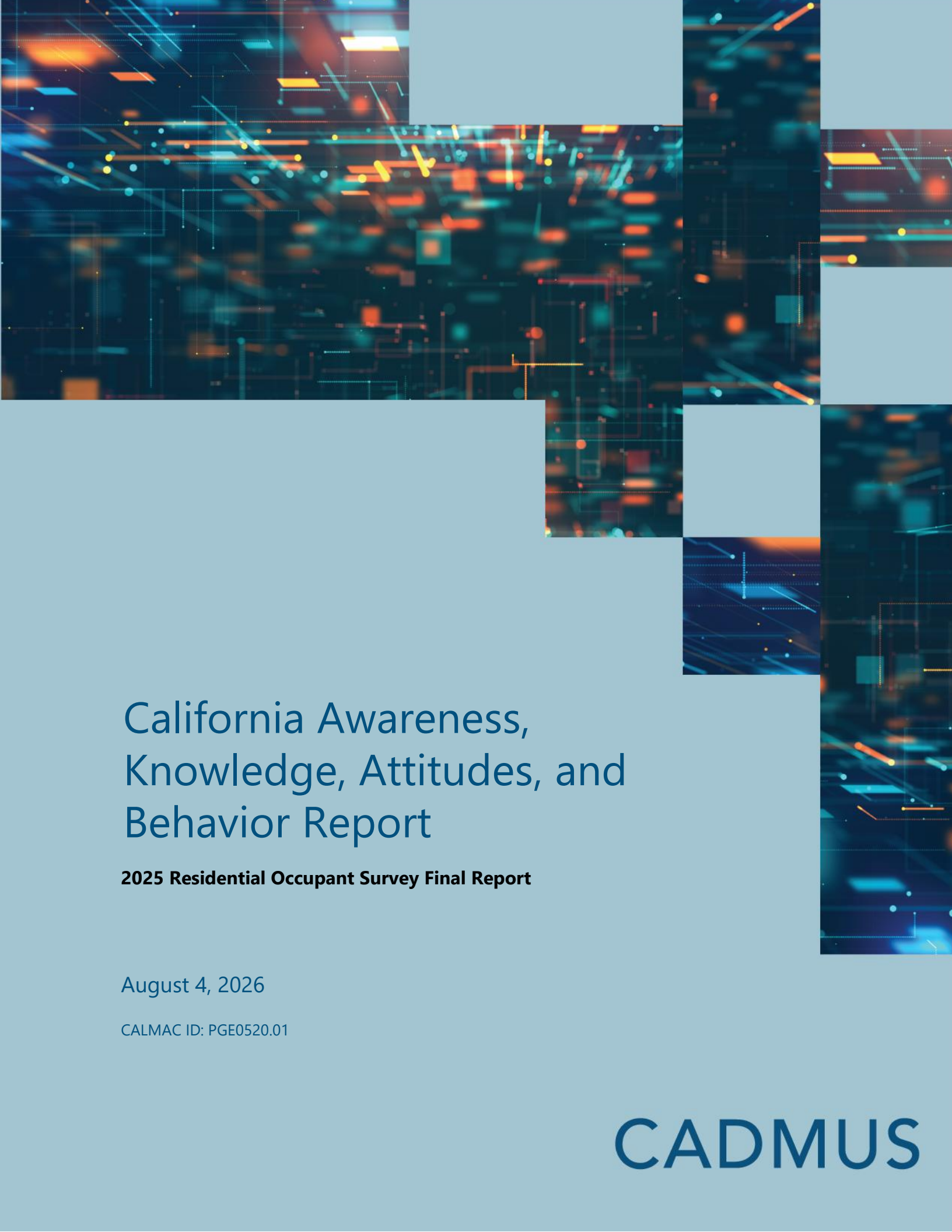




# California Awareness, Knowledge, Attitudes, and Behavior Report

**2025 Residential Occupant Survey Final Report**

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CADMUS

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## Definitions

The following terms are referenced throughout the report and are defined below.

### Definitions of Constituents and Target Populations

| Term                                | Definition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CCA</b>                          | Community Choice Aggregator (CCA) is a program that allows cities, counties, and other qualifying governmental entities within the service areas of investor-owned utilities (IOUs) to purchase and/or generate electricity for their residents and businesses.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Equity-targeted</b>              | <p>The CPUC defined the term “equity-targeted” in D.23-06-055, but in this study, it is used to refer to geographically defined areas based on economic need and environmental impact.<sup>1</sup> The definition of “equity-targeted” for the current research includes any household located in a Disadvantaged Community (DAC). Additionally, the definition includes census tracts that meet the following criteria:</p> <ul style="list-style-type: none"> <li>• Having a median income in the census tract is 80% or below the statewide median income</li> <li>• Ranking in the highest 25% of overall scores in CalEnviroScreen 4.0</li> <li>• Lacking overall scores in CalEnviroScreen 4.0 due to data gaps, but receiving the highest 5% of cumulative population burden scores</li> <li>• Being located in households on lands under the control of federally recognized Tribes.</li> </ul> |
| <b>Investor-Owned Utility (IOU)</b> | The four investor-owned utilities (IOUs) sponsoring the AKAB study, which include: Pacific Gas & Electric, Southern California Edison, San Diego Gas & Electric, and SoCalGas (gas-only)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Low-Income</b>                   | Income-qualified customers, identified in this study as households with income below 200% Federal Poverty Level, are in line with eligibility for the California Alternate Rates for Energy (CARE) program.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Market Rate</b>                  | Non-low-income                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Multifamily</b>                  | Properties that consist of five or more attached units; households that reside in one of these units.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Non-IOU areas</b>                | Areas in California that are not covered by one of the sponsoring IOU territories.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Non-equity targeted</b>          | Households that do not fall within the Equity-targeted definition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Program Administrator (PA)</b>   | Administrators of energy efficiency programs in the state of California, including IOU-sponsored programs as well as those offered by RENs and CCAs.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>REN</b>                          | Regional Energy Network                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

<sup>1</sup> California Energy Commission. *Low-Income or Disadvantaged Communities Designated by California*. California State Geoportal:  
[https://gis.data.ca.gov/datasets/4c148fc005b3453faa645a97c72b6f21\\_0/explore?location=36.838697%2C-119.179789%2C6.48](https://gis.data.ca.gov/datasets/4c148fc005b3453faa645a97c72b6f21_0/explore?location=36.838697%2C-119.179789%2C6.48)

# CADMUS

| Term                  | Definition                                                                                                                                                                                                                                                                          |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Rural</b>          | Households in areas other than the United States Office of Management and Budget Combined Statistical Areas of the San Francisco Bay Area, the Greater Los Angeles and Sacramento Areas, or the Office of Management and Budget metropolitan statistical areas of San Diego County. |
| <b>Strata/Stratum</b> | Target survey categories by IOU and equity-targeted status.                                                                                                                                                                                                                         |
| <b>Single-Family</b>  | Properties that consist of detached homes or attached units of four or fewer, including mobile homes; households that reside in one of these homes or units.                                                                                                                        |

## 1. Executive Summary

### 1.1. Summary, Purpose, and Objectives

The Residential Awareness, Knowledge, Attitudes, and Behavior (AKAB) 2025 Residential Occupant Survey is the first survey in the multi-year Residential AKAB study and establishes a statewide baseline in California for how single-family and multifamily occupants engage with energy efficiency products, services, and financing opportunities. The study collects information on AKAB indicators adopted by the California Public Utilities Commission (CPUC) that were designed to inform Market Support efforts.

The CPUC directed the Portfolio Administrators (PAs) to collect data for 17 Market Support indicators spanning awareness, knowledge, attitudes, behaviors, and capital access. This first phase provides foundational insights to inform the following:

- Baseline conditions for statewide energy efficiency engagement
- Gaps and opportunities in the efficiency market
- Equity considerations across income, geography, and housing type

A survey with multifamily property owners and managers in late 2026 will provide additional insight into multifamily conditions and opportunities, and a follow-up occupant survey in 2027 will measure changes over time.

### 1.2. Methods

Cadmus conducted a statewide survey of residential occupants in single-family and multifamily homes. The research team used a combined push-to-web and email recruitment strategy, drawing from purchased address lists and investor-owned utility (IOU)-provided customer data.

The survey included the following key methodological features:

- **Sample design:** stratification by IOU territory and equity designation, with 10 strata per housing type
- **Eligibility:** adults involved in household energy decisions, including renters and owners
- **Languages:** availability of survey in English and Spanish
- **Responses:** 1,965 completes; 3.6% overall completion rate
- **Weighting:** adjustment to reflect statewide proportions by IOU and equity status
- **Analysis:** crosstabulations and significance testing (chi-square, z-tests) at  $\alpha=0.05/0.10$

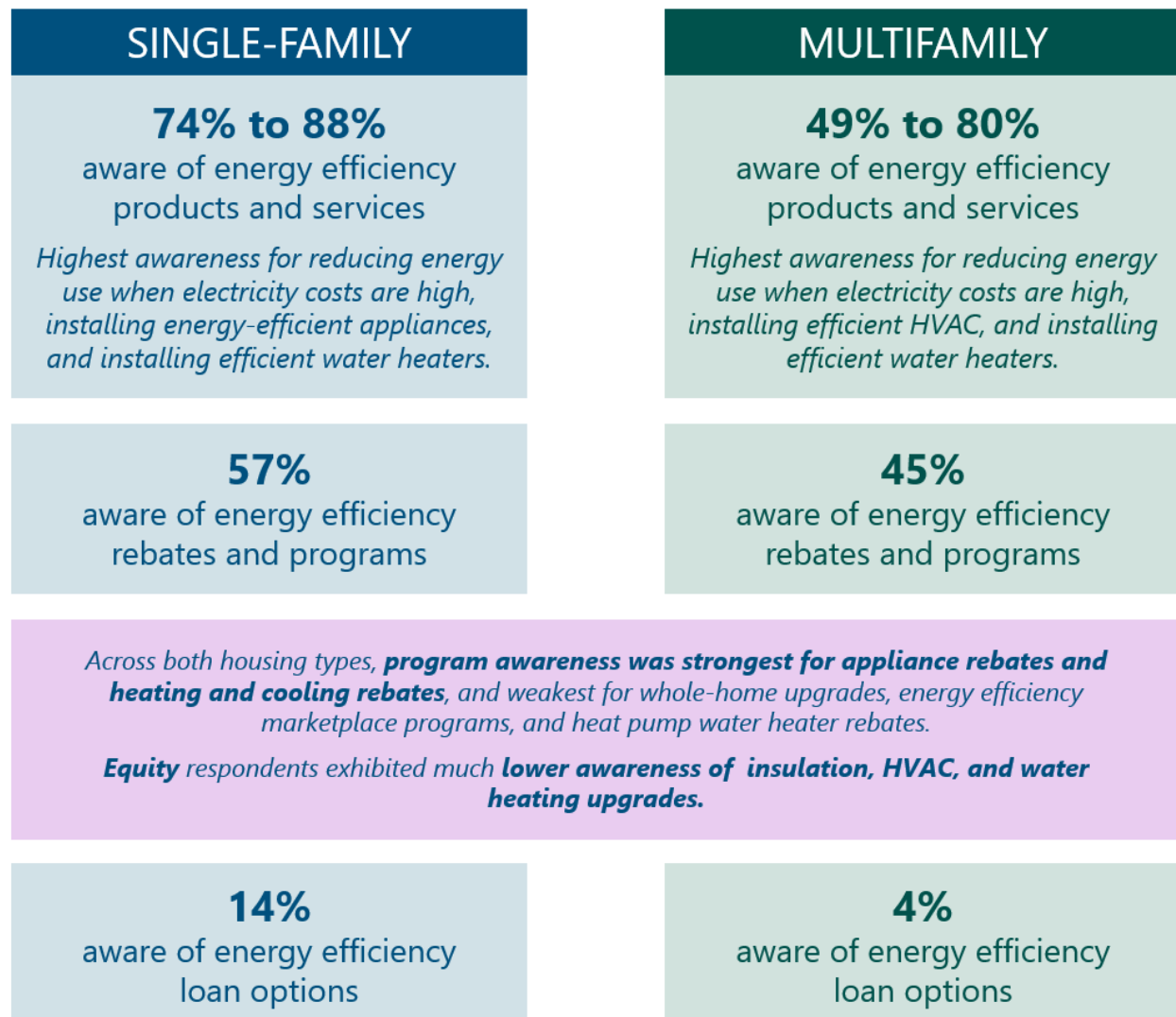
### 1.3. Baseline Findings

The following section discusses baseline findings for each dimension (awareness, knowledge, attitudes, and behaviors) including both general energy efficiency and capital access topics. Across dimensions the study revealed a consistent pattern: California residents are generally aware of energy efficiency concepts but have limited depth of knowledge, low program participation, and very low awareness or interest in financing options. Equity-related gaps persist, particularly for high-impact projects. The later Key

*Takeaways* section provides further insights into gaps and opportunities for California's energy efficiency market.

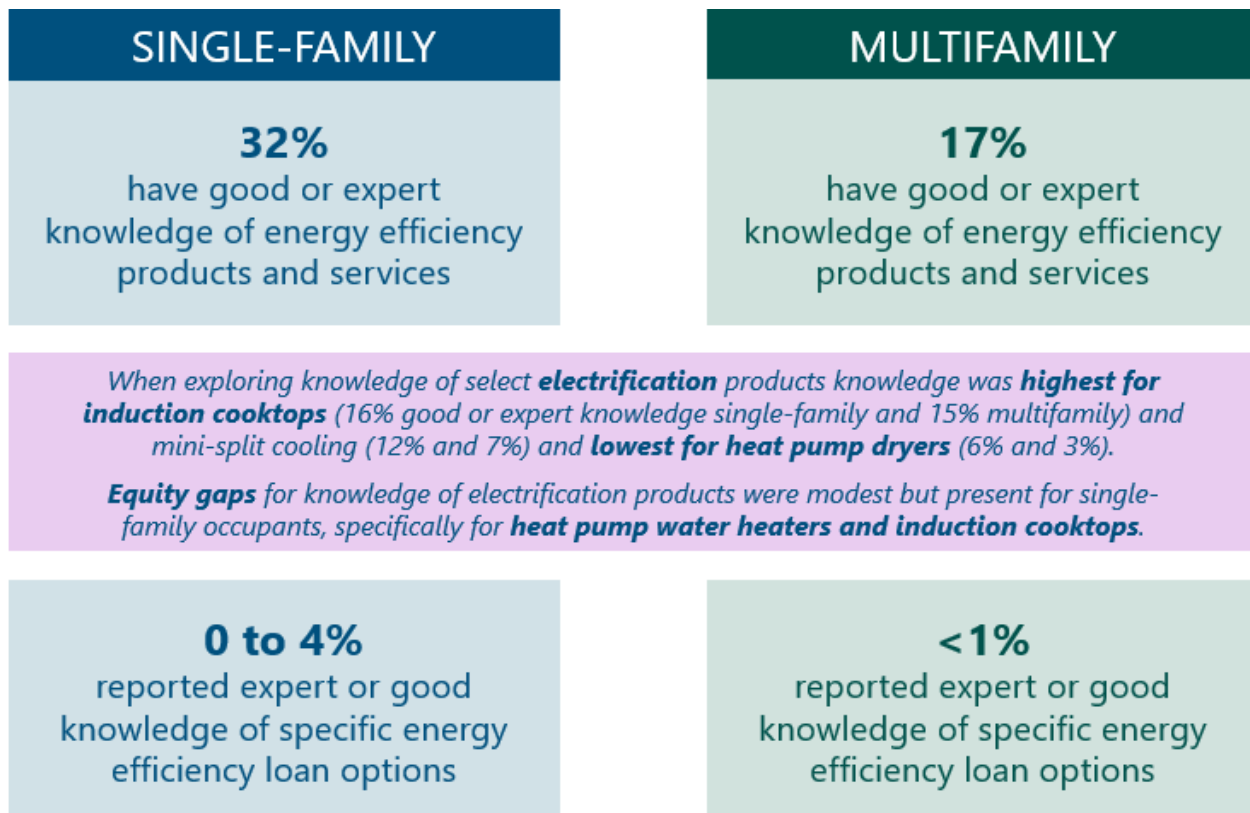
## Awareness

California residents demonstrated high awareness of energy efficiency products and services, particularly among single-family respondents. Equity-related program awareness gaps were more pronounced for single-family residents and for major equipment replacement, such as HVAC, water heaters, and shell measures. These improvements may offer the greatest long-term benefits but also carry higher complexity or cost. Persistent gaps in these areas can limit participation in improvements that deliver substantial bill savings, comfort, and durability benefits.



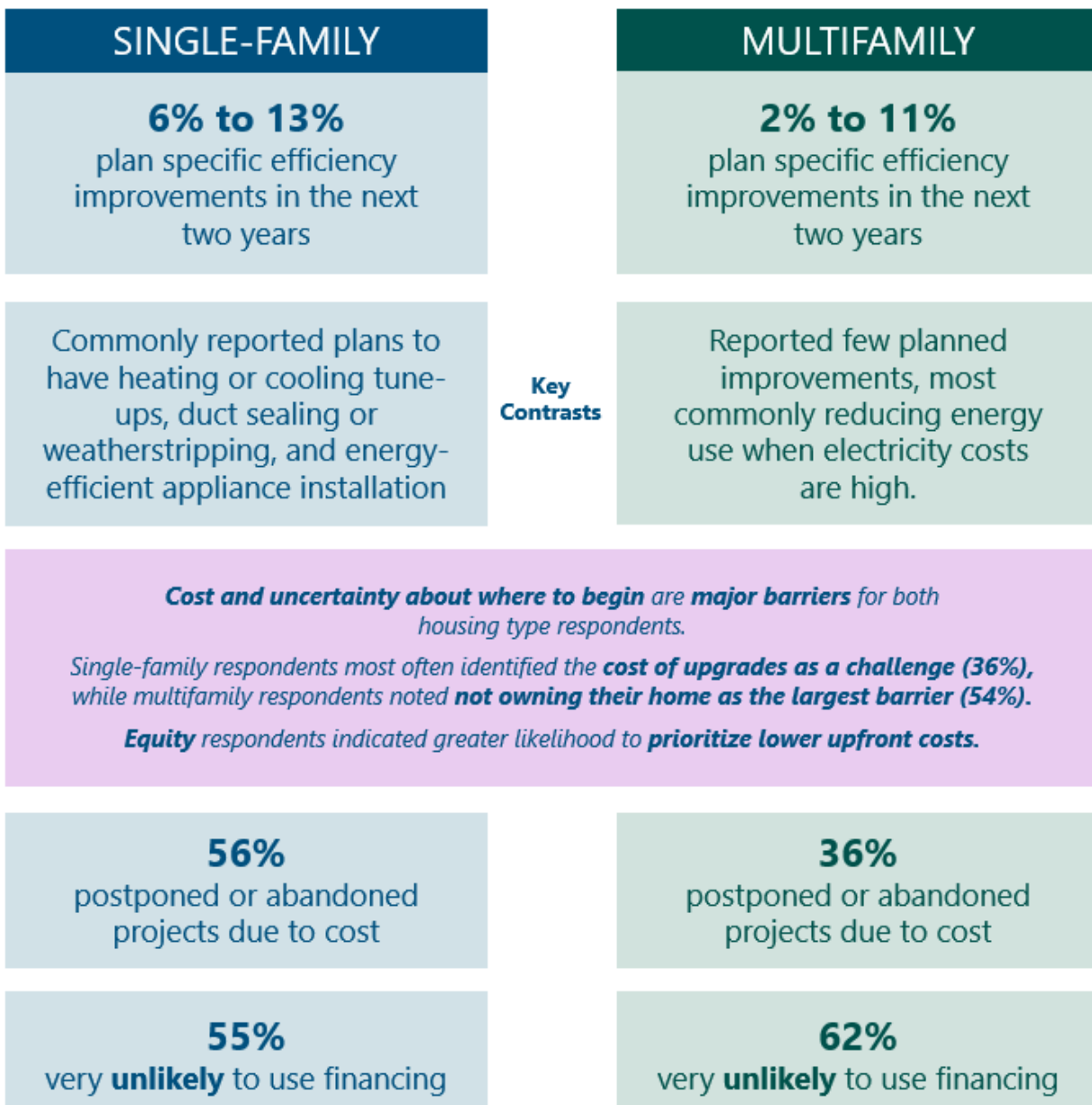
## Knowledge

California residents demonstrated moderate overall knowledge of energy efficiency, with stronger knowledge among single-family respondents than multifamily respondents. Knowledge of specific electrification-focused technologies was modest and varied across equipment types, with single-family residents more familiar with some technologies than others. Even when awareness exists, the depth of knowledge is minimal, especially for financing. Homeownership was associated with higher knowledge of energy efficiency, and efficiency knowledge was linked to greater confidence and readiness to engage with energy efficiency improvements. This pattern aligns with awareness findings, which show greater familiarity among residents with more direct control over home improvements.



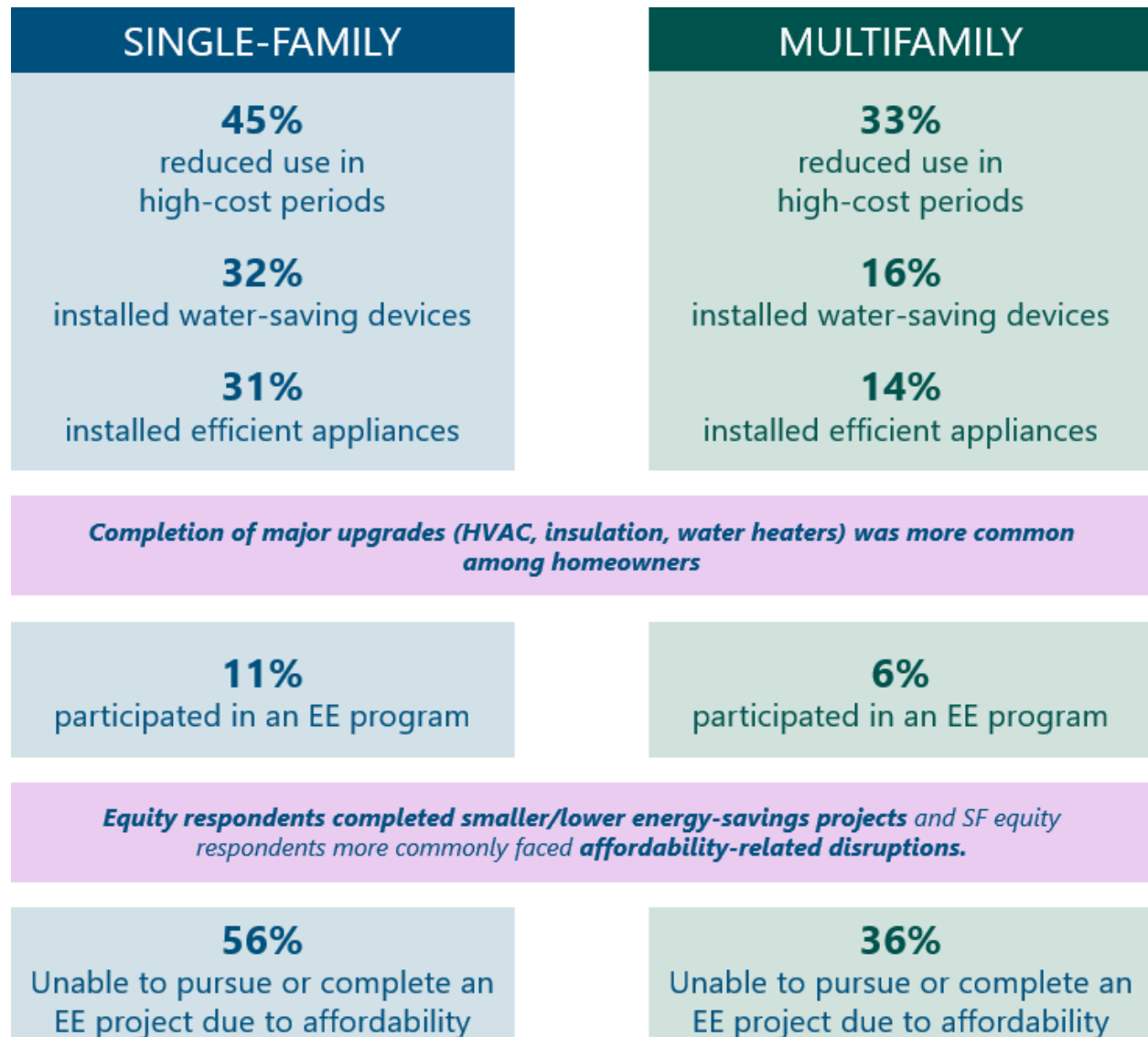
## Attitudes

The survey included interest (or plans for energy efficiency related improvements) as a key indicator of a household's attitude. California residents generally expressed positive attitudes toward energy efficiency, especially when framed around lowering monthly energy bills. Attitudes suggest that affordability concerns compete directly with efficiency goals, creating an important opportunity for incentives, financing, and messaging that emphasize value. These trade-offs indicate that programs may be more effective when they reduce upfront cost barriers and communicate long-term bill savings clearly. The main opportunity is to convert general interest into action by making next steps clear and reducing perceived complexity; clear guidance, simple pathways, and support that helps residents move from interest to action can support this conversion. Interest in using financing is low, with reluctance to use financing, suggesting behavioral and perception barriers beyond awareness.



## Behavior

Respondents exhibited a consciousness of ways to impact energy use but lacked a comprehensive approach. Low engagement in home energy assessments and moderate levels of stepwise energy-efficiency improvement actions suggest that respondents could benefit from greater engagement in a holistic approach to moderating energy use and decreasing cost. Even though some households have made EE improvements, a majority of single-family and multifamily respondents reported choosing not to pursue, postponing, or being unable to complete an EE project due to issues with affordability. There is opportunity to convert this general interest and need into formal program participation, especially among renters and lower-knowledge households. Access to existing capital is underutilized and poorly understood across both equity and non-equity segments, with persistent awareness, knowledge, and trust gaps limiting the ability of financing to support energy efficiency adoption, especially in multifamily contexts.



## 2. Introduction and Overview

California offers numerous energy efficiency incentives, education, and financing opportunities through various statewide, utility, municipal, county, regional energy network (REN), community choice aggregators (CCAs), and other organizations. These organizations share the goal of making energy efficiency upgrades and behavioral modifications as accessible as possible and, over time, have developed offerings tailored to the evolving market needs of the state. The overarching Residential Sector Awareness, Knowledge, Attitude, and Behavior (AKAB) research effort focuses on the Market Support segment, collecting information on AKAB indicators to set a quantitative baseline and help PAs understand trends in energy efficiency. The research presented here focuses on the first wave of the residential occupant survey.

Cadmus designed and conducted the Residential Sector AKAB study in accordance with CPUC D. 23-06-55, Ordering Paragraph 25, and the Advice Letter 4951-G/7344-E filed by the Portfolio Administrators (PAs) on August 1, 2024. The California Public Utilities Commission (CPUC) ordered the PAs to plan and conduct studies to collect data for 17 Market Support indicators designed by the California Energy Efficiency Coordinating Committee (CAEECC) and adopted by the CPUC to help stakeholders understand energy efficiency trends (Table 1).

The residential sector AKAB study includes a bi-annual survey<sup>2</sup> of residential occupants throughout California. The study involves the four sponsoring investor-owned utilities (IOUs), which include Pacific Gas & Electric, Southern California Edison, San Diego Gas & Electric, and SoCalGas (gas-only), as well as non-IOU areas. This report presents the first phase of the multiyear study. This 2025 phase serves as a baseline for the relevant AKAB indicators covered by the study and will be followed by a second occupant survey in 2027 to measure changes over time and to identify and inform gaps and opportunities.<sup>3</sup>

### Research Objectives

The Residential AKAB study has the primary objective<sup>4</sup> of collecting data on nine residential-targeted AKAB indicators to help stakeholders understand energy efficiency (EE) trends. Study objectives include the following:

- **Inform baselines** and progress by the PAs, as well as setting targets and goals for the market support and equity segments of the portfolio
- Inform the existence of **gaps and opportunities** in the efficiency market
- Provide insight into progress in **improving equity**.

### AKAB Indicators

The framework for exploring the research objectives is grounded primarily in the four core indicator topics: awareness, knowledge, attitude, and behavior. Together, these indicators reflect the process that

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<sup>2</sup> Cadmus has been contracted to conduct the 2025 and 2027 surveys.

<sup>3</sup> In 2026, Cadmus will survey multifamily property managers and owners.

<sup>4</sup> CPUC. PG&E Status of Advice Letter 4951G/7344E. November 20, 2024.

many residents go through before taking action on an energy efficiency upgrade or improvement. In general, the process begins with awareness of both the need for action and the available solutions. Knowledge often follows as residents become more familiar with the details, decisions, and contingencies involved in making an energy efficiency improvement. With awareness and knowledge, interest and motivation can then shape attitudes toward action, while behavior represents the ultimate step of engaging with an energy efficiency program or completing an improvement.

At the same time, this progression does not always follow a straight line or include every step for every resident. Some residents may act with limited knowledge, revisit earlier stages as circumstances change, or encounter barriers that interrupt the process. These indicators, therefore, provide a general framework for understanding how residents engage with energy efficiency and for identifying insights that can inform program design, outreach, and support for residents at different phases of that process.

### *Indicator Definitions*

The CPUC adopted 25 Market Support indicators in D.23-06-055 Ordering Paragraph (OP) 25. Cadmus designed this study to gather data on the nine indicators targeted to residential customers shown in Table 1. Capital access opportunities include financing options, including both PA and non-PA financing offerings.

**Table 1. Relevant AKAB Indicators by Topic**

| Awareness                                                                                                                                          | Knowledge                                                                                                                                                     | Attitudes                                                                                                                                                          | Behavior                                                                                                                                                     |                                                                                        |
|----------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| ENERGY EFFICIENCY PRODUCTS AND SERVICES                                                                                                            |                                                                                                                                                               |                                                                                                                                                                    |                                                                                                                                                              |                                                                                        |
| 1<br>Percent of customer sample aware of energy efficiency product/service                                                                         | 2<br>Percent of customer sample that is knowledgeable of energy efficiency product/service benefits                                                           | 3<br>Percent of customer sample that is interested in obtaining an energy efficiency product/service                                                               | 4<br>Percent of customer sample that has taken action towards obtaining an energy efficiency product/service                                                 | 5<br>Percent of customer sample that has obtained energy efficiency products/ services |
| CAPITAL ACCESS OPPORTUNITY FOR INVESTMENTS IN ENERGY EFFICIENCY PRODUCTS OR SERVICES                                                               |                                                                                                                                                               |                                                                                                                                                                    |                                                                                                                                                              |                                                                                        |
| 14<br>Percent of market participants aware of capital access opportunities for investments in energy-efficient projects, products, and/or services | 15<br>Percent of market participants knowledgeable about capital access opportunities for investments in energy-efficient projects, products, and/or services | 16<br>Percent of market participants interested in leveraging capital access opportunities for investments in energy-efficient projects, products, and/or services | 17<br>Percent of market participants that were unable to take action due to capital or affordability of energy-efficient projects, products, and/or services |                                                                                        |

Indicators 1–5 correspond to Sub-Objective #1 (Demand), and Indicators 14–17 correspond to Sub-Objective #5 (Access to Capital), as defined in the CPUC-adopted Market Support Metrics framework. The remaining Market Support sub-objectives (Supply, Partnerships, and Innovation & Accessibility) are measured through program-level and market-actor data rather than residential occupant surveys and are outside of the scope of the Residential AKAB Study.

## 3. Methodology

For the Residential AKAB study, Cadmus surveyed residential customers living in single-family and multifamily homes with five or more units in California. The team used a combination of purchased and IOU-sourced contact data. To gather survey responses, the team deployed an online survey using Qualtrics software and conducted outreach via push-to-web postcard recruitment and email. The following sections briefly describe the methodology. For a more detailed description of the methodology, including definitions of key terms, a description of the fielding approach, and the strata weighting scheme, see **Error! Reference source not found..**

### Study Recruitment

To be eligible for the study, customers had to play a role in household decision-making regarding utility bills or energy use, be at least 18 years old, and have no affiliation with California energy utilities. To ensure the data were representative of equity-targeted households, both homeowners and renters could participate. Customers were only permitted to respond to the survey once.

To recruit Spanish-speaking customers, the postcard and email invitations included key instructions in Spanish, and the team programmed the survey in English and Spanish, so respondents could toggle between the languages. Ultimately, 40 respondents (2.0%) elected to complete the survey in Spanish.

### Sample Design and Survey Dispositions

The sample design segmented customers into two housing types: single-family homes (buildings with up to four units, including mobile homes) or multifamily homes (buildings with five or more units) in California. The study used a total of 10 strata per housing type: equity and non-equity groups for each of four IOU regions (PG&E, SCE, SDG&E, and SoCalGas) and a non-IOU region. The team defined “equity-targeted” geographically at the census tract level and included census tracts that met the following criteria:

- Had a median income 80% or below the statewide median income
- Ranked in the top 25% of overall scores in CalEnviroScreen 4.0
- Lacked overall scores in CalEnviroScreen 4.0 due to data gaps, but ranked in the top 5% of cumulative population burden scores
- Were located within federally recognized Tribes

At the time of closure in March 2026, 1,965 customers completed the survey, resulting in a 3.6% completion rate. Table 2 summarizes the disposition by IOU. The response rates were similar across IOUs, with the highest rate among SDG&E customers (5.1%) and the lowest rate among non-IOU customers (2.1%).

**Table 2. Survey Disposition by IOU**

| IOU          | Total Sample  | Completes    | Completion Rate |
|--------------|---------------|--------------|-----------------|
| <b>Total</b> | <b>54,299</b> | <b>1,965</b> | <b>3.6%</b>     |
| PG&E         | 16,661        | 590          | 3.5%            |
| SCE          | 16,659        | 585          | 3.5%            |
| SDG&E        | 5,810         | 299          | 5.1%            |
| SoCalGas     | 22,202        | 711          | 3.2%            |
| Non-IOU      | 5,903         | 122          | 2.1%            |

Note: The sum of the IOU values is greater than the total row because SoCalGas territory (and thus respondents) overlapped with the other IOU and non-IOU territories.

## Analyses

This report presents results separately for single-family and multifamily respondents. The team obtained 1,309 responses from single-family customers and 656 responses from multifamily customers.

Cadmus obtained all response data from Qualtrics, which the team downloaded and cleaned using Excel and RStudio. Analyses included crosstabulations of the AKAB indicators across key demographic and household characteristics, including equity designation and homeownership.

For questions with 5-point response scales, the team condensed the top two and bottom two scores. The team tested significance using pairwise z-tests (i.e., proportion tests) with a primary alpha of 0.05 and a secondary alpha of 0.10. All analyses used weighted values, as described below and in **Error! Reference source not found.**

### Representativeness and Weighting

Cadmus used a weighting scheme in the analyses to adjust respondent proportions across the stratification variables (IOU and equity designation), ensuring they were representative of their statewide proportions in the initial source data. The team calculated weights separately for single-family and multifamily respondents by dividing each stratum's proportion in the population by its corresponding proportion in the response data. The weights varied by strata and ultimately ranged from 0.23 to 2.17. See **Error! Reference source not found.** for more information.

### Homeownership, Income, Rurality, and Respondent Age

Table 3 presents the distribution of survey completes compared to the overall breakdown for California by homeownership status, rural location, and income level. The representation of completed surveys for single-family respondents and multifamily respondents was similar to the statewide distribution, and Cadmus did not include these variables in the weighting scheme.

**Table 3. Completed Surveys by Customer Characteristics Compared to Statewide Metrics**

|                                 | Completed Surveys | Statewide Breakdown | Percentage Difference |
|---------------------------------|-------------------|---------------------|-----------------------|
| <b>Renters<sup>5</sup></b>      | 44%               | 43%                 | 1%                    |
| <b>Low-Income<sup>6</sup></b>   | 36%               | 30%                 | 6%                    |
| <b>Rural<sup>7</sup></b>        | 62%               | 57%                 | 5%                    |
| <b>Age category<sup>8</sup></b> |                   |                     |                       |
| 35 to 64 years                  | 50%               | 51%                 | -1%                   |
| 65 years or older               | 33%               | 29%                 | 4%                    |
| Less than 35 years              | 17%               | 20%                 | -3%                   |

## Limitations and Future Approaches

The AKAB study launched in September 2025 to support indicator reporting within the 2025 Annual Reporting process. Given the goal of reaching as broad an audience as possible in the state, and the compressed timeline, the first wave of the occupant survey relied primarily on a publicly available address list purchased from the U.S. Postal Service (USPS). This list contained addresses and was supplemented with available emails but not residents' names. While the fielding approach supplemented the USPS list with IOU customer contact information, Cadmus did not have names or any supplemental information for non-IOU areas. This gap likely contributed to lower response rates among non-IOU customers. Additionally, relying on multiple list sources could have led to a small amount of overlap between the two lists, which the team mitigated. First, the team removed duplicate email addresses from the USPS and IOU lists, then applied Qualtrics' duplication detection software. Lastly, the team asked respondents to specify whether they had previously taken the survey.

This is a multi-year study, with a second wave scheduled for 2027. Because the 2027 study will have a longer lead time, Cadmus plans to shift to relying on IOU customer contact data in IOU areas instead of the purchased list. This will support the standard of having a single sample frame and would remove the risk of overlapping customers and . Although adjustments to the methods could contribute to differences between Wave 1 and Wave 2 results, the differences should be minimal because there should be a high level of alignment between the address-based USPS list and IOU customer contact data.

<sup>5</sup> U.S. Census Bureau. Accessed September, 2025. "Selected characteristics of households (ACSST5Y2023.S1101)." <https://data.census.gov/table/ACSST5Y2023.S1101>

<sup>6</sup> California Health and Human Services Agency. Accessed October 2025. "Poverty Rate (<200% FPL) and Child (under 18) Poverty Rate by California Regions." [data.chhs.ca.gov/dataset/poverty-rate-by-california-regions](https://data.chhs.ca.gov/dataset/poverty-rate-by-california-regions)

<sup>7</sup> U.S. Census Bureau. Accessed September 2025. "Selected characteristics of households (ACSST5Y2023.S1101)." <https://data.census.gov/table/ACSST5Y2023.S1101>

<sup>8</sup> U.S. Census Bureau. Accessed September 2025. "Households." [www.census.gov/data/tables/time-series/demo/families/households.html](https://www.census.gov/data/tables/time-series/demo/families/households.html)

## 4. Key Takeaways

This section synthesizes the study's key findings into key takeaways to highlight baseline conditions, gaps, opportunities, and equity-related insights for California's energy efficiency market. Subsequent sections of this report provide detailed findings.

### 4.1. Awareness and Outreach

**California residents demonstrated high awareness of energy efficiency products and services, particularly among single-family respondents. However, equity-related program awareness gaps were more pronounced for single-family, especially for major equipment replacements, such as HVAC, water heaters, and shell measures. These improvements may offer the greatest long-term benefits but involve higher complexity or cost, and persistent gaps in awareness can limit households from making improvements that can deliver substantial bill savings, comfort, and durability benefits.** In single-family housing, respondents in equity areas were less likely to be aware of insulation, HVAC systems, energy-efficient water heaters, and higher-efficiency doors/windows. In multifamily housing, respondents in equity areas were also less likely to be aware of insulation, HVAC systems, HVAC tune-ups, and energy-efficient water heaters. Among single-family respondents, those in equity areas were significantly less likely than those in non-equity areas to report awareness of energy efficiency rebates and programs (53% vs. 59%;  $p < 0.05$ ). Multifamily respondents were most aware of measures they can act on directly and less aware of improvements that typically depend on owners or property managers.

**Awareness of financing options for energy efficiency upgrades is very low and does not differ by equity designation or by housing type. This suggests that loan-based capital access is not widely recognized as a pathway for supporting energy efficiency investments.** Only 14% of single-family and 4% of multifamily respondents reported awareness of loan options, with no significant differences by equity designation. Awareness was highest for personal financing, indicating that awareness is largely limited to general or non-program-specific financing rather than specialized or program-supported energy efficiency loans.

The Detailed findings Figure 3 and Figure 17 outline preferred communication channels by housing type, to support promotion strategies.

### 4.2. Knowledge

**California residents demonstrated moderate overall knowledge of energy efficiency, with stronger knowledge among single-family respondents than multifamily respondents.** Knowledge of specific electrification-focused technologies was modest and varied across equipment types (6% to 16% single-family and 3% to 15% multifamily), with single-family residents more familiar with some technologies than others. Even when awareness exists, the depth of knowledge is minimal, especially for financing. Equity-related knowledge gaps were present among single-family respondents but generally modest, with somewhat lower knowledge among single-family respondents in equity areas.

Among single-family respondents, 32% self-reported *expert* or *good knowledge* of energy efficiency, 44% reported *basic knowledge*, and 24% reported limited or *no knowledge*. Among multifamily respondents, only 17% reported *expert* or *good knowledge*, while 36% reported limited or *no knowledge*. On the topic of electrification-focused technologies, single-family and multifamily respondents reported the highest knowledge of induction cooktops and mini-split air cooling, and the lowest knowledge of heat pump clothes dryers and air-source heat pumps. A greater share of multifamily respondents reported having little to no knowledge of any of the technologies surveyed compared with single-family respondents.

**Respondents had a low level of knowledge of financing options across housing types.** Between 0% to 4% of single-family and less than 1% of multifamily respondents reported *expert* or *good knowledge* of the financing options surveyed. Among single-family respondents, 27% in equity areas reported *limited* or *no knowledge*, compared with 22% of respondents in non-equity areas ( $p < 0.10$ ).

Homeownership was associated with higher knowledge of energy efficiency, and efficiency knowledge was linked to greater confidence and readiness to engage with energy efficiency improvements. This pattern is consistent with awareness findings showing greater familiarity among residents with greater direct control over home improvements.

Single-family respondents with *expert* or *good knowledge* were more likely to rate their homes as efficient (46% vs. 18% among those with *limited* or *no knowledge*;  $p < 0.05$ ). Respondents with *limited* or *no knowledge* were more likely to report barriers such as not knowing where to begin, not owning their home, and lacking confidence that improvements would save energy or money. Homeowners were significantly more likely than renters to report *expert* or *good knowledge* of energy efficiency (36% vs. 21%;  $p < 0.05$ ).

## 4.3. Attitudes

**California residents generally expressed positive attitudes toward energy efficiency, especially for lowering monthly energy bills, but relatively few had planned near-term upgrades. Cost was the dominant barrier shaping attitudes across housing types.** Although 85% of single-family and 82% of multifamily respondents said that lowering their monthly energy bills was *somewhat* or *very important*, few had plans to install energy-efficient products and services in the next two years, ranging from 6% to 13% for single-family respondents and 2% to 11% for multifamily respondents.

The most common planned improvements among single-family respondents were heating or cooling tune-ups, duct sealing or weather-stripping, and installing efficient appliances. Multifamily respondents planned fewer improvements, with the most common being to reduce energy use during high-cost periods.

**Residents' attitudes suggest that affordability concerns compete directly with efficiency goals, creating an important opportunity for incentives, financing, and messaging that emphasize value.** Single-family respondents most often cited the cost of upgrades (36%) as a challenge, while multifamily respondents cited not owning their home (54%). Many respondents expressed interest in lowering energy bills, but relatively few planned to complete most individual improvements in the next two years. Not knowing where to begin was one of the most common barriers across both segments. Despite this,

interest in choosing the higher-efficiency option remained similar, even at a higher upfront cost (40% single-family, 38% multifamily). Single-family respondents in equity areas were also more likely to prioritize lower upfront costs over higher-efficiency equipment (35% vs. 27%).

These trade-offs suggest programs may be more effective when they reduce upfront costs and clearly communicate long-term bill savings. The main opportunity is to convert general interest in energy efficiency into action by clarifying next steps and reducing perceived complexity. This suggests a need for clearer guidance, simpler pathways, and support that helps residents move from interest to action.

**Interest in using financing is low, with strong resistance to loans. Most residents are reluctant to use financing, suggesting behavioral and perception barriers beyond awareness.** Fifty-five percent of single-family and 62% of multifamily respondents were *very unlikely* to use loans. Across both segments, only 3% to 4% were *very likely* to use loans, and 1% to 4% had already used loans.

## 4.4. Behavior

**Respondents exhibited a consciousness of ways to impact energy use but lacked a comprehensive approach. Low engagement in home energy assessments and moderate levels of stepwise energy-efficiency improvement actions suggest that respondents could benefit from greater engagement in a holistic approach to moderating energy use and decreasing cost.** Even though some households have made energy improvements, a majority of single-family and multifamily respondents reported choosing not to pursue, postponing, or being unable to complete an EE project due to issues with affordability. Households in equity areas were less likely to complete energy efficiency improvements. There is opportunity to convert this general interest and need into formal program participation, especially among renters and lower-knowledge households.

Occupants were most likely to cite that they had taken action to reduce energy use in high-cost periods (45% single-family and 33% multifamily) while they were least likely to have completed a home energy assessment (7% single-family and 7% multifamily). Owners were more likely than renters to complete a wide range of improvements. Single-family respondents with *expert* or *good knowledge* were also more likely to have participated in a program (18%) than those with *limited* or *no knowledge* (5%), suggesting that clearer education and easier entry points could increase uptake.

Respondents in equity areas were less likely to have completed a range of efficiency measures, including energy-efficient heating and cooling systems, higher-efficiency doors or double-pane windows, energy-efficient water heaters, water-saving devices, smart thermostats, and smart home devices. Among program participation, however, respondents in equity areas were more likely to have participated in home energy assessments (3% vs. 1%), suggesting that early-stage engagement may be reaching equity segments even when completed upgrades remain less common.

**Access to existing capital is underutilized and poorly understood across both equity and non-equity segments, with persistent gaps in awareness, knowledge, and trust limiting its ability to support energy efficiency adoption—especially in multifamily contexts.** This suggests that low levels of awareness, knowledge, and interest in financing options are a broad, market-wide issue, rather than

one concentrated primarily within equity populations. Awareness, knowledge, interest, and engagement in loans are broadly low across both equity and non-equity segments.

## 5. Energy Efficiency Detailed Findings

This section presents findings for the general energy efficiency indicators and related topics, starting with findings from the Single-Family survey (section 5.1), followed by findings from the Multifamily survey (section 5.2). Findings related to a household's awareness, knowledge, attitudes, and behaviors about loans and other financial mechanisms available to help take energy saving actions are presented in section 6.

### 5.1. Single-Family

This section summarizes single-family (n=1,309) findings across AKAB indicators, presenting each indicator sequentially and supplementing it with subsections focused on related topics. The section ends with a discussion of notable findings across characteristics such as equity, homeownership, and home equipment.

#### Awareness

The survey collected responses related to the general awareness indicator along with awareness of programs and preferred outreach channels.

##### *Indicator 1: Awareness of Energy Efficiency Products and Services*

California residents demonstrated high awareness of specific improvements they could make to their homes' efficiency, and moderate awareness of energy efficiency rebates and programs. The analysis identified notable differences across equity designation, homeownership, and home equipment, underscoring the opportunity to provide clearer, more targeted communication to connect residents with available opportunities.

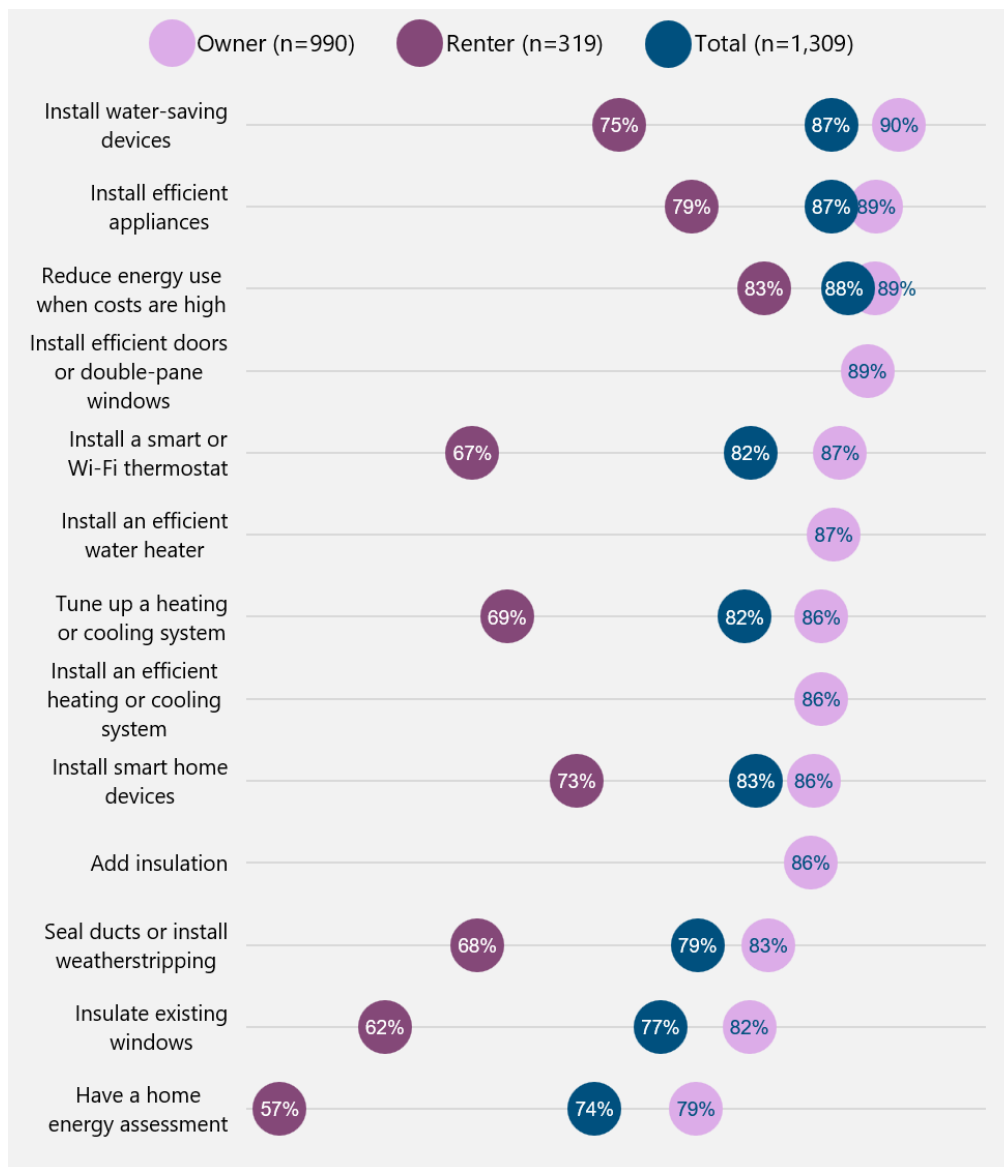
The survey asked respondents about their plans for making specific energy efficiency actions and included an option to indicate if they *did not know* what the improvement was. Cadmus classified respondents who selected *do not know* as unaware and those who selected any response indicating plans to take action as aware. As shown in Figure 1, single-family respondents were most frequently aware of reducing use in high-cost periods (88%), energy-efficient appliances (87%), and water-saving devices (87%). Awareness was lowest for home energy assessments and inspections (74%) and window insulation (77%).

Indicator #1 (Single-Family):

**74% to 88%**

**General Awareness  
of Energy Efficiency  
Products & Services**

**Figure 1 Single-Family Awareness of Energy Efficiency Improvements by Homeownership**

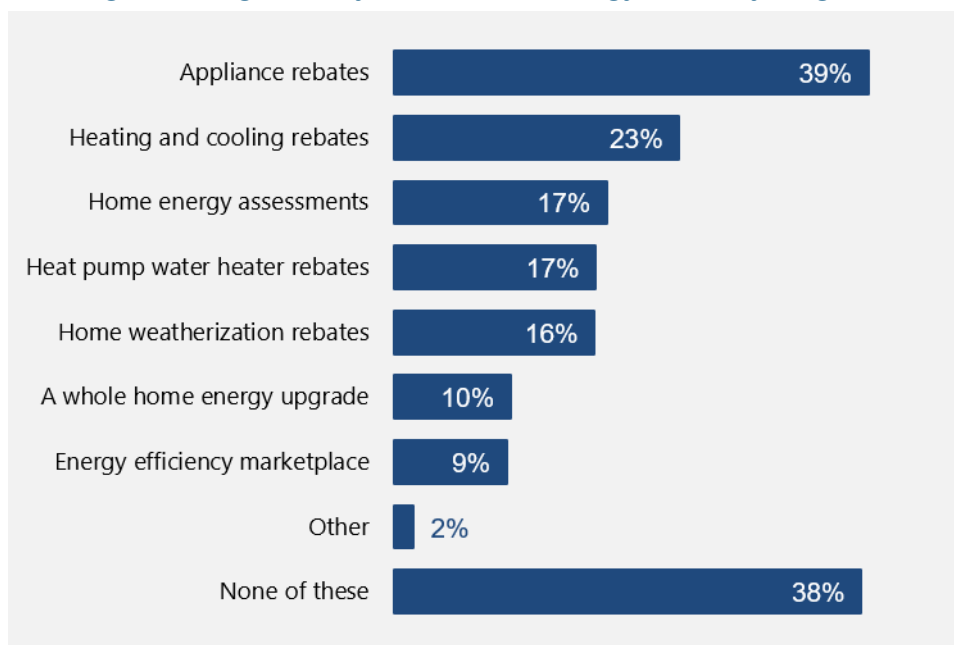


Source: Survey Question D2, "For the following actions and improvements, please select the option that best describes your plans over the next two years." Question D2 used a matrix response format that included a "Don't know what this is" option.

### *Additional Related Findings*

The survey asked respondents which types of rebate or efficiency programs they had heard about. Respondents were most frequently aware of appliance rebates (39%) and heating and cooling rebates (23%), and least frequently aware of whole-home energy upgrades (10%) and energy efficiency marketplace programs (9%; n=1,309; see Figure 2).

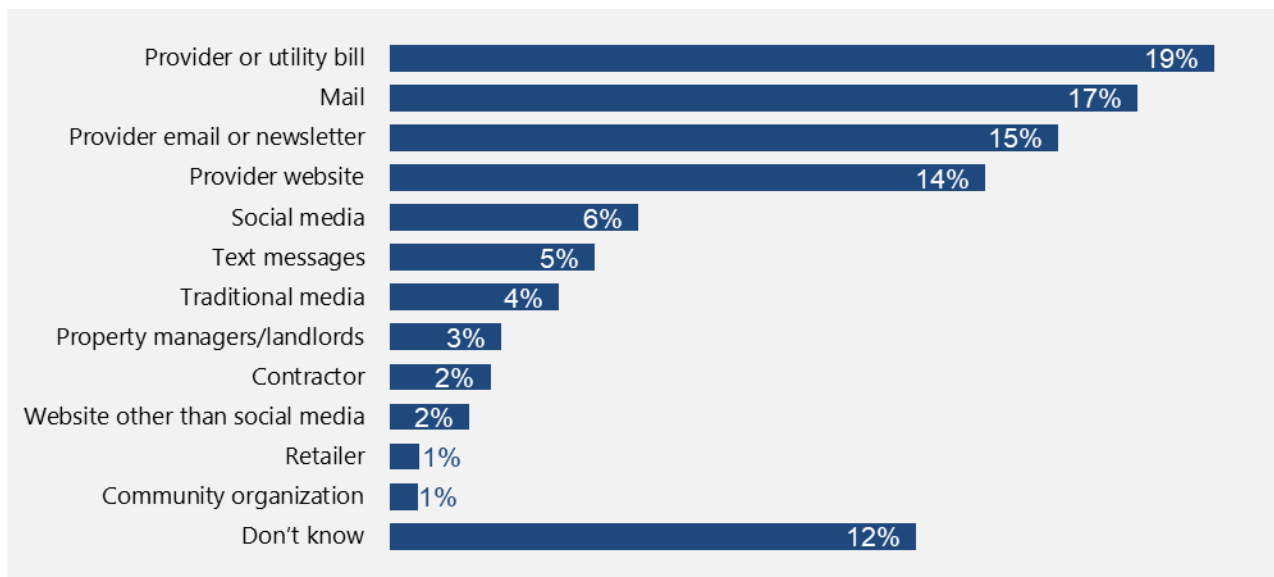
**Figure 2. Single-Family Awareness of Energy Efficiency Programs**



Source: Survey Question B2, "Which rebates or energy efficiency programs have you heard about in the past 12 months? Select all that apply." (n=1,309)

When asked about the best way to inform them about energy efficiency programs and services in the future, single-family respondents most frequently said provider or utility bills (19%), mail (17%), provider emails or newsletters (15%), and provider websites (14%) were their preferred contact methods (n=1,309; Figure 3).

**Figure 3. Communication Preferences of Single-Family Occupants**



Source: Survey Question E6, "Please select the best way for you to find out about energy efficiency programs and services." (n=1,309)

## Knowledge

This section reports on respondents' overall understanding of energy efficiency (the Knowledge indicator) and familiarity with electrification-focused technologies. Together, these findings provide insight into the baseline level of knowledge among California residents and help identify where knowledge is stronger, where it is more limited, and which groups may benefit from additional education or support.

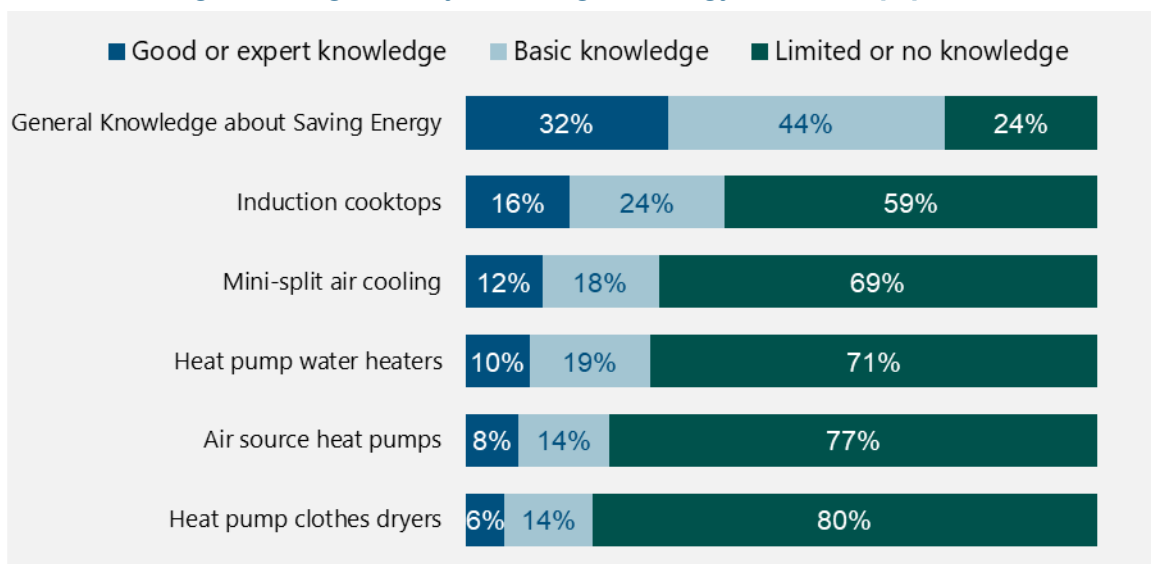
### Indicator 2: Knowledge of Energy Efficiency Products and Services

To assess general knowledge of energy efficiency, the survey asked respondents to rate their knowledge of saving energy at home and making energy-efficient purchases. Overall, most single-family respondents reported some level of knowledge about saving energy—32% reported *expert or good knowledge*, 44% reported *basic knowledge*, and 24% reported *limited or no knowledge* (n=1,309).

Indicator #2 (Single-Family):  
**32% good or expert**  
**General Knowledge**  
of Energy Efficiency  
Products and Services

The survey also asked respondents to rate their knowledge of a list of high-impact, electrification-focused technologies of strategic importance. As shown in Figure 4, respondents said they were most knowledgeable about induction cooktops and mini-split air cooling and least knowledgeable about heat pump clothes dryers and air source heat pumps.

**Figure 4. Single-Family Knowledge of Energy-Efficient Equipment**



Source: Survey Question C3, "How would you describe your level of knowledge when it comes to saving energy at home and making future energy-efficient purchases (e.g., appliances, windows)?" and C4, "How would you rate your knowledge with the following types of equipment?" (n=1,309)

## Attitudes

The survey collected responses related to the attitude indicator (interest in EE products and services), along with exploring trade-offs between cost and efficiency, as well as respondent motivations and barriers related to obtaining energy efficiency products or services.

### *Indicator 3: Interest in Energy Efficiency Products and Services*

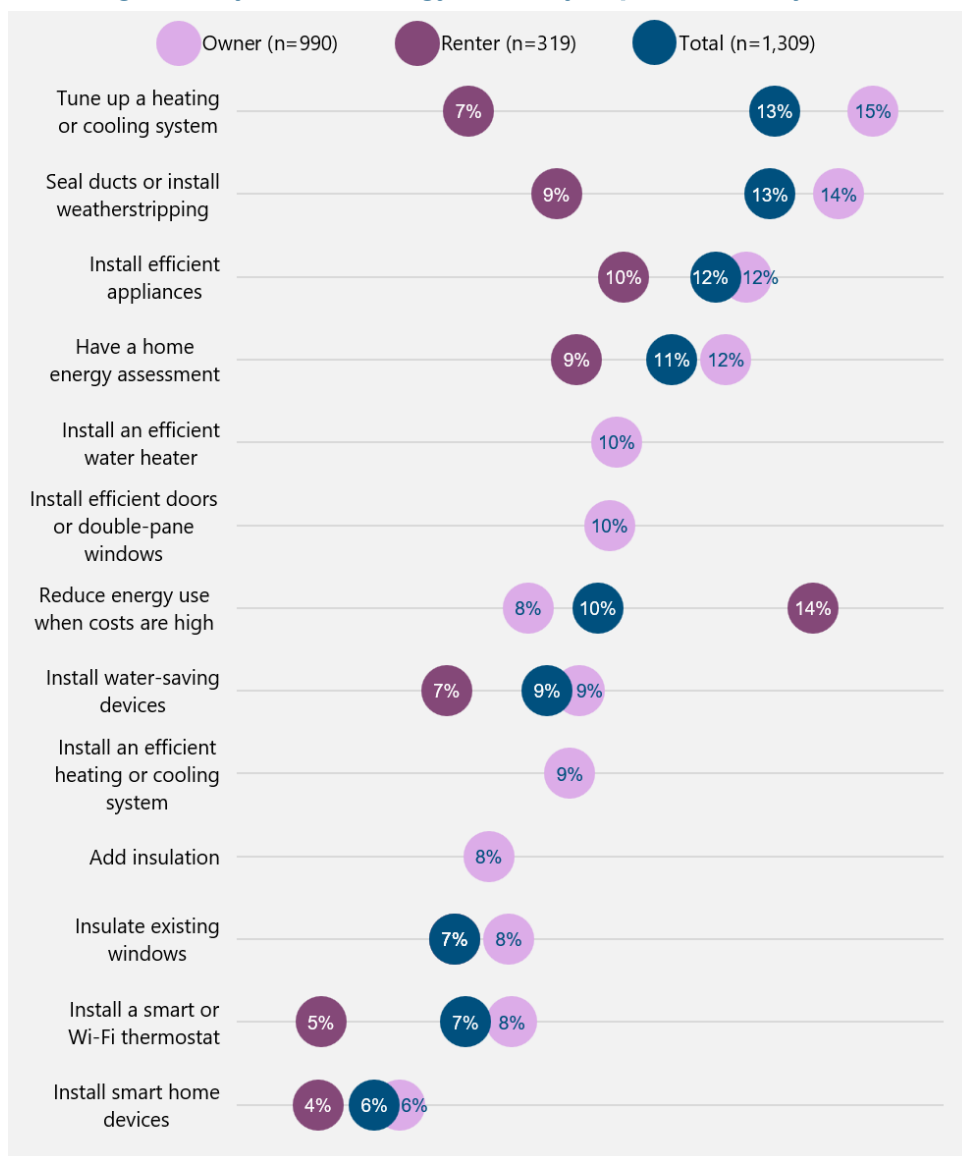
To assess attitudes toward future energy efficiency upgrades, the survey asked respondents which efficiency improvements they planned to complete in the next two years. Across all single-family respondents (n=1,309), the most common planned improvements were heating or cooling system tune-ups (13%), duct sealing or weather-stripping (13%), and energy-efficient appliance installation (12%; see Figure 5). The survey also asked homeowners about several additional technologies that are not typically the responsibility of renters, including water heaters, heating and cooling systems, high-efficiency doors and double-pane windows, and insulation. Among those technologies, a similar percentage of homeowners had plans to install efficient water heaters (10%) and doors and windows (10%) as heating or cooling systems (9%) and insulation (8%). Note that interest in these 12 energy efficiency upgrades applies only to those who have not already taken the action. For the percentages who have already taken action, see the Behaviors section (Indicator 4 below).

Indicator #3 (Single-Family):

**6% to 13%**

**General Interest**  
in Energy Efficiency  
Products & Services

**Figure 5. Single-Family Planned Energy Efficiency Improvements by Homeownership**

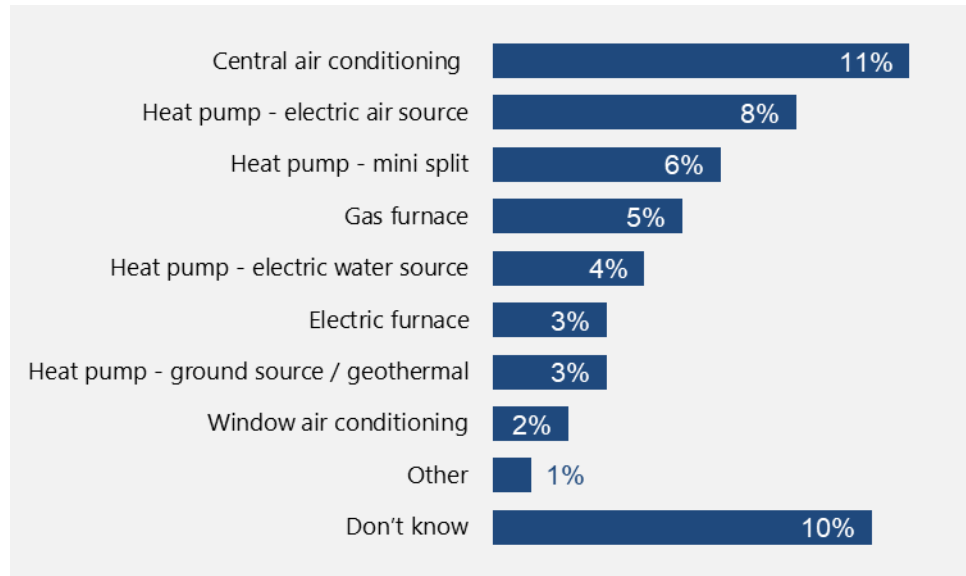


Source: Survey Question D2, "For the following actions and improvements, please select the option that best describes your plans over the next two years." This figure displays the proportions of respondents who selected "plan to complete in the next 2 years."

For respondents who indicated their plans to install energy-efficient heating and cooling, water heating, or appliances, the survey also asked questions to understand specifically which efficient heating or cooling systems, water heaters, and appliances respondents were interested in. As shown in Figure 6, of single-family respondents who indicated they had plans to install an energy-efficient heating or cooling system 8% were interested in electric air source heat pumps and 6% were interested in mini-split heat pumps, while 11% were interested in central air conditioners, and 5% were interested in gas furnaces (n=353). Among those planning to install efficient water heating, respondents were most interested in tankless water heaters (14%), conventional storage tank water heaters (7%), and heat pump water heaters (6%; n=323; see Figure 7). Lastly, respondents who indicated they had plans to upgrade to energy-efficient

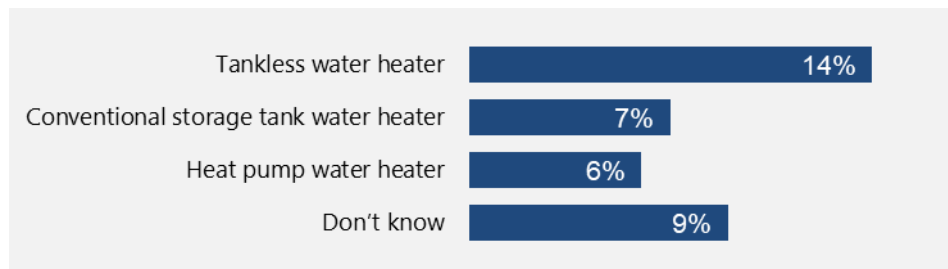
appliances, most were interested in refrigerators (18%), clothes dryers (17%), and clothes washers (16%; n=519; see Figure 8).

**Figure 6. Single-Family Homeowner Interest in Efficient Heating and Cooling Systems**



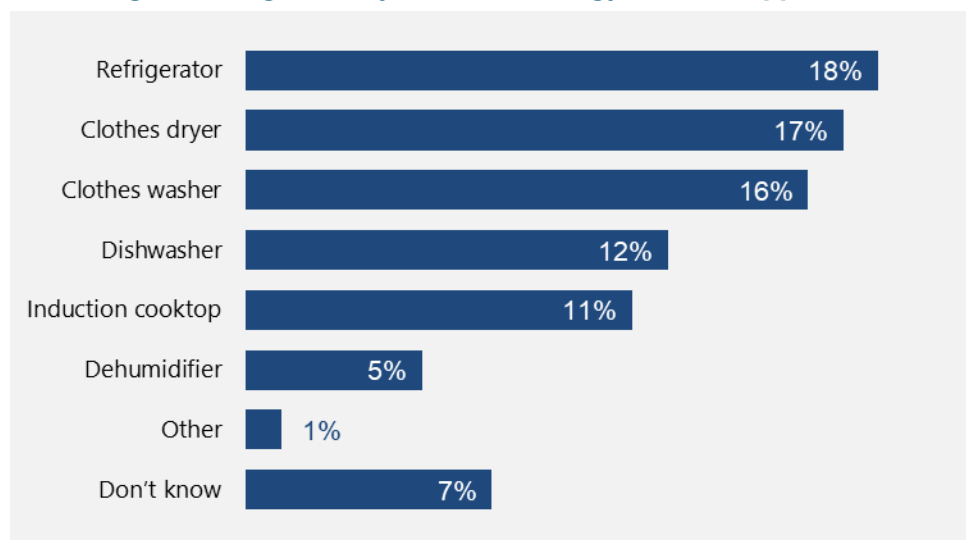
Source: Survey Question D3, "Which type of energy-efficient heating or cooling system are you interested in installing? Select all that apply." (n=990)

**Figure 7. Single-Family Homeowner Interest in Water Heaters**



Source: Survey Question D4, "Which type of energy-efficient water heating system are you interested in installing? Select all that apply." (n=990)

**Figure 8. Single-Family Interest in Energy-Efficient Appliances**



Source: Survey Question D5, "Which type of energy-efficient appliances are you interested in installing? Select all that apply." (n=1,309)

### *Additional Related Findings*

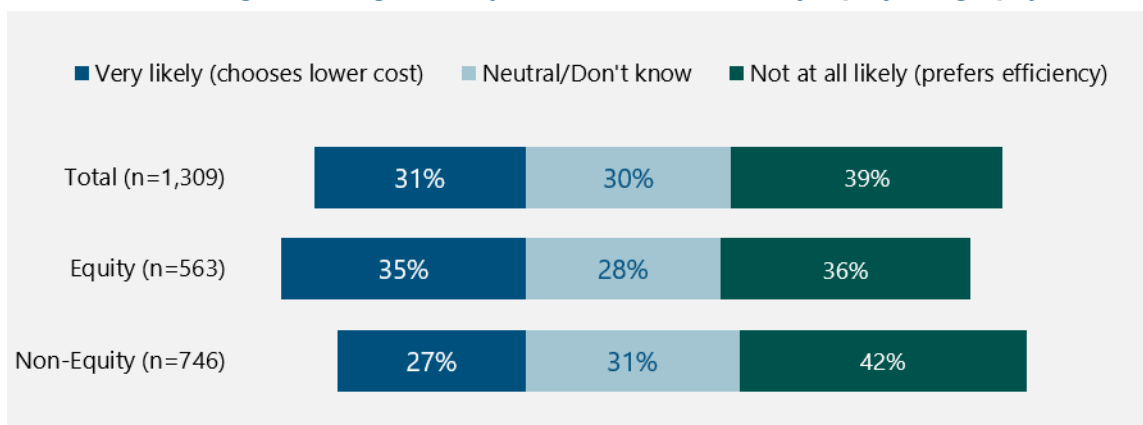
To assess attitudes toward energy efficiency and the barriers to making efficiency improvements, respondents explored the trade-offs between cost and efficiency, as well as their motivation for obtaining energy efficiency products or services. The results suggest that financial considerations are a major factor for many single-family residents.

Overall, single-family respondents reported varying levels of home energy efficiency. Nearly one-third (30%) said their home was *very efficient*, 43% said their home was *moderately efficient*, and 21% said their home was *not at all efficient* (n=1,309).

When asked how important it is to lower their monthly energy bills, 85% of single-family respondents said it was *somewhat important* or *very important* (on a scale from 1 to 5, where 1 was *not at all important* and 5 was *very important*; n=1,309).

The survey also asked about respondents' likelihood of choosing lower upfront costs over higher efficiency, with respondents leaning slightly toward efficient options. Thirty-nine percent of single-family respondents said they were more likely to choose higher-efficiency options, even if they are more expensive upfront, while 31% reported they were more likely to choose lower-cost, less efficient options, despite the potential of incurring higher costs in the long term (see Figure 9).

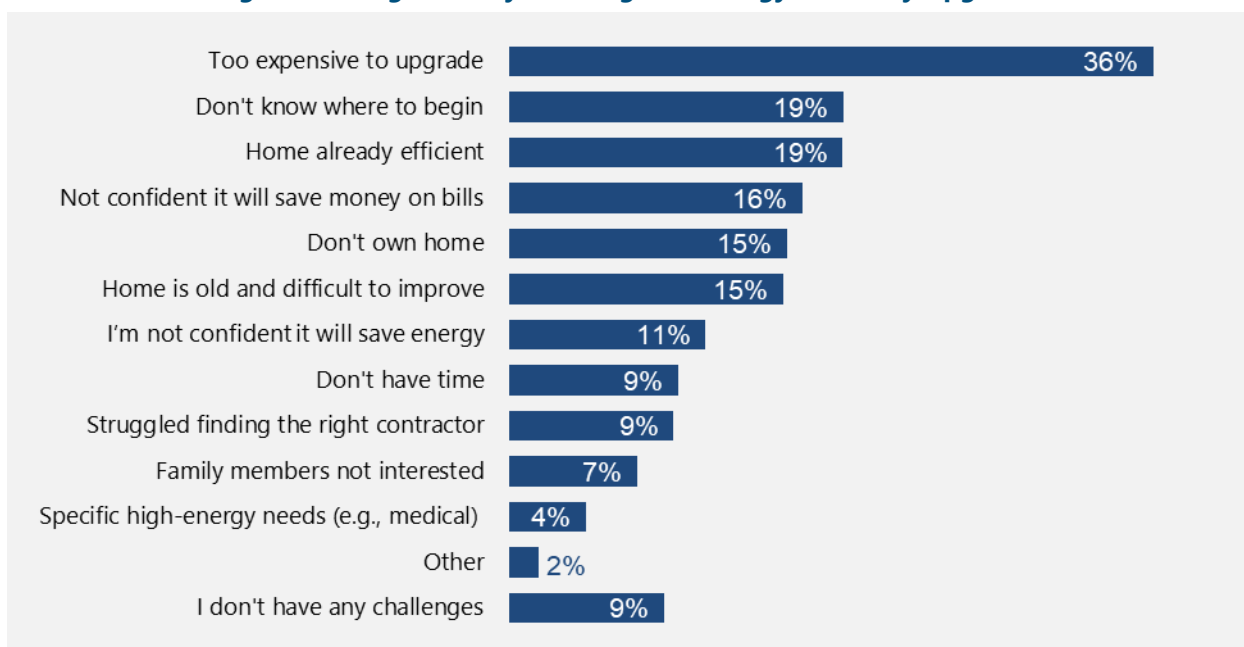
**Figure 9. Single-Family Tradeoff Preferences by Equity Geography**



Source: Survey Question C2, "When considering options to upgrade or replace energy-using equipment in your home, how likely are you to select a more affordable option that may cost less up front but would cost more on energy bills in the long term?" (n=1,309)

To assess barriers to making energy efficiency upgrades, the survey asked respondents to report challenges they face in saving energy in their homes. Single-family respondents most often cited financial barriers to saving energy at home. The most common challenge was the cost of upgrades (36%), followed by not knowing where to begin (19%). Another 19% said their home was already efficient, while 9% reported no challenges in implementing energy efficiency upgrades (n=1,309).

**Figure 10. Single-Family Challenges to Energy Efficiency Upgrades**



Source: Survey Question C5, "What challenges, if any, do you face in saving energy in your home? Select all that apply." (n=1,309)

## Behavior

### *Indicators 4 and 5: Taken Action Towards Obtaining/Have Obtained Energy Efficiency Products or Services*

When asked to identify which energy efficiency improvements they had completed, respondents most frequently said they had reduced energy use in high-cost periods<sup>9</sup> (45%), installed water-saving devices (32%), and installed a smart or Wi-Fi thermostat (31%; see Figure 11). Among single-family homeowners, 32% said they installed an energy-efficient water heater, 32% installed higher-efficiency doors or double-pane windows, 26% installed an energy-efficient heating or cooling system, and 24% had added insulation. The least commonly completed actions among single-family respondents were completing a home energy assessment (7%), insulating existing windows (9%), and sealing ducts or installing weatherstripping (17%).

Indicator #4 (Single-Family):

**7% to 45%**

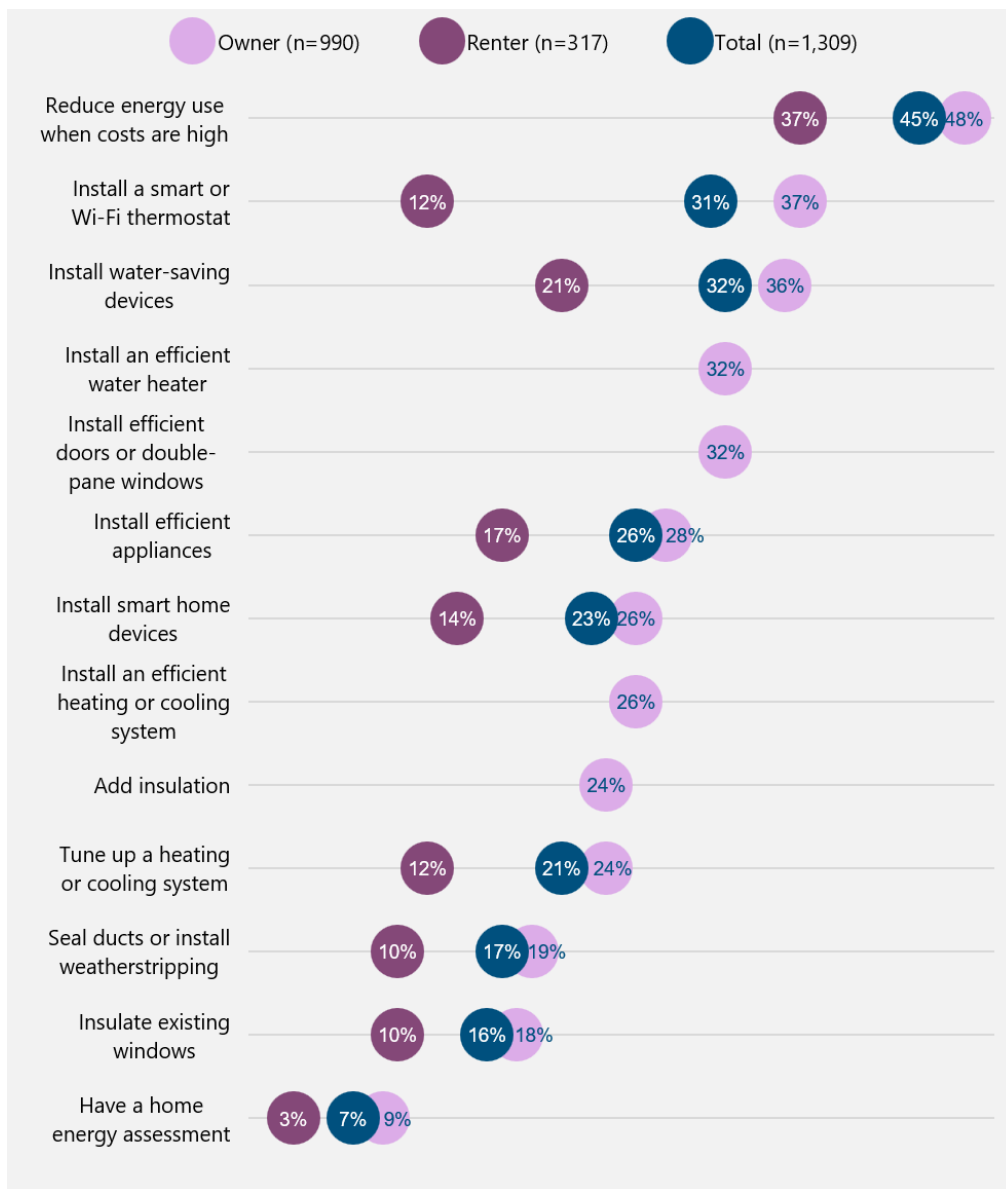
**General Behavior**

toward Energy Efficiency  
Products & Services

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<sup>9</sup> Specifically, the survey asked respondents about their plans to regularly reduce energy use when electricity costs are high (between 4:00 PM and 9:00 PM).

**Figure 11. Single-Family Completed Energy Efficiency Improvements by Homeownership**

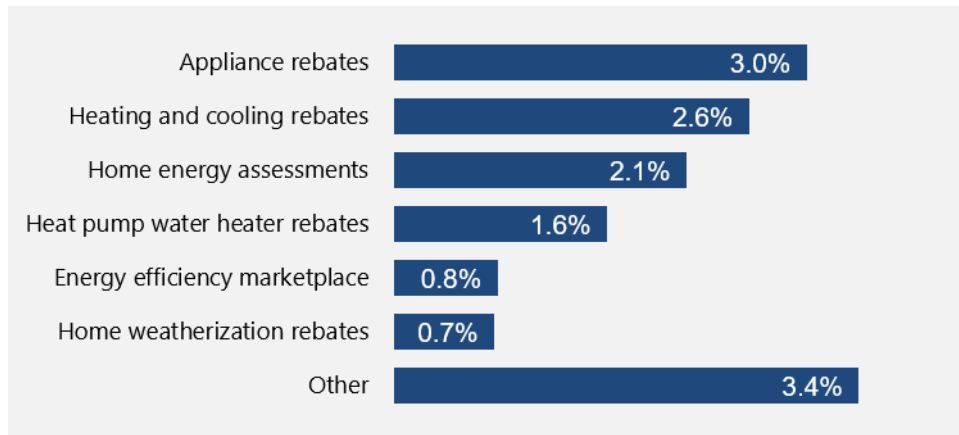


Source: Survey Question D2, "For the following actions and improvements, please select the option that best describes your plans over the next two years." This figure displays the proportions of respondents who selected "already completed or efficient." (n=1,309)

### *Additional Related Findings*

The survey also asked respondents which rebates and energy efficiency programs they had participated in. Among all single-family respondents, when asked which programs they had participated in, most had participated in appliance rebate (3.0%) or heating and cooling rebate (2.6%) programs, as shown in Figure 12.

**Figure 12. Single-Family Program Participation**



Source: Survey Question B4, "Which rebate or energy efficiency programs have you participated in over the past 2 years? Select all that apply." (n=1,309)

## Notable Comparisons for General Energy Efficiency

Below are notable comparisons across general energy efficiency awareness, knowledge, attitudes, and behaviors of single-family occupants by equity status, homeownership, type of heating/cooling system, and energy efficiency knowledge level.

### *Equity Status (Equity Area vs. Non-Equity Area)*

Equity-area respondents trail non-equity respondents on awareness, knowledge, and completed action for most measures, but report equal or greater motivation to act on cost-saving opportunities. Compared to respondents in non-equity areas (n=746), equity-area respondents (n=563) were:

#### **Awareness**

- Less aware of insulation, efficient heating/cooling systems, efficient water heaters, and higher-efficiency doors/windows (all  $p < 0.05$ ).

#### **Knowledge**

- More likely to report limited/no knowledge of saving energy (27% vs. 22%;  $p < 0.10$ ).
- Had a greater lack of knowledge of heat pump water heaters (75% vs. 68% reporting limited/no knowledge;  $p < 0.05$ ) and induction cooktops (62% vs. 57%;  $p < 0.05$ ) when asked about specific electrification technologies (Figure 13).

#### **Attitudes**

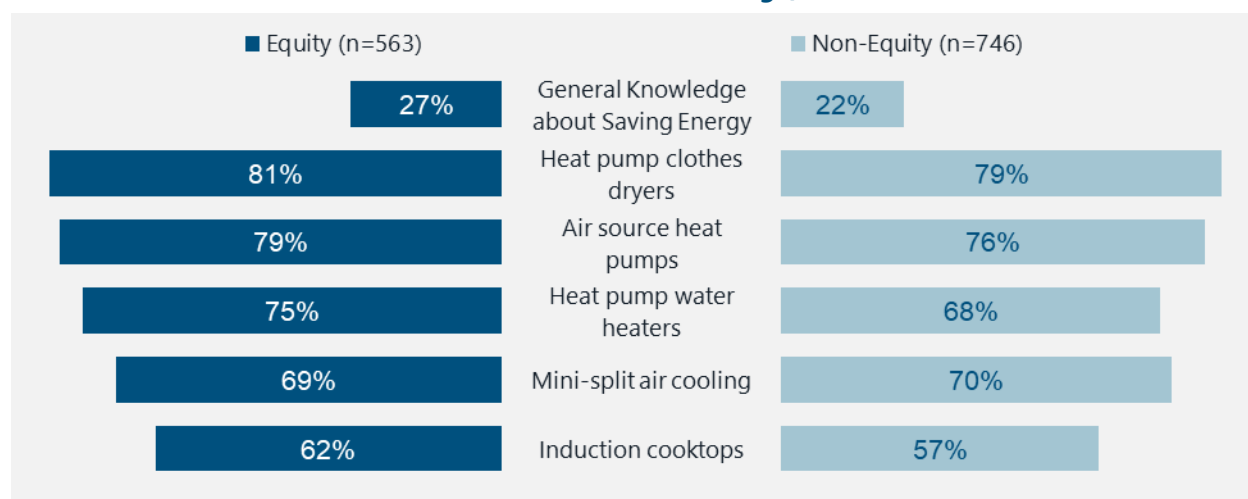
- More likely to plan to reduce energy use in high-cost periods (13% vs. 7%;  $p < 0.05$ ), use temporary window insulation (9% vs. 6%;  $p < 0.05$ ), and install water-saving devices (10% vs. 8%;  $p < 0.10$ ).
- Less likely to rate their home as efficient (27% vs. 32%;  $p < 0.05$ ).
- More likely to say that lowering their energy bill was important (87% vs. 83%;  $p < 0.10$ ).
- More likely to prioritize low upfront cost over efficiency, (35% vs. 27%;  $p < 0.05$ ).

- More likely to cite not owning their home as a barrier to making upgrades (18% vs. 14%), along with lacking confidence that improvements would lower their energy bills (13% vs. 18%) and struggling to find contractors (7% vs. 11%; all  $p < 0.05$ ).

## Behavior

- Less likely to have installed most efficiency measures including heating/cooling systems, doors/windows, water heaters, water-saving devices, smart thermostats/home devices (all  $p < 0.05$ ).
- More likely to have completed a home energy assessment (3% vs. 1%;  $p < 0.05$ ), although overall program participation did not vary by equity area (11%, both groups) .

**Figure 13. Single-Family Knowledge of Energy-Efficient Equipment by Equity Status (Reporting Limited or No Knowledge)**



Source: Survey Question C3, "How would you describe your level of knowledge when it comes to saving energy at home and making future energy-efficient purchases (e.g., appliances, windows)?" and C4, "How would you rate your knowledge with the following types of equipment?" This figure displays the proportions of respondents who selected *limited knowledge* or *no knowledge*.

## Homeownership Status (Homeowner vs. Renter)

Homeowners consistently outpace renters on awareness, knowledge, and completed action. However, they also report more upgrade-related barriers, likely reflecting their direct responsibility for larger investments. Compared to renters (n=990), homeowners (n=317) were:

### Awareness

- More aware of most efficiency measures including home energy assessments, sealing and weatherstripping, efficient appliances, and smart thermostats (Figure 1), compared to renters who were more likely to report no awareness of any of the listed measures (50% vs. 35%; all  $p < 0.05$ ).
- More aware of energy efficiency programs, including rebates for appliances (43% vs. 26%), heating/cooling (25% vs. 18%), and heat pump water heaters (21% vs. 4%), and whole-home upgrades (11% vs. 7%; all  $p < 0.05$ ).

## Knowledge

- More likely to have expert/good knowledge of saving energy (36% vs. 21%;  $p < 0.05$ ).

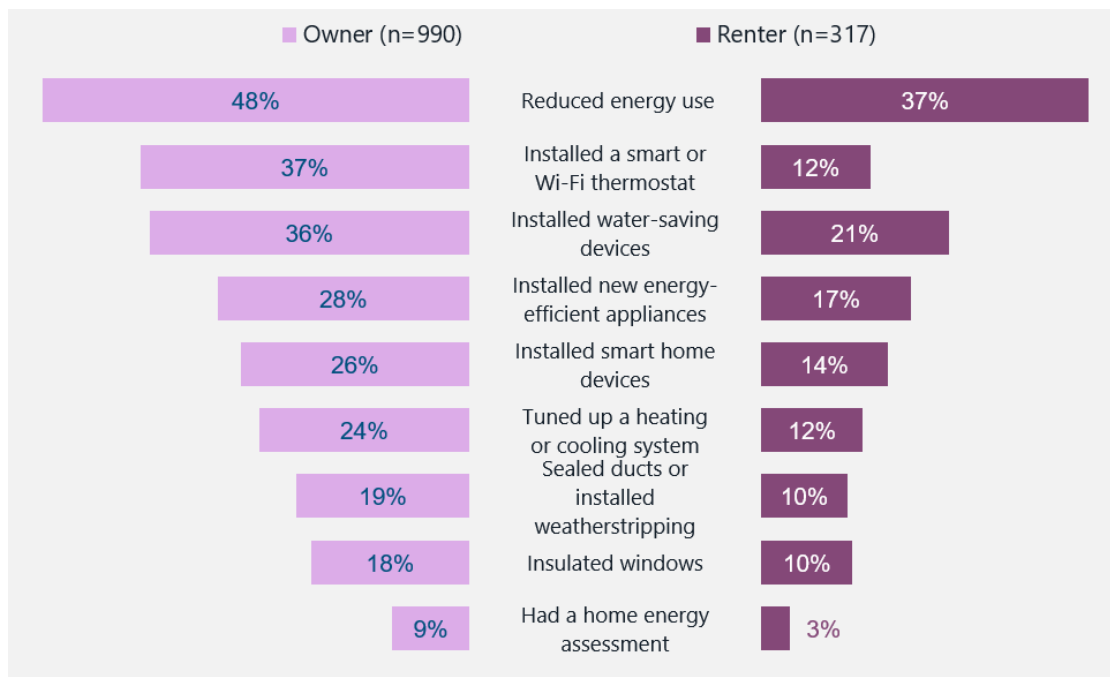
## Attitudes

- More likely to report barriers such as the high cost of upgrades (41% vs. 20%), lack of confidence that improvements would save energy (12% vs. 7%), or save money (18% vs. 11%), believing their home is already energy efficient (23% vs. 5%), and having difficulty finding a contractor (11% vs. 2%; all  $p < 0.05$ ); at the same time, they were more likely to say they have no challenges (10% vs. 6%;  $p < 0.05$ ).

## Behavior

- More likely to have already completed most efficiency improvements (all  $p < 0.05$ ; see Figure 14 **Error! Reference source not found.**).

**Figure 14. Single-Family Completed Energy Efficiency Improvements by Homeownership**



Source: Survey Question D2, "For the following actions and improvements, please select the option that best describes your plans over the next two years." This figure displays the proportions of respondents who selected *already completed* or *efficient*.

## Heating/Cooling System Type (Heat Pump vs. Natural Gas vs. Electric Furnace/Baseboard)

Households already using heat pump technology (n=129) show the highest awareness, knowledge, and program participation tied to electrification upgrades compared to those with natural gas heating (n=819) or electric furnace or baseboard heating (n=105), likely reflecting prior engagement with efficiency programs.

## Awareness

- Heat pump (23%) and natural gas heating (18%) households were more aware of heat pump water heater rebates than electric furnace/baseboard (11%;  $p < 0.10$ ).
- Natural gas water heater households were more aware of appliance rebates (42% vs. 33%) and home energy assessments (18% vs. 13%;  $p < 0.05$ ) than electric water heater households.

## Knowledge

- Heat pump households report the highest knowledge of electrification technologies (18%–27% expert/good) vs. natural gas (8%–18%) vs. electric furnace/baseboard (4%–12%), and a similar pattern holds for heat pump cooling vs. central air vs. window/portable AC ( $p < 0.05$ ).

## Behavior

- Heat pump cooling (8%) households are more likely to have participated in heating/cooling rebate programs than those with central air (3%) or window/portable AC (1%;  $p < 0.05$ ).
- Respondents with heat pump heating (7%) were more likely to have participated in heating and cooling rebate programs than those with natural gas heating (2%;  $p < 0.05$ ) and those with electric furnace or baseboard heat (2%;  $p < 0.10$ ).

## *Energy Efficiency Knowledge Level (Expert/Good vs. Limited/No Knowledge)*

Respondents who already have strong energy efficiency knowledge show the most favorable attitudes and the highest follow-through on action, suggesting that education itself is a lever for driving both attitude and behavior change. Compared to respondents with limited or no knowledge ( $n=317$ ), those with expert or good knowledge ( $n=419$ ) were:

## Awareness

- More likely to have heard of every rebate/program option cited ( $p < 0.05$ ).

## Attitudes

- Far more likely to rate their home as efficient (46% vs. 18%;  $p < 0.05$ ).
- More likely to prioritize efficiency over low upfront cost (65% vs. 50%;  $p < 0.05$ ).
- Less likely to cite barriers to program participation, including not owning their home (9% vs. 23%), not knowing where to begin (10% vs. 31%), low confidence in energy savings (8% vs. 13%; all  $p < 0.05$ ), and low confidence in bill savings (12% vs. 16%;  $p < 0.10$ ).

## Behavior

- Far more likely to have participated in an efficiency program in the past two years (18% vs. 5%), including appliance rebates, heating/cooling rebates, heat pump water heater rebates, home energy assessments, and marketplaces ( $p < 0.05$ ).

## 5.2. Multifamily

This section presents findings for multifamily respondents. Similar to what was presented in section 5.1 above, this section describes multifamily findings on awareness, knowledge, attitudes and behaviors.

### Awareness

#### *Indicator 1: Awareness of Energy Efficiency Products and Services*

The survey asked multifamily respondents about their plans to take specific energy efficiency actions, allowing them to indicate whether they did not know about an energy efficiency improvement<sup>10</sup>. As shown in Figure 15, multifamily respondents were most aware of reducing energy use in high-cost periods (80%) and installing efficient heating and cooling systems (79%; n=656). They were least aware of home energy assessments (49%).

Indicator #1 (Multifamily):

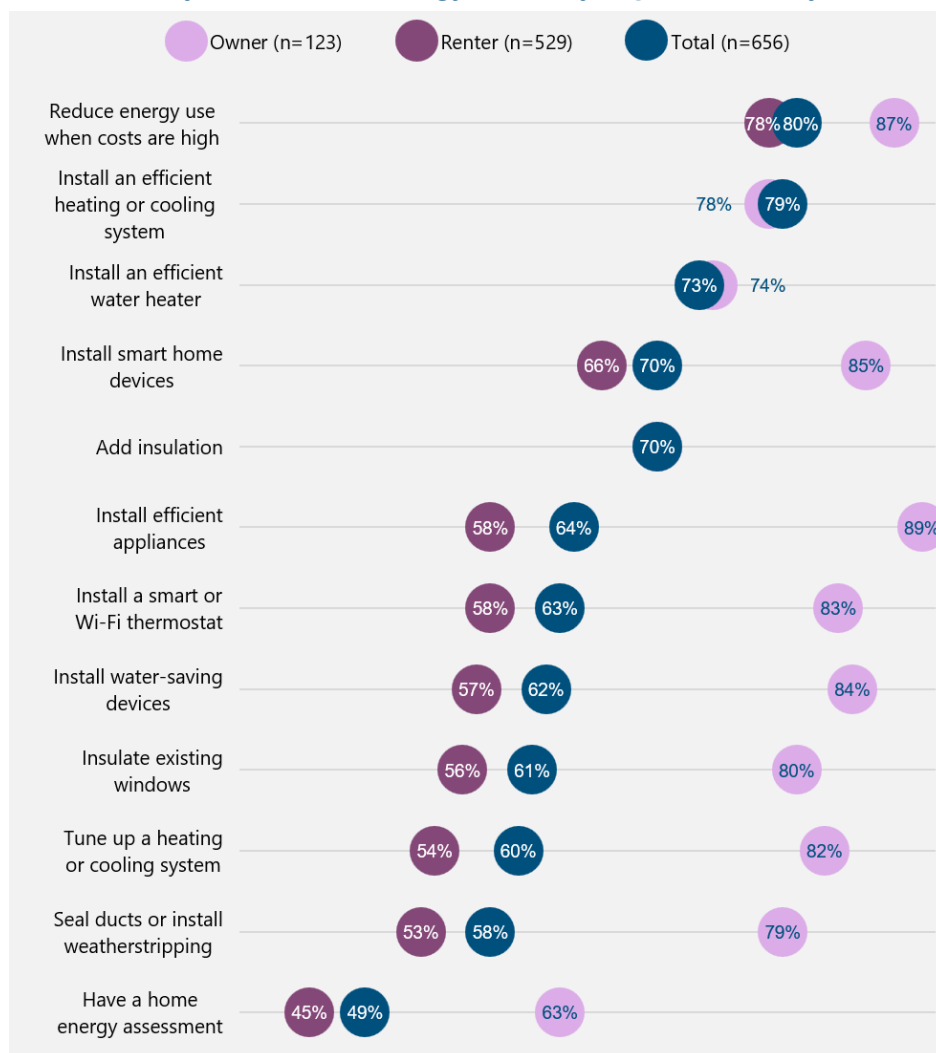
**49% to 80%**

**General Awareness  
of Energy Efficiency  
Products & Services**

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<sup>10</sup> Cadmus classified respondents who selected *do not know* about an improvement as unaware and respondents who selected any response indicating plans related to the improvement as aware.

**Figure 15. Multifamily Awareness of Energy Efficiency Improvements by Homeownership**

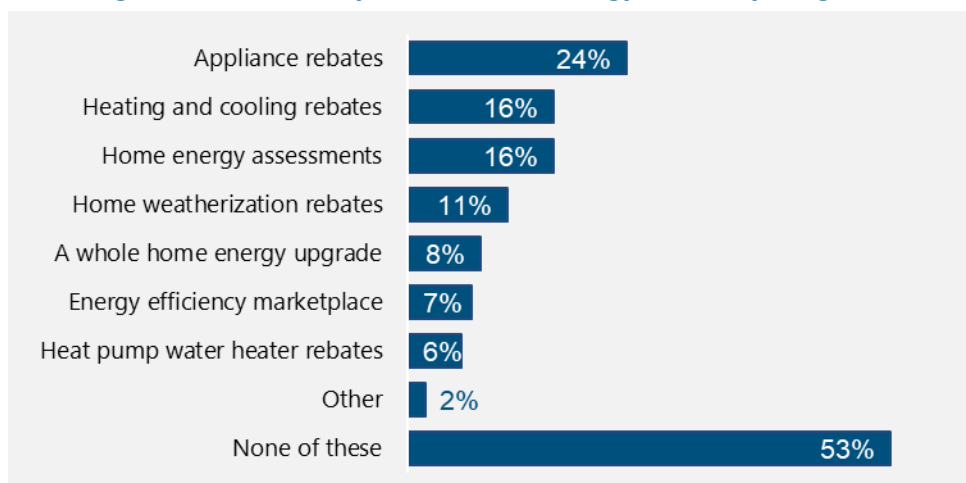


Source: Survey Question D2, "For the following actions and improvements, please select the option that best describes your plans over the next two years." Question D2 used a matrix response format that included a "Don't know what this is" option. Respondents who selected "Don't know what this is" were classified as unaware, while respondents who selected any of the other response options related to plans for these improvements were classified as aware.

### *Additional Related Findings*

The survey asked multifamily respondents which types of rebate or efficiency programs they had heard about. Program awareness was highest for appliance rebates (24%) and lowest for heat pump water heater rebates (6%; see Figure 16).

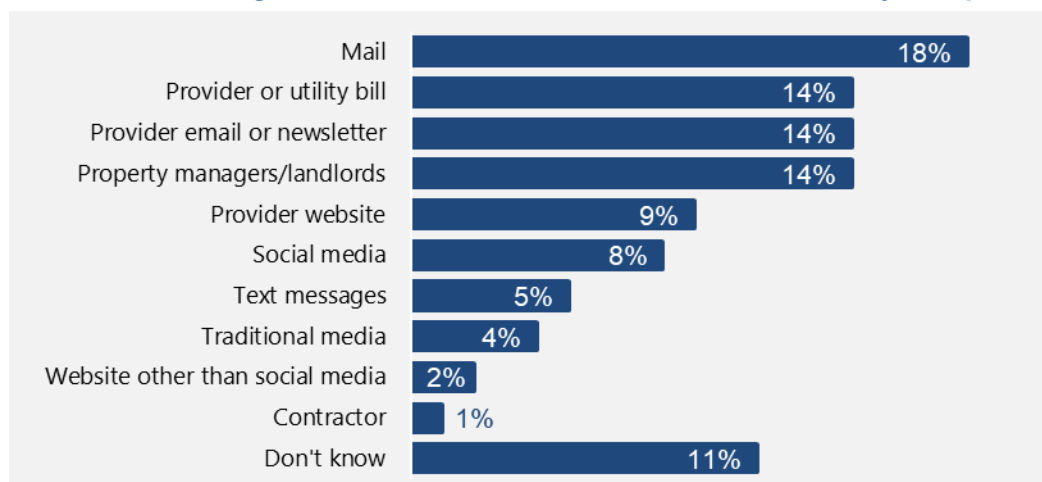
**Figure 16. Multifamily Awareness of Energy Efficiency Programs**



Source: Survey Question B2, "Which rebates or energy efficiency programs have you heard about in the past 12 months? Select all that apply." (n=656)

The survey also asked respondents about the best way to inform them about future energy efficiency programs and services. Eighteen percent of multifamily respondents said that mail was the best form of contact, and 14% said a provider or utility bill, provider email or newsletter, or property manager or landlord were their preferred forms of contact (n=656; see Figure 17).

**Figure 17 Communication Preferences of Multifamily Occupants**



Source: Survey Question E6, "Please select the best way for you to find out about energy efficiency programs and services." (n=656)

## Knowledge

This section reports on the general knowledge indicator and familiarity with electrification-focused technologies.

## Indicator 2: Knowledge of Energy Efficiency Products and Services

To assess general knowledge of energy efficiency, the survey asked respondents to rate their knowledge of saving energy at home and making energy-efficient purchases. Overall, most multifamily respondents reported some level of knowledge about energy efficiency—17% reported *expert or good knowledge*, 47% reported *basic knowledge*, and 36% reported *limited or no knowledge* (n=656).

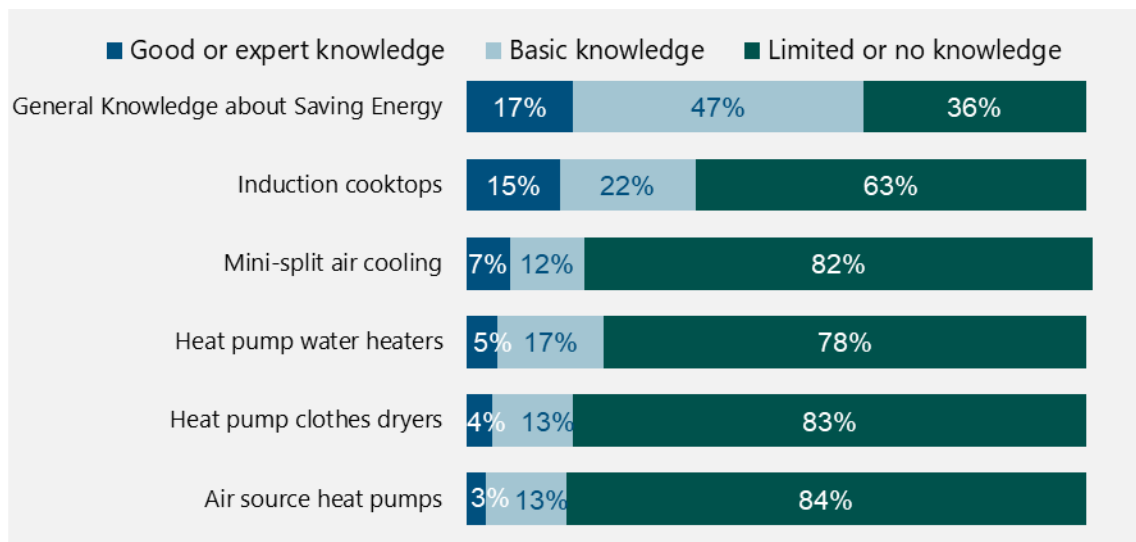
Indicator #2 (Multifamily):

**17%**

**General Knowledge  
of Energy Efficiency  
Products & Services**

The survey also asked respondents to rate their knowledge of a list of key electrification-focused technologies. As shown in Figure 18, respondents reported that they were most knowledgeable about induction cooktops and mini-split air cooling and least knowledgeable about heat pump clothes dryers and air source heat pumps, however, respondents' knowledge about these electrification-focused technologies is lower than their general knowledge about how to save energy.

**Figure 18. Multifamily Knowledge of Energy Efficiency Equipment**



Source: Survey Question C3, "How would you describe your level of knowledge when it comes to saving energy at home and making future energy-efficient purchases (e.g., appliances, windows)?" and C4, "How would you rate your knowledge with the following types of equipment?" (n=656)

## Attitudes

The survey collected responses related to the attitude indicator (interest in EE products and services), along with exploring trade-offs between cost and efficiency, as well as respondent motivations and barriers related to obtaining energy efficiency products or services.

## *Indicator 3: Interest in Energy Efficiency Products and Services*

To assess interest in energy efficiency upgrades, the survey asked which improvements respondents planned to complete in the next two years. Note that interest in these 12 energy efficiency upgrades applies only to those who have not already taken the action.

Across all multifamily respondents (n=656), the most common planned improvements were reducing energy use in high-cost periods (11%), temporary window insulation (6%), energy-efficient appliance installation (5%), home energy assessment (5%) and smart home device installation (5%; see Figure 19).

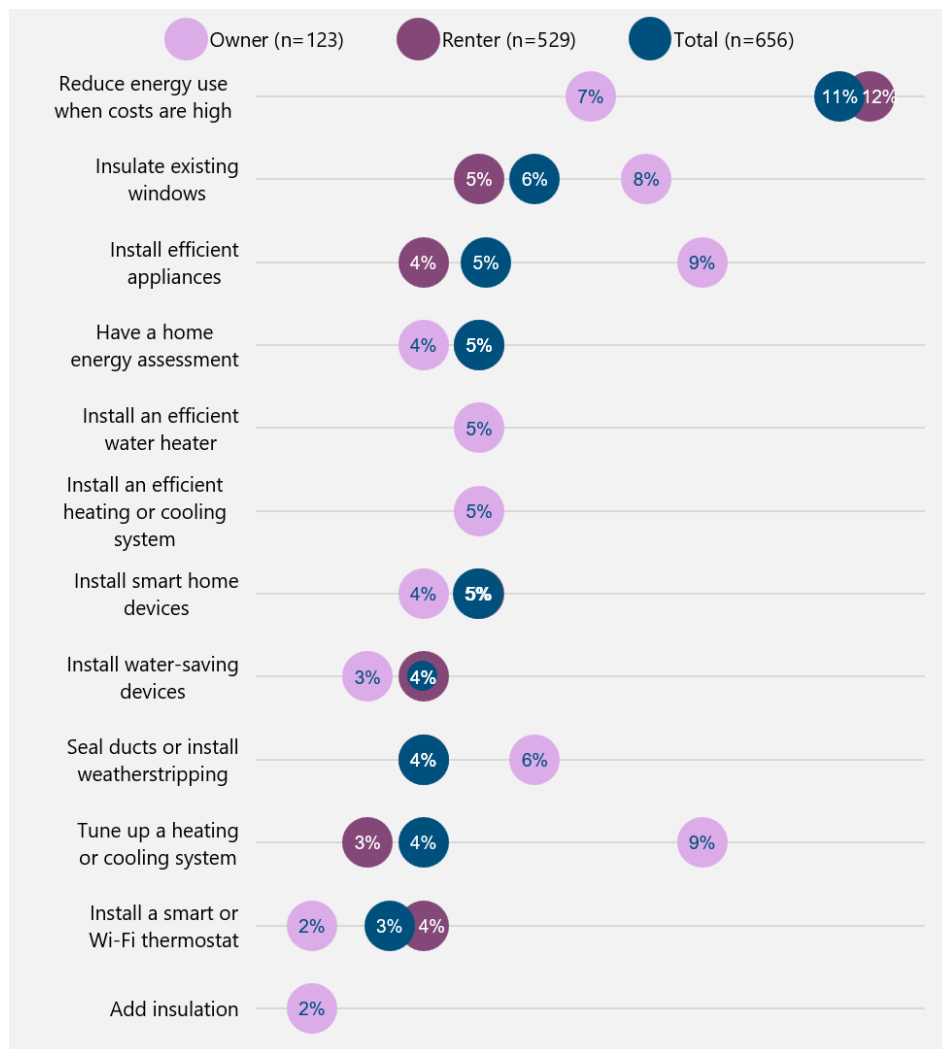
The survey also asked multifamily homeowners (n=123) about several technologies that are not typically the responsibility of renters: efficient water heaters, heating or cooling systems, and insulation. Few multifamily homeowners planned to install these technologies.

Indicator #3 (Multifamily):

**2% to 11%**

**General Interest**  
in Energy Efficiency  
Products & Services

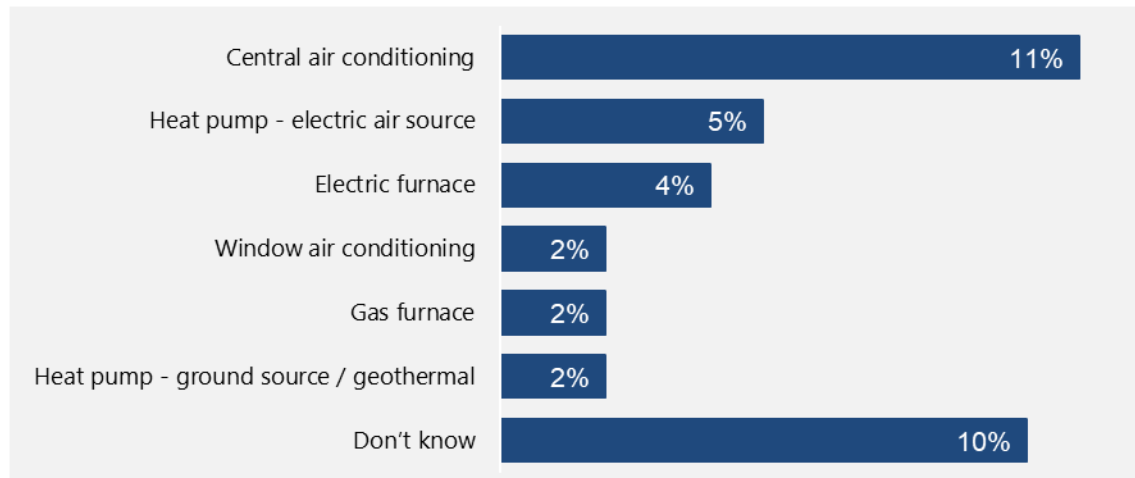
**Figure 19. Multifamily Planned Energy Efficiency Improvements by Homeownership**



Source: Survey Question D2, "For the following actions and improvements, please select the option that best describes your plans over the next two years." This figure displays the proportions of respondents who selected "plan to complete in the next two years."

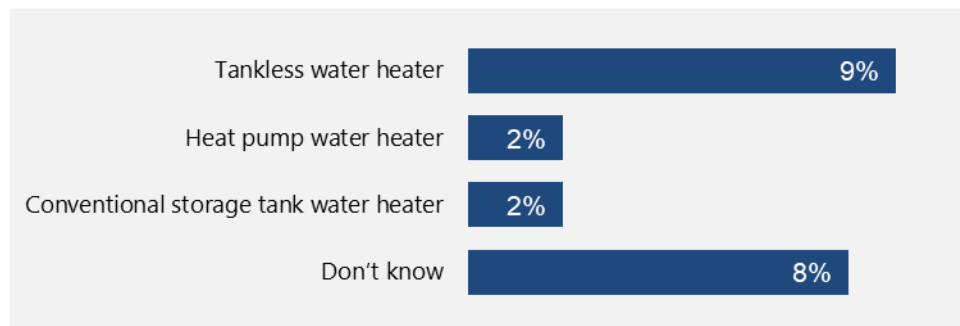
For respondents who indicated their plans to install energy-efficient heating and cooling, water heating, or appliances, the survey also asked questions to understand specifically which efficient heating or cooling systems, water heaters, and appliances respondents were interested in. As shown in Figure 20, multifamily homeowners who indicated they had plans to install an energy-efficient heating or cooling system 11% were interested in central air conditioners, 5% were interested in electric air source heat pumps, and 4% were interested in electric furnaces. For those interested in installing energy-efficient water heating, respondents were most interested in tankless water heaters (9%), conventional storage tank water heaters (2%), and heat pump water heaters (2%; see Figure 21). Lastly, for multifamily homeowners who indicated they had plans to install efficient appliances, they were most interested in refrigerators (16%), dishwashers (11%), clothes washers (10%), and clothes dryers (10%; see Figure 22).

**Figure 20. Multifamily Homeowner Interest in Efficient Heating and Cooling Systems**



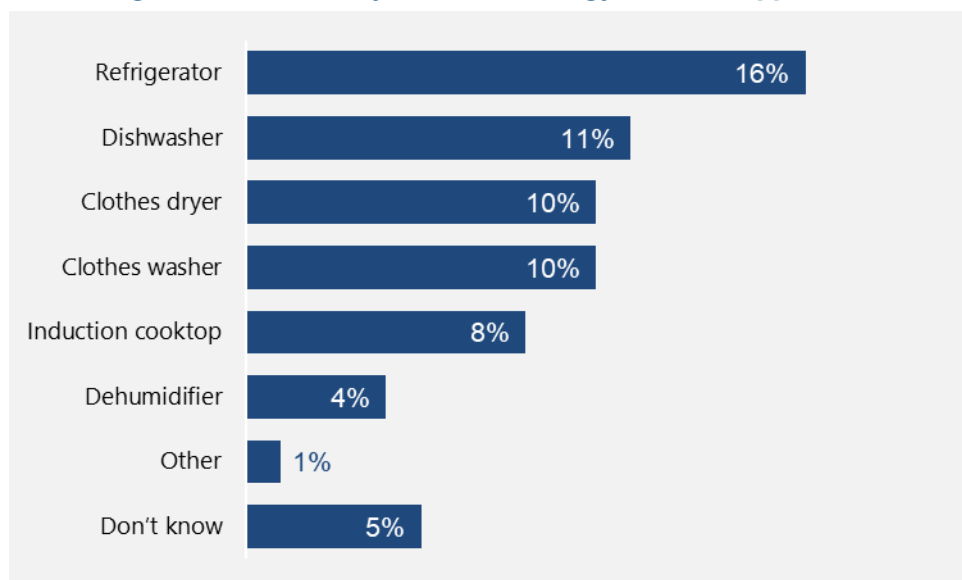
Source: Question D3, "Which type of energy-efficient heating or cooling system are you interested in installing? Select all that apply." (n=123)

**Figure 21. Multifamily Homeowner Interest in Water Heaters**



Source: Question D4, "Which type of energy-efficient water heating system are you interested in installing? Select all that apply." (n=123)

**Figure 22. Multifamily Interest in Energy-Efficient Appliances**



Source: Survey Question D5, "Which type of energy-efficient appliances are you interested in installing? Select all that apply." (n=656)

### *Additional Related Findings*

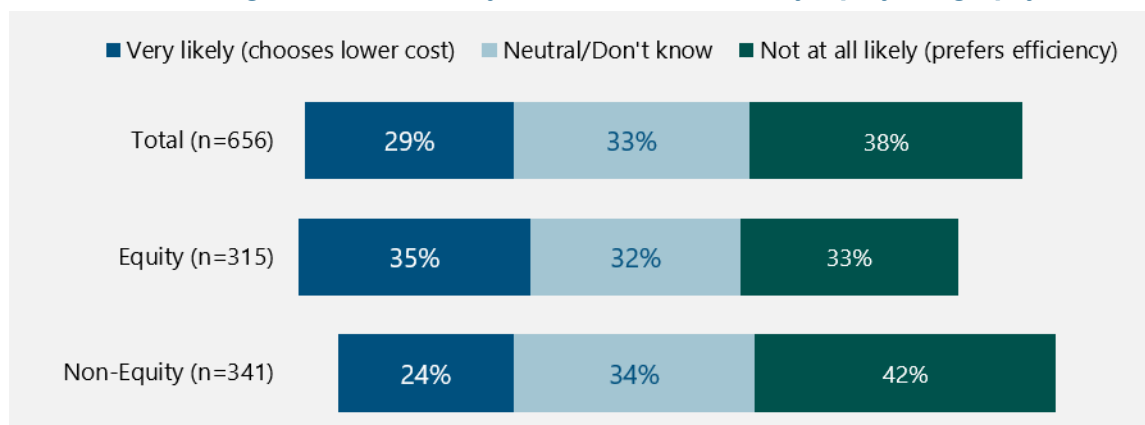
Respondents were also asked about trade-offs between cost and efficiency, as well as their motivations for obtaining energy efficiency products or services. The findings presented in this section highlight that financial considerations are a predominant concern for many multifamily residents.

Overall, multifamily respondents reported varying levels of home energy efficiency. Nearly one-quarter (23%) reported their home was *very efficient*, 44% said that their home was *moderately efficient*, and 22% reported that their home was *not at all efficient* (n=656).

When asked how important it is to lower their monthly energy bills, 82% of multifamily respondents said it was *somewhat* or *very important* (on a scale from 1 to 5, where 1 was *not at all important* and 5 was *very important*; n=656).

The survey also asked respondents how likely they were to prioritize lower upfront costs over higher efficiency. Among multifamily respondents, 38% said they were *not likely* to choose more affordable options over more efficient ones, while 29% reported that they were *more likely* to choose lower-cost, less efficient options (n=656; see Figure 23).

**Figure 23. Multifamily Tradeoff Preferences by Equity Geography**



Source: Survey Question C2, "When considering options to upgrade or replace energy-using equipment in your home, how likely are you to select a more affordable option that may cost less up front but would cost more on energy bills in the long term?" (n=656)

To assess barriers to making energy efficiency upgrades, the survey asked respondents to report challenges they face in saving energy in their homes. As shown in Figure 24, multifamily respondents most frequently cited not owning their home (54%) and not knowing where to begin (20%, n=656). Eight percent of respondents said that they do not face any challenges with implementing energy efficiency upgrades (n=656).

**Figure 24. Multifamily Challenges to Energy Efficiency Upgrades**



Source: Survey Question C5, "What challenges, if any, do you face in saving energy in your home? Select all that apply." (n=656)

## Behavior

### *Indicators 4 and 5: Taken Action Towards Obtaining/Have Obtained Energy Efficiency Products or Services*

To assess the extent to which customers have taken action towards obtaining efficiency products and services, the survey asked respondents a series of questions about the efficiency improvements they have made. As shown in Figure 25, the most common improvements were reducing energy use in high-cost periods<sup>11</sup> (33%), installing water-saving devices (16%), and installing energy-efficient appliances (14%, n=656). Among multifamily homeowners, 19% said they have installed an energy-efficient water heater, 16% have installed an energy-efficient heating or cooling system, and 9% have added insulation (n=123). The least commonly completed actions among multifamily respondents overall were having a home energy assessment (4%), insulating existing windows (6%), sealing ducts or installing weatherstripping (8%), and tuning up heating or cooling systems (8%).

Indicator #4 (Multifamily):

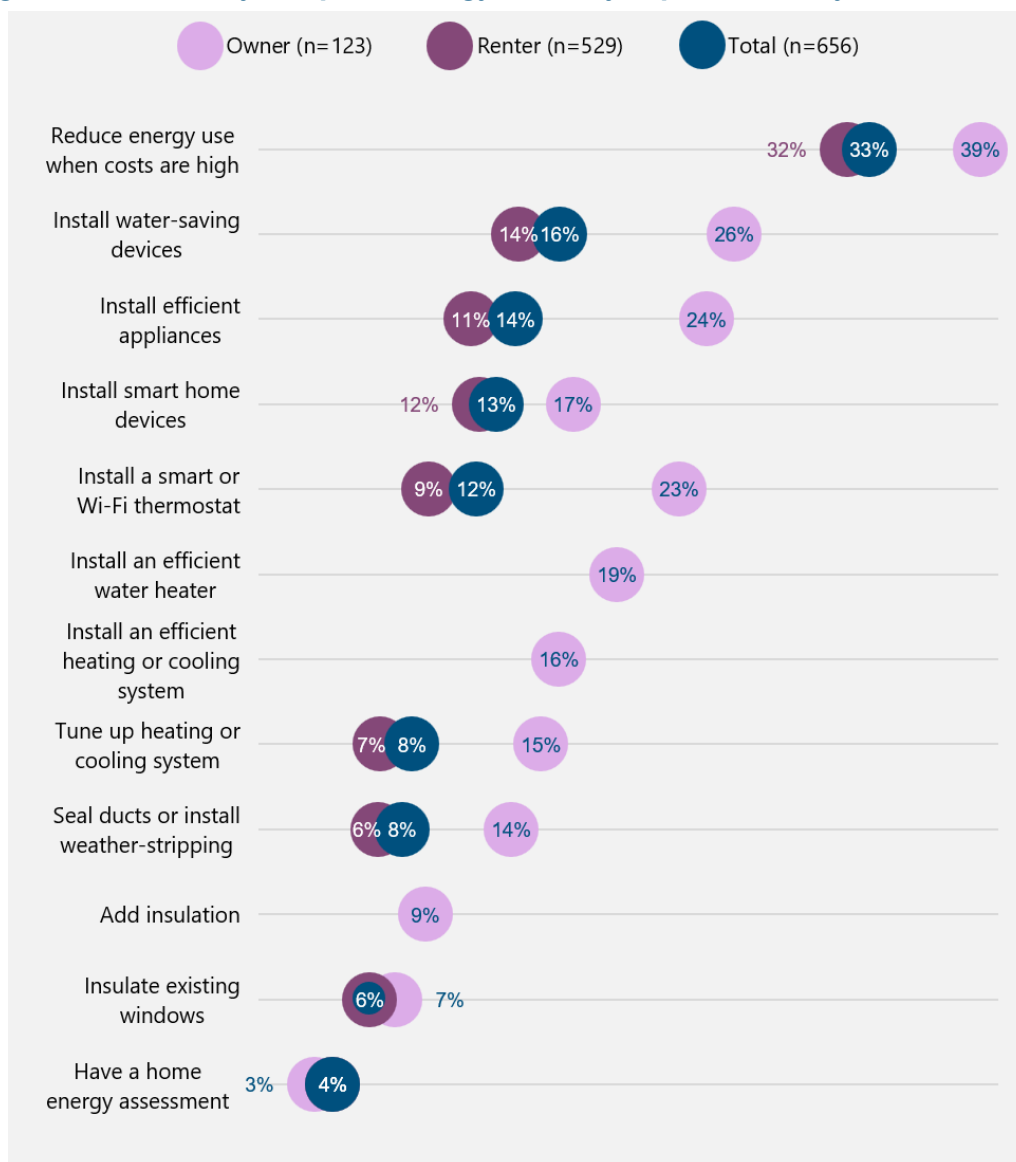
**2% to 33%**

**General Behavior**  
toward Energy Efficiency  
Products & Services

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<sup>11</sup> Specifically, the survey asked respondents about their plans to regularly reduce energy use when electricity costs are high (between 4:00 PM and 9:00 PM).

**Figure 25. Multifamily Completed Energy Efficiency Improvements by Homeownership**

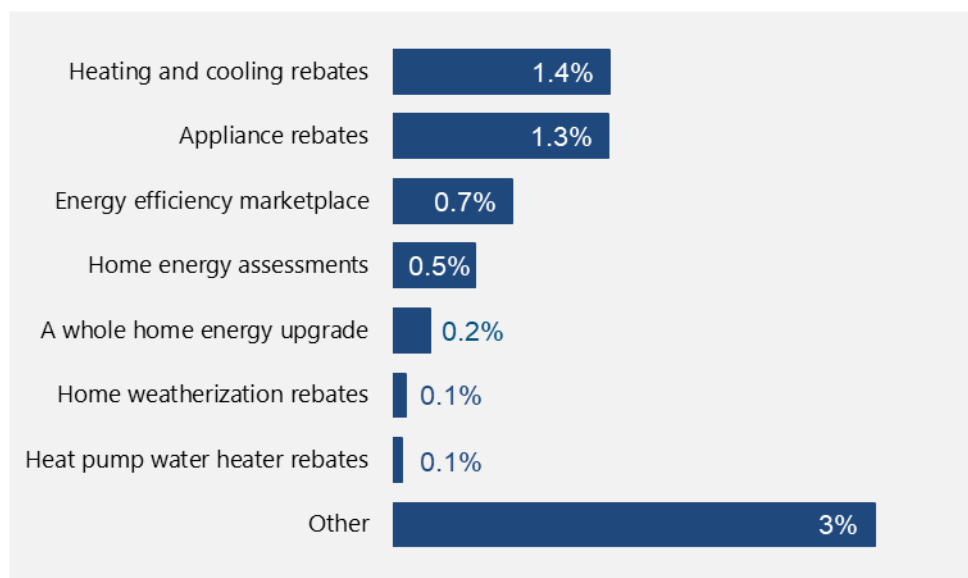


Source: Survey Question D2, "For the following actions and improvements, please select the option that best describes your plans over the next two years." This figure displays the proportions of respondents who selected "already completed or efficient."

### *Additional Related Findings*

The survey also asked respondents about rebates and efficiency programs they had participated in. When asked which programs they had participated in, most said heating and cooling rebate (1.4%) or appliance rebate (1.3%) programs (Figure 26).

**Figure 26. Multifamily Program Participation**



Source: Survey Question B4, “Which rebate or energy efficiency programs have you participated in over the past two years? Select all that apply.” (n=656)

## Notable Comparisons for General Energy Efficiency

Below are notable comparisons across general energy efficiency awareness, knowledge, attitudes, and behaviors of multifamily occupants by equity status, homeownership, type of heating/cooling system, and energy efficiency knowledge level.

### *Equity Status (Equity Area vs. Non-Equity Area)*

Respondents living in equity areas lag behind respondents from non-equity areas on energy efficiency awareness and completed action for most measures, while reporting similar knowledge and planned improvements and a higher tendency to prioritize lower upfront costs. Compared to multifamily respondents in non-equity areas (n=341), equity-area respondents (n=315) were:

#### **Awareness**

- Less aware of measures including insulation (9% vs. 17%), energy-efficient water heaters (10% vs. 17%), energy-efficient heating and cooling systems (10% vs. 18%; all  $p < 0.05$ ), and heating/cooling tune-ups (56% vs. 62%;  $p < 0.10$ ).

#### **Knowledge**

- Similar in their overall knowledge of saving energy and similar knowledge of specific electrification-focused technologies.

#### **Attitudes**

- Similar in planned efficiency improvements, but more likely to prioritize lower upfront costs over higher efficiency (35% vs. 24%,  $p < 0.05$ ; see Figure 23).

- Less likely to report several barriers to making improvements, including high upgrade costs (12% vs. 18%;  $p < 0.05$ ), lack of time (10% vs. 15%;  $p < 0.05$ ), uncertainty about energy savings (5% vs. 9%;  $p < 0.10$ ), and difficulty finding a contractor (1% vs. 3%;  $p < 0.05$ ).

## Behavior

- Less likely to have already installed efficient appliances (10% vs. 16%) and smart home devices (10% vs. 15%; both  $p < 0.05$ ).
- Somewhat more likely to have completed a home energy assessment (1% vs. 0%;  $p < 0.10$ ); however, overall program participation is similar.

## *Homeownership Status (Homeowner vs Renter)*

Homeowners are consistently more aware of and knowledgeable about energy efficiency improvements and technologies compared to renters. Along the same lines, homeowners are less likely to face challenges with saving energy and more likely to have completed energy efficiency improvements. Homeowners made up a smaller portion of multifamily participants than renters ( $n=123$  vs.  $n=529$ ). As a result, multifamily awareness and knowledge of energy efficiency may better reflect the awareness and knowledge of renters. Compared to multifamily renters, homeowners were:

## Awareness

- More aware than renters of most efficiency improvements (Figure 15;  $p < 0.05$ ).
- More likely to have heard of rebates for heat pump water heaters (17% vs. 4%;  $p < 0.05$ ) and appliances (30% vs. 23%;  $p < 0.10$ ).

## Knowledge

- More likely to report expert/good knowledge of saving energy (33% vs. 14%) and to have expert/good knowledge of electrification technologies, including induction cooktops (13% vs. 23%), mini-split air cooling (5% vs. 14%), air source heat pumps (2% vs. 9%; all  $p < 0.05$ ), and heat pump clothes dryers (3% vs. 7%;  $p < 0.10$ ).

## Attitudes

- More likely to prioritize higher efficiency over lower upfront cost (70% vs. 56%,  $p < 0.05$ ).
- More frequently cite upgrade-related barriers such as cost (31% vs 12%), lack of time (19% vs 11%), uncertainty about bill savings (23% vs 10%), finding a contractor (10% vs 1%), older homes (17% vs 8%), or believing that their home is already efficient (23% vs 7%; all  $p < 0.05$ ).
- Less likely to identify lack of homeownership as a barrier (0% vs 66%;  $p < 0.05$ ).

## Behavior

- More likely to have completed heating system tune-ups (15% vs. 7%;  $p < 0.05$ ), installation of duct sealing/weatherstripping (14% vs. 6%), efficient appliances (24% vs. 11%), water-saving devices (26% vs. 14%), and smart thermostats (23% vs. 9% see Figure 25).

## *Energy Efficiency Knowledge Level (Expert/Good vs. Limited/No Knowledge)*

Respondents with expert or good knowledge of energy efficiency exhibited both higher awareness of saving energy at home and were more confident in their ability to make energy efficiency home upgrades.

Compared to respondents with limited or no knowledge (n=228), those with expert or good knowledge (n=111) were:

## **Awareness**

- More likely to have heard of appliance rebates, heating/cooling rebates, home energy assessments, heat pump water heater rebates, and home weatherization rebates (all  $p < 0.05$ ).

## **Attitudes**

- More likely to rate their home as efficient (46% vs. 16%,  $p < 0.05$ ).
- Less likely to cite barriers such as not owning their home (36% vs 56%), not knowing where to begin (34% vs 4%), lack of time (17% vs 7%), and uncertainty that upgrades would save money (13% vs 5%; all  $p < 0.05$ ) or energy (9% vs 4%;  $p < 0.10$ ).

## 6. Capital Access Detailed Findings

This section presents findings for the capital access indicators and related topics, starting with findings from the Single-Family survey, followed by findings from the Multifamily survey

### 6.1. Single-Family

This section summarizes single-family findings on awareness of, knowledge about, interest in, and limitations of capital access and financing opportunities available to support energy efficiency upgrades.

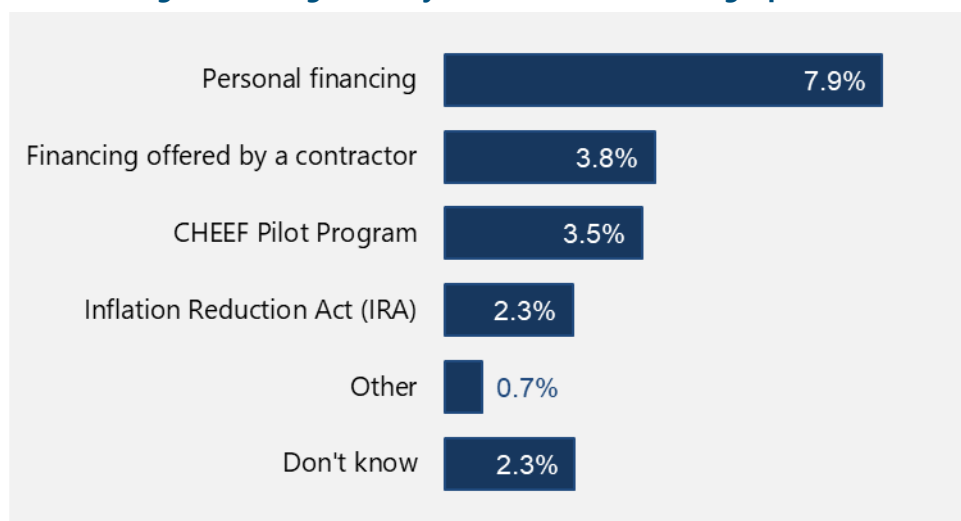
#### Awareness

##### *Indicator 14: Awareness of Capital Access Opportunities for Investment in Energy Efficiency Products and Services*

The survey asked single-family respondents about their awareness of loan options for energy efficiency projects (excluding credit cards). Overall, 14% of single-family respondents reported that they were aware of loan options, whereas 69% indicated they were not aware (n = 1,309). The other 17% said they were not sure.

Respondents also indicated which specific loan options they were aware of. Options included personal loans, contractor-based financing, the federal Inflation Reduction Act (IRA) financing, and the California Hub for Energy Efficiency Financing Pilot Program (CHEEF) financing.<sup>12</sup> As shown in Figure 27, more respondents had heard about personal financing (7.9%) compared to contractor-based financing (3.8%), CHEEF financing (3.5%), and IRA financing (2.3%).

**Figure 27. Single-Family Awareness of Financing Options**



Source: Survey Question E3, "Which loan options have you heard about (do not include credit cards)? Select all that apply." (n=1,309)

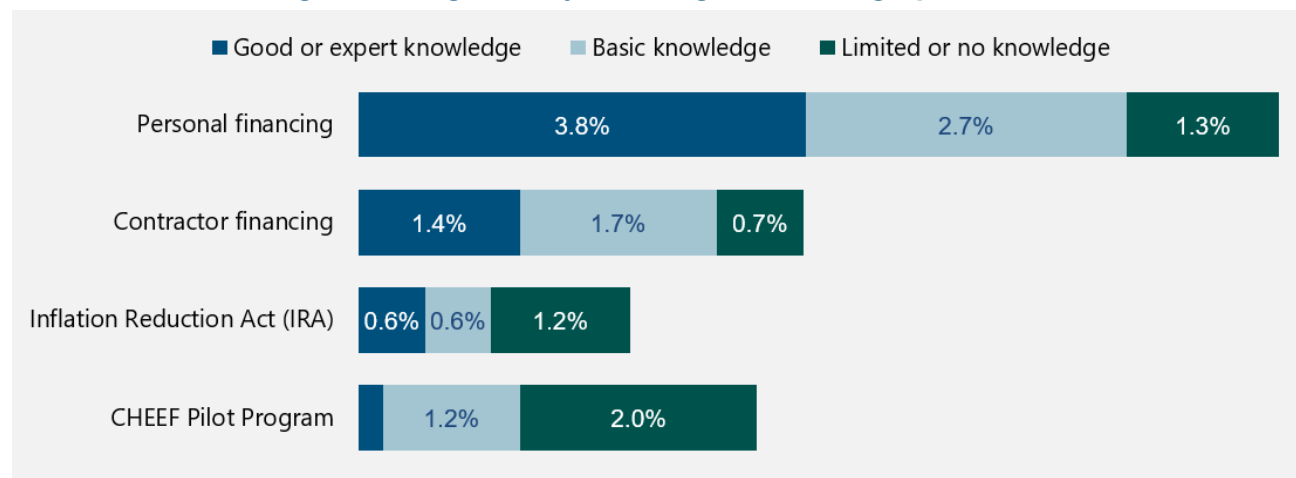
<sup>12</sup> In future surveys, the research team will refer to CHEEF financing as its customer-facing name, GoGreen.

## Knowledge

### *Indicator 15: Knowledge of Capital Access Opportunities for Investment in Energy Efficiency Products and Services*

To assess knowledge about capital access opportunities, the survey asked respondents to rate their knowledge of the opportunities. Similar to the pattern observed for awareness, respondents reported the highest levels of knowledge for personal financing (with 4% of all respondents reporting *expert* or *good knowledge*) and the lowest level of knowledge for IRA financing and CHEEF financing (with less than 1% of all respondents reporting *expert* or *good knowledge*; n=1,309<sup>13</sup>).

**Figure 28. Single-Family Knowledge of Financing Options**



Source: Survey Question E4, "How would you describe your level of knowledge for the following loan option(s)?" (n=1,309)

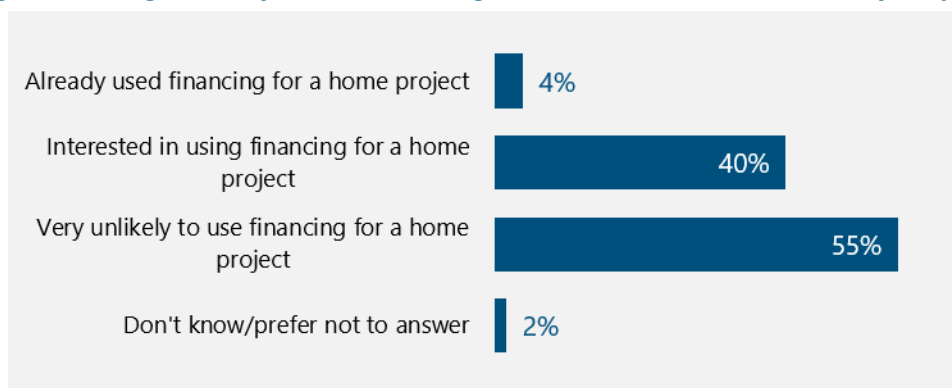
## Attitudes

### *Indicator 16: Interest in Use of Capital Access Opportunities for Investment in Energy Efficiency Products and Services*

To assess attitudes about capital access opportunities for energy efficiency upgrades, the survey asked respondents about their interest in using a loan to fund a home energy project. As shown in Figure 29, only 4% of single-family respondents reported having used financing options, and 40% expressed interest in using loans in the future (n=1,309). Notably, 55% of single-family respondents said they are very unlikely to use loans for energy efficiency improvements under any circumstances. The remaining respondents said they were unsure or preferred not to answer (2%).

<sup>13</sup> The survey asked respondents to rate their knowledge about the financing options only if they indicated they were aware of the options and Cadmus calculated percentages out of all respondents (n=1,309) to estimate knowledge across the entire sample.

**Figure 29. Single-Family Interest in Using a Loan to Fund Home Efficiency Projects**



Source: Survey Question E5, "Which of the following statements best describes your interest in using a loan to fund a home energy project or upgrade?" (n=1,309)

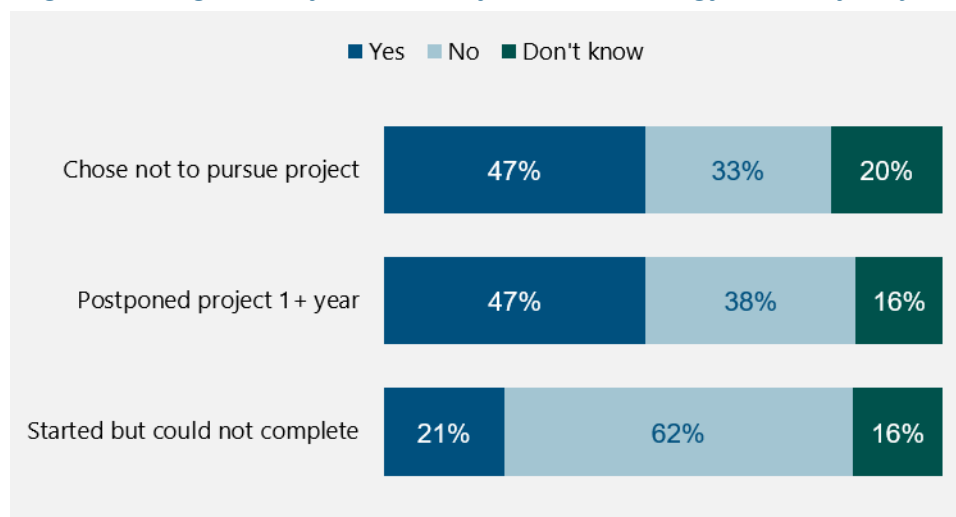
Note: The "interested in using financing for a home project" category is comprised of respondents who selected either "I am very likely to use a loan," "I might consider a loan if interest rates and terms are favorable," "I might apply for a loan, but I'm unsure if I'd qualify", and "I would likely use a loan only in an emergency for essential energy repairs."

## Behavior

### *Indicator 17: Limitations in Use of Capital Access Opportunities for Investment in Energy Efficiency Products and Services*

To assess limitations in accessing or using financing for energy efficiency improvements, the survey asked respondents about affordability challenges they have faced when pursuing energy efficiency projects. Overall, 56% of single-family respondents reported experiencing an affordability challenge that prevented them from pursuing or completing an efficiency project (n=1,309). Specifically, due to affordability challenges, 47% of respondents had chosen not to pursue a project, 47% had postponed a project, and 21% had started but could not complete a project (see Figure 30). And as stated above, more than half of all respondents (56%) experienced at least one of these challenges.

**Figure 30. Single-Family Affordability Barriers to Energy Efficiency Projects**



Source: Survey Question E1. "Please indicate if any of the following apply to you. (Response options: Yes, No, Don't know)" (n=1,309; Indicate "yes" to each that apply.)

## Notable Comparisons for Capital Access Opportunities

Below are notable comparisons across capital access opportunity awareness, knowledge, attitudes, and behaviors of single-family occupants by equity status, homeownership, type of heating/cooling system, and energy efficiency knowledge level.

### *Equity Status (Equity Area vs. Non-Equity Area)*

Respondents living in equity areas report similar awareness of financing opportunities but experience substantially greater affordability barriers that limit their ability to complete energy-efficiency projects. Compared to respondents in non-equity areas (n=746), equity-area respondents (n=563) were:

#### **Awareness**

- Similar in their awareness of energy-efficiency loan options.

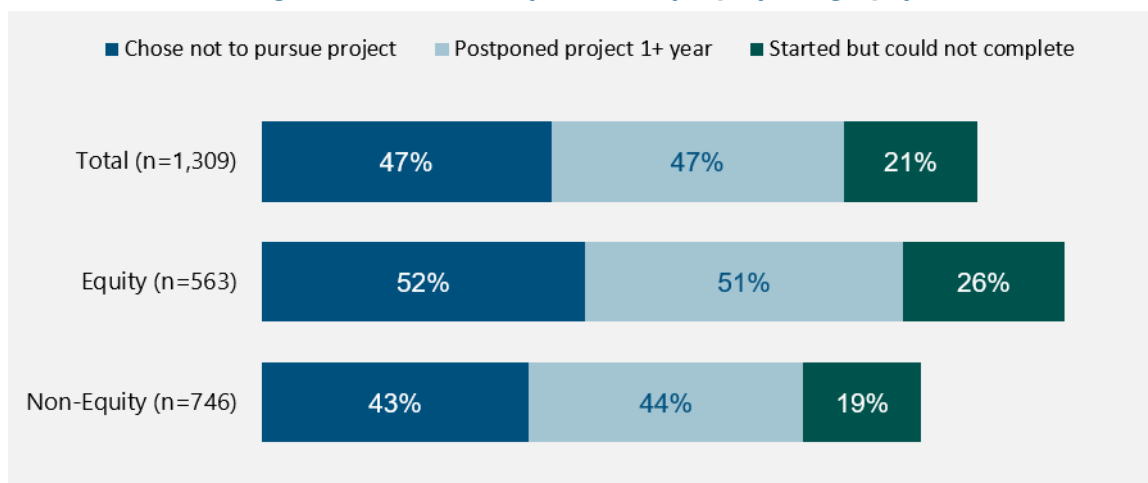
#### **Attitudes**

- Somewhat more likely than non-equity respondents to only use a loan for emergency energy repairs (16% vs. 13%;  $p < 0.10$ ).

#### **Behavior**

- More likely to experience affordability barriers that prevent project completion:
  - Choosing not to pursue a project (52% vs. 43%)
  - Postponing a project (51% vs. 44%)
  - Starting but being unable to complete a project because of cost (25% vs. 19%; all  $p < 0.05$ ; see Figure 31).

**Figure 31. Affordability Barriers by Equity Geography**



Source: Survey Question E1. "Please indicate if any of the following apply to you...Chose not to pursue a home energy-efficiency project because I could not afford it, Postponed a home energy-efficiency project for a year or more because I could not afford it, Started, but was not able to complete a home energy-efficiency project because I could not afford it." (Indicate "yes" to each that apply.)

### *Homeownership (Homeowner vs. Renter)*

Homeowners consistently demonstrate greater awareness and knowledge of financing options and are more willing to consider using loans for energy-efficiency projects. Renters show lower awareness and greater reluctance to use financing, often reflecting the limitations associated with not owning their home. Compared to renters (n=990), homeowners (n=317) were:

#### **Awareness**

- More aware than renters of energy-efficiency loan options overall (16% vs. 8%;  $p < 0.05$ ).
- More likely to have heard of personal financing (9% vs. 5%), contractor-based financing (5% vs. 1%), and CHEEF financing (4% vs. 2%; all  $p < 0.05$ ).

#### **Knowledge**

- More likely to report expert/good knowledge of personal financing (5% vs. 1%;  $p < 0.05$ ) and contractor-based financing (2% vs. 0%;  $p < 0.10$ ).

#### **Attitudes**

- More likely to have used a loan for a home energy project (5% vs. 0%;  $p < 0.05$ ).
- More likely to consider financing if rates and terms are favorable (19% vs. 12%).
- Less averse to using a loan under any circumstances (53% vs 61% choosing *very unlikely*;  $p < 0.05$ ).
- Less often indicate that they might consider applying for a loan, but express concern about qualifying for a loan (3% vs. 9%;  $p < 0.05$ ).

## *Energy Efficiency Knowledge Level (Expert/Good vs. Limited/No Knowledge)*

Respondents with self-reported expert or good-level knowledge of saving energy and making energy-efficient purchases in general are substantially more aware of financing opportunities, more knowledgeable about financing products, more interested in using financing, and less likely to experience affordability barriers that prevent project completion. Compared to respondents with limited or no knowledge (n=317), those with expert or good knowledge (n=419) were:

### **Awareness**

- More likely to have heard about financing options overall (23% vs. 5%).
- More likely to have heard about personal financing (14% vs. 3%), CHEEF financing (6% vs. 1%), contractor-based financing (6% vs. 1%), and IRA financing (5% vs. 1%; all  $p < 0.05$ ).

### **Knowledge**

- More likely to report expert/good knowledge of personal financing (7% vs. 1%;  $p < 0.05$ ).

### **Attitudes**

- More likely to have used a loan for a home energy project (6% vs. 3%;  $p < 0.05$ ).
- More willing to consider financing if rates and terms are favorable (18% vs. 13%;  $p < 0.05$ ).

### **Behavior**

- Less likely to have chosen not to pursue a project because they could not afford it (39% vs 50%;  $p < 0.05$ ).
- Less likely to have started but not completed a project because of cost (18% vs 28%;  $p < 0.05$ ).

## 6.2. Multifamily

This section presents findings for multifamily respondents. Similar to what was presented in section 6.1 above, this section describes multifamily awareness of, knowledge about, interest in, and limitations of capital access and financing opportunities available to support energy efficiency upgrades.

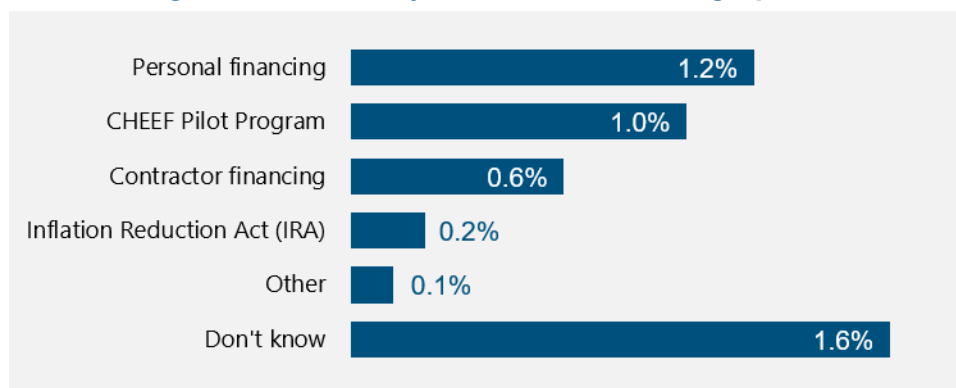
### **Awareness**

#### *Indicator 14: Awareness of Capital Access Opportunities for Investment in Energy Efficiency Products and Services*

The survey asked multifamily respondents about their awareness of loan options for energy efficiency projects (excluding credit cards). Four percent of multifamily respondents reported being aware of loan options, whereas 77% said they were not (n=656). The other 18% said they were not sure.

Respondents also indicated which specific loan options they were aware of. Options included personal loans, contractor-based financing, IRA financing, and CHEEF financing. As shown in Figure 32, more respondents had heard about personal financing (1.2%) and CHEEF financing (1.0%) than contractor-based financing (0.6%) and IRA financing (0.2%).

**Figure 32. Multifamily Awareness of Financing Options**



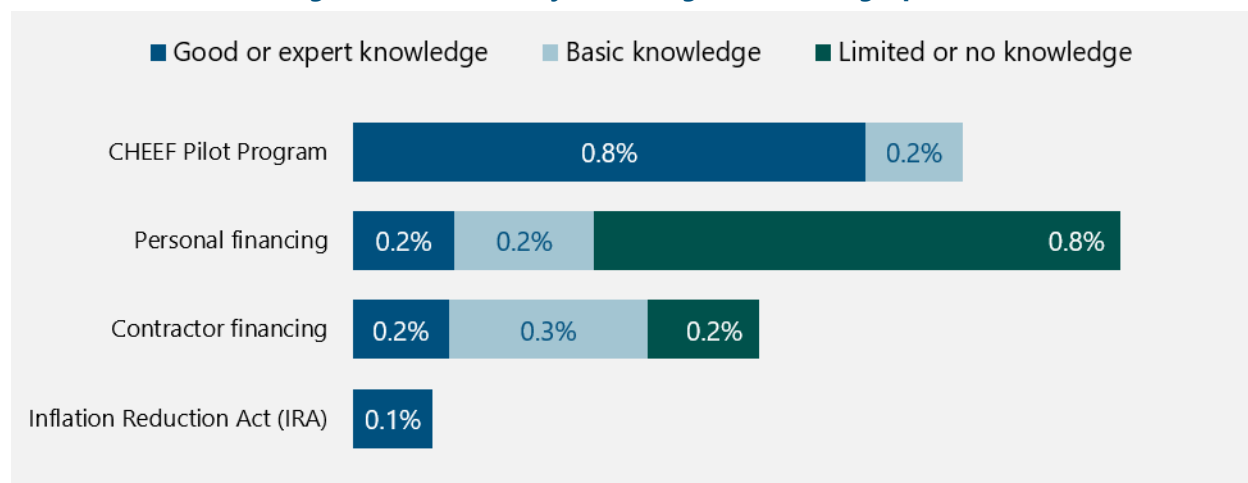
Source: Survey Question E3, "Which loan options have you heard about (do not include credit cards)? Select all that apply." (n=656)

## Knowledge

### *Indicator 15: Knowledge of Capital Access Opportunities for Investment in Energy Efficiency Products and Services*

As described in the previous section, the survey asked respondents about their awareness of energy efficiency loan options. To assess their knowledge about capital access opportunities, the survey asked respondents who were aware of each option to rate their understanding of it. As shown in Figure 33, respondents reported the highest levels of knowledge for personal financing (with 0.8% of all multifamily respondents reporting *expert or good knowledge*; n=656).

**Figure 33. Multifamily Knowledge of Financing Options**



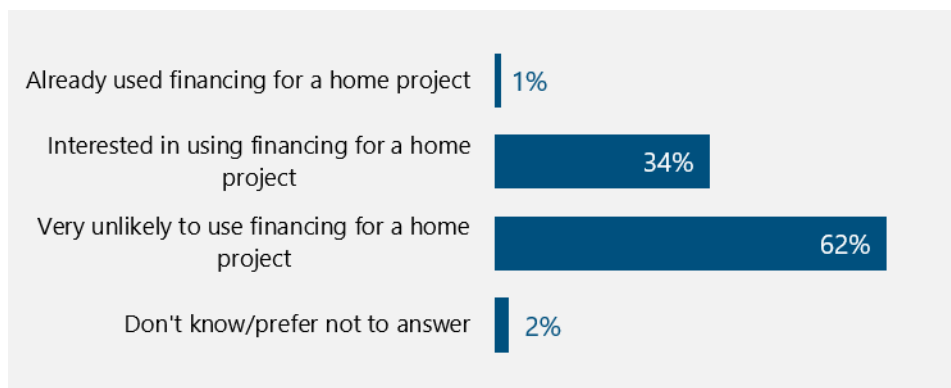
Source: Survey Question E4, "How would you describe your level of knowledge for the following [E3.1] loan option(s)?" (n=656)

## Attitudes

### *Indicator 16: Interest in Use of Capital Access Opportunities for Investment in Energy Efficiency Products and Services*

To assess attitudes about capital access opportunities for energy efficiency upgrades, the survey asked respondents about their interest in using a loan to fund a home energy project. As shown in Figure 34, only 1% of multifamily respondents reported that they had used financing options for energy efficiency upgrades, and 34% expressed interest in using loans in the future (n=656). Notably, 62% of multifamily respondents said they were very unlikely to use loans for energy efficiency improvements under any circumstances. The remaining respondents said they were unsure or preferred not to answer (2%).

**Figure 34. Multifamily Interest in Using a Loan to Fund Home Efficiency Projects**



Source: Survey Question E5, "Which of the following statements best describes your interest in using a loan to fund a home energy project or upgrade?" (n=656)

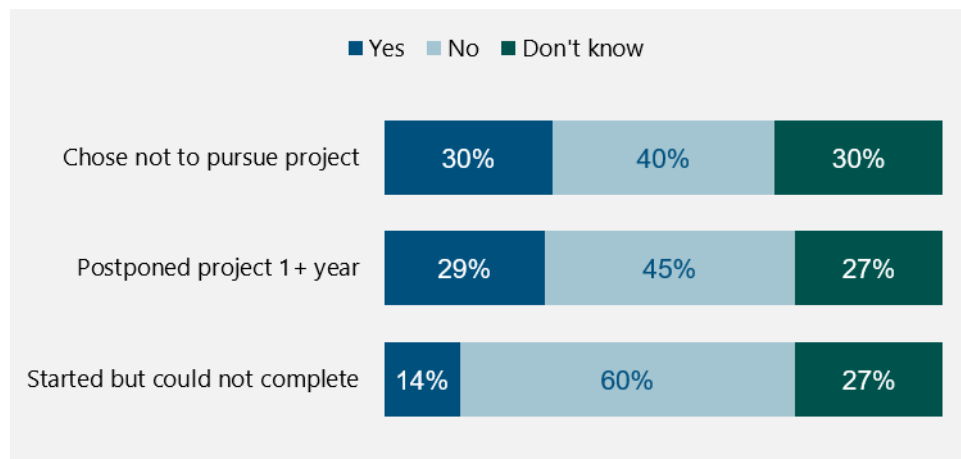
Note: The "interested in using financing for a home project" category is comprised of respondents who selected either "I am very likely to use a loan," "I might consider a loan if interest rates and terms are favorable," "I might apply for a loan, but I'm unsure if I'd qualify", and "I would likely use a loan only in an emergency for essential energy repairs."

## Behavior

### *Indicator 17: Limitations in Use of Capital Access Opportunities for Investment in Energy Efficiency Products and Services (Indicator 17)*

To assess limitations in accessing or using financing for energy efficiency improvements, the survey asked respondents about affordability challenges they have faced when pursuing energy efficiency projects. Overall, 36% of multifamily respondents reported experiencing an affordability challenge that prevented them from pursuing or completing an efficiency project (n=656). Specifically, due to affordability challenges, 30% of respondents had chosen not to pursue a project, 29% had postponed a project, and 14% had started but could not complete a project (see Figure 35).

**Figure 35. Multifamily Affordability Barriers to Energy Efficiency Projects**



Source: Survey Question E1, "Please indicate if any of the following apply to you. (Response options: Yes, No, Don't know)" (n=656; Indicate "yes" to each that apply.)

## Notable Comparisons for Capital Access Opportunities

Below are notable comparisons across capital access opportunity awareness, knowledge, attitudes, and behaviors of multifamily occupants by equity status, homeownership, type of heating/cooling system, and energy efficiency knowledge level.

### *Equity Status (Equity Area vs. Non-Equity Area)*

Respondents living in equity areas and non-equity areas reported similar awareness, knowledge, attitudes, and behaviors about loan options for energy efficiency projects. Both groups reported affordability challenges preventing them from taking energy efficiency actions.

### *Homeownership Status (Homeowner vs Renter)*

Homeowners held more optimistic attitudes regarding loan opportunities for energy efficiency upgrades in comparison to their counterparts. Compared to multifamily renters (n=529), homeowners (n=123) were:

#### **Attitudes**

- More likely than renters to say they would consider a loan if rates and terms were favorable (15% vs. 6%;  $p < 0.05$ ).
- Less likely to express an interest in loans with hesitancy about their qualification (3% vs. 9%;  $p < 0.05$ ).

### *Energy Efficiency Knowledge Level (Expert/Good vs. Limited/No Knowledge)*

Respondents self-reported expert or good-level knowledge of saving energy and making energy-efficient purchases in general showed higher awareness of multiple financing options compared to those with limited knowledge of energy efficiency. Compared to respondents with limited or no knowledge (n=228), those with expert or good knowledge (n=111) were:

## **Awareness**

- More likely to have heard of loan options overall (11% vs. 2%;  $p < 0.05$ ).
- More aware of personal financing (4% vs. 0%), CHEEF financing (4% vs. 1%), and contractor-based financing (2% vs. 0%; all  $p < 0.05$ ).

## **Knowledge**

- More likely to report expert/good knowledge of personal financing (3% vs. 0%;  $p < 0.05$ ).

## 7. Future AKAB Surveys

The research presented here focuses on the first wave of the residential occupant survey, which establishes a statewide baseline in California for the 17 Market Support indicators. Ultimately, the 2025-2027 AKAB study effort will include a multifamily property manager and owner survey conducted in 2026 to provide additional insight into multifamily energy conditions and opportunities, and a second wave of the occupant survey conducted in 2027 to measure changes from the 2025 baseline.

## Appendix A. Detailed Methodology

The AKAB advice letter describes the residential occupant study as two separate surveys: one for single-family homes (residences with up to four units, including mobile homes) and another for multifamily homes (residences with five or more units). In practice, the research team leveraged a single, shared survey, routed respondents to housing-type-appropriate survey content and presented the results separately.

### A.1.1. Survey Design

Cadmus designed the survey instrument to ensure eligibility (using screening questions at the beginning of the survey), assess the 17 AKAB indicators, and identify respondent demographics. Multifamily households received the same questions as single-family households, but because most multifamily households cannot upgrade certain energy-using equipment or shell measures, these technologies were not included in the survey for multifamily occupants. To encourage survey completion, the team monitored initial response data for survey questions with the most drop-offs and amended them to reorder common answers to be listed first or add a common open-ended response in the “other” category to the response list for one question. For instance, the team added a common write-in response as a fixed response option in one question.

### A.1.2. Fielding Approaches and Data Sources

As IOU customer data was not available at the start of survey activities while data security approvals were in progress, Cadmus used two data sources: an initial purchased list of mailing addresses with partial email coverage, followed by supplemental customer emails provided by IOUs that eventually became available, which the team used to fill unmet targets. Due to study timing, fielding approaches differed by data source and are described below.

#### *Postcard Push-To-Web Fielding Approach*

The first fielding approach used postcards with push-to-web recruitment. The postcards provided customers with two ways to access the survey: a trackable QR code to scan and a password-protected URL to enter their internet browser. The team recontacted nonrespondents via email (for contacts with available email addresses) or a second postcard (for contacts without available email addresses). The team sent postcard invitations in December 2025 and the follow-up postcards and emails in February 2026.

To create the sample, the team purchased an address-based, randomly selected contact list built from the US Postal Service Computerized Delivery Sequence File (CDSF) from a reputable list vendor. The vendor amended emails to the list when available. The team assumed a response rate of 5% based on past experience with incentivized dual postcard and email outreach to residential utility customers. Therefore, at least 24,000 single-family occupants were required to obtain 1,200 single-family responses, and at least 14,000 multifamily occupants were required to obtain 700 multifamily responses. The first fielding approach thus used a sample of 38,000 mailing addresses, the minimum required to achieve the target response rate. Sixty-five percent of contacts had amended email addresses.

## Email-Only Fielding Approach

Because the first fielding approach did not yield the expected number of responses, the second fielding approach used email-only outreach using a sample from IOU residential customer data from PG&E and SCE. SDG&E also provided data but did not have any open response quotas at the time of receipt. The sample included 5,993 PG&E contacts and 10,306 SCE contacts. The team emailed invitations and reminders in March 2026.

### A.1.3. Survey Dispositions

In total across both fielding approaches, 1,965 customers completed the survey upon closure in March 2026, achieving a completion rate of 3.6%. **Error! Reference source not found.** summarizes the sampling strategy and disposition by fielding approach and IOU. The first fielding approach with postcard push-to-web recruitment achieved 1,604 completes from 38,000 contacts, yielding a 4.2% completion rate. The second fielding approach, email-only outreach, achieved 361 completes from 16,299 PG&E and SCE contacts, yielding a 2.2% completion rate.

**Table 4. Survey Disposition by Fielding Approach and IOU**

| Fielding Approach              | Total Sample  | Completes    | Completion Rate |
|--------------------------------|---------------|--------------|-----------------|
| <b>Postcard Push-To-Web</b>    | <b>38,000</b> | <b>1,604</b> | <b>4.2%</b>     |
| PG&E                           | 10,668        | 535          | 5.0%            |
| SCE                            | 10,790        | 444          | 4.1%            |
| SDG&E                          | 5,810         | 299          | 5.1%            |
| SoCalGas                       | 16,333        | 570          | 3.5%            |
| Non-IOU                        | 5,903         | 122          | 2.1%            |
| <b>Email Only</b>              | <b>16,299</b> | <b>361</b>   | <b>2.2%</b>     |
| PG&E                           | 5,993         | 55           | 0.9%            |
| SCE                            | 10,306        | 306          | 3.0%            |
| SoCalGas <sup>1</sup>          | 5,869         | 141          | 2.4%            |
| <b>Total (Both Approaches)</b> | <b>54,299</b> | <b>1,965</b> | <b>3.6%</b>     |
| PG&E                           | 16,661        | 590          | 3.5%            |
| SCE                            | 16,659        | 585          | 3.5%            |
| SDG&E                          | 5,810         | 299          | 5.1%            |
| SoCalGas                       | 22,202        | 711          | 3.2%            |
| Non-IOU                        | 5,903         | 122          | 2.1%            |

Note: The sum of the IOU values is greater than the grey total rows because SoCalGas territory (and thus respondents) overlapped with the other IOU and non-IOU territories.

<sup>1</sup>Although Cadmus did not receive IOU residential data from SoCalGas, PG&E, and SCE identified some customers in their residential data as SoCalGas customers, so they are included in the SoCalGas row of the Email Only Approach.

### A.1.4. Representativeness and Weighting

Cadmus calculated weights by dividing the strata's proportions in the population by their proportions in the response data. **Error! Reference source not found.** describes response representativeness and final weights by strata.

**Table 5. Single-Family and Multifamily Proportions and Weights**

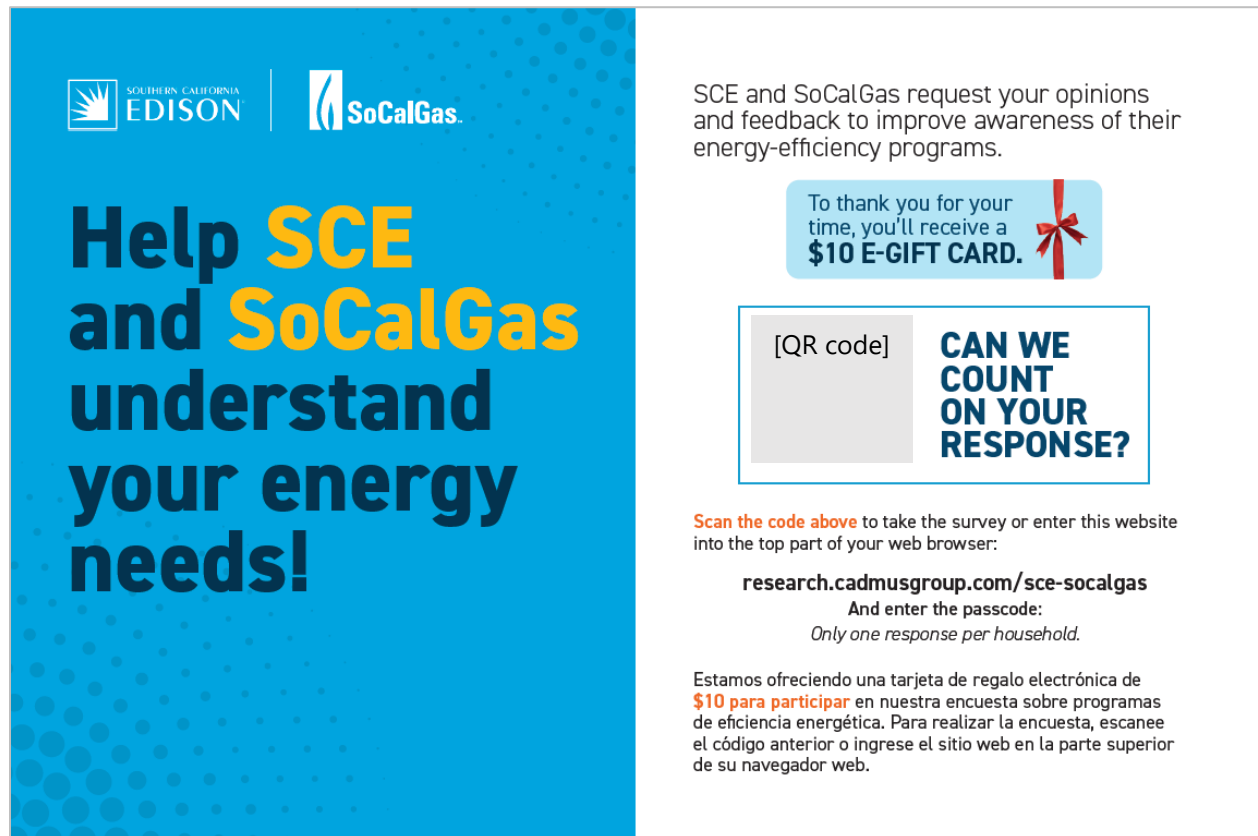
| IOU                            | Equity Designation | Population Proportion | Response Proportion | Weight |
|--------------------------------|--------------------|-----------------------|---------------------|--------|
| <b>Single-Family Occupants</b> |                    |                       |                     |        |
| PG&E                           | Non-Equity         | 20.3%                 | 17.7%               | 1.15   |
|                                | Equity             | 12.0%                 | 12.1%               | 0.99   |
| SCE                            | Non-Equity         | 19.3%                 | 24.1%               | 0.80   |
|                                | Equity             | 16.8%                 | 18.4%               | 0.91   |
| SDG&E                          | Non-Equity         | 5.8%                  | 5.8%                | 0.99   |
|                                | Equity             | 3.9%                  | 6.0%                | 0.64   |
| SoCalGas                       | Non-Equity         | 6.1%                  | 6.3%                | 0.97   |
|                                | Equity             | 6.4%                  | 4.2%                | 1.53   |
| Other / Non-IOU                | Non-Equity         | 6.3%                  | 3.0%                | 2.11   |
|                                | Equity             | 3.1%                  | 2.2%                | 1.39   |
| <b>Multifamily Occupants</b>   |                    |                       |                     |        |
| PG&E                           | Non-Equity         | 22.7%                 | 16.9%               | 1.34   |
|                                | Equity             | 13.3%                 | 13.4%               | 0.99   |
| SCE                            | Non-Equity         | 14.6%                 | 14.5%               | 1.01   |
|                                | Equity             | 12.6%                 | 14.9%               | 0.85   |
| SDG&E                          | Non-Equity         | 3.6%                  | 11.3%               | 0.32   |
|                                | Equity             | 2.4%                  | 10.7%               | 0.23   |
| SoCalGas                       | Non-Equity         | 9.5%                  | 5.5%                | 1.73   |
|                                | Equity             | 9.9%                  | 4.6%                | 2.17   |
| Other / Non-IOU                | Non-Equity         | 7.6%                  | 3.8%                | 2.00   |
|                                | Equity             | 3.7%                  | 4.4%                | 0.84   |

Note: The population and response proportions are rounded to the tenth place in this table, but they were not rounded in the analyses.

## Appendix B. Survey Outreach and Instrument

### B.1. Survey Postcard Front

Cadmus designed postcards with branding appropriate to the IOU or IOUs present by geographical region. For instance, addresses in the overlap of SCE and SoCalGas territories received the following postcard:



The postcard is divided into two main sections. The left section has a blue background with a pattern of small white dots. It features the logos for Southern California Edison (SCE) and SoCalGas at the top. Below the logos, the text reads: "Help SCE and SoCalGas understand your energy needs!". The right section has a white background. It contains the following text: "SCE and SoCalGas request your opinions and feedback to improve awareness of their energy-efficiency programs." Below this is a blue box with a red ribbon graphic that says: "To thank you for your time, you'll receive a \$10 E-GIFT CARD." Below that is a box containing a QR code placeholder labeled "[QR code]" and the text "CAN WE COUNT ON YOUR RESPONSE?". Below the QR code box, it says: "Scan the code above to take the survey or enter this website into the top part of your web browser: research.cadmusgroup.com/sce-socalgas And enter the passcode: Only one response per household." At the bottom, there is a paragraph in Spanish: "Estamos ofreciendo una tarjeta de regalo electrónica de \$10 para participar en nuestra encuesta sobre programas de eficiencia energética. Para realizar la encuesta, escanee el código anterior o ingrese el sitio web en la parte superior de su navegador web."

# CADMUS

## B.2. Survey Postcard Back



SCE and SoCalGas have partnered with The Cadmus Group on this research. If you have any questions or difficulties taking the survey, please contact [residentialsurvey@cadmusgroup.com](mailto:residentialsurvey@cadmusgroup.com) or (510) 768-8388.

If you would like to verify the legitimacy of this study, you may contact  
SCE at 1-800-655-4555  
or SoCalGas at 1-877-238-0092.

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SCE y SoCalGas se han asociado con The Cadmus Group para realizar esta investigación. Si tiene alguna pregunta o dificultad para realizar la encuesta, comuníquese con [residentialsurvey@cadmusgroup.com](mailto:residentialsurvey@cadmusgroup.com) o al (510) 768-8388.

Si desea verificar la legitimidad de este estudio, puede comunicarse con  
SCE al 1-800-655-4555  
o SoCalGas al 1-877-238-0092.

Message funded by ratepayers./Mensaje financiado por los clientes del servicio público

## B.3. Survey Email Invitation

To: [EMAIL]

From: [noreply@qualtrics-survey.com](mailto:noreply@qualtrics-survey.com)

From Name: \${e://Field/IOU\_wording\_from} Survey

Reply to Email: [residentialsurvey@cadmusgroup.com](mailto:residentialsurvey@cadmusgroup.com)

Subject: Have your voice count: Tell \${e://Field/IOU\_wording1} about energy efficiency for a \$10 gift card! [shifted to: You're invited! California Energy Study - \$10 thank-you]

Dear [FirstName],

As a valued [IOU\_wording2] customer, we would like to learn more about your thoughts on energy efficiency and any experience you might have with efficiency products or programs.

# CADMUS

We value your opinion! Your responses to this short survey will help [IOU\_wording1] design and deliver programs to serve you better. Your input is very important to us, will be kept confidential, and only used for research purposes. Your responses will directly influence [IOU\_wording2] programs for customers like you. To thank you for your time, **you will receive a \$10 e-gift card once you complete the survey**, which will take about 10 minutes. Only one response per household.

Estamos ofreciendo **una tarjeta de regalo electrónica de \$10** para realizar nuestra encuesta de 10 minutos sobre programas de eficiencia energética. Haga clic en el enlace para realizar la encuesta o pegue el URL en su navegador de Internet. Puede cambiar entre español e inglés en cualquier momento. Solo una respuesta por grupo familiar. *[In Spanish: We're offering a \$10 e-gift card to take our 10 minute survey about energy-efficiency programs. Click on the link below to take the survey or paste the url into your internet browser. You may switch between Spanish and English at any time. Only one response per household.]*

**Click the link below to take the survey:**

[\[auto-generated link\]](#)

Or you may copy and paste the URL below into your internet browser: [\[auto-generated url\]](#)

**Your energy provider has** asked The Cadmus Group to conduct this survey. **[IF IOU ≠ OTHER:** "If you have any questions about the validity of this survey, you may contact [IOU\_wording1] at [IOU\_PHONE]." **]** If you have any questions, please contact [residentialsurvey@cadmusgroup.com](mailto:residentialsurvey@cadmusgroup.com), or leave a message at (510) 768-8388.

**Tu proveedor de energía le ha** pedido al Cadmus Group que realice esta encuesta. **[IF IOU ≠ OTHER:** "Si tiene alguna pregunta sobre la validez de esta encuesta, puede comunicarse con [IOU\_wording1] al [IOU\_PHONE]." **]** Si tiene alguna pregunta, comuníquese con [residentialsurvey@cadmusgroup.com](mailto:residentialsurvey@cadmusgroup.com) o deje un mensaje al (510) 768-8388.

Thank you in advance for sharing your experiences and your time.

Sincerely,  
Athena Dodd  
[residentialsurvey@cadmusgroup.com](mailto:residentialsurvey@cadmusgroup.com)  
The Cadmus Group

## Reminder Invitation

To: [EMAIL]

From: [noreply@qualtrics-survey.com](mailto:noreply@qualtrics-survey.com)

Reply to Email: [residentialsurvey@cadmusgroup.com](mailto:residentialsurvey@cadmusgroup.com)

Subject: Don't forget to tell [IOU\_wording1] about energy efficiency! [shifted to: We still need you!]

California Energy Study - \$10 thank-you]

Dear [FirstName],

We're making progress, but we still need your input! As one of a select group of customers your input about energy efficiency and about any actions you might have taken to reduce energy use in your home is very important to us. Your responses will be kept confidential, and will directly influence [\\${e://Field/IOU\\_wording1}](#) programs for customers like you. To thank you for your time, **you will receive a \$10 e-gift card once you complete the survey**, which will take about 10 minutes. Only one response per household.

Estamos ofreciendo una tarjeta de regalo electrónica de \$10 para realizar nuestra encuesta de 10 minutos sobre programas de eficiencia energética. Haga clic en el enlace para realizar la encuesta o pegue el URL en su navegador de Internet. Puede cambiar entre español e inglés en cualquier momento. Solo una respuesta por grupo familiar. *[In Spanish: We're offering a \$10 e-gift card to take our [10 minute survey about energy-efficiency programs](#). Click on the link below to take the survey or paste the [url](#) into your internet browser. You may switch between Spanish and English at any time. Only one response per household.]*

**Click the link below to take the survey:**

[\[auto-generated link\]](#)

Or you may copy and paste the URL below into your internet browser: [\[auto-generated url\]](#)

**[IOU\_wording1]** has/have asked The Cadmus Group to conduct this survey. **[IF IOU ≠ OTHER:** "If you have any questions about the validity of this survey, you may contact **[IOU\_wording1]** at **[IOU\_PHONE]**." **]** If you have any questions, please contact [residentialsurvey@cadmusgroup.com](mailto:residentialsurvey@cadmusgroup.com), or leave a message at (510) 768-8388.

**[IOU\_wording1]** le ha/han pedido al Grupo Cadmus que realice esta encuesta. **[IF IOU ≠ OTHER:** "Si tiene alguna pregunta sobre la validez de esta encuesta, puede comunicarse con **[IOU\_wording1]** al **[IOU\_PHONE]**." **]** Si tiene alguna pregunta, comuníquese con [residentialsurvey@cadmusgroup.com](mailto:residentialsurvey@cadmusgroup.com) o deje un mensaje al (703) 247-6016.

Thank you in advance for sharing your experiences and your time.

Sincerely,  
Athena Dodd  
[residentialsurvey@cadmusgroup.com](mailto:residentialsurvey@cadmusgroup.com)  
The Cadmus Group

## *Final Reminder Invitation*

To: **[EMAIL]**  
From: [noreply@qualtrics-survey.com](mailto:noreply@qualtrics-survey.com)  
Reply to Email: [residentialsurvey@cadmusgroup.com](mailto:residentialsurvey@cadmusgroup.com)  
Subject: Last chance to tell **[IOU\_wording1]** about energy efficiency!

Dear **[FirstName]**,

We recently invited you to tell us your thoughts about energy efficiency and about any actions you might have taken to reduce energy use in your home. We need a **few more responses** to meet our response goal. Will you help us reach our goal by taking the survey? Your input is very important to us, will be kept confidential, and will directly influence **[IOU\_wording1]** programs for customers like you. To thank you for your time, **you will receive a \$10 e-gift card once you complete the survey**, which will take about 10 minutes.

Only one response per household.

Estamos ofreciendo una tarjeta de regalo electrónica de \$10 para realizar nuestra encuesta de 10 minutos sobre programas de eficiencia energética. Haga clic en el enlace para realizar la encuesta o pegue el URL en su navegador de Internet. Puede cambiar entre español e inglés en cualquier momento. Solo una respuesta por grupo familiar. *[In Spanish: We're offering \$10 to take our 10 minute survey about energy-efficiency programs. Click on the link below to take the survey or paste the url into your internet browser. You may switch between Spanish and English at any time. Only one response per household.]*

**Click the link below to take the survey:**

[\[auto-generated link\]](#)

Or you may copy and paste the URL below into your internet browser: [\[auto-generated url\]](#)

**[IOU\_wording1]** has/have asked The Cadmus Group to conduct this survey. **[IF IOU ≠ OTHER: "If you have any questions about the validity of this survey, you may contact [IOU\_wording1] at [IOU\_PHONE]."**] If you have any questions, please contact [residentialsurvey@cadmusgroup.com](mailto:residentialsurvey@cadmusgroup.com), or leave a message at (510) 768-8388.

**[IOU\_wording1]** le ha/han pedido al Grupo Cadmus que realice esta encuesta. **[IF IOU ≠ OTHER: "Si tiene alguna pregunta sobre la validez de esta encuesta, puede comunicarse con [IOU\_wording1] al [IOU\_PHONE]."**] Si tiene alguna pregunta, comuníquese con [residentialsurvey@cadmusgroup.com](mailto:residentialsurvey@cadmusgroup.com) o deje un mensaje al (703) 247-6016.

Thank you in advance for sharing your experiences and your time.

Sincerely,

Athena Dodd

[residentialsurvey@cadmusgroup.com](mailto:residentialsurvey@cadmusgroup.com)

The Cadmus Group

## B.4. Survey Instrument

### *Survey Introduction and Screener*

[ALL QUESTIONS SHOULD BE FORCE RESPONSE, UNLESS OTHERWISE SPECIFIED]

California Energy Efficiency Survey

Welcome! Thank you for agreeing to take our survey. The survey will only take about 10 minutes, and your responses will be used for research purposes only. Thank you for sharing your time and your thoughts. To navigate through the survey, click the “next” button below.

You may switch between English and Spanish at any time, using the dropdown at the top of the screen.

Find The Cadmus Group data privacy policy [here](#).

### *A. Screener*

A1. Do you have a role in your household related to decisions about utility bills or how energy is used in your home? [FORCE RESPONSE]

- 1. Yes
- 2. No [TERMINATE]
- 98. Don't know [TERMINATE]

A2. Are you at least 18 years old?

- 1. Yes
- 2. No [TERMINATE]

A3. Have you or anyone in your household ever been employed by or affiliated with [IOU\_wording2] or any other California energy utility? [FORCE RESPONSE]

- 1. Yes [TERMINATE]
- 2. No
- 98. Don't know

A4. Did you or anyone else in your household already complete this statewide energy survey, either by responding to the postcard or email invitation? [Repeat](#) responses may affect your incentive delivery. [FORCE RESPONSE]

- 1. Yes [TERMINATE]
- 2. No
- 98. Don't know

A5. Has your household signed up to get electricity through any of the following Community Choice Aggregators (CCAs)? **[ALPHABETIZE IN SURVEY PROGRAMMING]**

1. **[Display if IOU\_elec is not "OTHER"]** No, I get my energy directly through **[IOU\_elec]**  
**[IF IOU CONTAINS PGE OR SCE OR OTHER]**

2. Central Coast Community Energy (CCCE)  
3. Clean Power Alliance (CPA)

**[IF IOU CONTAINS PGE]**

4. King City Community Power (KCCP)  
**[IF IOU CONTAINS PGE OR OTHER]**

5. Ava Community Energy (Ava)

6. CleanPowerSF (CPSF)

7. MCE

8. Pioneer Community Energy (Pioneer)

9. Redwood Coast Energy Authority (RCEA)

10. Peninsula Clean Energy

11. San Jose Clean Energy (SJCE)

12. Silicon Valley Clean Energy (SVCE)

13. Sonoma Clean Power (SCP)

14. Valley Clean Energy (VCE)

**[IF IOU CONTAINS SCE]**

15. Apple Valley Choice Energy (AVCE)

16. Energy for Palmdale's Independent Choice (EPIC)

17. Lancaster Energy (LE)

18. San Jacinto Power (SJP)

**[IF IOU CONTAINS SCE OR OTHER]**

19. Desert Community Energy (DCE)

20. Orange County Power Authority (OCPA)

21. Pico Rivera Innovative Municipal Energy (PRIME)

22. Pomona Choice Energy (Pomona Choice)

23. Rancho Mirage Energy Authority (RMEA)

24. Santa Barbara Clean Energy (SBCE)

**[IF IOU CONTAINS SCE OR SDGE OR OTHER]**

25. San Diego Community Power (SDCP)

**[IF IOU CONTAINS SDGE OR OTHER]**

26. Clean Energy Alliance (CEA)

98. Don't know

A6. Which of the following provides your home with **natural gas**?

1. **[Display if IOU\_elec is not "OTHER"]** **[IOU\_elec]**

2. SoCalGas

3. Other (please specify:) **[TEXT BOX]**

4. Does not apply (do not have natural gas service)

98. Don't know

A7. Which of the following best describes your home?

1. Single-family detached home
2. Attached home with less than 5 units (e.g., townhouse, row house, apartment, or condominium)
3. Apartment or condominium with 5 or more units
4. Mobile home
5. Manufactured home
6. Other (please specify:) [TEXT BOX]

**[SCREEN OUT TERMINATION MESSAGE:]** Thank you for your interest in this survey. At this time, you do not meet the criteria, but we truly appreciate your participation.

**[CHECK IOU-EQUITY-HOUSE TYPE AGAINST QUOTAS; OVER QUOTA TERMINATION MESSAGE:]** Thank you for your interest in this survey. At this time, we've received the maximum number of responses allowed from your group. We truly appreciate your time and input.

A8. Do you rent or own your home?

1. Own
2. Rent
3. Live in a home I don't own without paying rent
4. Other (please specify:) [TEXT BOX]

**[EDIT EMBEDDED DATA: HOUSE\_TYPE]**

IF A7=1, 2, 4, OR 5: HOUSE\_TYPE=SF

IF A7=3: HOUSE\_TYPE=MF

IF A7=6: HOUSE\_TYPE=UNKNOWN

**[CREATE EMBEDDED DATA: OWNERSHIP]**

IF A8=1: OWNERSHIP=OWNER

IF A8=2 or 3: OWNERSHIP=RENTER

IF A8=4: OWNERSHIP=UNKNOWN

## *B. Program Awareness and Engagement*

For the following questions we will refer to your energy efficiency program provider(s) as your “**provider**” even if there are multiple utilities, service providers, Community Choice Aggregators (CCAs), or Regional Energy Networks (RENs) involved with offering energy efficiency services. For our first set of questions, we would like to know about your experience with energy efficiency products and services from your provider.

B1. (1) Before today, had you heard anything about energy efficiency rebates or programs that help reduce the cost of energy-efficient products or help you use energy more efficiently?

1. Yes
2. No
98. Don't know

B2. (1) Which rebates or energy efficiency programs have you **heard about** in the past 12 months?

Select all that apply. *Note that we are interested in specific rebates or programs that help **save energy** – not manufacturer rebates.* [MULTISELECT; RANDOMIZE 1-8, non bolded text should display as "hover text" only]

1. **Appliance rebates:** Rebates for appliances, such as refrigerators, clothes washers, dishwashers, or other appliances *(these are rebates that help to make energy-efficient products more affordable when compared to standard efficiency products)*
2. **Heating and cooling rebates:** Rebates for heating and cooling equipment, such as heat pumps, air conditioners, or smart thermostats
3. **Home energy assessments:** In-person or virtual energy assessments to review your home's energy use and identify ways you can save energy
4. **Energy efficiency marketplace:** Online marketplace where utility customers can purchase discounted energy-saving products
5. **Heat pump water heater rebates:** Rebates for heat pump water heaters
6. **Home weatherization rebates:** Rebates for insulation, duct sealing, and air sealing to help make your home's temperature more consistent and comfortable
7. **A whole home energy upgrade:** Programs that provide comprehensive services, including an energy assessment and other improvements such as weatherization, insulation, and equipment.
8. Other (please describe:) [TEXT BOX, FORCE RESPONSE]
9. None of these [EXCLUSIVE]

B3. (4) Have you participated in any programs from your provider in the past two years that helped you save money on energy efficiency equipment or upgrades?

1. Yes
2. No
98. Don't know

B4. (4) **[IF B3=1]** Which rebate or energy efficiency programs have you **participated** in over the past 2 years? Select all that apply. **[MULTISELECT; RANDOMIZE 1-7]**

1. **Appliance rebates:** Rebates for appliances, such as refrigerators, clothes washers, dishwashers, or other appliances (*these are rebates that help to make energy-efficient products more affordable when compared to standard efficiency products*)
2. **Heating and cooling rebates:** Rebates for heating and cooling equipment, such as heat pumps, air conditioners, or smart thermostats
3. **Home energy assessments:** In-person or virtual energy assessments to review your home's energy use and identify ways you can save energy
4. **Energy efficiency marketplace:** Online marketplace where utility customers can purchase discounted energy-saving products
5. **Heat pump water heater rebates:** Rebates for heat pump water heaters
6. **Home weatherization rebates:** Rebates for insulation, duct sealing, and air sealing to help make your home's temperature more consistent and comfortable
7. **A whole home energy upgrade:** Programs that provide comprehensive services, including an energy assessment and other improvements such as weatherization, insulation, and equipment.
8. Other (please describe:) **[TEXT BOX, FORCE RESPONSE]**
9. None of these **[EXCLUSIVE]**

## C. Knowledge, Barriers and Attitudes

Next, we'd like to know a bit more about your thoughts around saving energy in your home.

C1. (3) When considering all household expenses, how important is it for you to lower your monthly energy bill?

|                             |     |     |     |                       |                 |
|-----------------------------|-----|-----|-----|-----------------------|-----------------|
| Not at all important<br>(1) | (2) | (3) | (4) | Very important<br>(5) | Don't know (98) |
|-----------------------------|-----|-----|-----|-----------------------|-----------------|

C2. (3) When considering options to upgrade or replace energy-using equipment in your home, how likely are you to select a more affordable option that may cost less up front but would cost more on energy bills in the long term?

|                       |     |     |     |                                              |                 |
|-----------------------|-----|-----|-----|----------------------------------------------|-----------------|
| Not at all likely (1) | (2) | (3) | (4) | Very<br>likely/already<br>have done this (5) | Don't know (98) |
|-----------------------|-----|-----|-----|----------------------------------------------|-----------------|

- C3. (2) How would you describe your level of knowledge when it comes to saving energy at home and making future energy-efficient purchases (e.g., appliances, windows)?
- No knowledge** — I don't know what products or upgrades would help my home save energy
  - Limited knowledge** — I've heard of some energy-saving products but don't understand how they work or what to choose
  - Basic knowledge** — I understand a few common options like efficient appliances or windows
  - Good knowledge** — I understand several home energy options and how they could benefit my home
  - Expert knowledge** — I understand technical details and could advise others on home energy decisions
- C4. (2) How would you rate your knowledge with the following types of equipment: **[DROPDOWN FOR EACH OPTION: No knowledge, Limited knowledge, Basic knowledge, Good knowledge, Expert knowledge]**
- Air Source Heat Pump
  - Mini-split Air Cooling
  - Heat Pump Water Heater
  - Heat Pump Clothes Dryers
  - Induction Cooktops
- C5. What challenges, if any, do you face in saving energy in your home? Select all that apply. **[MULTISELECT; RANDOMIZE 2-10]**
- I don't have any challenges with saving energy in my home **[EXCLUSIVE]**
  - I don't own my home
  - I don't know where to begin
  - My home is already pretty energy efficient
  - It's too expensive to make the required upgrades
  - I don't have time/am too busy
  - I'm not confident it will save energy
  - I'm not confident it will save money on my energy bills
  - I've struggled with finding the right contractors to complete the work
  - I live with other family members that are less interested in saving energy
  - I have specific high-energy needs (such as a business, hobby, or medical) for which there are not efficient options
  - Other (please specify:) **[TEXT BOX]**

## D. Equipment Installation and Interest

The next questions are about your interest in energy efficiency upgrades in your home.

- D1. How would you rate your home's current level of energy efficiency?

|                          |     |     |     |                    |                 |
|--------------------------|-----|-----|-----|--------------------|-----------------|
| Not at all efficient (1) | (2) | (3) | (4) | Very efficient (5) | Don't know (98) |
|--------------------------|-----|-----|-----|--------------------|-----------------|

D2. (3, 5) For the following actions and improvements, please select the option that best describes your plans over the next two years.

|                                                                                                                                                   | Already completed or efficient (1) | Plan to complete in the next 2 years (2) | Need, but no current plans (3) | Not needed (4)        | Not sure/Does not apply/(98) | Don't know what this is (99) |
|---------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|------------------------------------------|--------------------------------|-----------------------|------------------------------|------------------------------|
| (1) Have an <b>energy assessment</b> or inspection of my home                                                                                     | <input type="radio"/>              | <input type="radio"/>                    | <input type="radio"/>          | <input type="radio"/> | <input type="radio"/>        | <input type="radio"/>        |
| <b>[IF OWNERSHIP ≠ RENTER]</b><br>(2) <b>Add insulation</b> (in ceiling/attic, walls, or floor)                                                   | <input type="radio"/>              | <input type="radio"/>                    | <input type="radio"/>          | <input type="radio"/> | <input type="radio"/>        | <input type="radio"/>        |
| (3) <b>Insulate existing windows</b> with temporary plastic sheeting or other material                                                            | <input type="radio"/>              | <input type="radio"/>                    | <input type="radio"/>          | <input type="radio"/> | <input type="radio"/>        | <input type="radio"/>        |
| <b>[IF OWNERSHIP ≠ RENTER]</b><br>(4) Install an <b>energy-efficient heating or cooling system</b> (furnace or air conditioner)                   | <input type="radio"/>              | <input type="radio"/>                    | <input type="radio"/>          | <input type="radio"/> | <input type="radio"/>        | <input type="radio"/>        |
| (5) <b>Tune up</b> a heating or cooling system                                                                                                    | <input type="radio"/>              | <input type="radio"/>                    | <input type="radio"/>          | <input type="radio"/> | <input type="radio"/>        | <input type="radio"/>        |
| (6) <b>Seal ducts</b> , add caulk, or install weather-stripping                                                                                   | <input type="radio"/>              | <input type="radio"/>                    | <input type="radio"/>          | <input type="radio"/> | <input type="radio"/>        | <input type="radio"/>        |
| <b>[IF OWNERSHIP ≠ RENTER]</b><br>(7) Install an <b>energy-efficient water heater</b>                                                             | <input type="radio"/>              | <input type="radio"/>                    | <input type="radio"/>          | <input type="radio"/> | <input type="radio"/>        | <input type="radio"/>        |
| (8) Install new <b>energy-efficient appliances</b> (e.g., refrigerator, dishwasher, clothes washer/dryer, cooktop/range)                          | <input type="radio"/>              | <input type="radio"/>                    | <input type="radio"/>          | <input type="radio"/> | <input type="radio"/>        | <input type="radio"/>        |
| <b>[IF HOUSE_TYPE ≠ MF &amp; OWNERSHIP ≠ RENTER]</b><br>(9) Install higher-efficiency <b>door(s)</b> or <b>double-pane windows</b>                | <input type="radio"/>              | <input type="radio"/>                    | <input type="radio"/>          | <input type="radio"/> | <input type="radio"/>        | <input type="radio"/>        |
| (10) Install <b>water-saving devices</b> (e.g., faucet heads/aerators, showerheads)                                                               | <input type="radio"/>              | <input type="radio"/>                    | <input type="radio"/>          | <input type="radio"/> | <input type="radio"/>        | <input type="radio"/>        |
| (11) Install a <b>smart or Wi-Fi thermostat</b>                                                                                                   | <input type="radio"/>              | <input type="radio"/>                    | <input type="radio"/>          | <input type="radio"/> | <input type="radio"/>        | <input type="radio"/>        |
| (12) Install <b>smart home devices</b> (or smart speaker, e.g., Alexa, Google Home, Apple Home/Siri) to control lights or heating/cooling systems | <input type="radio"/>              | <input type="radio"/>                    | <input type="radio"/>          | <input type="radio"/> | <input type="radio"/>        | <input type="radio"/>        |
| (13) <b>Regularly reduce energy use</b> when electricity costs are high (between 4:00 PM and 9:00 PM)                                             | <input type="radio"/>              | <input type="radio"/>                    | <input type="radio"/>          | <input type="radio"/> | <input type="radio"/>        | <input type="radio"/>        |

- D3. (3) **[IF D2.4 = 2 OR 3]** Which type of energy-efficient heating or cooling system are you interested in installing? Select all that apply. **[MULTISELECT; RANDOMIZE 1-8]**
1. Electric furnace
  2. Gas furnace
  3. Central air conditioning
  4. Window air conditioning
  5. Heat pump--Electric air source (central for heating and cooling)
  6. Heat pump--Ground source / geothermal
  7. Heat pump--Electric water source
  8. Heat pump--Mini-split
  9. Other (please specify:) **[TEXT BOX]**
  98. Don't know **[EXCLUSIVE]**
- D4. (3) **[IF D2.7 = 2 OR 3]** Which type of energy-efficient water heating system are you interested in installing? Select all that apply. **[MULTISELECT; RANDOMIZE 1-4]**
1. Conventional storage tank water heater
  2. Tankless water heater
  3. Heat pump water heater
  4. Other (please specify:) **[TEXT BOX]**
  98. Don't know **[EXCLUSIVE]**
- D5. (3) **[IF D2.8 = 2 OR 3]** Which type of energy-efficient appliances are you interested in installing? Select all that apply. **[MULTISELECT; RANDOMIZE 1-6]**
1. Induction cooktop
  2. Refrigerator
  3. Dishwasher
  4. Clothes washer
  5. Clothes dryer
  6. Dehumidifier
  7. Other (please specify:) **[TEXT BOX]**
  98. Don't know **[EXCLUSIVE]**

## E. Financing

- E1. (17) Please indicate if any of the following apply to you. *Note: Home energy-efficiency projects refer to weatherization, insulation, or upgrades to energy-consuming equipment.* **(Response options: Yes, No, Don't know)**
1. Chose not to pursue a home energy-efficiency project because I could not afford it
  2. Postponed a home energy-efficiency project for a year or more because I could not afford it
  3. Started, but was not able to complete a home energy-efficiency project because I could not afford it

E2. (14) Are you aware of any loan options (other than credit cards) that are focused on helping you pay for energy efficiency projects for your home over time?

1. Yes
2. No
98. Don't know

E3. (14) **[IF E2=1]** Which energy efficiency loan options have you heard about (do not include credit cards)? Select all that apply. **[MULTISELECT; RANDOMIZE 1-5, non-bold text is hover text for items 1 through 4]**

1. **California Hub for Energy Efficiency Financing (CHEEF) Pilot Program** (State funded smaller loans for energy efficiency projects with fairly low interest rates)
2. **Personal financing** (Commercially/Bank funded loans such as a home equity loan, green loan, or other loan products)
3. **Inflation Reduction Act (IRA) financing** (Federally funded reduced interest loans for larger projects, paired with IRA credits)
4. **Financing offered by a contractor** (Such as a payment installment plan with interest)
5. Other (please specify:) **[TEXT BOX; FORCE RESPONSE]**
98. Don't know **[EXCLUSIVE]**

E4. (15) **[IF E3 = ANY 1-5 SELECTION]** How would you describe your level of knowledge for the following **[E3.1]** loan option(s)? **[Repeat for E3.2; E3.3; E3.4; and E3.5 if selected, use hover text in E3]**

1. No knowledge — I don't know anything about it
2. Limited knowledge — I've heard about it but do not understand much about it
3. Basic knowledge — I understand basic information about it
4. Good knowledge — I have good understanding and know some details about it
5. Expert knowledge — I have extensive knowledge about it and could advise others on it

E5. (16) Which of the following statements best describes your interest in using a loan to fund a home energy project or upgrade? **[Single response]**

1. I am **very unlikely** to use a loan for a home project under any circumstances.
2. I have **already used** or am currently using financing for a home project. Please describe the project **[TEXT BOX]**
3. I am **very likely** to use a loan for a future home project.
4. I **might consider** a loan if interest rates and terms are favorable.
5. I would likely use a loan **only in an emergency** for essential energy repairs.
6. I might apply for a loan, but I'm **unsure if I'd qualify**.

E6. Please select the **best way** for you to find out about energy efficiency programs and services.

[RANDOMIZE 1-12]

1. Community organization (Which one?) [TEXT BOX]
2. Provider email or newsletter
3. Provider website
4. Website other than social media (Which one?) [TEXT BOX]
5. Mail (postcard, flyer, or letter)
6. Property managers/landlords
7. Text messages
8. Traditional media (Television, radio, newspaper/magazine)
9. Retailer (Which one?) [TEXT BOX]
10. Social media (e.g., Instagram, Facebook)
11. Provider or utility bill (mail or online; inserts or "onserts") [Insert hover text: promotion on the outside of an envelope]
12. Contractor
98. Don't know

E7. What kinds of support (such as information, tools, or services) would give you confidence about where to start with making energy-efficient improvements to your home? [OPEN END; DO NOT REQUIRE; FOR IOU ANALYSIS]

## F. Demographics

Finally, we have a few questions about your home and household. These will be used for statistical purposes only.

F1. What type(s) of cooling system, if any, does your residence have? Select all that apply.

[MULTIPLE RESPONSE ALLOWED]

1. No cooling system [EXCLUSIVE]
2. Electric central air (whole house air conditioning)
3. Wall / window air conditioning
4. Heat pump--Electric air source
5. Heat pump--Electric water source
6. Heat pump--Mini-split
7. Heat pump--Ground source / geothermal
8. Portable / floor-based air conditioning unit
9. Evaporative or "swamp" cooler
10. Other (please specify:) [TEXT BOX]
98. Don't know [EXCLUSIVE]

F2. What is the main heating system used in your residence?

1. No heating system [EXCLUSIVE]
2. Natural gas furnace
3. Natural gas boiler (heated water or steam)
4. Natural gas wall / room heater
5. Electric furnace
6. Heat pump--Electric air source
7. Heat pump--Central heat electric water source
8. Heat pump--Ground source / geothermal
9. Heat pump--Mini-split
10. Electric baseboards or space heating
11. Fuel oil furnace (heated water or steam)
12. Bottled gas (propane) furnace
13. Bottled gas (propane) wall / room heater
14. Wood furnace / stove / fireplace
15. Other (please specify:) [TEXT BOX]
98. Don't know [EXCLUSIVE]

F3. Which of the following is the primary fuel source for your **water heater**?

1. Electricity
2. Natural Gas
3. Oil
4. Other (please specify:) [TEXT ENTRY]
5. Prefer not to answer
98. Don't know

F4. Which of the following energy items are used at this home? Select all that apply. [MULTIPLE RESPONSE ALLOWED]

1. Solar panels for home electricity
2. Battery to store electricity from solar panels
3. Backup generator for the home
4. Electric Vehicle (EV)
5. Electric charger (What type? Ex. Level 1, Level 2, etc.): [TEXT BOX]
6. None of these [EXCLUSIVE]

F5. [IF OWNERSHIP=RENTER] Do you plan to buy a home in the next two years?

1. Yes
2. No
98. Don't know
99. Prefer not to answer

F6. Including yourself, how many people lived in your home full-time during the past 12 months?

Full-time is considered more than 9 months in the past year.

1. 1
2. 2
3. 3
4. 4
5. 5
6. 6
7. 7
8. 8
9. 9
10. 10
11. 11
12. 12
13. 13 or more
14. Prefer not to answer

**[CREATE EMBEDDED DATA: CUTOFF; based on 200% FPL]**

IF F4=1: CUTOFF=\$29,160  
IF F4=2: CUTOFF=\$39,440  
IF F5=3: CUTOFF=\$49,720  
IF F5=4: CUTOFF=\$60,000  
IF F5=5: CUTOFF=\$70,280  
IF F5=6: CUTOFF=\$80,560  
IF F5=7: CUTOFF=\$90,840  
IF F5=8: CUTOFF=\$101,120  
IF F5=9: CUTOFF=\$111,400  
IF F5=10: CUTOFF=\$121,680  
IF F5=11: CUTOFF=\$131,960  
IF F5=12: CUTOFF=\$142,240  
IF F5=13: CUTOFF=\$152,520

F7. What is the highest level of education that you have completed?

1. Less than high school diploma or equivalent
2. High school diploma or equivalent
3. Technical or business school certificate/2-year college degree/some college
4. 4-year college degree/bachelor's degree
5. Graduate or professional degree/master's degree or PhD
6. Prefer not to answer

F8. What year were you born?

1. **[OPEN END]**
2. Prefer not to answer

F9. In 2024, what was your annual household income before taxes? [CORRESPONDS TO 200% FPL]

1. Under \$**[CUTOFF]**
2. Over \$**[CUTOFF]**
3. Prefer not to answer

F10. What is the approximate square footage of your home?

1. Less than 1,000 square feet
  2. 1,000 to 1,500 square feet
  3. 1,501 to 2,000 square feet
  4. 2,001 to 3,000 square feet
  5. More than 3,000 square feet
98. Don't know
99. Prefer not to answer

F11. What is the primary language spoken in your home?

1. English
2. Spanish
3. Chinese
4. Japanese
5. Vietnamese
6. Korean
7. Tagalog
8. Hindi
9. Armenian
10. Persian
11. Arabic
12. Portuguese
13. Russian
14. Other (please specify:) **[TEXT BOX]**

F12. Those are all the questions we have. To receive your e-gift card, please provide your contact information. This information will only be used to send you your gift card, and your utility will **not** update the contact information they have on file for you with your responses below. You will receive an email to select your gift card directly from Tangocard.com with the subject line "Thanks for taking our survey!" Please allow up to 1 week for delivery.

*Note: if any of the fields below are blank, we will not be able to send you your gift card.*

1. First Name: **[FORM FIELD]**
2. Last Name: **[FORM FIELD]**
3. Email: **[FORM FIELD; VALIDATE FOR EMAIL FORMAT]**

**END OF SURVEY MESSAGE:** Thank you for taking the time to complete this survey! Your responses are very important for making energy efficiency more affordable in the state of California.