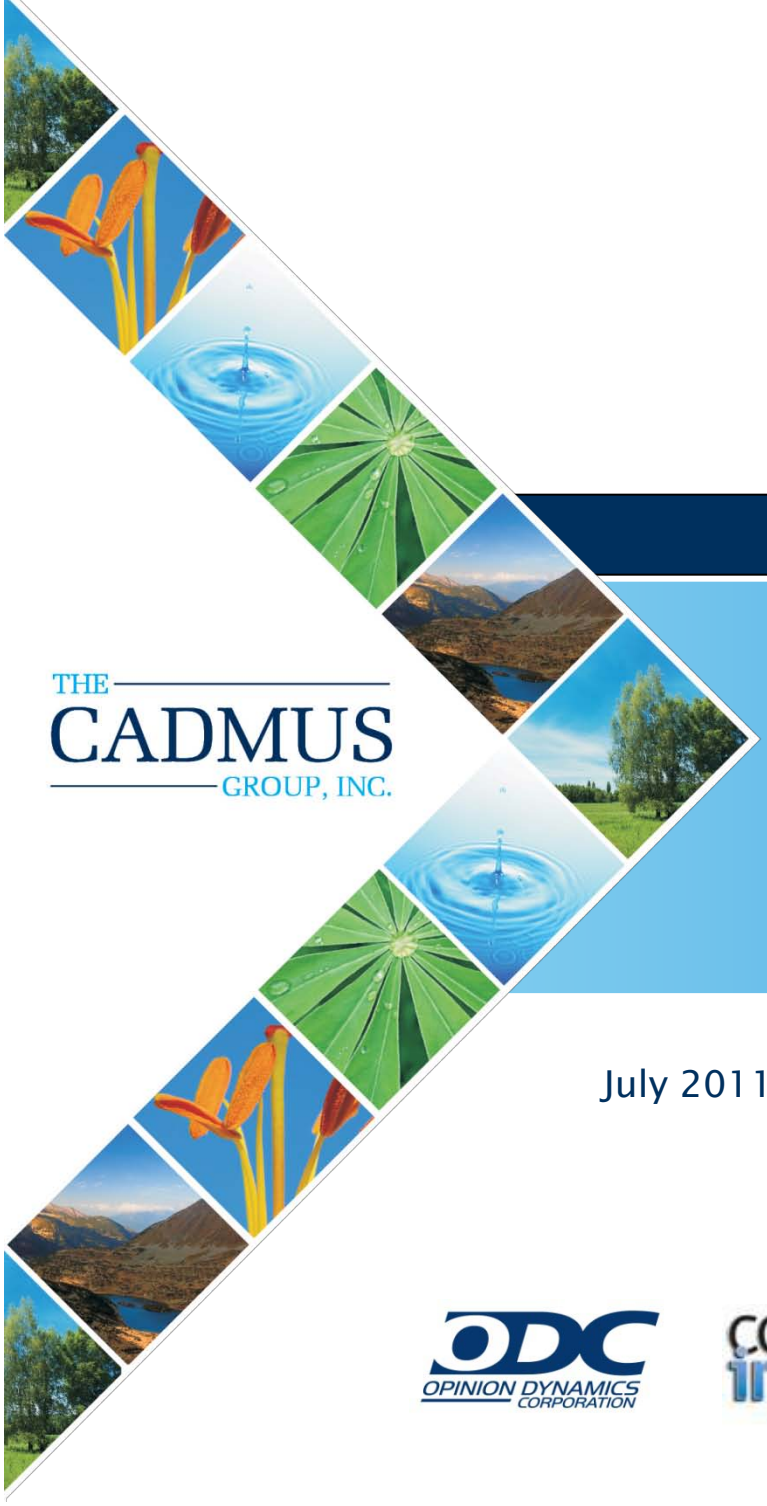

THE CADMUS GROUP, INC.

Michigan Baseline Study 2011: Residential Baseline Report

July 2011

ODC OPINION DYNAMICS CORPORATION

CONSUMER insights inc.

MDI All the right connections.

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Introduction

This report presents research results conducted in the state of Michigan by The Cadmus Group, Inc. (Cadmus) and subcontractors Opinion Dynamics Corporation, Mad Dash, and Consumer Insights (together referred to as the Project Team) as part of a residential baseline study. The baseline energy study's objective was to assess a "market baseline" of existing residential building and equipment stock in Michigan, with respect to current adoption of energy-efficient technologies.

The investigations utilized telephone and on-site surveys of residential buildings within Michigan, with the team conducting over 2,000 residential household telephone surveys as well as on-site surveys of 1,069 households. During the site visits, we collected a range of information, from installed quantities of equipment and their efficiency levels to building shell characteristics. The telephone surveys captured residents' baseline attitudes, perceptions, behaviors, and barriers to energy efficiency in general.

This state of Michigan baseline report is a compilation of three regional efforts that spanned 18 months and began in late 2009. The three studies and their sponsors encompass:

- **Detroit Edison (DTE) Energy Baseline Study:** This study, beginning in November 2009, included telephone surveys and on-site visits for residential and commercial electric and gas customers. Opinion Dynamics led this study with subcontractors Cadmus, Consumer Insights, and Patrick Engineering.
- **Consumers Energy (CE) Baseline Study:** This study began in March 2010 and included telephone surveys and on-site visits for Consumer Energy residential electric and gas residents. Cadmus led this study with subcontractors Opinion Dynamics and Consumer Insights.
- **Michigan Public Service Commission Residential Baseline Study:** This study, beginning in September 2010, included telephone surveys and on-site visits of residential and commercial building stock in the Upper Peninsula as well as in regions not covered by CE or DTE Energy. Cadmus led this study with subcontractors Opinion Dynamics Corporation and Mad Dash.

Using data collected from each of the above studies, this report weighted data to represent the state of Michigan's residential building stock and energy-related attitudes. This report defines various characteristics, such as geographic region and customer type; its Methodology and Finding section presents specific details.

Although we conducted each study for a different sponsor and at different times, the telephone and on-site collection instruments remained relatively similar. We only made minor changes from one study to the next, to make the data collection effort more efficient and standardized.

Methodology

The Michigan residential sector baseline study relied on two data collection activities: 1) on-site visits; and 2) a telephone survey. The following sections outline the methodology used for both study components.

In-Home Visits

The Project Team performed in-home visits to collect detailed inventories of residential home and equipment characteristics for customers residing in the Upper Peninsula, as well as in rural regions not in the CE or DTE Energy service territories. This study captured a multitude of energy-related data, including the penetration of electric- and gas-consuming equipment and appliances, efficiency levels for equipment and appliances, building shell characteristics, compact fluorescent lamp (CFL) saturation, and other relevant information.

Using telephone surveys, Opinion Dynamics recruited participants. Between December 2010 and April 2011, Mad Dash Inc. scheduled and conducted 266 site visits in Michigan's Upper Peninsula, and other regions not covered by either the Consumers Energy or DTE baseline studies. All participating households received a $25 Visa debit card as an incentive to take part in the study.

Sample Design

The Project Team conducted three types of on-site assessment surveys with different Michigan residential populations: (1) residents in the DTE Energy service territory, (2) residents in the CE service territory, and (3) residents in the Upper Peninsula and regions where DTE Energy and CE service territories do not provide electric service. To achieve specific requirements set forth by each sponsor, we varied the sampling design from study to study, but the studies were still generally consistent.

Stratified across customer, building type, and weather zone, we set site visit quotas to achieve 90 percent confidence with 10 percent precision. Our weather zone stratification goal was to achieve 10 percent precision for the Detroit/Saginaw and Lansing/Muskegon areas. We strove to achieve 20 percent or better precision for the less populated weather zones, such as Alpena and Traverse City. Overall, the sample included 1,069 sites across the state of Michigan, with 172 sites in the Upper Peninsula and 897 sites in the Lower Peninsula. Figure 1 and Figure 2 show the distribution of sites across the state, with general locations and number of site visits highlighted by the red circles.

Figure 1. Upper Peninsula Sites

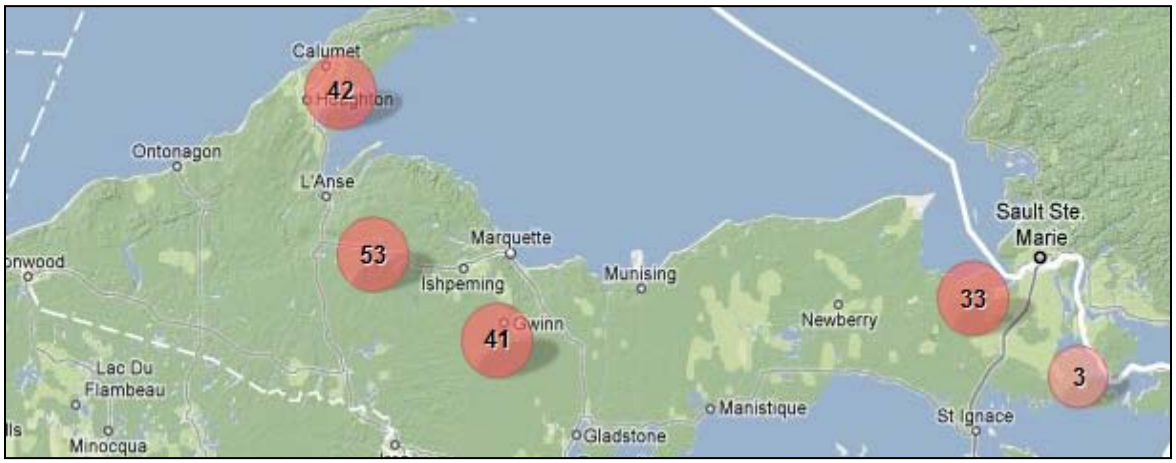
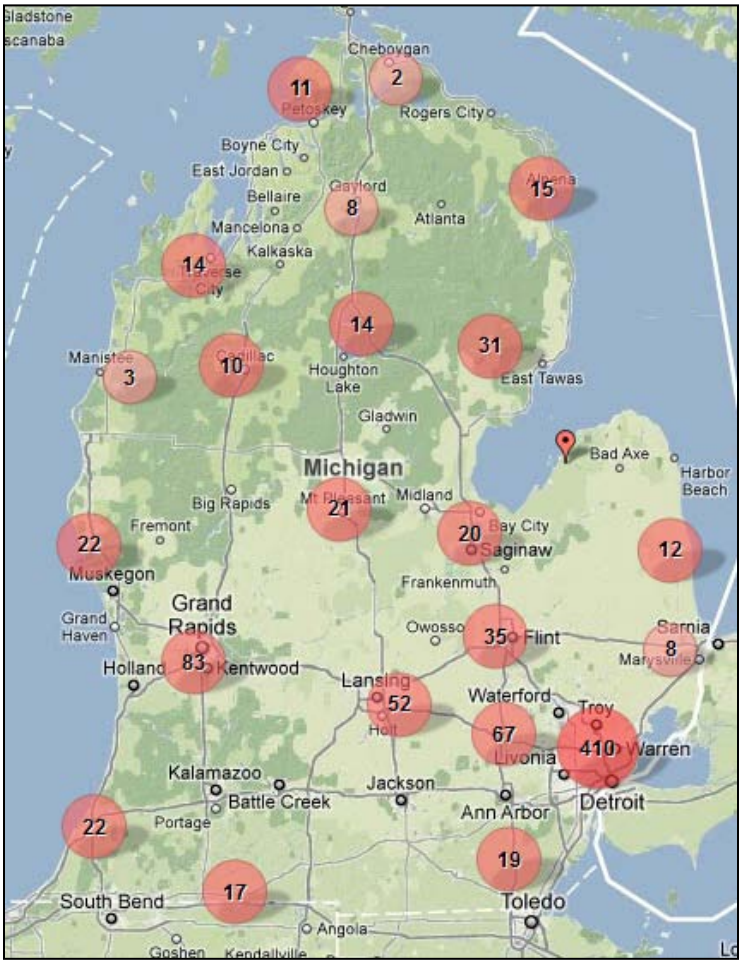


Figure 2. Lower Peninsula Sites



Michigan Geographic Region Development

We based geographic regions for weighting and reporting on climate zones as listed in the Michigan Energy Measures Database (MEMD) (using the weighting tool for weather sensitive measures). After assigning a representative weather station to each MEMD climate zone (shown in Table 1), we calculated the distance between each site and each weather station and assigned a region to each site based on the nearest weather station.

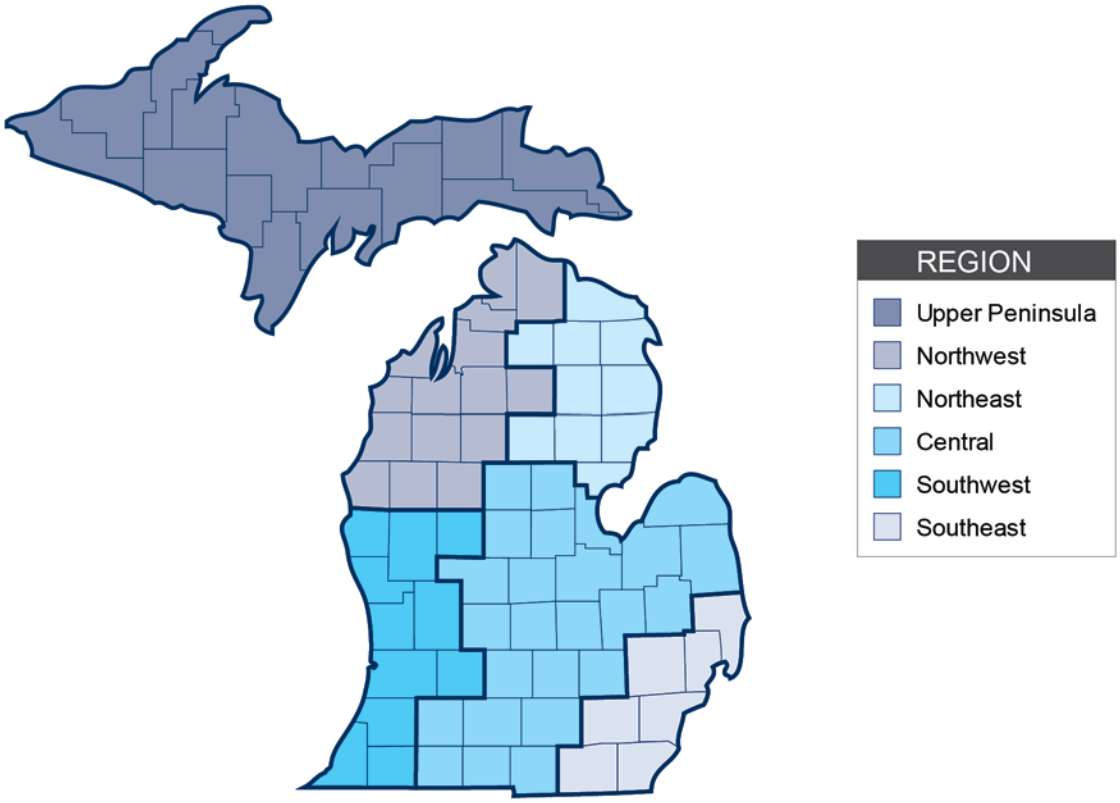
Table 1. Weather Station to Region Mapping

Weather Station	Region
Alpena County Airport	Northeast
Detroit City Airport	Southeast
Lansing WSO Airport	Central
Saginaw FAA Airport	
Muskegon County Airport	Southwest
Sault Ste Marie WSO	Upper Peninsula
Traverse City FAA Airport	Northwest

After mapping each site to one of the seven regions, we: 1) compared annual heating degree days (HDD) and cooling degree days (CDD) across regions to determine if nearby regions could be grouped based on similar weather, and 2) determined whether the weather sample sizes in each region were large enough for weighting and reporting. Due to a relatively small difference in HDD and CDD between Lansing and Saginaw, and their small sample sizes relative to the population, we combined these two regions.

Figure 3 shows the county-level mapping of regions.

Figure 3. Michigan Regions for Reporting*



*Many counties had sites belonging to two regions; therefore boundaries in Figure 3 should be considered as visual interpretation only, and not the final boundary.

Weighting

Given the different characteristics between multifamily, mobile, and single family homes, and given the variability of weather and housing characteristics across the state of Michigan, we developed case weights to control for sample bias. Specifically, we calculated sample weights by post-stratifying the sample by building type and region. The case weights for each cell reflect the ratio of the percentage of total population for that cell to the percentage of the total sample for the cell.

$$w_{br} = \frac{X_{br}}{x_{br}}$$

Where:

w = weight
b = building type
r = region
X = percent of total population for the given building type and region
x = percent of sample for the given building type and region

Table 2 shows the case weights for each cell. We used zip code-level building count estimates from the 2000 US Census. We aggregated building type definitions from the Census to estimate

discrete categories for single family, multifamily, and mobile/manufactured homes.[1] We mapped these zip codes to the six reported geographic regions and summarized building types by each region to serve as population estimates for case weights.

Table 2. In-Home Visit Sample Weights

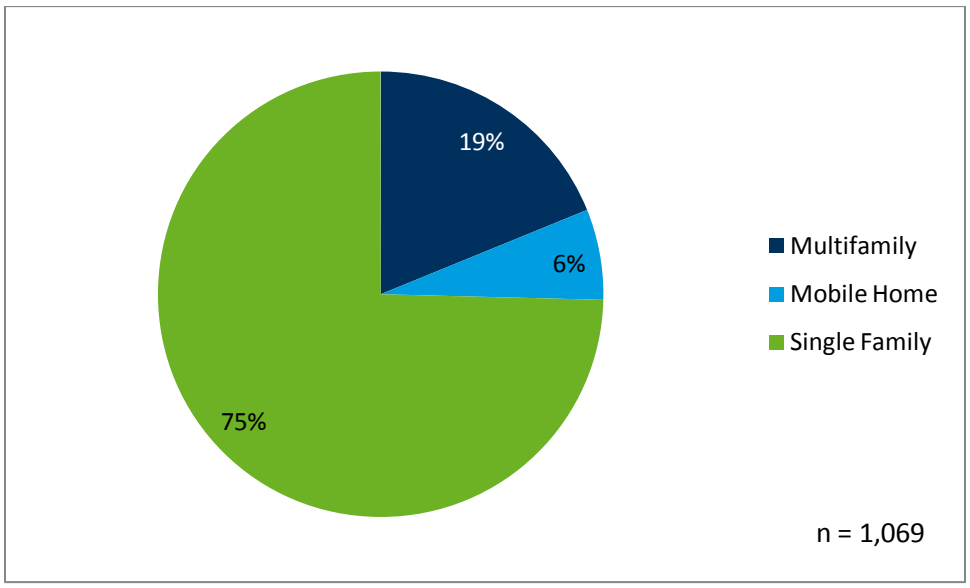
Building Type	Region	Percent of Population	Percent of Sample	Weight
Multifamily	Northeast (Alpena)	0.2%	0.8%	0.18
Multifamily	Southeast (Detroit)	10.6%	10.9%	0.98
Multifamily	Southwest (Muskegon)	2.7%	1.6%	1.66
Multifamily	Central (Lansing/Saginaw)	4.4%	2.4%	1.82
Multifamily	Upper Peninsula (Sault Ste Marie)	0.5%	1.7%	0.30
Multifamily	Northwest (Traverse City)	0.5%	0.7%	0.73
Mobile Home/Manufactured	Northeast (Alpena)	0.3%	0.9%	0.35
Mobile Home/Manufactured	Southeast (Detroit)	1.7%	2.0%	0.84
Mobile Home/Manufactured	Southwest (Muskegon)	1.3%	1.1%	1.14
Mobile Home/Manufactured	Central (Lansing/Saginaw)	2.1%	1.8%	1.20
Mobile Home/Manufactured	Upper Peninsula (Sault Ste Marie)	0.4%	0.6%	0.67
Mobile Home/Manufactured	Northwest (Traverse City)	0.8%	0.3%	2.80
Single Family	Northeast (Alpena)	2.5%	4.0%	0.62
Single Family	Southeast (Detroit)	33.8%	33.7%	1.00
Single Family	Southwest (Muskegon)	10.8%	9.2%	1.17
Single Family	Central (Lansing/Saginaw)	19.8%	11.1%	1.77
Single Family	Upper Peninsula (Sault Ste Marie)	3.3%	14.0%	0.24
Single Family	Northwest (Traverse City)	4.4%	3.3%	1.35

Figure 4 shows the weighted mix of building types we sampled for the on-site survey.[2] The distribution of building types in the sample are approximately the same as the actual statewide mix.

[1] For the remainder of the report, mobile homes include mobile and manufactured homes.

[2] To be consistent in our reporting, we summarized weighted results using percentages and included these in charts, and we reported sample sizes (n) using the unweighted sample.

Figure 4. Weighted Distribution of Building Types



By comparing Figure 4 to the unweighted sample distribution in Table 3, the similarity between the sample we achieved by building type and the actual distribution of the Michigan population is apparent.

Table 3. Unweighted Distribution of Building Types

Building Type	Completed Site Visit	Percent
Multifamily	194	18%
Mobile Home	71	7%
Single Family	804	75%
Total	1,069	100%

As shown in Figure 5, the Southeast region, consisting primarily of Detroit and the surrounding metropolitan region, accounts for nearly half of Michigan's population. Homes in the Northwest, Northeast, and Upper Peninsula regions account for a combined 13 percent of Michigan's residential building stock.

Figure 5. Weighted Distribution of Regions

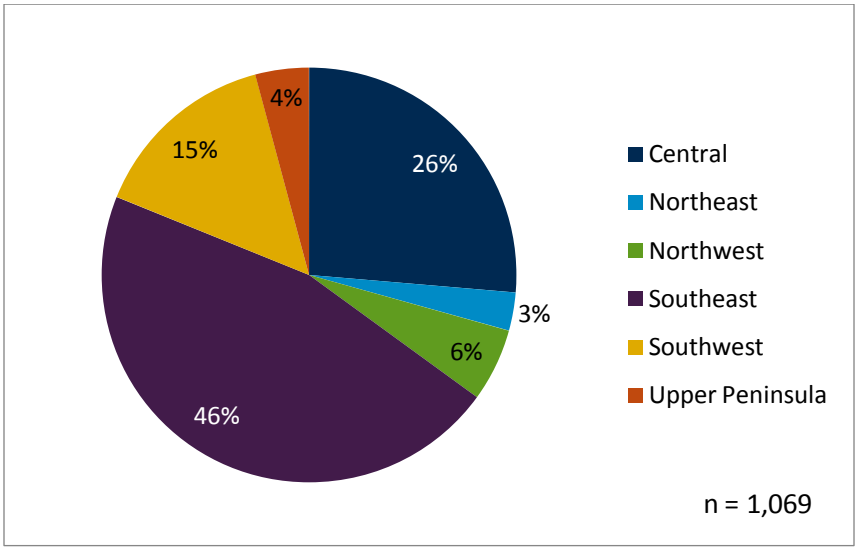


Table 4 provides additional details of the unweighted distribution of site visits by geographic region. Figure 5 and Table 4 shows how the sample over-represents the Upper Peninsula region and under-represents the Central region. Weighting by region corrects for this sample bias.

Table 4. Unweighted Distribution of Regions

Building Type	Completed Site Visits	Percent
Central	165	15.4%
Northeast	62	5.8%
Northwest	45	4.2%
Southeast	497	46.5%
Southwest	127	11.9%
Upper Peninsula	173	16.2%
Total	1,069	100.0%

Data Cleaning

After entering all site data electronically, we scanned all fields for entry errors and outliers. This cleaning process enabled us to address the majority of errors. We performed additional data checks to assess how the survey results compared to similar statistics from other regional studies.

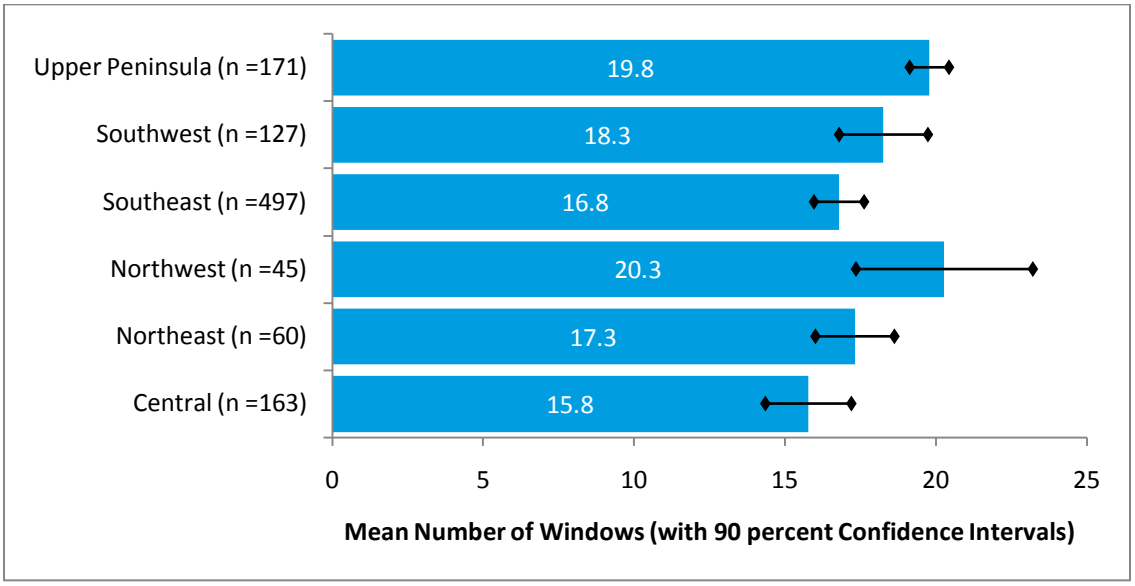
In addition to entry errors and outlying responses, we checked internal consistency in recorded responses across fields. For example, where the total number of windows did not add up to the window count by frame type (e.g., wood, metal, vinyl), we corrected fields where possible. Where inconsistencies could not be resolved, we omitted those fields from our analysis. With windows, for instance, we dropped six sites because of inconsistent and/or anomalous data.

Data Analysis

Nearly all of the reported values are significant at the 90 percent level and within a ±10 percent confidence interval. This level of precision was not achieved for some of the measures or characteristics that are uncommon in the customer population, such as recreational equipment (pools, spas, saunas). These cases are noted throughout the report.

Where relevant, we analyzed data by either building type or region. The Cadmus Team drew samples by region and building type, intending to achieve results at 90 percent confidence level within ±10 percent relative confidence interval. To ensure the level of uncertainty is apparent in our analysis, we present confidence intervals for figures that display averages by building type or region (see Figure 6 for an example). In Figure 6, the Upper Peninsula region confidence interval (represented by the black line) is small- the range of windows is between 19.1 and 20.4. This means that we are 90% confident that the true average is between 19.1 and 20.4 windows per home. For proportions, all results are reported at the 90 percent level, with 10 percent precision, unless otherwise noted.

Figure 6. Example Figure: Confidence Intervals for Mean Number of Windows



The Project Team calculated all confidence intervals using standard statistical formulae. For mean values, we used the following formula:

$$Confidence\ Interval_{mean} = mean \pm 1.645 * \sqrt{\frac{s^2}{n}}$$

Where s^2 is equal to the sample variance, and 1.645 is the z-score for a 90 percent confidence interval. We assumed the normal approximation formula to estimate confidence intervals for proportions:

$$Confidence\ Interval_{proportion} = proportion \pm 1.645 * \sqrt{\frac{proportion * (1 - proportion)}{n}}$$

Due to differences in the overall mix of equipment within each home, we did not collect data for every characteristic at every site. For this reason, field-specific sample sizes are noted in this report's tables and figures.

Penetration, Saturation, and Mean Units

This report frequently cites three metrics: penetration, mean units, and saturation. These metrics merit some discussion to explain their meaning.

Penetration refers to the proportion of homes assigned a given equipment type or characteristic. For instance, faucet aerators have a penetration of 83 percent. This means 83 percent of homes have at least one faucet aerator (though they could have more). In an energy efficiency context, penetration is often used to convey adoption levels of a given technology.

Saturation refers to the average number of units across all homes (except lighting). [3] For instance the faucet aerators saturation of 224 percent indicates, on average, there are 2.24 faucet aerators in residential households. Equipment saturations help identify potential for energy efficiency. Where applicable, we break out saturations for most end uses by ENERGY STAR and non-ENERGY STAR designations. With respect to the faucet aerator example, dividing the saturation (2.24) by the average number of sinks in households (~3.6) tells us that roughly 62 percent of sinks have faucet aerators.

While saturations indicate the average numbers of units across all households (including the households that do not have the equipment) mean units tell us the average number of units for households with the equipment. Dividing the saturation by the penetration gives us the mean units. For example, while the saturation of faucet aerators is 224 percent, 83 percent of the households have at least one faucet aerator. This indicates that of the households that have at least one faucet aerator, there are, on average, 2.7 aerators.

Telephone Surveys

This section presents the combined attitudinal telephone survey results of DTE Energy residential customers, CE residential customers, and residential customers living outside of the CE and DTE Energy service territories. Combined, these telephone surveys capture the baseline energy-related attitudes, perceptions, and behaviors of 2,012 residents living in the state of Michigan. The survey also captured residents' awareness of energy-efficiency programs, as well as their prior participation in energy-efficiency programs offered by utilities throughout the state.

Summary of Survey Statistics

The Project Team conducted all telephone surveys using the Opinion Dynamic telephone interview call center, ensuring consistent quality control procedures. Across the three surveys, we interviewed a total of 2,012 Michigan respondents, yielding a combined response rate of 12

percent and a cooperation rate of 35 percent for this study. The baseline survey response and cooperation rate are average for this type of survey effort. Appendix D provides details on the telephone survey sampling for each of the three studies.

Table 5. Telephone Survey Response and Cooperation Rate

Total Survey Completes	Response Rate	Cooperation Rate
2,012	12%	35%

Survey Dispositions

The survey response rate is the number of completed interviews divided by the total number of potentially eligible respondents in the sample. We calculated the response rate using the standards and formulas set forth by the American Association for Public Opinion Research (AAPOR).[4] For various reasons, we were unable to determine the eligibility of all sample units through the survey process, and chose to use AAPOR Response Rate 3 (RR3). RR3 includes an estimate of eligibility for these unknown sample units. We used the formulas below to calculate RR3. Table 6 provides definitions for the letters used in the formulas.

$$E = \frac{(I + R + NC)}{(I + R + NC + e)}$$

$$RR3 = \frac{I}{((I + R + NC) + (E * U))}$$

We also calculated a cooperation rate, which is the number of completed interviews divided by the total number of eligible residents actually contacted. We used AAPOR Cooperation Rate 1 (COOP1), which is calculated as:

$$COOP1 = \frac{I}{(I + R)}$$

We classified respondents as ineligible when the given phone numbers were wrong or not working.

Below, Table 6 provides the final telephone survey dispositions of Michigan residents for the baseline study

[4] AAPOR. *Standard Definitions: Final Dispositions of Case Codes and Outcome Rates for Surveys.* 2009. http://www.aapor.org/Standard_Definitions/1818.htm.

Table 6. Final Residential Telephone Survey Dispositions

Disposition	Total
Completed Interviews (I)	2,012
Eligible Non-Interviews	8,443
Refusals (R)	3,306
Mid-Interview Terminate (R)	260
Respondent Never Available (NC)	4,713
Language Problem (NC)	164
Not Eligible (e)	5,434
Fax/Data Line	415
Non-Working	3,516
Wrong Number	444
Business/Government	650
Cell Phone	60
Duplicate Phone Number	45
No Eligible Respondent	304
Unknown Eligibility Non-Interview (U)	10,251
No Answer	3,516
Answering Machine	4,229
Busy	233
Call Blocking	500
Not Attempted	1,773
Total Participants in Sample	26,140

Weighting Approach

To produce overall results for the state of Michigan, the Project Team combined the three individual residential survey data files. Because each sample of the three residential surveys represented a particular customer base or territory within Michigan, we developed a weighting scheme to make the combined residential data file representative of the state of Michigan as a whole. To accomplish this, we constructed design weights based on the respondent's county. The combined residential data file under-represented some counties and over-represented others. As such, we weighted respondents up or down based on their county of residence so that the combined residential data file represents each county in a manner proportionate to its representation of the overall population.

Applying extremely high and low design weights to a handful of respondents can have a negative impact on the precision of the survey estimates. Therefore, we combined counties with a relatively small number of respondents (10-20) that were similar in both population density and geographic location. As seen in Table 7, each design weight in practice is a quotient of the region's population estimate and survey responses.

Table 7. Design Weights by Region

Michigan Regions	Population Estimates	Survey Responses	Weight
Southwest Medium Metro*	12.64%	2.63%	4.80
Southern Non-Metro**	3.74%	0.89%	4.19
Montcalm/Gratiot/Shiawassee	1.81%	1.19%	1.52
Tuscola/Sanilac/Huron	1.40%	2.19%	0.64
Muskegon/Newaygo	2.26%	4.37%	0.52
Mid-State Non-Metro+	2.22%	1.74%	1.28
Bay/Saginaw	3.21%	1.69%	1.90
Arenac/Gladwin/Midland	1.30%	1.29%	1.01
Northeast Non-Metro++	1.12%	1.54%	0.73
Manistee/Wexford/Missaukee	0.73%	1.09%	0.66
Benzie/Grand Traverse/Leelanau	1.23%	1.64%	0.75
Northwest Non-Metro#	1.37%	1.19%	1.15
Presque Isle/Alpena	0.45%	2.04%	0.22
East Upper Peninsula##	0.37%	2.14%	0.17
Baraga/Iron	0.38%	2.24%	0.17
Houghton/Keweenaw	0.22%	1.54%	0.14
Ontonagon/Gogebic	0.25%	1.34%	0.18
Chippewa	0.39%	2.68%	0.15
Delta	0.39%	3.18%	0.12
Dickinson	0.28%	2.09%	0.13
Genesee	4.48%	1.54%	2.91
Kent	5.99%	6.46%	0.93
Lapeer	0.93%	1.24%	0.75
Livingston	1.79%	5.42%	0.33
Macomb	8.30%	7.16%	1.16
Marquette	0.65%	4.13%	0.16
Menominee	0.25%	1.59%	0.16
Monroe	1.54%	1.49%	1.03
Oakland	12.24%	8.75%	1.40
Ottawa	2.55%	1.59%	1.60
Saint Clair	1.72%	2.14%	0.81
Washtenaw County	3.42%	6.06%	0.56
Wayne County	20.35%	13.72%	1.48
Total	100.00%	100.00%	

* Counties include Cass, Van Buren, Kalamazoo, Calhoun, Jackson, Ingham, Eaton, Barry, Ionia, and Clinton.

** Counties include St. Joseph, Lenawee, Branch, Hillsdale, and Allegan.

\+ Counties include Osceola, Mescota, Isabella, Mason, Oceana, and Clare.

++ Counties include Crawford, Oscoda, Alcona, Iosco, Ogemaw, and Roscommon.

\# Counties include Emmet, Cherboygan, Antrim, Osego, and Charlevoix.

Counties include Mackinac, Luce, Schoolcraft, and Alger.

The combined weighted data file over-represents older Michigan residents and under-represents younger residents compared to the overall population of Michigan. This type of non-response

bias is common in telephone surveys, since younger adults are more difficult to reach and are less likely to participate in surveys than older adults. To correct for this bias, we constructed post-stratification weights using eight age categories based on population data for Michigan from the 2008 U.S. Census Current Population Survey. Table 8 shows these post-stratification weights.

Table 8. Post-Stratification Weights

Age Category	2008 U.S. Census Estimates	Survey Responses*	Post-stratification Weight
18 to 29 years	21%	5.8%	3.68
30 to 39 years	17%	12.9%	1.29
40 to 49 years	20%	17.2%	1.14
50 to 54 years	10%	9.3%	1.07
55 to 59 years	9%	12.5%	0.68
60 to 69 years	12%	22.2%	0.54
70 to 79 years	7%	12.1%	0.58
80 or more years	5%	8.2%	0.61
Total	100%	100%	

* Represents the weighted percent based on the region weights.

We calculated a final weight for each telephone survey respondent by multiplying the county-based design weight by the age-based post-stratification weight for each respondent. We used the final weighted survey data for each respondent to report statewide attitudinal results.

Data Integration

Given our previous Michigan baseline research with DTE Energy and CE customers, we only needed to make minimal changes to the telephone survey instrument for use with residential customers within the remaining Michigan utilities' service areas. Because all three efforts used the same survey instrument, aggregating the three respondent data sets was a straightforward process.

The questions asking Michigan residents about their knowledge of utility-specific programs are slightly different for each telephone survey, since we asked respondents only about program offerings available to them. Although we adjusted the wording of these questions slightly for each respondent group, the purpose and meaning of the questions was the same. Given the difference in timing for each survey effort, we included some minor additional questions in later surveys, including a few more attitudinal questions and a question about the website. Throughout the report, we note which questions were not included in all three survey instruments.

Data Analysis

An important approach to the analysis is comparing attitudinal results among respondents living in urban and rural regions of the state. The Project Team used the six-level urban-rural classification developed by the National Center for Health Statistics (NCHS).[5] As shown in

[5] http://www.cdc.gov/nchs/data_access/urban_rural.htm.

Table 9, this classification method separates metropolitan areas into four distinct statistical areas by population size, and divides the non-metropolitan areas into two distinct categories by population size. However, this report only references statistical differences between residents living in urban (metro) and rural (non-metro) areas.

Table 9. NCHS Urban-Rural Classification

Urban-Rural Category	Statistical Area Classification
Metropolitan	
Large central metro	Counties in a metropolitan area with a population of one million or more: 1) that contains the entire population of the largest principal city of that metropolitan area, or 2) whose entire population resides in the largest principal city of the metropolitan area, or 3) that contains at least 250,000 of the population of any principal city in the metropolitan area.
Large fringe metro	Counties in a metropolitan area with a population of one million or more but that do not qualify as large central metro.
Medium metro	Counties in a metropolitan area with a population between 250,000 and 999,999.
Small metro	Counties in a metropolitan area with a population between 50,000 and 249,999.
Non-metropolitan	
Micropolitan	Counties in a micropolitan area.
Noncore	Counties that are neither metropolitan nor micropolitan.

As shown in Table 10, this study included a larger share of residential customers living in metropolitan areas.

Table 10. Urban and Rural Survey Distribution

Urban/Rural	Unweighted Percent	Weighted Percent
Metropolitan	64%	83%
Non-Metropolitan	36%	17%

We used other demographic variables to analyze the data, specifically age, education, and income. We chose these variables for understanding the energy-efficiency attitudes and behaviors among Michigan residential customers because of their importance to the state. We conducted two types of tests to determine the significance of differences observed between urban and rural regions, as well as between the other key demographic variables.

- We compared **proportions** using the independent z-test for proportions/percentages.
- We compared **means** using the two-tailed independent t-test for means (unequal variances).

We conducted these tests at the 90 percent and 95 percent significance levels.

We used these two significance tests to assess whether the observed proportion or mean were the same for two different groups. For example, we used the z-test for proportions to test the hypothesis that respondents who installed energy-efficiency equipment in the past two years are proportionately the same for residents in urban and residents in rural areas. A high value for the

z-test is evidence *against* the hypothesis that the proportions are the same, and indicates that the differences seen between the two groups did not occur by chance. In other words, a high value would indicate that the differences between groups are statistically significant.

Throughout this report, we document percentages based on all 2,012 weighted responses to the survey. Since we asked some questions only to a subset of respondents, we calculated these percentages using their corresponding different subset base. Each graph or table shows the base for each percentage. We included total percents and "*don't know*" responses in our analysis, where meaningful; otherwise, we present the percentages after eliminating respondents who answered "*don't know*" or "*refused.*"

In-Home Site Visits: Energy-Consuming Equipment Characteristics

Introduction

In this section, we characterized the energy-consuming equipment of Michigan's residential sector based on the on-site data collection effort.

Table 11 outlines the penetration and saturation of all major appliances for which we collected data. Penetration is the proportion of households for which at least one of a given characteristic or equipment is present. Penetration for a given home attribute can never exceed 100 percent. Alternately, saturation is defined for all home characteristics and equipment (except lighting),[6] and represents how many of a particular characteristic or equipment exist among all residents.

Table 11. Appliance Penetration and Saturation

Appliance/Equipment	Penetration	Saturation
Cooling Systems (n = 947)		
Central air conditioner	56%	
Room air conditioners	17%	
Ground source heat pump	0%	
Something else	1%	
Heating Systems (n =1,046)		
Primary heating system	100%	
Gas heating	87%	
Electric heating (primary)	2%	
Oil heating (primary)	1%	
Bottled gas heating (primary)	3%	
Wood heating (primary)	1%	
Other/Could not identify	5%	
Secondary heating system	38%	
Water Heating		
Water heaters (n = 973)	100%	
Water heater blankets (n = 939)	7%	
Drain heat recovery (n = 936)	1%	
Pipe insulation (n = 939)	18%	
Aerators (n = 1,019)	83%	224%
Low-flow showerheads (n = 1,066)	60%	86%
Recreational Equipment		
Swimming pools (n = 1,054)	7%	
Spas/hot tubs (n = 1,049)	4%	

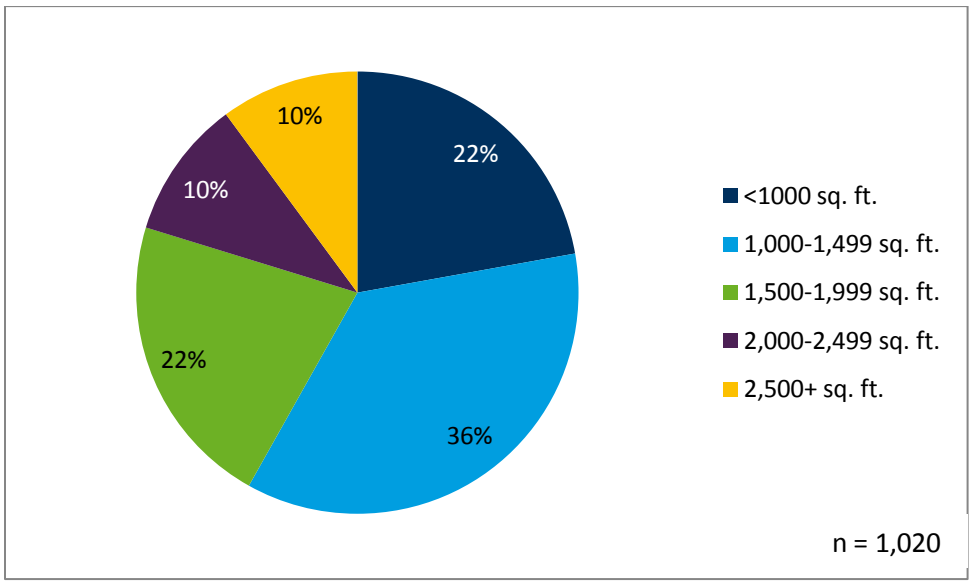
[6] Saturation for lighting is the proportion of lighting composed of the given bulb type. For this reason, lighting saturation is always lower than or equal to its corresponding penetration.

Saunas (n = 1,069)	1%	
Laundry Appliances		
Clothes washers (n = 988)	93%	99%
Top loading washers (n = 961)	80%	87%
Front loading washers (n = 961)	16%	17%
Clothes dryers (n = 1,063)	92%	100%
Kitchen Appliances		
Stoves (n = 1,068)	99%	101%
Ovens (n = 1,064)	99%	103%
Refrigerators (n = 987)	100%	125%
Stand-alone freezers (n = 989)	36%	38%
Dishwashers (n = 987)	66%	66%
Microwaves (n = 995)	95%	100%
Consumer Electronics		
Televisions (n = 989)	99%	274%
DVD Players (n = 974)	84%	130%
DVRs (n = 909)	30%	39%
Digital TV converters (n = 890)	22%	33%
All computers (n = 973)	85%	161%
Laptop computers (n = 929)	46%	61%
Desktop computers (n = 944)	74%	108%
Computer monitors (n = 937)	61%	78%
Multifunctional devices (n = 923)	49%	55%
Printers (n = 908)	30%	34%
Scanners (n = 891)	7%	7%
Copiers (n = 890)	6%	7%
Video game systems (n = 986)	32%	51%
Lighting (n = 1,018)		
Incandescent	99%	67%
CFL	76%	16%
LED	4%	0%
Halogen	57%	5%
Fluorescent	72%	11%

General Building Information

As can be seen in Figure 7, over one-third of the homes we visited were between 1,000 and 1,499 square feet, and approximately 80 percent of the homes we visited were less than 2,000 square feet.

Figure 7. Weighted Distribution of Residence Sizes



The mean square footage for homes we surveyed fall within reasonable bounds, with single family homes having the largest floor space and multifamily homes having the smallest floor space. Both weighted and unweighted values are shown in Table 12.

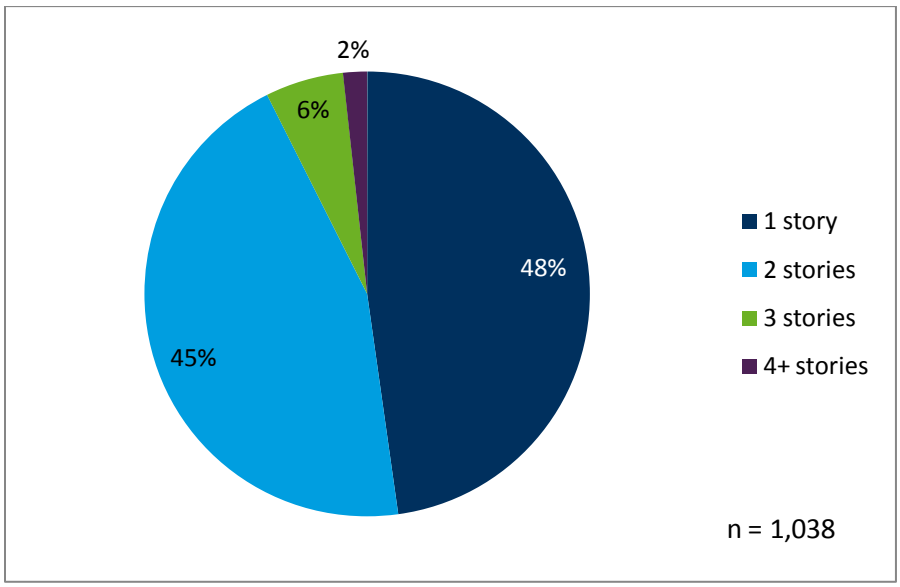
Table 12. Weighted and Unweighted Mean Residence Size by Building Type

Type	n	Unweighted Mean Square Footage	Weighted Mean Square Footage
Multifamily	187	958	928
Mobile Home	63	1,128	1,130
Single Family	770	1,720	1,689

Almost half of the homes we visited (48 percent) were one-story dwellings (Figure 8).[7] Two-story dwellings accounted for another 45 percent of homes, and residences with three stories or more were less common, accounting for less than 8 percent of the homes we visited.

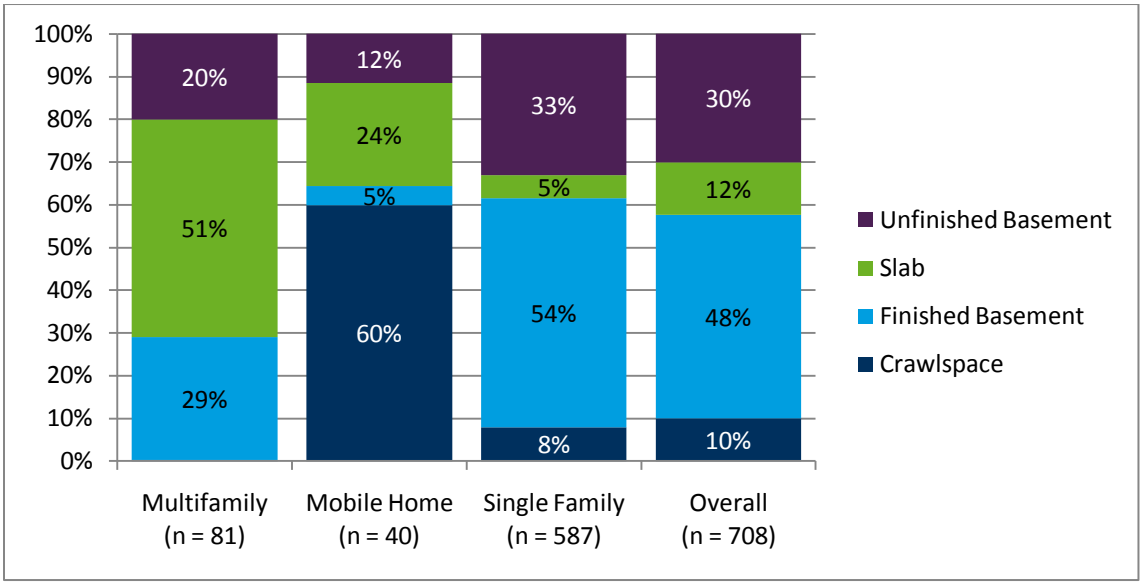
[7] We only counted finished spaces when determining number of levels (finished basements were included).

Figure 8. Weighted Distribution of Number of Stories



The home foundation type was largely a function of building type, as demonstrated in Figure 9. The majority of single family homes either had a finished or unfinished basement (87 percent). Basements were less common in multifamily and mobile homes, where slab foundations and crawlspaces were more prevalent. The variety of foundation types in the different building types likely reflects different dates of construction and building styles.

Figure 9. Foundation Type by Residence Type

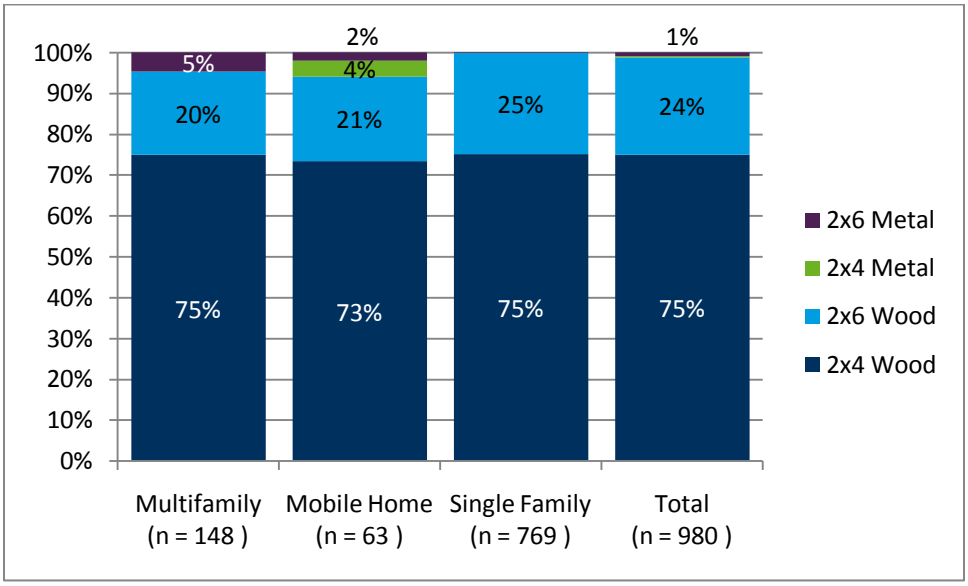


Note: Mobile home results are reported at the 90 percent confidence level, with ±12.7 percent confidence.

Building Envelope

Wood-framing was the most common type of wall framing for all building types, with metal being slightly more prevalent (up to 5 percent) in multifamily and mobile homes (see Figure 10).

Figure 10. Frequency of Wall Framing Types by Building Type



While nearly all residents had attic and side wall insulation, floor insulation was less common. Table 13 provides the distribution of insulation material types for different wall and room locations across all building types. Of residents who had insulation, batted was the most common for attics, side walls, crawlspaces, finished basements, and joists, while rigid insulation was most common in unfinished basements.

Table 13. Insulation Type by Location

Insulation Type	Wall or Room Type					
	Attic (n = 526)	Side Wall (n = 395)	Crawl space (n = 203)	Unfinished Basement (n = 215)	Finished Basement (n = 131)	Joist (n = 397)
Batted	55%	71%	18%	10%	45%	68%
Loose Fill	43%	21%	1%	1%	2%	1%
Rigid	1%	4%	10%	12%	23%	3%
Other*	<1%	<1%	<1%	1%	<1%	<1%
None	0%	3%	70%	77%	29%	28%

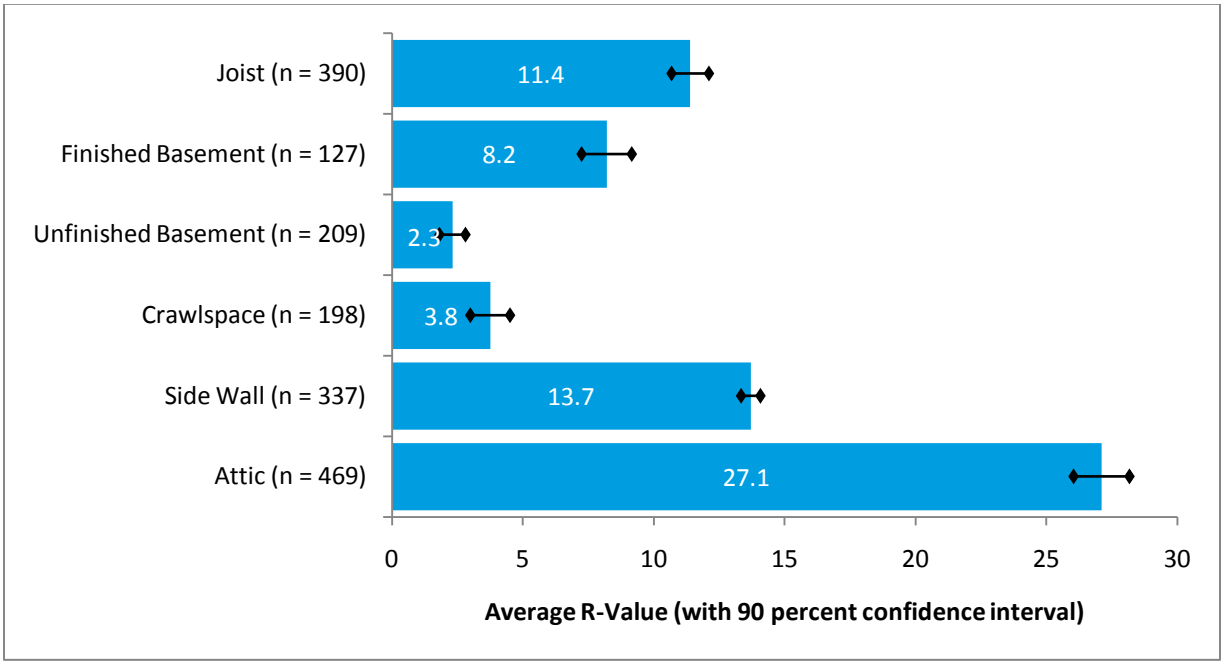
*Other includes polyisocyanurate and polyurethane.

We calculated the R-values we presented in Figure 11 using the average per inch R-value for each insulation type.[8] As shown in the figure, these values were only available for a small sub-

[8] Typical R values for each insulation type can be found via the U.S. Department of Energy at: http://www.energysavers.gov/your_home/insulation_airsealing/index.cfm/mytopic=11510

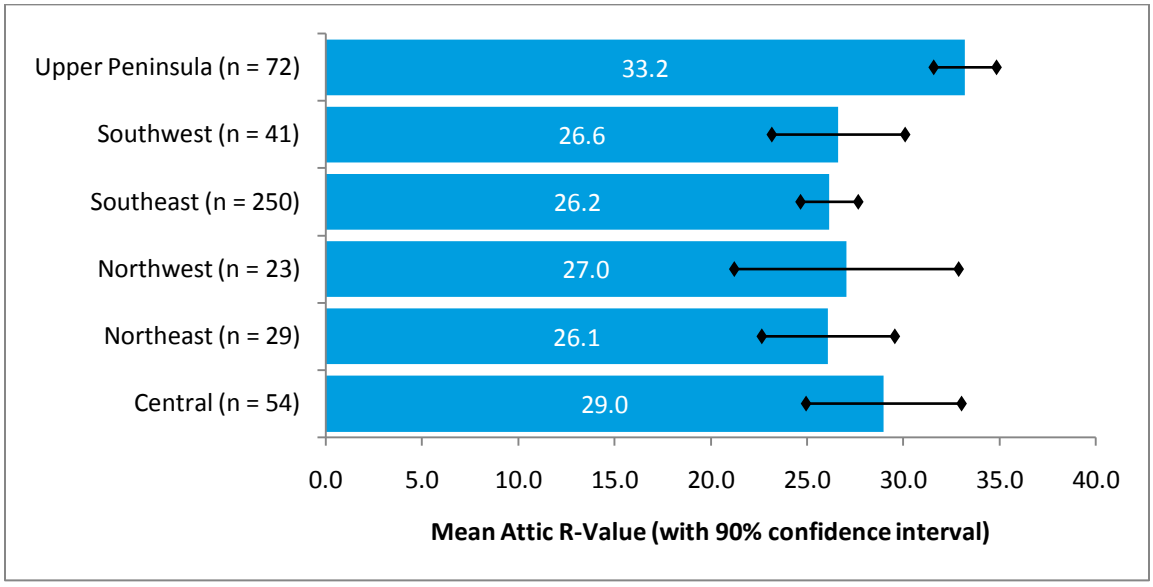
section of sites, largely due to our limited accessibility to joist and side wall insulation. For comparison purposes, current state code requires an R-value of 49 for attic insulation and 21 for wall insulation.

Figure 11. Mean R-Value of Insulation by Location



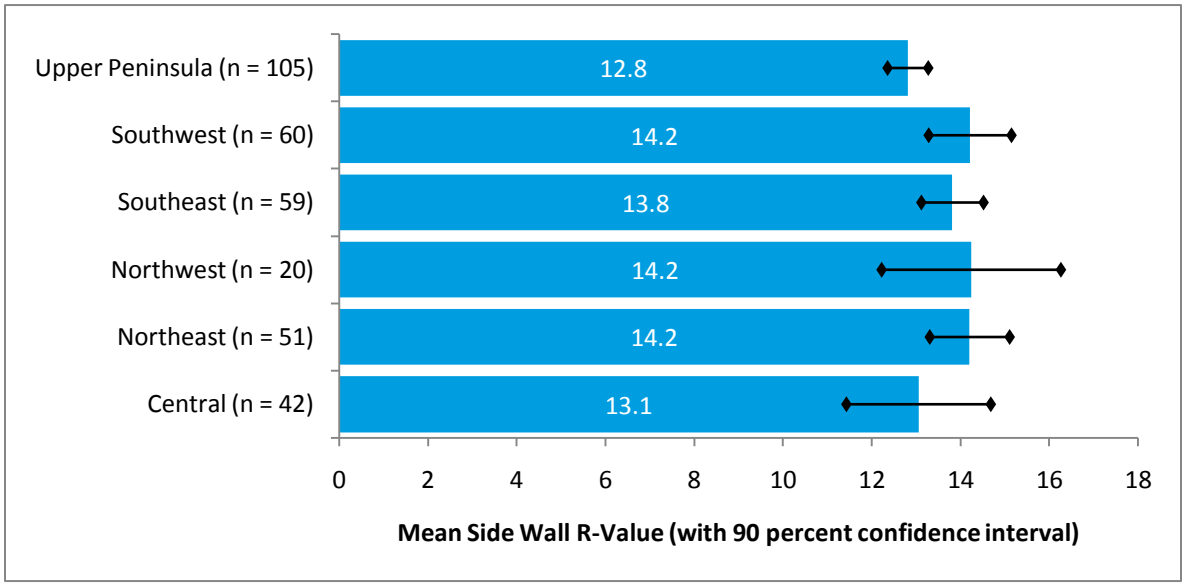
Homes in the Upper Peninsula have the highest average attic insulation R-value, at 33.2 (Figure 12). The remaining regions have average R-values ranging from 26 to 29.

Figure 12. Mean Attic Insulation R-Value by Region



Conversely, homes in the Southeast, Central, Southwest, and Northwest regions all had higher average side wall insulation R-values than the homes in the Upper Peninsula (Figure 13).

Figure 13. Mean Side Wall R-Values by Region



Windows

Window count is largely a function of the size and type of home. Figure 14 illustrates this relationship, and Figure 15 shows that the distribution appears to be normal. On average, there are 17 windows in Michigan homes.

Figure 14. Window Count by Residence Size (sq. ft.)

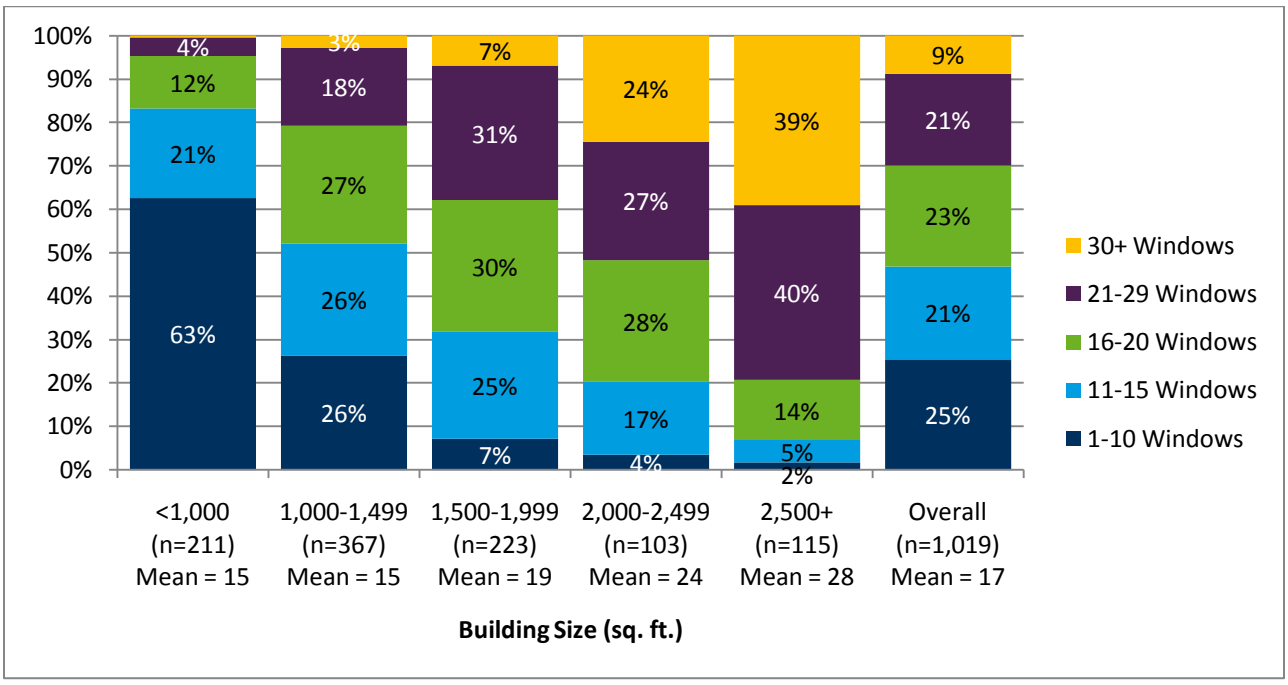
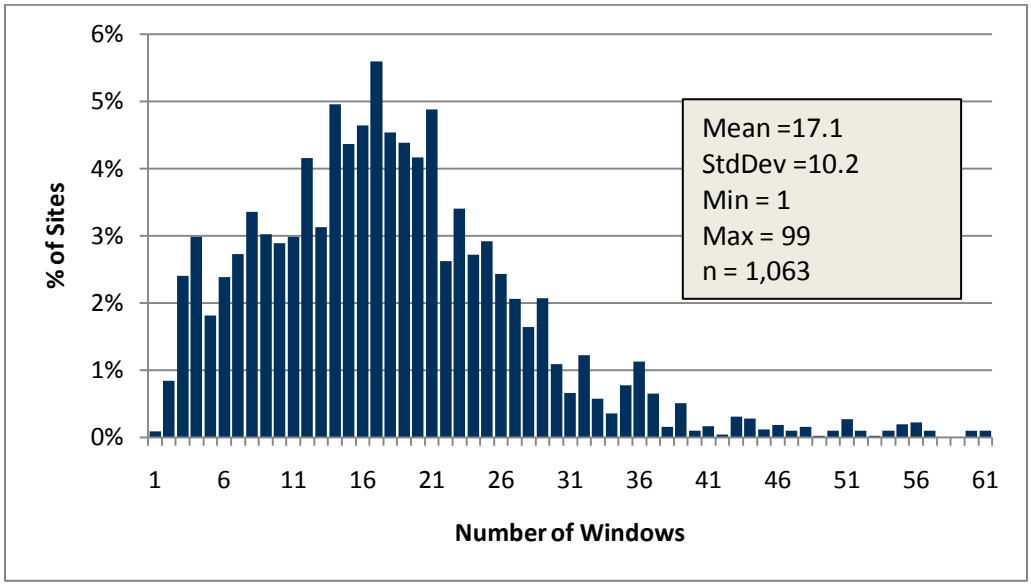


Figure 15. Distribution of Total Windows per Home



The average single family home has 20 windows, while mobile and multifamily homes average 12 and six windows, respectively (Figure 16). As shown in Figure 17, the mean number of windows by region ranged from 16 windows in the Central region to nearly 20 windows in the Upper Peninsula.

Figure 16. Mean Number of Windows by Building Type

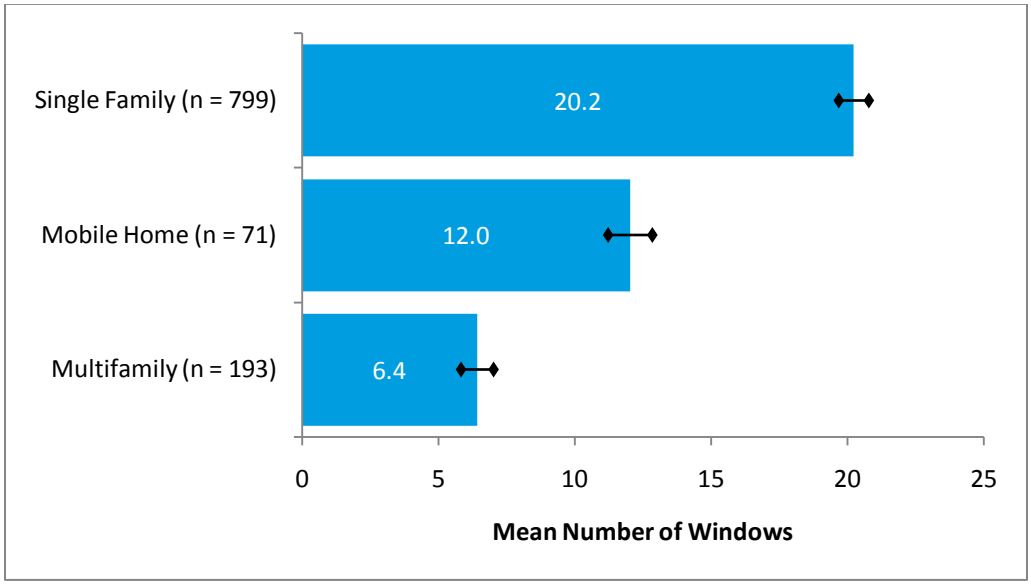
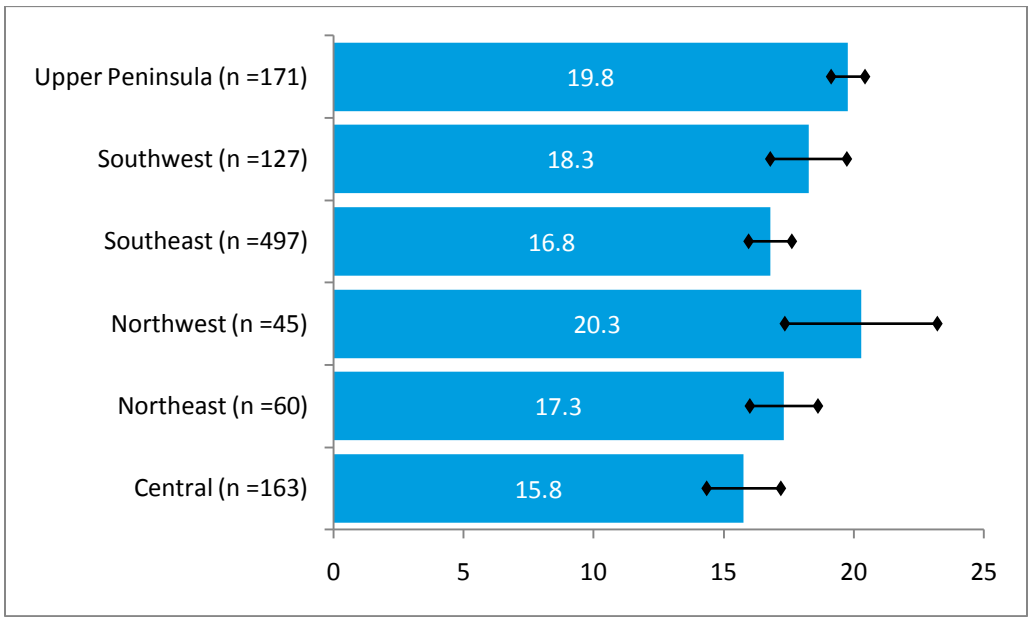
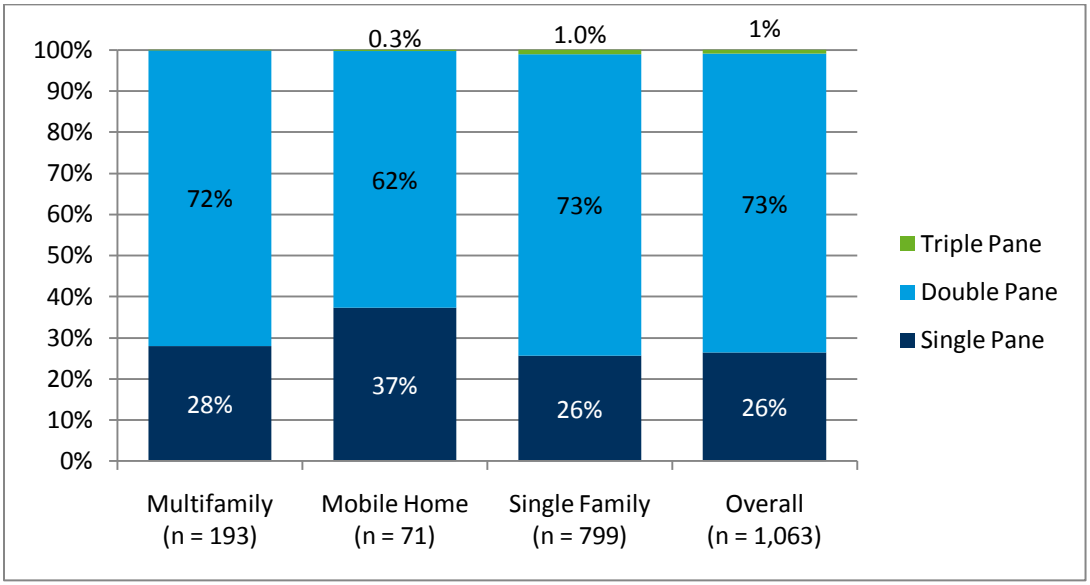


Figure 17. Mean Number of Windows by Region



The majority of windows in residential homes were either single or double paned, as shown in Figure 18. One percent of households had triple paned windows, which is typical for the residential sector. The mean number of single pane windows per household was four, compared to 12.6 for double pane and 0.2 for triple pane.

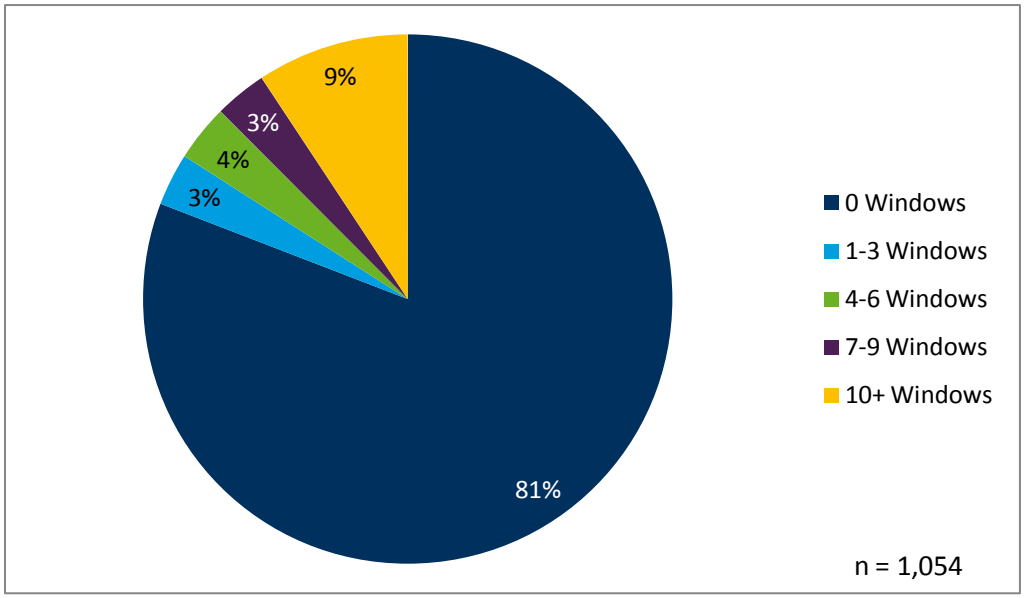
Figure 18. Window Type by Building Type



Roughly 81 percent of the homes we surveyed had no storm windows (see Figure 19). When we asked residents about the duration of time they use their storm windows, over half (62 percent)

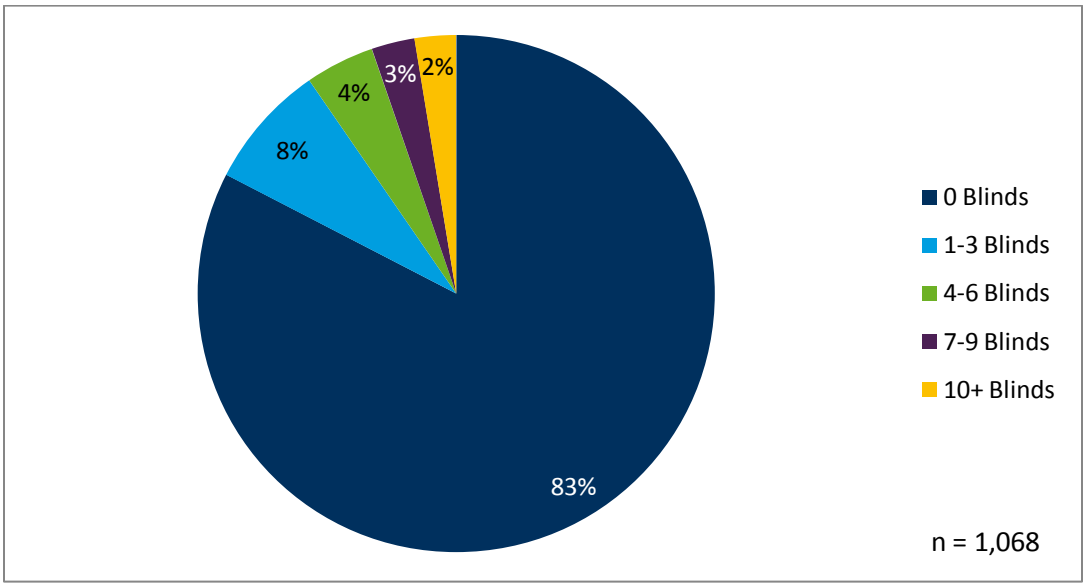
reported between 10 and12 months per year. Approximately one-third of respondents use their storm windows for half the year or less.

Figure 19. Number of Storm Windows



Insulated blinds were infrequent in the homes we surveyed. Eighty-two percent of homes did not have any insulated blinds. Where insulated blinds were present, there were rarely more than six in a home (Figure 20).

Figure 20. Number of Insulated Blinds



Basement Dehumidification

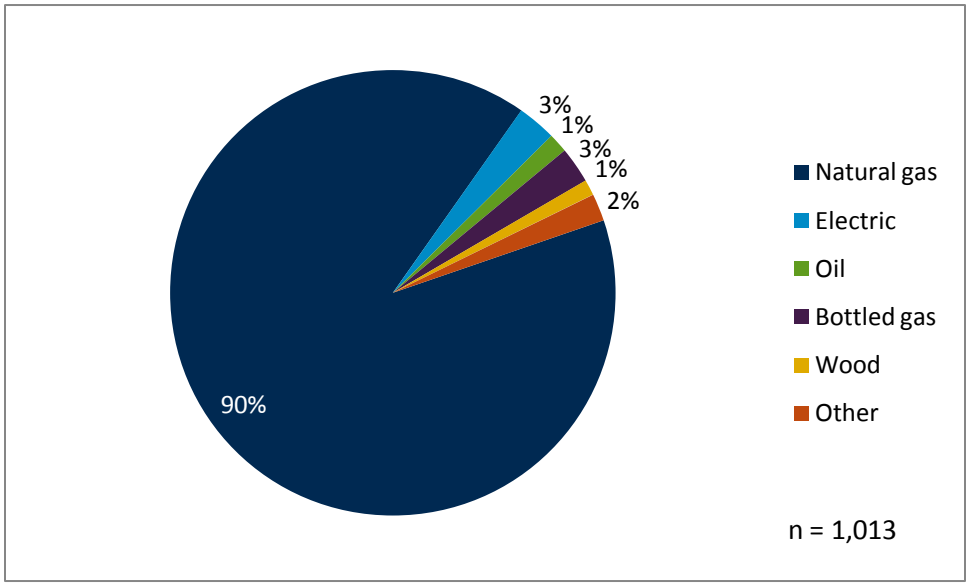
During our site visits, we found that 27 percent of homes use dehumidifiers (n = 226). Ninety-three percent of households with dehumidifiers were single family homes, and 41 percent of dehumidifiers were ENERGY STAR®-rated. The median dehumidifier age was three years (n = 200).

Heating and Cooling Systems

Heating Systems

Natural gas was the most prominent heating fuel found in residential homes (90 percent), with the remaining 10 percent using electric, oil, bottled gas, wood, or other (Figure 21).

Figure 21. Primary Heating System Fuel Type



As shown in Table 14, gas heat is far less common in the Upper Peninsula than in other regions, likely due to the availability of gas lines. Electric heat is still relatively rare in most geographic regions, accounting for roughly 3 percent of the primary heating systems statewide.

Table 14. Fuel Share of Primary Heating System by Region

Fuel Type	Central (n = 154)	Northeast (n = 59)	Northwest (n = 45)	Southeast (n = 468)	Southwest (n = 122)	Upper Peninsula (n = 165)
Natural gas	86%	88%	93%	93%	92%	64%
Electric	1%	4%	0%	3%	1%	9%
Oil	3%	0%	0%	1%	0%	6%
Bottled gas	5%	0%	0%	2%	4%	9%
Wood	1%	4%	2%	0%	1%	5%
Other	3%	4%	5%	0%	2%	6%

Electric heating, which includes baseboards, central forced air furnaces, portable heaters, and radiant floor heating, was most common in multifamily homes (relative to the other building types; Figure 22). This is most likely due to a lack of space and/or ducting necessary for furnace heating. Close to 1 percent of single family homes and mobile homes used electric for their primary heating system.

Figure 22. Primary Heating System Fuel Type by Residence Type

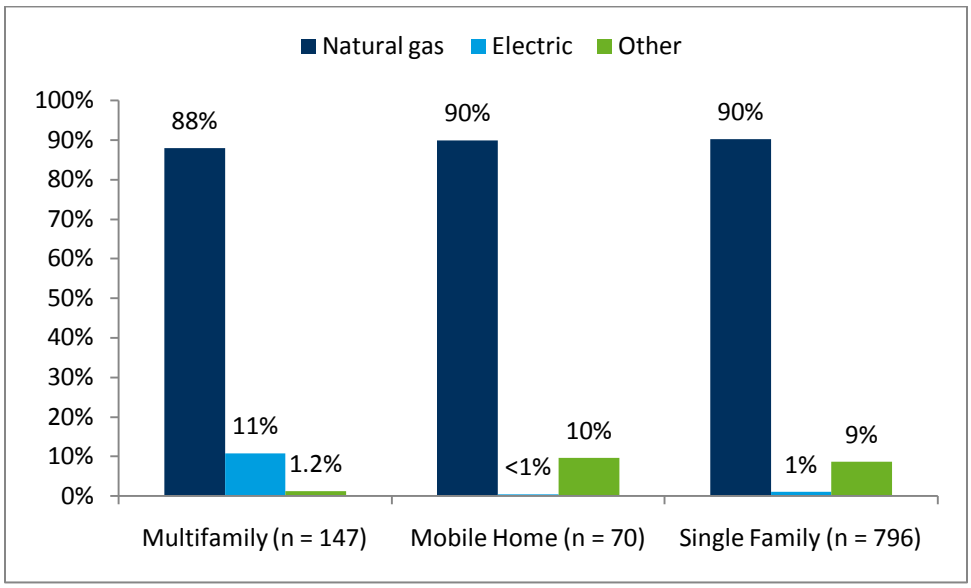
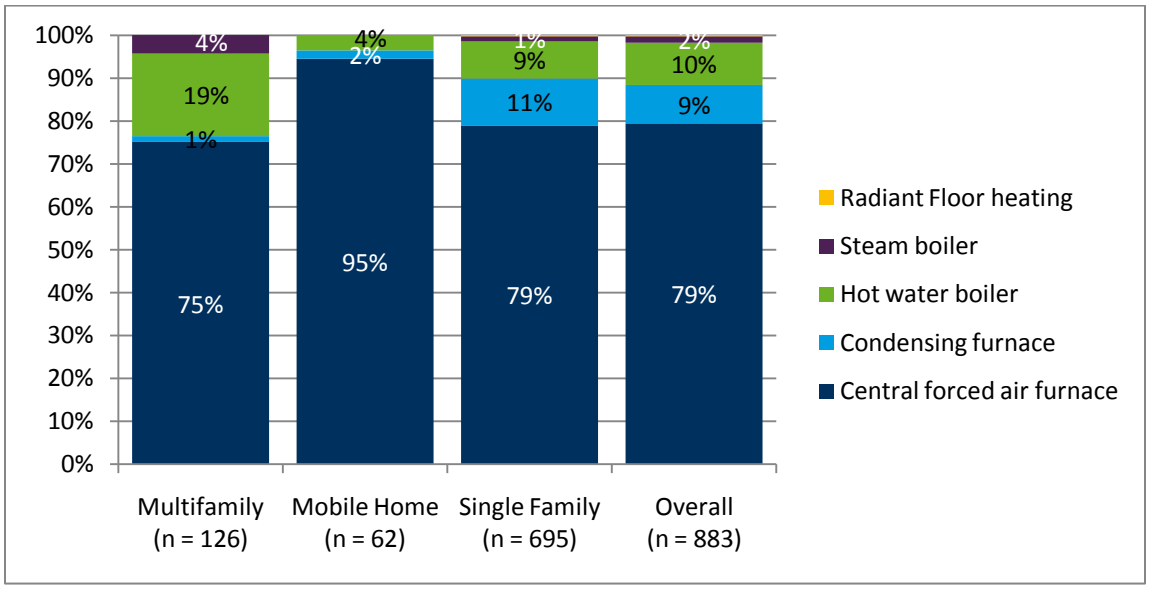


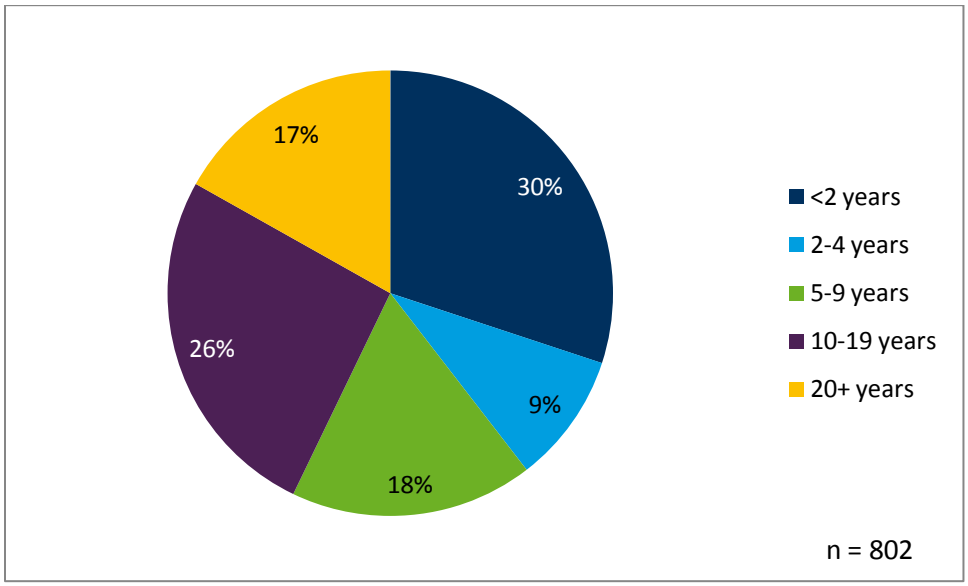
Figure 23 provides the distribution of gas heating systems by building type. Across all home types with gas heating, furnaces represent approximately 88 percent of the heating systems, followed by hot water boilers (10 percent). Steam boilers and radiant floor heating systems were relatively rare, accounting for roughly 2 percent of gas heating systems combined.

Figure 23. Types of Primary Gas Heating Systems by Building Type



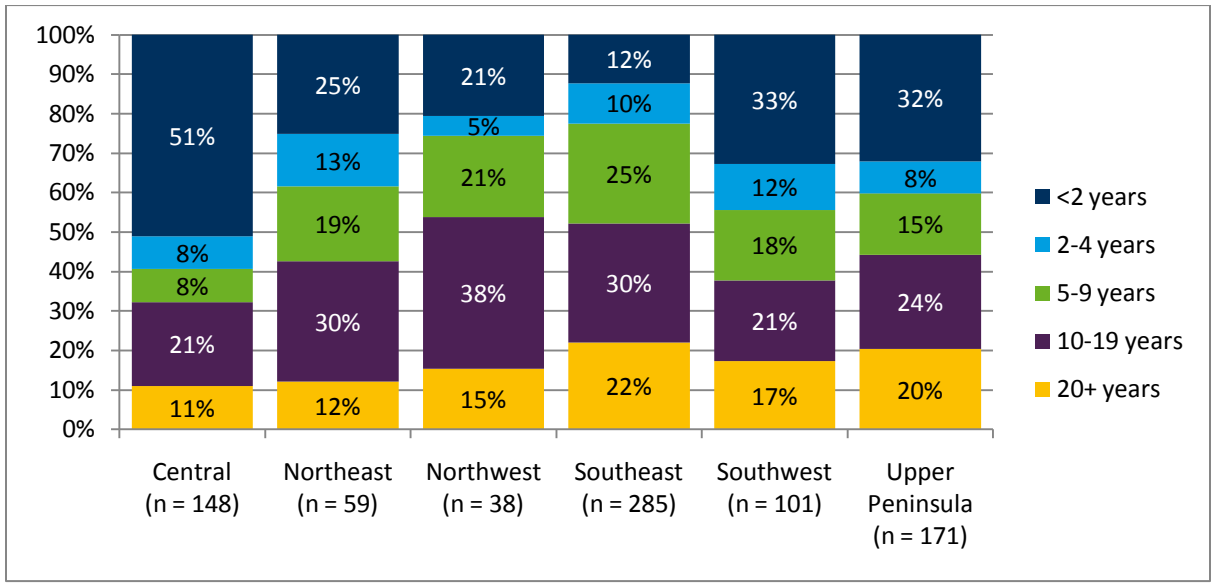
Fifty-seven percent of homes had furnaces that were less than 10 years old (Figure 24). A large proportion of units were less than two years old (30 percent).

Figure 24. Age of Primary Heating Systems



Heating systems in the Southeast region are markedly older than heating systems in other regions, with only 12 percent of units in this region being less than two years old, and 22 percent of units being more than 19 years old (Figure 25). In the Central region, for comparison, 51 percent of heating units are less than two years old and only 11 percent of units are more than 20 years old.

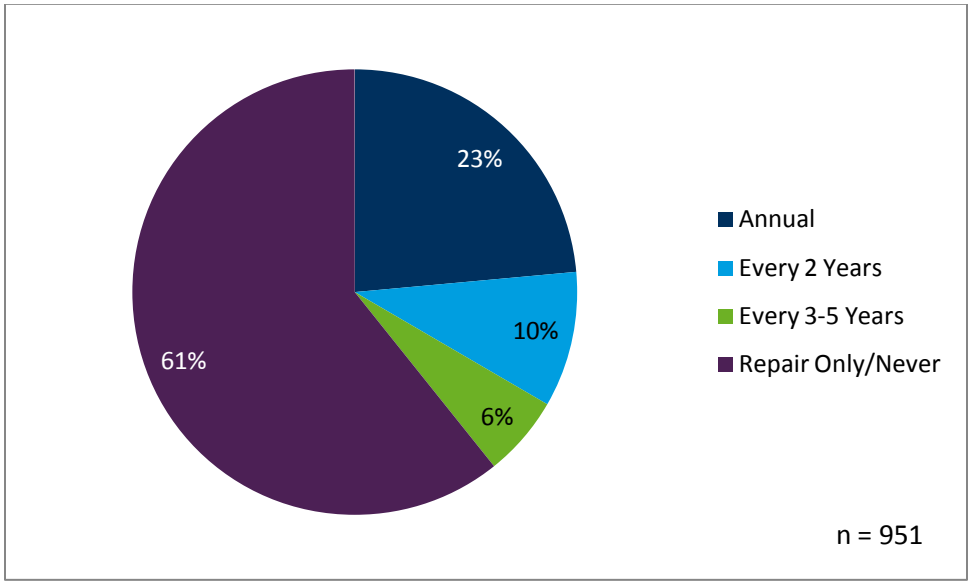
Figure 25. Age of Primary Heating System by Region



Note: Northwest region results are reported at the 90 percent confidence level, with ±13.0 percent confidence.

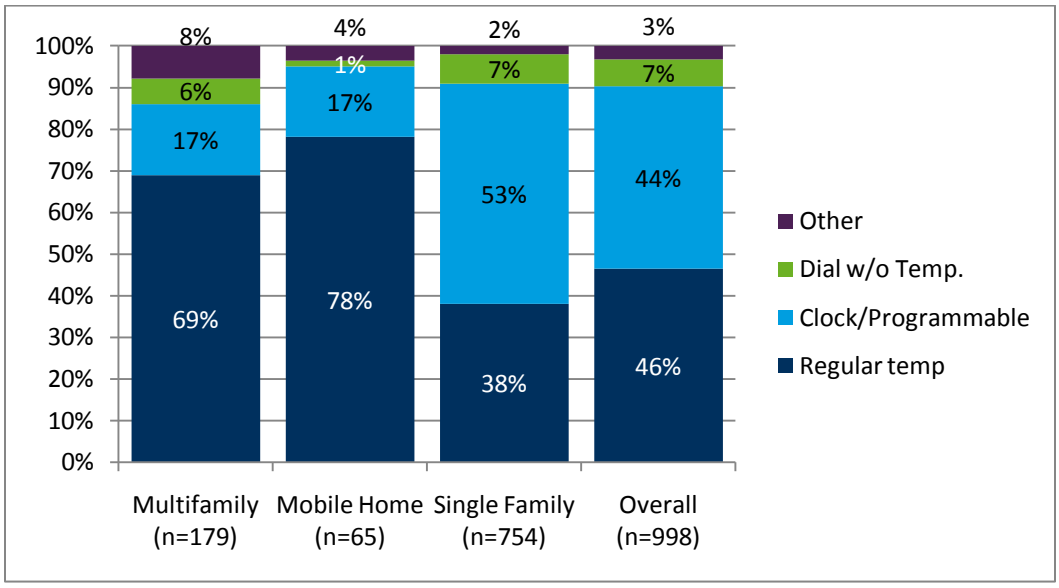
When we asked residents about the frequency of maintenance on their furnace, 61 percent responded "*never*" or "*repair only*" (Figure 26). Twenty-three percent of systems were serviced on an annual basis.

Figure 26. Primary Heating System Maintenance



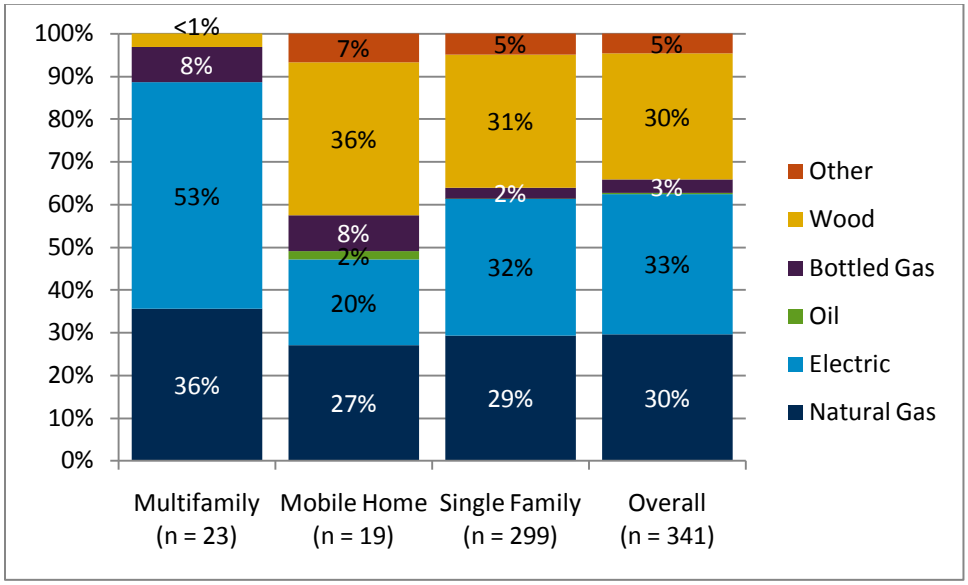
The Project Team encountered a number of heating system control types, including temperature dials with a temperature indicator (referred to as regular temp), dials without a temperature indicator, programmable thermostats, and simple on/off switches (other). Programmable thermostats were most common in single family residences (Figure 27), though they were only present in just over half of single family homes. Mobile homes and multifamily residences are dominated by regular temperature dial thermostats, at 78 percent and 69 percent, respectively.

Figure 27. Types of Primary Heating System Controls by Residence Type



Overall, 38 percent of homes had secondary heating systems. Figure 28 shows that secondary heating fuel types varied greatly by building type. Many homes used either portable electric heaters or some type of fireplace, whether gas or wood-fired.

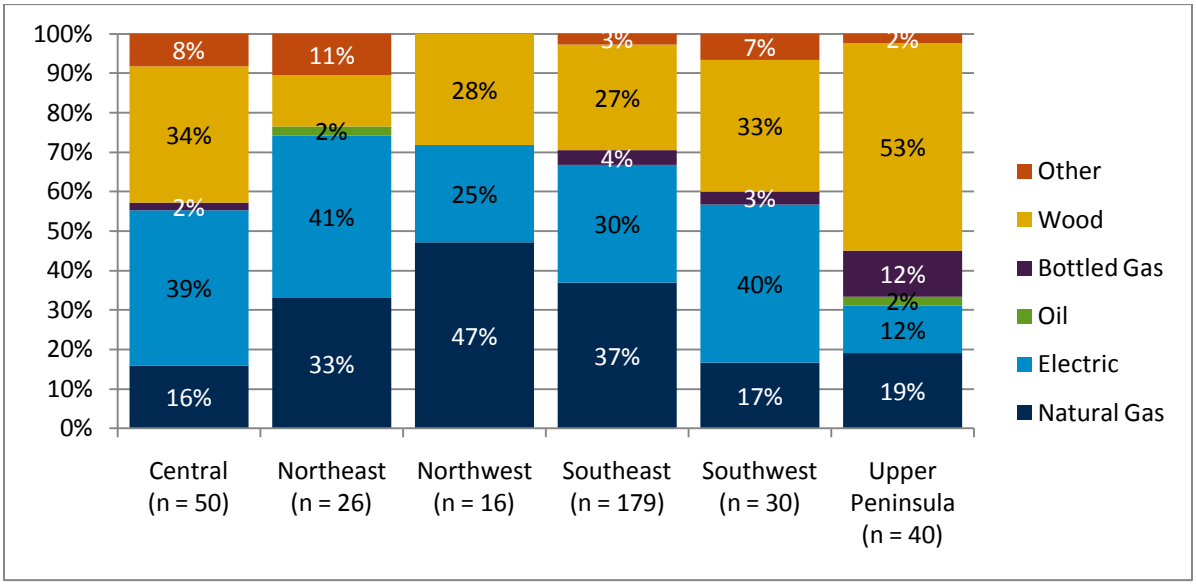
Figure 28. Secondary Heating Systems by Building Type



Note: Mobile home results are reported at the 90 percent confidence level, with ±18.1 percent confidence. Multifamily results are reported at the 90 percent confidence level, with ±17.1 percent confidence.

Secondary heating systems also varied by region (Figure 29). While 53 percent of homes in the Upper Peninsula use a wood fueled secondary heating system, about 27 percent of homes in the Southeast have similar systems. Gas fueled secondary heating systems were more common in the Southeast (primarily gas fireplaces).

Figure 29. Secondary Heating Systems by Region



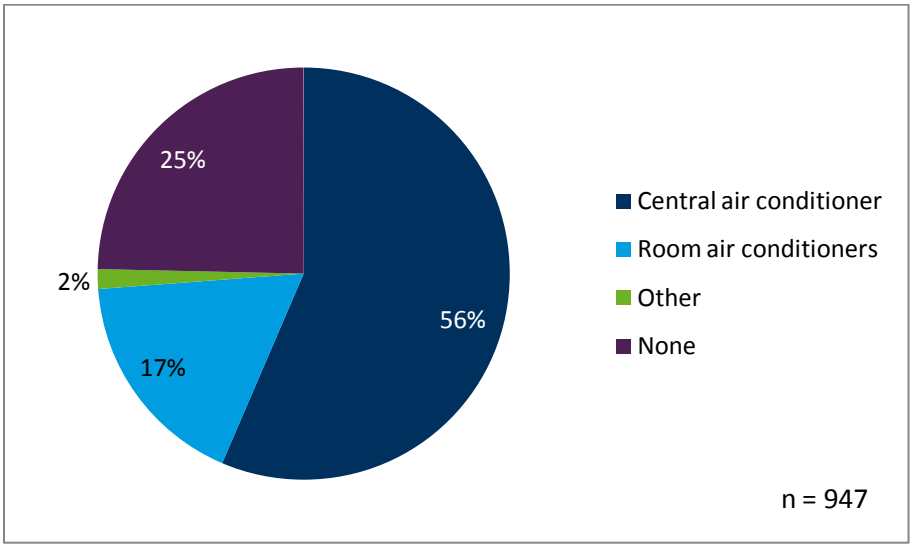
Note: The Southeast region is the only region reported at the 90 percent confidence level, ± 10 percent confidence. All other regions are reported at the 90 percent confidence level, ± 20 percent confidence or better.

The majority of multifamily heating systems (69 percent) were not shared, but represented individual heating systems (per unit). Of those multifamily buildings with shared systems, virtually all were natural gas steam boilers.

Cooling Systems

Central air conditioning represents 56 percent of residential cooling systems (Figure 30). The remaining portion of cooling systems are room air conditioners (17 percent), while roughly one quarter of the homes we surveyed had no air conditioning.

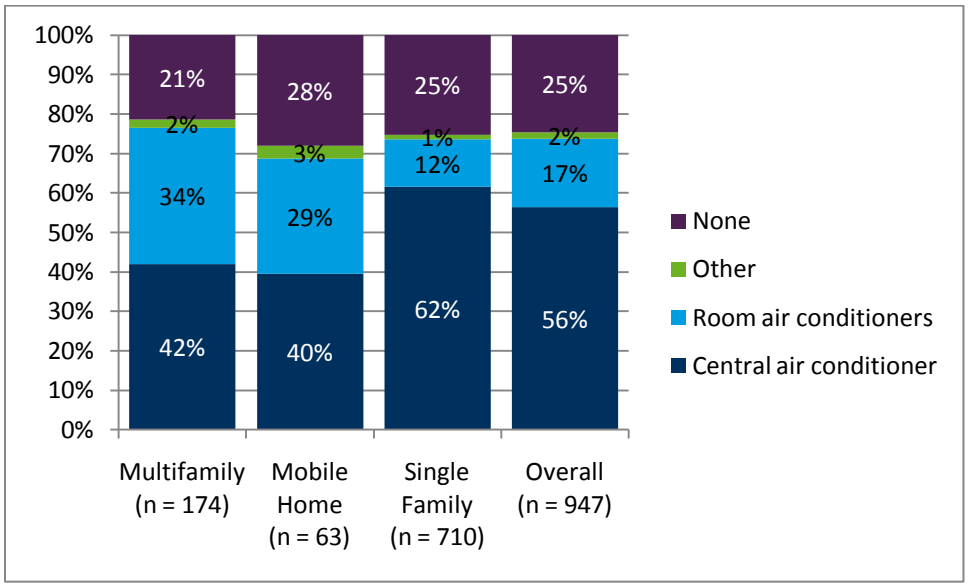
Figure 30. Penetration of Cooling Systems*



* 'Other' includes air source heat pumps, ground source heat pumps, and evaporative coolers.

Figure 31 presents the distribution of primary cooling systems by building type. While 62 percent of single family homes have central air conditioners, only 42 percent of multifamily homes have central air. Multifamily and mobile homes are more likely than single family homes to have room air conditioners, at 34 percent and 29 percent, respectively.

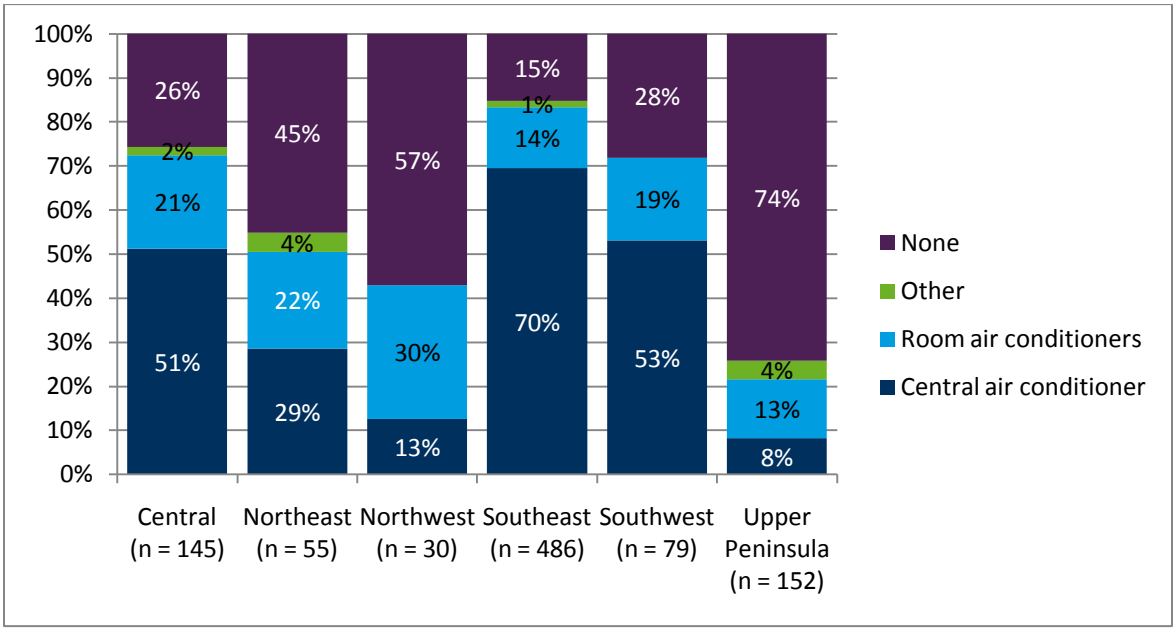
Figure 31. Primary Cooling System by Building Type



While the majority of homes in the Lower Peninsula have central or room air conditioning, 74 percent of homes in the Upper Peninsula do not have cooling systems. Cooling systems are most common in the Southeast region, where 85 percent of homes have some type of artificial cooling.[9]

[9] Does not include room fans.

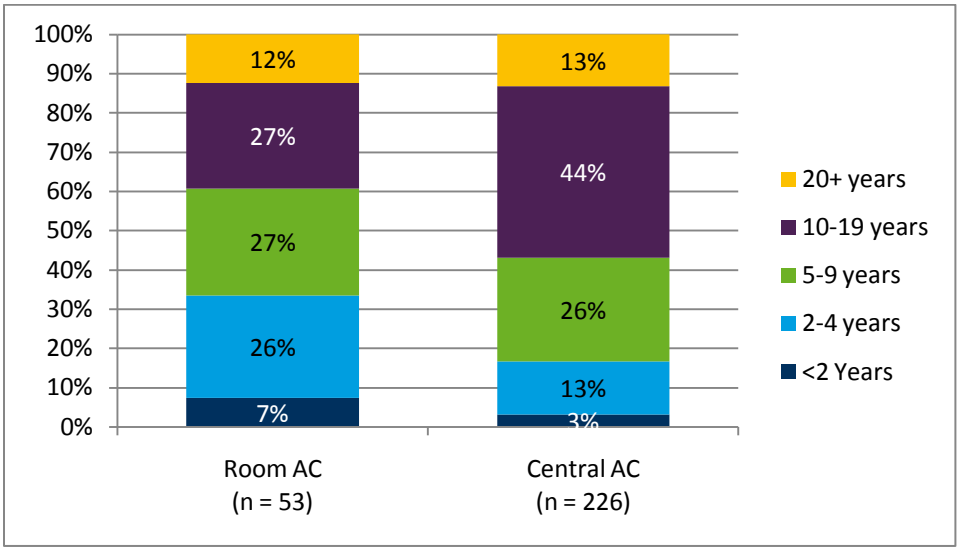
Figure 32. Primary Cooling System by Region



Note: Northwest region results are reported at the 90 percent confidence level, with ±14.9 percent confidence.
Northeast region results are reported at the 90 percent confidence level, with ±11.0 percent confidence.

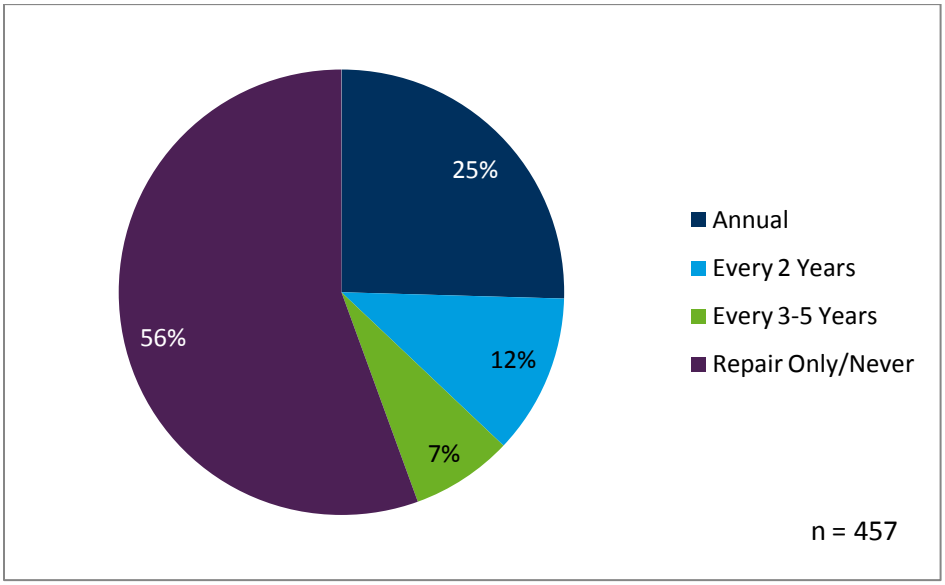
Unlike furnaces, the majority of central air conditioning systems (57 percent) were older than 10 years, while room air conditioners were slightly newer. Figure 33 provides the distribution of unit age across the central and window air conditioning systems.

Figure 33. Age of Primary Central Air Conditioning Systems and Window Units*



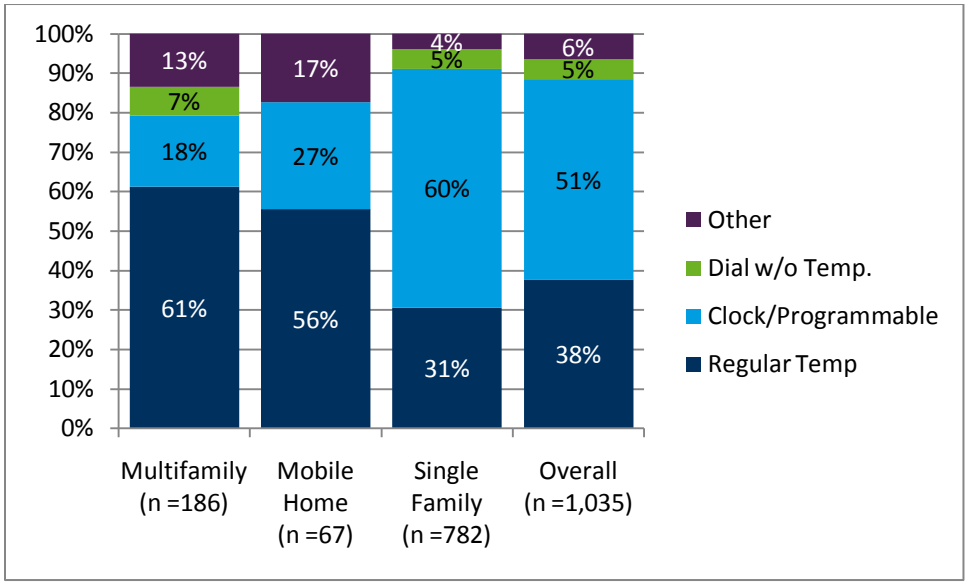
Maintenance of central air conditioning systems (Figure 34) largely mirrors that for primary heating systems, as the majority of homeowners do not have maintenance performed (56 percent) and approximately one-quarter of homes receive annual maintenance.

Figure 34. Maintenance of Primary Central Air Conditioning Units



As shown in Figure 35, the distribution of temperature control types for cooling systems diverges slightly from those for heating systems, largely due to the presence of room air conditioners. Multifamily homes, for example, have the highest proportion of room air conditioners, and therefore, compared to single family homes, have a corresponding higher proportion of switch operated cooling systems (switch systems fall into the 'Other' category in the table below).

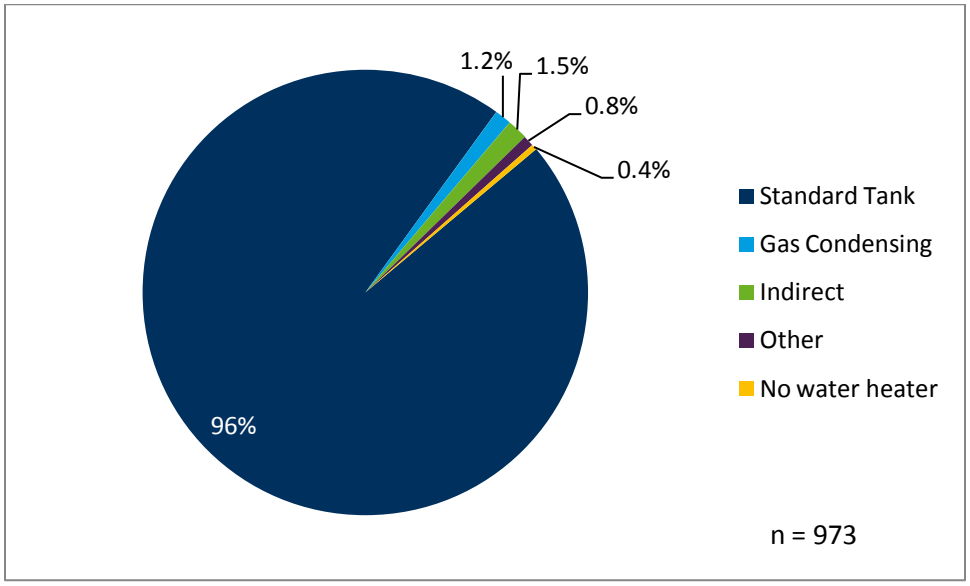
Figure 35. Types of Primary Cooling System Controls



Water Heating

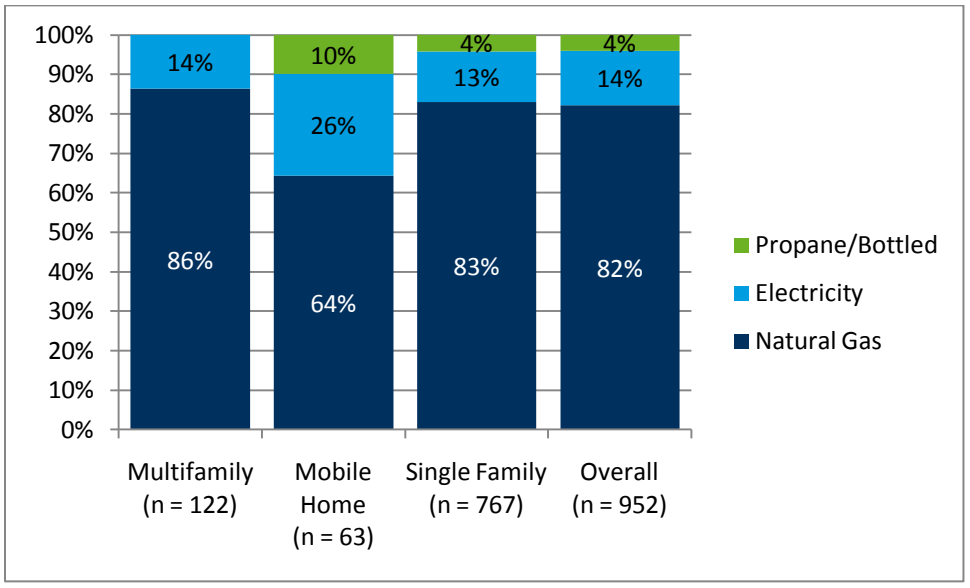
Almost all of the water heaters at homes we surveyed (96 percent) were standard tank-type units, with all other units, such as tankless, solar, gas condensing, and indirect, making up less than 4 percent of units (Figure 36).

Figure 36. Water Heater Type



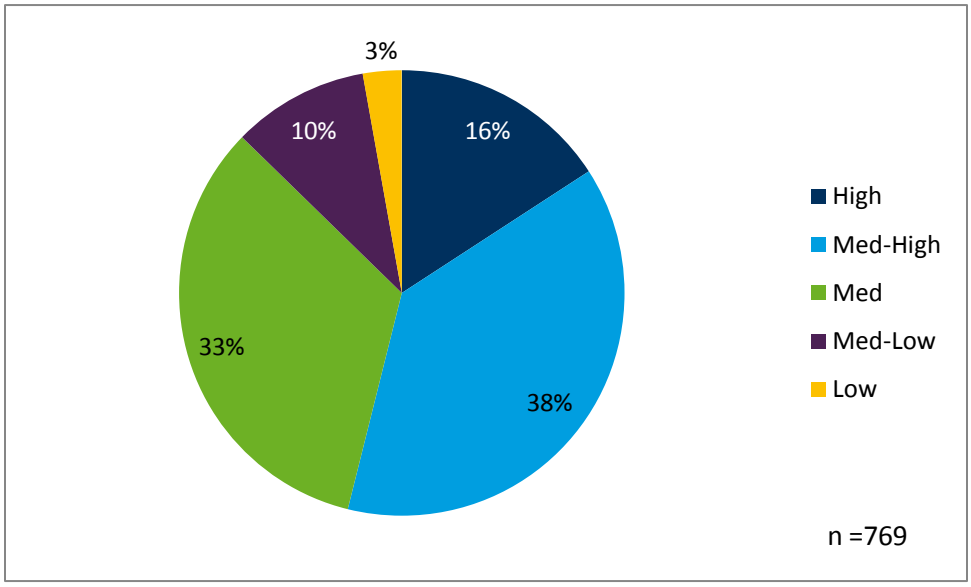
Eighty-two percent of water heaters in the homes we surveyed use natural gas for fuel (as shown in Figure 37). The remaining water heaters are electric (14 percent) and propane or bottled gas units (4 percent). While electric water heaters were in less than 15 percent of single family and multifamily homes, 26 percent of mobile homes have electric water heaters.

Figure 37. Distribution of Water Heater Fuel Types by Building Type



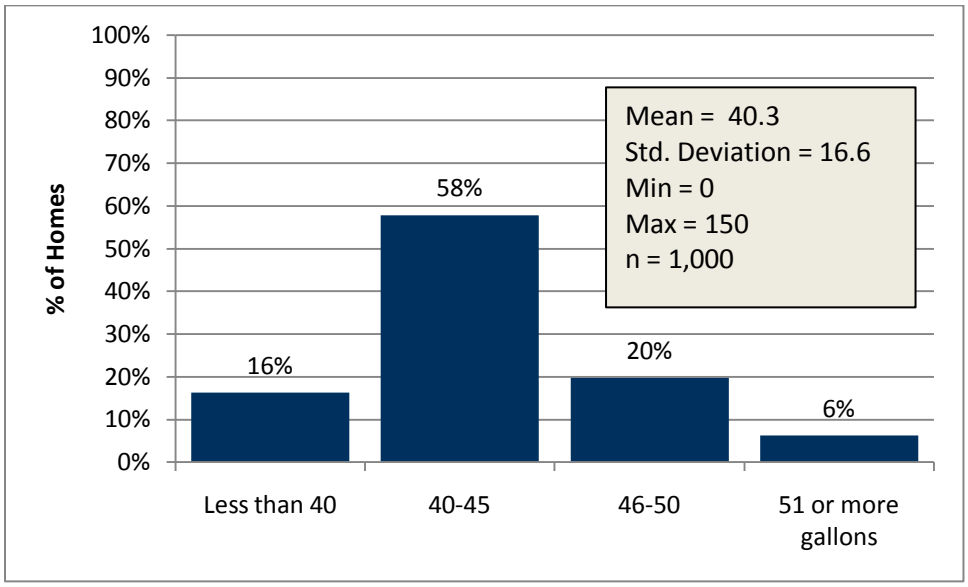
As shown in Figure 38, temperature settings on residential water heaters varied greatly, with the majority (87 percent) falling within the medium to medium-high range.[10]

Figure 38. Primary Water Heating Temperature



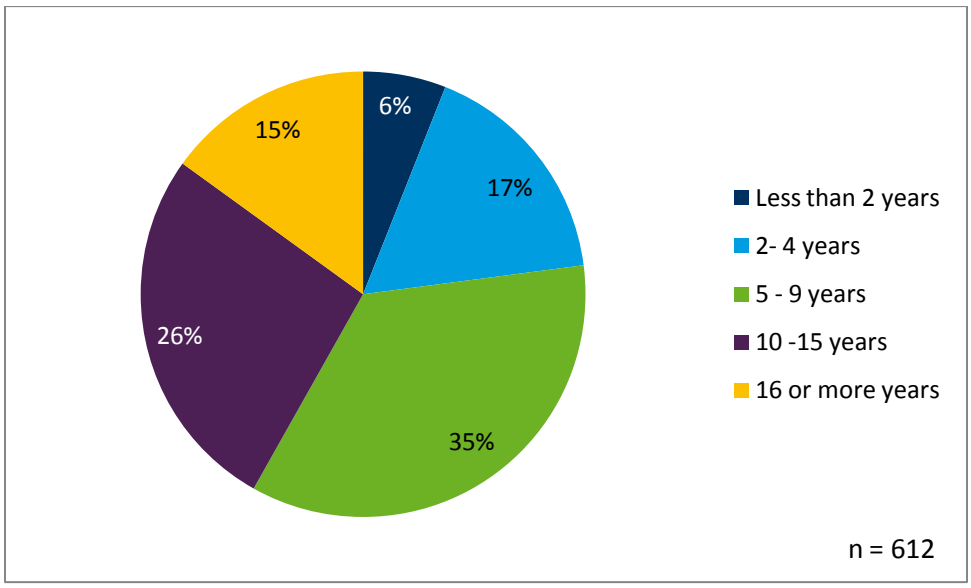
The majority of water heaters were between 40 and 45 gallons in capacity and were less than 10 years old, as indicated in Figure 39 and Figure 40. Few units exceeded 50 gallons (approximately 6 percent) or were more than 15 years old (approximately 15 percent).

Figure 39. Capacity of Water Heaters



[10] Due to the wide variety of ways water heater manufacturers display their temperature settings, we instructed auditors to record the set point in the broad terms of low, medium, and high. On average, low corresponds to 115 degrees F, medium to 130 degrees F, and high 145 degrees F.

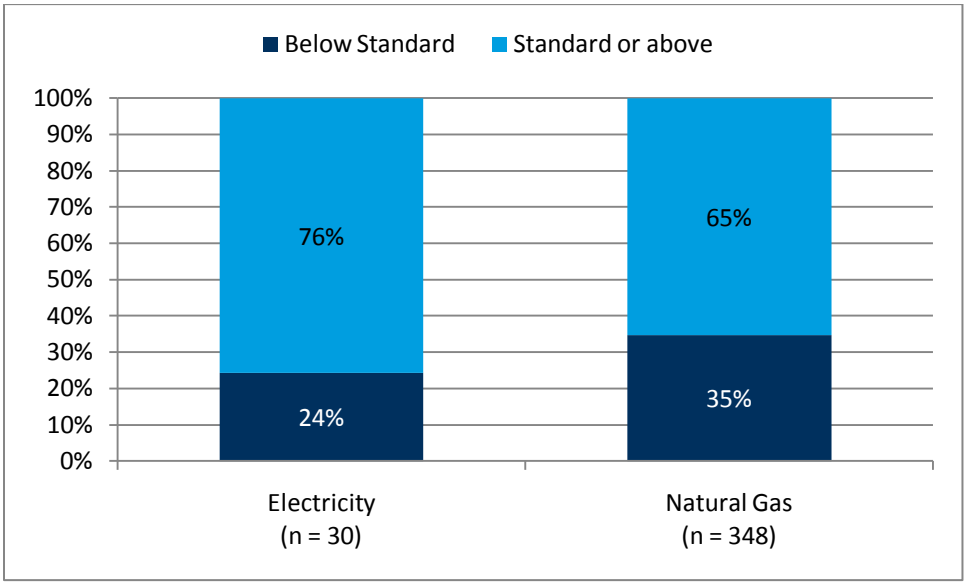
Figure 40. Age of Primary Water Heater



The water heater efficiency was infrequently provided on the name plate, but where the make and model were available, the Project Team recorded. For units where make and model were not available we used secondary research to approximate the efficiency of units by their size.[11] Figure 41 provides the distribution of water heaters by fuel type relative to the federal efficiency standard (0.59 efficiency factor, abbreviated as EF, for a natural gas 40 gallon unit). At most of the sites we visited, the electrical units met the federal standard (76 percent), while a smaller proportion of gas water heaters met the federal standard (65 percent).

[11] Secondary sources include: the Air-Conditioning, Heating and Refrigeration Institute database (http://www.ahridirectory.org/ceedirectory/pages/home.aspx); the Consortium for Energy Efficiency Website (http://www.cee1.org/gas/gs-wh/); and the General Electric database (http://m.geappliances.com/GEAppliancesMobile/Dispatcher).

Figure 41. Water Heater Efficiency by Fuel Type*

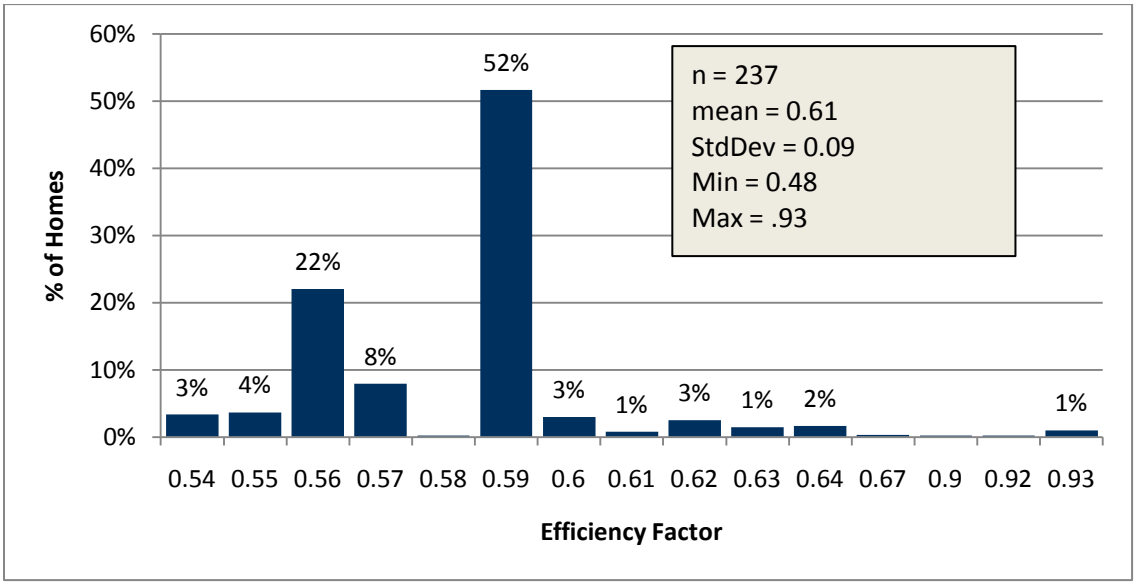


Note : Electric water heater results are reported at the 90 percent confidence level, with ±13.2 percent confidence.

Water heater efficiency standards depend on water heater size and fuel type. Specifically, if an electric water heater's EF is greater than or equal to 0.97 - 0.00132 * volume, then it meets the federal standard. A gas water heater's EF must be greater than or equal to 0.67 - 0.0019 * volume to meet the federal standard.

Figure 42 provides a distribution of EFs for customer with 40 gallon, natural gas or propane/bottled water heaters. Natural gas water heaters with a 40 gallon tank are the most common type, accounting for 55 percent of all water heaters.

Figure 42. Efficiency Factors for Natural Gas Water Heaters with 40 Gallon Tanks



Water Efficiency Measures

Water efficiency measures aid in energy conservation by reducing water usage, and subsequently reducing the overall water heating load. Depending on the water heating fuel type, these measures may result in gas or electric energy savings. The most typical water efficiency measures are low-flow showerheads and faucet aerators.

Table 15 shows the average number of sinks and showers in homes of different sizes and types. On average, homes have approximately 3.6 sinks and 1.5 showers (largely driven by single family homes).

As indicated by the saturations in Table 11, overall, homes average 2.24 faucet aerators and 0.86 low flow showerheads. This means that roughly 38 percent of sinks and 42 percent of showerheads do not have low-flow units.12 Faucet aerators and low-flow showerheads, therefore, offer significant energy saving potential.

Table 15. Mean Number of Sinks and Showers by Home Characteristics

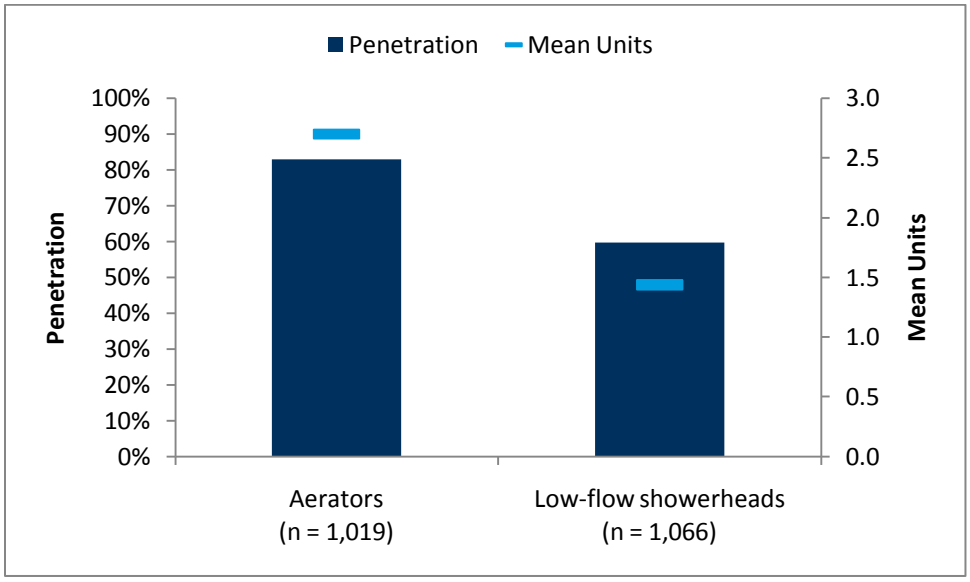
Home Characteristics	n	Sinks	Showers
Overall*	1,068	3.6	1.5
<1,000 sq. ft.	211	1.5	1.1
1,000-1,499 sq. ft.	368	3.3	1.3
1,500-1,999 sq. ft.	223	4.1	1.7
2,000-2,499 sq. ft.	103	4.5	1.8
2,500+ sq. ft.	115	5.6	2.1
Multifamily	194	2.9	1.3
Mobile Home	71	3.0	1.5
Single Family	803	3.9	1.5

* Sample sizes for home size groups add up to 1,020 because square footage estimates were available for only 1,020 homes.

Both low-flow showerheads and faucet aerators were present in more than half of the homes we surveyed. Figure 43 indicates that in homes with water efficiency measures, more than one low-flow showerhead and more than two aerators were present.

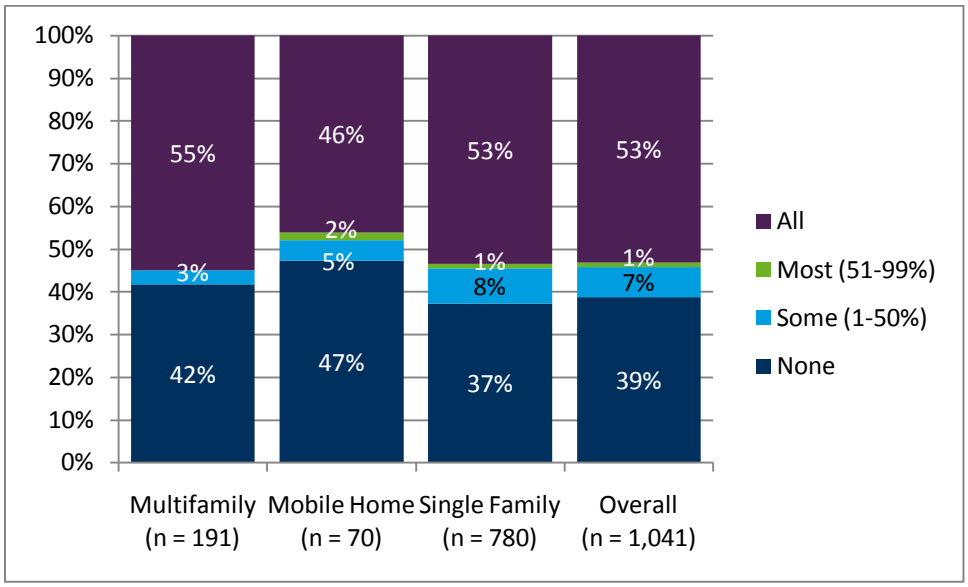
[12] Dividing the measure saturation by the average number of sinks/showers yields the percent of sinks/showers with the measure. The measure saturation should not be confused with the mean units in Figure 43—mean units indicate, on average, how many aerators or showerheads are in households that have the measure, while saturations take into account households that do not have the measure.

Figure 43. Penetration of Water Heating Energy Efficiency Measures



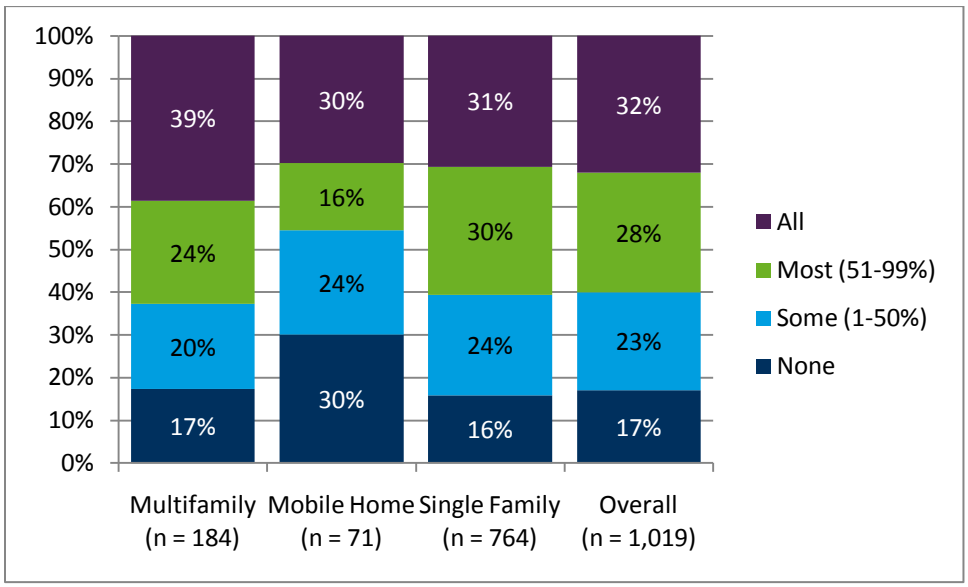
On average, 53 percent of homes had all the showers fitted with a low-flow showerhead, while 39 percent of homes with showers did not have any low-flow showerheads installed (Figure 44). Eight percent of single family homes had a low-flow showerhead installed in at least one of their showers (but not in most or all of their showers).

Figure 44. Share of Showers in a Household with Low-Flow Measures Installed



Unlike showers, homeowners often fit some, but not all of their faucets with low-flow measures. Seventeen percent of households did not have any low-flow faucet aerators installed, and 32 percent had the measure installed on every sink (Figure 45).

Figure 45. Share of Sinks in a Household with Low-Flow Measures Installed



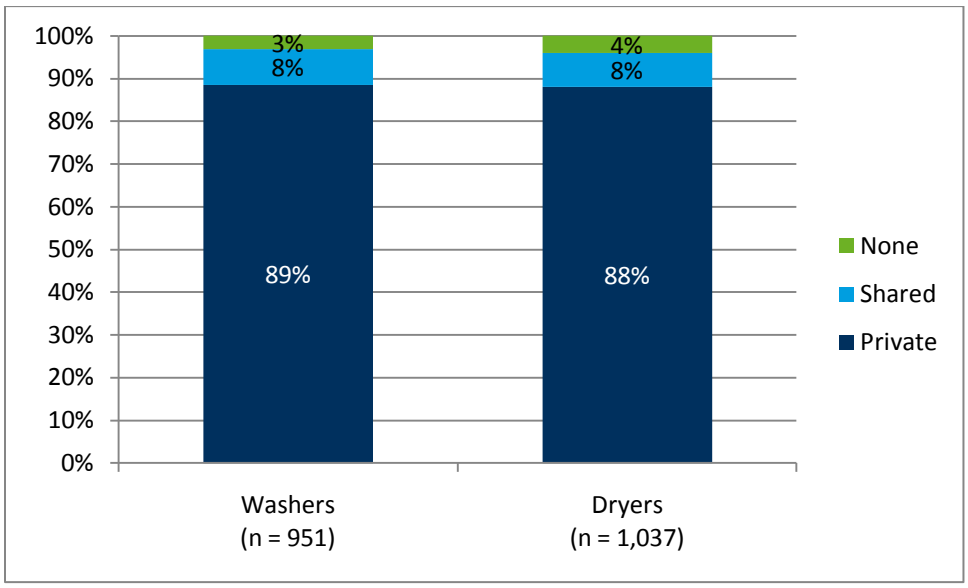
Laundry

Nearly all of the homes we surveyed had access to laundry appliances, although the number of homes with private washers and dryers was slightly lower, as described below. As expected, the distribution of shared and private washers is nearly identical to the distribution of shared and private dryers.

Clothes Washers

Eighty-nine percent of residents had a private clothes washer (Figure 46). Roughly 3 percent of homes did not have a clothes washer, while 8 percent shared a unit(s). Multifamily homes account for 96 percent of all homes that share washers. The majority (88 percent) of clothes washers we surveyed were top-loading, as opposed to horizontal-axis machines (n = 961).

Figure 46. Penetration of Washer and Dryer Type

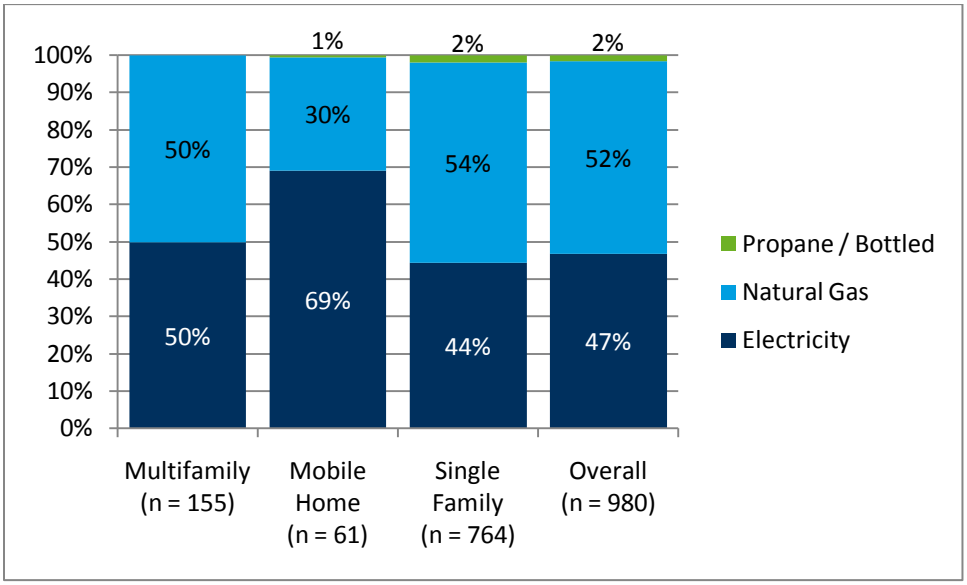


Fourteen percent of clothes washers were ENERGY STAR-rated (n = 869). The Project Team's documentation of ENERGY STAR clothes washers was based on our ability to visually detect the label or determine that a particular model was ENERGY STAR-rated by searching for the make and model number on the ENERGY STAR Website. It should be noted that there are likely instances where a clothes washer was ENERGY STAR-rated at one time, but lost its rating due to strengthened ENERGY STAR standards.

Clothes Dryers

Natural gas clothes dryers were slightly more prevalent (52 percent) on average than electric dryers (47 percent), as shown in Figure 47. This distribution was relatively consistent across multifamily and single family homes, but mobile homes had electric clothes dryers accounting for 69 percent of the units. As expected, dryers that use bottled fuel are rare, accounting for 2 percent of units overall.

Figure 47. Distribution of Dryer Fuel Type by Building Type

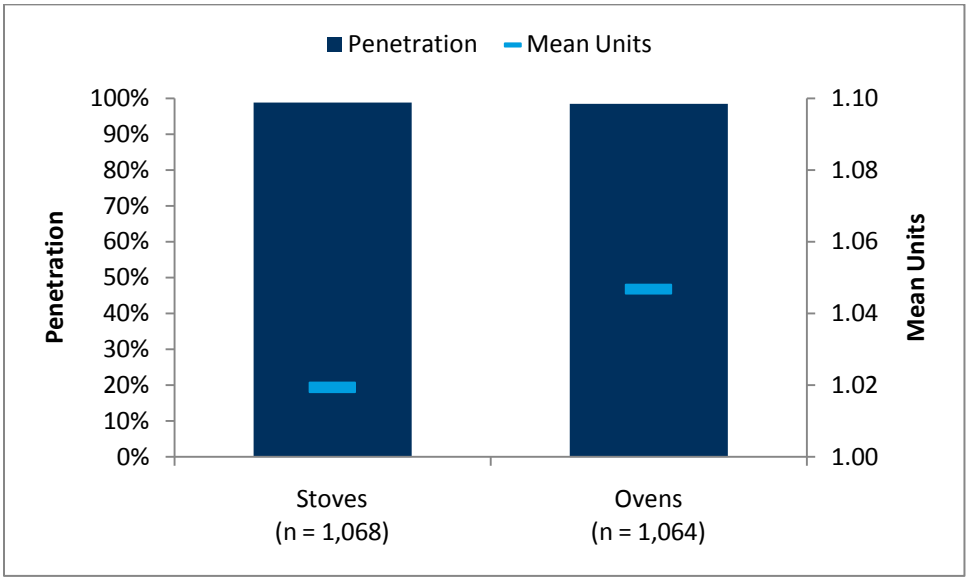


Kitchen Appliances

Cooking Appliances

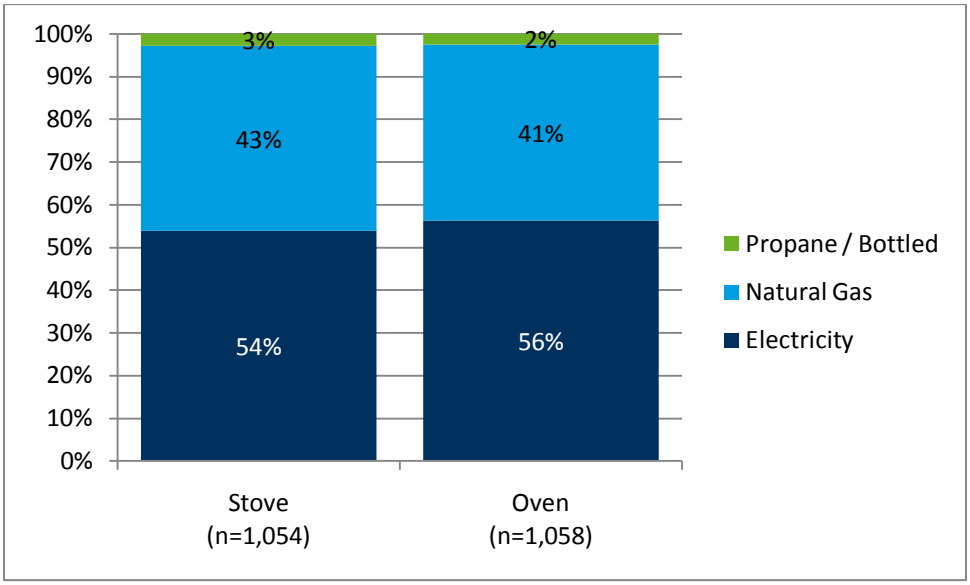
Virtually all of the homes we surveyed had ovens and/or stoves, and homes only rarely had more than one of these types of appliances. As shown in Figure 48, penetrations and mean units are nearly identical for these appliances.

Figure 48. Penetration and Mean Units of Stoves and Ovens



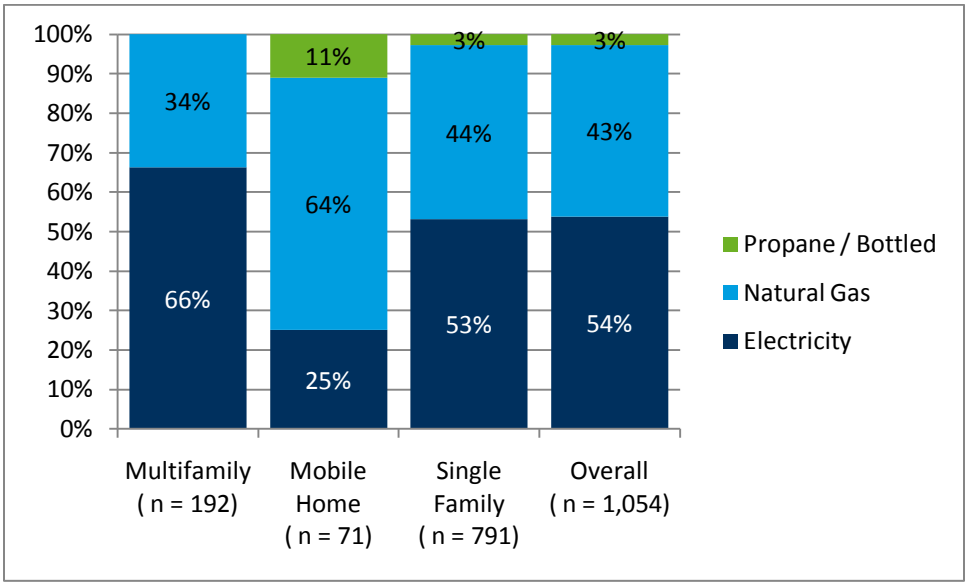
Electricity is the most common fuel type for ovens and stoves, accounting for 54 percent of stoves and 56 percent of ovens (Figure 49).

Figure 49. Stoves and Ovens by Fuel Type



We found that the fuel types for stoves and ovens were variable across different building types. Figure 50 illustrates this variation in stove fuel type across different buildings types (this distribution should be equally consistent for oven fuel types across different building types). While the distribution of fuel type for these appliances in single family homes is consistent with the overall distributions shown in Figure 49, multifamily homes are more likely to have electric cooking appliances, and mobile homes are more likely to have gas cooking appliances.

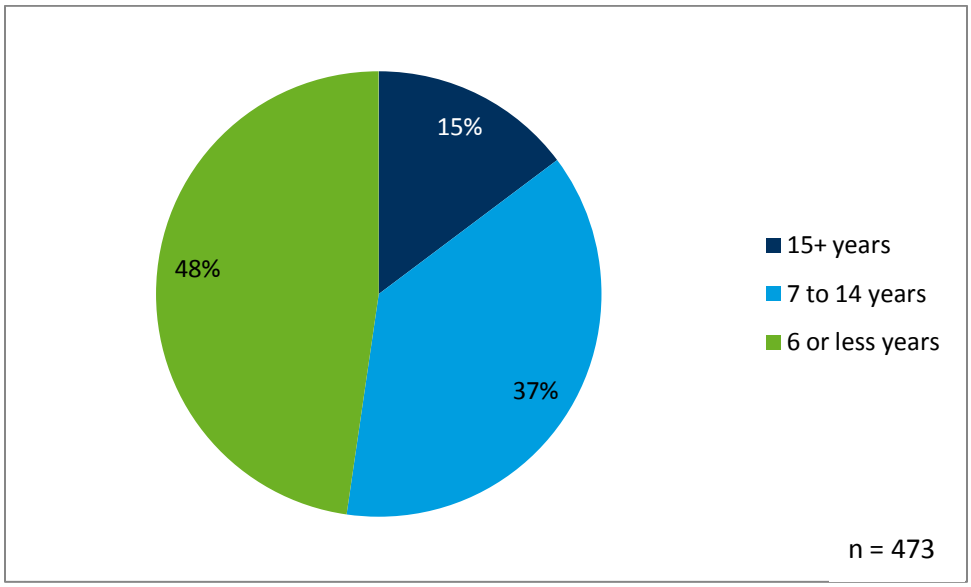
Figure 50. Stove Fuel Type by Building Type



Dishwashers

Sixty-six percent of the homes we surveyed contained a dishwasher, with only a negligible number of homes having more than one (n = 987) . Of the homes with a dishwasher(s), 18 percent of the units were ENERGY STAR-rated (n = 642). Nearly half of the dishwashers in our survey were six years old or newer, with only 15 percent being older than 15 years (Figure 51).

Figure 51. Age of Dishwashers



Refrigerators and Freezers

As seen in Figure 52, all homes had refrigerators and approximately 36 percent also had a stand-alone freezer. On average, roughly 25 percent of homes had a secondary refrigerator, while almost no residents had a secondary stand-alone freezer.

Figure 52. Penetration and Mean Units of Refrigerators and Freezers

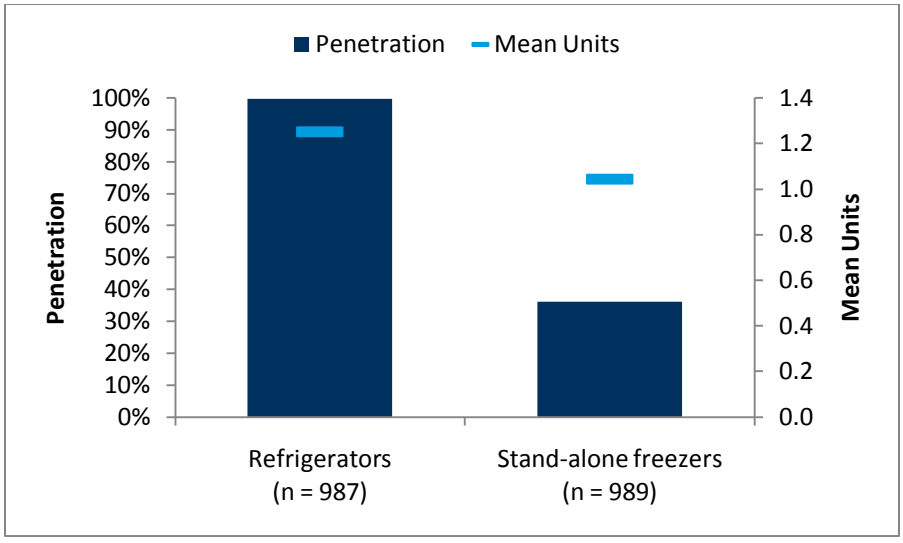
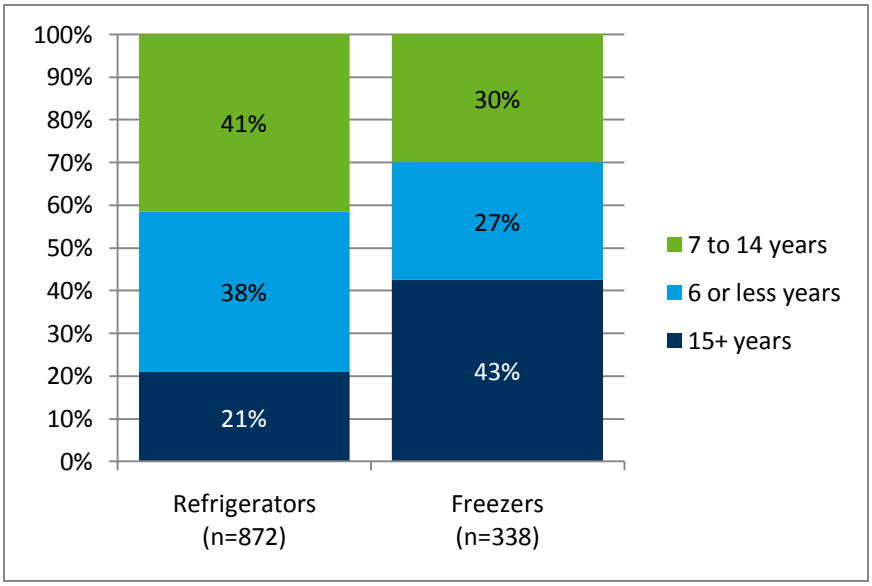


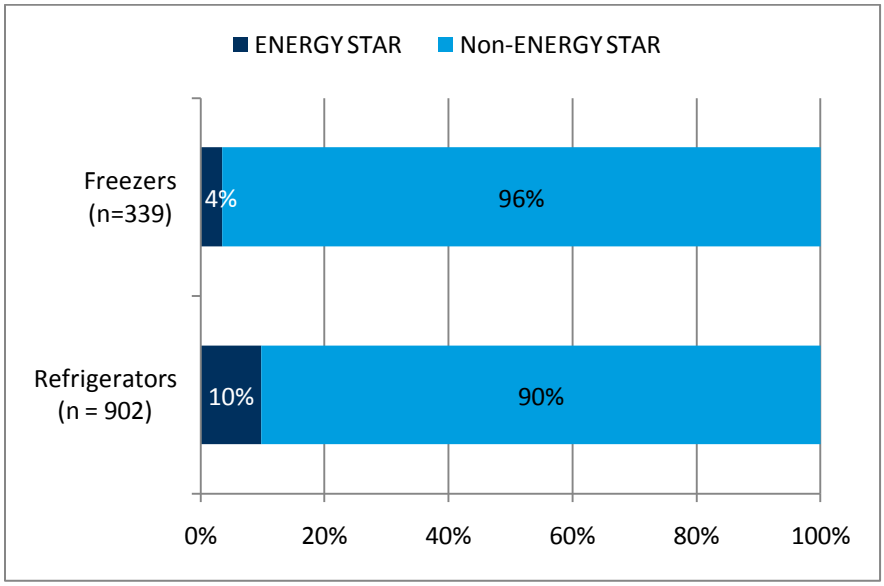
Figure 53 shows that the refrigerators and freezers were typically less than 15 years old, and thus were manufactured after the appliance code passed in 1990 under the National Appliance Energy Conservation Act, the first national energy standard for home appliances.

Figure 53. Age of Primary Refrigerator and Stand-Alone Freezer



Only 4 percent of stand-alone freezers and 10 percent of refrigerators were ENERGY STAR-rated (Figure 54). Single family homes had the majority of ENERGY STAR refrigerators. While single family homes make up about 75 percent of the home type population, they account for 93 percent of ENERGY STAR refrigerators (n = 111).

Figure 54. Penetration of ENERGY STAR Refrigerators and Freezers

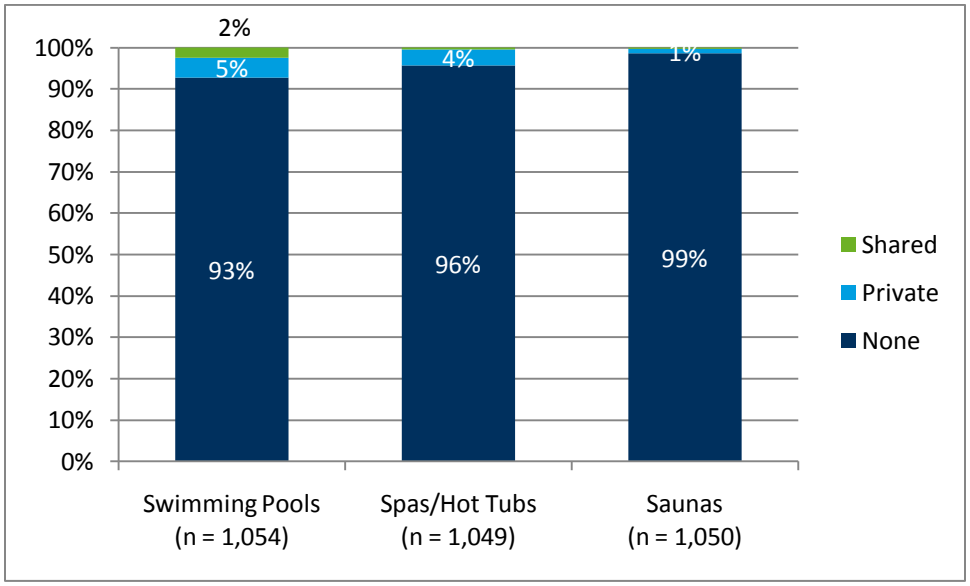


Recreational Equipment

Swimming Pools

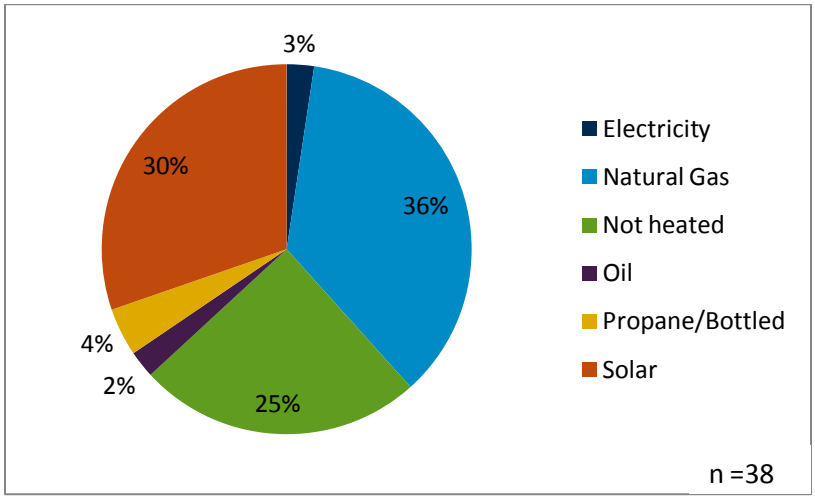
The vast majority of homes did not have any outdoor recreational equipment such as a swimming pool, hot tub, or sauna. Figure 55 shows that 93 percent of households have no shared or private swimming pool, 96 percent of households do not have a hot tub or spa, and 99 percent of households do not have a sauna.

Figure 55. Recreational Equipment Penetrations



Of those households with a swimming pool, the type of fuel used to heat them varied (Figure 56). The most common fuel types were natural gas (36 percent) and solar (30 percent). Nearly one-quarter of households with a swimming pool do not heat their pool.

Figure 56. Swimming Pool Fuel Type



Note: Swimming pool fuel results are reported at the 90 percent confidence level, with ±12.8 percent confidence.

Consumer Electronics

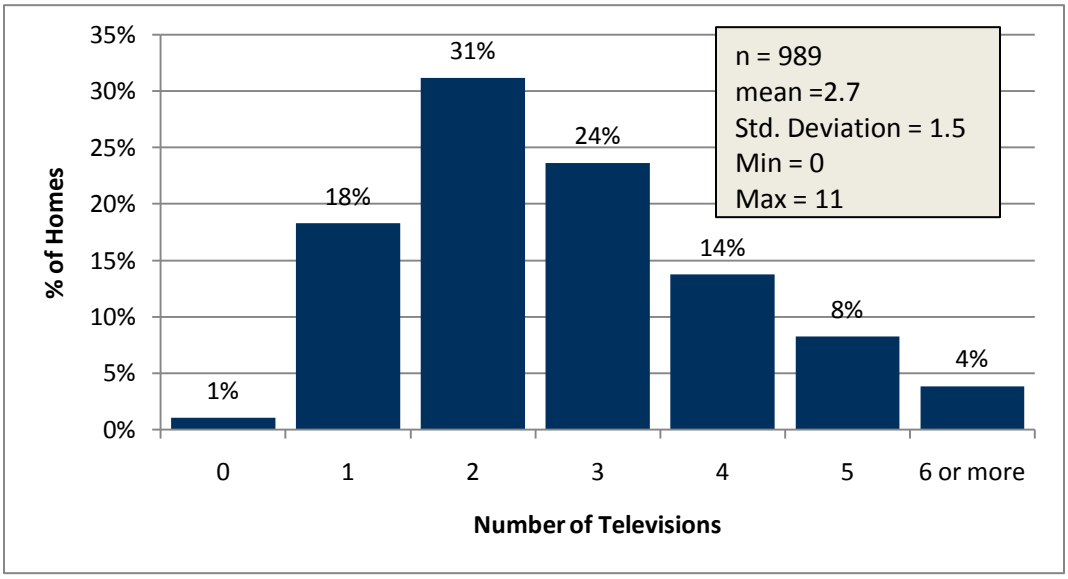
Televisions

Virtually all residential homes had at least one television, with the average home having two or three (Table 16 and Figure 57).

Table 16. Penetration and Saturation of Televisions

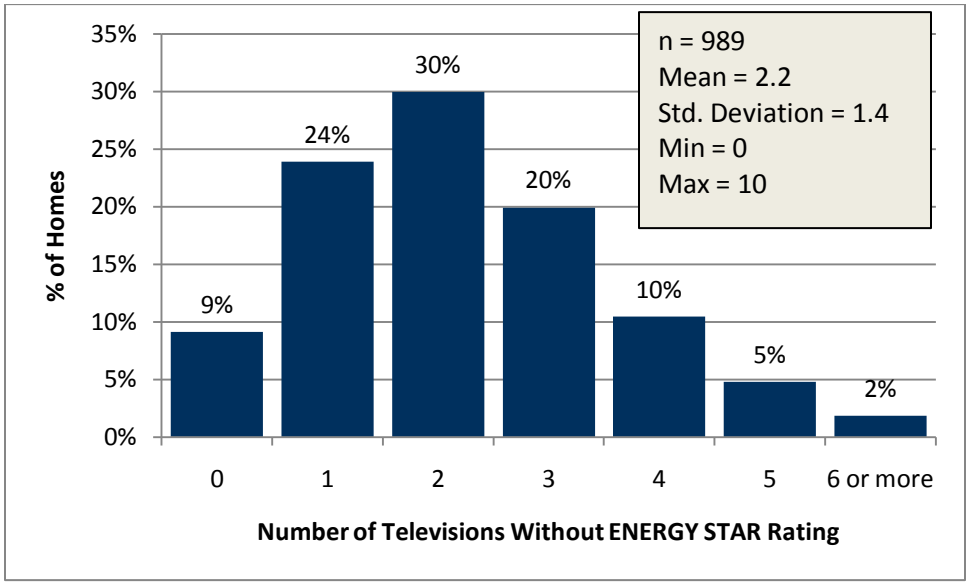
Equipment	Penetration	Saturation
ENERGY STAR (n = 989)	38%	52%
Non-ENERGY STAR (n = 989)	91%	222%
All TV's (n = 989)	99%	274%

Figure 57. Total Number of Televisions



Televisions were typically not ENERGY STAR-rated, as can be seen in Figure 58 and Figure 59. Figure 58 shows the number of televisions that were not ENERGY STAR-rated. Nine percent of homes only have ENERGY STAR-rated televisions (represented as '0' in the figure).

Figure 58. Number of TVs Without ENERGY STAR Rating



About 29 percent of homes had one ENERGY STAR-rated TV, and approximately 8 percent had more than one. Sixty-two percent of homes did not have any ENERGY STAR rated televisions.

Figure 59. Number of TVs With ENERGY STAR Rating

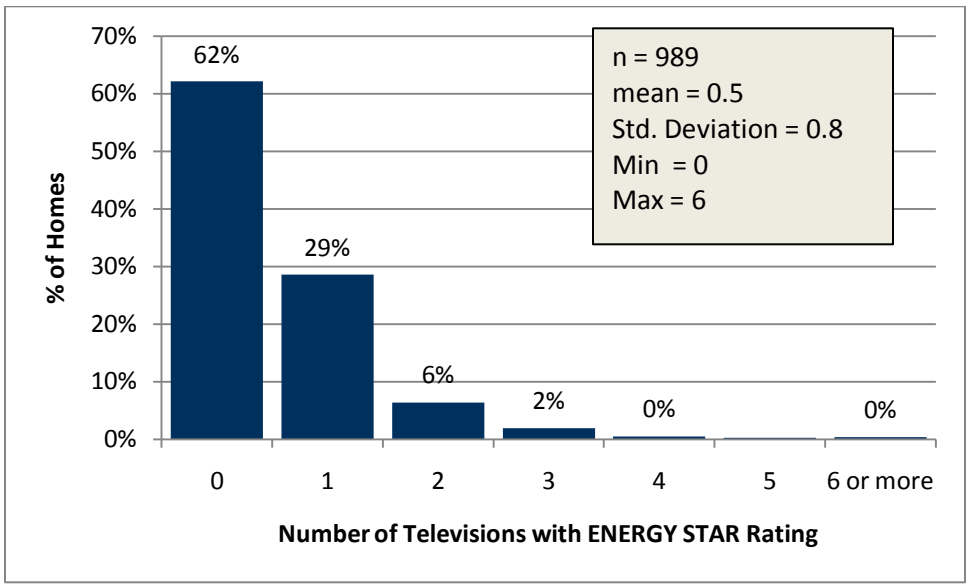
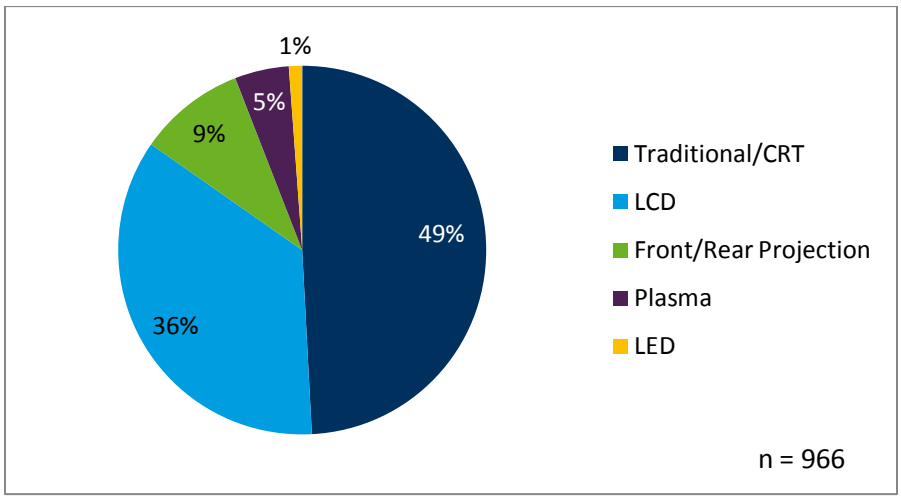


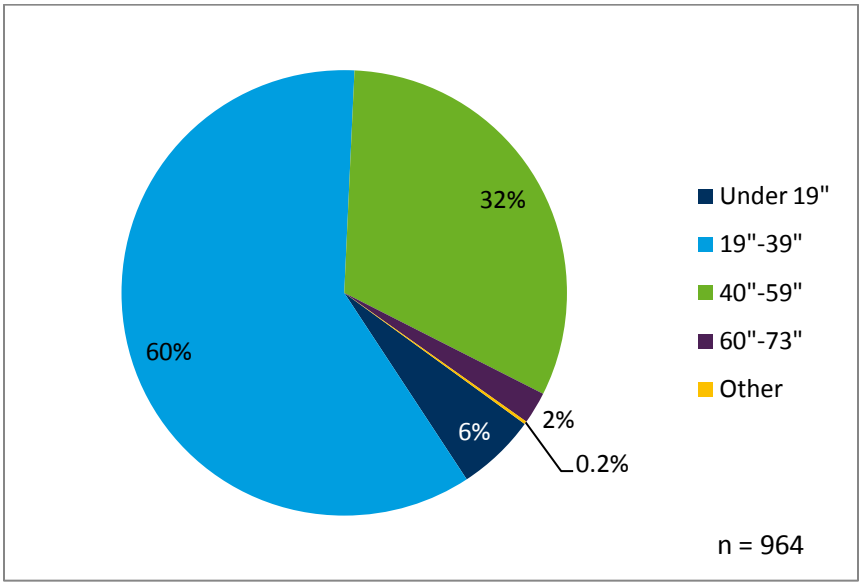
Figure 60 and Figure 61 provide the distributions of the typical characteristics of primary televisions in homes we surveyed. A primary unit is defined as the television most frequently viewed in the home. In nearly half of households, the primary TV is a traditional cathode ray tube (CRT). Thirty-six percent of homes have an LCD television as primary.

Figure 60. Primary TV Type



Primary televisions between 19 and 39 inches (diagonal) are the most common, appearing in 60 percent of homes (Figure 61).

Figure 61. Primary TV Size



Home Audio and TV Accessories

As with televisions, most home audio and TV accessories are non-ENERGY STAR-rated, as shown in Table 17.

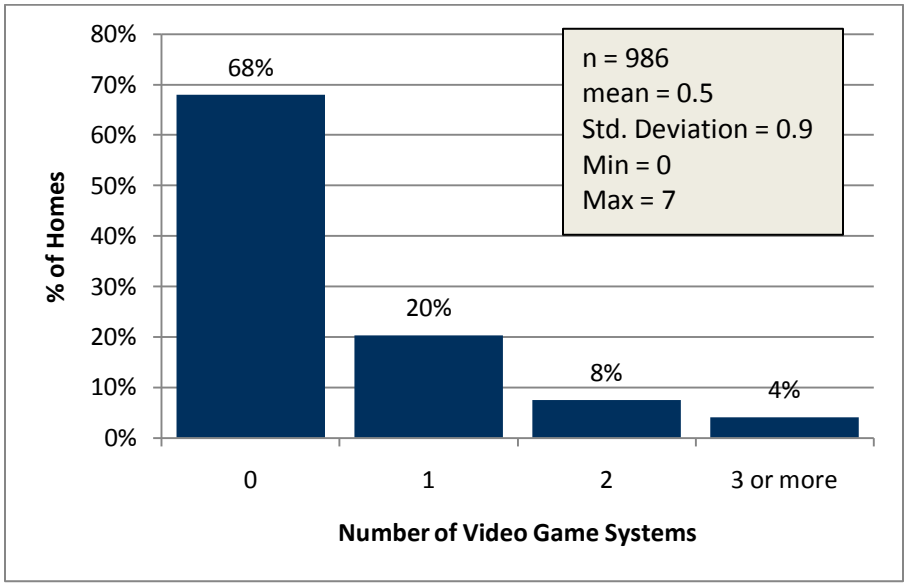
Table 17. Penetration and Saturation of Home Audio and TV Accessories

Equipment	Penetration	Saturation
ES Digital TV Converters	4%	6%
Non-ES Digital TV Converters	19%	27%
Total Digital TV Converters (n = 890)	22%	33%
Total DVRs (n = 909)	30%	39%
ES DVD Players	13%	14%
Non-ES DVD Players	77%	116%
Total DVD Players (n = 974)	84%	130%

Note: Penetrations for "total" rows will not always equal the sum ES/Non-ES components. In instances where customers have both ENERGY STAR and Non-ENERGY STAR units, the sum of individual penetrations could exceed the penetration for the "total" category.

On average, homes had 0.5 video game systems, though the majority of homes (68 percent) did not have any video game system. Nearly one-third of homes had one or more video game systems (Figure 62).

Figure 62. Number of Video Game Systems



Computers

Laptop and desktop computers (Table 18), and their accompanying monitors (Table 19) had low penetrations and saturations of ENERGY STAR-rated units. This trend is similar to the low levels of ENERGY STAR-rated televisions and various other consumer electronics. Approximately 85 percent of the households we surveyed had computers, averaging 1.9 computers per home (in homes that have computers).

Table 18. Penetration and Saturation of Computers

Equipment	Penetration	Saturation
ES Laptop Computers	16%	20%
Non-ES Laptop Computers	32%	41%
Total Laptop Computers (n=929)	46%	61%
ES Desktop Computers	8%	9%
Non-ES Desktop Computers	59%	74%
Total Desktop Computers (n=944)	74%	108%
Total Computers (n=973)	85%	161%

Note: Penetrations for "total" rows will not always equal the sum ES/Non-ES components. In instances where customers have both ENERGY STAR and Non-ENERGY STAR units, the sum of individual penetrations could exceed the penetration for the "total" category.

Table 19. Penetration and Saturation of Computer Monitors

Equipment	Penetration	Saturation
ES Computer Monitors	12%	14%
Non-ES Computer Monitors	52%	64%
Total Computer Monitors (n = 937)	61%	78%

Note: Penetrations for "total" rows will not always equal the sum ES/Non-ES components. In instances where customers have both ENERGY STAR and Non-ENERGY STAR units, the sum of individual penetrations could exceed the penetration for the "total" category.

Other Home Office Equipment

Home office equipment had low penetrations and saturations of ENERGY STAR-rated units (Table 20). Only multifunctional devices (such as scanner/printer/fax units) had an ENERGY STAR saturation exceeding 10 percent.

Table 20. Penetration and Saturation of Home Office Equipment

Equipment	Penetration	Saturation
ES Copiers	2%	2%
Non-ES Copiers	5%	5%
Total Copiers (n = 890)	6%	7%
ES Scanners	2%	2%
Non-ES Scanners	5%	5%
Total Scanners (n = 891)	7%	7%
ES Printers	4%	4%
Non-ES Printers	26%	29%
Total Printers (n = 908)	30%	34%
ES Multifunctional Devices	19%	20%
Non-ES Multifunctional Devices	32%	35%
Total Multifunctional Devices (n = 923)	49%	55%

Note: Penetrations for "total" rows will not always equal the sum ES/Non-ES components. In instances where customers have both ENERGY STAR and Non-ENERGY STAR units, the sum of individual penetrations could exceed the penetration for the "total" category.

Lighting

Incandescent bulbs make up the majority of domestic lighting and are present in virtually every home. Both linear fluorescents and CFLs are present in over three-quarters of homes (Table 21). However, incandescents account for over two-thirds of the overall saturation of lighting (defined as the proportion of total lighting made up of a given bulb type).

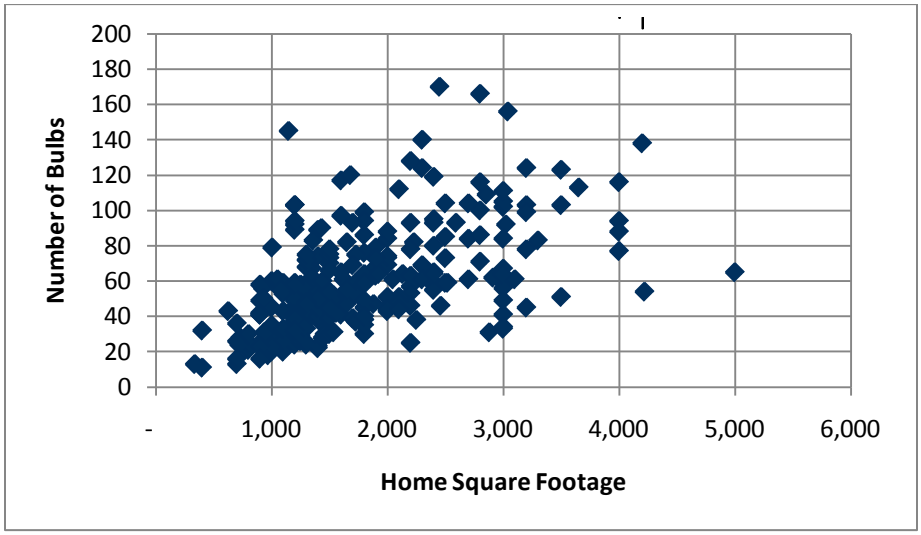
For this study, we found that 76 percent of households have at least one CFL currently installed, and there is a mean of 7.6 CFLs installed across all households.

Table 21. Penetration and Saturation of Lighting

Bulb Type	Penetration	Saturation
LED-Pin	2%	0%
LED-Screw	3%	0%
LED (n=994)	4%	0%
Halogen-Pin	30%	2%
Halogen-Screw	42%	3%
Halogen (n=994)	57%	5%
CFL-Pin	4%	0%
CFL-Specialty	19%	2%
CFL-Screw	70%	14%
CFL (n=994)	76%	16%
Fluorescent (n=994)	72%	11%
Incandescent (n=994)	99%	67%

The total number of bulbs within a given home varied greatly, largely as a function of total living space (Figure 63). The distribution is approximately normal, though slightly right-skewed and with a small difference between the mean and median number of bulbs (Figure 64).

Figure 63. Total Bulbs vs. Residence Size*



* This figure reflects unweighted counts.

Figure 64. Distribution of Total Number of Light Bulbs (excluding storage)

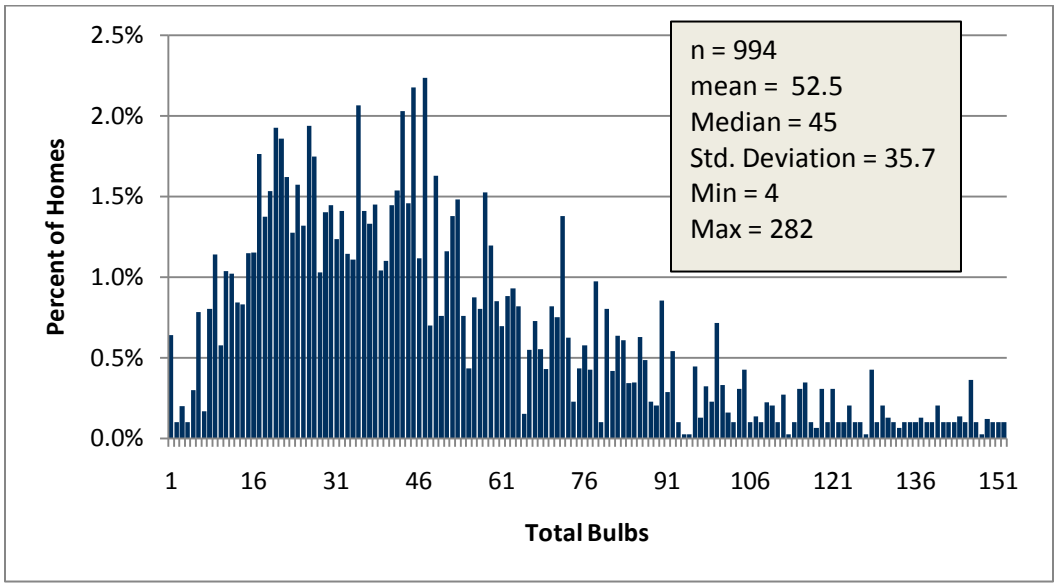


Table 22 provides the mean number of bulbs by room type. On average, households have roughly 35 incandescent bulbs, eight CFLs, three halogens bulbs, less than one LED bulb, and seven fluorescent bulbs.

Table 22. Mean Number of Bulbs by Room Type

Room	Total Bulbs	Incandescent	CFL	Halogen	LED	Fluorescent
Bathroom	4.5	3.5	0.7	0.2	0.01	0.1
Bedroom	4.2	3.3	0.7	0.1	0.02	0.1
Closet	2.4	1.8	0.2	0.1	0.00	0.3
Dining Room	4.3	3.6	0.5	0.1	0.01	0.0
Finished Basement	8.4	4.0	0.9	0.5	0.01	3.1
Garage	5.5	2.3	0.4	0.1	0.00	2.6
Hallway	4.2	3.4	0.7	0.1	0.02	0.1
Kitchen	5.1	2.7	0.9	0.6	0.03	0.8
Laundry	2.1	1.0	0.3	0.0	0.01	0.8
Office	3.4	2.2	0.6	0.3	0.00	0.3
Other	3.9	2.6	0.5	0.3	0.01	0.5
Outside	4.9	3.0	0.6	1.2	0.02	0.1
Primary	4.3	3.2	0.9	0.2	0.01	0.1
Unfinished Basement	6.3	3.0	0.9	0.1	0.00	2.3
Utility	1.7	1.0	0.1	0.1	0.00	0.5
Whole House*	52.5	34.7	7.6	3.4	0.1	6.6

*The "whole house" average will not equal the sum of room averages because the types and number of rooms in a house vary.

On average, single family homes have 62 light bulbs, mobile homes have 34 light bulbs, and multifamily homes have 25 light bulbs (Table 23 and Figure 65). While the average single family home is 78 percent larger than the average multifamily home, the mean number of light bulbs in single family homes is 148 percent greater than the number found in multifamily homes.

Table 23. Average Number of Bulbs by Building Type (excluding storage)

Building Type	Total Bulbs	Incandescent	CFL	Halogen	LED	Fluorescent
Multifamily (n = 163)	24.9	17.4	3.8	0.0	0.91	2.8
Mobile Home (n = 55)	33.9	24.2	6.4	0.0	1.25	2.0
Single Family (n = 671)	61.7	40.3	8.9	0.2	4.16	8.1

Figure 65. Mean Bulbs by Building Type (excluding storage)

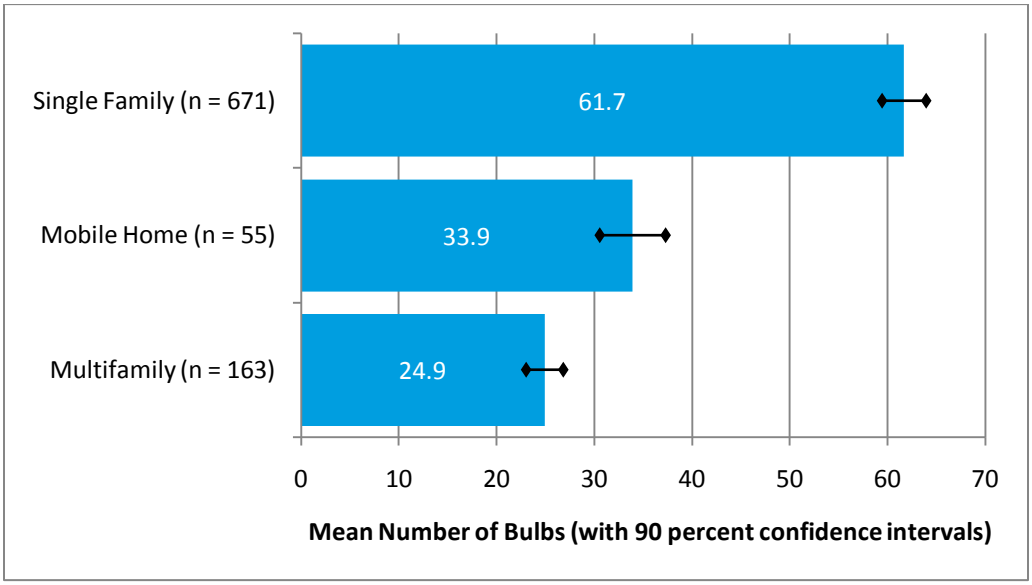


Table 24 shows the average number of light bulbs by type and region. Homes in the Upper Peninsula average nearly 12 CFLs, almost three more than any other region.

Table 24. Average Number of Bulbs by Region (excluding storage)

Region	Total Bulbs	Incandescent	CFL	Halogen	LED	Fluorescent
Central (n = 159)	43.7	29.2	7.6	0.1	1.71	5.1
Northeast (n = 57)	51.4	32.6	8.7	0.3	3.72	6.1
Northwest (n = 32)	58.4	41.2	7.0	0.1	2.90	7.3
Southeast (n = 489)	57.1	37.8	7.2	0.2	4.46	7.3
Southwest (n = 88)	49.6	31.9	8.0	0.0	3.1	6.6
Upper Peninsula (n = 169)	57.6	36.6	11.5	0.0	2.3	7.1

Figure 66 and Figure 67 show that the distributions of total incandescent and total CFL bulbs are essentially inverse of each other.

Figure 66. Distribution of Incandescent Lighting Saturations

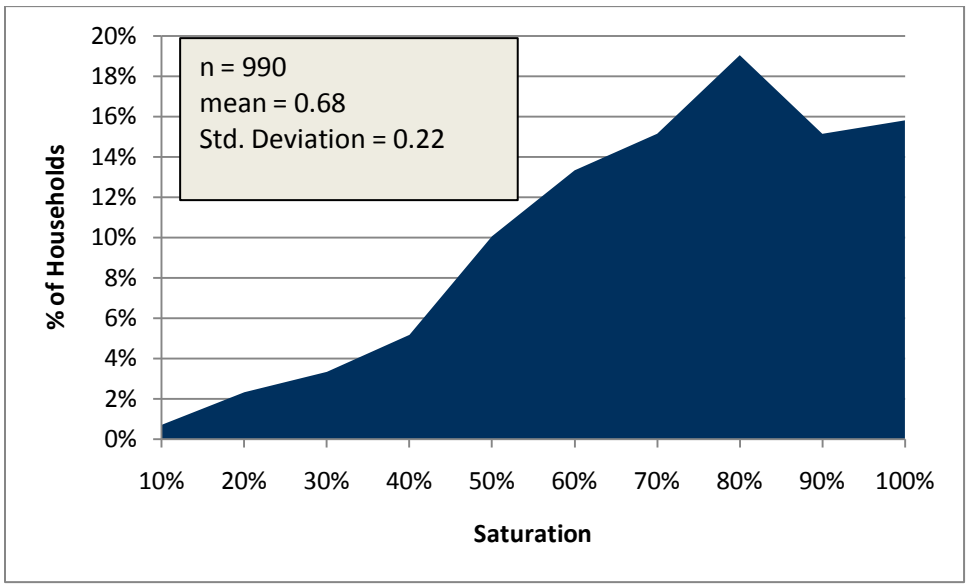
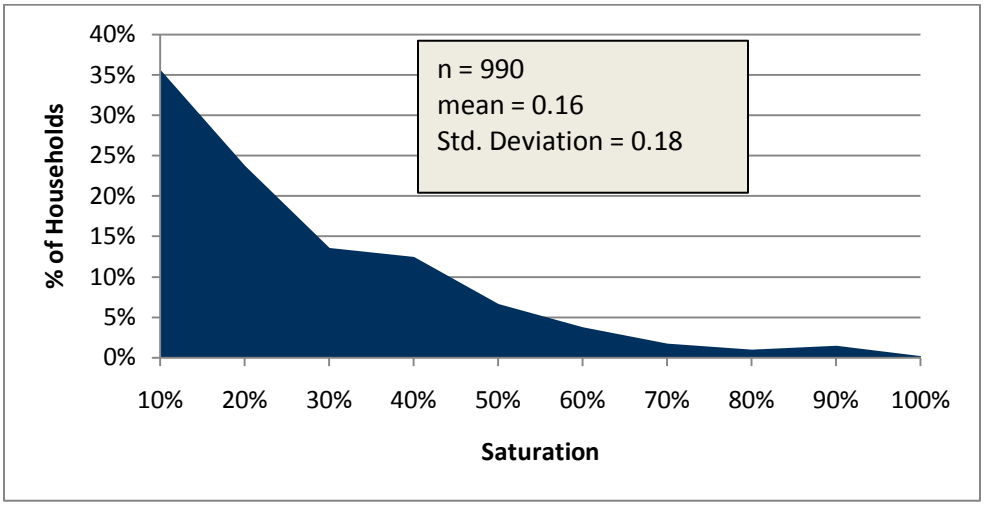


Figure 67. Distribution of CFL Lighting Saturations



We conducted in-depth audits of the location and types of lighting, and found that CFLs are most represented in high-use rooms, such as primary living spaces and kitchens (Table 25). As compared to installations by room type in the household, CFLs make up a larger share of bulbs in storage (28 percent).

Table 25. Lighting Saturation Rate by Bulb Type and Room Type

Room	Incandescent	CFL	Halogen	LED	Fluorescent
Bathroom	77%	17%	3%	0.1%	3%
Bedroom	77%	19%	2%	0.2%	2%
Closet	77%	11%	1%	0.0%	11%
Dining Room	80%	16%	3%	0.2%	1%
Finished Basement	49%	13%	4%	0.1%	33%
Garage	60%	8%	3%	0.0%	30%
Hallway	78%	19%	2%	0.4%	1%
Kitchen	54%	20%	7%	0.6%	18%
Laundry	56%	17%	1%	0.2%	26%
Office	64%	23%	6%	0.1%	7%
Other	73%	17%	4%	0.6%	5%
Outside	66%	14%	19%	0.4%	1%
Primary Living Space	71%	23%	4%	0.2%	2%
Storage	68%	28%	1%	0.1%	3%
Unfinished Basement	59%	16%	1%	0.1%	24%
Utility	73%	8%	2%	0.0%	17%
Whole House*	67%	16%	5%	0.25%	11%

*The "whole house" average will not equal the mean of room averages because the types of rooms in a house vary.

Table 26 shows the penetration and saturation of canned lighting.

Table 26. Penetration and Saturation of Canned Lighting

Room	Penetration	Saturation
Bathroom	6%	4%
Bedroom	4%	3%
Closet	1%	1%
Dining Room	2%	1%
Hallway	3%	2%
Kitchen	13%	6%
Laundry	2%	1%
Office	4%	3%
Other	6%	2%
Outside	0%	0%
Primary Living Space	8%	4%

Telephone Survey Awareness, Attitudes, and Behavior

This analysis explores how Michigan residents think about their energy usage and energy efficiency, and provides a baseline assessment of customers' energy-related attitudes, perceptions, and behaviors. Key topics of discussion include:

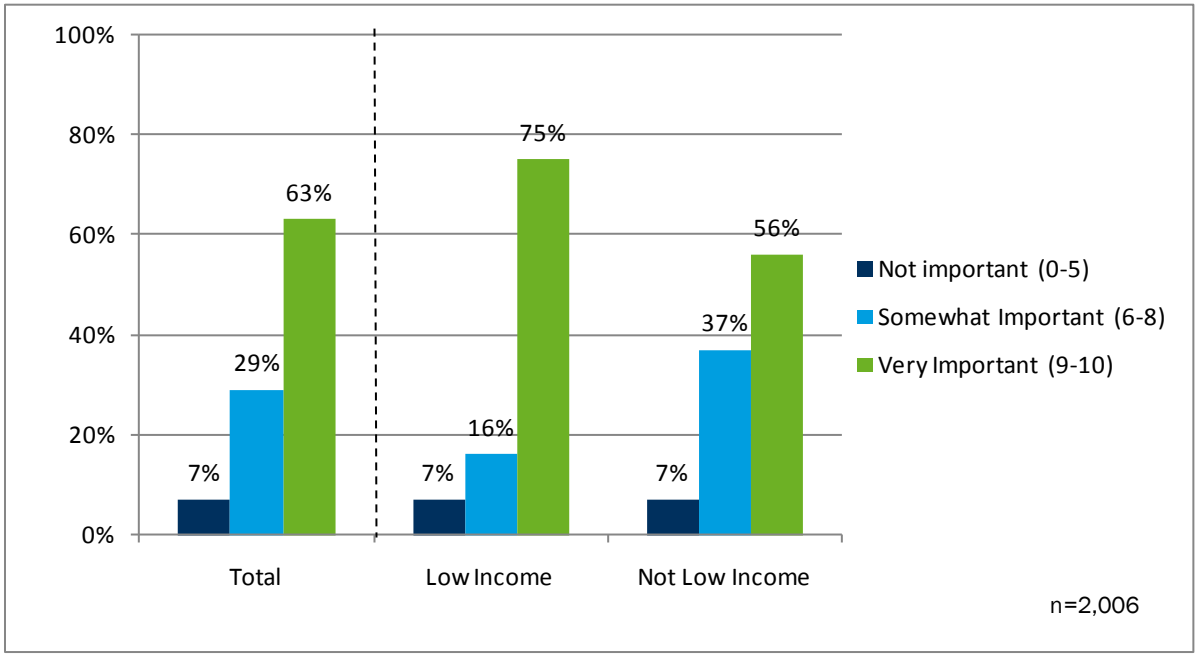
- The importance of saving energy and the level of personal responsibility customers feel to conserve energy.
- Customers' level of knowledge related to CFLs and ENERGY STAR labeling.
- Potential barriers that could prevent customers from becoming more energy efficient in their daily lives.

Energy-Efficiency Attitudes

Saving energy is very important to the majority of Michigan residents (63 percent).[13] On average, residents rated the importance of saving energy as an 8.8 using a scale of 0 to 10, where 0 indicates "not at all important" and 10 indicates "very important."

There is evidence that the perceived importance of saving energy among Michigan residents is influenced by their income level. Residents who reported an income of less than 200 percent of the federal poverty level are significantly more likely to value the importance of saving energy than residents who reported an income that does not meet the low-income threshold (75 percent vs. 56 percent, respectively).

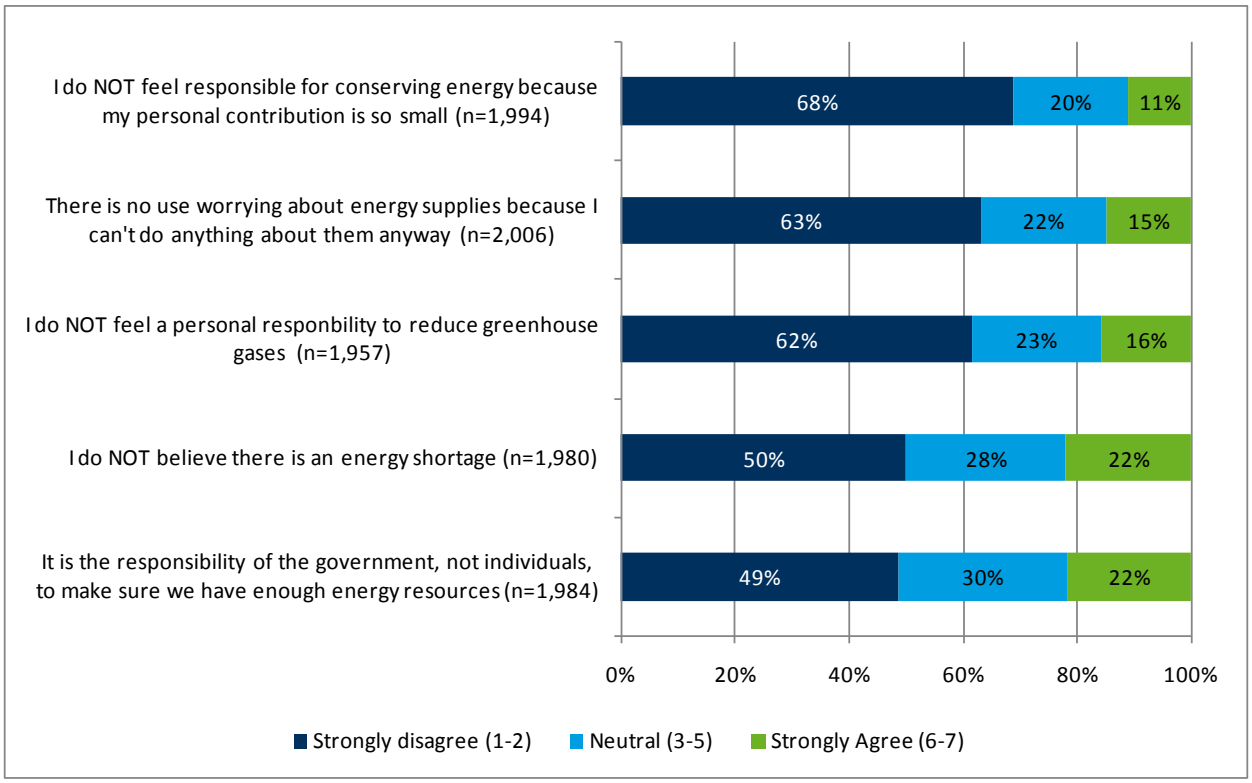
Figure 68. Importance of Saving Energy by Income Level



[13] "Very important" indicates respondents providing a rating of 9 or 10 on a scale of 0 to 10 where 0 means "not at all important" and 10 means "very important."

We asked residents about their personal responsibility to save energy. As shown in Figure 69, half of all Michigan residents believe that there is an energy shortage, with 63 percent of residents believing that they can affect energy supplies. The majority of Michigan residents feel some personal sense of responsibility to conserve energy (68 percent) and to reduce greenhouse gases (62 percent). Only one in five residents (22 percent) reported that it is the government's responsibility to make sure we have enough energy resources.

Figure 69. Attitudes Regarding Personal Responsibility to Save Energy



The perceptions and views that residents have about their personal responsibility for energy saving is largely influenced by their education level.

- Compared to residents with a high school diploma, residents without a high school diploma are significantly more likely to report that they do not feel responsible for conserving energy because their personal contribution is very small (30 percent vs. 10 percent).
- Compared to residents with a high school diploma, residents without a high school diploma are significantly more likely to report that there is no use worrying about energy supplies because they can't do anything about them anyway (49 percent vs. 12 percent).
- Residents with at least some college education are significantly more likely to feel a responsibility to reduce greenhouse gases compared to those without any college education (66 percent vs. 55 percent).

- Additionally, residents with at least some college education are significantly more likely to believe there is an energy shortage compared to residents without any college education (56 percent vs. 40 percent).

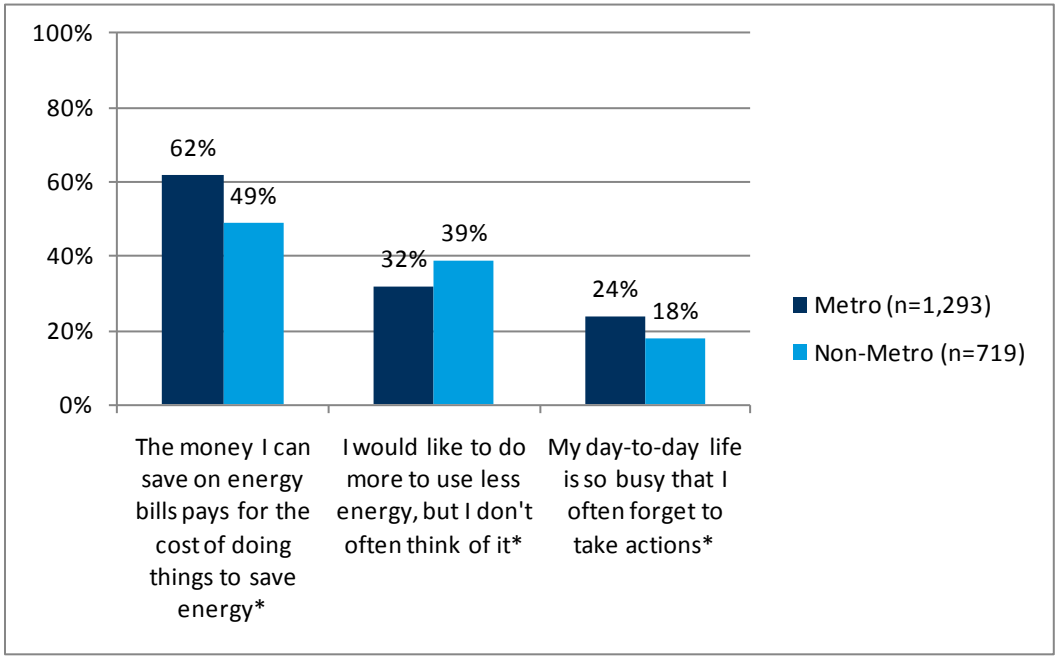
Overall, few residents reported any lifestyle or attitudinal barriers to their energy-efficiency behaviors. The greatest barrier, reported by one-third (34 percent) of residents, is that they do not think about energy even though they would still like to do more to save energy. This perception is more predominant among residents living in urban (metro) areas than among residents in rural (non-metro) areas (32 percent vs. 39 percent), as shown in Figure 70.

However, at least half of Michigan residents strongly agree that:

1) The money they can save on their energy bills pays for the cost of making improvements to save energy, and
2) Energy efficiency does not mean sacrificing comfort in their home.

Certain attitudes differ significantly for residents living in rural regions compared to those in more urban regions. Sixty-two percent of residents from urban areas reported that the money they can save on their energy bills pays for the cost of making changes to save energy, compared to 49 percent for rural residents. Furthermore, more urban residents reported that their day-to-day life is too busy to take actions to save energy compared to rural residents (24 percent vs. 18 percent).

Figure 70. Attitudes Regarding Energy-Efficiency Barriers, Perceptions, and Motivations (% Strongly Agree)



* Indicates that the difference is statistically significant at the 90 percent confidence level.

When asked their primary motivation to save energy, nearly two-thirds (64 percent) of residents referenced the potential to save money on their utility bill. Less commonly mentioned primary

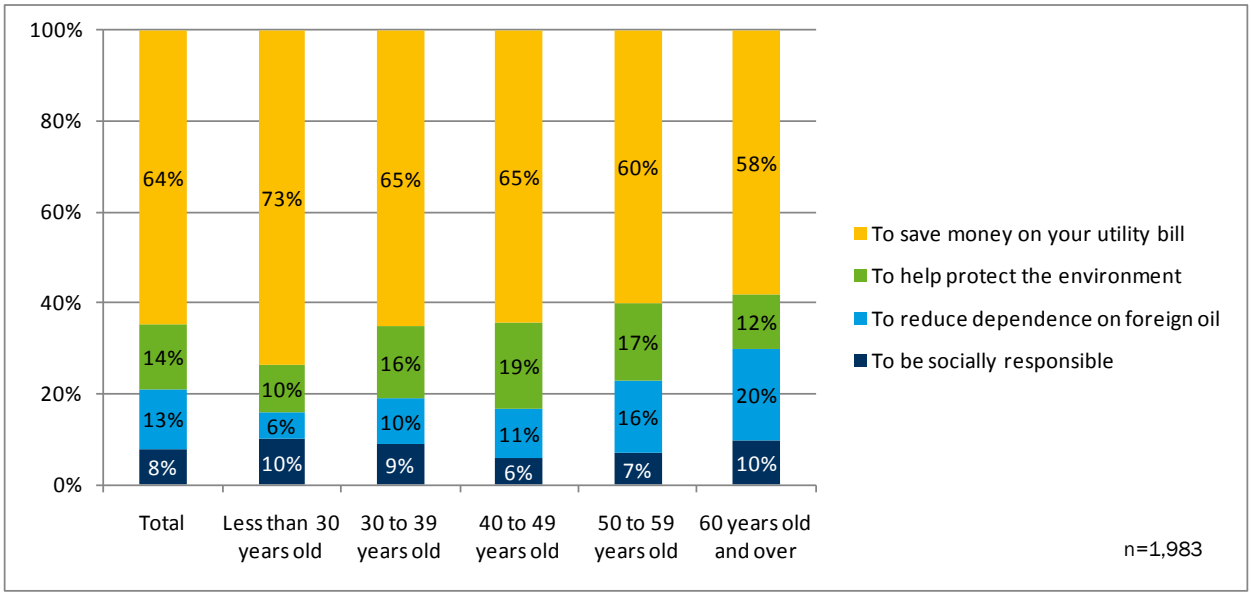
motivators include reducing our dependence on foreign oil (13 percent) and being socially responsible (8 percent). A large percentage of residents reported protecting the environment as their second or third motivation for saving energy (34 percent as secondary reason and another 34 percent as tertiary reason; see Table 27).

Table 27. Reasons Why Residents Save Energy

Reasons to Save Energy	Percentage of Customers		
	#1 Reason (n = 1,983)	#2 Reason (n = 1,934)	#3 Reason (n = 1,860)
Save money on utility bill	64%	18%	12%
Help protect the environment	14%	34%	34%
Reduce dependence on foreign oil/ encourage energy independence	13%	32%	29%
Be socially responsible	8%	17%	26%

Age plays an important role in residents' motivation to save energy. Those who are 60 years or older are more likely to be motivated by their desire to reduce our dependence on foreign oil (20 percent) as their primary reason to save energy, compared to those who are less than 30 years old (6 percent), 30-39 years old (10 percent), and 40-49 years old (11 percent). In contrast, younger residents (those less than 30 years old) are more likely to be motivated by saving money as their primary reason to save energy (73 percent) compared to residents in their fifties (60 percent) and older (58 percent). It is clear that personal financial reasons serve as the primary motivator to save energy, while social motivations are just secondary. However, as residents grow older, financial reasons become less important, giving ground to political motivations.

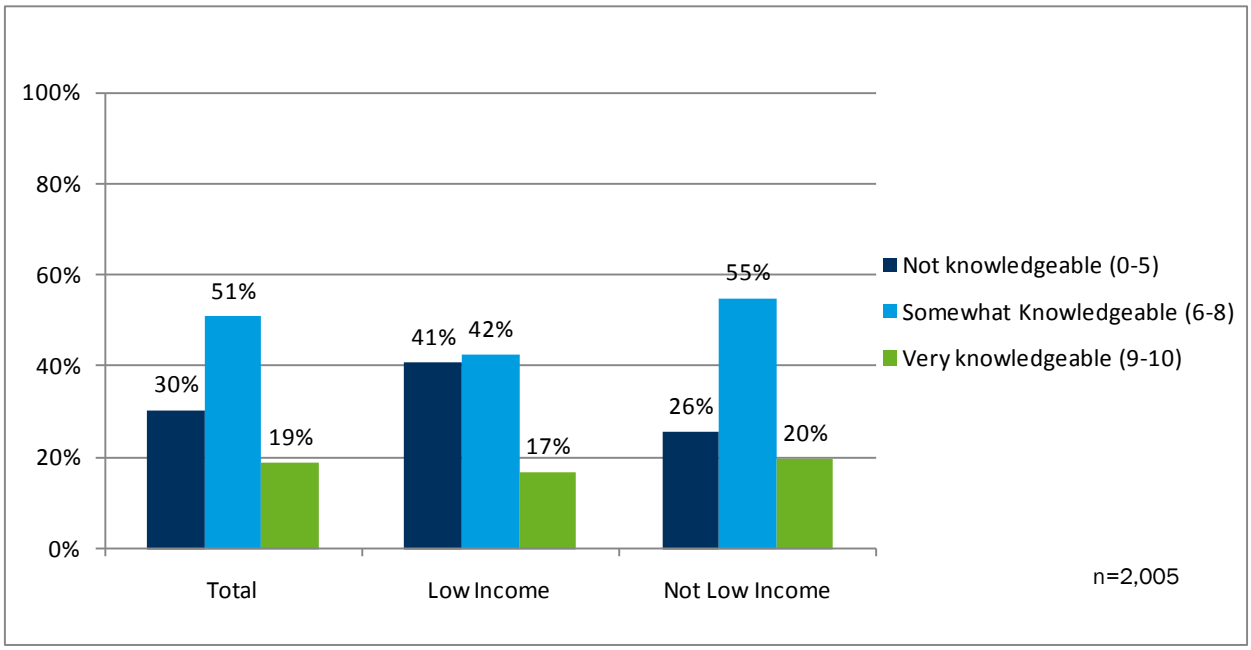
Figure 71. Number One Reason Why Residents Would Save Energy, by Age



Energy-Efficiency Knowledge

Michigan residents indicated that they generally have a high level of energy-efficiency knowledge. On a scale from 0 to 10 in which 0 is "not at all knowledgeable" and 10 is "very knowledgeable," 70 percent of respondents said that they are somewhat knowledgeable (score of 6-8) or very knowledgeable (score of 9 or 10) about ways to save energy. However, residents from low-incomes household (defined as making less than 200 percent of the federal poverty level) reported significantly lower levels of energy-efficiency knowledge than residents who do not meet the low-income threshold (41 percent vs. 26 percent).

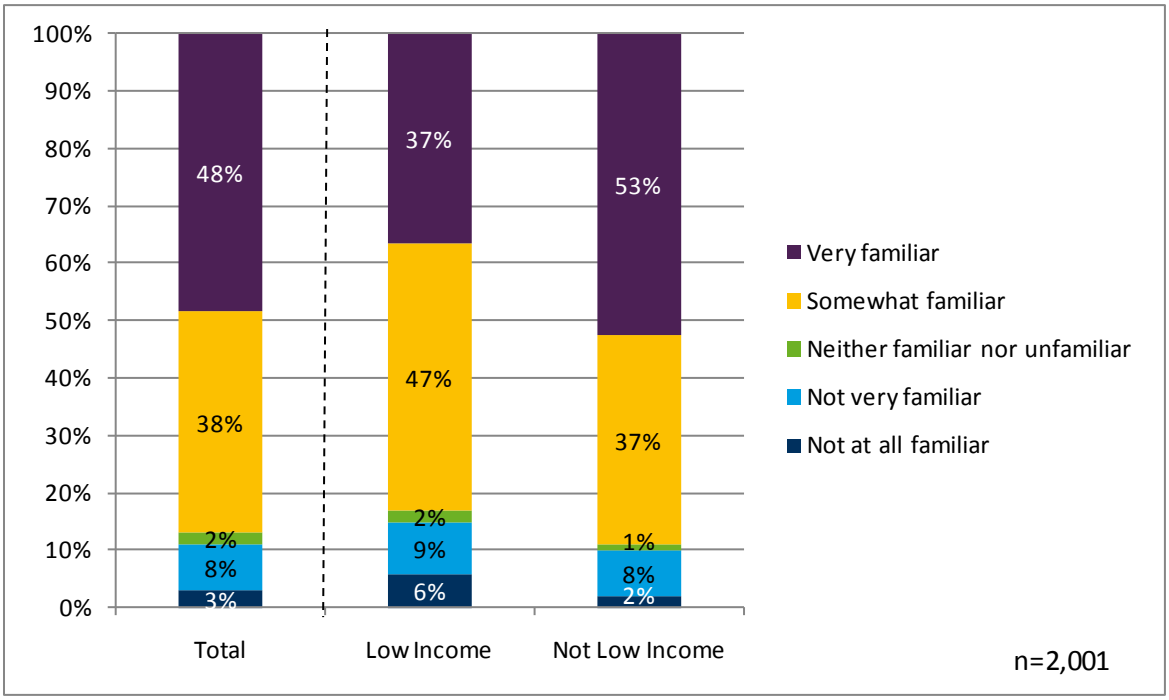
Figure 72. Resident Knowledge About Ways to Save Energy, by Income



We also asked Michigan residents to rate their knowledge of energy-efficient measures, such as CFLs. The vast majority of residents (92 percent) stated that they have heard of CFLs. While 78 percent of residents with less than a high school education reported being aware of CFLs, 91 percent of residents with more than a high school education reported that they are aware.

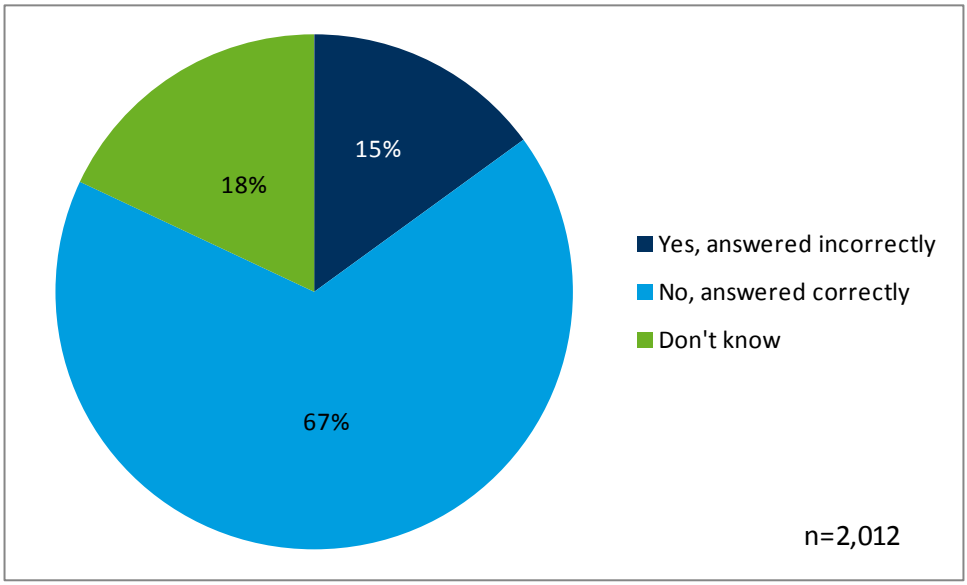
Additionally, low-income residents reported lower levels of CFL awareness than non-low-income residents, although their awareness is still high (86 percent vs. 95 percent). When asked to describe their familiarity with CFLs, 48 percent of residents claim to be "very familiar" with CFLs and 38 percent claim to be "somewhat familiar," as shown in Figure 73.

Figure 73. Level of Familiarity with CFLs



To better understand residents' energy-efficiency knowledge, we asked them to indicate whether the following statement is correct or incorrect: "*Items with an ENERGY STAR label use a similar amount of energy as items without the label, but have other useful options.*" As shown in Figure 74, approximately two-thirds of residents (67 percent) indicated correctly that the statement is wrong, while 15 percent of residents did not provide the correct response and 18 percent did not know. Residents with less than a high school education were more likely to answer the question incorrectly than those with at least a high school education (54 percent vs. 11 percent).

Figure 74. Respondents Correctly Answering ENERGY STAR Label Question



Barriers to Becoming More Energy Efficient

To better understand how Michigan residents make decisions when purchasing equipment and what barriers exist to purchasing energy-efficient equipment, we asked them to rate their agreement with a series of statements related to factors they consider when purchasing energy-consuming equipment or devices for their home. These statements explored their attitudes about possible purchase barriers such as the price, availability, and performance of energy-efficient equipment, as well as questions about their perceptions on the availability of information and search costs to help them make their decision. As shown in Figure 75, respondents indicated their level of agreement with each statement using a scale of 1 to 7, in which 1 indicates that they "strongly disagree" and 7 indicates that they "strongly agree."

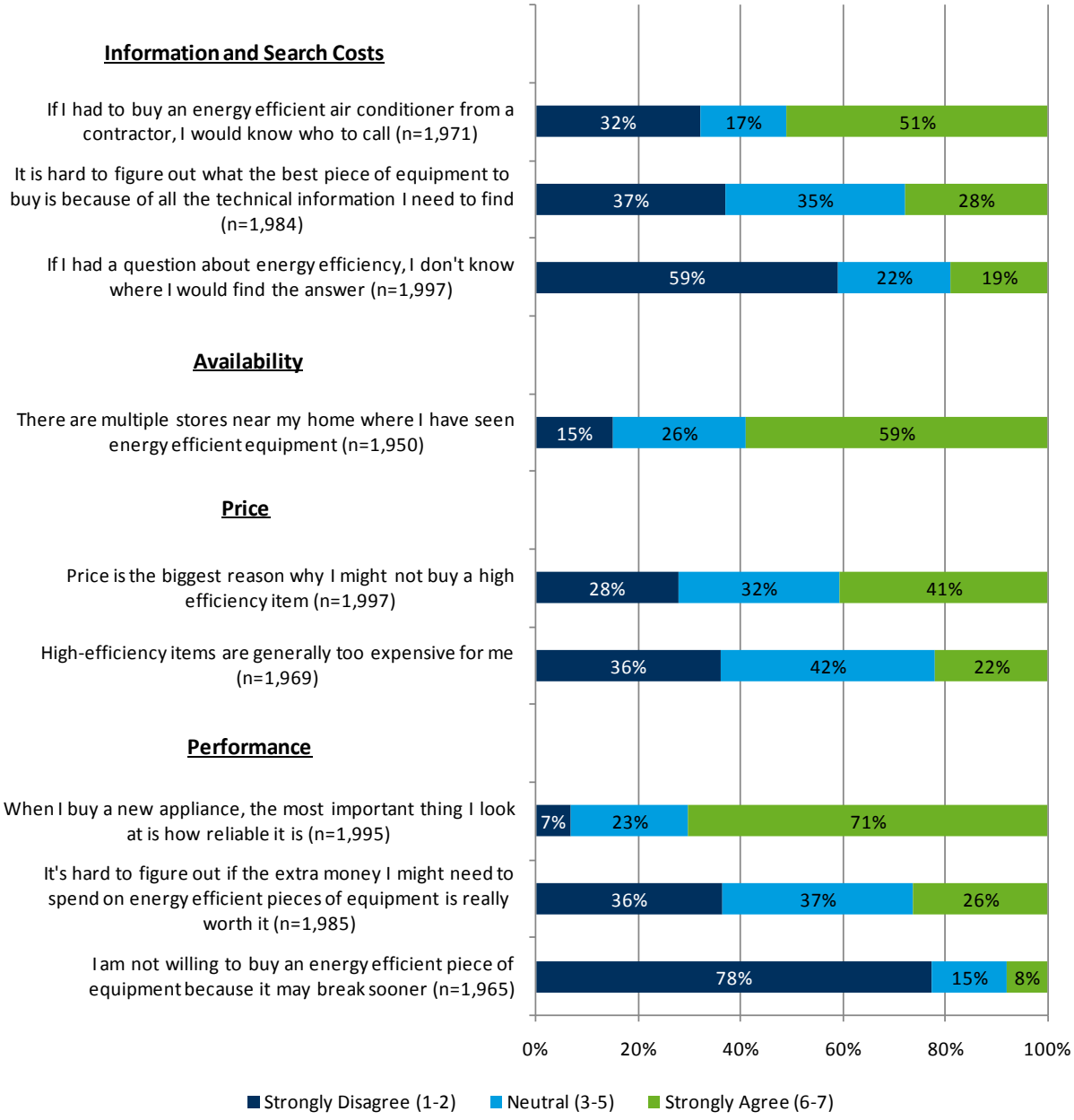
Overall, the largest barrier to becoming more energy efficient is price. Forty-one percent strongly agree with the statement "*price is the biggest reason why I might not buy a high efficiency item*" (rated as a 6 or 7). While residents indicated concern about equipment prices, they did not report that energy-efficient equipment prices were out of their reach, with only 36 percent strongly disagreeing with the statement "*high efficiency items are generally too expensive for me.*"

Although the price of energy-efficient equipment is an issue for some residents, for most, energy-efficient equipment is something that they can still afford. As such, these findings seem to purport that the perceived value of energy-efficient equipment is a barrier. Only one in five Michigan residents (22 percent) strongly agrees that high efficiency equipment is out of their price range.

The majority (59 percent) reported that they would know where to find answers about energy efficiency, including whom to call (51 percent). Additionally, 72 percent reported that they can find information on the best piece of equipment to buy.

Michigan residents are interested in the performance of the equipment they buy. Over 70 percent indicated that the reliability of an appliance they buy is most important factor in their decision. While equipment performance is a central concern, only 8 percent said they would be unwilling to buy energy-efficient equipment because they fear it would break sooner. However, 26 percent expressed uncertainty about whether spending the extra money for efficient equipment is really worth the added cost.

Figure 75. Barriers to Energy Efficiency



Barriers to energy efficiency affect residents with low levels of household income more than those with higher incomes. This income-based difference is statistically significant for all the barrier questions, with the exception of the importance of equipment reliability. Low-income residents reported more often than non-low-income residents that price is their biggest barrier to purchasing a high-efficiency item (57 percent vs. 34 percent). However, low-income residents are significantly more likely to report that there are multiple stores with energy-efficient equipment compared to non-low-income residents (65 percent vs. 41 percent). Therefore, the availability of energy-efficient equipment is less of a barrier for low-income residents than for non-low-income residents.

In addition, there is some directional trending of barrier responses based on six levels of residents' education. Those with a high school education or less tended to report more barriers to becoming energy efficient than those with higher levels of education. This difference is most apparent for the following barriers:

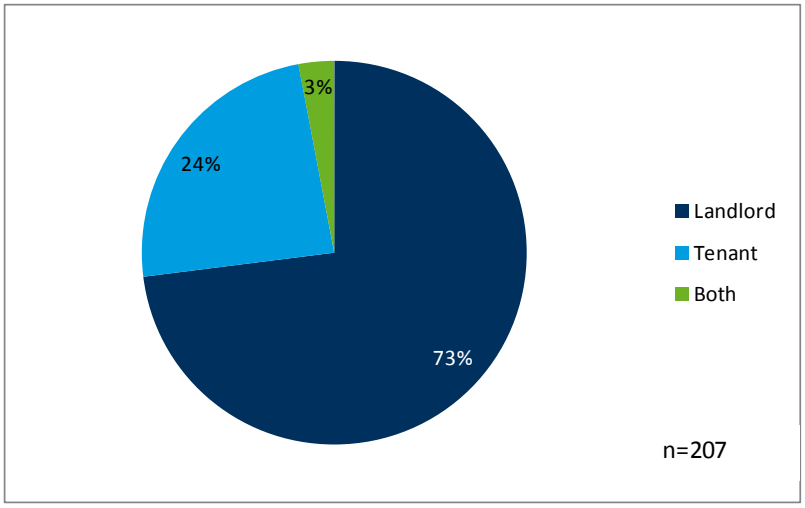
- Price of high-efficiency items,
- Their ability to determine if the extra money spent on energy-efficient equipment was worth the cost, and
- Knowing where to find answers about energy efficiency.

Looking at differences by age cohort, older residents (age 60 or older) agree more often than their younger counterparts, 33 percent vs. 24 percent respectively, that it is hard to figure out if the extra money spent on energy-efficient equipment was worth the cost, and that it is hard to determine the best piece of equipment because of the amount of technical information, 40 percent vs. 25 percent, respectively. Additionally, older residents more often do not know where to find answers regarding energy efficiency than younger residents. Targeting older and less educated populations may help to reduce the barriers to adopting energy efficiency in the Michigan market.

We offered residents the opportunity to mention additional barriers to purchasing energy-efficient equipment. The majority (64 percent) provided no additional barriers. Those who did provide feedback on barriers most often cited high costs (24 percent), lack of money/inability to afford equipment (22 percent), and a lack of time to research the equipment (10 percent).

As shown in Figure 76, renters—who constitute 16 percent of the total—face an additional barrier to purchasing energy-efficient equipment: they do not have direct control of equipment purchases. Across the state, nearly three-quarters (73 percent) of renters rely on their landlord to purchase large pieces of equipment for their residence. Resident renters under 30 years of age are significantly more likely to rely on a landlord for purchasing equipment (83 percent) than the older age groups.

Figure 76. Responsibility for Purchasing Large Equipment Among Renters



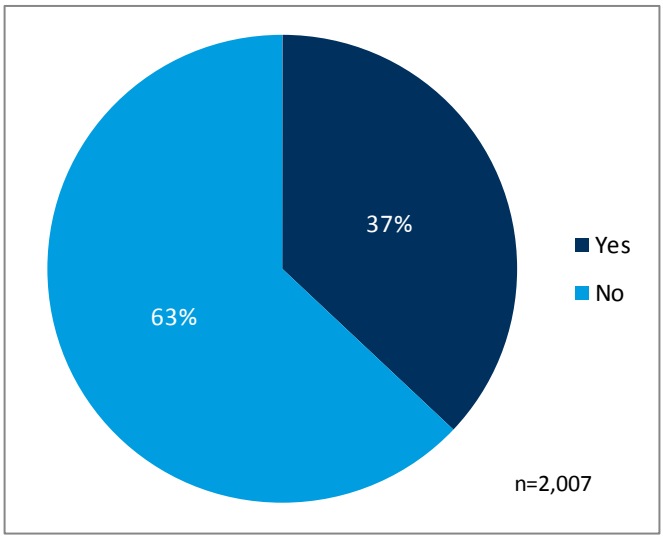
Potential to Drive Action

This section provides information about residents' knowledge of energy-efficiency campaigns or programs, as well as their purchase plans for the next year. This section also outlines additional actions that residents may take to reduce their energy usage.

Program Awareness

Only 37 percent are aware of energy-efficiency campaigns or programs that public utilities offer to reduce their cost for purchasing energy-efficient products and appliances and to help them save energy (Figure 77). The levels of awareness and familiarity are consistent across all metro and non-metro areas of the state, and among all key demographics.

Figure 77. Awareness of Energy Efficiency Campaigns/Programs



Of those who reported being aware of program offerings, most first learned about the programs through a bill insert (39 percent), while 7 percent do not remember how they became aware of the program(s).

It is important to note that residents do not frequently look to their local utility provider for energy-efficiency information. Only 11 percent reported that they had visited their utility's Website in the past six months in search of information on how to save energy. Not surprisingly, older residents (aged 60 and older) are significantly less likely to have visited the utility Website compared to younger age groups (4 percent vs. 13 percent).

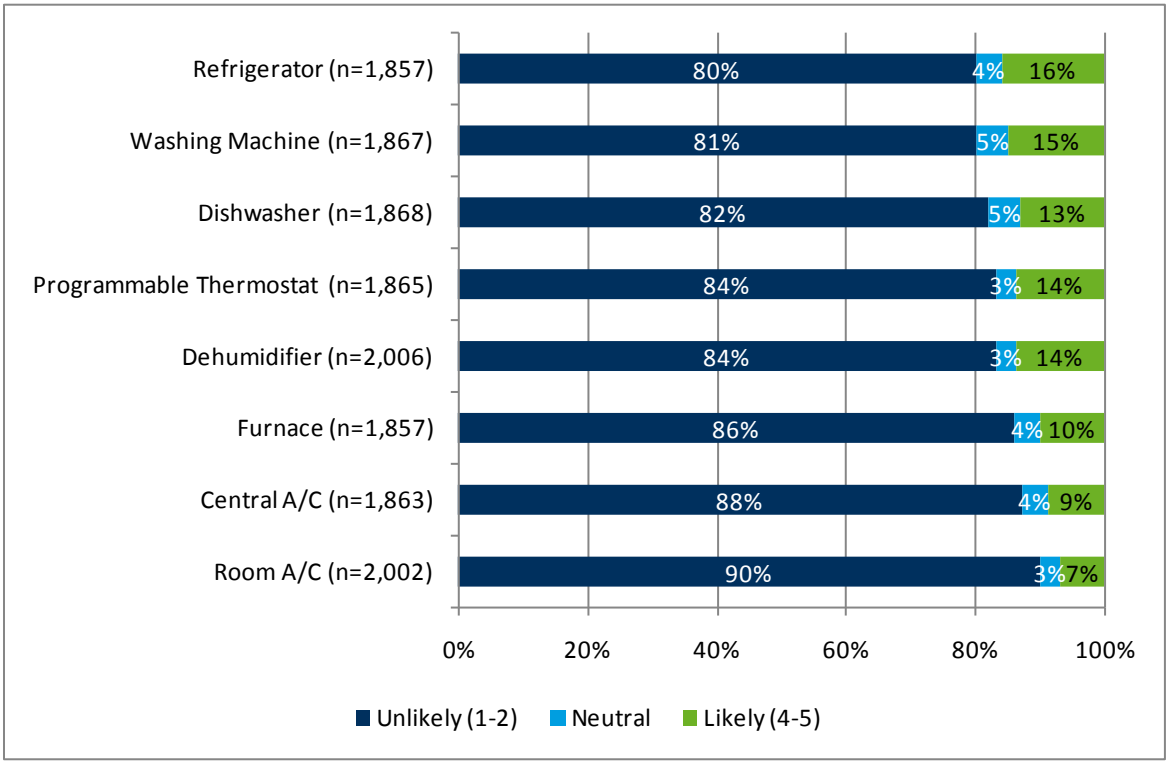
Less than 6 percent reported having participated in an energy-efficiency program offered by their utility. Interestingly, residents living in non-metro regions (10 percent) and those under 200 percent of the federal poverty line (9 percent) were more likely to report having participated in programs compared to residents in more urban areas (6 percent) and those with higher incomes (6 percent). One-quarter of residents (26 percent) reported being aware of energy-efficiency programs outside of those offered by their local utility. These tended to be programs sponsored by the federal government (25 percent).

Intent to Take Action and Actions Taken

Equipment Purchases and Decision Making

We asked all residents who indicated that they are responsible for buying large equipment for their homes to rate the likelihood that they would be purchasing specific pieces of equipment in the next year. For renters whose landlords are responsible for purchasing large equipment, we only asked about dehumidifiers and room air conditioners.

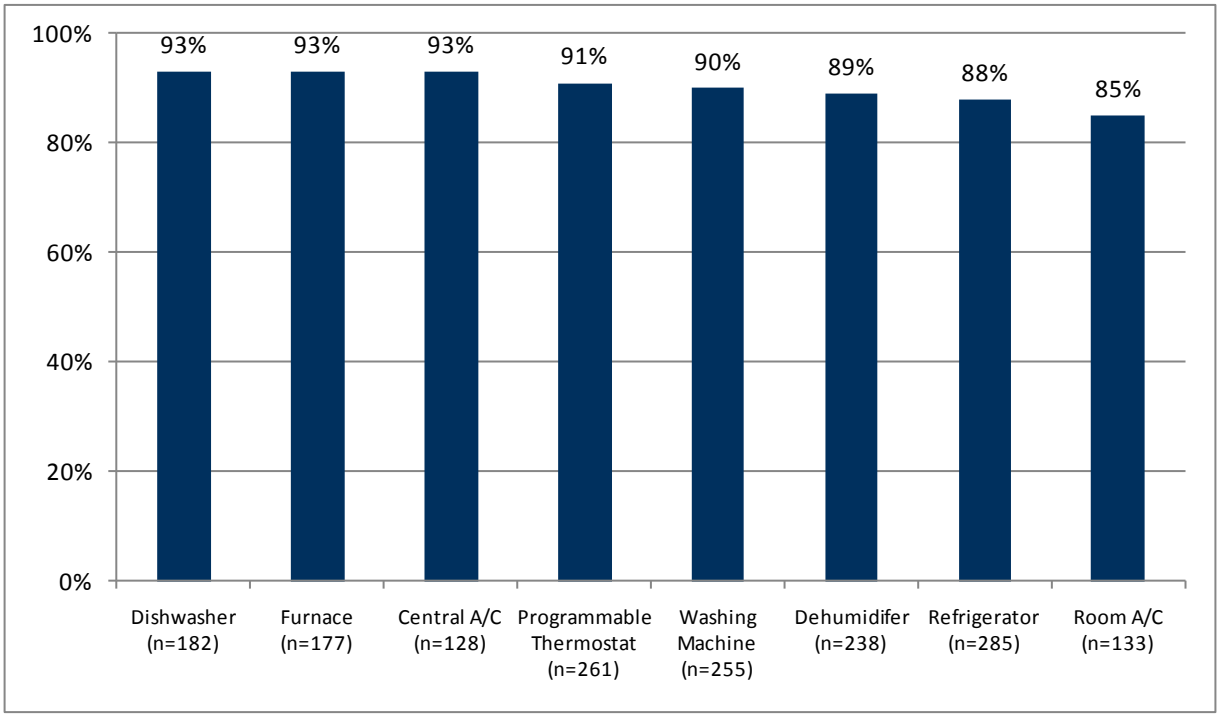
Figure 78. Likelihood to Purchase an Appliance Within the Next Year (of those responsible for purchasing appliances)



Approximately half of the respondents (51 percent) who are responsible for buying large pieces of equipment indicated they would be purchasing at least one appliance within the next year. Of those who are planning to buy equipment in the next year, most reported they will buy one appliance. The appliances they are most likely to purchase are refrigerators (16 percent) and washing machines (15 percent). They are less likely to purchase central air conditioner systems (9 percent) and room air conditioners (7 percent). There were no clear trends for purchasing plans among education, age, and income groups, as the decision to purchase an appliance is often dependent on the age of the existing unit and the preference of the individual.

Almost all who stated that they are likely to purchase an appliance in the next twelve months also stated they are likely to look for an energy-efficient model. No significant trend appeared between metro and non-metro areas or among age, income, or education groups.

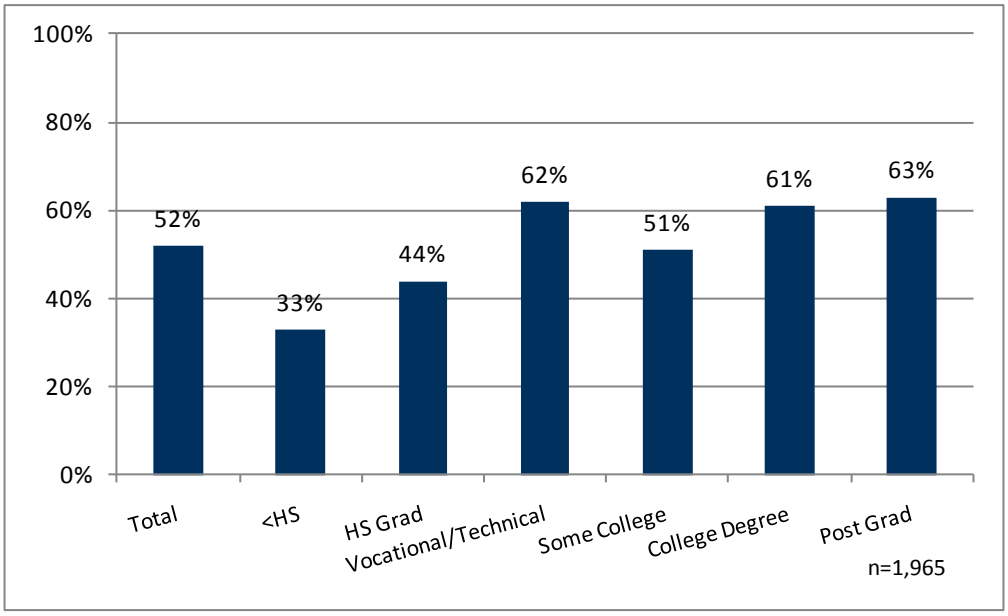
Figure 79. Percentage Likely to Purchase Energy-Efficient Appliances (of those responsible for purchasing appliances)



Note: Includes only those who reported that they are likely to buy a new appliance in the next year.

Not only did residents indicate that they are interested in looking for energy-efficient models in the future, but 52 percent also noted that the ENERGY STAR label has influenced their past purchasing decisions. The ENERGY STAR label is more likely to influence non-low-income residents (61 percent vs. 42 percent). Additionally, as shown in Figure 80, the ENERGY STAR label is less likely to influence residents with a high school degree or less than those who went to vocational/technical school or college (43 percent vs. 61 percent).

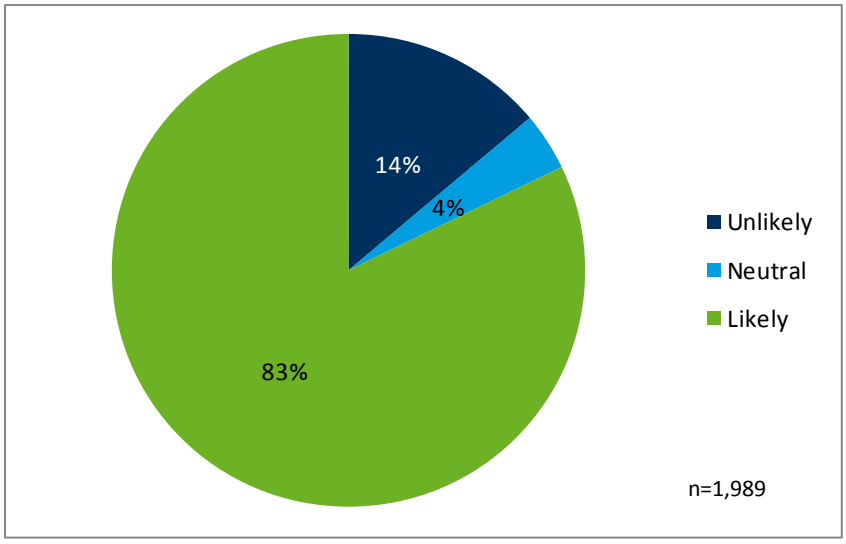
Figure 80. Percent Influenced by ENERGY STAR Label, by Level of Education



Future Energy Use Reduction

Eighty-three percent of Michigan residents indicated that they are likely to try to reduce the amount of energy they use in their home. Figure 81 shows that over half (57 percent) reported that they are "very likely" to try to save energy. The findings revealed no significant differences between metro and non-metro areas or by age, income, or education.

Figure 81. Likelihood of Reducing Energy Usage



For those residents who indicated they are likely to try to save energy, nearly two-thirds (64 percent) reported that they will turn off all lights when they are not in use. Other popular energy-saving actions reported by residents included reducing the thermostat settings in the winter (48

percent), unplugging adapters when not in use (26 percent), and increasing the level of insulation in their home (25 percent).

Low-income residents are more likely to report that they will turn off lights when not in use (76 percent vs. 58 percent). Furthermore, low-income residents are more likely to report that they will unplug adapters when not in use compared to non-low-income residents (35 percent vs. 23 percent). In contrast, affluent respondents are more likely to report that they will increase the level of insulation in their residence compared to low-income residents (35 percent vs. 23 percent). There were no differences in findings between metro and non-metro areas.

Table 28. Steps Customers Might Take to Reduce Their Energy Usage (of those likely to try to reduce usage; multiple responses allowed)

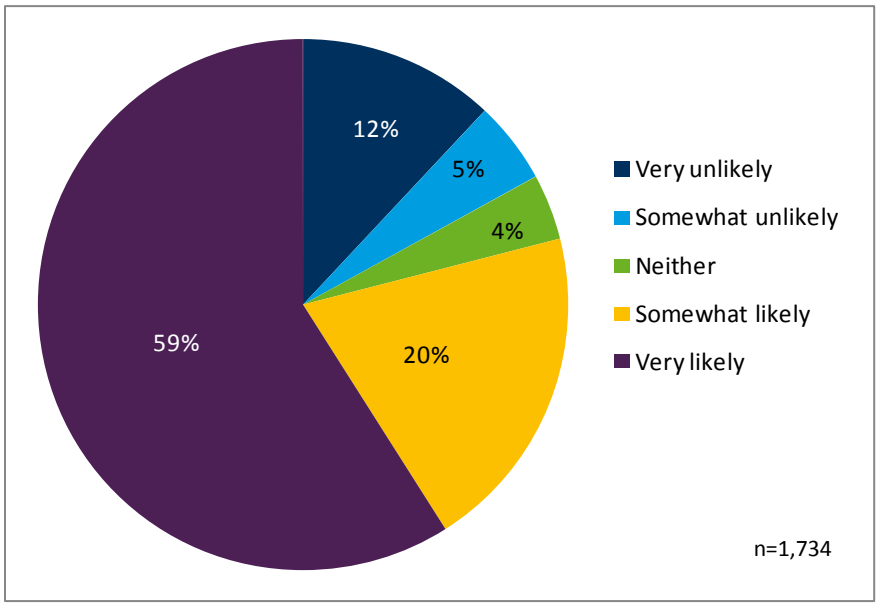
Energy Saving Actions	Percentage of Respondents (n = 1,943)
Turn off all lights when not in use	64%
Reduce thermostat settings in the winter	48%
Unplug adapters and charge devices when not in use	26%
Increase level of insulation	25%
Purchase more efficient appliances	23%
Increase thermostat settings in summer	21%
Reduce air infiltration or leaks	19%
Take shorter showers	16%
Unplug electronic devices with instant 'on' feature	16%
Other	6%

Note: We did not show responses that were reported by under 5 percent of respondents.

CFL Purchases

Less than half who reported being aware of CFLs also reported purchasing a CFL in the past three months (43 percent). They reported making these purchases most often at big-box stores such as Lowe's (21 percent), Wal-Mart (15 percent), and Home Depot (3 percent). As shown in Figure 82, approximately six in 10 residents (59 percent) reported that they are "very likely" to purchase a CFL the next time they buy a light bulb. The residents' location, income, education, and age did not affect their likelihood to purchase a CFL.

Figure 82. Likelihood to Purchase a CFL During Next Light Bulb Purchase



Almost one-quarter (23 percent) reported being unsure of the degree to which their friends and family use CFLs. Twenty-two percent believe that "more than half" or "all" of their friends and family use CFLs in their homes. An additional 23 percent think that "about half" use CFLs, while 26 percent estimated that "less than half" of their friends and family use CFLs. Only 7 percent reported thinking that none of their friends or family use CFLs.

Appendix A. Profile of Phone Respondents

Table 29 presents the demographics of Michigan residents who participated in the attitudinal telephone surveys.

Table 29. Respondent Demographics

Demographics	Weighted Percent of Respondents n = 2,012
Ownership	
Own	84%
Rent	16%
Refused	--
Number of People in Household	
1	22%
2	31%
3	18%
4	14%
5	8%
6	4%
7 or more	2%
Refused	1%
Age*	
Under 30	6%
30 to 39	12%
40 to 49	16%
50 to 59	21%
60 or over	41%
Refused	4%
Level of Education	
Less than high school	5%
High school graduate	27%
Vocational/technical school	2%
Some college, no degree	25%
Bachelor's degree	27%
Graduate or professional degree	12%
Refused	2%
Racial or Ethnic Background	
Caucasian	79%
Hispanic or Latino	3%
African American or Black	9%
Asian	1%
American Indian or Pacific Islander	1%
Mixed/Bi-Racial	3%
Refused	4%

Demographics	Weighted Percent of Respondents n = 2,012
Household Income	
Less than $30,000	25%
$30,000-$49,999	19%
$50,000-$79,999	20%
$80,000-$99,999	6%
$100,000-$149,999	6%
$150,000 or more	3%
Refused	22%
Residence Type	
Single family home (ranch)	46%
Single family home (two or more stories)	36%
Two-family duplex or flat	3%
Condominium (apartment style)	2%
Condominium (townhouse style)	3%
Condominium (ranch style)	1%
Mobile home	3%
Apartment (three or more units)	5%
Townhouse (attached)	--
Refused	--
Size of home (square footage)	
Less than 1,000 sq. ft.	11%
1,000-1,499 sq. ft.	24%
1,500-1,999 sq. ft.	18%
2,000-2,499 sq. ft.	9%
2,500-2,999 sq. ft.	6%
3,000-3,999 sq. ft.	4%
4,000-4,999 sq. ft.	1%
5,000 or more sq. ft.	7%
Don't know	21%
Refused	1%
Years in Home	
Not my year-round residence	--
Less than 1 year	--
1-3 years	25%
4-10 years	31%
11-20 years	21%
Over 20 years	23%
Refused	--
Region	
Metro	83%
Non-metro	17%

* Weighted by county, not age.

Appendix B. Profile of Site Visit Respondents

Table 30 presents the demographics of Michigan residents participating in the site visits.

Table 30. Respondent Demographics

Demographics	On-Site Survey (Weighted)
Ownership (n = 931)	
Own	77%
Rent	23%
Refused	--
Number of People in Household (n = 931)	
1	27%
2	37%
3	14%
4	12%
5	7%
6	2%
7 or more	2%
Refused	--
Level of Education (n = 931)	
Less than high school	6%
High school graduate	27%
Vocational/technical school	7%
Some college, no degree	30%
Bachelor's degree	20%
Graduate or professional degree	8%
Refused	3%
Household Income (n = 931)	
Less than $30,000	30%
$30,000-$49,999	17%
$50,000-$79,999	14%
$80,000-$99,999	7%
$100,000-$149,999	5%
$150,000 or more	2%
Refused	25%
Residence Type (n = 931)	
Single family home (ranch)	38%
Single family home (two or more stories)	33%
Two-family duplex or flat	5%
Condominium (apartment style)	1%
Condominium (townhouse style)	1%

Demographics	On-Site Survey (Weighted)
Condominium (ranch style)	2%
Mobile home	6%
Apartment (three or more units)	14%
Townhouse (attached)	1%
Refused	0%
Size of home (n = 1020)	
Less than 1,000 sq. ft.	22%
1,000-1,499 sq. ft.	36%
1,500-1,999 sq. ft.	22%
2,000-2,499 sq. ft.	10%
2,500-2,999 sq. ft.	4%
3,000-3,999 sq. ft.	5%
4,000-4,999 sq. ft.	1%
5,000 or more sq. ft.	0%
Don't know	--
Refused	--

Appendix C. Telephone Survey Instrument

Introduction
May I speak with [CONTACT NAME]?

Hello, my name is [INTERVIEWER NAME] and I'm calling from Opinion Dynamics on behalf of the Michigan Public Service Commission and your local electric and gas provider. We are conducting a study of households to better understand how residential customers like you use energy. Your participation is important in helping the State of Michigan improve energy efficiency programs for residential customers. This survey should take about 15 minutes. May I please speak with someone in your household who is involved in making decisions regarding energy use in your home? [CONTINUE WITH CORRECT CONTACT]

Screener

S3. How long have you lived in this home?
1. Less than 1 year [THANK AND TERMINATE]
2. 1-3 years
3. 4-10 years
4. 11-20 years
5. More than 20 years
999. (Refused) [THANK AND TERMINATE]

S4. Which of the following best describes the use of this home?
1. Year-round, full-time
2. Seasonal or part-time use [THANK AND TERMINATE]
3. Landlord [THANK AND TERMINATE]
4. (Other, Specify) [Confirm if respondent lives year-round in residence. IF NOT, THANK AND TERMINATE]
998. (Don't know) [THANK AND TERMINATE]
999. (Refused) [THANK AND TERMINATE]

S2. Which power company provides electric power to your home?
1. DTE Energy/Detroit Edison
2. Consumers Energy
3. (Other, specify)
8. (Don't know)
9. (Refused)

S3. Which company supplies natural gas services to your home?
1. DTE Energy/Mich Con/Michigan Consolidated
2. Consumers Energy
3. (Other, specify)
4. (No natural gas at my home)
8. (Don't know)
9. (Refused)

[Terminate if S2=1,2,8,9 and S3=1,2,8,9]

Home Characteristics

H1. Do you own or rent your home?

1. Rent
2. Own
999. (Refused)

H2a. Which of the following best describes your home?

1. Single family home (ranch)
2. Single family home (2 or more stories)
3. Two-family duplex or flat
4. Condominium (apartment style)
5. Condominium (townhouse style)
6. Condominium (ranch style)
7. Mobile home
8. Apartment (3 or more living units in building)
9. Townhouse (attached)
10. Cottage or cabin
11. Other, specify
999. (Refused)

[SKIP IF H2a=1, 2, 3, 7, 10]
H2b. How many units does your building have?

1. 4 or fewer
2. 5 or more
3. (Not applicable)
998. (Don't know)
999. (Refused)

H3. Approximately how many square feet of living space does your home have? Don't include the basement unless it is a space that you consider lived in. [READ LIST IF NECESSARY]

1. Under 1,000 sq. ft.
2. 1,000 - 1,499 sq. ft.
3. 1,500 – 1,999 sq. ft.
4. 2,000 – 2,499 sq. ft.
5. 2,500 – 2,999 sq. ft.
6. 3,000 – 3,999 sq. ft.
7. 4,000 – 4,999 sq. ft.
8. 5,000 – 5,999 sq. ft.
9. 6,000 – 6,999 sq. ft.
10. 7,000 – 7,999 sq. ft.
11. 8,000 or more sq. ft.
998. (Don't know)
999. (Refused)

Energy Efficiency Attitudes

I am going to ask you several questions about energy and your thoughts about it. There is no right or wrong answer to any of these questions, so please just give me your honest response.

A1. On a scale of 0 to 10 where 0 is not at all important and 10 is very important, how important, is saving energy to your household?

0. 0 – not at all important
1 1
2. 2
3. 3
4. 4
5. 5
6. 6
7. 7
8. 8
9. 9
10. 10 – very important
98. (Don't know)
99. (Refused)

A2. Please indicate the extent to which you agree or disagree with the following statements. Please use a 1-7 scale where 1 means "Strongly Disagree" and 7 means "Strongly Agree." [RANDOMIZE LIST]

a. My day-to-day life is so busy that I often forget to take actions that save energy.
b. It is difficult to find energy efficient products that meet my needs.
c. Information about saving energy is never around when I need it or it comes at the wrong time.
d. I would like to do more to use less energy, but I don't often think of it.
e. The money I can save on energy bills pays for the cost of doing things to save energy.
f. I can save energy without sacrificing comfort in my home
g. I've already done as much as I can to save energy in my home

A3. The following are four possible reasons why you might try and save energy in your home. Which of the following is the most important to you? [Randomize list]

a. To help protect the environment
b. To save money on your utility bill
c. To reduce dependence on foreign oil/encourage energy independence
d. To be socially responsible

A3B. Which is the second most important reason as to why you would try to save energy at your home? [Randomize list]

a. To help protect the environment
b. To save money on your utility bill
c. To reduce dependence on foreign oil/encourage energy independence
d. To be socially responsible

A3C. Which of the following is the third most important reason?
[Randomize list]

a. To help protect the environment
b. To save money on your utility bill
c. To reduce dependence on foreign oil/encourage energy independence
d. To be socially responsible

A4. For the next set of questions, please indicate the extent to which you agree or disagree with the following statements. Please use a 1-7 scale where 1 means "Strongly Disagree" and 7 means "Strongly Agree." [RANDOMIZE LIST]

a. I do NOT feel responsible for conserving energy because my personal contribution is very small.
b. I do NOT feel a personal responsibility to reduce greenhouse gases.
c. There is no use worrying about energy supplies because I can't do anything about them anyway.
d. It is the responsibility of the government, not individuals, to make sure we have enough energy resources.
e. An appliance that saves energy won't look as good as the non-energy efficient alternative.
f. I do NOT believe there is an energy shortage.

Energy Efficiency Knowledge

K1. How would you rate your knowledge of the different ways you can save energy in your home? Please use a 0-10 scale where 0 means "Not at all knowledgeable" and 10 means "Extremely knowledgeable."

0	1	2	3	4	5	6	7	8	9	10	998	999
Not at all knowledgeable										Extremely knowledgeable	DK	Ref

K2. Have you ever heard of compact fluorescent light bulbs, sometimes called CFLs?

1. Yes
2. No
998. (Don't know)
999. (Refused)

[SKIP INTRO LANGUAGE TO K3 IF K2=1]
CFLs also known as Compact Fluorescent Lamps are light bulbs, usually shaped in a spiral ("corkscrew") or in a double U-shape that are advertised as using less energy than normal light bulbs and fit into a regular light bulb socket.

K3. How familiar are you with CFLs? Would you say that you are…?

1. Not at all familiar
2. Not very familiar
3. Neither familiar nor unfamiliar
4. Somewhat familiar
5. Very familiar
98. (Don't know)
99. (Refused)

K4. Please indicate whether the following statement is correct or incorrect. Items with an ENERGY STAR label use a similar amount of energy as items without the label, but have other useful options.

1. (Yes/Correct)
2. (No/Incorrect)
98. (Don't Know)
99. (Refused)

Program Awareness

P1. Are you aware of any energy efficiency programs offered by your local utility that are designed to help customers save energy?

1. Yes
2. No
98. (Don't know)
99. (Refused)

[SKIP TO P8 IF P1=2, 98, 99]
P1a. What energy efficiency programs are you aware of?
[OPEN RESPONSE]

[SKIP TO P8 IF P1a=998, 999]
P2. How did you FIRST hear about these programs offered by your local utility provider?

1. (Local Utility Website)
2. (Radio advertising)
3. (Newspaper)
4. (Television)
5. (Bill insert)
6. (Contractor)
7. (Billboard)
00. (Other, specify)
98. (Don't know)
99. (Refused)

P3.What other ways have you heard about it? [MULTIPLE RESPONSE; UP TO 3]

1. (Local Utility Website)
2. (Radio advertising)
3. (Newspaper)
4. (Television)
5. (Bill insert)
6. (Contractor)
7. (Billboard)
00. Other, specify)
96. No other way
98. (Don't know)
99. (Refused)

P4. How familiar would you say you are with the energy efficiency programs offered by your local utility provider?

1. Not at all familiar
2. Not familiar
3. Neither familiar nor unfamiliar
4. Somewhat familiar
5. Very familiar
98. (Don't know)
99. (Refused)

(SKIP TO P8 IF P4=1, 2, 99, 98)

P5. Have you participated in any energy efficiency programs sponsored by your local utility?

1. Yes
2. No
98. (Don't know)
99. (Refused)

[SKIP IF P5<>1]

P5a. Which energy efficiency program(s) have you participated in?" [OPEN END]

00. (Enter response in box below)
98. (Don't know)
99. (Refused)

P6. Do you know anyone else who has participated in any of the energy efficiency programs sponsored by your local utility provider?

1. Yes
2. No
98. (Don't know)
99. (Refused)

[SKIP IF P6<>1]
P6a. Which energy efficiency program(s) has this person participated in? [OPEN END]
00. (Enter response in box below)
98. (Don't know)
99. (Refused)

P8. Outside of programs sponsored by your local utility provider, are you familiar with any other programs that provide information about energy efficiency or how to reduce the cost to buy energy efficient equipment?
1. Yes
2. No
98. (Don't know)
99. (Refused)

[SKIP IF P8=2, 998, 999]
P9. Can you tell me the name of the program or the group offering it?
00. [OPEN END]
1. (Don't remember/know)
99. (Refused)

P7. Have you visited your local utilities' website in the past 6 months to look for energy efficiency information?
1. Yes
2. No
98. (Don't know)
99. (Refused)

P10. [IF P7 = 1] Overall, how would you rate your local utilities' website on providing information about energy efficiency or the programs available? Would you say you found it to be ……
1. Very Useful
2. Somewhat useful
3. Slightly useful
4. Not at all useful
98. DK
99. Ref

[SKIP IF P10=1, 2, 998, 999]
P11. Do you have any suggestions about how the website could be made more useful to you?
00. [OPEN END]
96. (None)
98. (DK)
99. (Ref)

Barriers

B1. I'm going to take a minute to explain the next set of questions. We are interested in understanding how decisions are made when purchasing equipment in your home. I am going to read a list of statements that may or may not apply to your experience right now, but please answer them to the best of your ability. Using a scale from 1 to 7 where 1 is 'Strongly Disagree' and 7 is 'Strongly Agree,' please indicate your level of agreement with the following statements:

1	2	3	4	5	6	7	998	999
Strongly disagree						Strongly agree	DK	Ref

[Randomize List]

a. When I buy a new appliance, the most important thing I look at is how reliable it is.
b. It's hard to figure out if the extra money I might need to spend on an energy efficient piece of equipment is really worth it.
c. It's hard to figure out what the best piece of equipment to buy is because of all the technical information I need to find.
d. I'm not willing to buy an energy efficient piece of equipment because it may break sooner.
e. High-efficiency items are generally too expensive for me
f. Price is the biggest reason why I might not buy a high efficiency item.
g. If I had a question about energy efficiency I don't know where I would find the answer.
h. There are multiple stores near my home where I have seen energy efficient equipment on sale.
i. If I had to buy an energy efficient air conditioner from a contractor, I would know who to call

B2. Other than the things I just asked you about, can you think of anything else that could get in the way of you becoming more energy efficient in your household?

96. (None, no other barriers exist)
00. [OPEN END]
98. (Don't know)
99. (Refused)

[SKIP IF H1>1]
B3. As a renter, who buys the big pieces of equipment for your home – yourself or your landlord?

1. (Respondent)
2. (Landlord)
3. (Both)
98. (Don't Know)
99. (Refused)

Intent to Take Action

[SKIP TO T1f if B3=02, 998, 999]
T1. How likely are you to purchase a new…? Are you very unlikely, somewhat unlikely, neither likely nor unlikely, somewhat likely, or very likely? [ASK FOR EACH]

a. Refrigerator within the next year
b. Washing machine within the next year
c. Dishwasher within the next year
d. Furnace within the next year
e. Central A/C within the next year
f. Room A/C within the next year [ASK RENTER]
g. Dehumidifier within the next year [ASK RENTER]
h. Programmable thermostat within the next year

1. Very unlikely
2. Somewhat unlikely
3. Neither likely nor unlikely
4. Somewhat likely
5. Very likely
98. (Don't know)
99. (Refused)

[SKIP IF T1a<>4, 5]
T2a. The next time you need to buy a **new refrigerator**, how likely are you to look for an energy efficient model?

1. Very unlikely
2. Somewhat unlikely
3. Neither likely nor unlikely
4. Somewhat likely
5. Very likely
98. (Don't know)
999. (Refused)

[SKIP IF T1b<>4, 5]
T2b. The next time you need to buy a **new washing machine**, how likely are you to look for an energy efficient model?

1. Very unlikely
2. Somewhat unlikely
3. Neither likely nor unlikely
4. Somewhat likely
5. Very likely
98. (Don't know)
99. (Refused)

[SKIP IF T1c<>4, 5]
T2c. The next time you need to buy a **new dishwasher**, how likely are you to look for an energy efficient model?

1. Very unlikely
2. Somewhat unlikely
3. Neither likely nor unlikely
4. Somewhat likely
5. Very likely
98. (Don't know)
99. (Refused)

[SKIP IF T1d<>4, 5]
T2d. The next time you need to buy a **new furnace**, how likely are you to look for an energy efficient model?

1. Very unlikely
2. Somewhat unlikely
3. Neither likely nor unlikely
4. Somewhat likely
5. Very likely
98. (Don't know)
99. (Refused)

[SKIP IF T1e<>4, 5]
T2e. The next time you need to buy a **new central A/C**, how likely are you to look for an energy efficient model?

1. Very unlikely
2. Somewhat unlikely
3. Neither likely nor unlikely
4. Somewhat likely
5. Very likely
98. (Don't know)
99. (Refused)

[SKIP IF T1f<>4, 5]
T2f. The next time you need to buy a **new room A/C**, how likely are you to look for an energy efficient model?

1. Very unlikely
2. Somewhat unlikely
3. Neither likely nor unlikely
4. Somewhat likely
5. Very likely
98. (Don't know)
99. (Refused)

[SKIP IF T1g<>4, 5]
T2g. The next time you need to buy a **new dehumidifier**, how likely are you to look for an energy efficient model?

1. Very unlikely
2. Somewhat unlikely
3. Neither likely nor unlikely
4. Somewhat likely
5. Very likely
98. (Don't know)
99. (Refused)

[SKIP IF T1h<>4, 5]
T2h. The next time you need to buy a **new programmable thermostat**, how likely are you to look for an energy efficient model?

1. Very unlikely
2. Somewhat unlikely
3. Neither likely nor unlikely
4. Somewhat likely
5. Very likely
98. (Don't know)
99. (Refused)

T3. In the next year, how likely are you to try to reduce the amount of energy you use in your home to try to decrease your utility costs?

1. Very unlikely
2. Somewhat unlikely
3. Neither likely nor unlikely
4. Somewhat likely
5. Very likely
98. (Don't know)
99. (Refused)

[SKIP IF T3<>4, 5]
T3a. What steps might you take to reduce your energy use? [OPEN END] [MULTIPLE RESPONSE]

1. (Turn off lights when not in use)
2. (Reduce thermostat setting in the winter)
3. (Increase thermostat setting in the summer)
4. (Unplug adapters and charging devices when not in use)
5. (Purchase more efficient appliances)
6. (Take shorter showers)
7. (Increase level of insulation)
8. (Reduce air infiltration or leaks (by caulking, adding storm windows, etc.))
9. (Unplug electronic devices with "instant on" feature)
00. (Other, specify)
98. (Don't know)
99. (Refused)

T4. Has the presence of the ENERGY STAR label ever influenced your decision to purchase a particular product?

1. Yes
2. No
98. (Don't know)
99. (Refused)

CFL Module [SKIP TO RF1 IF K3=1, 2, 3, 998, 999]

Now I would like to ask you some questions about the lighting you have in your home.

L1. Do you currently have any CFLs installed inside or outside of your home?

1. Yes
2. No
98. (Don't know)
99. (Refused)

[SKIP IF L1<>1]
L2. Approximately how many CFLs do you currently have installed on the inside and outside of your home? Your best estimate is fine.

00. [NUMERIC OPEN END]
98. (Don't know)
99. (Refused)

[SKIP IF L2<>998]
L2a. Would you say it is greater than five bulbs? Could you possibly give us your best guess of the approximate number?

00. [NUMERIC OPEN END]
98. (Don't know)
99. (Refused)

L3. How many CFLs are you storing in your home right now? This could be in your closet, your pantry, your garage, or anywhere in your home.

00. [NUMERIC OPEN END]
96. (None)
98. (Don't know)
99. (Refused)

[SKIP IF L3<> 998]
L3a. Would you say it is greater than five bulbs? Could you possibly give us your best guess of the approximate number? [WORK FROM THERE TO GET AN ESTIMATE]

00. [NUMERIC OPEN END]
98. (Don't know)
99. (Refused)

[SKIP IF (L1=2 AND L3=996) OR (L1=998 AND L3=998)]
L4. Have you purchased CFLs for use in your home in the last 3 months?

1. Yes
2. No
98. (Don't know)
99. (Refused)

[SKIP IF L4<>1]
L5. To the best of your knowledge, where did you purchase these CFLs? [MULTIPLE RESPONSE; UP TO 3]

1. (Home Depot)
2. (Walmart)
3. (Costco)
4. (ACE Hardware)
5. (ACO)
6. (Sam's Club)
7. (Best Buy)
8. (Meijer)
9. (Kroger)
10. (Lowe's)
11. (Menards)
12. (Other, specify)
98. (Don't know)
99. (Refused)

L6. The next time you buy a light bulb, how likely are you to buy a CFL?

1. Very unlikely
2. Somewhat unlikely
3. Neither likely nor unlikely
4. Somewhat likely
5. Very likely
98. (Don't know)
99. (Refused)

L7. How many of your friends and family, would you say, currently use CFLs in their home?

1. None of my friends and family
2. Less than half of my friends and family
3. About half of my friends and family
4. More than half of my friends and family
5. All of my friends and family
98. I do not know
99. (Refused)

Demographics

We're almost finished. I just have a few questions about your household to make sure we're getting a representative sample of utility customers.

X1. In what year were you born?

00. [NUMERIC OPEN END; 1890-1992]
9998. (Refused)

X2. Including yourself, how many people lived in your home during the past 12 months?

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. Thirteen or more
99. (Refused)

X3. How many children under 18 years of age currently reside in this home?

0. 0
1. 1
2. 2
3. 3
4. 4
5. 5
6. 6
7. 7
8. 8
9. 9
10. Ten or more
99. (Refused)

X4. Which of the following best represents your annual household income from all sources in 2008, before taxes? Was it . . . .

1. Up to $9,999
2. $10,000-$19,999
3. $20,000-$29,999
4. $30,000-$39,999
5. $40,000-$$49,999
6. $50,000-$59,999
7. $60,000-$69,999
8. $70,000-$79,999
9. $80,000-$89,999
10. $90,000-$999,999
11. $100,000-$149,999
12. $150,000-$199,999
13. $200,000-$249,999
14. $250,000-$299,999
15. $300-000 or more
99. (Refused)

[SKIP IF X4=1, 2, 12, 13, 14, 15, 999, or it is not a direct combination in the chart below.]
X5. Was your income above or below _X_?

IF X2 (HOUSEHOLD SIZE)=	X	Ask if:
1	$21,660	X4=3
2	$29,140	X4=3
3	$36,620	X4=4
4	$44,100	X4=5
5	$51,580	X4=6
6	$59,060	X4=6
7	$66,540	X4=7
8	$74,020	X4=8
9	$79,000	X4=9
10	$80,700	X4=9
11	$82,300	X4=10
12	$84,000	X4=11

X6. What is the last grade of school you completed? [READ CODES 1-7 IF NECESSARY]

1. Grade school or less (1-8)
2. Some high school (9-11)
3. Graduated high school (12)
4. Vocational/technical school
5. Some college (1-3 years)
6. Graduated college (4 years)
7. Post graduate education
99. (Refused)

X7. What is your ethnicity or racial heritage? (If necessary: For example, White, African American, Arab American, Hispanic, Asian, or something else?)

1. (White)
2. (African American/Black)
3. (Arab American)
4. (Hispanic/Spanish-American)
5. (Asian)
6. (Native American/Indian)
7. (Mixed/bi-racial)
8. (Other, SPECIFY)
98. (Don’t know)
99. (Refused)

[SKIP IF X7<>1, 3, OR 7]

X8. Is your main ethnic group or ancestry British, Irish, Italian, or something else? [ACCEPT ONE MENTION; EMPHASIZE MAIN NATIONALITY IF MORE THAN ONE ANSWER IS GIVEN]

1. (British/English/Scottish)
2. (German)
3. (Irish)
4. (Italian)
5. (Polish)
6. (French)
7. (Scandinavian)
8. (Spanish American/Hispanic [Mexican, Puerto Rican, Cuban])
9. (Afro-American/black)
10. (East European/Russian)
11. (Portuguese)
12. (Asian/Oriental [Japanese, Chinese, Korean, Filipino])
13. (American Indian)
14. (Dutch)
15. (Chaldean)
16. (Other, SPECIFY)
98. (Don't know)
99. (Refused)

Thank and terminate

Appendix D. Sample Design

The Project Team conducted three attitudinal baseline telephone surveys with different Michigan residential populations: (1) customers in the DTE Energy service territory, (2) customers in the CE service territory, and (3) residents of Alpena County and the Upper Peninsula.

We fielded the DTE Energy survey in November 2009, using a random sample of DTE Energy customers stratified by customer type within each of DTE Energy's 14 regions. We completed approximately 100 interviews in each of 11 key regions and 50 interviews in each of the remaining three regions for a total of 1,255 completed interviews (see Table 31).

Table 31. DTE Energy Telephone Survey Sample by Customer Type and Region

Customer Type	DTE Energy Region	Sampling Frame	Completes
Electric Only	Oakland	2,500	100
	Macomb	2,500	100
	Livingston	2,500	100
	Thumb	2,500	100
	Other electric only	1,250	50
Combination	Wayne, non-Detroit	2,500	100
	Washtenaw	2,500	105
	Detroit	2,500	100
	Other combo	1,250	100
Gas Only	Kent	3,000	100
	CLP, non-Kent	3,000	100
	NLP	3,000	100
	UP	1,500	50
	Other gas only	1,500	50
Total		32,000	1,255

We fielded the CE survey in February 2010, employing a random sample of CE customers. Like with the DTE Energy survey, we stratified this sample by customer type, but did not use an additional regional stratification. We completed interviews with 400 Consumers Energy customers, stratified by the corresponding proportion of customer type as shown in Table 32.

Table 32. Consumers Energy Telephone Sample

Customer Type	Sampling Frame	Completes
Electric Only	3,200	160
Gas Only	3,200	160
Combination	1,600	80
Total	8,000	400

To reach Michigan residents not in either the DTE Energy or CE service territories, in January 2011 the Project Team conducted an additional set of surveys with residents living in the Upper Peninsula and Alpena County. We purchased a sample list of 7,031 residents living in these areas and then screened respondents to ensure they were not electric and gas customers of DTE Energy

or CE. We then completed a total of 407 surveys with quotas from each county that were directly proportional to the percentage of residents living in that county, as shown in Table 33.

Table 33. Telephone Survey of Residents Living in Upper Peninsula and Alpena County

County	Sampling Frame	Completes
Alger County	208	11
Alpena County	638	36
Baraga County	155	10
Chippewa County	661	47
Delta County	760	45
Dickinson County	592	32
Gogebic County	327	19
Houghton County	780	43
Iron County	270	14
Keweenaw County	63	2
Luce County	148	8
Mackinac County	230	13
Marquette County	1371	80
Menominee County	529	29
Ontonagon County	142	8
Schoolcraft County	157	10
Total	7,031	407

Appendix E. Site Survey Instrument

Resident Name:
_____

Street Address:
_____

City:
_____

State:_____ Zip Code: _____

Phone:
_____

Check Number:
_____

Date:
_____

Electric Utility:
_____

Gas Utility:
_____

On-Site Inspector
(Name and ID# Required):
_____

Time in: _____

Time out: _____

Photograph this page as the home identifier sheet before entering the home

1. Initial Homeowner Interview

1. What are the primary and secondary (if applicable) heating sources in your home? (Make note of where to look for later)

2. What are the primary, secondary, third, fourth cooling sources and locations in your home? (Make note of where to look for later)

3. Where is your thermostat located? What temperature do you typically have the thermostat set at during the day/night/while away? (Get temperatures for both heating and cooling seasons) **Enter Thermostat info on Page 2 (Q2-4 and Q6-8).**

4. Do you have any stand-alone freezer or secondary refrigerators? If so, where are they located? (Make note of where to look later)

5. What type if insulation do you have in your exterior sidewalls? In the ceiling/attic? And where is your attic access? **Enter Side Wall Insulation info on Page 28 (Q264) and note ceiling/attic insulation for later.**

6. Do you use storms windows on your home? If so, how many months out of the year are they used?

7. What is the square footage of your house (living space only)? **Enter SQ FT. info on Page 2 (Q10).**

1a. Does this home have control over the heating temperature?	☐ 1 Yes ☐ 2 No→**SKIP TO QUESTION 5a**		☐ 99 Can't Assess, Reason:
1. Temperature Control: Main Heat	☐ 1 Regular Temp ☐ 2 Clock / Programmable ☐ 3 Dial w/o Temp. ☐ 4 Switch ☐ 5 Other	☐ **Check box if photo taken**	☐ 99 Can't Assess, Reason:
2. Awake Temp: Heat	Record # ☐ 96 Not Applicable		☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
3. Sleep Temp: Heat	Record # ☐ 96 Not Applicable		☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
4. Away Temp: Heat	Record # ☐ 96 Not Applicable		☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
5a. Does this home have control over the coolng temperature?	☐ 1 Yes ☐ 2 No→**SKIP TO QUESTION 9**		☐ 99 Can't Assess, Reason:
5. Temperature Control: Main Cool	☐ 1 Regular Temp ☐ 2 Clock / Programmable ☐ 3 Dial w/o Temp. ☐ 4 Switch ☐ 5 Other	☐ **Check box if photo taken**	☐ 99 Can't Assess, Reason:
6. Awake Temp: Cool	Record # ☐ 96 Not Applicable		☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
7. Sleep Temp: Cool	Record # ☐ 96 Not Applicable		☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
8. Away Temp: Cool	Record # ☐ 96 Not Applicable		☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
9. # of Months Storm Windows in Use	Record #		☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
10. Square Feet of Living Space	Record #		☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
36. Dehumidifier	☐ 1 Yes ☐ 2 No→**SKIP TO NEXT SECTION**	☐ **Check box if photo taken**	☐ 99 Can't Assess, Reason:
37. Dehumidifier Make / Model	Record Make: Record Model:	☐ **Check box if photo taken**	☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
38. Dehumidifier Age	Record #		☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
39. Dehumidifier Efficiency	☐ 1 Energy Star ☐ 2 Non-Energy Star		☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:

Basement (Unfinished Areas)

11a. Does this home have any Unfinished Basement areas? ☐ 1 Yes BASEMENT ☐ 2 No →SKIP TO FINISHED

11b. Is the Unfinished Basement area accessible? ☐ 1 Yes BASEMENT ☐ 2 No →SKIP TO FINISHED

- Note any freezers or refrigerators and record under "Kitchen" section.
- Note any laundry equipment and record under the "Laundry Area" section.

11. Unfinished Basement Type	☐ 1 Heated/Conditioned	☐ 2 Unconditioned		☐ 99 Can't Assess, Reason:
12. Crawl Space Insulation	Record type 1	Record type 2	Record type 3	☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
13. Crawl Space Insulation	Layer 1 (record inches)	Layer 2 (record inches)	Layer 3 (record inches)	☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
14. Insulation between Joists	Record type 1	Record type 2	Record type 3	☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
15. Insulation between Joists	Layer 1 (record inches)	Layer 2 (record inches)	Layer 3 (record inches)	☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
16. Unfinished Basement Wall Insulation	Record type			☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
17. Unfinished Basement Wall Insulation	Record inches			☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
18a. Are there any windows in the unfinished basement areas?	☐ 1 Yes	☐ 2 No→**SKIP TO QUESTION 27a**		☐ 99 Can't Assess, Reason:
18. # Windows	Total, Record #			☐ 99 Can't Assess, Reason:
19. # Single Pane	Record #			☐ 99 Can't Assess, Reason:
20. # Double Pane	Record #			☐ 99 Can't Assess, Reason:
21. # Triple Pane	Record #			☐ 99 Can't Assess, Reason:
22. # Wood Frames	Record #			☐ 99 Can't Assess, Reason:

Basement (Unfinished Areas) Continued

23. # Metal Frames	Record #	☐ 99 Can't Assess, Reason:
24. # Vinyl Frames	Record #	☐ 99 Can't Assess, Reason:
25. Weatherstripping on Windows	☐ 1 Yes ☐ 2 Partial ☐ 3 No	☐ 99 Can't Assess, Reason:
26. # Insulated Blinds	Record #	☐ 99 Can't Assess, Reason:
27a. Is there any lighting in the unfinished basement areas?	☐ 1 Yes ☐ 2 No→**SKIP TO QUESTION 40**	☐ 99 Can't Assess, Reason:
27. # Incandescent **Screw** Bulbs Installed	Record #	☐ 99 Can't Assess, Reason:
28. # CFL Twist/Spiral **Screw** Bulbs Installed (non-dimmable)	Record #	☐ 99 Can't Assess, Reason:
29. # CFL Specialty **Screw** Bulbs Installed	Record #	☐ 99 Can't Assess, Reason:
30. # LED **Screw** Bulbs Installed	Record #	☐ 99 Can't Assess, Reason:
31. # Halogen **Screw** Bulbs Installed	Record #	☐ 99 Can't Assess, Reason:
32. # Fluorescent **Pin** Bulbs Installed	Record #	☐ 99 Can't Assess, Reason:
33. # CFL **Pin** Bulbs Installed	Record #	☐ 99 Can't Assess, Reason:
34. # Halogen **Pin** Bulbs Installed	Record #	☐ 99 Can't Assess, Reason:
35. # LED **Pin** Bulbs Installed	Record #	☐ 99 Can't Assess, Reason:
40. # of Sinks **(In Unfinished Basement Areas)**	Record #	☐ 99 Can't Assess, Reason:
41. Low-Flow Aerators GPM ≤ 2.5 **(In Unfinished Basement Areas)**	Record #	☐ 99 Can't Assess, Reason:

Basement (Finished Areas)

42aa. Does this home have any Finished Basement areas? ☐ 1 Yes ☐ 2 No →SKIP TO HEATING

42ab. Is the Finished Basement area accessible? ☐ 1 Yes ☐ 2 No →SKIP TO HEATING

- Note any consumer electronics and record in the "Consumer Electronics" section
- Note sauna and record in the "Recreational Equipment" section
- Note any relevant heating / cooling units and record in "Mechanicals" section
- Note any freezers or refrigerators and record under "Kitchen" section.

42a. Basement Wall Insulation	Record type 1	Record type 2	Record type 3	☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
42b. Basement Wall Insulation	Layer 1 (record inches)	Layer 2 (record inches)	Layer 3 (record inches)	☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
43. Linear Feet of Duct in Conditioned Space	Record Linear Feet			☐ 99 Can't Assess, Reason:
44. Duct Insulation	Record type			☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
45. Duct Insulation	Record depth in inches			☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
46a. Are there any windows in the finished basement areas?	☐ 1 Yes	☐ 2 No→**SKIP TO QUESTION 55a**		☐ 99 Can't Assess, Reason:
46. # Windows	Total, Record #			☐ 99 Can't Assess, Reason:
47. # Single Pane	Record #			☐ 99 Can't Assess, Reason:
48. # Double Pane	Record #			☐ 99 Can't Assess, Reason:
49. # Triple Pane	Record #			☐ 99 Can't Assess, Reason:
50. # Wood Frames	Record #			☐ 99 Can't Assess, Reason:
51. # Metal Frames	Record #			☐ 99 Can't Assess, Reason:

Basement (Finished Areas) Continued

52. # Vinyl Frames	Record #	☐ 99 Can't Assess, Reason:
53. Weatherstripping on Windows	☐ 1 Yes ☐ 2 Partial ☐ 3 No	☐ 99 Can't Assess, Reason:
54. # Insulated Blinds	Record #	☐ 99 Can't Assess, Reason:
55a. Is there any lighting in the unfinished basement areas?	☐ 1 Yes ☐ 2 No→**SKIP TO QUESTION 64**	☐ 99 Can't Assess, Reason:
55. # Incandescent **Screw** Bulbs Installed	Record #	☐ 99 Can't Assess, Reason:
56. # CFL Twist/Spiral **Screw** Bulbs Installed (non-dimmable)	Record #	☐ 99 Can't Assess, Reason:
57. # CFL Specialty **Screw** Bulbs Installed	Record #	☐ 99 Can't Assess, Reason:
58. # LED **Screw** Bulbs Installed	Record #	☐ 99 Can't Assess, Reason:
59. # Halogen **Screw** Bulbs Installed	Record #	☐ 99 Can't Assess, Reason:
60. # Fluorescent **Pin** Bulbs Installed	Record #	☐ 99 Can't Assess, Reason:
61. # CFL **Pin** Bulbs Installed	Record #	☐ 99 Can't Assess, Reason:
62. # Halogen **Pin** Bulbs Installed	Record #	☐ 99 Can't Assess, Reason:
63. # LED **Pin** Bulbs Installed	Record #	☐ 99 Can't Assess, Reason:
64. # of Sinks **(In Finished Basement Areas)**	Record #	☐ 99 Can't Assess, Reason:
65. Low-Flow Aerators GPM ≤ 2.5 **(In Finished Basement Areas)**	Record #	☐ 99 Can't Assess, Reason:

MECHANICALS (Heating, Cooling & Water Heating):

- Ask owner about both heating and cooling maintenance patterns at this point
- Ask owner about presence of drain heat recovery system or ground-source heat pump

Furnace

66a. Does this home have heating? ☐ 1 Yes ☐ 2 No →SKIP TO COOLING

66b. Is the heating system accessible? ☐ 1 Yes ☐ 2 No →SKIP TO COOLING

→ **ANSWER QUES. 66 ONLY IF MF** 66. Shared Heating (Another Res.)	☐ 1 Yes ☐ 2 No	☐ **Check box if photo taken**	☐ 99 Can't Assess, Reason:
67. Primary Heat System Type **(See Table 1 and Record Code)**	Record Code	☐ **Check box if photo taken**	☐ 99 Can't Assess, Reason:
68. Primary Heat System Efficiency	Record %		☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
69. Primary Heat System Make / Model	Record Make: Record Model:	☐ **Check box if photo taken**	☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
70. Primary Heat System Age / Mfg. Date	Record Year		☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
71. Primary Scheduled Heat System Maintenance by HVAC Pro.	☐ 1 Annual ☐ 2 Every 2 years ☐ 3 Every 3-5 years ☐ 4 Repair Only /Never		☐ 99 Can't Assess, Reason:
72. Secondary Heating System Type **(See Table 1 and Record Code)**	Record Code ☐ 96 None	☐ **Check box if photo taken**	☐ 99 Can't Assess, Reason:
→ **ANSWER QUES. 73 ONLY IF RADIANT HEAT** 73. # of Rooms with Radiant Heat	Record #		☐ 99 Can't Assess, Reason:

Cooling

74a. Does this home have cooling? ☐ 1 Yes ☐ 2 No →SKIP TO WATER HEATING

74b. Is the cooling system accessible? ☐ 1 Yes ☐ 2 No →SKIP TO WATER HEATING

→ ANSWER QUES. 74 ONLY IF MF 74. Shared Cooling (Another Res.)	☐ 1 Yes ☐ 2 No		☐ **Check box if photo taken**	☐ 99 Can't Assess, Reason:
75. Primary Cooling System Type **(See Table 2 and Record Code)**	Record Code	**→ IF ROOM AC SKIP TO Q79**	☐ **Check box if photo taken**	☐ 99 Can't Assess, Reason:
76. Primary Cool System Efficiency	Record # / SEER			☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
77. Primary Cooling System Make / Model	Record Make:	Record Model:	☐ **Check box if photo taken**	☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
78. Primary Cooling System Age / Mfg. Date	Record Year			☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
79. Frequency of Primary Cooling System Maintenance by HVAC Pro.	☐ 1 Annual ☐ 2 Every 2 years ☐ 3 Every 3-5 years ☐ 4 Repair Only /Never			☐ 99 Can't Assess, Reason:
→ SKIP TO Q86 IF PRIMARY COOLING TYPE NOT ROOM AC 80a. Total number of Room A/C Units	Record #			☐ 99 Can't Assess, Reason:
80b. Room A/C Unit 1 Mfg. Date	Record Year		☐ **Check box if photo taken of name plate**	☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
80c. Room A/C Unit 1 Size	Record BTU's/hour			☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
80d. Room A/C Unit 1 Efficiency	☐ 1 Energy Star ☐ 2 Non-Energy Star			☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
80. Room A/C Unit 2 Mfg. Date	Record Year			☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
81. Room A/C Unit 2 Size	Record BTU's/hour			☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
82. Room A/C Unit 2 Efficiency	☐ 1 Energy Star ☐ 2 Non-Energy Star			☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:

Cooling (Continued…)

83. Room A/C Unit 3 Mfg. Date	Record Year		☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
84. Room A/C Unit 3 Size	Record BTU's/hour		☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
85. Room A/C Unit 3 Efficiency	☐ 1 Energy Star	☐ 2 Non-Energy Star	☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
86. Secondary Cooling System Type **(See Table 2 and Record Code)**	Record Code	☐ 96 None	☐ 99 Can't Assess, Reason:

☐ **Check box if photo taken**

Water Heater

87a. Does this home have a water heater? ☐ 1 Yes ☐ 2 No →SKIP TO LAUNDRY AREA

87b. Is the water heater accessible? ☐ 1 Yes ☐ 2 No →SKIP TO LAUNDRY AREA

→ **ANSWER QUES. 87 ONLY IF MF** 87. Shared Water Heater (Another Res.)	☐ 1 Yes ☐ 2 No	☐ **Check box if photo taken**	☐ 99 Can't Assess, Reason:
88. Type of Water Heater **(See Table 3 and Record Code)**	Record Code	☐ **Check box if photo taken**	☐ 99 Can't Assess, Reason:
89. Fuel Type for Primary Water Heater	☐ 1 Electricity ☐ 2 Natural Gas ☐ 3 Propane/ Bottled		☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
→**ANSWER QUES. 90 IF WH=SOLAR** 90. Alt or B/U Water Heater Type	☐ 1 Standard Storage ☐ 2 Tankless		☐ 99 Can't Assess, Reason:
→ **ANSWER IF TEMP SETTING ON WH** 91. Prim. WH Temp.	Record Temp.		☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
→ **ANSWER IF NO TEMP SETTING** 92. Prim. WH No Temp. L/M/H	☐ 1 Low ☐ 2 Med - Low ☐ 3 Med ☐ 4 Med - High ☐ 5 High		☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
93. Prim. WH Efficiency	Record EF	☐ **Check box if photo taken**	☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
94. Prim. WH Make / Model	Record Make: Record Model:	☐ **Check box if photo taken**	☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
95. Prim. WH Age / Mfg. Date	Record Year		☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
96. Prim. WH Size	Record Gallons		☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
97. Qty Water Heaters	Record #		☐ 99 Can't Assess, Reason:
98. Fuel Type Secondary WH	☐ 1 Electricity ☐ 2 Natural Gas ☐ 3 Propane/ Bottled		☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
99. WH Blanket / Wrap on Prim. WH	☐ 1 Yes ☐ 2 No		☐ 99 Can't Assess, Reason:
100. Pipe Insulation	☐ 1 Yes ☐ 2 No		☐ 99 Can't Assess, Reason:
101. WH Timer	☐ 1 Yes ☐ 2 No		☐ 99 Can't Assess, Reason:
102. Drain Heat Recovery	☐ 1 Yes ☐ 2 No		☐ 99 Can't Assess, Reason:

Laundry Area

103a. Does this home have a Laundry Area? ☐ 1 Yes ☐ 2 No →SKIP TO KITCHEN

103b. Did the homeowner deny access to the Laundry Area? ☐ 1 Yes → SKIP TO KITCHEN ☐ 2 No

103. Clothes Dryer	☐ 1 Private ☐ 2 Shared ☐ 3 None→SKIP TO Q108		☐ Check box if photo taken	☐ 99 Can't Assess, Reason:
104. # Clothes Dryers	Record #			☐ 99 Can't Assess, Reason:
105. Prim. Clothes Dryer Age/Mfg. Date	Record Year			☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
106. Prim. Clothes Dryer Fuel	☐ 1 Electricity ☐ 2 Natural Gas ☐ 3 Propane/Bottled			☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
107. # Clothes Dryers w/ Moisture Sensor	Record #			☐ 99 Can't Assess, Reason:
108. Clothes Washer	☐ 1 Private ☐ 2 Shared ☐ 3 None→SKIP TO Q113a		☐ Check box if photo taken	☐ 99 Can't Assess, Reason:
109a. Total # of Clothes Washers	Record #			☐ 99 Can't Assess, Reason:
109. # Top Loading Clothes Washers	Record #			☐ 99 Can't Assess, Reason:
110. # Front Loading Clothes Washers	Record #			☐ 99 Can't Assess, Reason:
111. Prim. Clothes Washer Make / Model	Record Make:	Record Model:	☐ Check box if photo taken	☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
112. Clothes Washer Efficiency	☐ 1 Energy Star ☐ 2 Non-Energy Star			☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
113a. Are there any windows in the laundry area?	☐ 1 Yes ☐ 2 No→SKIP TO QUESTION 122a			☐ 99 Can't Assess, Reason:
113. # Windows	Total, Record #			☐ 99 Can't Assess, Reason:
114. # Single Pane	Record #			☐ 99 Can't Assess, Reason:
115. # Double Pane	Record #			☐ 99 Can't Assess, Reason:
116. # Triple Pane	Record #			☐ 99 Can't Assess, Reason:

Laundry Area (Continued…)

117. # Wood Frames	Record #		☐ 99 Can't Assess, Reason:
118. # Metal Frames	Record #		☐ 99 Can't Assess, Reason:
119. # Vinyl Frames	Record #		☐ 99 Can't Assess, Reason:
120. Weatherstripping on Windows	☐ 1 Yes	☐ 2 Partial ☐ 3 No	☐ 99 Can't Assess, Reason:
121. # Insulated Blinds	Record #		☐ 99 Can't Assess, Reason:
122a. Is there any lighting in the laundry area?	☐ 1 Yes	☐ 2 No→**SKIP TO QUESTION 132**	☐ 99 Can't Assess, Reason:
122. # Incandescent **Screw** Bulbs Installed	Record #		☐ 99 Can't Assess, Reason:
123. # CFL Twist/Spiral **Screw** Bulbs Installed (non-dimmable)	Record #		☐ 99 Can't Assess, Reason:
124. # CFL Specialty **Screw** Bulbs Installed	Record #		☐ 99 Can't Assess, Reason:
125. # LED **Screw** Bulbs Installed	Record #		☐ 99 Can't Assess, Reason:
126. # Halogen **Screw** Bulbs Installed	Record #		☐ 99 Can't Assess, Reason:
127. # Fluorescent **Pin** Bulbs Installed	Record #		☐ 99 Can't Assess, Reason:
128. # CFL **Pin** Bulbs Installed	Record #		☐ 99 Can't Assess, Reason:
129. # Halogen **Pin** Bulbs Installed	Record #		☐ 99 Can't Assess, Reason:
130. # LED **Pin** Bulbs Installed	Record #		☐ 99 Can't Assess, Reason:
132. # of Sinks **(In Laundry Area)**	Record #		☐ 99 Can't Assess, Reason:
133. Low-Flow Aerators GPM ≤ 2.5 **(In Laundry Area)**	Record #		☐ 99 Can't Assess, Reason:
136. # Canned light sockets	Record #	☐ 96 Not top floor→**SKIP TO KITCHEN**	☐ 99 Can't Assess, Reason:
136A. Type of bulbs	☐ 1 Incandescent	☐ 2 CFL ☐ 3 Halogen	☐ 99 Can't Assess, Reason:
137. # Canned light sockets sealed	Record #		☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
137A. Type of bulbs	☐ 1 Incandescent	☐ 2 CFL ☐ 3 Halogen	☐ 99 Can't Assess, Reason:

Kitchen

138a. Did the homeowner deny access to the Kitchen?

☐ 1 **Yes → SKIP TO LIVING SPACE**
☐ 2 **No**

- Note any consumer electronics and record in the "Consumer Electronics" section
- Note any relevant heating / cooling units and record in the "Basement / Mechanicals" section
- Note any laundry equipment and record under the "Laundry Area" section.
- Check all closets for lighting and combine into closets column in the "Living Space" section

138b. Are there any windows in the kitchen?	☐ 1 Yes	☐ 2 No→**SKIP TO QUESTION 146**	☐ 99 Can't Assess, Reason:
138. # Windows	Total, Record #		☐ 99 Can't Assess, Reason:
139. # Single Pane	Record #		☐ 99 Can't Assess, Reason:
140. # Double Pane	Record #		☐ 99 Can't Assess, Reason:
141. # Triple Pane	Record #		☐ 99 Can't Assess, Reason:
142. # Wood Frames	Record #		☐ 99 Can't Assess, Reason:
143. # Metal Frames	Record #		☐ 99 Can't Assess, Reason:
144A. # Vinyl Frames	Record #		☐ 99 Can't Assess, Reason:
144B. Weatherstripping on Windows	☐ 1 Yes	☐ 2 Partial ☐ 3 No	☐ 99 Can't Assess, Reason:
145. # Insulated Blinds	Record #		☐ 99 Can't Assess, Reason:
146. # Incandescent **Screw** Bulbs Installed	Record #		☐ 99 Can't Assess, Reason:
147. # CFL Twist/Spiral **Screw** Bulbs Installed (non-dimmable)	Record #		☐ 99 Can't Assess, Reason:

Kitchen (Continued…)

148. # CFL Specialty **Screw** Bulbs Installed	Record #		☐ 99 Can't Assess, Reason:
149. # LED **Screw** Bulbs Installed	Record #		☐ 99 Can't Assess, Reason:
150. # Halogen **Screw** Bulbs Installed	Record #		☐ 99 Can't Assess, Reason:
151. # Fluorescent **Pin** Bulbs Installed	Record #		☐ 99 Can't Assess, Reason:
152. # CFL **Pin** Bulbs Installed	Record #		☐ 99 Can't Assess, Reason:
153. # Halogen **Pin** Bulbs Installed	Record #		☐ 99 Can't Assess, Reason:
154. # LED **Pin** Bulbs Installed	Record #		☐ 99 Can't Assess, Reason:
156. # of Sinks **(In the Kitchen)**	Record #		☐ 99 Can't Assess, Reason:
157. Low-Flow Aerators GPM ≤ 2.5 **(In the Kitchen)**	Record #		☐ 99 Can't Assess, Reason:
158. # Canned light sockets	Record #	☐ 96 Not top floor→**SKIP TO QUES. 160**	☐ 99 Can't Assess, Reason:
158A. Type of bulbs	☐ 1 Incandescent	☐ 2 CFL ☐ 3 Halogen	☐ 99 Can't Assess, Reason:
159. # Canned light sockets sealed	Record #		☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
159A. Type of bulbs	☐ 1 Incandescent	☐ 2 CFL ☐ 3 Halogen	☐ 99 Can't Assess, Reason:
160. # Ceiling Fans	Record #		☐ 99 Can't Assess, Reason:
161. # Ovens	Record #		☐ 99 Can't Assess, Reason:
162. Prim. Oven Fuel	☐ 1 Electricity	☐ 2 Natural Gas ☐ 3 Propane/ Bottled	☐ 4 None
163. Convection Oven – Prim.	☐ 1 Yes	☐ 2 No	
164. # Cooking stove-tops (should be counted separately from oven)	Record #		☐ 99 Can't Assess, Reason:
165. Prim. Stove-top fuel	☐ 1 Electricity	☐ 2 Natural Gas ☐ 3 Propane/ Bottled ☐ 4 None	☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:

Kitchen (Continued…)

166. # Refrigerators	Record #			☐ 99 Can't Assess, Reason:
167. Prim. Refrigerator Make / Model	Record Make:	Record Model:	☐ Check box if photo taken	☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
168. Prim. Refrigerator Age	☐ 1 6 or less years	☐ 2 7 to 14 years	☐ 3 15+ years	☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
169. Prim. Refrigerator Efficiency	☐ 1 Energy Star	☐ 2 Non-Energy Star		☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
170. # Stand-Alone Freezers	Record #			☐ 99 Can't Assess, Reason:
171. Stand-Alone Freezer Make / Model	Record Make:	Record Model:	☐ Check box if photo taken	☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
172. Stand-Alone Freezer Age	☐ 1 6 or less years	☐ 2 7 to 14 years	☐ 3 15+ years	☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
173. Stand-Alone Freezer Efficiency	☐ 1 Energy Star	☐ 2 Non-Energy Star		☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
174. # Dishwashers	Record #			☐ 99 Can't Assess, Reason:
175. Prim. Dishwasher Make / Model	Record Make:	Record Model:	☐ Check box if photo taken	☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
176. Prim. Dishwasher Age	Record Year			☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
177. Prim. Dishwasher Efficiency	☐ 1 Energy Star	☐ 2 Non-Energy Star		☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
178. # Microwaves	Record #			☐ 99 Can't Assess, Reason:

Living Space (Living Room / Family Room / Great Room / Dining Room / Office / Den / Library / Parlor, etc.)

179a. What is the total number of living spaces in this home? # _____

- Note any consumer electronics and record in the "Consumer Electronics" section
- Note any relevant heating / cooling units and record in the "Basement / Mechanicals" section
- If you cannot assess a question for a given room, enter '99' and put a reason and room type in the relevant box.

Measure	Prim. Living Space (LR/FR) (a)	Dining Room (b)	Office / Den (circle one) (c)	Other Living Space(s) (f)	
179b. Is this room type in the home? **IF NO→SKIP TO NEXT ROOM TYPE**	☐ 1 Yes ☐ 2 No	☐ 1 Yes ☐ 2 No	☐ 1 Yes ☐ 2 No	☐ 1 Yes ☐ 2 No	☐ 99 Can't Assess, Reason and Room Type:
179c. Check box if homeowner denies access to this room. **→SKIP TO NEXT ROOM TYPE**	☐ 1 Access denied?	☐ 1 Access denied?	☐ 1 Access denied?	☐ 1 Access denied?	
179d. One Word Room Identifier (Size, Wall Color, Use, etc.)	Record Desc.	Record Desc.	Record Desc.	Description of other living spaces:	
179e. Are there any windows in this room type? **IF NO→SKIP TO QUESTION 187**	☐ 1 Yes ☐ 2 No	☐ 1 Yes ☐ 2 No	☐ 1 Yes ☐ 2 No	☐ 1 Yes ☐ 2 No	☐ 99 Can't Assess, Reason and Room Type:
179. # Windows	Total, Record #	Total, Record #	Total, Record #	Total, Record #	☐ 99 Can't Assess, Reason and Room Type:
180. # Single Pane	Record #	Record #	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
181. # Double Pane	Record #	Record #	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
182. # Triple Pane	Record #	Record #	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
183. # Wood Frames	Record #	Record #	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
184. # Metal Frames	Record #	Record #	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
185. # Vinyl Frames	Record #	Record #	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
186. Weatherstripping on Windows	☐ 1 Yes ☐ 2 Partial ☐ 3 No	☐ 1 Yes ☐ 2 Partial ☐ 3 No	☐ 1 Yes ☐ 2 Partial ☐ 3 No	☐ 1 Yes ☐ 2 Partial ☐ 3 No	☐ 99 Can't Assess, Reason and Room Type:

Living Space (Continued…)

Measure	Prim. Living Space (LR/FR) (a)	Dining Room (b)	Office / Den (c)	Other Living Space(s) (f)	
187. # Insulated Blinds	Record #	Record #	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
188. # Incandescent **Screw** Bulbs Installed	Record #	Record #	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
189. # CFL Twist/Spiral **Screw** Bulbs Installed (non-dimmable)	Record #	Record #	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
190. # CFL Specialty **Screw** Bulbs Installed	Record #	Record #	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
191. # LED **Screw** Bulbs Installed	Record #	Record #	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
192. # Halogen **Screw** Bulbs Installed	Record #	Record #	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
193. # Fluorescent **Pin** Bulbs Installed	Record #	Record #	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
194. # CFL **Pin** Bulbs Installed	Record #	Record #	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
195. # Halogen **Pin** Bulbs Installed	Record #	Record #	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
196. # LED **Pin** Bulbs Installed	Record #	Record #	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
197. # Canned Light Sockets **→ IF NOT TOP FLOOR, CHECK BOX & SKIP TO QUESTION 199**	Record # ☐ 96 Not top floor	Record # ☐ 96 Not top floor	Record # ☐ 96 Not top floor	Record # ☐ 96 Not top floor	☐ 99 Can't Assess, Reason and Room Type:
197A. Type of bulbs	☐ 1 Incandescent ☐ 2 CFL ☐ 3 Halogen	☐ 1 Incandescent ☐ 2 CFL ☐ 3 Halogen	☐ 1 Incandescent ☐ 2 CFL ☐ 3 Halogen	☐ 1 Incandescent ☐ 2 CFL ☐ 3 Halogen	☐ 98 DK, Reason and Room Type: ☐ 99 Can't Assess, Reason and Room Type:
198. # Canned light sockets sealed	Record #	Record #	Record #	Record #	☐ 98 DK, Reason and Room Type: ☐ 99 Can't Assess, Reason and Room Type:
198A. Type of bulbs	☐ 1 Incandescent ☐ 2 CFL ☐ 3 Halogen	☐ 1 Incandescent ☐ 2 CFL ☐ 3 Halogen	☐ 1 Incandescent ☐ 2 CFL ☐ 3 Halogen	☐ 1 Incandescent ☐ 2 CFL ☐ 3 Halogen	☐ 98 DK, Reason and Room Type: ☐ 99 Can't Assess, Reason and Room Type:
199. # Ceiling Fans	Record #	Record #	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:

Closets/Hallways

- Note any consumer electronics and record in the "Consumer Electronics" section
- Note any relevant heating / cooling units and record in the "Basement / Mechanicals" section
- Combine hallways in lighting / window measures
- Check all closets for lighting and combine into closets column
- If you cannot assess a question for a given room, enter '99' and put a reason and room type in the relevant box.

Measure	Closets (d)	Hallways (e)	
179b. Is this room type in the home? **IF NO→SKIP TO NEXT ROOM TYPE**	☐ 1 Yes ☐ 2 No	☐ 1 Yes ☐ 2 No	☐ 99 Can't Assess, Reason and Room Type:
179c. Check box if homeowner denies access to this room. **→SKIP TO NEXT ROOM TYPE**	☐ 1 Access denied?	☐ 1 Access denied?	☐ 99 Can't Assess, Reason and Room Type:
179e. Are there any windows in this room type? **IF NO→SKIP TO QUESTION 187a**	☐ 1 Yes ☐ 2 No	☐ 1 Yes ☐ 2 No	☐ 99 Can't Assess, Reason and Room Type:
179. # Windows	Total, Record #	Total, Record #	☐ 99 Can't Assess, Reason and Room Type:
180. # Single Pane	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
181. # Double Pane	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
182. # Triple Pane	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
183. # Wood Frames	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
184. # Metal Frames	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
185. # Vinyl Frames	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
186. Weatherstripping on Windows	☐ 1 Yes ☐ 2 Partial ☐ 3 No	☐ 1 Yes ☐ 2 Partial ☐ 3 No	☐ 99 Can't Assess, Reason and Room Type:

Closets/Hallways (Continued…)

Measure	Closets (d)	Hallways (e)	
187a. Is there any lighting in this room type? **IF NO→SKIP TO QUESTION 199**	☐ 1 Yes ☐ 2 No	☐ 1 Yes ☐ 2 No	☐ 99 Can't Assess, Reason and Room Type:
187. # Insulated Blinds	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
188. # Incandescent **Screw** Bulbs Installed	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
189. # CFL Twist/Spiral **Screw** Bulbs Installed (non-dimmable)	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
190. # CFL Specialty **Screw** Bulbs Installed	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
191. # LED **Screw** Bulbs Installed	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
192. # Halogen **Screw** Bulbs Installed	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
193. # Fluorescent **Pin** Bulbs Installed	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
194. # CFL **Pin** Bulbs Installed	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
195. # Halogen **Pin** Bulbs Installed	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
196. # LED **Pin** Bulbs Installed	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
197. # Canned Light Sockets **→ IF NOT TOP FLOOR, CHECK BOX & SKIP TO QUESTION 199**	Record # ☐ 96 Not top floor	Record # ☐ 96 Not top floor	☐ 99 Can't Assess, Reason and Room Type:
197A. Type of bulbs	☐ 1 Incandescent	☐ 2 CFL ☐ 3 Halogen	☐ 99 Can't Assess, Reason:
198. # Canned light sockets sealed	Record #	Record #	☐ 98 DK, Reason and Room Type: ☐ 99 Can't Assess, Reason and Room Type:
198A. Type of bulbs	☐ 1 Incandescent	☐ 2 CFL ☐ 3 Halogen	☐ 99 Can't Assess, Reason:
199. # Ceiling Fans	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:

Bedrooms

200a. What is the total number of bedrooms in this home? # _____

- Note any consumer electronics and record in the "Consumer Electronics" section
- Note any relevant heating / cooling units and record in the Basement / Mechanicals" section
- Check all closets for lighting and combine into closets column in the "Living Space" section
- If you cannot assess a question for a given room, enter '99' and put a reason and bedroom # in the relevant box.

Measure	Bedroom 1 (a)	Bedroom 2 (b)	Bedroom 3 (c)	Bedroom 4 (d)	All Other Bedrooms (e)	
200b. Check box if homeowner denies access to this room. **→SKIP TO NEXT BEDROOM**	☐ 1 Access denied?	☐ 1 Access denied?	☐ 1 Access denied?	☐ 1 Access denied?	☐ 1 Access denied?	
200. One Word Room Identifier (Size, Wall Color, Use, etc.)	Record Desc.	Record Desc.	Record Desc.	Record Desc.	Description of other bedrooms:	
201a. Are there any windows in this bedroom? **IF NO→SKIP TO QUESTION 210**	☐ 1 Yes ☐ 2 No	☐ 1 Yes ☐ 2 No	☐ 1 Yes ☐ 2 No	☐ 1 Yes ☐ 2 No	☐ 1 Yes ☐ 2 No	☐ 99 Can't Assess, Reason and Bedroom #:
201. # Windows	Total, Record #	Total, Record #	Total, Record #	Total, Record #	Total, Record #	☐ 99 Can't Assess, Reason and Bedroom #:
202. # Single Pane	Record #	Record #	Record #	Record #	Record #	☐ 99 Can't Assess, Reason and Bedroom #:
203. # Double Pane	Record #	Record #	Record #	Record #	Record #	☐ 99 Can't Assess, Reason and Bedroom #:
204. # Triple Pane	Record #	Record #	Record #	Record #	Record #	☐ 99 Can't Assess, Reason and Bedroom #:
205. # Wood Frames	Record #	Record #	Record #	Record #	Record #	☐ 99 Can't Assess, Reason and Bedroom #:
206. # Metal Frames	Record #	Record #	Record #	Record #	Record #	☐ 99 Can't Assess, Reason and Bedroom #:
207. # Vinyl Frames	Record #	Record #	Record #	Record #	Record #	☐ 99 Can't Assess, Reason and Bedroom #:
208. Weatherstripping on Windows	☐ 1 Yes ☐ 2 Partial ☐ 3 No	☐ 1 Yes ☐ 2 Partial ☐ 3 No	☐ 1 Yes ☐ 2 Partial ☐ 3 No	☐ 1 Yes ☐ 2 Partial ☐ 3 No	☐ 1 Yes ☐ 2 Partial ☐ 3 No	☐ 99 Can't Assess, Reason and Bedroom #:

Bedrooms Continued

Measure	Bedroom 1 (a)	Bedroom 2 (b)	Bedroom 3 (c)	Bedroom 4 (d)	All Other Bedrooms (e)	
209. # Insulated Blinds	Record #	Record #	Record #	Record #	Record #	☐ 99 Can't Assess, Reason and Bedroom #:
210. # Incandescent **Screw** Bulbs Installed	Record #	Record #	Record #	Record #	Record #	☐ 99 Can't Assess, Reason and Bedroom #:
211. # CFL Twist/Spiral **Screw** Bulbs Installed (non-dimmable)	Record #	Record #	Record #	Record #	Record #	☐ 99 Can't Assess, Reason and Bedroom #:
212. # CFL Specialty **Screw** Bulbs Installed	Record #	Record #	Record #	Record #	Record #	☐ 99 Can't Assess, Reason and Bedroom #:
213. # LED **Screw** Bulbs Installed	Record #	Record #	Record #	Record #	Record #	☐ 99 Can't Assess, Reason and Bedroom #:
214. # Halogen **Screw** Bulbs Installed	Record #	Record #	Record #	Record #	Record #	☐ 99 Can't Assess, Reason and Bedroom #:
215. # Fluorescent **Pin** Bulbs Installed	Record #	Record #	Record #	Record #	Record #	☐ 99 Can't Assess, Reason and Bedroom #:
216. # CFL **Pin** Bulbs Installed	Record #	Record #	Record #	Record #	Record #	☐ 99 Can't Assess, Reason and Bedroom #:
217. # Halogen **Pin** Bulbs Installed	Record #	Record #	Record #	Record #	Record #	☐ 99 Can't Assess, Reason and Bedroom #:
218. # LED **Pin** Bulbs Installed	Record #	Record #	Record #	Record #	Record #	☐ 99 Can't Assess, Reason and Bedroom #:
219. # Canned Light Sockets **→ IF NOT TOP FLOOR, CHECK BOX & SKIP TO QUESTION 221**	Record # ☐ 96 Not top floor	Record # ☐ 96 Not top floor	Record # ☐ 96 Not top floor	Record # ☐ 96 Not top floor	Record # ☐ 96 Not top floor	☐ 99 Can't Assess, Reason and Bedroom #:
219A. Type of bulbs	☐ 1 Incandescent ☐ 2 CFL ☐ 3 Halogen	☐ 1 Incandescent ☐ 2 CFL ☐ 3 Halogen	☐ 1 Incandescent ☐ 2 CFL ☐ 3 Halogen	☐ 1 Incandescent ☐ 2 CFL ☐ 3 Halogen	☐ 1 Incandescent ☐ 2 CFL ☐ 3 Halogen	☐ 98 DK, Reason and Room Type: ☐ 99 Can't Assess, Reason and Room Type:
220. # Canned light sockets sealed	Record #	Record #	Record #	Record #	Record #	☐ 98 DK, Reason and Bedroom #: ☐ 99 Can't Assess, Reason and Bedroom #:
220A. Type of bulbs	☐ 1 Incandescent ☐ 2 CFL ☐ 3 Halogen	☐ 1 Incandescent ☐ 2 CFL ☐ 3 Halogen	☐ 1 Incandescent ☐ 2 CFL ☐ 3 Halogen	☐ 1 Incandescent ☐ 2 CFL ☐ 3 Halogen	☐ 1 Incandescent ☐ 2 CFL ☐ 3 Halogen	☐ 98 DK, Reason and Room Type: ☐ 99 Can't Assess, Reason and Room Type:
221. # Ceiling Fans	Record #	Record #	Record #	Record #	Record #	☐ 99 Can't Assess, Reason and Bedroom #:

Bathrooms

222a. What is the total number of bathrooms in this home? # _____

- Note any consumer electronics and record in the "Consumer Electronics" section
- Note any relevant heating / cooling units and record in the "Basement / Mechanicals" section
- Note any laundry equipment and record under the "Laundry Area" section.
- Check all closets for lighting and combine into closets column in the "Living Space" section
- If you cannot assess a question for a given room, enter '99' and put a reason and bathroom # in the relevant box.

Measure	Bathroom 1 (a)	Bathroom 2 (b)	Bathroom 3 (c)	All Other Bathrooms (d)	
222b. Check box if homeowner denies access to this room. **→SKIP TO NEXT BATHROOM**	☐ 1 Access denied?	☐ 1 Access denied?	☐ 1 Access denied?	☐ 1 Access denied?	
222. One Word Room Identifier (Size, Wall Color, Use, etc.)	Record Desc.	Record Desc.	Record Desc.	Description of other bathrooms:	
223a. Are there any windows in this bathroom? **IF NO→SKIP TO QUESTION 232**	☐ 1 Yes ☐ 2 No	☐ 1 Yes ☐ 2 No	☐ 1 Yes ☐ 2 No	☐ 1 Yes ☐ 2 No	☐ 99 Can't Assess, Reason and Bathroom #:
223. # Windows	Total, Record #	Total, Record #	Total, Record #	Total, Record #	☐ 99 Can't Assess, Reason and Bathroom #:
224. # Single Pane	Record #	Record #	Record #	Record #	☐ 99 Can't Assess, Reason and Bathroom #:
225. # Double Pane	Record #	Record #	Record #	Record #	☐ 99 Can't Assess, Reason and Bathroom #:
226. # Triple Pane	Record #	Record #	Record #	Record #	☐ 99 Can't Assess, Reason and Bathroom #:
227. # Wood Frames	Record #	Record #	Record #	Record #	☐ 99 Can't Assess, Reason and Bathroom #:
228. # Metal Frames	Record #	Record #	Record #	Record #	☐ 99 Can't Assess, Reason and Bathroom #:
229. # Vinyl Frames	Record #	Record #	Record #	Record #	☐ 99 Can't Assess, Reason and Bathroom #:
230. Weatherstripping on Windows	☐ 1 Yes ☐ 2 Partial ☐ 3 No	☐ 1 Yes ☐ 2 Partial ☐ 3 No	☐ 1 Yes ☐ 2 Partial ☐ 3 No	☐ 1 Yes ☐ 2 Partial ☐ 3 No	☐ 99 Can't Assess, Reason and Bathroom #:
231. # Insulated Blinds	Record #	Record #	Record #	Record #	☐ 99 Can't Assess, Reason and Bathroom #:

Bathrooms continued

Measure	Bathroom 1 (a)	Bathroom 2 (b)	Bathroom 3 (c)	All Other Bathrooms (d)	
232. # Incandescent **Screw** Bulbs Installed	Record #	Record #	Record #	Record #	99 Can't Assess, Reason and Bathroom #:
233. # CFL Twist/Spiral **Screw** Bulbs Installed (non-dimmable)	Record #	Record #	Record #	Record #	99 Can't Assess, Reason and Bathroom #:
234. # CFL Specialty **Screw** Bulbs Installed	Record #	Record #	Record #	Record #	99 Can't Assess, Reason and Bathroom #:
235. # LED **Screw** Bulbs Installed	Record #	Record #	Record #	Record #	99 Can't Assess, Reason and Bathroom #:
236. # Halogen **Screw** Bulbs Installed	Record #	Record #	Record #	Record #	99 Can't Assess, Reason and Bathroom #:
237. # Fluorescent **Pin** Bulbs Installed	Record #	Record #	Record #	Record #	99 Can't Assess, Reason and Bathroom #:
238. # CFL **Pin** Bulbs Installed	Record #	Record #	Record #	Record #	99 Can't Assess, Reason and Bathroom #:
239. # Halogen **Pin** Bulbs Installed	Record #	Record #	Record #	Record #	99 Can't Assess, Reason and Bathroom #:
240. # LED **Pin** Bulbs Installed	Record #	Record #	Record #	Record #	99 Can't Assess, Reason and Bathroom #:
241. # Canned Light Sockets **→ IF NOT TOP FLOOR, CHECK BOX & SKIP TO QUESTION 243**	Record # 96 Not top floor	Record # 96 Not top floor	Record # 96 Not top floor	Record # 96 Not top floor	99 Can't Assess, Reason and Bathroom #:
241A. Type of bulbs	1 Incandescent 2 CFL 3 Halogen	1 Incandescent 2 CFL 3 Halogen	1 Incandescent 2 CFL 3 Halogen	1 Incandescent 2 CFL 3 Halogen	98 DK, Reason and Room Type: 99 Can't Assess, Reason and Room Type:
242. # Canned light sockets sealed	Record #	Record #	Record #	Record #	98 DK, Reason and Bathroom #: 99 Can't Assess, Reason and Bathroom #:
242A. Type of bulbs	1 Incandescent 2 CFL 3 Halogen	1 Incandescent 2 CFL 3 Halogen	1 Incandescent 2 CFL 3 Halogen	1 Incandescent 2 CFL 3 Halogen	98 DK, Reason and Room Type: 99 Can't Assess, Reason and Room Type:
243. # Ceiling Fans	Record #	Record #	Record #	Record #	99 Can't Assess, Reason and Bathroom #:
244. # of Showers	Record #	Record #	Record #	Record #	99 Can't Assess, Reason and Bathroom #:
245. # Low-Flow Showerheads GPM ≤ 2.5	Record #	Record #	Record #	Record #	99 Can't Assess, Reason and Bathroom #:
246. # of Sinks	Record #	Record #	Record #	Record #	99 Can't Assess, Reason and Bathroom #:
247. Low-Flow Aerators GPM ≤ 2.5	Record #	Record #	Record #	Record #	99 Can't Assess, Reason and Bathroom #:

Garage / Additional Non-Living Space

- Note any consumer electronics and record in the "Consumer Electronics" section
- Note any relevant heating / cooling units and record in the "Basement / Mechanicals" section
- In Garage, check all built-in storage units for lighting
- Note any refrigerators / freezers and record in the appropriate sections
- If you cannot assess a question for a given room, enter "Can't Assess" in the relevant box.

Measure	Garage (e)	Additional Non-Living Space (e.g. barn) (f)	
222c. Is this room type in the home? **IF NO→SKIP TO NEXT ROOM TYPE**	☐ 1 Yes ☐ 2 No	☐ 1 Yes ☐ 2 No	☐ 99 Can't Assess, Reason and Room Type:
222b. Check box if homeowner denies access to this room. **→SKIP TO NEXT ROOM TYPE**	☐ 1 Access denied?	☐ 1 Access denied?	☐ 99 Can't Assess, Reason and Room Type:
222. Additional Room Description			
223a. Are there any windows in the room type? **IF NO→SKIP TO QUESTION 232a**	☐ 1 Yes ☐ 2 No	☐ 1 Yes ☐ 2 No	☐ 99 Can't Assess, Reason and Room Type:
223. # Windows	Total, Record #	Total, Record #	☐ 99 Can't Assess, Reason and Room Type:
224. # Single Pane	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
225. # Double Pane	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
226. # Triple Pane	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
227. # Wood Frames	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
228. # Metal Frames	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
229. # Vinyl Frames	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:

Garage / Additional Non-Living Space (Continued…)

Measure	Garage (e)	Additional Non-Living Space (e.g. barn) (f)	
230. Weatherstripping on Windows	☐ 1 Yes ☐ 2 Partial ☐ 3 No	☐ 1 Yes ☐ 2 Partial ☐ 3 No	☐ 99 Can't Assess, Reason and Room Type:
231. # Insulated Blinds	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
232a. Is there any lighting in the room type?	☐ 1 Yes ☐ 2 No	☐ 1 Yes ☐ 2 No	☐ 99 Can't Assess, Reason and Room Type:
232. # Incandescent **Screw** Bulbs Installed	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
233. # CFL Twist/Spiral **Screw** Bulbs Installed (non-dimmable)	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
234. # CFL Specialty **Screw** Bulbs Installed	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
235. # LED **Screw** Bulbs Installed	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
236. # Halogen **Screw** Bulbs Installed	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
237. # Fluorescent **Pin** Bulbs Installed	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
238. # CFL **Pin** Bulbs Installed	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
239. # Halogen **Pin** Bulbs Installed	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
240. # LED **Pin** Bulbs Installed	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:
241. # Canned Light Sockets **→ IF NOT TOP FLOOR, CHECK BOX & SKIP TO QUESTION 243**	Record # ☐ 96 Not top floor	Record # ☐ 96 Not top floor	☐ 99 Can't Assess, Reason and Room Type:
241A. Type of bulbs	☐ 1 Incandescent ☐ 2 CFL ☐ 3 Halogen	☐ 1 Incandescent ☐ 2 CFL ☐ 3 Halogen	☐ 99 Can't Assess, Reason and Room Type:
242. # Canned light sockets sealed	Record #	Record #	☐ 98 DK, Reason and Room Type: ☐ 99 Can't Assess, Reason and Room Type:
242A. Type of bulbs	☐ 1 Incandescent ☐ 2 CFL ☐ 3 Halogen	☐ 1 Incandescent ☐ 2 CFL ☐ 3 Halogen	☐ 99 Can't Assess, Reason and Room Type:
243. # Ceiling Fans	Record #	Record #	☐ 99 Can't Assess, Reason and Room Type:

Consumer Electronics

298a. Total # TV Sets	Record # ☐ 0 None→**SKIP TO QUESTION 304**	☐ 99 Can't Assess:
299. # Energy Star TV Sets	Record #	☐ 99 Can't Assess:
300. Type of TV Set 1 – Most Frequently Used	☐ 1 Plasma ☐ 2 LCD ☐ 3 LED ☐ 4 Front/Rear Projection ☐ 5 Traditional / CRT	☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
301. Size of TV Set 1 (Diagonal Measure)	☐ 1 Under 19" ☐ 2 19" – 39" ☐ 3 40" – 59" ☐ 4 60" – 73" ☐ 5 Other	☐ 99 Can't Assess:
302. Type of TV Set 2 – Most Frequently Used	☐ 1 Plasma ☐ 2 LCD ☐ 3 LED ☐ 4 Front/Rear Projection ☐ 5 Traditional / CRT	☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
303. Size of TV Set 2 (Diagonal Measure)	☐ 1 Under 19" ☐ 2 19" – 39" ☐ 3 40" – 59" ☐ 4 60" – 73" ☐ 5 Other	☐ 99 Can't Assess:
304. # of Digital Video Recorders (DVR)	Record # ☐ 0 None	☐ 99 Can't Assess:
305a. Total # Digital TV Converters	Record # ☐ 0 None→**SKIP TO QUESTION 307a**	☐ 99 Can't Assess:
306. # Energy Star Digital TV Converters	Record #	☐ 99 Can't Assess:
307a. Total # DVD Players	Record # ☐ 0 None→**SKIP TO QUESTION 309a**	☐ 99 Can't Assess:
308. # Energy Star DVD Players	Record #	☐ 99 Can't Assess:
309a. Total # Desktop Computers	Record # ☐ 0 None→**SKIP TO QUESTION 311a**	☐ 99 Can't Assess:
310. # Energy Star Desktop Computers	Record #	☐ 99 Can't Assess:

Consumer Electronics (Continued…)

311a. Total # Laptop Computers	Record # ☐ 0 None→**SKIP TO QUESTION 313a**	☐ 99 Can't Assess, Reason:
312. # Energy Star Laptop Computers	Record #	☐ 99 Can't Assess, Reason:
313a. Total # Computer Monitors	Record # ☐ 0 None→**SKIP TO QUESTION 315a**	☐ 99 Can't Assess, Reason:
314. # Energy Star Computer Monitors	Record #	☐ 99 Can't Assess, Reason:
315a. Total # Copiers	Record # ☐ 0 None→**SKIP TO QUESTION 317a**	☐ 99 Can't Assess, Reason:
316. # Energy Star Copiers	Record #	☐ 99 Can't Assess, Reason:
317a. Total # Printers	Record # ☐ 0 None→**SKIP TO QUESTION 319a**	☐ 99 Can't Assess, Reason:
318. # Energy Star Printers	Record #	☐ 99 Can't Assess, Reason:
319a. Total # Scanners	Record # ☐ 0 None→**SKIP TO QUESTION 321a**	☐ 99 Can't Assess, Reason:
320. # Energy Star Scanners	Record #	☐ 99 Can't Assess, Reason:
321a. Total # Multifunctional Devices	Record # ☐ 0 None→**SKIP TO QUESTION 323**	☐ 99 Can't Assess, Reason:
322. # Energy Star Multifunctional Devices	Record #	☐ 99 Can't Assess, Reason:
323. # Video Game Players / Systems	Record # ☐ 0 None→**SKIP TO ATTIC AREA**	☐ 99 Can't Assess, Reason:
324. Video Game Players Plugged in All the Time?	☐ 1 Yes ☐ 2 No	☐ 99 Can't Assess, Reason:

Attic Area

248a. Is the Attic area accessible? ☐ 1 **Yes** ☐ 2 **No →SKIP TO NEXT SECTION**

248. Attic Type	☐ 1 Heat / Conditioned	☐ 2 Unconditioned			☐ 99 Can't Assess, Reason:
249. Whole House Fan	☐ 1 Yes	☐ 2 No			☐ 99 Can't Assess, Reason:
250. Attic Insulation	Record type 1	Record type 2	Record type 3	☐ **Check box if photo taken**	☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
251. Attic Insulation	Layer 1 (inches)	Layer 2 (inches)	Layer 3 (inches)	☐ **Check box if photo taken**	☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
252. # Canned Light Sockets	Record #				☐ 99 Can't Assess, Reason:
252A. Type of bulbs	☐ 1 Incandescent	☐ 2 CFL	☐ 3 Halogen		☐ 99 Can't Assess, Reason:
253. # Canned light sockets sealed	Record #				☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
253A. Type of bulbs	☐ 1 Incandescent	☐ 2 CFL	☐ 3 Halogen		☐ 99 Can't Assess, Reason:

Prior to Heading Outside

253a. Are there any light bulbs **in Storage**?	☐ 1 Yes	☐ 2 No→**SKIP TO QUESTION 262**			☐ 99 Can't Assess, Reason:
253. # Incandescent **Screw** Bulbs In **Storage**	Record #				☐ 99 Can't Assess, Reason:
254. # CFL Twist/Spiral **Screw** Bulbs In **Storage** (non-dimmable)	Record #				☐ 99 Can't Assess, Reason:
255. # CFL Specialty **Screw** Bulbs In **Storage**	Record #				☐ 99 Can't Assess, Reason:
256. # LED **Screw** Bulbs In **Storage**	Record #				☐ 99 Can't Assess, Reason:
257. # Halogen **Screw** Bulbs In **Storage**	Record #				☐ 99 Can't Assess, Reason:
258. # Fluorescent **Pin** Bulbs In **Storage**	Record #				☐ 99 Can't Assess, Reason:
259. # CFL **Pin** Bulbs In **Storage**	Record #				☐ 99 Can't Assess, Reason:
260. # Halogen **Pin** Bulbs In **Storage**	Record #				☐ 99 Can't Assess, Reason:
261. # LED **Pin** Bulbs in **Storage**	Record #				☐ 99 Can't Assess, Reason:
262. Total # of Rooms in House	Record #				☐ 99 Can't Assess, Reason:
263. Note Security System **(DO NOT ASK HOMEOWNER)**	☐ 1 Yes	☐ 2 No			☐ 99 Can't Assess, Reason:
264. Side Wall Insulation	Record type 1	Record type 2	Record type 3		☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
265. Side Wall Insulation	Layer 1 (inches)	Layer 2 (inches)	Layer 3 (inches)		☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
266. Side Wall Insulation	Record Inside Temp	Record Outside Temp	Record Furniture Temp		☐ 99 Can't Assess, Reason:
267. Weatherstripping on Door(s)	☐ 1 Yes	☐ 2 Partial	☐ 3 No		☐ 99 Can't Assess, Reason:
268. Wall Framing	☐ 1 2x4 Wood	☐ 2 2x6 Wood	☐ 3 2x4 Metal	☐ 4 2x6 Metal	☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
269. Note any unusual or high bulb count fixtures in the home, such as candelabras here and take photo(s)			☐ **Check box if photo taken**		☐ 99 Can't Assess, Reason:

Outside Evaluation

270. Type of Residence	☐ 1 SF Detached ☐ 2 SF Attached ☐ 3 MF Condo/Apt. ☐ 4 MH/Trailer	☐ **Check box if photo taken**	☐ 99 Can't Assess, Reason:
272. # Storm Windows (Verify Frames)	Record #		☐ 99 Can't Assess, Reason:
273. Foundation Type	☐ 1 Finished Basement ☐ 2 Unfinished Basement ☐ 3 Slab ☐ 4 Crawl Space		☐ 99 Can't Assess, Reason:
274. Roof Color	☐ 1 Light/White ☐ 2 Dark ☐ 3 Other		☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
275. # of Units in Building	Record #		☐ 99 Can't Assess, Reason:
276. # Levels / Stories	Record #		☐ 99 Can't Assess, Reason:
277a. Is there any outside lighting?	☐ 1 Yes ☐ 2 No→**SKIP TO NEXT SECTION**		☐ 99 Can't Assess, Reason:
277. Outdoor Security Lighting (Hardwired / Non-Solar)	☐ 1 Yes ☐ 2 No		☐ 99 Can't Assess, Reason:
278. Outdoor Security Lighting Activation	☐ 1 Manual ☐ 2 Timer ☐ 3 Photo-sensor ☐ 4 Motion sensor ☐ 5 Combination		☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
279. # Incandescent **Screw** Bulbs Installed	Record #		☐ 99 Can't Assess, Reason:
280. # CFL Twist/Spiral **Screw** Bulbs Installed (non-dimmable)	Record #		☐ 99 Can't Assess, Reason:
281. # CFL Specialty **Screw** Bulbs Installed	Record #		☐ 99 Can't Assess, Reason:
282. # LED **Screw** Bulbs Installed	Record #		☐ 99 Can't Assess, Reason:
283. # Halogen **Screw** Bulbs Installed	Record #		☐ 99 Can't Assess, Reason:
284. # Fluorescent **Pin** Bulbs Installed	Record #		☐ 99 Can't Assess, Reason:
285. # CFL **Pin** Bulbs Installed	Record #		☐ 99 Can't Assess, Reason:
286. # Halogen **Pin** Bulbs Installed	Record #		☐ 99 Can't Assess, Reason:
287. # LED **Pin** Bulbs Installed	Record #		☐ 99 Can't Assess, Reason:

Recreational Equipment

288a. Does this home have any recreational equipment (i.e., pool, hot tub, or sauna)?

☐ 1 **Yes** ☐ 2 **No →END INSPECTION**

288. Swimming Pool	☐ 1 Private	☐ 2 Shared (MF)	☐ 3 None→**SKIP TO Q294a**		☐ **Check box if photo taken**	☐ 99 Can't Assess, Reason:
289. Swimming Pool Heating Fuel	☐ 1 Electricity	☐ 2 Natural Gas	☐ 3 Propane/ Bottled	☐ 4 Solar	☐ 5 Not Heated	☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
290. Swimming Pool: Timer-On	Record Time					☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
291. Swimming Pool: Timer-Off	Record Time					☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
292. Swimming Pool: Timer-On 2	Record Time					☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
293. Swimming Pool: Timer-Off 2	Record Time					☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
294. Hot Tub / Spa	☐ 1 Private	☐ 2 Shared	☐ 3 None→**SKIP TO Q296a**		☐ **Check box if photo taken**	☐ 99 Can't Assess, Reason:
295. Hot Tub / Spa Fuel	☐ 1 Electricity	☐ 2 Natural Gas	☐ 3 Propane/ Bottled			☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason:
296. Sauna	☐ 1 Private	☐ 2 Shared	☐ 3 None→**END INSPECTION**		☐ **Check box if photo taken**	☐ 99 Can't Assess, Reason:
297. Sauna Fuel	☐ 1 Electricity	☐ 2 Natural Gas	☐ 3 Propane/ Bottled			☐ 98 Don't know, Reason: ☐ 99 Can't Assess, Reason: