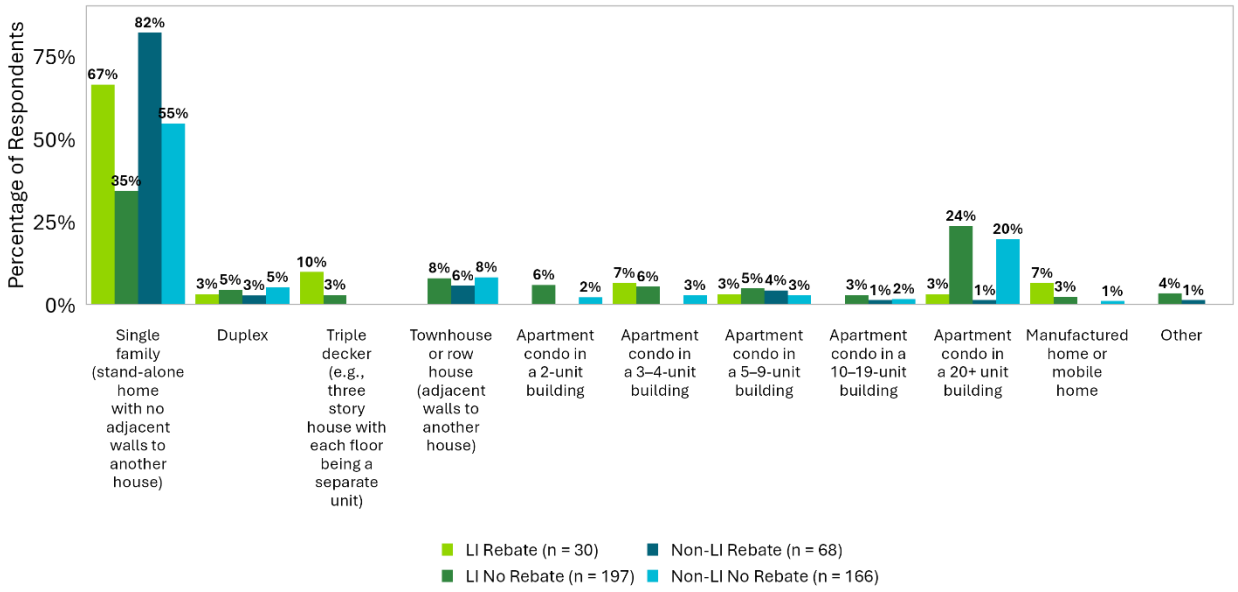
1. LI = Low-income based on self-reported income level; overall 29% of the 461 respondents with central cooling systems did not answer the income question (including those that did not get the question).
Source: Guidehouse (Non-Participant Survey Results), question E1.

Figure 5-6. Please select the range of years in which your home was built.



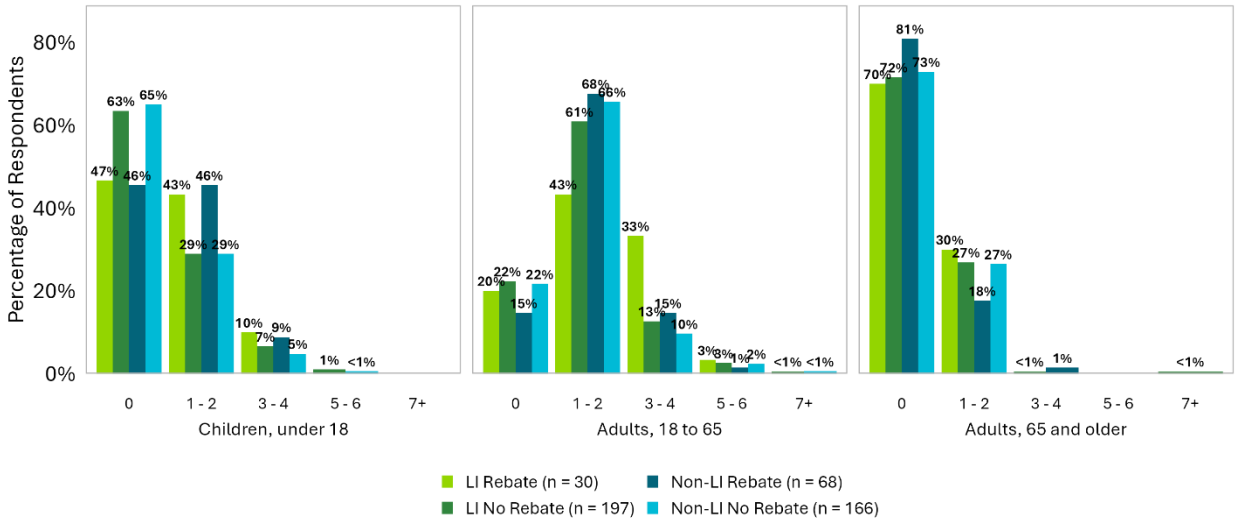
1. LI = Low-income based on self-reported income level; overall 29% of the 461 respondents with central cooling systems did not answer the income question (including those that did not get the question).
Source: Guidehouse (Non-Participant Survey Results), question E2.

Figure 5-7. Which of the following best describes your current type of housing?



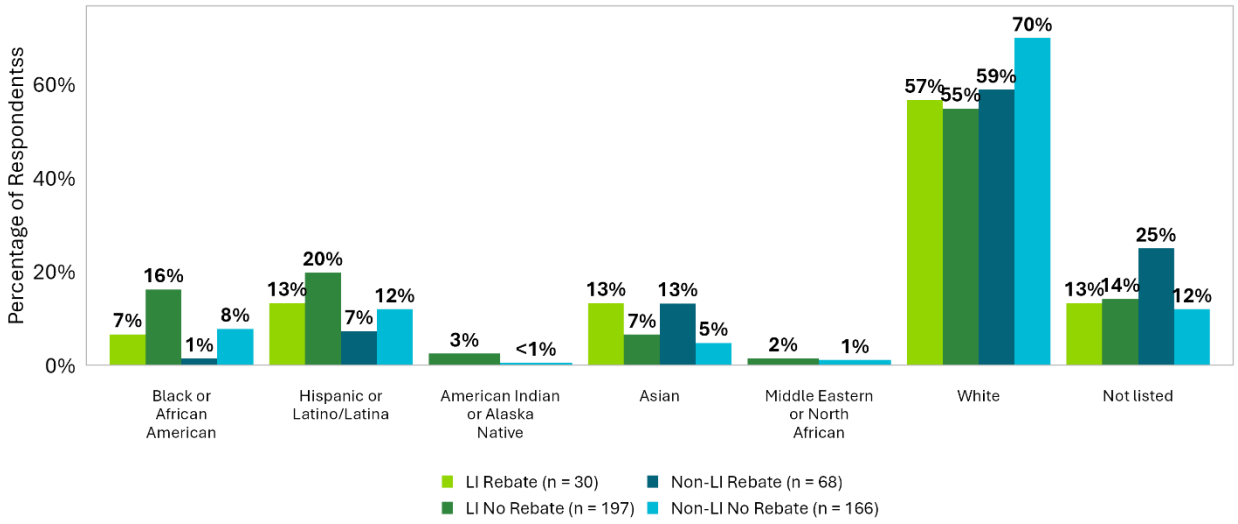
1. LI = Low-income based on self-reported income level
Source: Guidehouse (Non-Participant Survey Results), question E3.

Figure 5-8. How many individuals typically occupy this home? Enter zero if appropriate. (Optional)



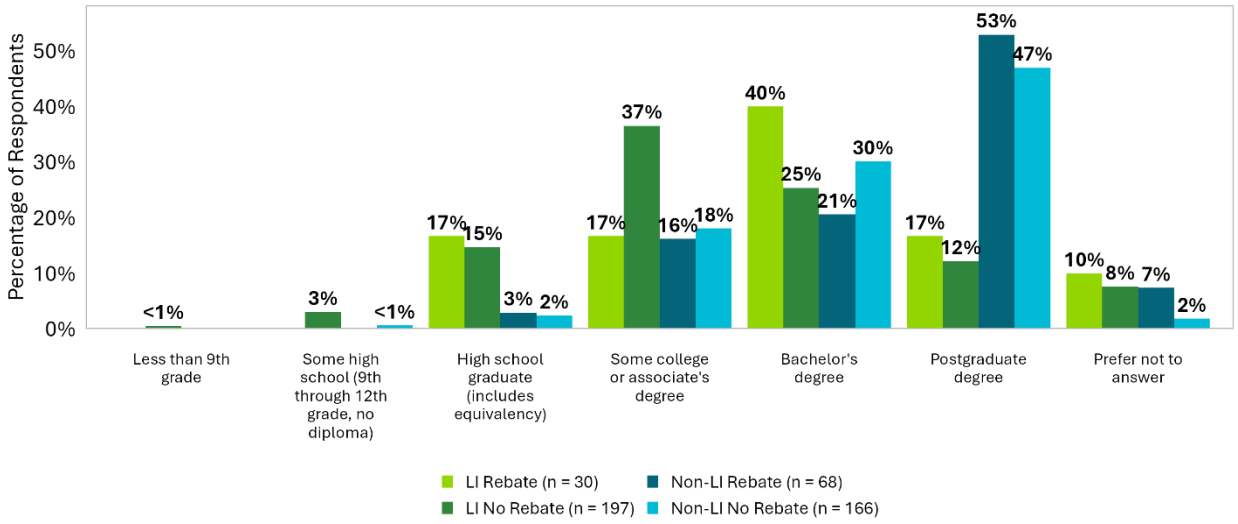
1. LI = Low-income based on self-reported income level
Source: Guidehouse (Non-Participant Survey Results), question E4.

Figure 5-9. Which of the following best describes the race/ethnic background you identify with? Select all that apply.



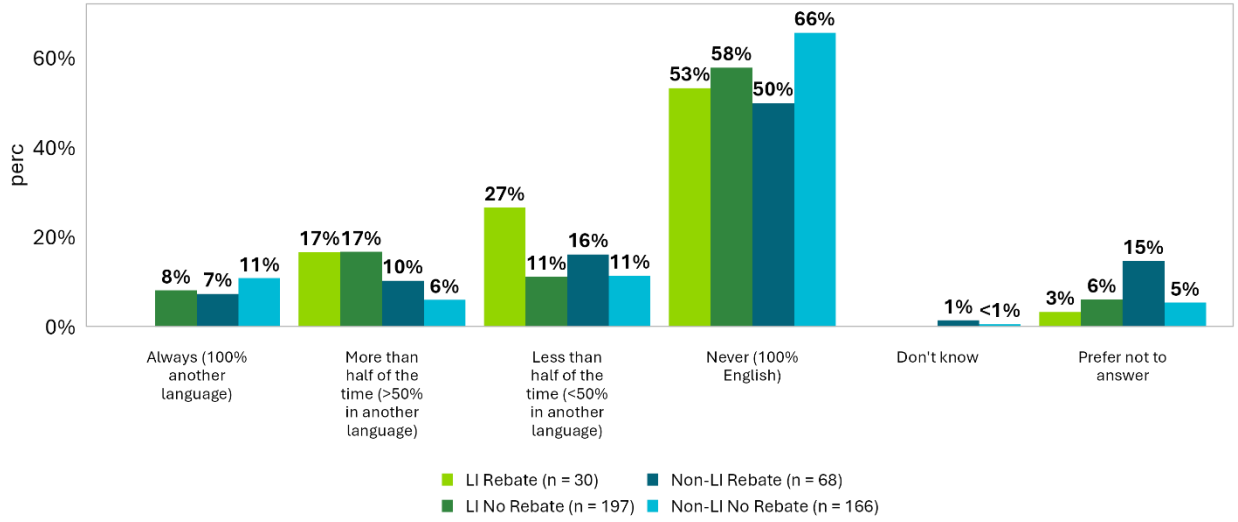
1. LI = Low-income based on self-reported income level
Source: Guidehouse (Non-Participant Survey Results), question E5.

Figure 5-10. What is your highest level of education?



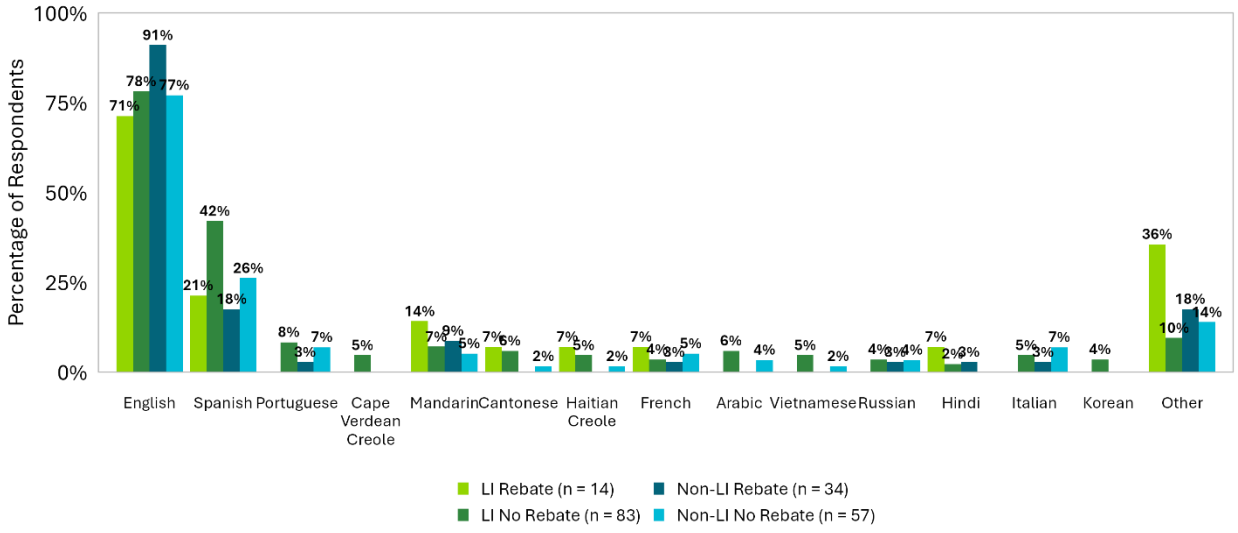
1. LI = Low-income based on self-reported income level; overall 29% of the 461 respondents with central cooling systems did not answer the income question (including those that did not get the question).
Source: Guidehouse (Non-Participant Survey Results), question E6.

Figure 5-11. How often do members of you household speak a language other than English in your home?



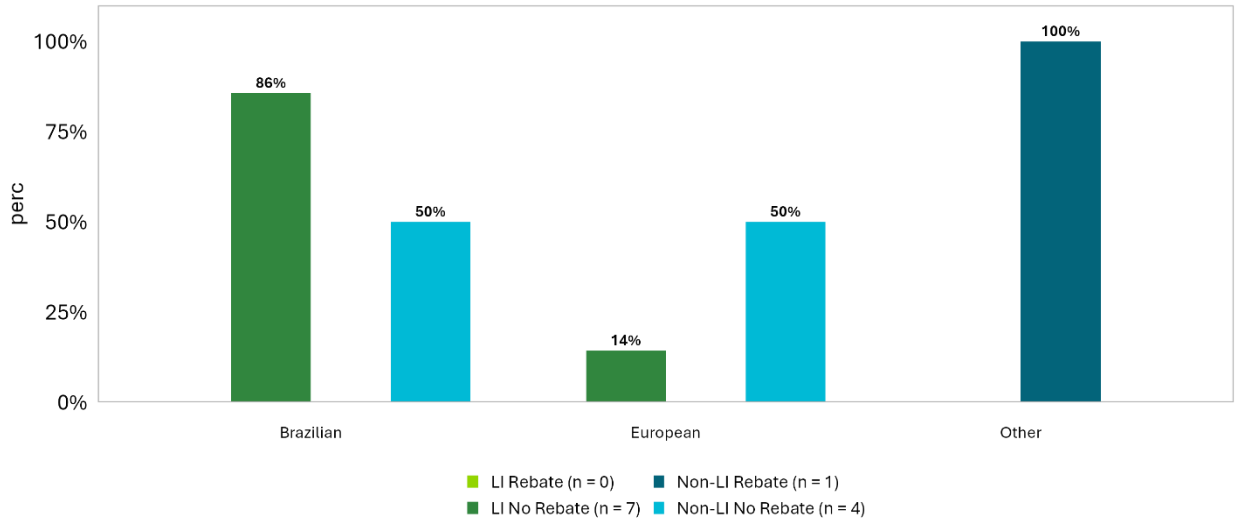
1. LI = Low-income based on self-reported income level; overall 29% of the 461 respondents with central cooling systems did not answer the income question (including those that did not get the question).
Source: Guidehouse (Non-Participant Survey Results), question E7.

Figure 5-12. Which languages are spoken in your home? Select all that apply.



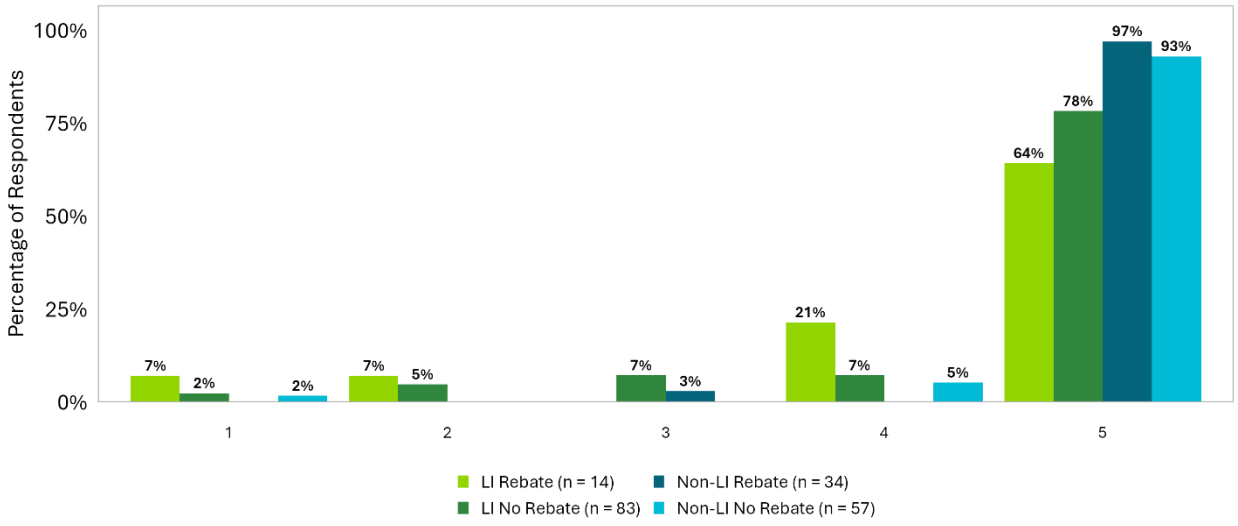
1. LI = Low-income based on self-reported income level; overall 29% of the 461 respondents with central cooling systems did not answer the income question (including those that did not get the question).
Source: Guidehouse (Non-Participant Survey Results), question E8.

Figure 5-13. Which Portuguese dialect do you speak?



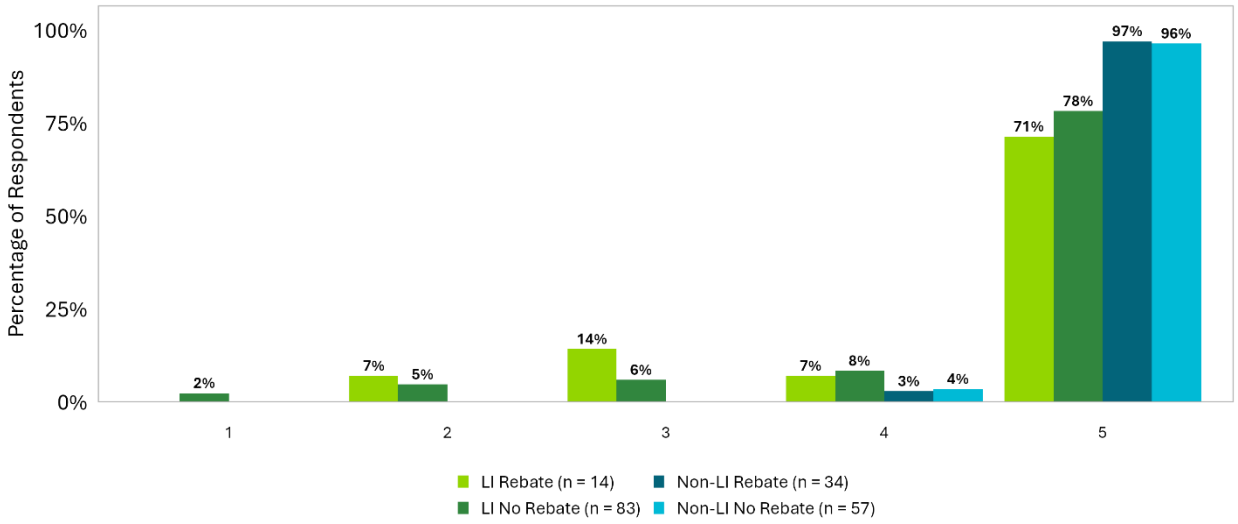
1. LI = Low-income based on self-reported income level; overall 29% of the 461 respondents with central cooling systems did not answer the income question (including those that did not get the question).
Source: Guidehouse (Non-Participant Survey Results), question E9.

Figure 5-14. How comfortable are you speaking English? On a scale of 1 to 5, with 1 being not at all comfortable and 5 being extremely comfortable.



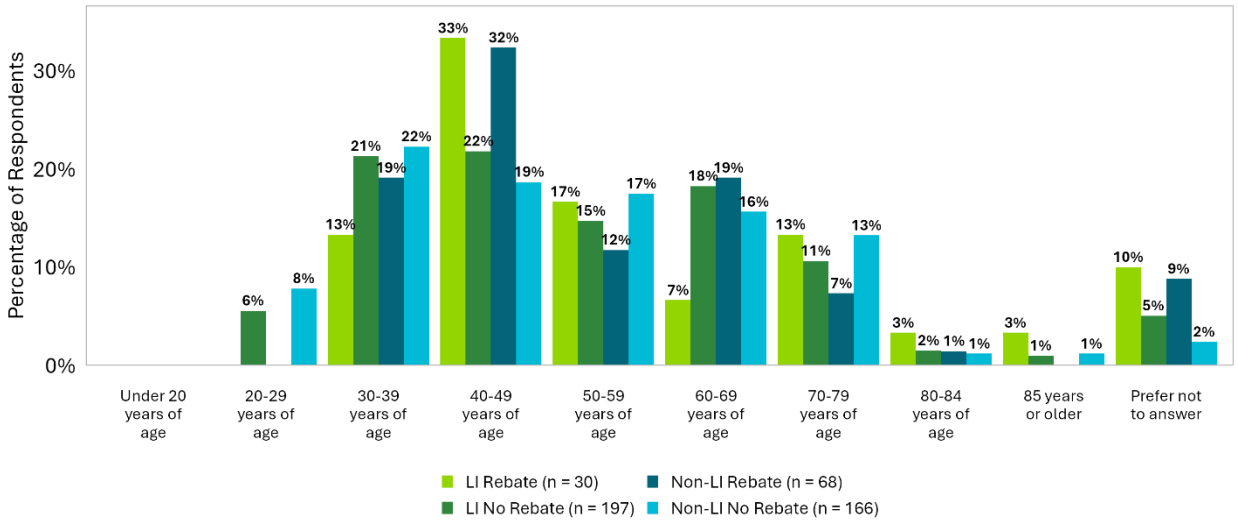
1. LI = Low-income based on self-reported income level; overall 29% of the 461 respondents with central cooling systems did not answer the income question (including those that did not get the question).
Source: Guidehouse (Non-Participant Survey Results), question E10a.

Figure 5-15. How comfortable are you reading English? On a scale of 1 to 5, with 1 being not at all comfortable and 5 being extremely comfortable.



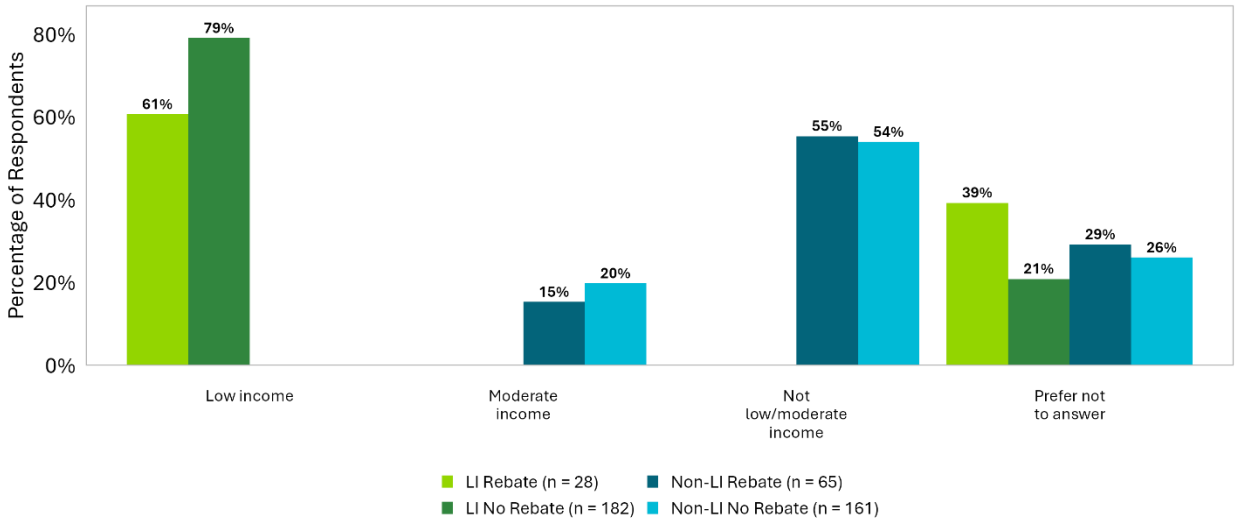
1. LI = Low-income based on self-reported income level; overall 29% of the 461 respondents with central cooling systems did not answer the income question (including those that did not get the question).
Source: Guidehouse (Non-Participant Survey Results), question E10b.

Figure 5-16. How old are you?



1. LI = Low-income based on self-reported income level; overall 29% of the 461 respondents with central cooling systems did not answer the income question (including those that did not get the question).
Source: Guidehouse (Non-Participant Survey Results), question E11.

Figure 5-17. What was your estimated total annual household income reported in 2024 before tax?



1. LI = Low-income based on self-reported income level; overall 29% of the 461 respondents with central cooling systems did not answer the income question (including those that did not get the question).
Source: Guidehouse (Non-Participant Survey Results), question E12; chart output also leverages question E4.

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