MASSACHUSETTS RESIDENTIAL APPLIANCE SATURATION SURVEY (RASS)

VOLUME 1: SUMMARY RESULTS AND ANALYSIS

Final

Prepared for:

CAPE LIGHT COMPACT

NATIONAL GRID

NSTAR ELECTRIC

UNITIL

WESTERN MASSACHUSETTS ELECTRIC COMPANY

Prepared by:

OPINION DYNAMICS CORPORATION
230 Third Avenue
Third Floor
Waltham, MA 02451
(617) 492-1400
www.opiniondynamics.com

Contact: Antje Siems, Senior Project Manager
April 2009

TABLE OF CONTENTS

EXECUTIVE SUMMARY 1

INTRODUCTION 4

METHODOLOGY 6

1. HOME CHARACTERISTICS 17

2. SPACE HEATING 21

3. SPACE COOLING 29

4. WATER HEATING 36

5. BUILDING SHELL 40

6. LAUNDRY EQUIPMENT 42

7. FOOD PREPARATION 48

8. REFRIGERATORS AND FREEZERS 52

9. ENTERTAINMENT EQUIPMENT 58

10. HOME OFFICE 64

11. LIGHTING 68

12. MISCELLANEOUS APPLIANCES 70

13. ENERGY EFFICIENCY 73

14. PROFILE OF RESPONDENTS 77

DATA SUMMARY BY ELECTRIC ENERGY EFFICIENCY PROGRAM ADMINISTRATOR ..82

DATA SUMMARY BY BUILDING TYPE 97

DATA SUMMARY BY PRIMARY HEATING FUEL 111

DATA SUMMARY BY INCOME CATEGORY 124

TABLE OF TABLES

Table 1. Summary of Appliance Penetration and Saturation 1
Table 2. Summary of Sample Design 7
Table 3. Summary of Mail Survey 8
Table 4. Adjustment Example 15
Table 5. Interest in Product Rebates 76
Table 6. Home Characteristics – by Electric Energy Efficiency Program Administrator 82
Table 7. Space Heating – by Electric Energy Efficiency Program Administrator 83
Table 8. Space Cooling – by Electric Energy Efficiency Program Administrator 84
Table 9. Water Heating – by Electric Energy Efficiency Program Administrator 86
Table 10. Building Shell – by Electric Energy Efficiency Program Administrator 87
Table 11. Laundry Equipment – by Electric Energy Efficiency Program Administrator 88
Table 12. Food Preparation – by Electric Energy Efficiency Program Administrator 89
Table 13. Refrigerators and Freezers – by Electric Energy Efficiency Program Administrator 90
Table 14. Entertainment Equipment – by Electric Energy Efficiency Program Administrator 91
Table 15. Home Office – by Electric Energy Efficiency Program Administrator 92
Table 16. Lighting – by Electric Energy Efficiency Program Administrator 93
Table 17. Miscellaneous Appliances – by Electric Energy Efficiency Program Administrator 94
Table 18. Energy Efficiency – by Electric Energy Efficiency Program Administrator 95
Table 19. Profile of Respondents – by Electric Energy Efficiency Program Administrator 96
Table 20. Home Characteristics – by Building Type 97
Table 21. Space Heating – by Building Type 98
Table 22. Space Cooling – by Building Type 99
Table 23. Water Heating – by Building Type 100
Table 24. Building Shell – by Building Type 101
Table 25. Laundry Equipment – by Building Type 102
Table 26. Food Preparation – by Building Type 103

Table 27. Refrigerators and Freezers – by Building Type 104
Table 28. Entertainment Equipment – by Building Type 105
Table 29. Home Office – by Building Type 106
Table 30. Lighting – by Building Type 107
Table 31. Miscellaneous Appliances – by Building Type 108
Table 32. Energy Efficiency – by Building Type 109
Table 33. Profile of Respondents – by Building Type 110
Table 34. Home Characteristics – by Primary Heating Fuel Type 111
Table 35. Space Heating – by Primary Heating Fuel Type 112
Table 36. Space Cooling – by Primary Heating Fuel Type 113
Table 37. Water Heating – by Primary Heating Fuel Type 114
Table 38. Building Shell – by Primary Heating Fuel Type 114
Table 39. Laundry Equipment – by Primary Heating Fuel Type 115
Table 40. Food Preparation – by Primary Heating Fuel Type 116
Table 41. Refrigerators and Freezers – by Primary Heating Fuel Type 117
Table 42. Entertainment Equipment – by Primary Heating Fuel Type 118
Table 43. Home Office – by Primary Heating Fuel Type 119
Table 44. Lighting – by Primary Heating Fuel Type 120
Table 45. Miscellaneous Appliances – by Primary Heating Fuel Type 121
Table 46. Energy Efficiency – by Primary Heating Fuel Type 122
Table 47. Profile of Respondents – by Primary Heating Fuel Type 123
Table 48. Home Characteristics – by Income Category 124
Table 49. Space Heating – by Income Category 125
Table 50. Space Cooling – by Income Category 126
Table 51. Water Heating – by Income Category 127
Table 52. Building Shell – by Income Category 127
Table 53. Laundry Equipment – by Income Category 128
Table 54. Food Preparation – by Income Category 129
Table 55. Refrigerators and Freezers – by Income Category 130

Table 56. Entertainment Equipment – by Income Category 131
Table 57. Home Office – by Income Category 132
Table 58. Lighting – by Income Category 133
Table 59. Miscellaneous Appliances – by Income Category 134
Table 60. Energy Efficiency – by Income Category 135
Table 61. Profile of Respondents – by Income Category 136

TABLE OF FIGURES

Figure 1: Example of Penetration and Saturation Figure 11
Figure 2. Ratio Adjustment Algorithm 14
Figure 3. Home Ownership by Building Type 17
Figure 4. Type of Building (Adj.) 18
Figure 5. Year Residence was Built, by Provider 19
Figure 6. Size of Residence, by Year Residence was Built 19
Figure 7. Percentage of Homes Remodeled in the Past 3 Years, by Heating Type 20
Figure 8. Penetration of Space Heating Systems 21
Figure 9: Primary Heating Fuels by Provider (Adj.) 22
Figure 10. Primary Fuel Type by Building Type (Adj.) 22
Figure 11. Primary Heating Fuel by Age of Home (Adj.) 23
Figure 12. Heating System Types by Fuel Type (Adj.) 23
Figure 13. Fuel Types of Additional Heating Systems 24
Figure 14. Use of Additional Heating System 25
Figure 15. Age of Main Heating System 25
Figure 16. Thermostat Type (Adj.) 26
Figure 17. Thermostat Type by Primary Fuel Type (Adj.) 27
Figure 18. Mean Temperature Setting by Thermostat Type 28
Figure 19. Incidence of Space Cooling (Adj*.) 29
Figure 20. Incidence of Central Air Cooling by Provider 30
Figure 21. Cooling System Type (Adj.) 30
Figure 22. Age of Central AC System by Age of Home 31
Figure 23. Type of Thermostat (Adj.) 31
Figure 24. Mean Temperature Setting by Thermostat Type 32
Figure 25. Age of Room Air Conditioners (Adj.) 33
Figure 26. Size of Room Air Conditioners (Adj.) 33
Figure 27. Frequency of Air Conditioning Use by Time Period 34

Figure 28. Timeline for Installation/Replacement of Central AC....34
Figure 29. Timeline for Installation/Replacement of Room AC....35
Figure 30. Penetration of Water Heating Systems....36
Figure 31. Primary Water Heating Fuel (Adj.)....36
Figure 32. Primary Water Heating Fuel by Building Type (Adj.)....37
Figure 33. Primary Water Heating System by Fuel Type (Adj.)....37
Figure 34. Age of Primary Water Heater....38
Figure 35. Penetration of Insulation Blanket by Water Heating Fuel Type....38
Figure 36. Penetration of Water Saving Features (Adj.)....39
Figure 37. Insulation of Exterior Walls....40
Figure 38. Amount of Attic/Ceiling Insulation (Adj.)....40
Figure 39. Types of Windows (Adj.)....41
Figure 40. Types of Window Frame Materials (Adj.)....41
Figure 41. Penetration of Clothes Washers and Dryers (Adj.)....42
Figure 42. Penetration of Clothes Washers and Dryers by Service Provider (Adj.)....43
Figure 43. Type of Clothes Washer (Adj.)....44
Figure 44. Age of Clothes Washers....44
Figure 45. Number of Loads in a Typical Week....45
Figure 46. Weekday Use of Laundry Equipment....45
Figure 47. Type of Clothes Dryer (Adj.)....46
Figure 48. Age of Clothes Dryers....46
Figure 49. Percentage of Loads Line-Dried....47
Figure 50. Fuel Type (Adj.)....48
Figure 51. Average Age of Stovetops/Ranges (Adj.)....49
Figure 52. Microwave (Adj.) and Indoor Grill Penetration....49
Figure 53. Dishwasher Penetration by Owners/Renters (Adj.)....50
Figure 54. Weekly Use of Dishwasher....51
Figure 55: Refrigerator and Freezer Penetration and Saturation (Adj.)....52
Figure 56: Types of Refrigerators (Adj.)....53
Figure 57: Refrigerator Size (Adj.)....53

Figure 58: Age of All Refrigerators 54
Figure 59: Frequency of Refrigerator Use 55
Figure 60: Freezer Style 55
Figure 61: Freezer Size 56
Figure 62: Age of Freezers 56
Figure 63: Age of Freezers by Freezer Type 57
Figure 64. Number of TVs per Home (Adj.) 58
Figure 65. Penetration and Saturation of TVs by Display Type and Screen Size (Adj.) 59
Figure 66. Primary and Additional TVs by Type 60
Figure 67. Mean Hours of Television Viewing 60
Figure 68. Seasonal Use of TVs on Weekdays 61
Figure 69. Penetration and Saturation of Home Audio and TV Accessories (Adj.) 62
Figure 70. Frequency of Unplugging Electronics or Turning Off at Power Strip 63
Figure 71. Numbers of Hours per Week Spent Working from Home 64
Figure 72. Penetration and Saturation of Computers (Adj.) 65
Figure 73. Number of Computers in Home by Monitor Type (Adj.) 65
Figure 74. Mean Share of Time Computer is On, in Sleep Mode, and Off 66
Figure 75. Penetration and Saturation of Home Office Equipment (Adj.) 67
Figure 76. Lighting Penetration (Adj.) 68
Figure 77. CFL Penetration by Type of Residence (Adj.) 68
Figure 78. Number of Light Bulbs by Type of Lighting (Adj.) 69
Figure 79. Comparison of Number of CFLs: Self-Reported v. Fieldwork Adjusted 69
Figure 80. Penetration and Saturation of Miscellaneous Appliances (Adj.) 71
Figure 81. Average Dehumidifier Usage 72
Figure 82. Average Pool Pump Usage 72
Figure 83. Meaning of the ENERGY STAR® Label* 73
Figure 84. Meaning of the EnergyGuide Label 74
Figure 85. Familiarity with Other Energy Efficiency Programs* 75
Figure 86. Customer Interest in Energy Efficiency Products and Services 75
Figure 87. Head-of-Household Age 77

Figure 88. Educational Attainment among Respondents and Statewide 78
Figure 89. Annual Household Income 78
Figure 90. Annual Household Income Comparison with Massachusetts Residents 79
Figure 91. Years in Surveyed Home 80
Figure 92. Household Size 80
Figure 93. Primary Language Spoken at Home 81

EXECUTIVE SUMMARY

Five Massachusetts electric energy efficiency program administrators – Cape Light Compact, National Grid, NSTAR Electric, Unitil, and Western Massachusetts Electric Company (hereafter collectively referred to as "the Sponsors") – retained Opinion Dynamics Corporation to conduct a state-wide residential appliance saturation survey (RASS). The study effort consisted of a mail/Internet survey of close to 3,000 Massachusetts residential customers and an in-home verification of customer-provided data in 118 of the survey respondents' residences.

This report presents the findings of the survey and in-home verification efforts. The report consists of two Volumes:

- Volume 1 presents the methodology as well as summary results and analysis of the data collected in the 2008 Home Energy Survey and the in-home verification.
- Volume 2 contains the survey questions, as seen by the responding customer in the mail survey, and the detailed survey results by 1) electric energy efficiency program administrator, 2) building type of the residence, and 3) primary space heating fuel type of the residence.

One of the primary purposes of this study was to determine the penetration and saturation of Massachusetts homes with appliances and other energy using equipment. Key penetration and saturation data are presented in the table below. Other study findings, as well as comparison of results by different subgroups, are presented in Sections 1 through 14 of Volume 1.

Table 1. Summary of Appliance Penetration and Saturation
(Data adjusted by in-home visits is marked with "*")

Appliance/Equipment	Penetration	Saturation
Space Heating		
Space heating system	99%	--
Natural gas heat*	53%	--
Oil heat*	36%	--
Electric heat*	8%	--
Space Cooling		
Space cooling*	81%	--
Central air cooling*	29%	--
Room air conditioner	64%	126%
Water Heating		
Water heating system	98%	--
Natural gas heat*	57%	--
Oil heat*	24%	--

Appliance/Equipment	Penetration	Saturation
Electric heat*	16%	--
Insulation blanket	25%	--
Low-flow shower head*	68%	--
Faucet aerator*	57%	--
Laundry		
Clothes washer (private use)*	86%	--
Clothes dryer (private use)*	83%	--
Food Preparation		
Microwave oven*	95%	--
Indoor grill (electric)	32%	--
Dishwasher*	71%	--
Refrigerators and Freezers		
Refrigerator*	100%	128%
Freezer*	13%	14%
Entertainment Equipment		
Television*	99%	273%
CRT TV*	88%	197%
Flat panel LCD TV*	45%	69%
Flat panel plasma TV*	4%	7%
Projection TV*	3%	3%
DVD player or DVD/VCR*	83%	128%
Stereo*	75%	93%
Digital cable box*	61%	97%
VCR*	36%	45%
Home theater*	19%	20%
Home Office		
Computer*	82%	169%
Computer with flat panel monitor*	70%	139%
Computer with CRT monitor*	24%	25%
Telephone (landline)*	86%	255%
Cell phone	83%	148%
Answering machine*	79%	80%
Multifunction machine*	52%	59%
Printer*	37%	44%
Home network	24%	25%
Scanner*	8%	8%
Fax machine*	7%	7%

Appliance/Equipment	Penetration	Saturation
Copier*	3%	3%
Lighting		
Incandescent*	97%	--
CFL*	72%	--
Fluorescent tube lights*	60%	--
Halogen torchieres*	11%	--
Fluorescent torchieres*	7%	--
Miscellaneous Appliances		
Electric Clocks	82%	171%
Portable Fan	69%	119%
Ceiling Fan*	61%	147%
Dehumidifier*	50%	46%
Battery Charger	50%	80%
Humidifier*	33%	39%
Pond/Well/Pool Pump*	23%	22%
Electric Exercise Equipment*	20%	22%
Home Security System*	18%	19%
Cordless Vacuum	16%	17%
Electronic Household Air Cleaner	9%	12%
Attic or Whole-house fan*	8%	9%
Electric Whirlpool Spa*	7%	7%
Electric Water Heater for Pool*	3%	3%
Heated Waterbed*	2%	2%
Sauna-Electric*	1%	1%

INTRODUCTION

Five Massachusetts electric energy efficiency program administrators – Cape Light Compact, National Grid, NSTAR Electric, Unitil, and Western Massachusetts Electric Company (hereafter collectively referred to as "the Sponsors") – retained Opinion Dynamics Corporation to conduct a state-wide residential appliance saturation survey (RASS). The study effort consisted of a mail/Internet survey of close to 3,000 Massachusetts residential customers and an in-home verification of customer-provided data in a subset of survey respondents' residences. The field work was conducted by Mad Dash Incorporated under subcontract to Opinion Dynamics Corporation.

This report presents the findings of the survey and in-home verification efforts. This report consists of two Volumes:

Volume 1 presents summary results and analysis of the data collected in the 2008 Home Energy Survey and the in-home verification. Volume 1 is organized in three parts:

- **Introduction and Methodology:** These two sections provide background about the study and this report and present the data collection and analysis methodology.
- **Numbered sections 1 through 14:** These sections summarize and analyze the data collected in the study. The sections consist of graphs, tables, and brief descriptions of the most important findings summarizing. The 14 sections address the following study topics:
    - Section 1: Home Characteristics
    - Section 2: Space Heating
    - Section 3: Space Cooling
    - Section 4: Water Heating
    - Section 5: Building Shell
    - Section 6: Laundry Equipment
    - Section 7: Food Preparation
    - Section 8: Refrigerators and Freezers
    - Section 9: Entertainment Equipment
    - Section 10: Home Office
    - Section 11: Lighting
    - Section 12: Miscellaneous Appliances
    - Section 13: Energy Efficiency

  - Section 14: Profile of Respondents

- **Data Summary Tables:** Three sets of tables present study results by 1) electric energy efficiency program administrator, 2) building type of the residence, and 3) primary space heating fuel type of the residence. The tables are organized by the same topics used in the numbered sections of the report.

Volume 2 contains the detailed survey results, again organized by the same topics used in the numbered sections of Volume 1. Each section in Volume 2 begins with the survey questions, as seen by the responding customer in the mail survey.

METHODOLOGY

The residential appliance saturation survey consisted of a mail/internet survey of Massachusetts residential customers and an in-home verification of customer-provided data in a subset of survey respondents' residences.

Mail / Internet Survey

The mail survey was sent to 12,000 Massachusetts homes in October 2008. The survey pack consisted of a cover letter, a survey booklet, and a postage-paid return envelope. To enhance recognition and response rates, all written communications with customers were conducted on specially-designed stationary, displaying the logos of all five Sponsors. The cover letter included a reference to a website and a personal identification number (PIN), and offered customers the option to complete the survey on-line instead of by mail. The cover letter also announced a drawing of five $100 gift cards among respondents who returned the completed survey by the specified deadline.

Postcard reminders and a second copy of the survey booklet were sent to the entire sample in November 2008. After the response deadline had passed, brief follow-up calls were made to non-responding customers in survey strata that had not yet met their quota.

Sample Design

The survey sample was stratified by 1) electric energy efficiency program administrator; 2) heating fuel based on electric and non-electric rate codes; and 3) for NSTAR, by its three operating companies.

We estimated sample sizes for each stratum using a modified proportional approach. This approach consists of first allocating the sample of 12,000 surveys to each Sponsor based on the Sponsor's share of the total Massachusetts population. Proportional allocation of the overall sample resulted in precision levels of 10% or better (at a 90% confidence interval) for all Sponsors, except Unitil. Unitil's sample size was then increased to achieve a precision level of 7% (needed to achieve 10% precision levels for the substrata discussed below). To maintain an overall sample size of 12,000, the sample sizes of all other Sponsors were reduced in proportion to their total sample size.

We then allocated each Sponsor's sample to the Sponsor-specific substrata. This was again done using a modified proportional approach based on the number of customers in each substratum. For each Sponsor, the sample was allocated into "electric heat" and "non-electric heat" substrata. For all Sponsors except NGRID, the proportional allocation would not result in 10% precision for the "electric heat" stratum, so enough additional sample was allocated to the electric heat strata to achieve 10% precision. To maintain the overall sample size for the Sponsor, the sample size for the "non-electric heat" stratum was reduced accordingly. For NSTAR, the sample was further stratified by operating company: Boston Edison, Commonwealth Electric, and Cambridge Electric Light. NSTAR's sample was first allocated among these three strata, and then among the "electric heat" and "non-electric heat" substrata. Again, a proportional approach was used, which was then adjusted to achieve 10% precision for each substratum.

Table 2 below summarizes, for each stratum and substratum, the population and sample sizes, the expected number of completed surveys (assuming a 25% response rate), and the expected precision levels (for a 90% confidence level).

Table 2. Summary of Sample Design

By Stratum	Population Size	Sample Size	Expected Completes *(25% resp. rate)*	Expected Precision *(90% CI)*
1 - National Grid	1,114,663	5,290	1,323	2.3%
1a - National Grid - Electric Heat	82,513	392	98	8.3%
1b - National Grid - Non-Electric Heat	1,032,150	4,899	1,225	2.3%
2 - NSTAR	795,360	3,775	944	2.7%
2a - NSTAR - Boston Edison - Electric Heat	45,744	268	67	10.0%
2b - NSTAR - Boston Edison - Non-Elec. Heat	565,493	2,360	590	3.4%
2c - NSTAR - Commwlth Electric – Elec. Heat	6,806	268	67	10.0%
2d - NSTAR - Commwlth Electric - Non-Elec. Heat	135,119	342	86	8.9%
2e - NSTAR – Camb. Elect. Light - Electric Heat	1,504	268	67	10.0%
2f - NSTAR – Camb. Elect. Light - Non-Elec. Heat	40,694	268	67	10.0%
3 - WMECO	182,203	865	216	5.6%
3 - WMECO - Electric Heat	21,428	268	67	10.0%
3 - WMECO - Non-Electric Heat	160,775	597	149	6.7%
4 - Cape Light Compact (CLC)	170,739	810	203	5.8%
4 - CLC - Electric Heat	19,355	268	67	10.0%
4 - CLC - Non-Electric Heat	151,384	542	136	7.0%
5 - Unitil	25,188	548	137	7.0%
5 - Unitil - Electric Heat	2,196	268	67	10.0%
5 - Unitil - Non-Electric Heat	22,992	280	70	9.8%
6 - Municipal Utilities	150,000	712	178	6.1%
TOTAL	2,438,153	12,000	3,000	1.5%

For each survey stratum, the sample was drawn at random from the Sponsors' customer databases to provide a statistically valid representation of the population. For the 40 Massachusetts municipal utilities, we purchased address information for customers living

within the towns served by these utilities, in proportion to each utility's number of customers.

Summary of Mail Survey Statistics

Overall, 2,667 customers responded to the survey, 2,308 by mail and 359 via the Internet.

The survey responses were weighted to each stratum's population to ensure that all results are representative of the service provider and the Massachusetts population as a whole. For each sample stratum, sample weights were estimated as the ratio of the percentage of the population the stratum represents divided by the percentage of the completed surveys the stratum represents. For example, customers served by municipal utilities represent 6.15% of all Massachusetts customers (150,000 / 2,438,153; see Table 2) and 4.50 % of all survey responses (120 / 2,667; see Table 3). As a result, the sample weight for municipal utilities is 1.37 (6.15% / 4.50%).

Table 3 summarizes the mail survey statistics – including the actual number of completed surveys, the response rate, the achieved precision levels, and the sample weights – by sample stratum.

Table 3. Summary of Mail Survey

By Stratum	Actual Completes	Response Rate	Precision *(90% CI)*	Sample Weight
1 - National Grid	1,156	22%	2.4%	--
1a - National Grid - Electric Heat	96	25%	8.4%	0.94
1b - National Grid - Non-Electric Heat	1,060	22%	2.5%	1.07
2 - NSTAR	830	22%	2.8%	--
2a - NSTAR - Boston Edison - Electric Heat	64	24%	10.3%	0.78
2b - NSTAR - Boston Edison - Non-Elec. Heat	514	22%	3.6%	1.20
2c - NSTAR - Commwlth Electric – Elec. Heat	64	24%	10.3%	0.12
2d - NSTAR - Commwlth Electric - Non-Elec. Heat	85	25%	8.9%	1.74
2e - NSTAR – Camb. Elect. Light - Electric Heat	51	19%	11.5%	0.03
2f - NSTAR – Camb. Elect. Light - Non-Elec. Heat	52	19%	11.4%	0.86
3 - WMECO	204	24%	5.7%	--
3 - WMECO - Electric Heat	67	25%	10.0%	0.35
3 - WMECO - Non-Electric Heat	137	23%	7.0%	1.28
4 - Cape Light Compact (CLC)	224	28%	5.5%	--
4 - CLC - Electric Heat	75	28%	9.5%	0.28

By Stratum	Actual Completes	Response Rate	Precision *(90% CI)*	Sample Weight
4 - CLC - Non-Electric Heat	149	27%	6.7%	1.11
5 - Unitil	133	24%	7.1%	--
5 - Unitil - Electric Heat	64	24%	10.3%	0.04
5 - Unitil - Non-Electric Heat	69	25%	9.9%	0.36
6 - Municipal Utilities	120	17%	7.5%	1.37
TOTAL	2,667	22%	1.6%	--

Data Cleaning

Returned surveys were first screened for completeness. Twenty blank surveys (not included in the total count of 2,667 completed surveys) were set aside and excluded from further consideration. Completed surveys were then entered into a CATI database.

The primary data cleaning consisted of adjusting or eliminating contradictory responses. For example, if a customer did not respond to the question of how many refrigerators they have plugged in, but then provided characteristics for two refrigerators, we assumed that the response to the number of refrigerators should have been two. We generally did not override customer responses. In the example above, if the customer indicated that they have no refrigerator but then provided refrigerator characteristics, we excluded the refrigerator characteristics from consideration. Similarly, multiple responses to a single-response question, for example, two responses to "How old is your dishwasher?" were excluded from the analysis.

Questions that should have been answered but were left blank were treated as "No response." Such non-responses are identified in the detailed data tables in Volume 2, but they are excluded from the valid responses and any percentage calculations.

Data Analysis

All survey responses were analyzed for all Massachusetts customers as well as by four key variables: 1) energy efficiency program administrator, 2) building type of the residence, 3) primary space heating fuel type of the residence, and 4) income level. Two types of tests were conducted to determine the significance of differences observed between comparison groups: percentages were compared using the independent z-test for proportions/percentages; means were compared using the independent t-test for means (unequal variances). These tests were conducted at two levels of significance: 90% and 95%.

The two significance tests are used to test the hypothesis that an observed proportion or mean is the same for two different groups. For example, the z-test for proportions is used to test the hypothesis that the proportion of respondents using a specific fuel for their primary space heating system is the same for groups of respondents (example - by building type of

the residence). High values of the z-test for proportions at a 90% or 95% level of significance constitute evidence against the hypothesis that the proportions are the same.

For readability purposes, the discussion of survey results in Volume 1 does not explicitly note levels of significance when comparing results between different respondent groups. However, differences are only pointed out when a statistically significant difference exists. The detailed data tables presented in Volume 2 use upper case letters to indicate significant differences between respondent groups at the 95% and lower case letters to indicate significant differences at the 90% level, as illustrated below.[1]

		BUILDING TYPE			
	Total	Single-family	2-4 units	5+ units	Other
	(A)	(H)	(I)	(J)	(K)
Natural Gas	1,158	756	307	77	9
	49%	45%	66%	51%	38%
			HJK		
Electric	189	70	44	70	3
	8%	4%	10%	46%	14%
			H	HIK	
Oil	905	784	104	3	10
	39%	46%	23%	2%	42%
		IJ	J		iJ
Other	94	85	6	1	1
	4%	5%	1%	1%	6%
		IJ			
TOTAL VALID RESPONSES	2,346	1,695	462	152	23
	100%	100%	100%	100%	100%
TOTAL VALID RESPONSES (UNWEIGHTED)	2,367	1,638	476	215	24
Missing responses	27	8	13	6	-
	1%	*%	3%	4%	
			H	H	
TOTAL RESPONSES	2,373	1,703	474	158	23

Customers in multi-family residences of 2-4 units are significantly more likely to use natural gas as their primary space heating fuel than customers living in other types of residences.

Customers in single family homes are significantly more likely to use oil as their primary space heating fuel than customers living in multi-family residences.

Comparison Groups: HIJK
Independent T-Test for Means (unequal variances), Independent Z-Test for Percentages
Upper case letters indicate significance at the 95% level.
Lower case letters indicate significance at the 90% level.

In addition to the three key variables noted above, survey results were also analyzed by other customer or home characteristics of interest, such as income, age of the home, or awareness of the ENERGY STAR® label. Such comparisons are noted, where interesting or relevant results have been observed.

Penetration and Saturation

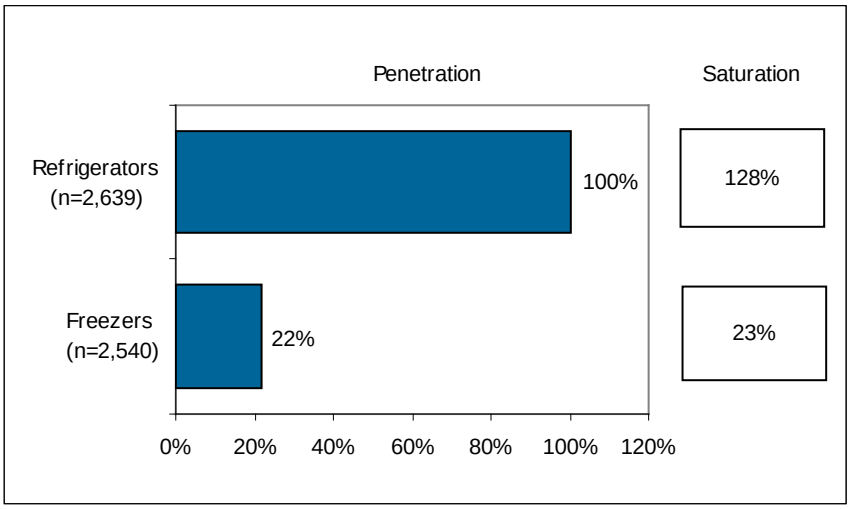
[1] Detailed data tables only include three of the four analyzed key variables: 1) energy efficiency program administrator, 2) building type of the residence, and 3) primary space heating fuel type of the residence.

A primary purpose of this study was to determine the penetration and saturation of Massachusetts homes with key appliances. These two concepts are defined as follows:

- **Penetration:** A percentage representing the proportion of customers that have one or more particular appliance (or other piece of equipment). It is calculated by dividing the number of customers with one or more of an appliance (or other piece of equipment) by the total number of customers responding to that question.
- **Saturation:** A percentage representing how many of a particular appliance (or other piece of equipment) exist among all customers. It is calculated by dividing the total number of a particular appliance (or other piece of equipment) by the total number of customers responding to that question. This percentage is at least equal to, but generally higher than the corresponding penetration of a particular appliance, because some households will have more than one of the appliance.

In this report, penetration levels are generally displayed as bar graphs with saturation levels, where available, presented in a separate column to the right of the penetration graph, as shown in the example below.

Figure 1: Example of Penetration and Saturation Figure



In-Home Verification

There is always potential measurement error from the mail survey because respondents could have misunderstood the questions in the survey or not known the answers. To reduce this possible error, we chose to conduct site visits at a subset of the respondent homes to verify the data from the mail survey. This in-home verification occurred by trained technicians. Because we felt that there would be no difference in errors people may have made regardless of their service territory or house characteristics, we chose the sites randomly from the completed surveys. Ultimately we verified the survey responses from 118 homes.

Data Adjusted

We used data from the verification to adjust the mail surveys to the extent practicable. However, we did not adjust all items. Items we did not adjust include:

- **Questions about customer behavior**, e.g., "How many dishwasher loads are run in a typical week?" Behavioral questions were not verified since the technicians could not observe the answer.
- **Questions about equipment age.** In most cases, the technicians could not reliably determine the age of equipment. As a result, we decided not to adjust this information.
- **Questions with low incidence in the verification sample.** Some questions explore details of appliances that few customers own. Where the incidence of an appliance type was low, we did not adjust the responses to questions about the characteristics of the appliance. An example is stand-alone freezers, which only 13% of Massachusetts households own.

Below are the survey questions we did adjust, by report section. The number in parentheses indicates the question number in the mail survey (see Volume 2 for the complete set of survey questions).

1. Home Characteristics

Type of residence (A1)
Number of rooms (A5)
Natural gas line (A11)

2. Space Heating

Have space heating (B1)
Primary heating system type (B2A)
Use/type of secondary heating (B2B)
Number/type of thermostats (B5)

3. Space Cooling

Have central air cooling (C1)
Percent of space cooled (C2)
Number/type of central air cooling (C3)
Number/type of thermostats (C5)
Age of room air conditioners (C7A)
Size of room air conditioners (C7B)

4. Water Heating

Have water heating (D1)
Primary heating system type (D2A)
Use of secondary heating (D2B)
Have low flow shower heads (D5)
Have water-saving faucets (D6)

5. Building Shell

Thickness of attic/ceiling insulation (K3)
Type of windows (K4)
Type of window frames (K5)

6. Laundry
Private use of laundry (E1)
Type of clothes washer (E3)
Have clothes dryer (E7)
Type of clothes dryer (E7)

7. Food Preparation
Type of stovetop/range (F1A)
Age of stovetop/range (F1B)
Have microwave oven (F2)
Have dishwasher (F4)

8. Refrigerators and Freezers
Number of refrigerators (G1)
Refrigerator characteristics (G2)
Number of freezers (H1)

9. Entertainment Equipment
Number/type of TVs (I1)
Number/ type of audio/TV accessories (I5)

10. Home Office
Number/type of computers (I6)
Number/type of other office products (I10)

11. Lighting
Number/type of lighting products (J1)

12. Miscellaneous Appliances
Number/type of appliances (L1)

Adjustment Methodology

We used the ratio adjustment method to adjust the mail survey responses for the items listed above.[2] This method first develops an adjustment factor, based on value of the 118 in-home visits and the value from the survey responses of the same 118 households. The adjustment factor is then multiplied by the value from the survey responses for all 2,667 households. The values to be adjusted can be either a mean or a proportion.

Figure 2 shows this two-step ratio adjustment method.

Figure 2. Ratio Adjustment Algorithm

Step 1: $$Adjustment\ Factor = \frac{\overline{X}_o}{\overline{Y}_o}$$

Step 2: $$\overline{Y}_{sa} = Adjustment\ Factor * \overline{Y}_s$$

Where:

Y_{sa} = adjusted mean/proportion for the item
X_o = mean/proportion from the 118 in-home visits
Y_o = mean/proportion from the survey responses for the 118 households with in-home visits
Y_s = mean/proportion from the survey responses for all 2,667 households

Consider the following example:

The in-home visits found that 95% of refrigerators are frost free and 5% are manual defrost. By contrast, the mail survey responses provided by the same 118 households reported that 90% of refrigerators are frost free while 10% are manual defrost.

Using these values, we first develop the adjustment factors for frost-free refrigerators and manual defrost refrigerators, as follows:

Frost-free refrigerators: $$Adjustment\ Factor = \frac{95\%}{90\%} = 1.06$$

Manual defrost refrigerators: $$Adjustment\ Factor = \frac{5\%}{10\%} = 0.47$$

All mail survey respondents reported that 91% of refrigerators are frost free while 5% are manual defrost. Multiplying the adjustment factors by the proportions reported by all survey respondents yields:

Frost-free refrigerators: $$Adjusted\ Value = 91\% * 1.06 = 96\%$$

[2] Judith T. Lessler and William D. Kalsbeek. Nonsampling Error in Surveys. 1992. p. 269.

Manual defrost refrigerators: $Adjusted\ Value = 9\% * 0.47 = 4\%$

When adjusting proportions, one has to be careful about how to use the results. When the data is categorical data, as in the example above, each category is adjusted separately. As a result, in many cases, the individual proportions no longer add up to 100%. In the example above, displaying the results to the first decimal would show that the adjusted proportion of frost-free refrigerators is 96.2% while the adjusted proportion of manual defrost refrigerators is 4.3%, for a total of 100.5%.

To correct for this, when adjusting categorical data in this report, we rebased the adjusted proportions to sum to 100%. Rebasing consists of dividing each adjusted proportion for a single question by the sum of all adjusted proportions. In this case, the rebasing would look as follows:

Frost-free refrigerators: $Rebased\ Value = \frac{96.2\%}{100.5\%} = 95.8\%$

Manual defrost refrigerators: $Rebased\ Value = \frac{4.3\%}{100.5\%} = 4.2\%$

In this example, rebasing the adjusted proportions does not change the final values, when presented as a whole number. However, in other cases it might.

Table 4 summarizes the data inputs and results of these adjustment calculations.

Table 4. Adjustment Example

	Frost-free	Manual Defrost
Onsite results (X_o)	95%	5%
Mail results for onsite HH (Y_o)	90%	10%
Adjustment Factor	1.06	0.47
Mail results for all surveys (Y_s)	91%	9%
Adjusted Mail results for all surveys (Y_{sa})	96.2%	4.3%
Rebased-Adjusted Mail results for all surveys	95.8%	4.2%

Use of Verification Work in this Report

This report incorporates the results of our verification work in two ways:

1. **Volume 1 data summary tables.** Adjustment factors for the questions presented above are included in the data summary tables at the end of Volume 1. As demonstrated in the example above, adjustment factors for categorical data cannot be used in isolation. As a result, the adjustment factors in the data summary tables should be considered an indication of the magnitude of the adjustment resulting from the in-home visits. ***Adjustment factors should not be directly applied to the percentages presented in the tables, unless all categories are adjusted and rebased.***

2. **Volume 1 Sections 1 through 14.** In the numbered sections that follow this methodology section, mail survey data were adjusted – using the developed adjustment factors – and rebased. Adjusted data are annotated by "(adj.)". It should

be noted that the sample size for the onsite audits (118) was insufficient to develop separate adjustment factors for subgroups of interest (such as by program administrator, building type, primary fuel type, or income category). Therefore, when adjusting results that are presented by subgroup, a single adjustment factor was used across all groups. While there is no reason that subgroups should differ in their ability to provide correct answers to the mail survey, any such differences might lead to different results.

3. **Volume 2.** The data presented in Volume 2 were ***not*** adjusted. The Volume 2 tables therefore show the self-reported data based on the mail survey, which might differ from the adjusted results presented in Sections 1 through 14.

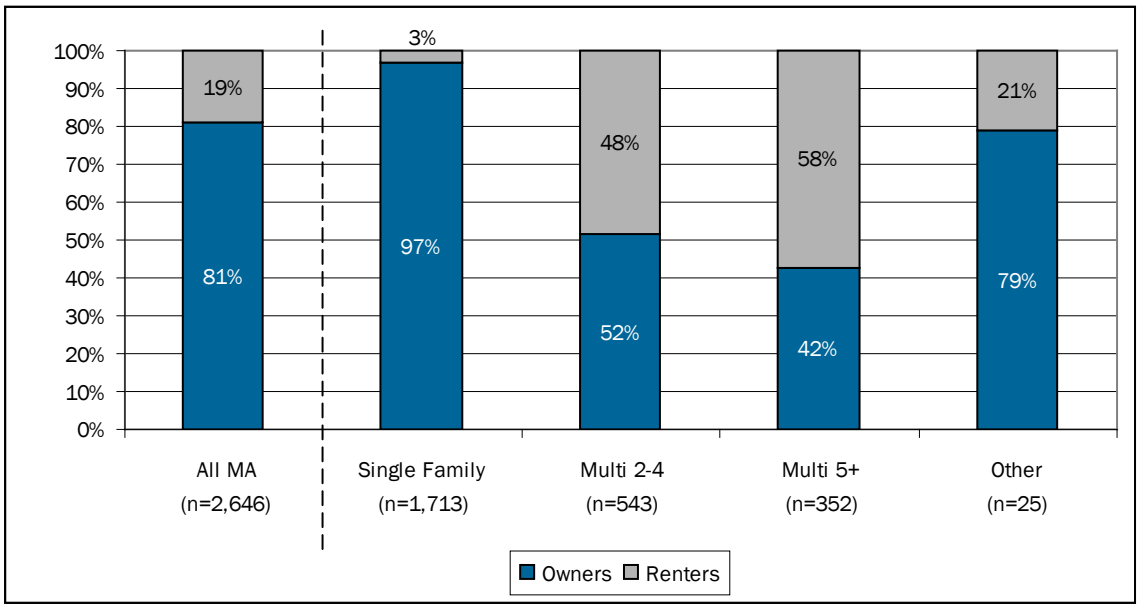
1. HOME CHARACTERISTICS

Home Ownership

Over 80% of Massachusetts residential customers own their home or current residence. Not surprisingly, customers living in single family homes are much more likely to own their home (97%) than customer living in multi-family or other residences.

Residents who use natural gas or oil heat are more likely to be amongst this group of homeowners than those with electric heat. In addition, customers served by Cape Light Compact and municipalities are more likely to be homeowners than those served by other providers. Not surprisingly, low income customers are more likely to rent their home.

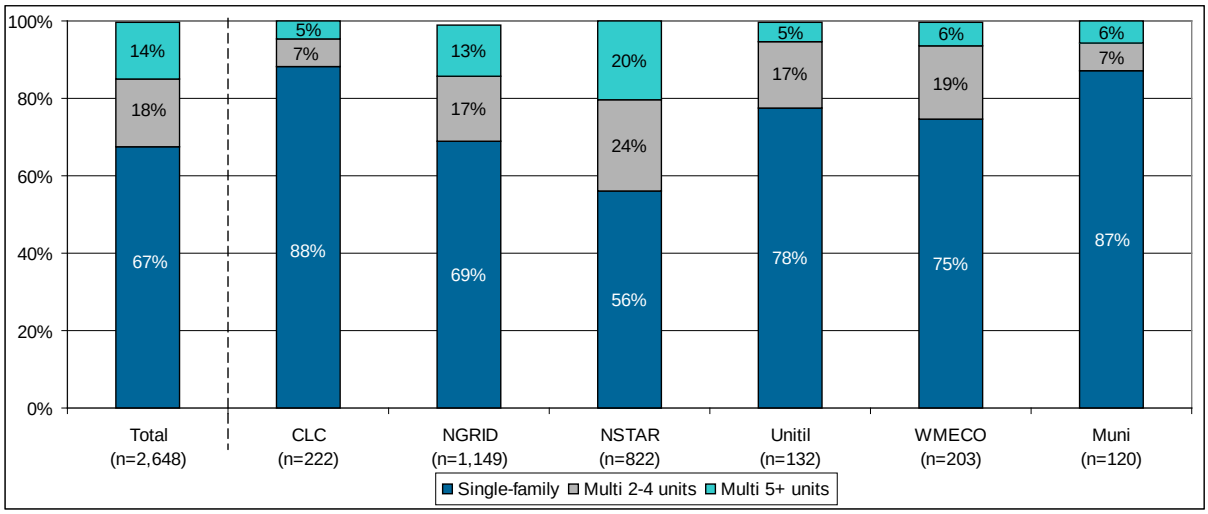
Figure 3. Home Ownership by Building Type



Type of Residence

Sixty-seven percent of customers live in single family homes (adj.). The remaining 33% are divided between multi-family residences with two to four units (18%), multi-family residences with five or more units (14%), and other types of residences (1%). Given that Cape Light Compact and municipalities have the highest percentage of homeowner customers, it is not surprising that they also have the largest percentage of single family customers of all service providers. Low income customers more often live in multi-family residences than other Massachusetts customers.

Figure 4. Type of Building (Adj.)



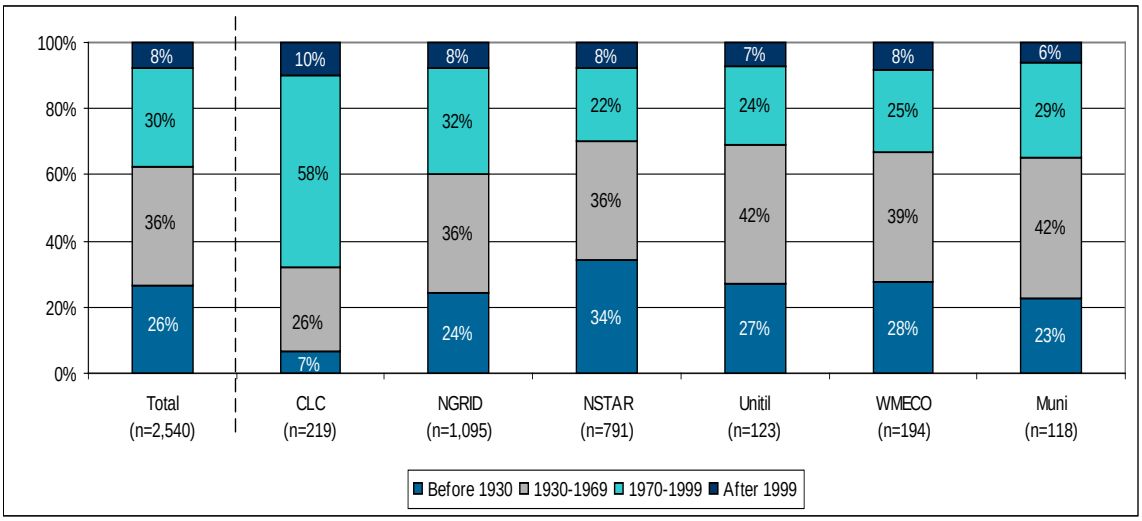
Ninety-three percent of respondents completed the survey for a permanent residence. Cape Light Compact is the only service provider with a substantial percentage of customers (41%) completing the survey for a seasonal or partial-year residence. A majority of partial-year residents use their homes during the summer months of June (87%), July (92%), August (92%), and September (83%).

Size and Age of Residence

Massachusetts residents have an average of 6.7 rooms in their residences (adj.),[3] making up an average of 1,866 square feet of living space. A majority of these homes are older residences with 26% built before 1930, 36% between 1930 and 1969, 30% between 1970 and 1999, and only 8% built after 1999. Homes of Cape Light Compact customers tend to be newer than those of other Massachusetts customers. Low income customers are more likely to live in homes built before 1970 than non-low income customers.

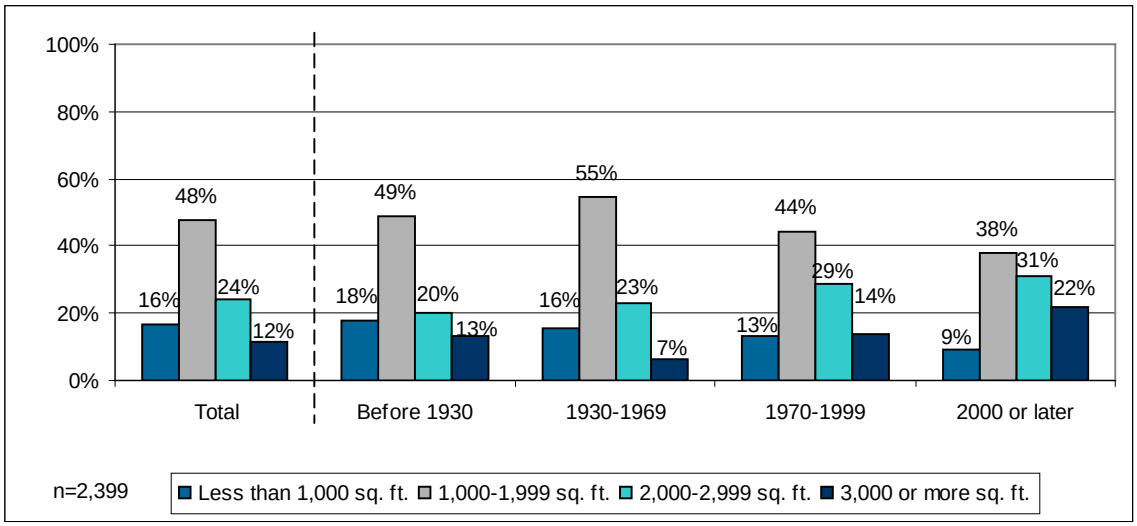
[3] The count of rooms excludes bathrooms, halls, pantries, unheated rooms, and garages.

Figure 5. Year Residence was Built, by Provider



The number of homes built with fewer than 1,000 square feet has decreased consistently across the years. Homes built since 2000 are more likely to be larger homes, with 3,000 or more square feet.

Figure 6. Size of Residence, by Year Residence was Built

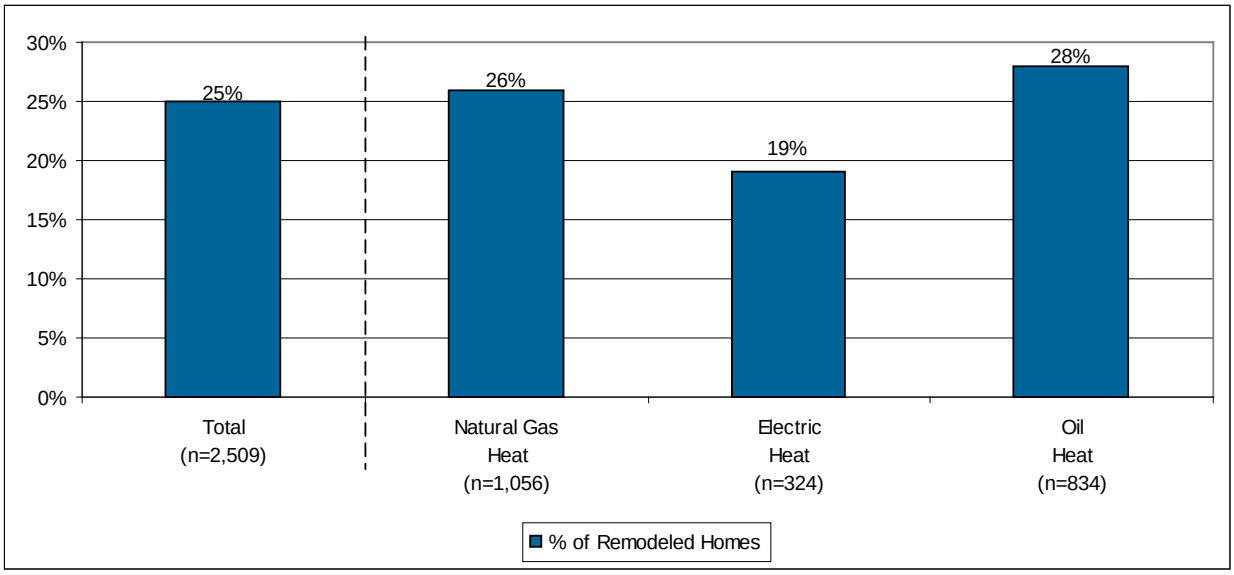


Approximately 61% of residences have a natural gas line to their home (adj.).

Incidence of Remodels

Twenty-five percent of customers remodeled their residence within the past three years.[4] Residences heated with natural gas and oil had a higher percentage of remodels than those with electric heat.

Figure 7. Percentage of Homes Remodeled in the Past 3 Years, by Heating Type



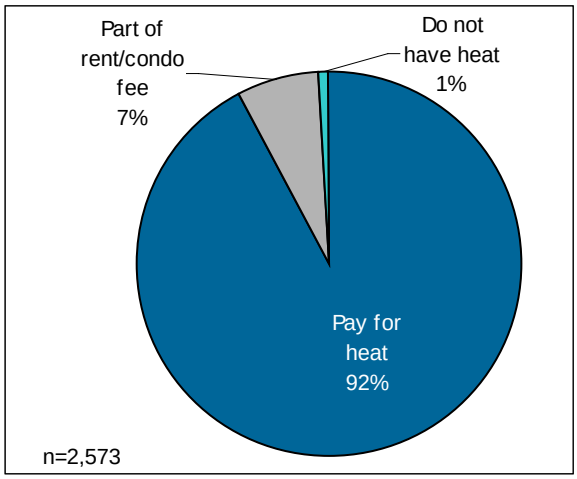
Most remodels were done to kitchens or bathrooms (63%); other remodels include adding a room or square footage (20%), finishing a basement (14%), and rebuilding most of the home (14%). While 14% of additions are not heated, those that are heated tend to be heated by extending the existing heating system (63%).

[4] Remodeling activities included in the survey include (1) adding a room or square footage to the home, (2) converting a basement to finished space, (3) remodeling the kitchen or bathroom, (4) rebuilding most of the home.

2. SPACE HEATING

Ninety-two percent of Massachusetts residential customers pay to heat their home. Seven percent of customers have heat included in their rent or condo fee, and less than 1% report that the home for which they completed the survey is not heated. National Grid and NSTAR customers are more likely than other Massachusetts customers to have heating costs included in their rent or condo fee, reflecting the fact that they more often live in multi-family residences of five or more units.

Figure 8. Penetration of Space Heating Systems



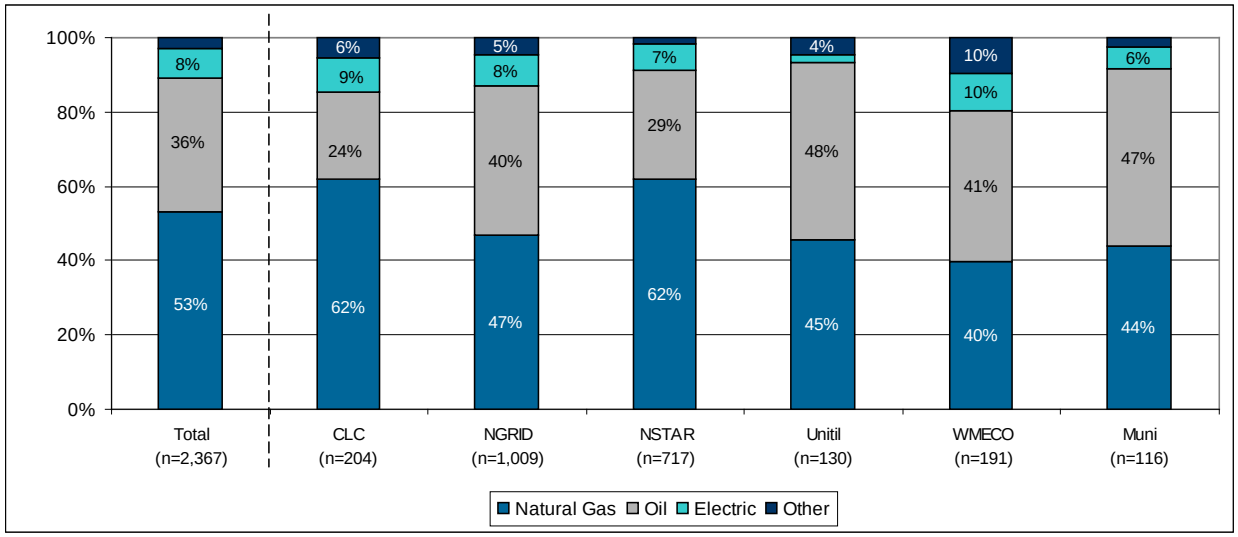
Primary Heating Fuel

Of customers who pay to heat their homes, 53% use natural gas as their primary heating fuel while 36% use oil (adj.). Only 8% use electricity as their primary source of heat (adj.).

CLC and NSTAR customers are more likely to use natural gas to heat their homes than customers of other electric service providers.[5] Conversely, customers of National Grid, Unitil, and WMECO are more likely to use oil to heat their homes than CLC and NSTAR customers.

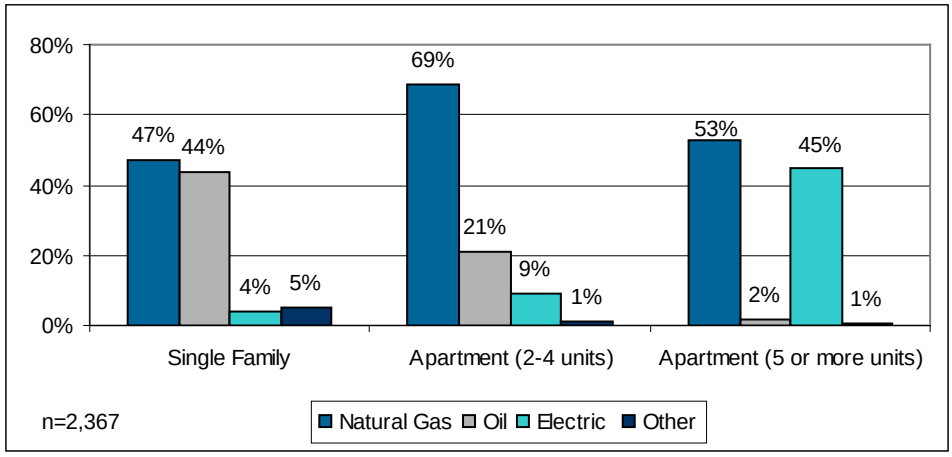
[5] Note that not all Massachusetts communities have the availability of natural gas.

Figure 9: Primary Heating Fuels by Provider (Adj.)



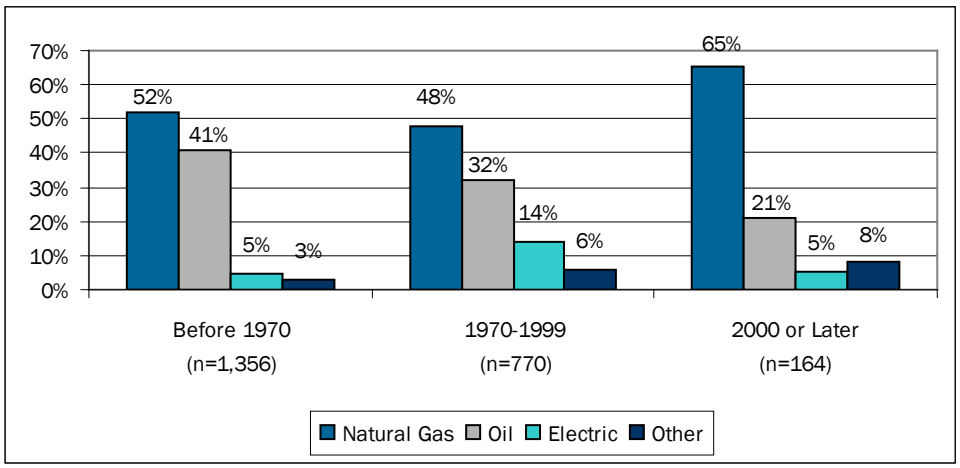
The prevalence of primary heating fuel types varies somewhat with the type and age of the home. Customers who live in single family homes are more likely have an oil system, customers who live in residences with two to four units are more likely to have a natural gas system, and customers who live an apartment building with five or more units are more likely to have an electric heat system.

Figure 10. Primary Fuel Type by Building Type (Adj.)



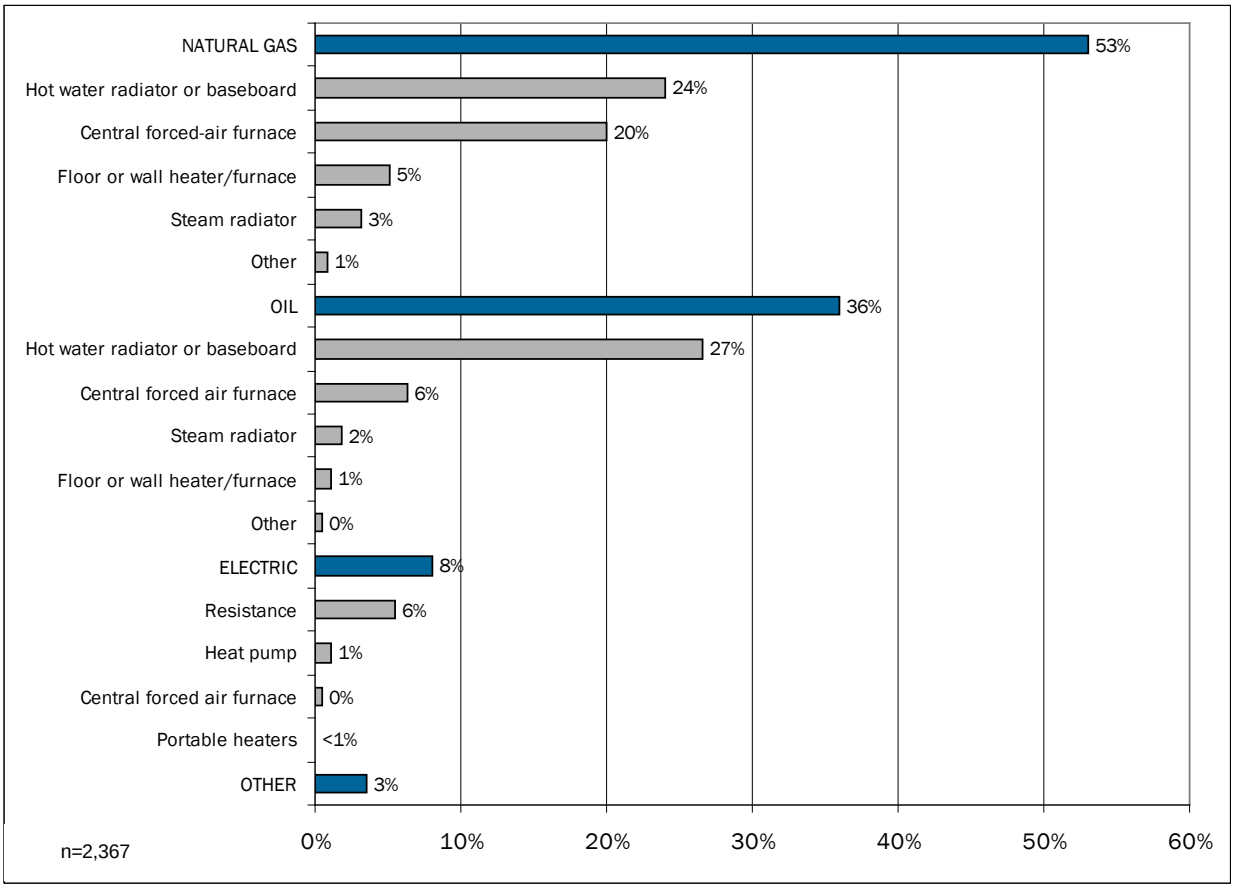
Across three age ranges (before 1970, between 1970 and 1999, and 2000 or later), natural gas is the most common primary heating fuel type. However, natural gas heating is most prevalent in newer homes (built in 2000 or later). Conversely, oil heat is more common in older homes (built before 1970), and electric heat is more common in homes built between 1970 and 1999.

Figure 11. Primary Heating Fuel by Age of Home (Adj.)



Most natural gas customers have either hot water radiator/baseboards or a central forced-air furnace. Over half of oil customers have hot water radiator/baseboards, and almost three-quarters of electric customers use a resistance heating system.

Figure 12. Heating System Types by Fuel Type (Adj.)

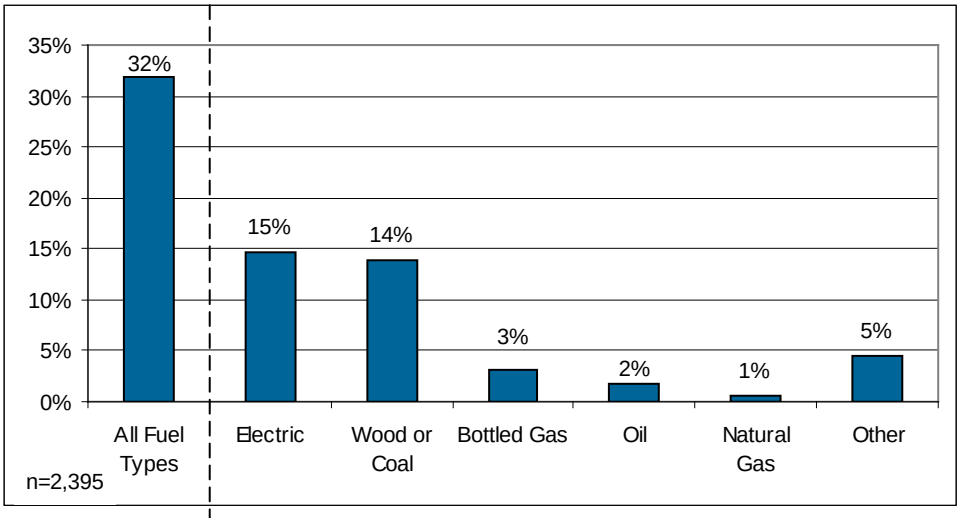


Additional Heating Systems

Nearly one-third of Massachusetts residential customers report using a secondary heating system. Most additional heating systems are electric or consist of wood/coal stoves or fireplaces. Customers in homes where oil is the primary heating fuel are more likely to have an additional heating system than other Massachusetts customers. Low income customers are less likely to have an additional heating system.

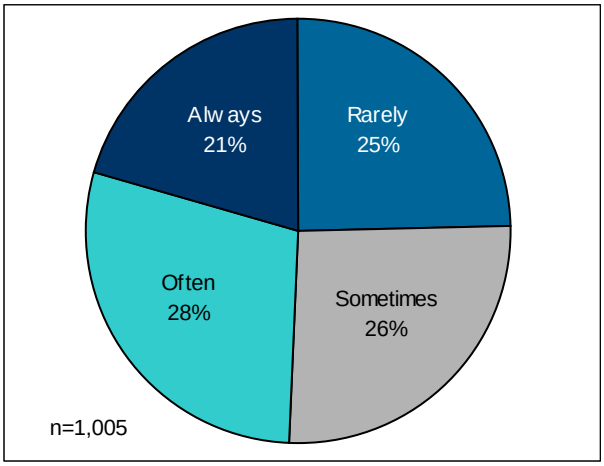
NSTAR customers, customers that live in an apartment building with five or more units, and customers with natural gas as a primary fuel type are more likely to have an electric secondary heating system. Unitil customers, customers that live in single family homes, and customers that use either oil or electricity as their primary heating fuel are more likely to use a wood/coal stove or fireplace for additional heating.

Figure 13. Fuel Types of Additional Heating Systems



Use of additional heating systems among Massachusetts customers varies. Almost equal shares of customers rarely (once per month), sometimes (once per week), often (2-4 days per week), and always (5-7 days per week) use their additional heating system during the heating season.

Figure 14. Use of Additional Heating System



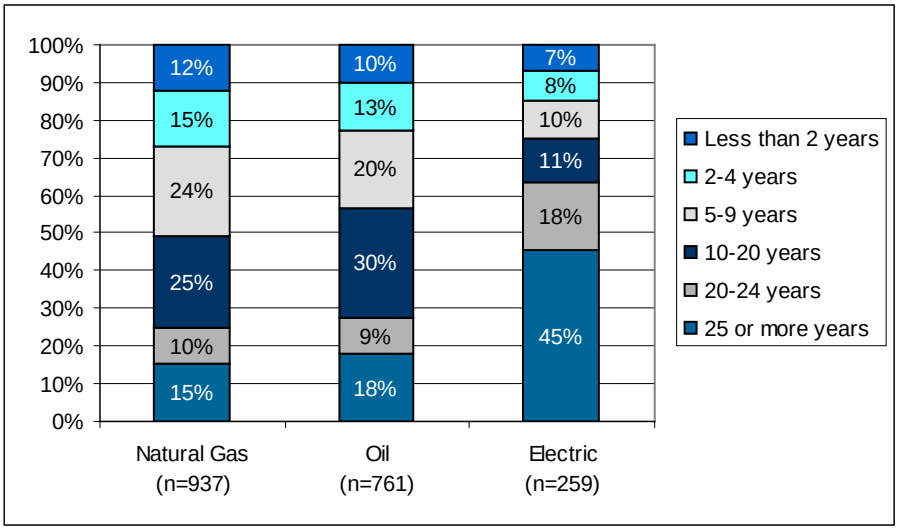
Age of Primary Heating System

The average age of customers' primary heating systems is 12.3 years. Eleven percent of customers report that their heating system is less than two years old, while 18% of customers have a heating system that is 25 or more years old.

In general, electric heating systems are older (18.0 years) than oil systems (12.6 years) and natural gas systems (11.5 years). Sixty-three percent of electric heating systems are 20 years or older.

Homes built between 1970 and 1999 have the oldest heating systems (14.2 years), compared to those built before 1970 (12.6 years) and those built after 1999 (4.3 years), reflecting more recent replacements of heating systems in the oldest homes.

Figure 15. Age of Main Heating System

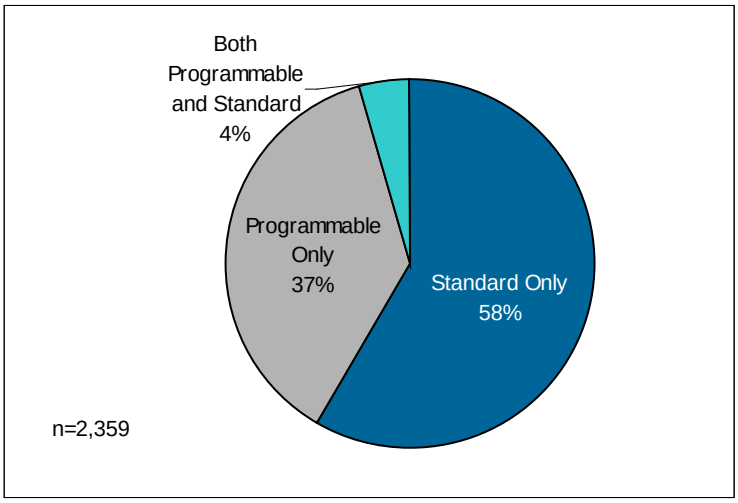


Thermostats

Ninety-five percent of customers have at least one thermostat for their heating system, with an average of 1.7 thermostats per home (adj.). Electric heat customers have more thermostats (3.4 thermostats) than those who use oil (1.7 thermostats) or natural gas (1.6 thermostats) as a primary fuel (adj.).

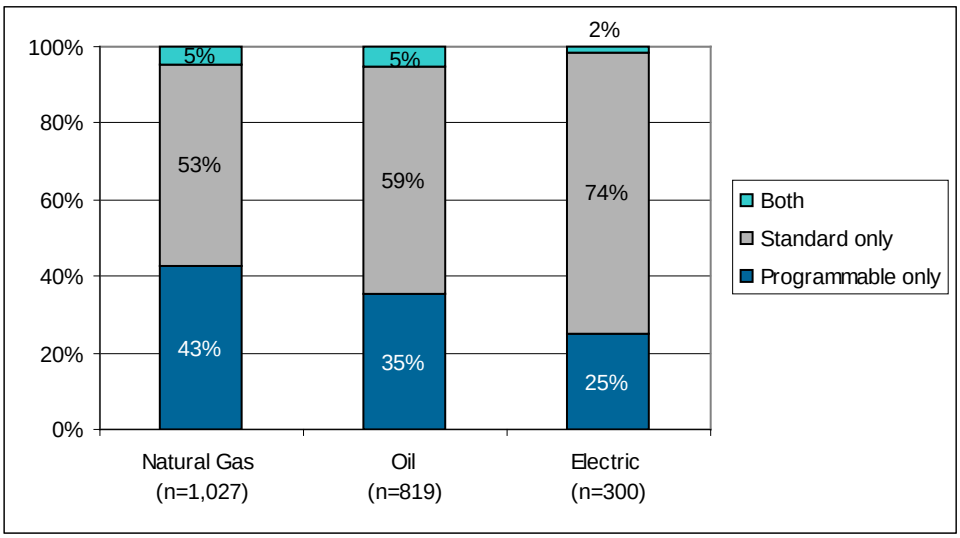
Over half of Massachusetts residential customers are using only standard thermostats (adj.). Low income customers have fewer thermostats and are more likely to use only standard thermostats than other Massachusetts customers.

Figure 16. Thermostat Type (Adj.)



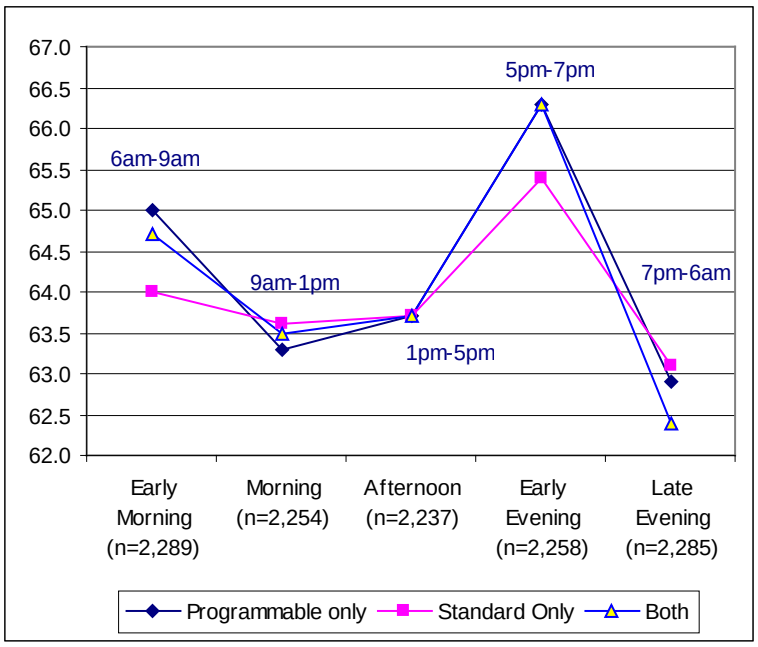
Cape Light Compact customers, customers who use electric heat as their primary fuel type, and customers with heating systems over 20 years old are more likely to use only standard thermostats. Conversely, customers with natural gas systems, customers whose heating systems is less than two years old and those with homes built after 1999 are more likely to use only programmable thermostats in their residence.

Figure 17. Thermostat Type by Primary Fuel Type (Adj.)



The mean thermostat setting for heating systems ranges from a low of 63.0 degrees (late evening, 7 p.m. to 6 a.m.) to a high of 65.8 degrees (early evening, 5 p.m. to 7 p.m.). Not surprisingly, temperature settings are slightly higher in the early morning (6 a.m. to 9 a.m.) and the early evening (5 p.m. to 7 p.m.), when people are in their homes before and after work/school. In general, CLC customers tend to set their thermostats at a lower setting than other electric service providers. Customers with newer homes (built in 2000 or later) tend to set their thermostats at a higher setting than those in homes built before 2000, and customers heating their homes with natural gas tend to set their thermostats at higher setting than customers heating with oil.

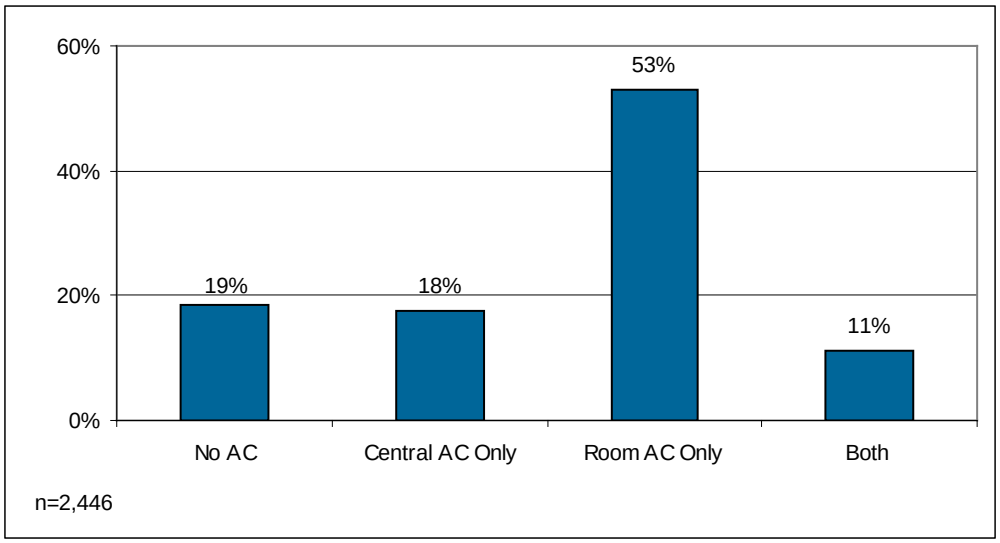
Figure 18. Mean Temperature Setting by Thermostat Type



3. SPACE COOLING

Overall, 81 percent of customers have some type of space cooling (adj.). Of those customers, 18% have only central air conditioning, 53% have only room air conditioning, and 11% have both central and room air conditioning (adj.).

Figure 19. Incidence of Space Cooling (Adj*.)

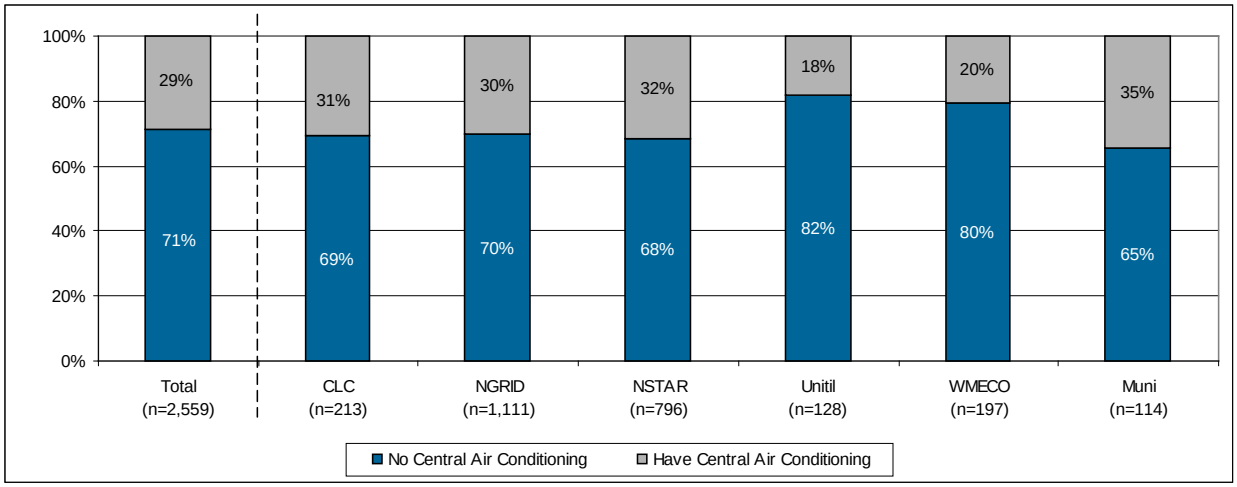


*Incidence of room air cooling could not be verified; adjustments were only made to central air cooling.

Central Air Cooling

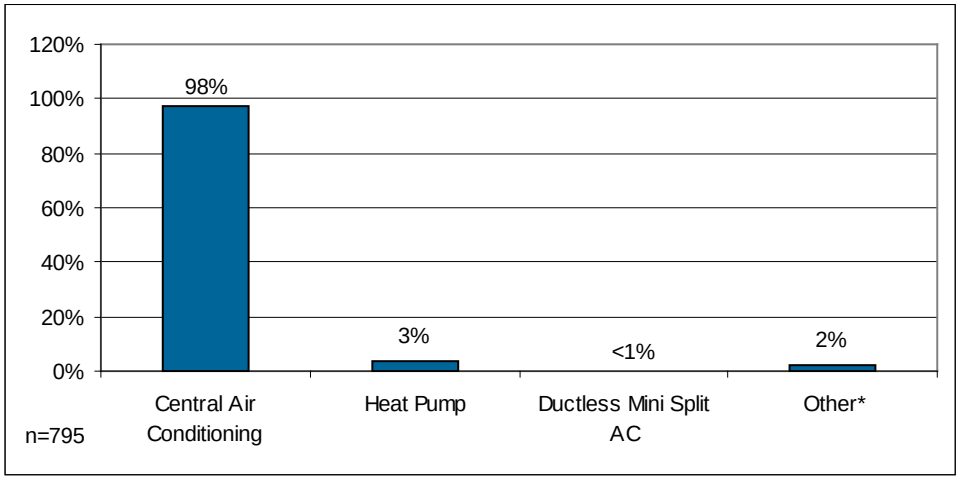
Twenty-nine percent of customers have central air cooling (adj.). Customers who live in an apartment building with five or more units, customers in homes built after 1999, and non-low income customers are more likely to have a central air cooling system. Customers of Unitil and WMECO are less likely to have a central air cooling system than customers of other Massachusetts service providers.

Figure 20. Incidence of Central Air Cooling by Provider



Almost all customers who have central air systems have central air conditioning (98%). Only 3% have a heat pump that heats and cools, and less than 1% have a ductless mini-split system (adj.).

Figure 21. Cooling System Type (Adj.)



*Incidence of "other" types of central air cooling could not be verified; no adjustment was made.

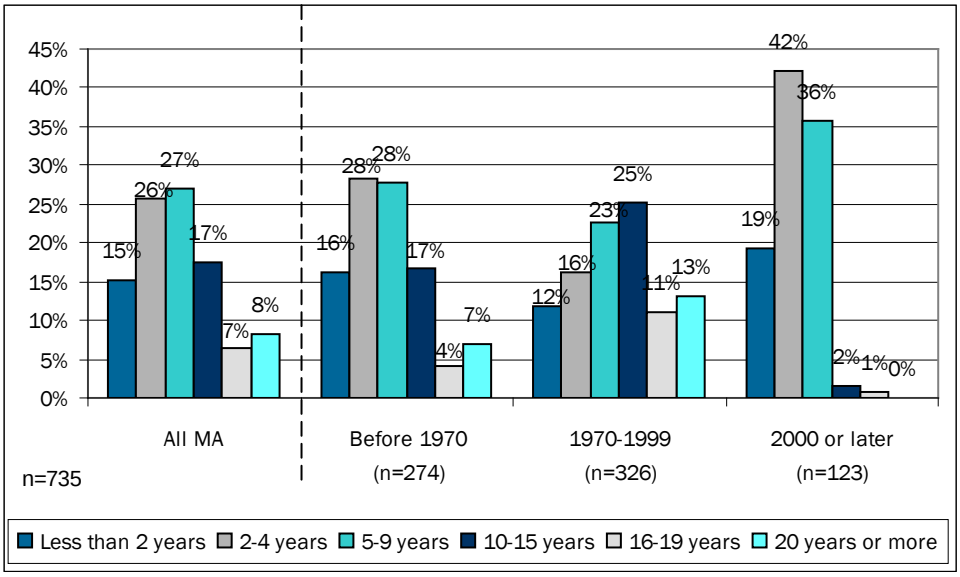
Customers with central air conditioning generally have 1.2 units per household (adj.). Over 80% of central air cooling systems cool 75-100% of the residence (adj.).

The mean age of customer's main cooling system is 7.7 years. Fifteen percent of customers report that their cooling system is less than two years old, while 8% of customers have a system that is more than 20 years old.

Homes built between 1970 and 1999 have the oldest central air conditioning systems (9.7 years), compared to those built before 1970 (7.0 years) and those built after 1999 (4.3

years), reflecting more recent additions or replacements of central cooling systems in the oldest homes.

Figure 22. Age of Central AC System by Age of Home

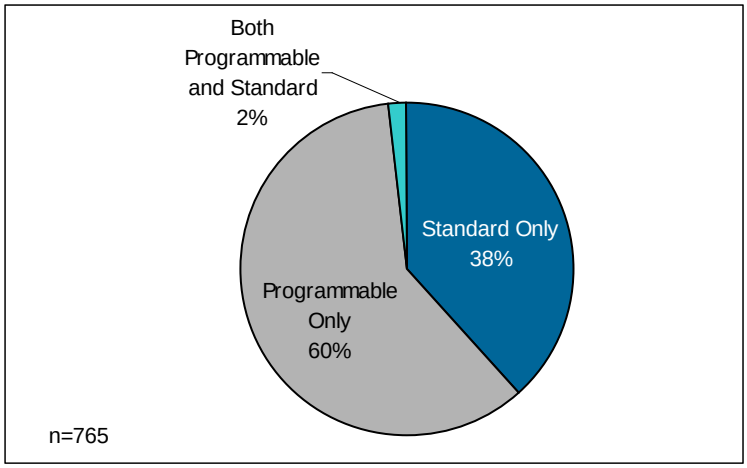


Thermostats

Ninety-two percent of customers have at least one thermostat for their cooling system, with an average of 1.5 thermostats per home (adj.). Customers in single family homes have more thermostats (1.6 thermostats) than those in apartments with 2-4 units (1.1 thermostats) or five or more units (1.2 thermostats) (adj.).

Over half of Massachusetts residential customers are using programmable thermostats only. Non-low income customers are more likely than other Massachusetts customers to use programmable thermostats only.

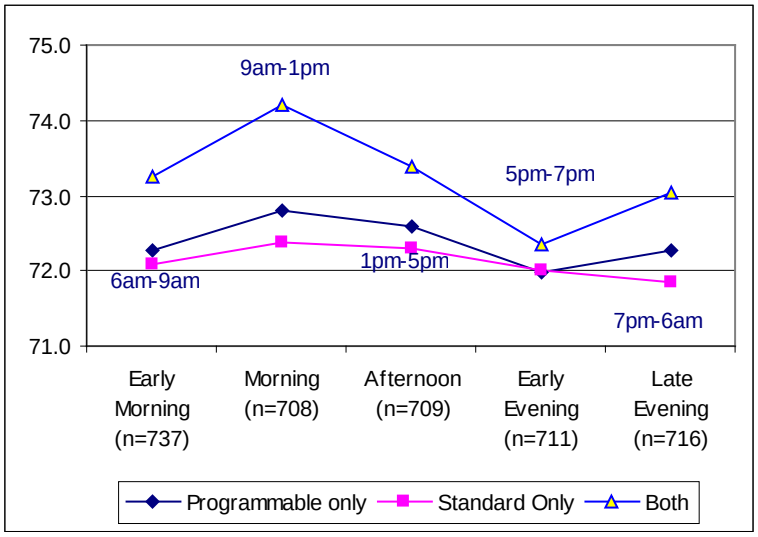
Figure 23. Type of Thermostat (Adj.)



Cape Light Compact customers, customers with electric heat as their primary fuel, and those that live in an apartment building with five or more units are more likely to use only standard thermostats. Conversely, customers with natural gas systems and customers whose central air cooling unit is less than two years old are more likely to use only programmable thermostats in their residence.

The mean thermostat settings for air cooling systems are fairly consistent throughout the day, with the average temperatures ranging from a low of 72.0 in the early evening (5 p.m. to 7 p.m.) to a high of 72.6 in the morning (9 a.m. to 1 p.m.).

Figure 24. Mean Temperature Setting by Thermostat Type



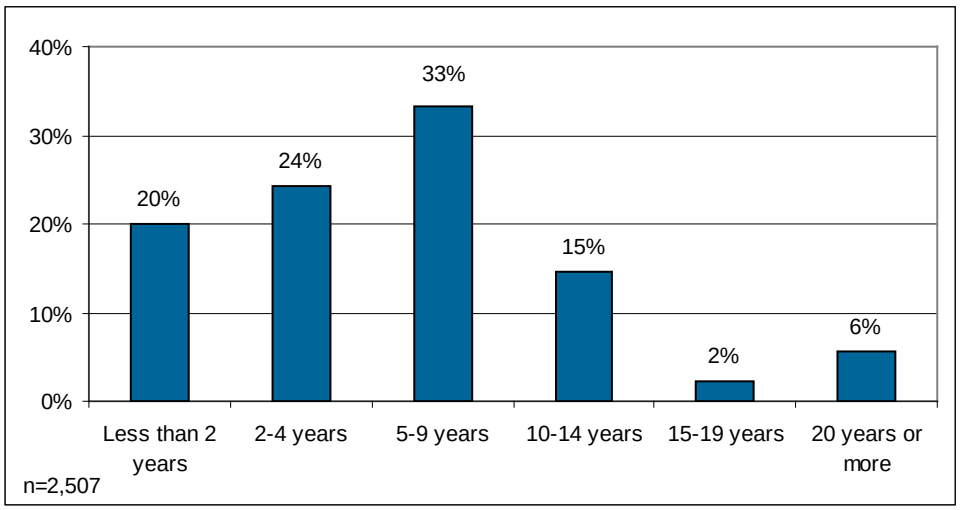
Room Air Conditioners

Sixty-four percent of customers have room air conditioners. National Grid customers, customers who live in homes built before 2000, and low income customers are more likely to have room air conditioners.

Customers who have room air conditioners have an average of two units.

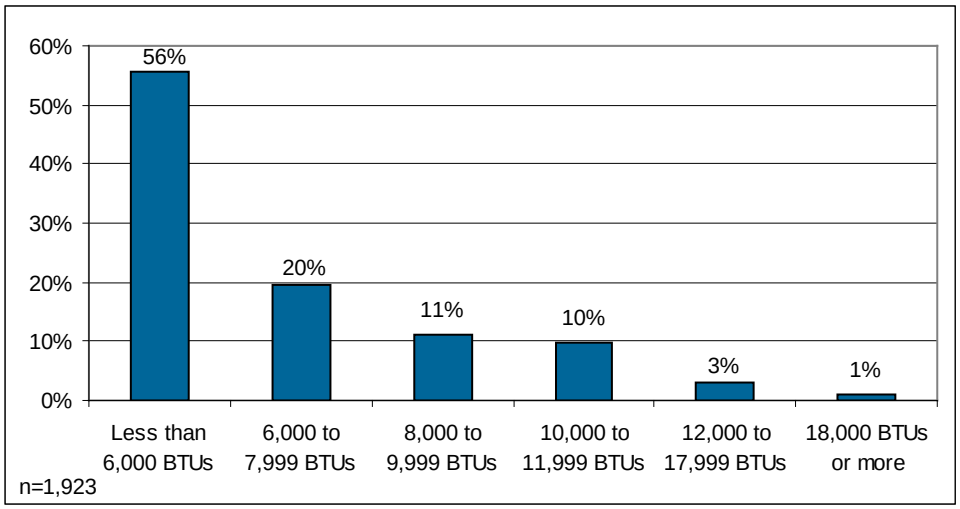
The average age of customers' room air conditioners is 6.5 years (adj.). Customers that live in an apartment building with five or more units are more likely to have an older room air conditioner (8.7 years) compared to those living in a single-family home (6.6 years) or those living in a building with two to four units (5.9 units) (adj.).

Figure 25. Age of Room Air Conditioners (Adj.)



Over half of all room air conditioners are less than 6,000 BTUs in size; the average size is approximately 7,200 BTUs (adj.). In general, customers in homes that have electric heat as their primary heating fuel, and customers of NGRID, NSTAR, and WMECO tend to have a larger room air conditioner compared to those with natural gas heat and customers of CLC and Unitil.

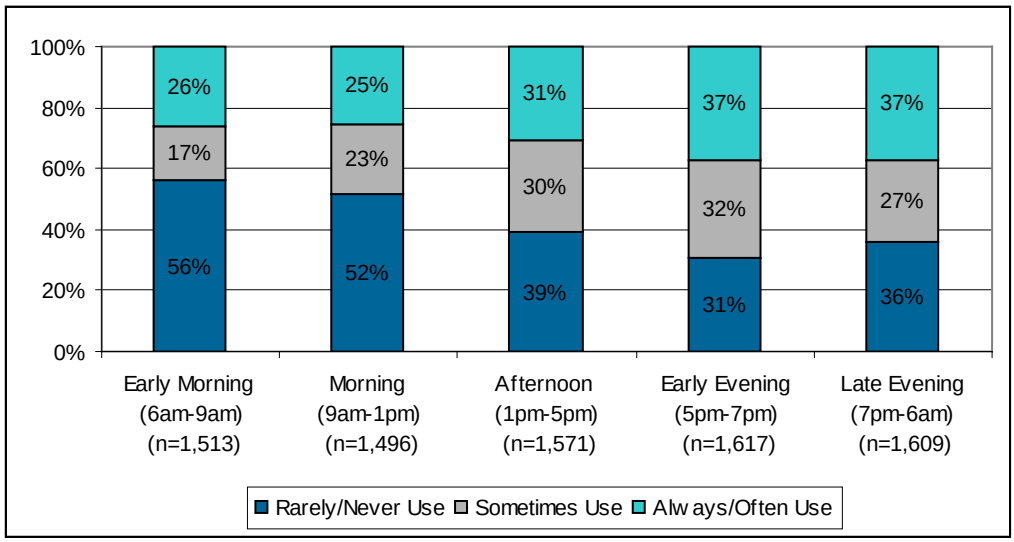
Figure 26. Size of Room Air Conditioners (Adj.)



Frequency of Use

Customers tend to use their air conditioning systems more frequently from the early evening through the night with around one-third of customers saying they use their cooling system often or always (at least five days a week) during the cooling season. Over 50% of customers report not using or rarely (two days a week or less) using the cooling system during the morning hours.

Figure 27. Frequency of Air Conditioning Use by Time Period

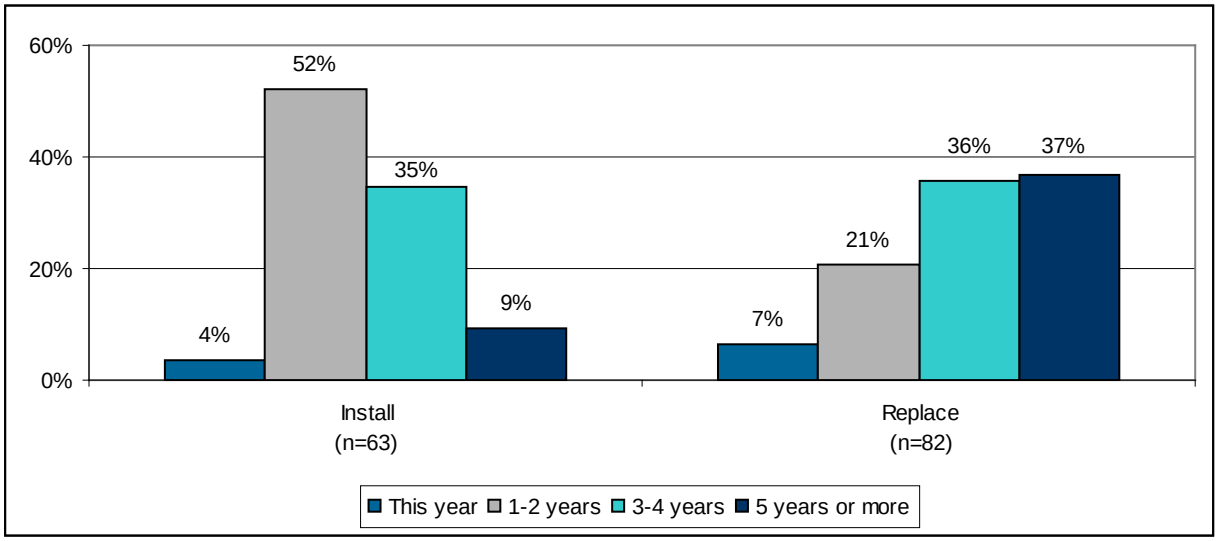


Plans for Future Air Conditioning Installation/Replacement

Fourteen percent of customers who do not currently have a central air conditioning system are very or somewhat likely to install a central air system in the future. Over 50% of these customers are planning on installing the central air conditioning system in the next one to two years.

Twenty-nine percent of customers that currently have a central air conditioning system are very or somewhat likely to replace that system. However, over 70% of those customers are planning to wait three or more years before making the replacement.

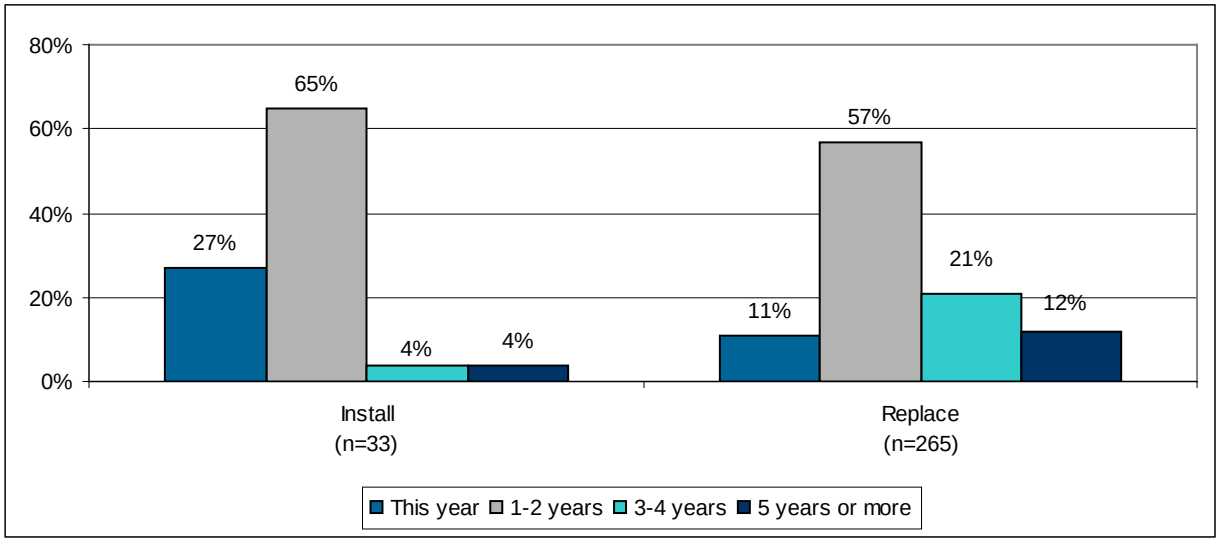
Figure 28. Timeline for Installation/Replacement of Central AC



Fifteen percent of customers who do not currently have a room air conditioning unit are very or somewhat likely to install one in the future. Over 90% of these customers are planning on installing the unit in the next one to two years.

Forty-one percent of customers that currently have a room air conditioning unit are very or somewhat likely to replace that unit. Nearly 70% of those customers are planning to make the replacement within the next one to two years.

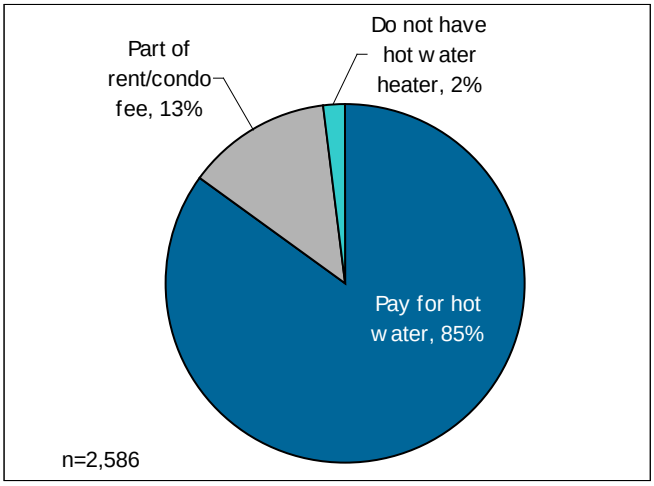
Figure 29. Timeline for Installation/Replacement of Room AC



4. WATER HEATING

Eighty-five percent of Massachusetts residential customers pay for hot water in their home. Thirteen percent of customers have hot water included in their rent or condo fee, and 2% report not having a water heating system. Customers without a water heating system are more likely to use oil for their primary heating fuel.

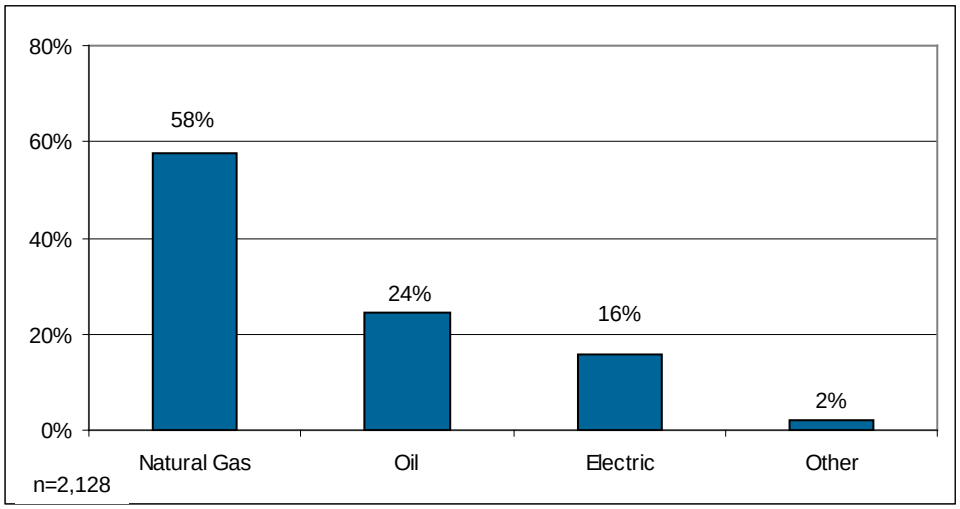
Figure 30. Penetration of Water Heating Systems



Water Heating System Type

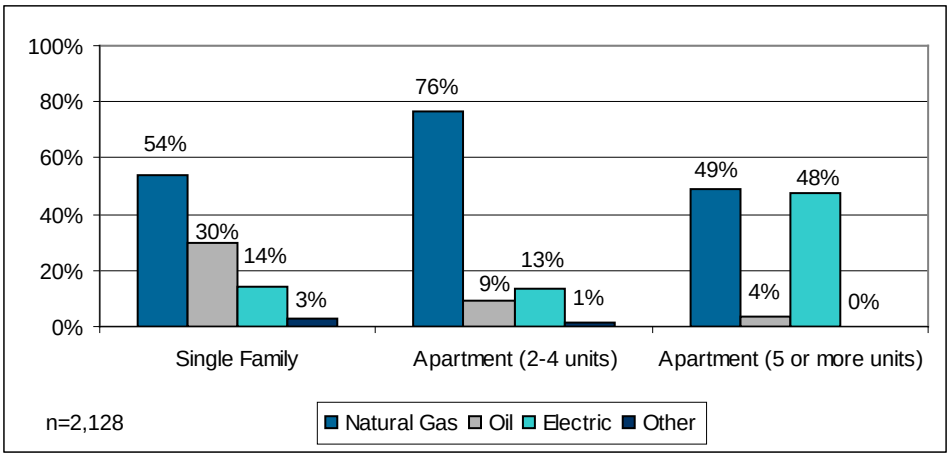
Natural gas is the most common fuel for water heating systems (58%), followed by oil (24%), and electric (16%) (adj.). Not surprisingly, this order is the same as the fuel types for space heating. However, compared to space heating systems, water heating systems are less likely to be fueled by oil and more likely to be be electric.

Figure 31. Primary Water Heating Fuel (Adj.)



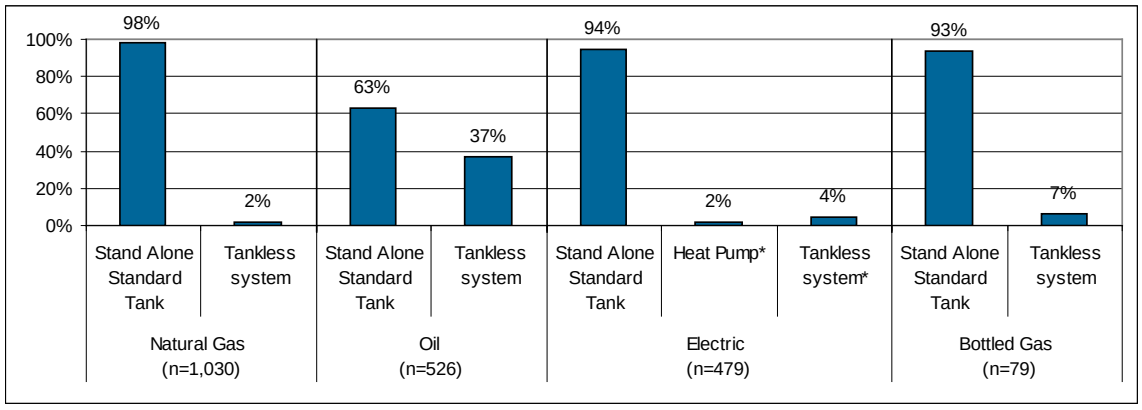
Compared to other Massachusetts customers, customers who live in a residence with two to four units are more likely to use natural gas to heat their water. Customers living in single family homes and customers living in homes built before 2000 are more likely to heat their water using oil.

Figure 32. Primary Water Heating Fuel by Building Type (Adj.)



Most water heating systems have stand alone tanks. Tankless systems are more common in oil and bottled gas systems than other types of systems.

Figure 33. Primary Water Heating System by Fuel Type (Adj.)

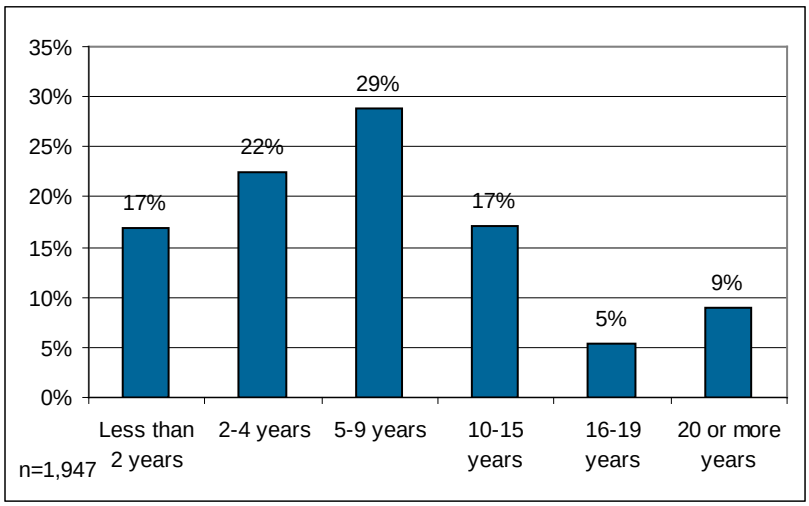


*Incidence of "other" types of central air cooling could not be verified; no adjustment was made.

The average age of the primary water heater for Massachusetts residential customers is 7.8 years. Almost one-third of water heating systems is 10 years or older, and 9% are 20 years or older.

Oil-fired water heating systems tend to be older (average 10.2 years) than natural gas (6.5 years) or electric (8.0 years) systems, reflecting the fact that older homes are more likely to be fueled by oil than newer homes.

Figure 34. Age of Primary Water Heater

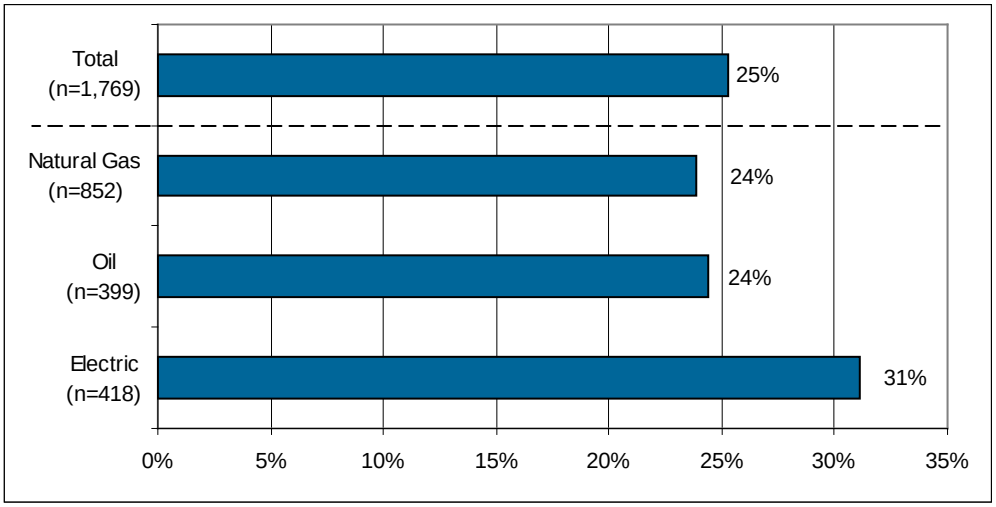


Only 1% of respondents report having an additional water heating system (adj.).

Incidence of Energy Efficiency Measures

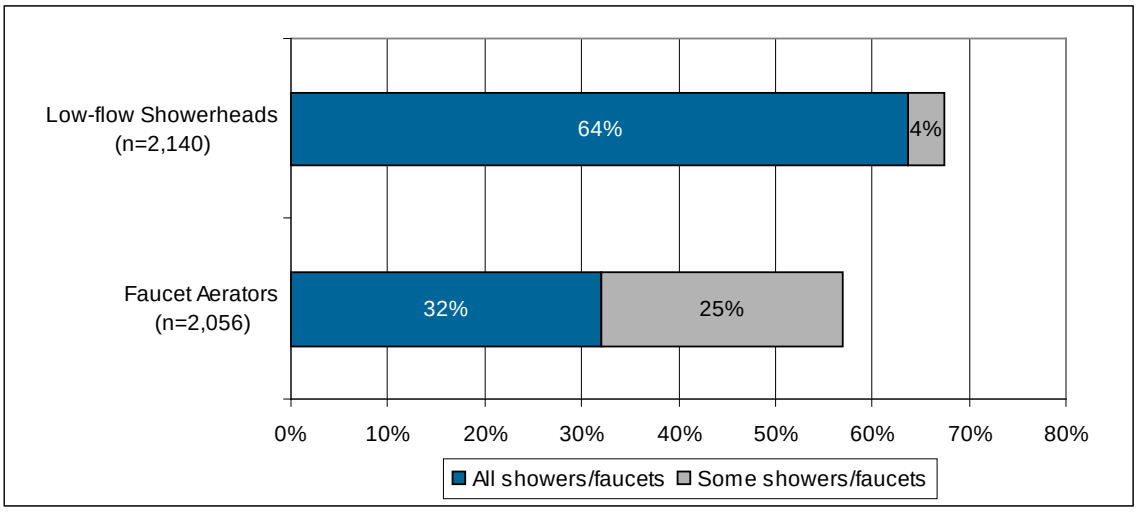
One-quarter of Massachusetts residential customers have an insulation blanket or tank wrap for their primary hot water heater. Those with electric water heaters are more likely to have an insulation blanket or tank wrap than those using oil or natural gas systems.

Figure 35. Penetration of Insulation Blanket by Water Heating Fuel Type



Two-thirds of residents have low-flow showerheads installed in some or all of the showers in their home and 57% of residents have water saving aerators on some or all faucets in their home (adj.). More homeowners than renters have these water saving measures installed.

Figure 36. Penetration of Water Saving Features (Adj.)

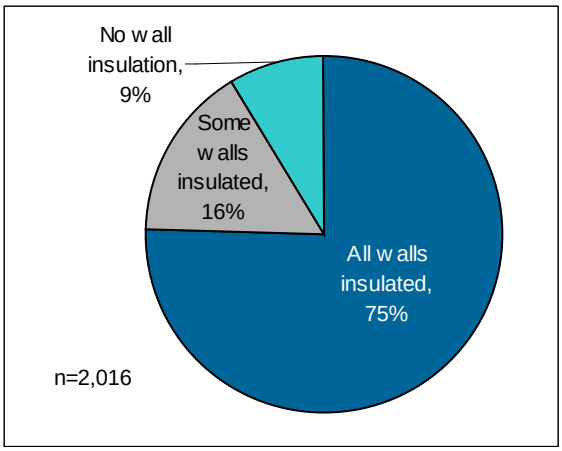


5. BUILDING SHELL

Insulation

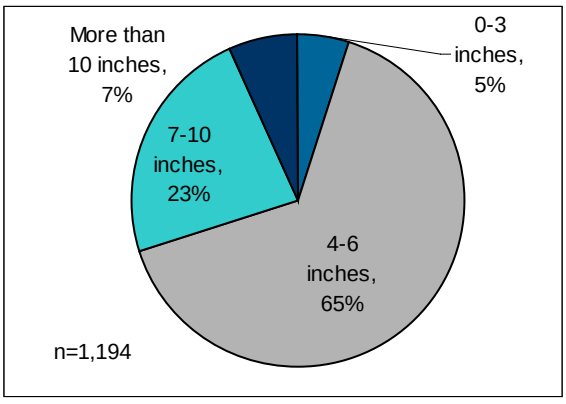
Seventy-five percent of Massachusetts residential customers have insulation in all of their home's exterior walls. An additional 16% have some of their exterior walls insulated, while 4% have no exterior wall insulation. Single-family homes (79%), non-low income customers (77%), and customers with electric heat (84%) are more likely to have insulation on all exterior walls than other Massachusetts customers. Conversely, low income customers (22%) and NSTAR customers (14%) are more likely to have no exterior wall insulation.

Figure 37. Insulation of Exterior Walls



The vast majority of customers (89%) report that their home's attic or ceiling is insulated. Of those with insulated attics or ceilings, most customers (65%) have four to six inches of insulation (adj.). Twenty-three percent of customers have seven to ten inches of insulation (adj.). Only 7% have more than 10 inches, and 5% have zero to three inches (adj.).

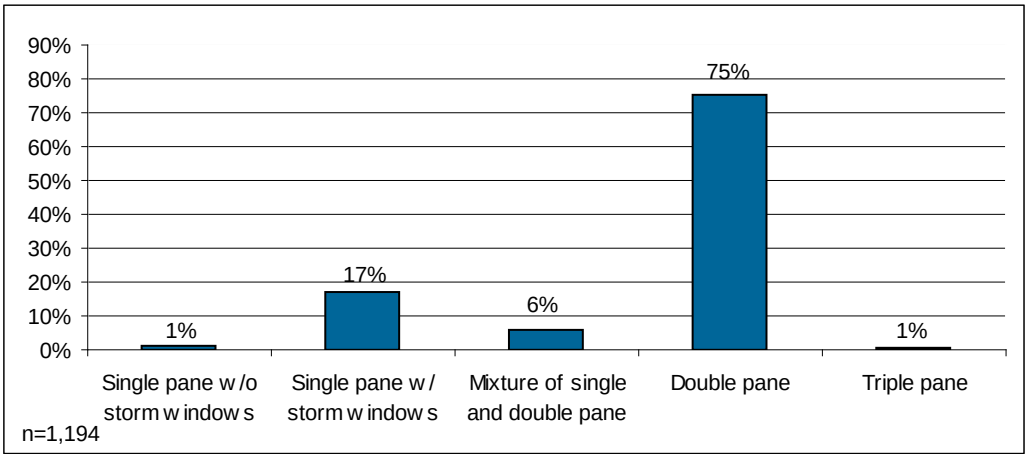
Figure 38. Amount of Attic/Ceiling Insulation (Adj.)



Windows

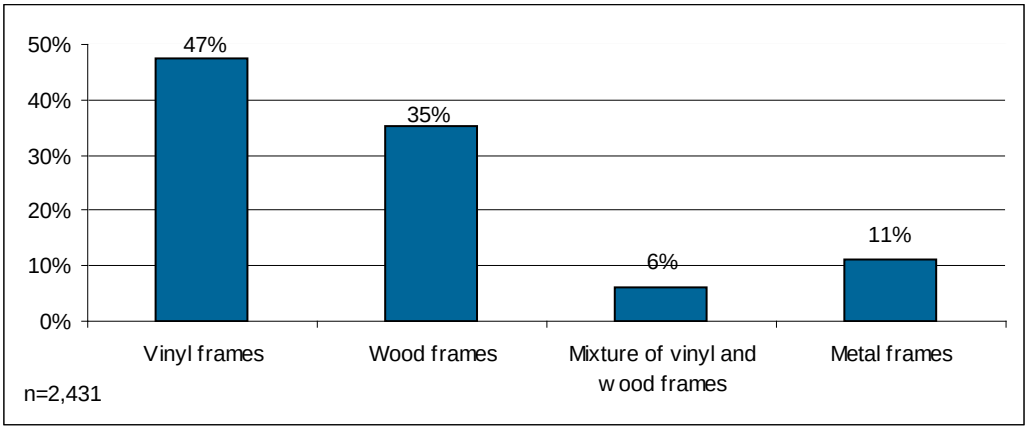
Seventy-five percent of customers have double panes in most or all of their windows (adj.). Another 17% have all or mostly single pane windows with storm windows (adj.). Only 1% have single pane windows without storm windows or triple paned windows (adj.). Low income customers are more likely to have single pane windows.

Figure 39. Types of Windows (Adj.)



Vinyl and wood are the most popular window frame materials among Massachusetts residential customers. Forty-seven percent of customers have vinyl frames only while 35% have wood frames only (adj.). An additional 6% have a mixture of vinyl and wood frames (adj.). Only 11% of respondents have metal frames (adj.). Customers in residences of five or more units (44%) and customers with electric heat (27%) are more likely to have windows with metal frames than other Massachusetts customers (adj.).

Figure 40. Types of Window Frame Materials (Adj.)

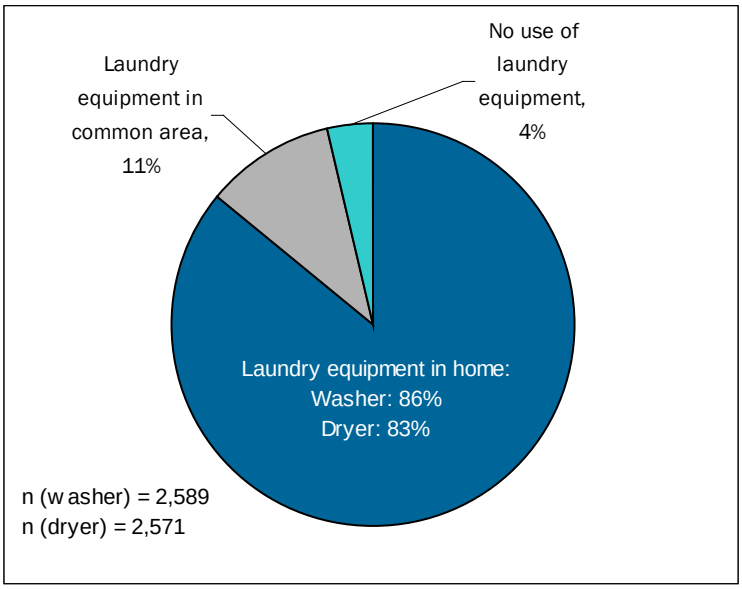


6. LAUNDRY EQUIPMENT

Penetration of Laundry Equipment

Eighty-six percent of Massachusetts residential customers have laundry equipment in their own home (adj.). An additional 11% have use of laundry equipment in a common area of their building, while 4% have no access to laundry equipment in their building (adj.). Eighty-six percent of customers have washers in their homes; 83% have dryers (adj.).

Figure 41. Penetration of Clothes Washers and Dryers (Adj.)



The majority of customers who use laundry equipment in a common area of their building live in multi-family residences of five or more units (71%), while the majority of customers who do not have access to laundry equipment live in multi-family residences of two to four units (53%).

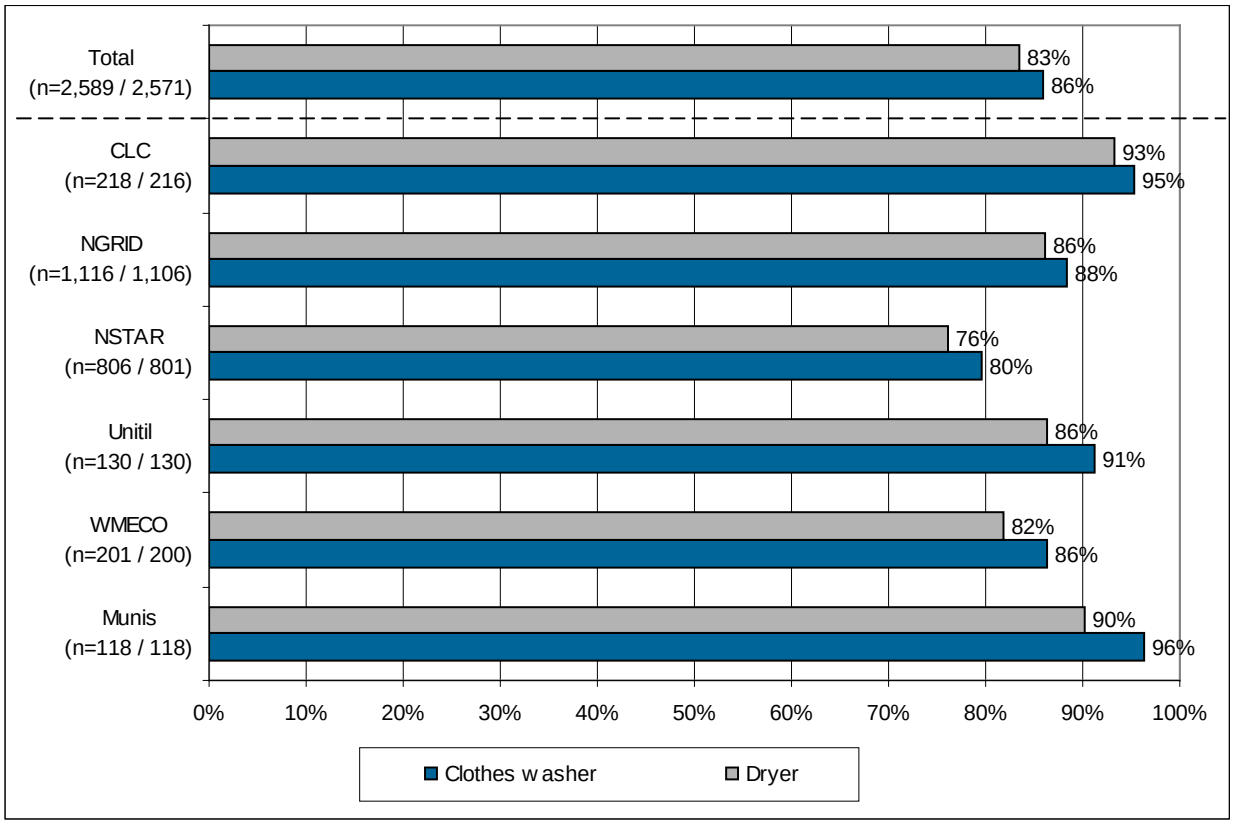
Customers who live in single-family homes are more likely to have private use of laundry equipment in their home compared to customers living in multi-family and other types of homes (including mobile homes). Customers who live in multi-family homes of five or more units and low income customers are more likely than other Massachusetts customers to have use of laundry in a common area.

- **Single-family (n=1,680):** Private use – 98%; Use in common area – 1%
- **Multi-family (2-4 units) (n=527):** Private use – 79%; Use in common area – 12%
- **Multi-family (5+ units) (n=347):** Private use – 37%; Use in common area – 57%
- **Other (n=24):** Private use – 71%; Use in common area – 11%

Customers served by municipal utilities have the highest penetration of clothes washers (96%); Cape Light Compact customers have the highest penetration of clothes dryers (93%)

(adj.). Compared to Massachusetts customers served by other electricity providers, NSTAR customers are less likely to have private use of laundry equipment, reflecting the fact that fewer NSTAR customers live in single-family homes.

Figure 42. Penetration of Clothes Washers and Dryers by Service Provider (Adj.)

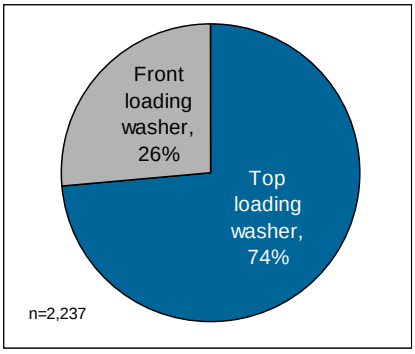


The remainder of this section is based on customers who have *private use of laundry equipment in their own home*, i.e., the laundry equipment they use is not located in a common area of a multi-family residence.

Clothes Washers

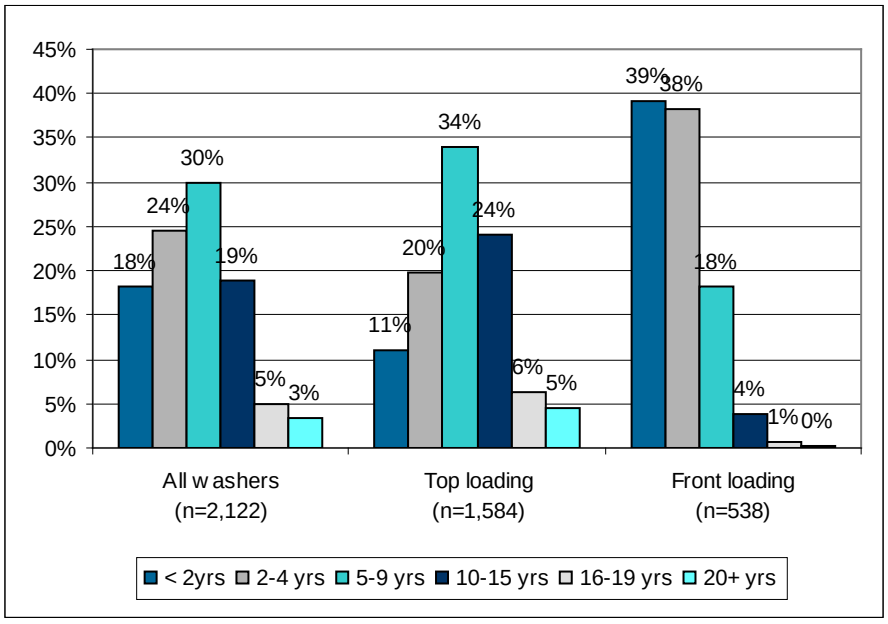
Approximately three-quarters of customers (74%) own top loading washers; one-quarter own front loading washers (adj.). Low income customers are more likely to have top loading washers.

Figure 43. Type of Clothes Washer (Adj.)



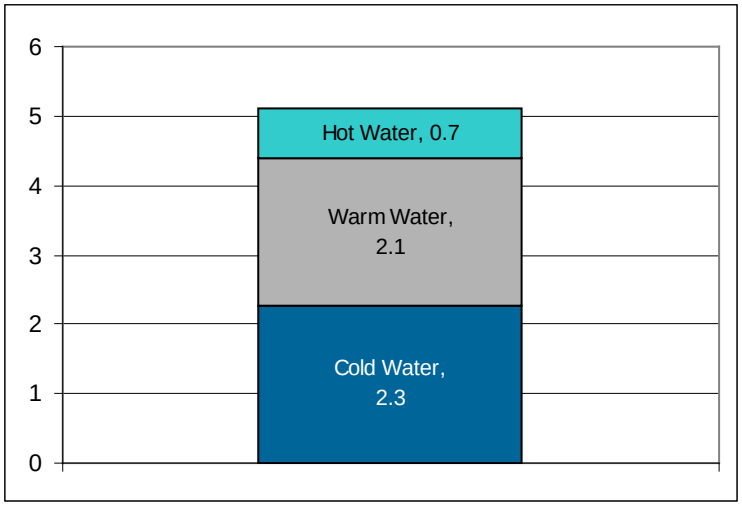
The mean age of all clothes washers is 6.9 years. Front loading washers are newer (mean age of 3.4 years) than top loading washers (mean age of 8.1 years). In fact, 54% of all washers purchased in the past two years are front loaders, compared to only 40% purchased between two and four years ago, and 10% purchased more than four years ago.

Figure 44. Age of Clothes Washers



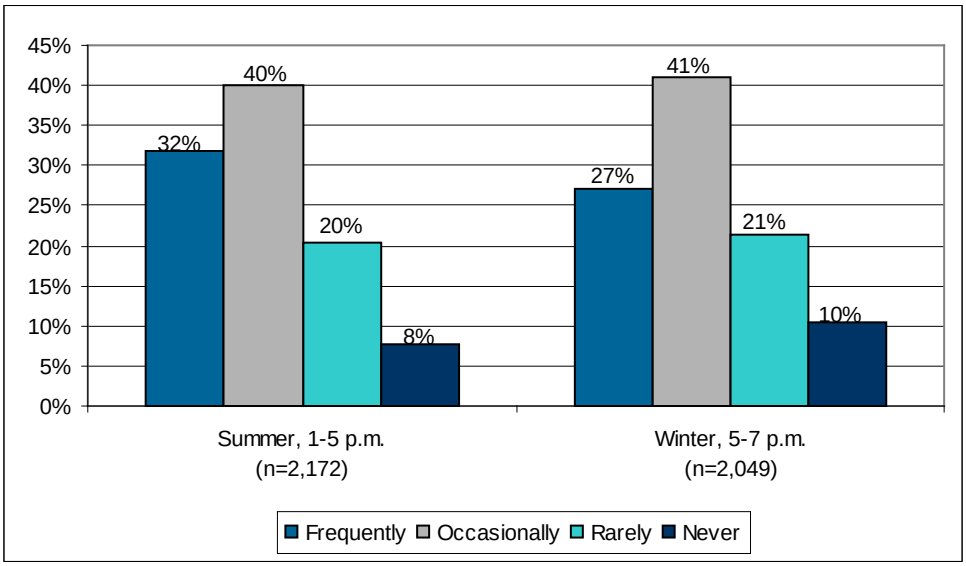
On average, Massachusetts residential customers wash 5 loads of laundry per week, 1 in hot water, 2 in warm water, and 2 in cold water. Customers in single-family homes wash more loads per week (5.3) than customers in multi-family homes of two to four units (4.7 loads), customers in multi-family homes of five or more units (4.3 loads), and customers in other types of buildings (3.6 loads).

Figure 45. Number of Loads in a Typical Week



Thirty-two percent of customers use their laundry equipment "frequently" (defined as three to five days per week) during summer peak demand hours (1 p.m. to 5 p.m.); 28% "rarely" (defined as less than one day per week) or never use it during those times. Similarly, 27% of customers use their laundry equipment frequently during winter peak demand hours (5 p.m. to 7 p.m.), while 31% rarely or never use it during those times.

Figure 46. Weekday Use of Laundry Equipment

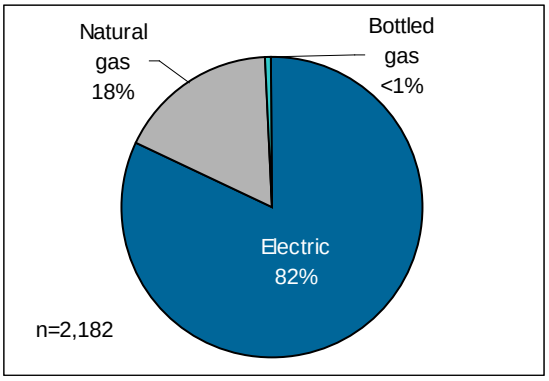


Clothes Dryers

Eighty-three percent of Massachusetts residential customers have clothes dryers for their private use (adj.). Of those customers, 82% own an electric dryer and 18% own a natural gas dryer. Less than 1% own a dryer powered by bottled gas (adj.). Customers in single-family homes and in multi-family homes of two to four units are more likely to own a natural gas

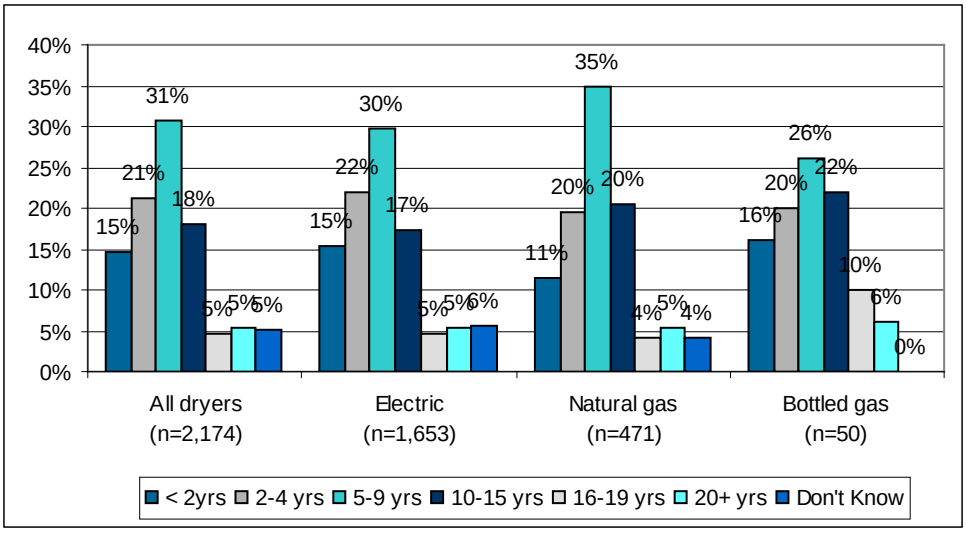
dryer than customers in multi-family homes of five or more units and customers living in other types of residences.

Figure 47. Type of Clothes Dryer (Adj.)



The mean age of all clothes dryers is 7.5 years. The age distribution is similar for different types of clothes dryers and for dryers owned by different groups of customers (there are no systematic differences by electric service provider, building type, or primary heating fuel).

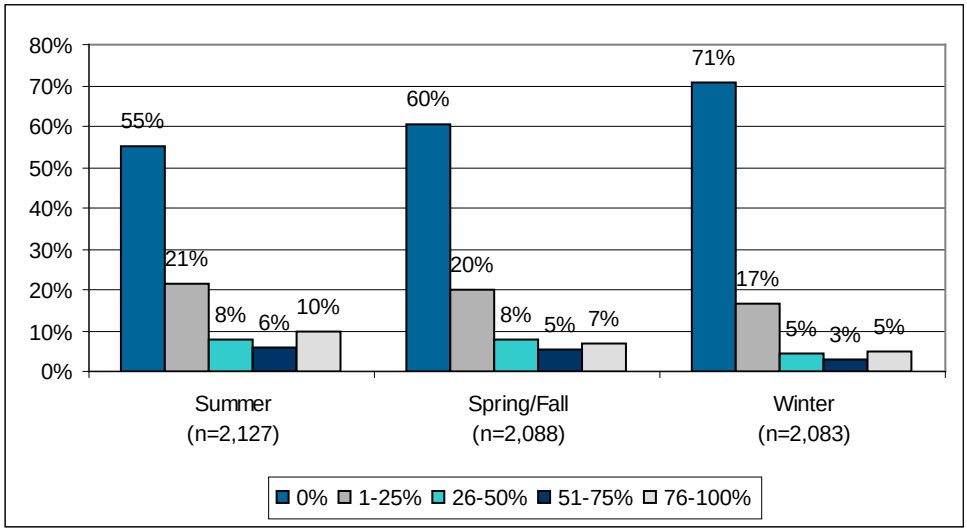
Figure 48. Age of Clothes Dryers



Few customers who have a clothes dryer for their private use line dry their clothes. On average, 18% of loads are line dried in the summer, compared to 14% in the spring and fall and 10% in the winter. Compared to other Massachusetts customers, WMECO customers, low income customers, and customers with natural gas dryers more frequently line dry their clothes in summer and in the spring and fall.

More than half of Massachusetts residential customers never line dry their clothes in the summer; this share increases to almost three-quarters in the winter.

Figure 49. Percentage of Loads Line-Dried



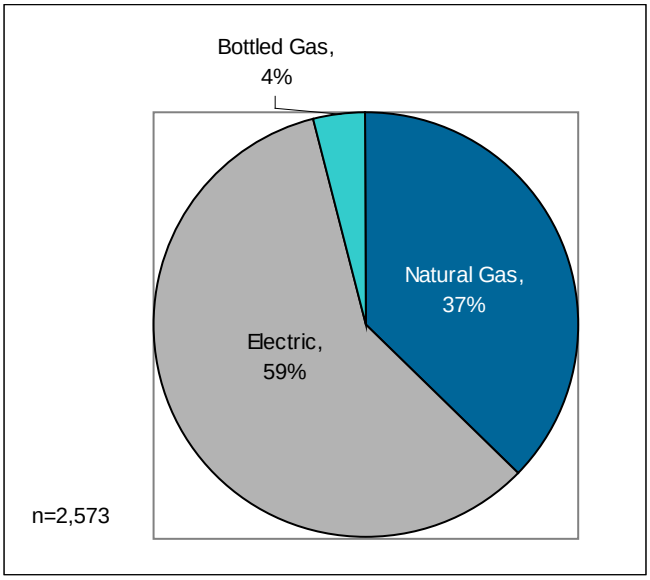
7. FOOD PREPARATION

Cooking Appliances

Most Massachusetts customers have electric cooking appliances: 59% of stovetops/ranges are electric while just over one-third use natural gas (adj.).

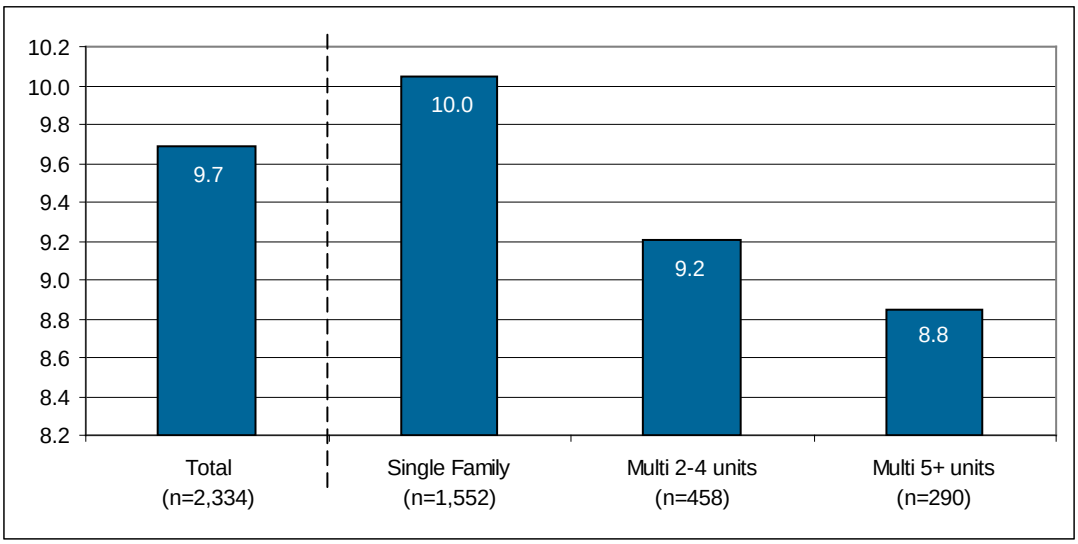
NSTAR customers (52%) and customers living in multi-family buildings with two to four units (55%) are more likely to have natural gas stovetops/ranges than other Massachusetts customers (adj.). WMECO customers have the highest percentage of electric food preparation equipment (76%) (adj.).

Figure 50. Fuel Type (Adj.)



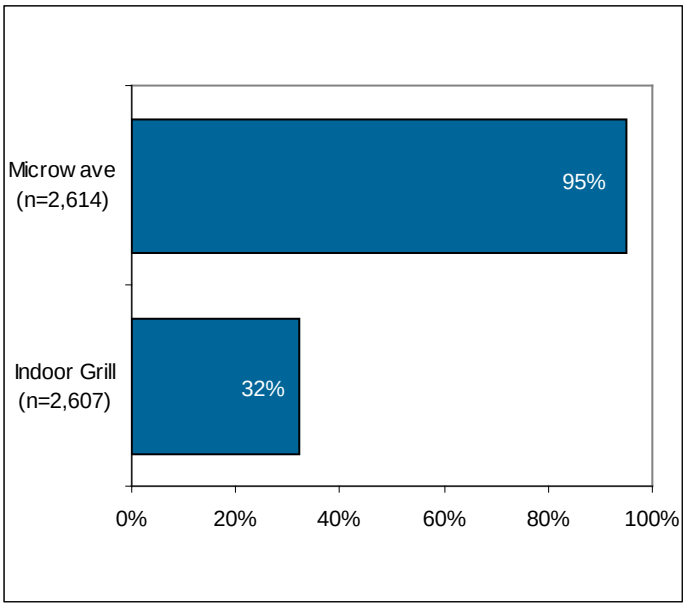
Stovetops/ranges in Massachusetts households are on average 9.7 years old (adj.). Overall, single family homes are more likely to have older food preparation equipment than multi-family homes.

Figure 51. Average Age of Stovetops/Ranges (Adj.)



The penetration of microwave ovens is extremely high at 95% among all Massachusetts customers (adj.). Single family homes have the highest penetration of microwave ovens at 97% (adj.). "George Foreman"-type indoor grills are owned by approximately one-third of Massachusetts residential customers.

Figure 52. Microwave (Adj.) and Indoor Grill Penetration

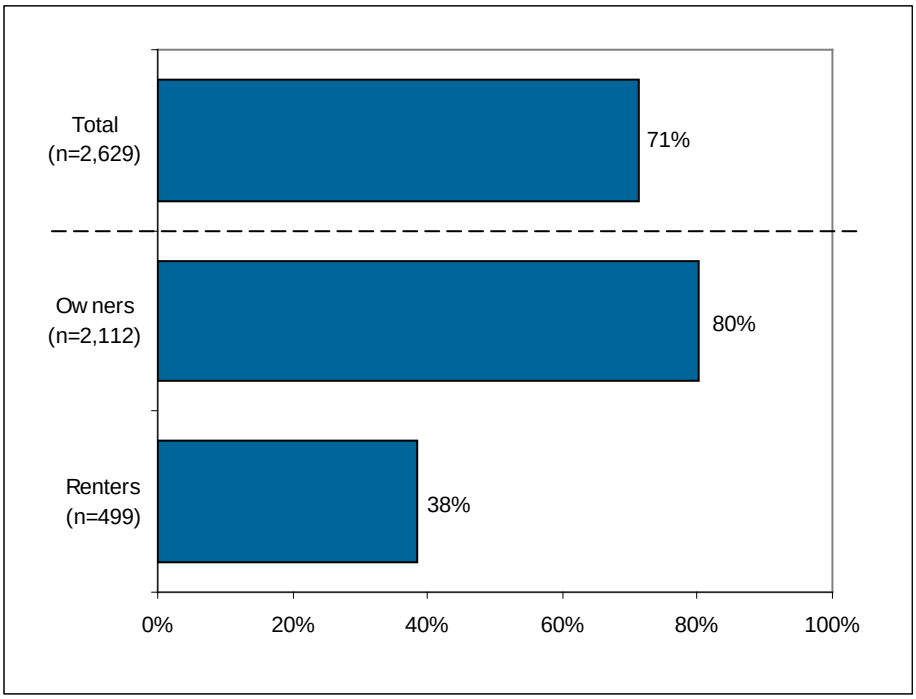


Dishwashers

Seventy-one percent of Massachusetts residential customers have a dishwasher in their home (adj.). Overwhelmingly, customers who own their residence are more likely to have a dishwasher (80%) than renters (38%) (adj.). In addition, customers who live in single family

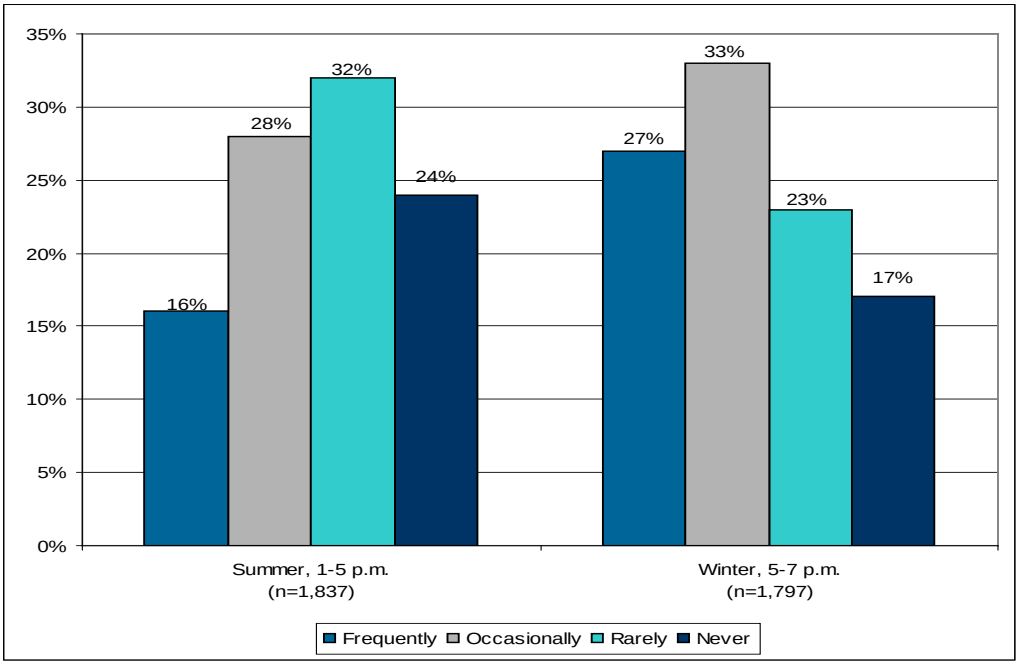
homes or newer residences and non-low income customers are also more likely to own a dishwasher than their counterparts. Customers of Cape Light Compact and the municipal utilities are more likely to own a dishwasher than the customers of other providers. On average customer's dishwashers are 7.3 years old.

Figure 53. Dishwasher Penetration by Owners/Renters (Adj.)



In a typical week, residents run their dishwasher an average of 3.2 times. Customers are more likely to use their dishwasher during winter peak demand times (between 5 p.m. and 7 p.m.) than during summer peak demand times (between 1 p.m. and 5 p.m.). The exception are Cape Light Compact customers who use their dishwashers more frequently during the summer months, reflecting the fact that many Cape homes are seasonal residences and primarily used in the summer.

Figure 54. Weekly Use of Dishwasher



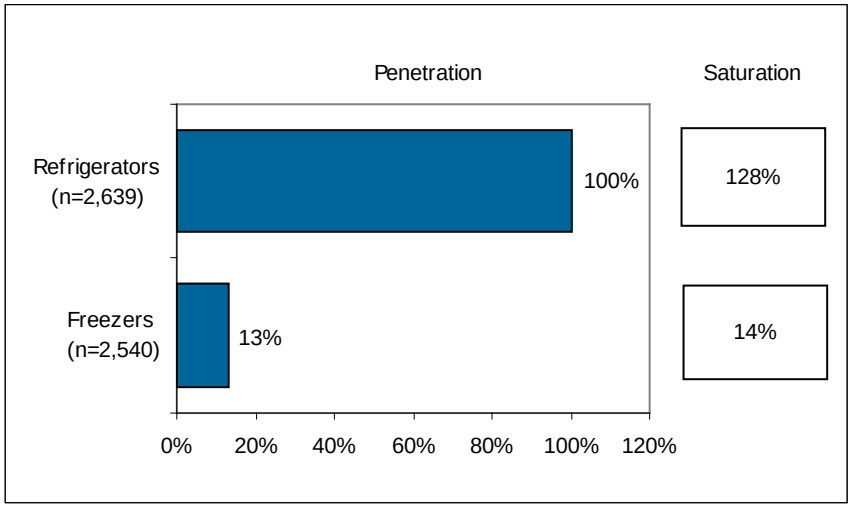
8. REFRIGERATORS AND FREEZERS

Penetration and Saturation

Virtually all Massachusetts households (99.6%) have a refrigerator. Twenty-seven percent of customers have two or more refrigerators, for an average of 1.3 refrigerators per household (adj.). Stand-alone freezers are less common. Thirteen percent of households have a stand-alone freezer, and only 1% own more than one (adj.).

Not surprisingly, customers living in single family homes are more likely to have freezers and multiple fridges than customers in multi-family residences.

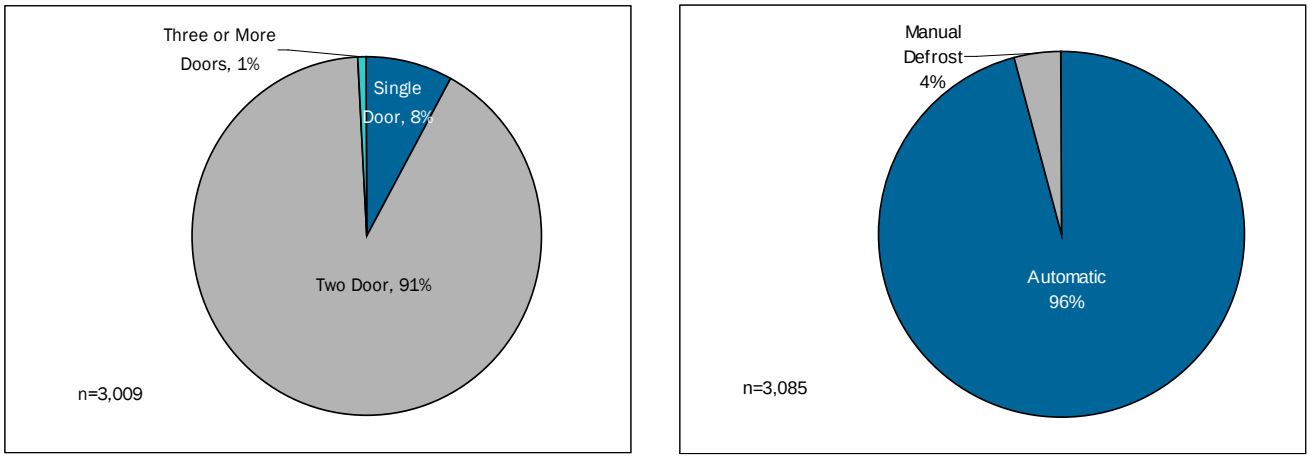
Figure 55: Refrigerator and Freezer Penetration and Saturation (Adj.)



Refrigerators

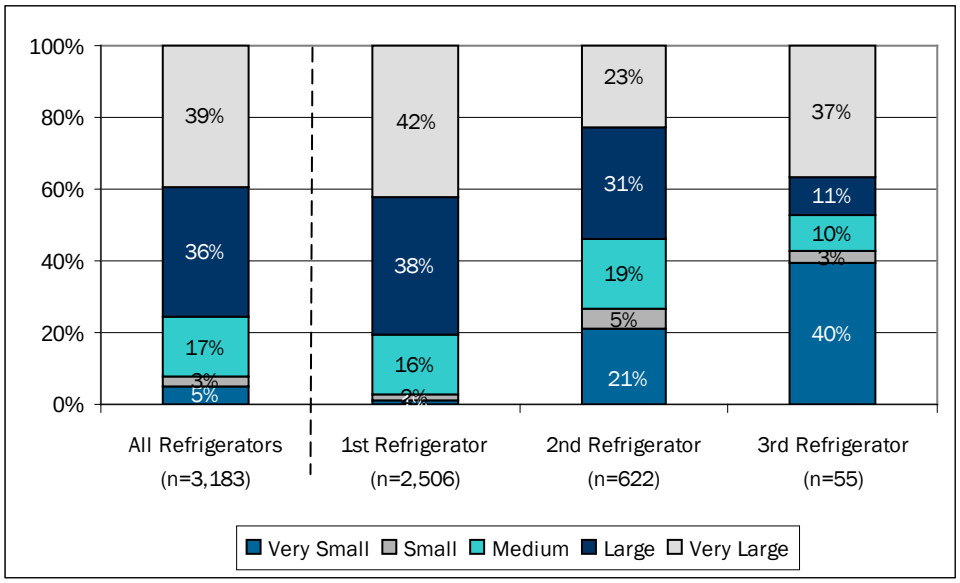
Ninety-one percent of refrigerators have two doors; of these 68% have a freezer on top, 10% have a bottom freezer, and 21% have two doors side-by-side (adj.). Customers living in multi-unit buildings are more likely to own a single-door refrigerator. Almost all refrigerators (96%) are automatic defrost/frost-free models (adj.). Low income customers are more likely to have a manual defrost refrigerator than other Massachusetts customers.

Figure 56: Types of Refrigerators (Adj.)



The majority of refrigerators are either large (19-22 cu. ft.; 36%) or very large (over 22 cu. ft.; 39%) in size (adj.). Primary refrigerators tend to be larger than second and third refrigerators. Not surprisingly, residents of single family homes and non-low income customers are more likely to have large and very large refrigerators. In addition, newer refrigerators tend to be larger than older refrigerators, indicating changes in the refrigerator market and customer preference over time.

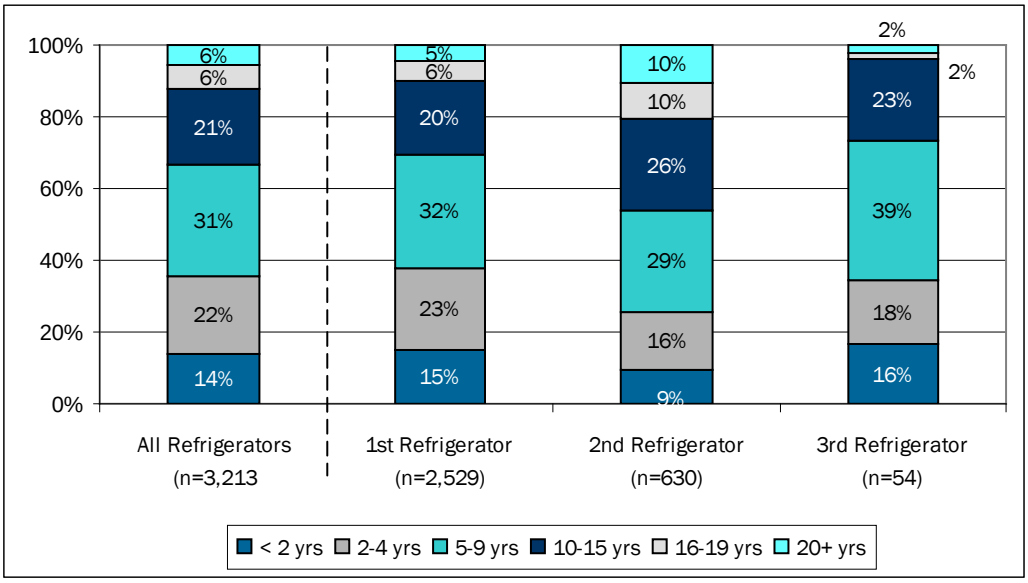
Figure 57: Refrigerator Size (Adj.)



Primary and additional refrigerators also differ in terms of age. Seventy percent of primary refrigerators are less than 10 years old, compared to 54% of second refrigerators. Interestingly, the smaller third refrigerators tend to be newer than the second refrigerators. It is possible that these are purchased to fulfill specific needs in the household, whereas

second refrigerators are more likely to be former primary refrigerators that have been relegated to secondary status when a newer model was purchased.

Figure 58: Age of All Refrigerators

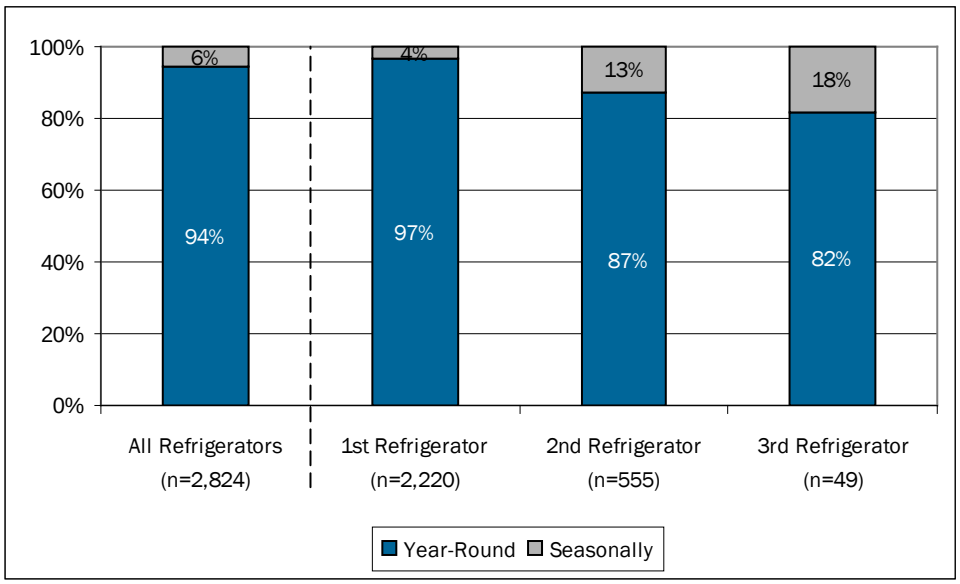


The high level of use among all refrigerators in customer homes is noteworthy. Over ninety percent (94%) of refrigerators owned by residential customers are used year-round.[6] Even second refrigerators (87%) and third refrigerators (82%) tend to be used year-round.

As expected, Cape Light Compact customers are more likely than other Massachusetts customers to use their refrigerator(s) seasonally.

[6] Note a relatively high non-response rate of 17%.

Figure 59: Frequency of Refrigerator Use

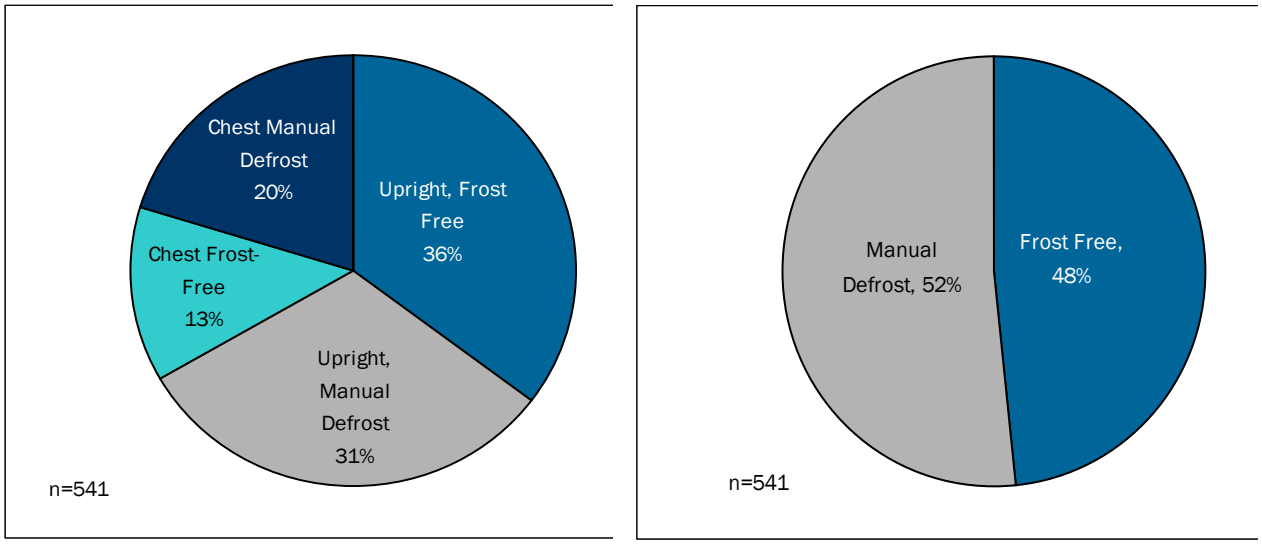


A small percentage of refrigerators dispense ice and water through the door (19%) or have an ice maker in the freezer (14%) (adj.). Not surprisingly, these features are more common in first refrigerators.

Freezers

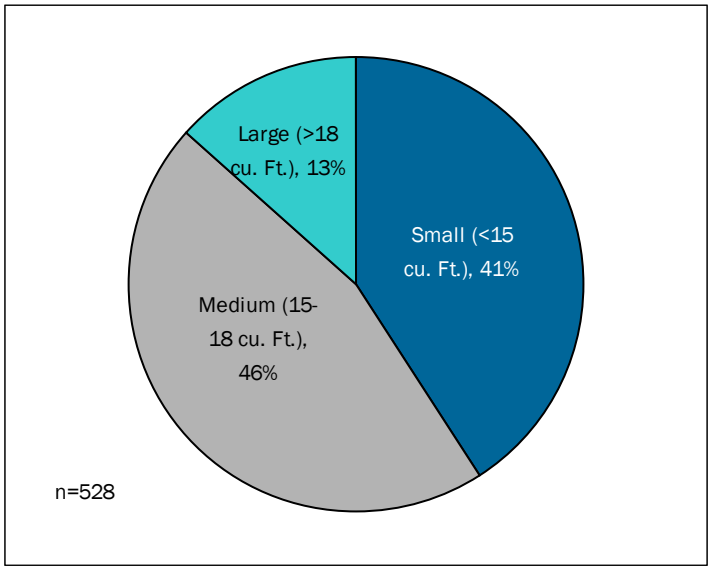
Two-thirds of stand-alone freezers are upright models (67%), and about half are frost-free (48%). Frost-free models tend to be newer than manual defrost models.

Figure 60: Freezer Style



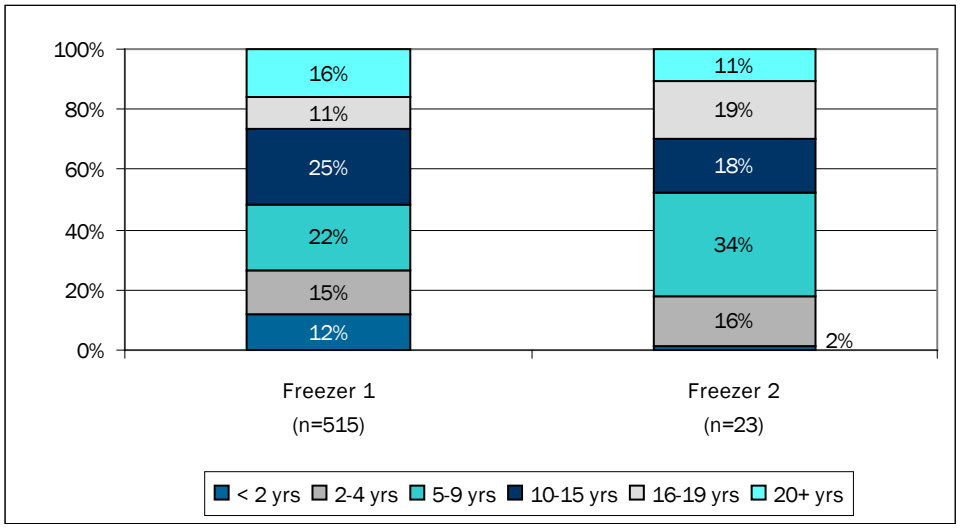
Most of the stand-alone freezers are small (less than 15 cu. Ft.; 41%) or medium-sized (15 to 18 cu. Ft.; 46%).

Figure 61: Freezer Size



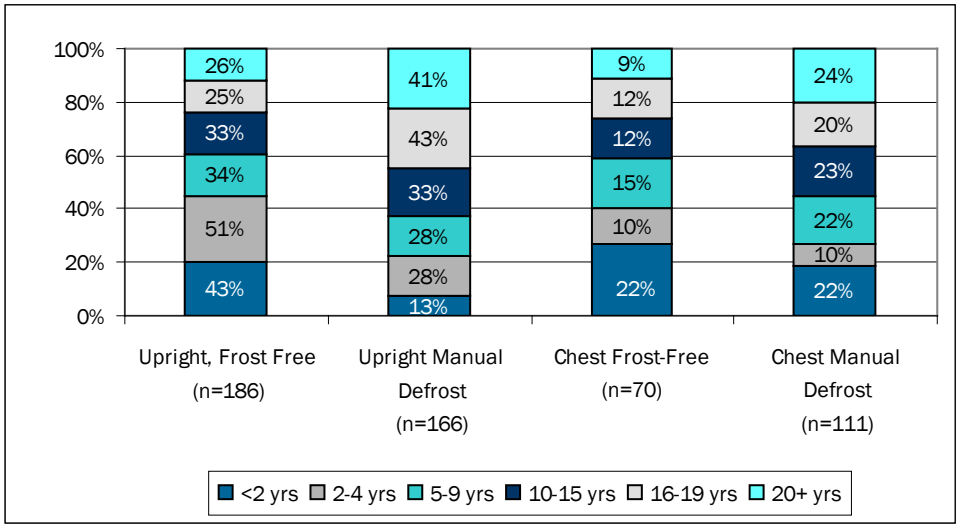
Overall, 52% percent of all stand-alone freezers are ten years of age or older. As expected, a greater percentage of primary than secondary stand-alone freezers are under four years old (27% compared to 18% of secondary freezers). It is interesting to note, however, that secondary freezers are not significantly older than primary ones. For example, 50% of secondary freezers are between two and nine years old. In addition, respondents report roughly the same percentage of primary and secondary freezers over 16 years old.

Figure 62: Age of Freezers



The highest percentage of older units are upright manual defrost models, while the largest percentage of recently purchased freezers are upright, frost free. Newer freezers tend to be smaller than older ones.

Figure 63: Age of Freezers by Freezer Type



Almost all stand-alone freezers (95%) are in use year-round.[7]

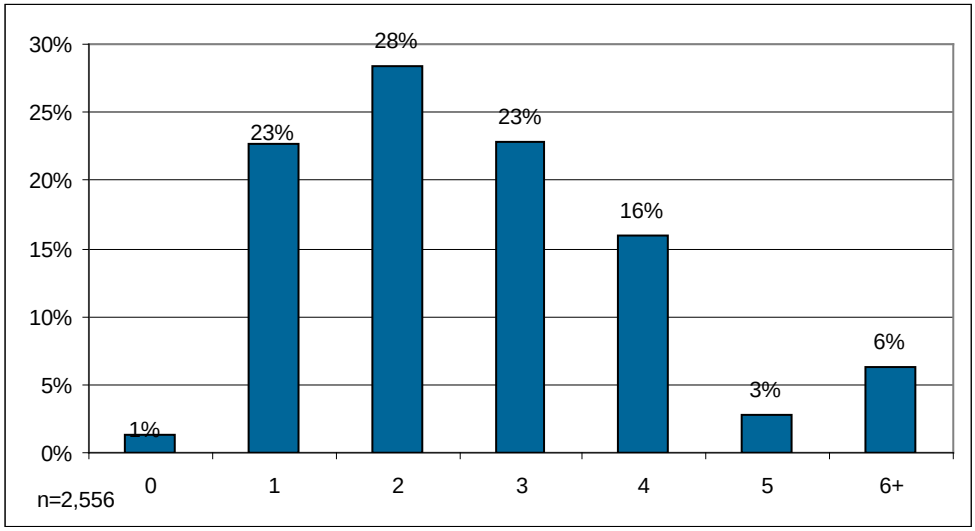
[7] Note a relatively high non-response rate of 20%.

9. ENTERTAINMENT EQUIPMENT

Televisions

Only 1% of Massachusetts residential customers do not have a television in their home (adj.). A large majority of customers (74%) have between one and three televisions in use (adj.). The average number of TVs in Massachusetts homes is 2.7 (adj.).

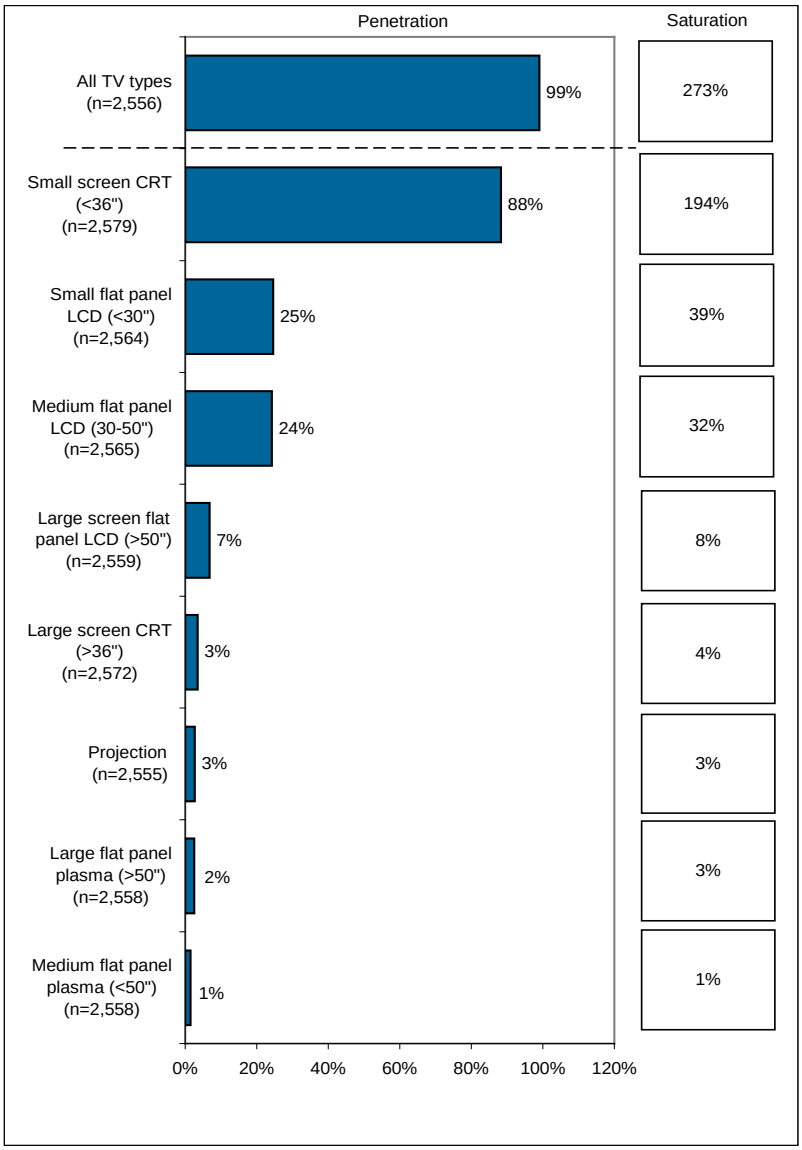
Figure 64. Number of TVs per Home (Adj.)



The most common type of TV is the standard tube (CRT) TV, used by 88% of customers (adj.). Almost one half of customers (45%) have TVs with LCD screens, and only a small portion have projection (3%) or plasma screen TVs (4%) (adj.). The order of popularity of the display types is expected and corresponds to their relative price. Customers in single-family homes and non-low income customers are more likely to own the larger and more expensive projection, LCD, and plasma TVs. For all television display types, a greater share of customers has small or medium screens compared to large screens.[8]

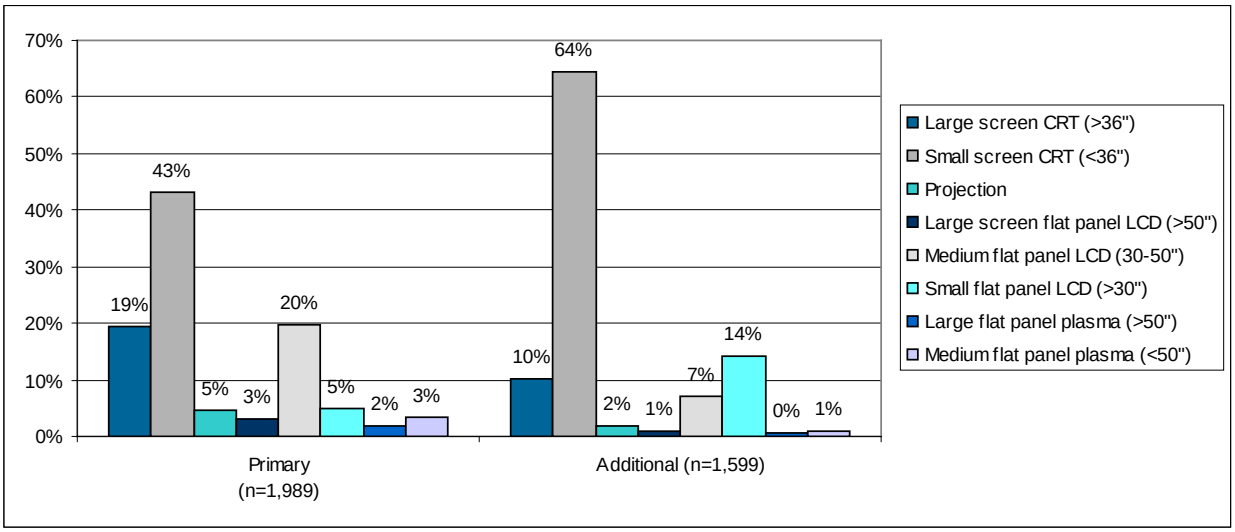
[8] Screen sizes are defined as follows: CRT – small: 36 inches or less, large: greater than 36 inches; LCD – small: less than 30 inches, medium: 30 to 50 inches, large: greater than 50 inches; Plasma: small: 50 inches or less, large: greater than 50 inches.

Figure 65. Penetration and Saturation of TVs by Display Type and Screen Size (Adj.)



The largest share of customers (43%) uses a small screen CRT television as their primary TV, followed by medium LCD TVs (20%), and large screen CRT TVs (19%). Small screen CRT TVs are also most commonly used for customers' additional TVs, followed by small screen LCD TVs. There is very little difference between customer's first additional and second additional televisions.

Figure 66. Primary and Additional TVs by Type

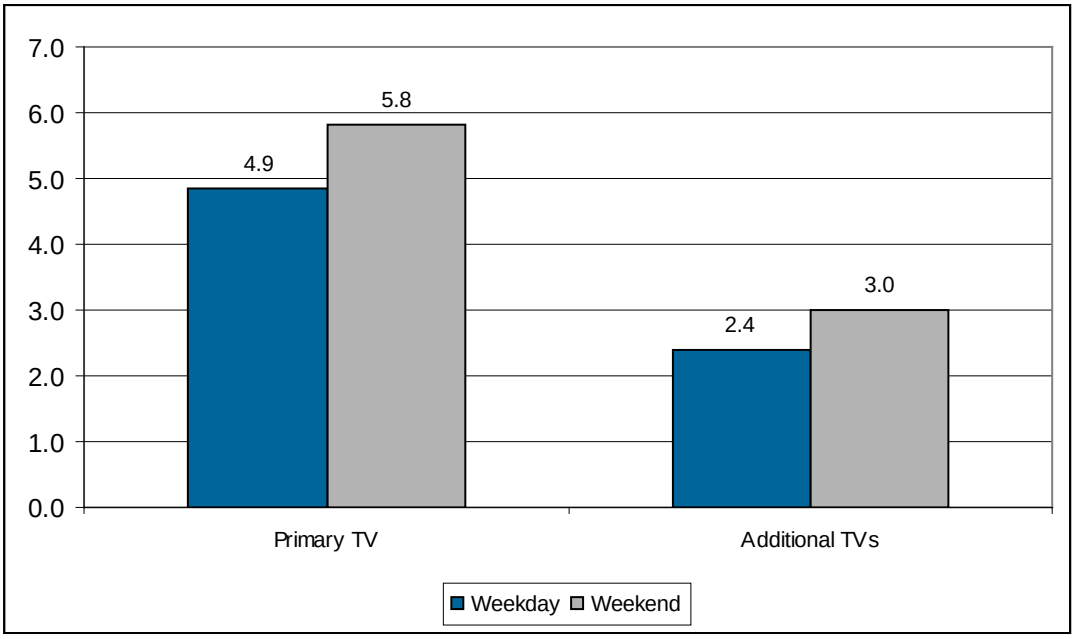


Television Use

On average, the primary televisions of Massachusetts residential customers are turned on 4.9 hours on weekdays and 5.8 hours on weekend days. Additional TVs are used less frequently than primary TVs, but are still turned on 2.4 hours on weekdays and 3.0 hours on weekend days. Low income customers tend to have their TVs turned on more frequently than other customers.

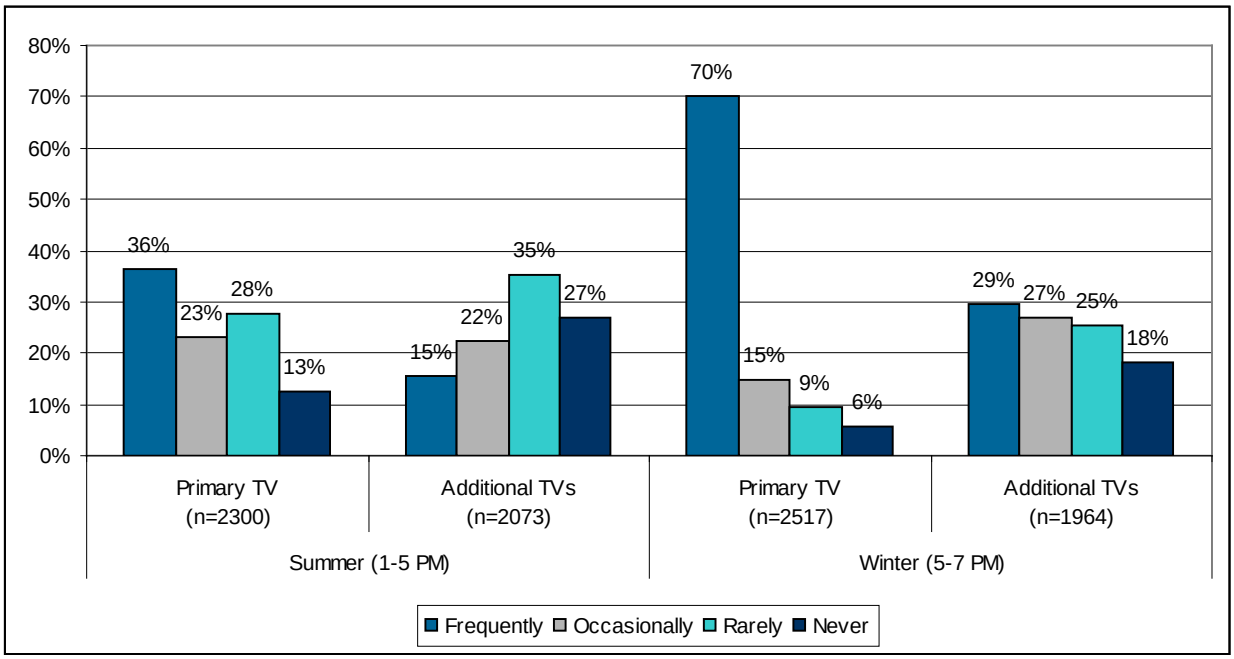
Nearly one-third of customers use their primary TV for six hours or more on weekdays; on weekends, almost half of customers use their primary TV for six hours or more.

Figure 67. Mean Hours of Television Viewing



Fifty-nine percent of customers use their primary TV frequently or occasionally during summer peak electricity demand times (between 1 and 5 p.m.). Eighty-five percent report that their primary TV is in use frequently or occasionally during winter peak electricity demand times (between 5 and 7 p.m.). Overall, customers use their televisions more during the winter peak period than the summer peak period.

Figure 68. Seasonal Use of TVs on Weekdays

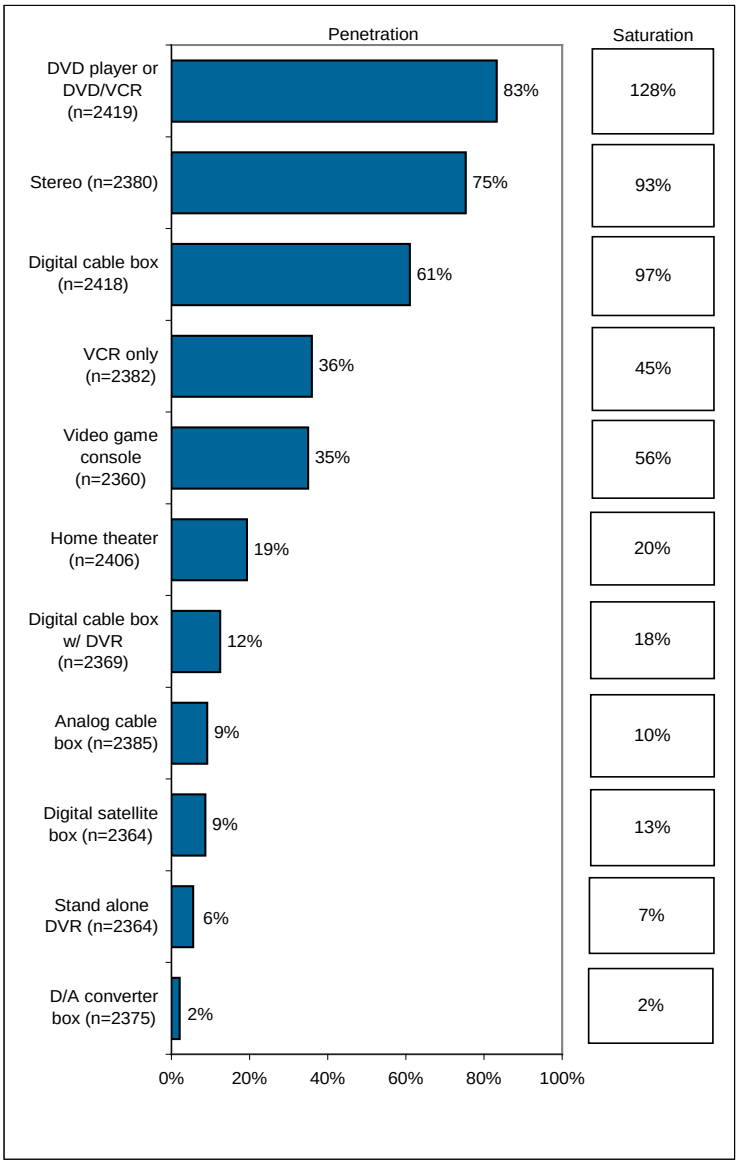


Home Audio and TV Accessories

More than three-quarters of residential customers (83%) use a DVD player in their home (adj.). Additionally, 75% of customers have a stereo and 61% have a digital cable box (adj.). Customers in single-family home are more likely to use home audio and TV accessories than those living in buildings with five or more units.

Customers are most likely to have multiple digital satellite boxes, digital cable boxes and digital/audio converter boxes in their homes. This is likely because these accessories are needed for each TV in the house.

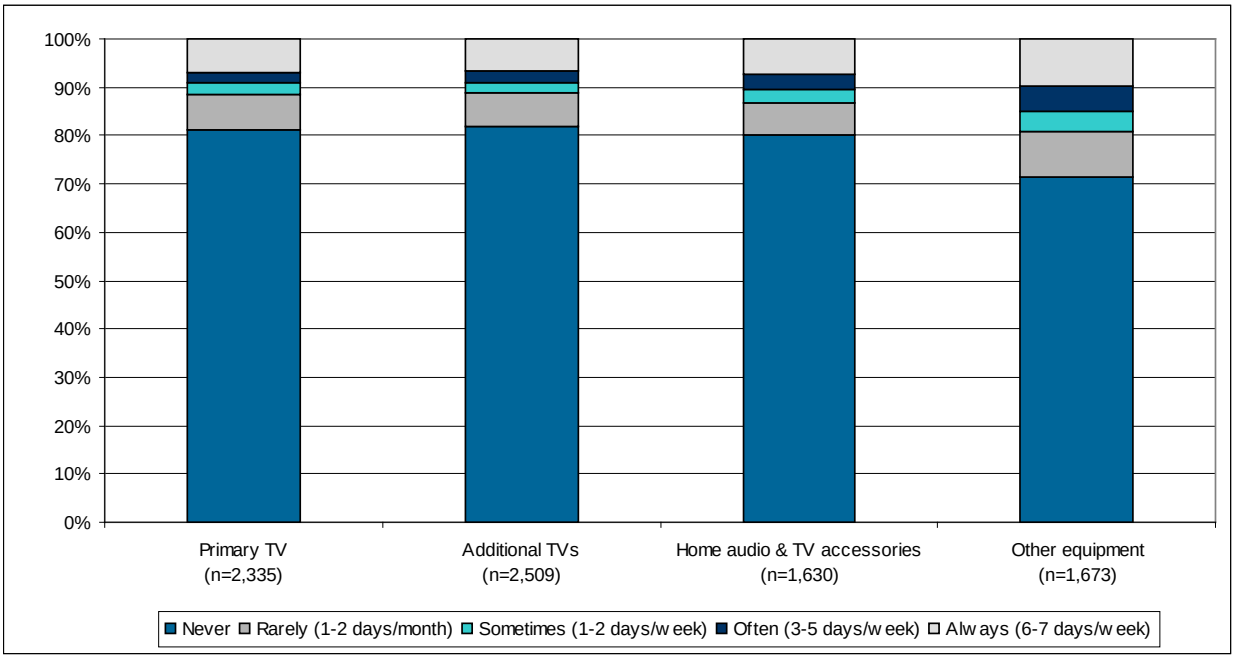
Figure 69. Penetration and Saturation of Home Audio and TV Accessories (Adj.)



Approximately 80% of customers never unplug or use a power strip to turn off their home entertainment electronics when not in use. These shares are consistent for the primary TV, additional TVs, and home audio and TV accessories. Customers are more likely to unplug "other" electronic equipment which includes home office equipment.

Customers in single-family homes are more likely to never unplug their electronic devices than customers in multifamily units.

Figure 70. Frequency of Unplugging Electronics or Turning Off at Power Strip



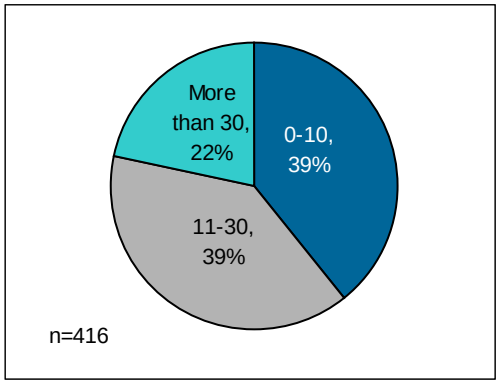
10. HOME OFFICE

Working from Home

Seventeen percent of Massachusetts residential customers report that they (or someone in their home) operate a business and/or work from their home. Customers living in single-family homes (19%) and non-low income customers are more likely to work out of their home than other customers.

Of the customers working from home, only 22% work more than 30 hours per week, while the remaining share is divided equally between those working 0-10 hours per week and those working 11-30 hours.

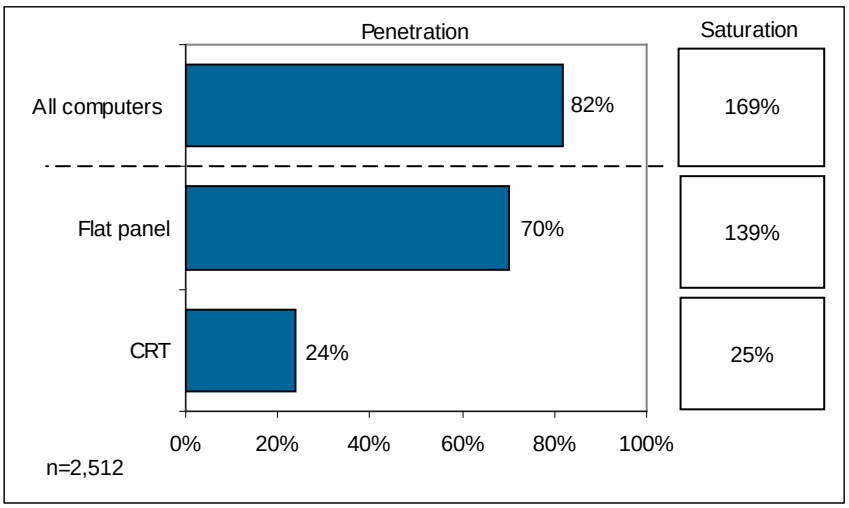
Figure 71. Numbers of Hours per Week Spent Working from Home



Computers

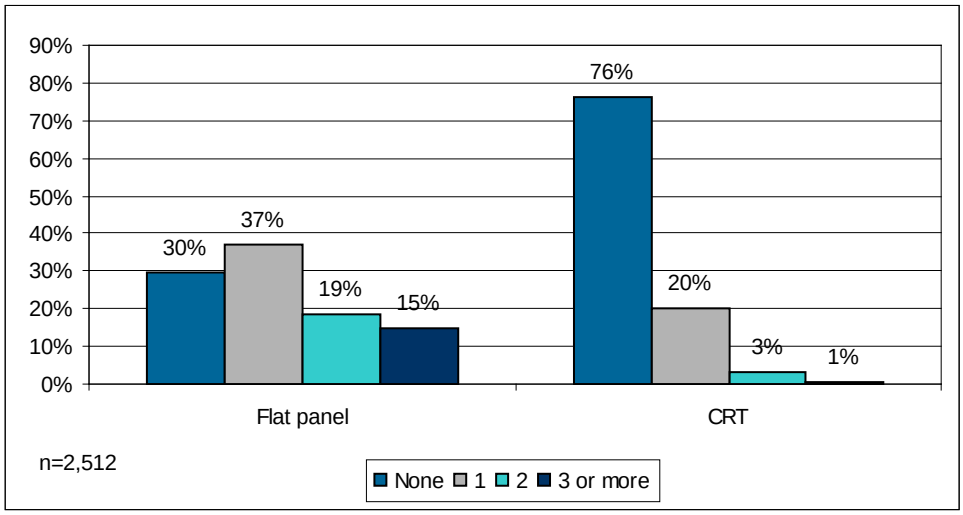
Eighty-two percent of Massachusetts residential customers have a computer in their home (adj.). Customers in single-family homes are more likely to have a computer (84%) than those living in multi-family buildings (80% for 2-4 unit buildings and 64% for 5+ unit buildings) (adj.). In addition, non-low income customers are more likely to have a computer. Flat panel monitors (70% of households) are much more prevalent than CRT monitors (24% of households) (adj.).

Figure 72. Penetration and Saturation of Computers (Adj.)



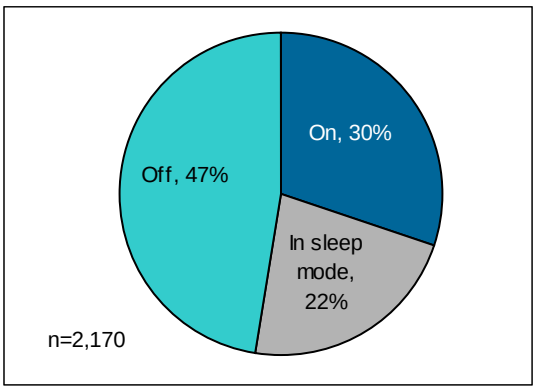
Nearly half of households (39%) only have one computer, while 42% have more than one (adj.). NSTAR customers and customers served by a municipal utility tend to have more computers than other Massachusetts customers.

Figure 73. Number of Computers in Home by Monitor Type (Adj.)



Fifty-seven percent of customers use the sleep mode on their computers while 43% do not. On average, customers keep their computers on 29% of the time and in sleep mode 21% of the time. Their computers are off the remaining 43% of time. The share of time a computer is on, in sleep mode, and off does not change substantially between multiple computers.

Figure 74. Mean Share of Time Computer is On, in Sleep Mode, and Off

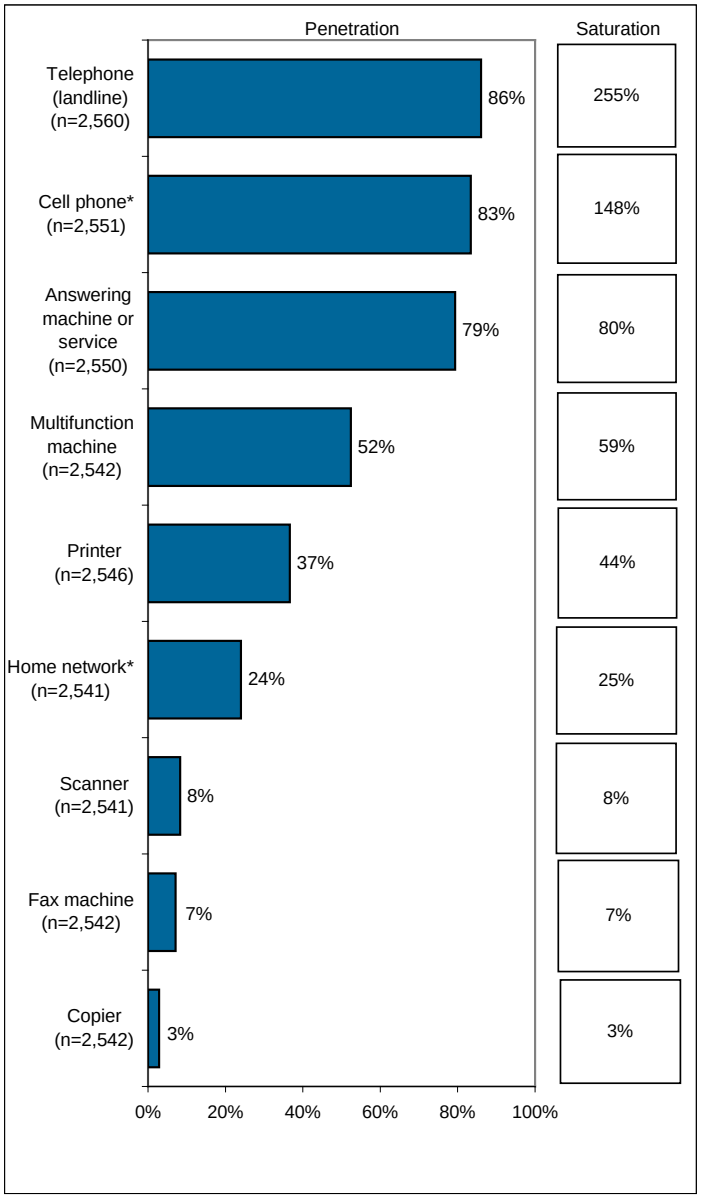


Other Home Office Equipment

The majority of customers have basic home office equipment, including a landline telephone (86%), a cell phone (83%), an answering machine (79%), and a multifunction machine (52%) (adj.). Other equipment, such as scanners, copiers, and fax machines, is less common and is used by less than one-quarter of customers.

NSTAR customers and customers in multi-family homes are less likely to have a landline than other Massachusetts customers. In addition, low income customers are less likely to have all types of home office equipment.

Figure 75. Penetration and Saturation of Home Office Equipment (Adj.)



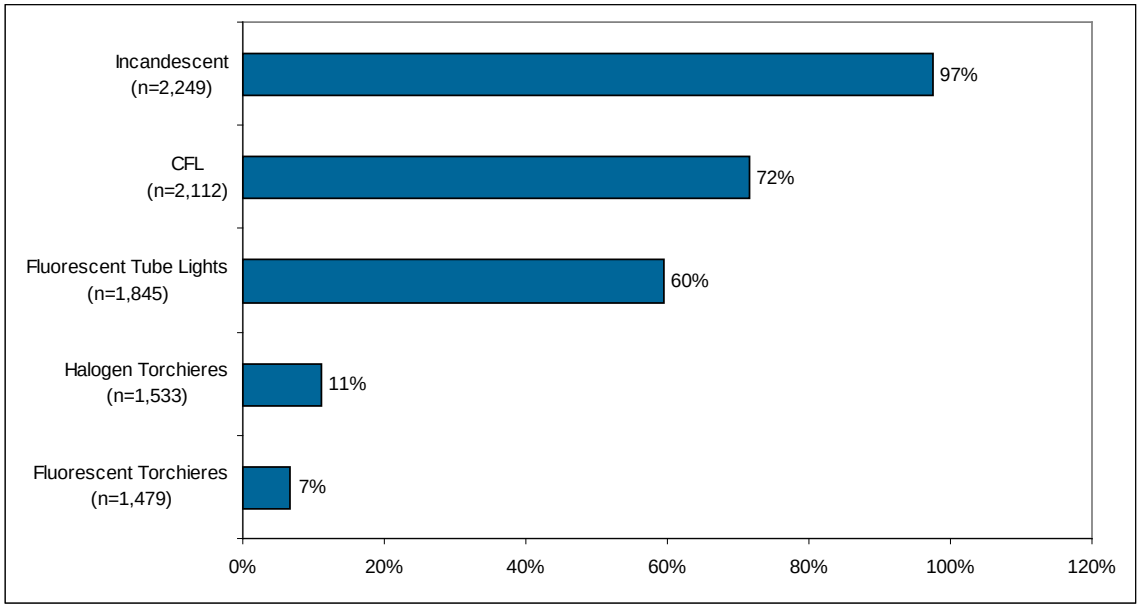
*Cell phone and Home network were not adjusted by the in-home verification.

11. LIGHTING

Lighting Penetration

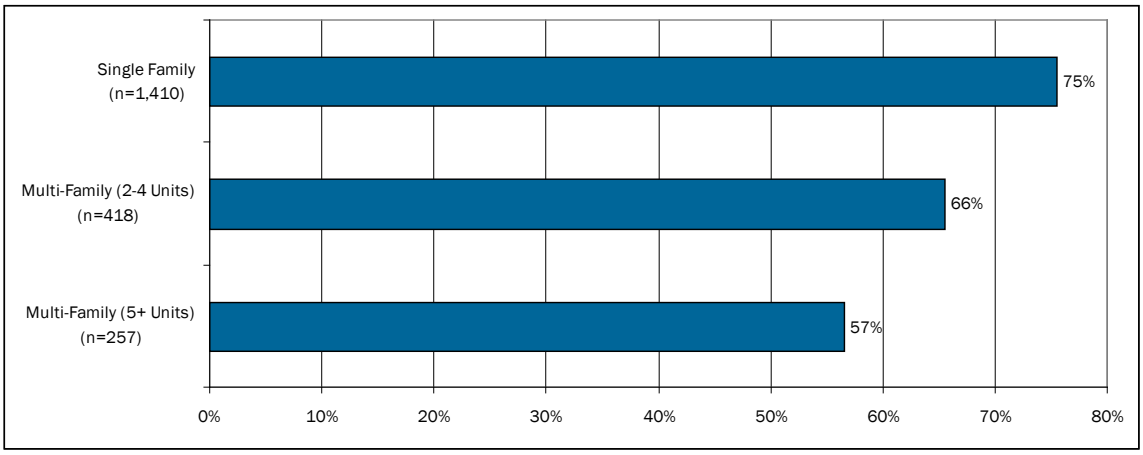
Ninety-seven percent of Massachusetts residents have standard incandescent light bulbs in their home (adj.). Additionally, 72% have compact fluorescent light bulbs (CFLs) and 60% have fluorescent tube lights (adj.). Much fewer households report having halogen torchieres (11%) and fluorescent torchieres (7%) (adj.).

Figure 76. Lighting Penetration (Adj.)



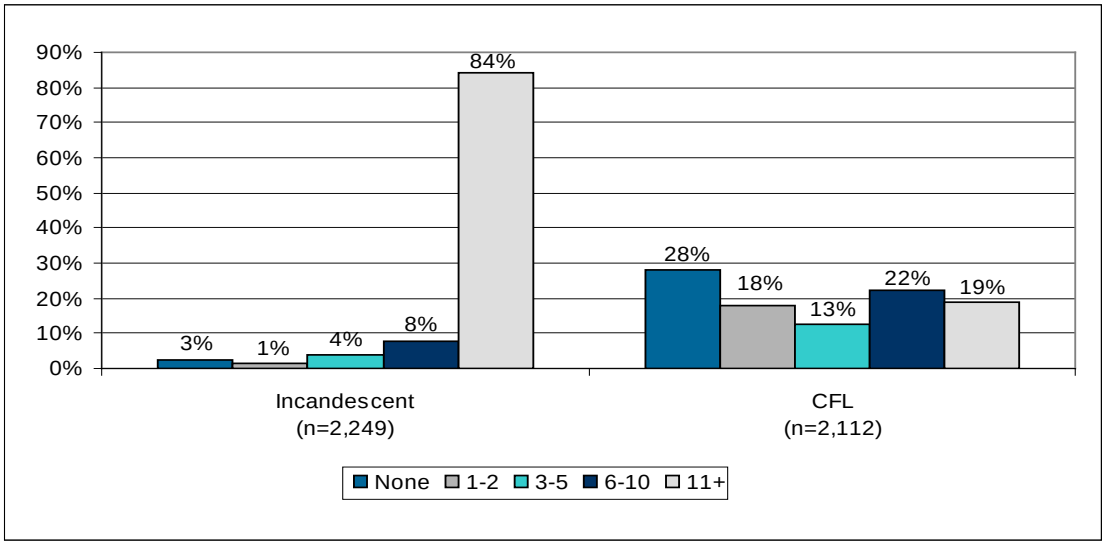
Customers living in single family homes are more likely to have CFLs in their home (75%) than customers living in multi-family residences (57% to 66%) (adj.). There are no differences in CFL penetration by income or education level.

Figure 77. CFL Penetration by Type of Residence (Adj.)



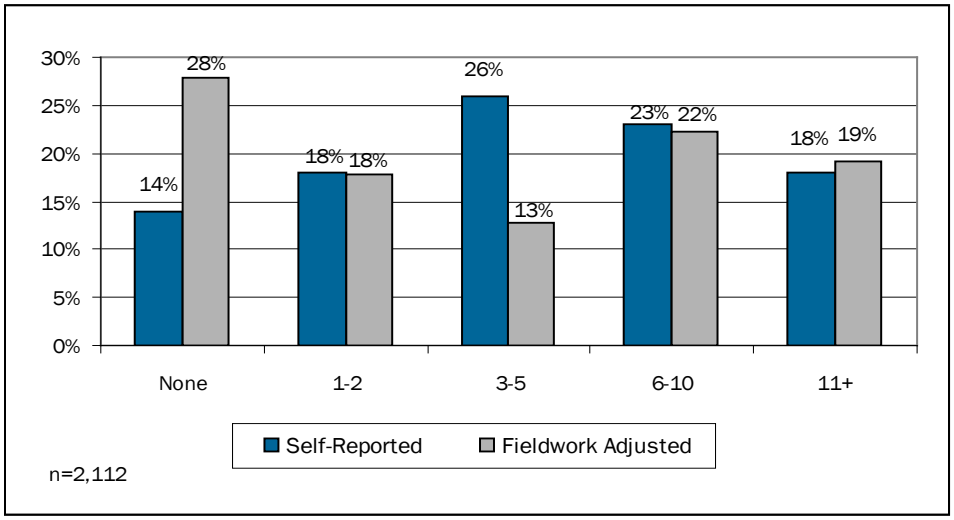
Residents have a large number of incandescent light bulbs in their homes. Eighty-four percent of customers have more than 10 incandescent light bulbs (adj.). Compact fluorescent light bulbs are also prevalent with 41% of respondents owning six or more CFL light bulbs (adj.). Single family homes and multi-families with two to four units are more likely to have eleven or more CFLs than multi-families with five or more units.

Figure 78. Number of Light Bulbs by Type of Lighting (Adj.)



The in-home verifications showed that customers with a large number of CFLs (six or more) are very accurate in reporting how many CFLs are installed in their home. However, a large number of customers seem to be unable to correctly identify CFLs: 14% of customers report having one or more CFLs while the in-home visit showed that they have none.

Figure 79. Comparison of Number of CFLs: Self-Reported v. Fieldwork Adjusted

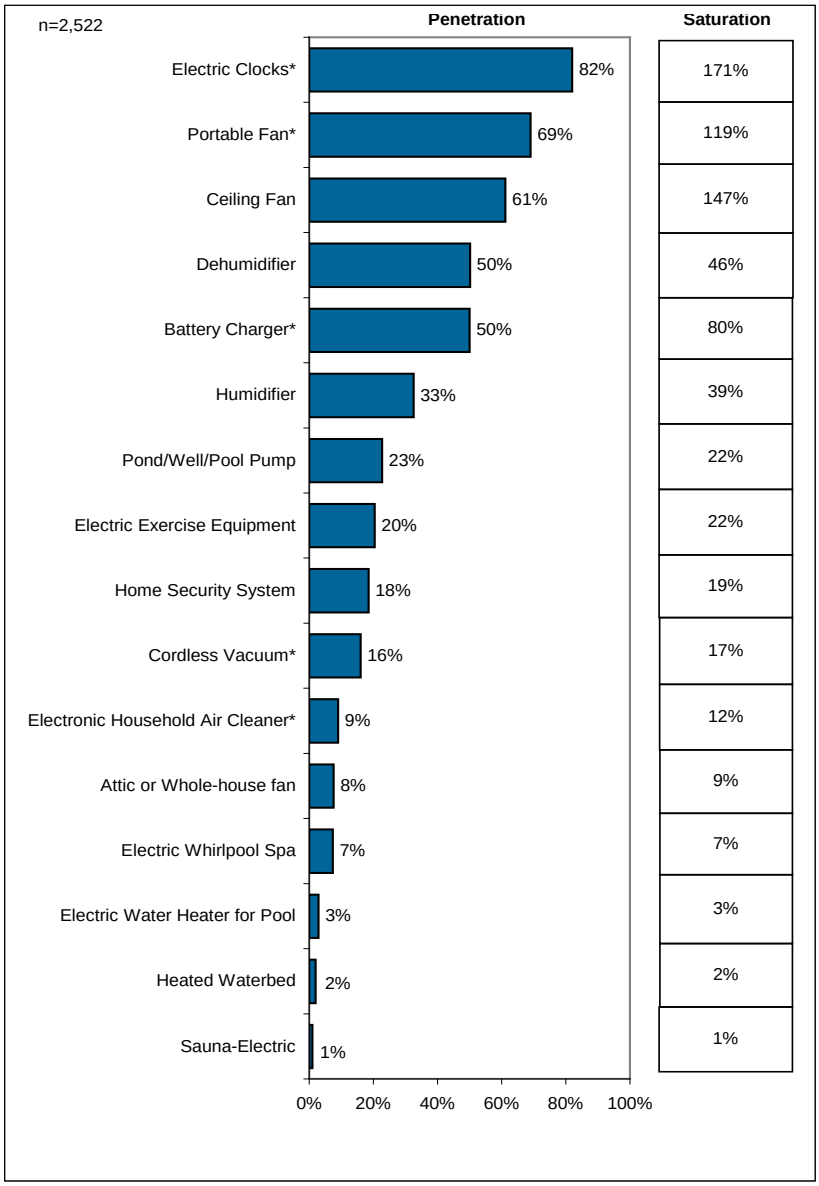


12. MISCELLANEOUS APPLIANCES

Penetration and Saturation

Massachusetts residential customers use a variety of electric appliances in their homes. Most households (82%) use at least one electric clock and/or clock radio in their home (adj.). Over 50% of residents also have one or more portable fans, ceiling fans, dehumidifiers, or battery chargers (adj.). Consistent with local climates, Cape Light Compact customers are more likely to have a dehumidifier (75%) but are less likely to have an attic or whole-house fan (5%) than other Massachusetts customers (adj.). Not surprisingly, customers living in single-family homes are more likely than customers living in other types of homes to use many of the miscellaneous appliances about which the survey asked, including: attic or whole-house fans, humidifiers, dehumidifiers, heated waterbeds, electric whirlpool spas, portable battery charges, home security systems, electric exercise equipment, electric clocks, and pool-related electric appliances. Conversely, low income customers are less likely to own most of these appliances.

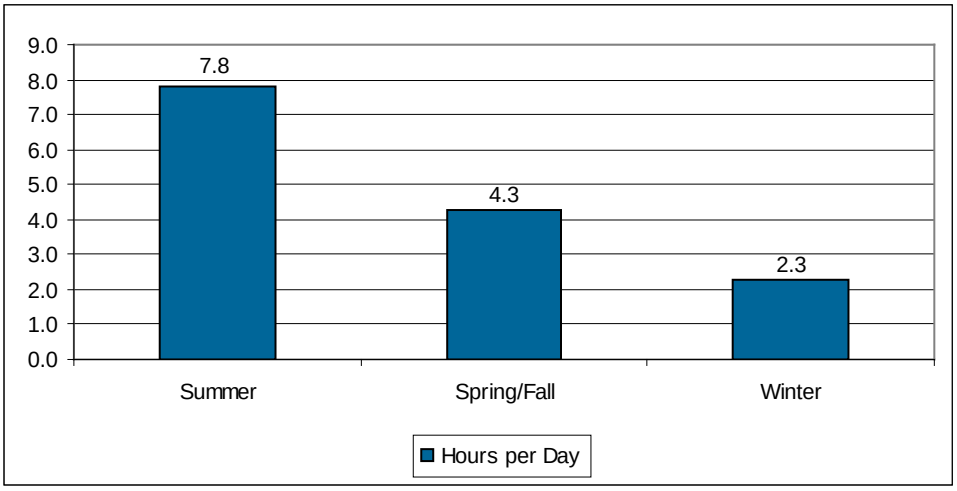
Figure 80. Penetration and Saturation of Miscellaneous Appliances (Adj.)



*In home verifications not available for these products.

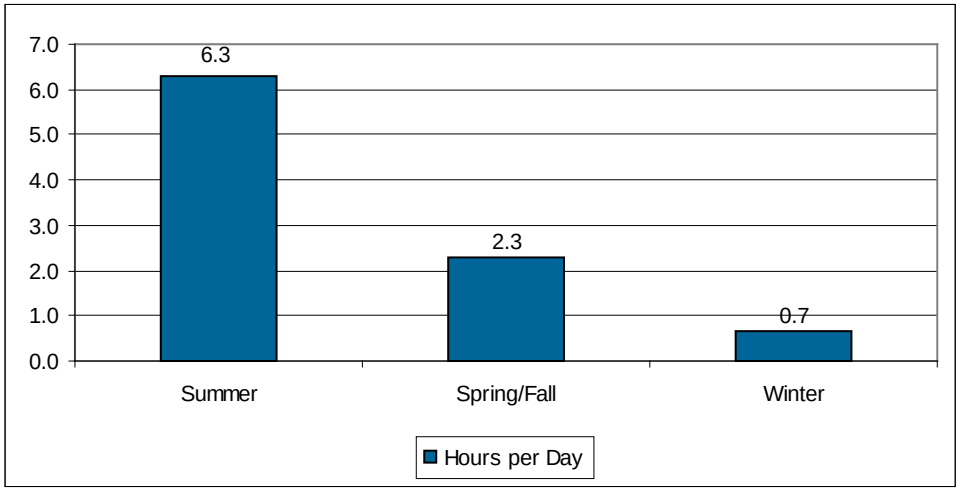
Less than half of Massachusetts households (46%) use one or more dehumidifiers in their home. Of those who do use dehumidifiers, they are used most often during the summer months. On average residents use their dehumidifiers 7.8 hours per day during summer and 2.3 hours per day during winter. Cape Light Compact customers report more frequent use of dehumidifiers in the summer (9.2 hours on average) than other Massachusetts customers.

Figure 81. Average Dehumidifier Usage



As expected the use of pool pumps is also heavily swayed towards the summer months. Those who use pool pumps use them an average of 6.3 hours per day in the summer, but only 0.7 hours per day in the winter.

Figure 82. Average Pool Pump Usage

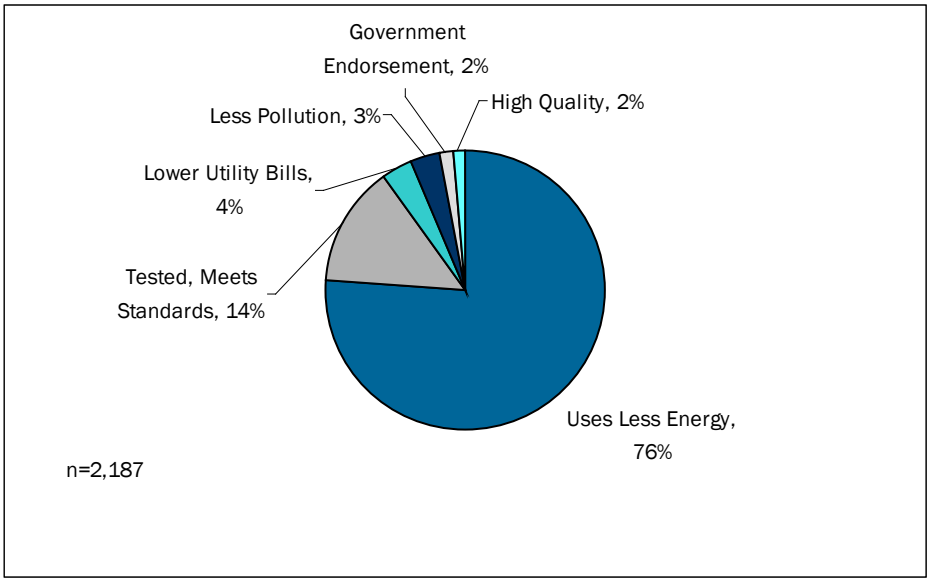


13. ENERGY EFFICIENCY

ENERGY STAR® Label

Eighty percent of Massachusetts' residential customers are either very or somewhat familiar with the ENERGY STAR® label; only 7% indicate they have never seen it. Non-low income customers (85%) are more likely to be familiar with the label than low income customers (67%). Of those who have seen the label before, 76% believe that "uses less energy" is the best description of the label's meaning; 14% think the label signifies that a product has been tested and meets standards. These findings indicate strong awareness of the ENERGY STAR® label and high levels of knowledge regarding its meaning. Interestingly, customers who consider themselves not very familiar with the label are as knowledgeable about the label's meaning as customers who consider themselves somewhat or very familiar.

Figure 83. Meaning of the ENERGY STAR® Label*



*Of customers who have seen the ENERGY STAR® label before.

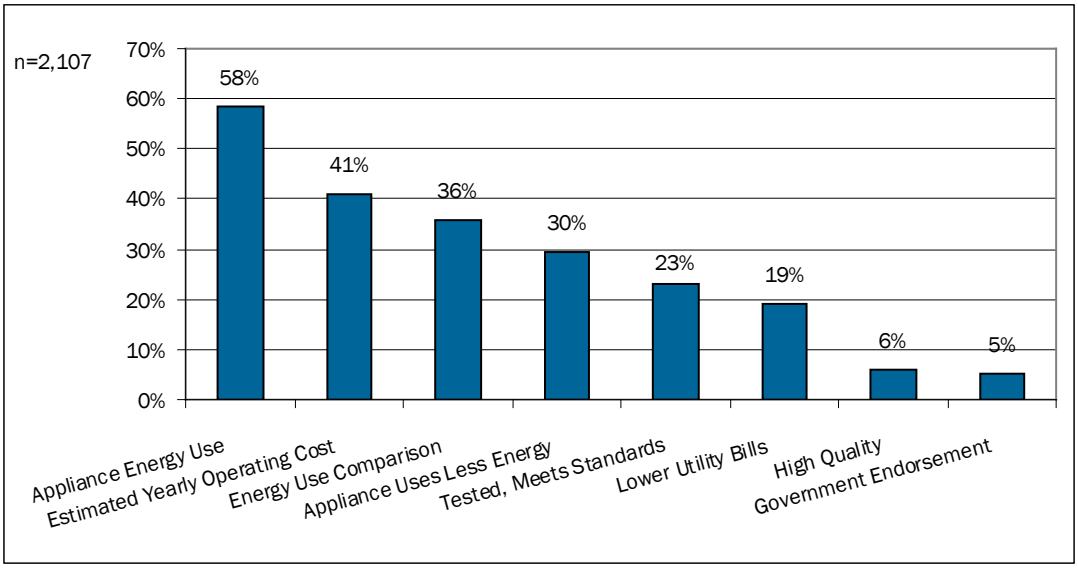
Two-thirds of customers who have seen the ENERGY STAR® label before report that the label has influenced them in their decision to purchase a particular product. Not surprisingly, customers very or somewhat familiar with the label are more likely to have been influenced in their purchase decision (75%) than customers less familiar (22%).

EnergyGuide Label

Seventy-six percent of residential customers are either very or somewhat familiar with the EnergyGuide label. Only a small percentage of customers indicate they have never seen it (7%), and residents of multi-unit buildings and low income customers are more likely to be among this group. In contrast to the ENERGY STAR® label, there is a wide range of interpretation regarding the information that the EnergyGuide label provides. Over half of

customers who have seen the label before know that it shows the appliance's energy use; fewer customers are aware of the other meanings of the label: 41% correctly identify "estimated yearly operating costs" while 36% know that the label shows a comparison of energy use.

Figure 84. Meaning of the EnergyGuide Label
(Multiple Response)*

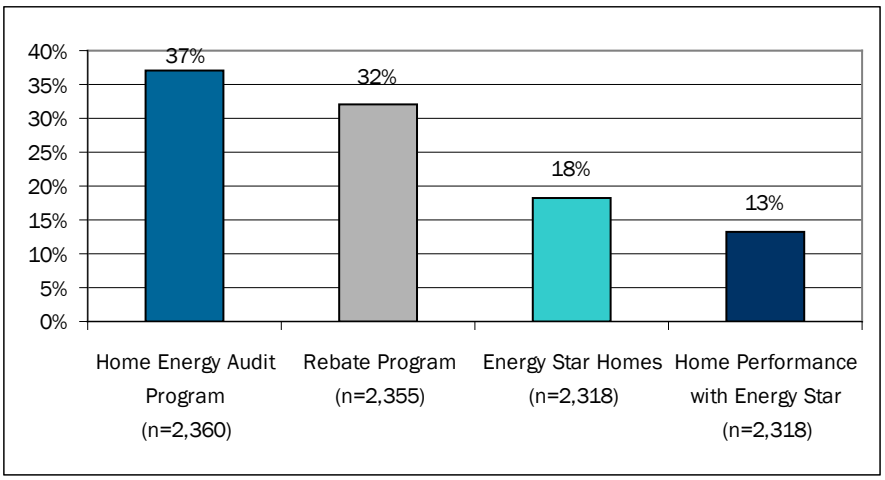


*Of customers who have seen the EnergyGuide label before.

Knowledge of Energy Efficiency Programs

Knowledge of utility-sponsored energy efficiency programs is low with a majority of customers claiming they are not very or not at all familiar with the programs included in the survey. Customers are most familiar with the Home Energy Audit Program (37%) and rebate programs (32%). In contrast, less than 20% of customers consider themselves familiar with the ENERGY STAR® Homes and Home Performance with ENERGY STAR® programs. In all cases, however, awareness of the programs is greater among customers familiar with the ENERGY STAR® label than those unfamiliar. Low income customers are less familiar with all programs than non-low income customers.

Figure 85. Familiarity with Other Energy Efficiency Programs*

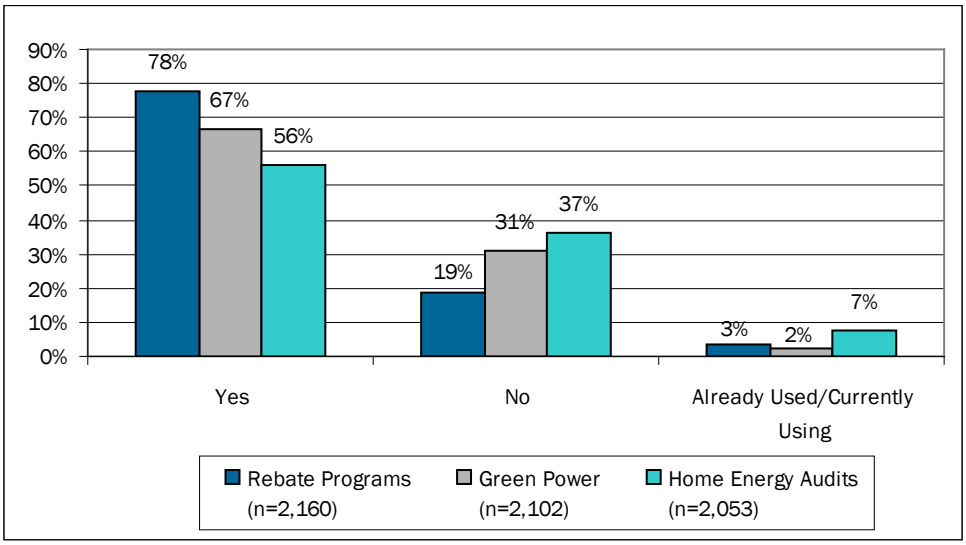


*Includes "very familiar" and "somewhat familiar" responses.

Interest in Energy Efficiency Products and Services

While awareness of utility-sponsored energy efficiency programs is relatively low, interest levels among Massachusetts customers are high: 78% of customers are interested in rebates for the purchase of energy efficient products or energy efficient home improvements; 67% are interested in green power; and 56% are interested in home energy audits. Non-low income customers are more interested in all types of programs than low income customers. Only a small percentage of customers (2% to 7%) have already utilized these services, indicating significant growth potential for these types of programs.

Figure 86. Customer Interest in Energy Efficiency Products and Services



Product Choices for Rebate Programs

The Home Energy Survey asked customers to rank the top four products that should receive rebates through an energy efficiency program. Heating systems and windows are the most popular choices, with 65% and 60% of customers selecting these measures as one of their four top choices. These two measures are also the most popular first choices of customers, with 27% and 16%, respectively. Other measures ranked in the top four by more than one-third of customers include refrigerators/freezers (53%), insulation (43%), light bulbs and fixtures (36%), and clothes washers (35%).

Compared to non-low income customers, low income customers are more likely to say that refrigerators and freezers (59%), light bulbs and fixtures (53%), and room air conditioners (30%) should receive rebates.

Table 5. Interest in Product Rebates

Energy Efficient Products	1st (n=1,892)	2nd (n=1,839)	3rd (n=1,813)	4th (n=1,785)	Any Rank (n=1,892)
Heating Systems	27%	17%	14%	9%	65%
Windows	16%	18%	16%	11%	60%
Refrigerators/Freezers	13%	12%	17%	14%	53%
Insulation	10%	12%	13%	9%	43%
Light Bulbs and Fixtures	14%	5%	7%	15%	39%
Clothes Washers	5%	10%	9%	12%	35%
Central Cooling Systems	3%	10%	7%	7%	26%
Solar Domestic Water Heater	7%	4%	4%	6%	21%
Room Air Conditioners	2%	4%	5%	6%	16%
Dishwashers	<1%	4%	6%	7%	16%
Geothermal Heat Pump	3%	3%	1%	3%	10%
Pool Pumps	<1%	<1%	<1%	<1%	1%
Other	<1%	<1%	<1%	1%	2%

14. PROFILE OF RESPONDENTS

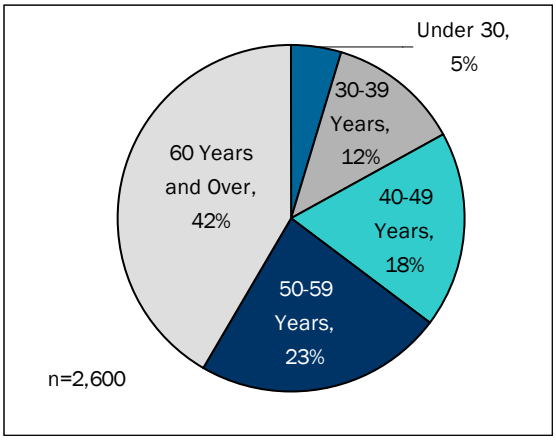
This section presents information about the residential customers that participated in the Home Energy Survey. In addition to providing key information about participating customer demographics, comparing this information with Massachusetts' census data provides an indication of how representative survey respondents are of the general Massachusetts population.

As described in more detail below, Home Energy Survey respondents are generally more educated and speak English at home to a larger extent than all Massachusetts residents.

Respondent Age

Over 40% of survey respondents are 60 years of age or older, compared to 17% who are under 40. The average age of survey respondents is approximately 52 years. Customers served by Cape Light Compact and the municipal utilities tend to be older than other Massachusetts customers.

Figure 87. Head-of-Household Age

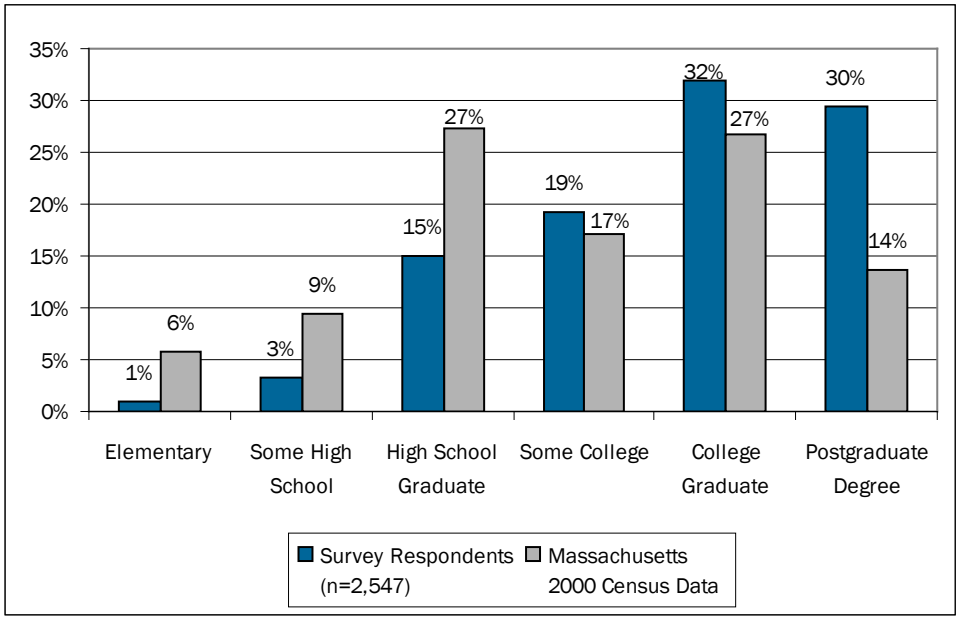


Educational Attainment

Education levels among survey respondents are high compared to Massachusetts averages. Almost two-thirds (62%) of survey respondents have a college or graduate degree, compared to 41% of Massachusetts adults 25 year or older[9]. Conversely, fewer survey respondents have a high school degree or less compared to the Massachusetts adult population.

[9] U.S. Census Bureau. "DP-2 Profile of Selected Social Characteristics: 2000." U.S. Census Bureau, Washington, DC. 2000. Online at http://factfinder.census.gov/servlet/QTTable?_bm=n&_lang=en&qr_name=DEC_2000_SF3_U_DP2&ds_name=DEC_2000_SF3_U&geo_id=04000US25

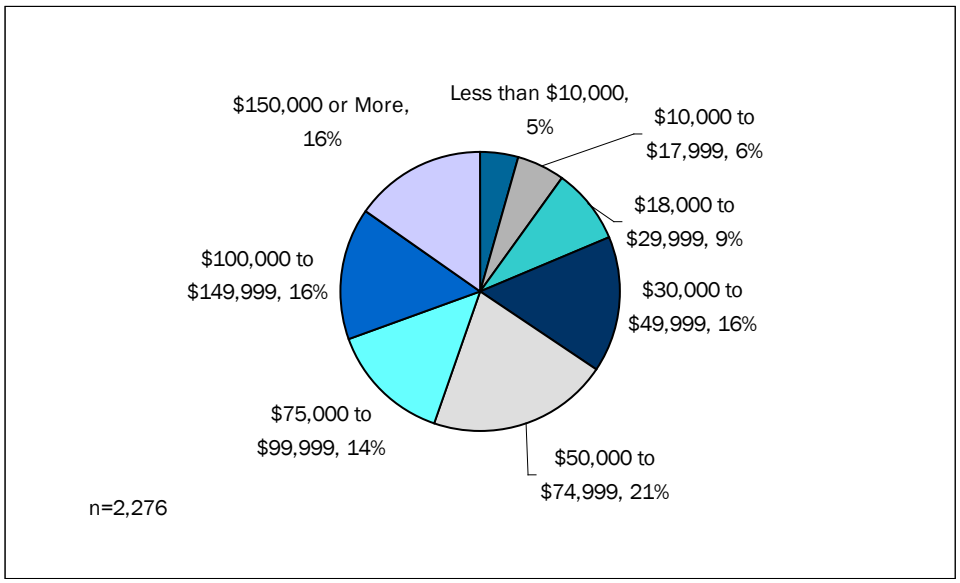
Figure 88. Educational Attainment among Respondents and Statewide



Household Income

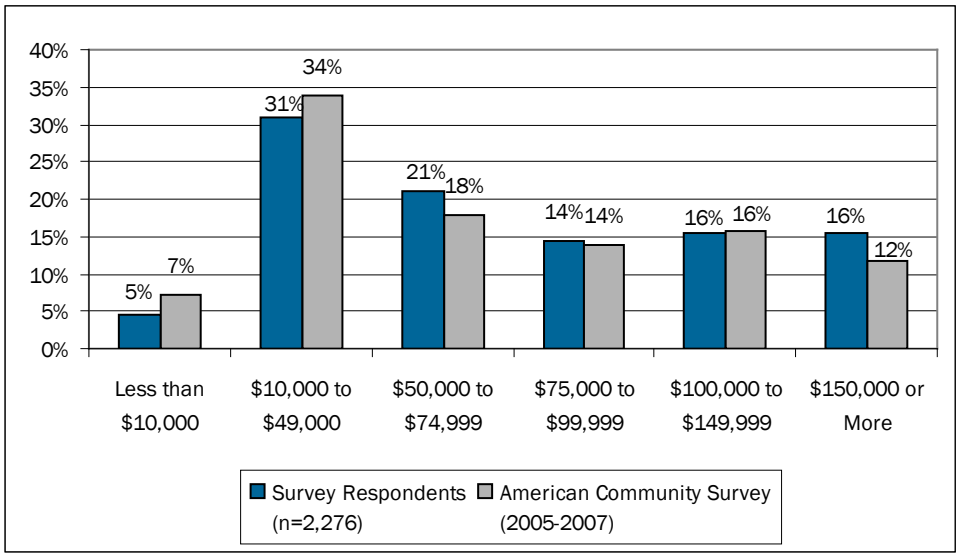
Fifteen percent of survey respondents did not provide information about their household income. Among respondents who did share earnings data, 19% earned less than $30,000 and almost one-third earned over $100,000 in 2007. Cape Light Compact, NSTAR, and municipal utility customers report higher household incomes than National Grid, Unitil, and WMECO customers.

Figure 89. Annual Household Income



The annual household income of survey respondents is generally consistent with that of all Massachusetts households. The highest income bracket ($150,000 or more) is slightly over-represented in the survey, while the lower income brackets ($49,000 or less) are slightly under-represented.

Figure 90. Annual Household Income Comparison with Massachusetts Residents



*The income category $10,000-$49,000 was created as a result of differences between the income categories used in the Home Energy Survey and those used by the U.S. Census. Note that American Community Survey income is from 2005-2007 while survey responses are for 2007.[10]

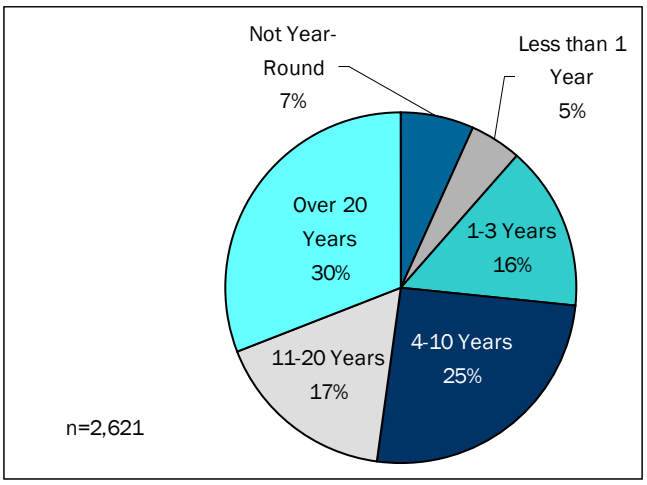
Additional Household Characteristics

Consistent with findings regarding the age of Home Energy Survey respondents, participating customers have lived in their homes for a long period of time. Close to one-half of survey respondents currently live in a home they have occupied for more than 10 years, and one-third live in homes they have occupied for more than 20 years.

Not surprisingly, Cape Light Compact has the largest percentage of seasonal residents of all electric service providers (42%). NSTAR customers are more likely than other Massachusetts customers to have lived in their homes for between one and three years.

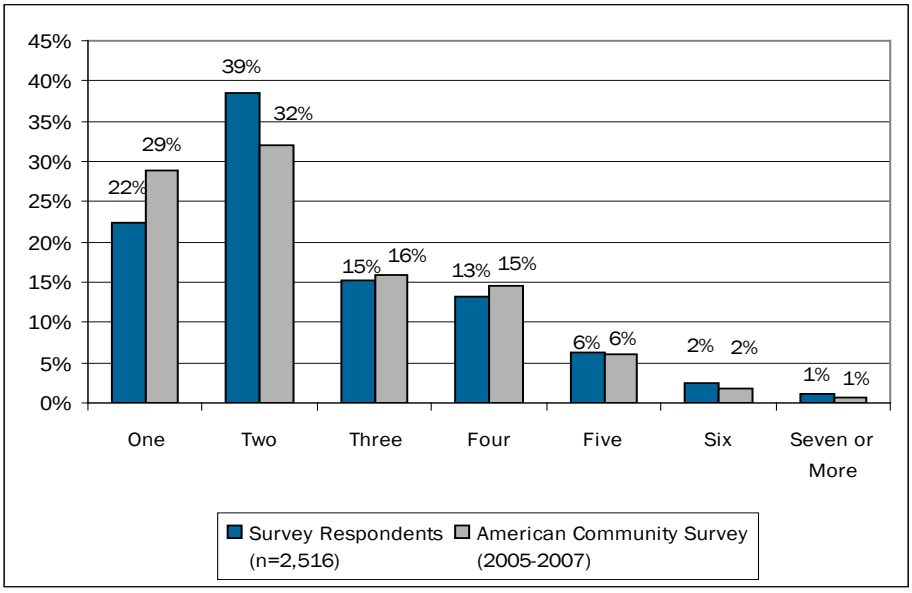
[10] U.S. Census Bureau. "2005-2007 American Community Survey." U.S. Census Bureau, Washington, DC. 2007. Online at http://factfinder.census.gov/servlet/DatasetMainPageServlet?_lang=en&_ts=254062574861&_ds_name=ACS_2007_3YR_G00_&_program=.

Figure 91. Years in Surveyed Home



Over 61% of survey respondents live in households of one or two people. An additional 28% of households consist of three or four members. These household sizes are very similar to all Massachusetts households. Twenty-eight percent of households have at least one member under the age of 18, and 44% of households have at least one member 60 years or older. Survey respondents are also representative of the State population in terms of average household size (2.6 and 2.5, respectively).[11]

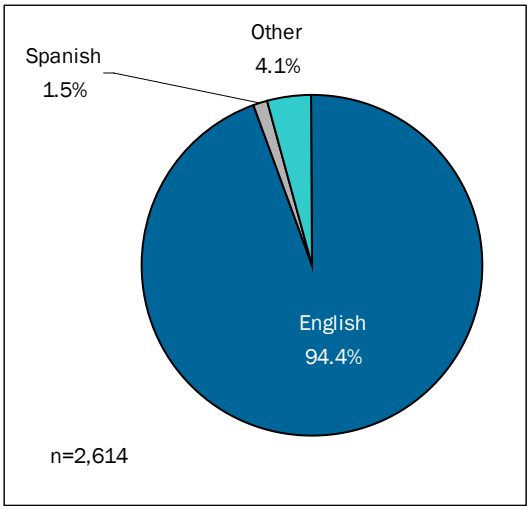
Figure 92. Household Size



[11] U.S. Census Bureau. "U.S. Census Bureau: State and County QuickFacts." U.S. Census Bureau, Washington, DC. Revised July 2008. Online at http://quickfacts.census.gov/qfd/states/25000.html.

Respondents overwhelmingly indicate that English is the primary language spoken in their homes (94.4%). While Spanish is the second most common primary language, it is used by only 1.5% of respondents. Respondents served by WMECO are more likely to speak Spanish than respondents located in the Cape Light Compact, National Grid and NSTAR service territories.

Figure 93. Primary Language Spoken at Home



A larger percentage of Massachusetts residents speak Spanish at home (6%) than survey respondents.[12] The fact that the Home Energy Survey was administered in English only may account for this difference.

[12] U.S. Census Bureau. "DP-2 Profile of Selected Social Characteristics: 2000."

DATA SUMMARY BY ELECTRIC ENERGY EFFICIENCY PROGRAM ADMINISTRATOR

The following tables summarize responses to the mail/Internet survey for all Massachusetts customers ("Total" column) and by electric energy efficiency program administrator. Customers served by municipal utilities are grouped under the heading "Munis". The final column presents the adjustment factor developed through the in-home verification visits. For explanations of the development and use of adjustment factors, please refer to the Methodology section.

The number of responses for each administrator ("n" in the table headers) represents the total number of surveys completed by the administrator's customers. It should be noted that not every respondent answered every question; therefore, the number of responses for any one question might be smaller than the number presented in the table header. Volume 2 of this report presents more detail about the number of responses for each question as well as significant differences between comparison groups.

The tables are organized by the same topics used in the main body of the report. The following three sections present the same information by the type of building the customer lives in, the customer's primary heating fuel, and the customer's income level, respectively.

Table 6. Home Characteristics – by Electric Energy Efficiency Program Administrator

	Total (n=2,667)	CLC (n=224)	NGRID (n=1,156)	NSTAR (n=830)	Unitil (n=133)	WMECO (n=204)	Munis (n=120)	Adj. Factor
Building Type								
SF Detached	67%	87%	68%	56%	76%	73%	88%	0.99
MF (2-4 units)	20%	8%	19%	27%	19%	21%	8%	0.87
MF (5+ units)	12%	4%	11%	17%	4%	5%	5%	1.18
Other	1%	<1%	1%	1%	1%	1%	0%	0.50
Own Home	81%	97%	81%	75%	87%	82%	95%	--
Year-Round Occupancy	93%	58%	95%	96%	100%	96%	98%	--
Mean No. of Rooms[A]	6.4	6.5	6.3	6.3	6.3	6.2	7.2	1.05
Mean Dwelling Size (sq. ft)	1,866	1,926	1,827	1,874	1,735	1,763	2,181	--
Home Built								
Before 1930	26%	6%	24%	34%	27%	28%	23%	--
1930-1969	36%	26%	36%	36%	42%	39%	42%	--
1970-1999	30%	58%	32%	22%	24%	25%	29%	--
2000 or later	8%	10%	8%	8%	7%	8%	6%	--
Home Remodeled in Last 3 Years	25%	28%	26%	24%	32%	24%	28%	--
Natural Gas Service Available	54%	64%	48%	62%	55%	43%	53%	1.14

[A] Excludes bathrooms, halls, pantries, unheated rooms, and garages.

Table 7. Space Heating – by Electric Energy Efficiency Program Administrator

	Total (n=2,667)	CLC (n=224)	NGRID (n=1,156)	NSTAR (n=830)	Unitil (n=133)	WMECO (n=204)	Munis (n=120)	Adj. Factor
Home Heating								
Pay to Heat Home	92%	97%	92%	89%	99%	97%	98%	0.98
Heat Part of Rent	7%	3%	7%	10%	1%	3%	2%	--
No Heat	1%	<1%	1%	1%	--	--	--	--
Primary Heating System Type[A]								
Natural Gas	49%	60%	44%	59%	43%	37%	41%	1.06
Electric	8%	9%	8%	8%	2%	10%	6%	0.99
Oil	39%	26%	43%	31%	51%	43%	50%	0.94
Bottled Gas	2%	4%	3%	1%	<1%	5%	1%	0.66
Wood or Coal	1%	2%	1%	--	1%	3%	1%	--
Other	1%	--	1%	<1%	3%	2%	1%	0.50
Mean Age of Primary Heating System[A]	12.3	12.2	12.5	12.0	13.0	11.2	13.8	--
Uses Additional Heating System	32%	28%	32%	30%	43%	38%	33%	0.87
Additional Heating System Type[AB]								
Natural Gas	2%	6%	1%	1%	3%	4%	5%	--
Electric	46%	47%	39%	61%	22%	38%	45%	--
Oil	6%	--	6%	5%	6%	13%	3%	--
Bottled Gas	10%	9%	9%	10%	4%	13%	11%	--
Wood or Coal	43%	40%	47%	34%	69%	44%	55%	--
Other	14%	14%	17%	8%	19%	24%	8%	--
Use of Additional Heating System[C]								
Always/Often	49%	42%	56%	39%	43%	58%	53%	--
Rarely/Sometimes	51%	58%	44%	61%	57%	42%	47%	--
Have No Thermostats[C]	5%	2%	5%	6%	7%	4%	2%	1.00
Have Programmable Thermostat(s)[C]	41%	29%	41%	43%	37%	36%	51%	1.00
Mean Number of Thermostats[D]								
Total	2.2	2.8	2.2	2.0	2.0	2.3	2.4	0.79
Programmable	1.0	1.00	0.9	1.0	0.7	0.8	1.2	0.73
Standard	1.3	1.8	1.3	1.0	1.3	1.5	1.2	0.84
Mean Thermostat Setting								
Early a.m. (6-9am)	64.4	62.9	64.5	64.6	63.6	63.9	64.9	--
Morning (9-1pm)	63.5	62.7	63.8	63.4	62.4	62.8	63.6	--
Afternoon (1-5pm)	63.7	62.9	64.0	63.6	63.0	63.0	64.1	--
Evening (5-7pm)	65.8	64.4	65.9	66.2	64.7	64.6	66.1	--
Night (7pm-6am)	63.0	61.5	63.1	63.2	61.6	62.7	62.9	--

[A] Of customers who pay to heat their home.

[B] Customers can have more than one additional heating system.

[C] Of customers who heat their residence.

[D] Of customers who have thermostats.

Table 8. Space Cooling – by Electric Energy Efficiency Program Administrator

	Total (n=2,667)	CLC (n=224)	NGRID (n=1,156)	NSTAR (n=830)	Unitil (n=133)	WMECO (n=204)	Munis (n=120)	Adj. Factor
Have Air Conditioning (Central or Room)	82%	75%	84%	82%	75%	68%	90%	0.99
Central Air Cooling								
Have CAC	36%	38%	34%	39%	24%	26%	42%	0.82
No CAC	64%	62%	66%	61%	76%	74%	58%	1.13
76-100% of Space Conditioned[A]	82%	90%	83%	82%	52%	83%	47%	1.03
CAC System Type[A]								
Central AC	89%	90%	89%	88%	81%	85%	93%	1.19
Heat Pump	8%	10%	7%	8%	--	8%	9%	0.44
Ductless Mini Split	4%	2%	3%	5%	<1%	6%	2%	--
Other	2%	2%	2%	3%	18%	<1%	--	--
Mean Number of CAC Systems[A]	1.2	1.2	1.2	1.3	1.4	1.1	1.3	0.99
Mean Age of Main CAC Unit[A]	7.7	6.4	7.8	7.6	8.7	7.7	8.1	--
Have No Thermostats[B]	8%	6%	7%	10%	31%	10%	2%	--
Have Programmable Thermostat(s)[B]	49%	32%	53%	47%	33%	57%	58%	1.20
Mean Number of Thermostats[C]								
Total	1.7	2.1	1.5	1.7	1.9	1.6	1.7	0.94
Programmable	1.0	1.0	1.0	1.0	0.6	1.2	1.2	1.00
Standard	0.6	1.1	0.5	0.7	1.3	0.4	0.5	0.87
Mean Thermostat Setting								
Early a.m. (6-9am)	72.2	73.2	72.1	72.0	71.2	72.4	72.4	--
Morning (9-1pm)	72.6	73.1	72.6	72.5	71.1	72.8	72.8	--
Afternoon (1-5pm)	72.5	72.9	72.4	72.4	70.1	72.6	72.8	--
Evening (5-7pm)	72.0	73.0	71.9	71.8	70.0	72.2	72.2	--
Night (7pm-6am)	72.1	73.3	72.1	71.8	71.3	72.4	72.2	--
Room AC								
Have Room AC	63%	55%	66%	59%	67%	57%	66%	--
No Room AC	37%	45%	34%	41%	33%	43%	34%	--
Mean Number of Room ACs[C]	2.0	1.9	2.1	2.0	2.0	1.7	2.2	--
Mean Age of Room ACs[C]	5.2	4.7	5.2	5.5	5.6	5.7	6.6	1.25
Mean Size of Room ACs (BTUs)[C]	7,679	7,324	7,982	7,957	7,302	8,341	7,936	0.93
Always/Often Use Cooling Systems[C]								
Early a.m. (6-9am)	26%	26%	26%	28%	23%	25%	23%	--
Morning (9-1pm)	25%	27%	27%	23%	26%	29%	24%	--
Afternoon (1-5pm)	31%	23%	20%	21%	35%	22%	23%	--
Evening (5-7pm)	37%	23%	18%	18%	26%	19%	24%	--
Night (7pm-6am)	37%	33%	38%	37%	35%	41%	32%	--

	Total (n=2,667)	CLC (n=224)	NGRID (n=1,156)	NSTAR (n=830)	Unitil (n=133)	WMECO (n=204)	Munis (n=120)	Adj. Factor
CAC: Very/Somewhat likely to								
Install[D]	14%	21%	15%	13%	20%	12%	11%	--
Replace[C]	29%	25%	35%	21%	42%	38%	30%	--
Room AC: Very/ Somewhat likely to								
Install[D]	15%	9%	16%	18%	33%	13%	8%	--
Replace[C]	41%	49%	42%	39%	53%	36%	43%	--

[A] Of customers who pay to cool their home.

[B] Of customers who have central cooling system.

[C] Of customers who have appliance/equipment.

[D] Of customers who do not have appliance/equipment.

Table 9. Water Heating – by Electric Energy Efficiency Program Administrator

	Total (n=2,667)	CLC (n=224)	NGRID (n=1,156)	NSTAR (n=830)	Unitil (n=133)	WMECO (n=204)	Munis (n=120)	Adj. Factor
Water Heating								
Pay for Hot Water	85%	95%	85%	80%	89%	90%	93%	1.04
Part of Rent	13%	2%	12%	19%	6%	6%	3%	--
No Hot Water	2%	3%	3%	1%	4%	4%	3%	--
Primary Water Heater Type[A]								
Natural Gas	52%	54%	45%	63%	51%	42%	53%	1.14
Electric	18%	22%	21%	14%	19%	22%	8%	0.89
Oil	26%	17%	30%	20%	28%	27%	36%	0.94
Bottled Gas	4%	5%	4%	2%	0%	9%	3%	0.94
Solar	<1%	1%	<1%	0%	0%	<1%	0%	--
Other	<1%	0%	<1%	1%	2%	0%	0%	--
Mean age of primary water heating system[A]	7.8	7.9	7.9	7.5	7.6	7.7	8.3	--
Primary water heater has insulation blanket/tank wrap[A]	25%	21%	25%	24%	27%	29%	29%	--
Uses Additional Heating System	3%	2%	4%	3%	5%	5%	1%	0.38
Low-Flow shower-heads installed in some/all showers	67%	65%	66%	67%	64%	62%	71%	0.95
Aerators on some/all faucets	51%	50%	53%	46%	52%	55%	55%	1.18

[A] Of customers who pay for hot water in their home.

Table 10. Building Shell – by Electric Energy Efficiency Program Administrator

	Total (n=2,667)	CLC (n=224)	NGRID (n=1,156)	NSTAR (n=830)	Unitil (n=133)	WMECO (n=204)	Munis (n=120)	Adj. Factor
All Exterior Walls Have Insulation	75%	86%	78%	68%	80%	71%	76%	--
Attic/Ceiling Has Insulation	89%	92%	90%	85%	94%	90%	93%	--
Rating of Attic/ Ceiling Insulation								
0-3 in. (<R-10)	13%	16%	13%	15%	6%	7%	10%	0.40
4-6 in. (R-11-19)	54%	55%	55%	51%	56%	54%	60%	1.26
7-10 in. (R-20-30)	24%	24%	24%	26%	24%	24%	19%	1.01
> 10 in. (R-31+)	9%	4%	8%	8%	15%	15%	10%	0.80
Window Type by Pane (All/Most)								
Single w/ Storm	23%	18%	20%	26%	26%	28%	30%	0.74
Single, no Storm	8%	7%	7%	10%	5%	5%	6%	0.14
Double	57%	58%	59%	53%	59%	57%	56%	1.36
Single/Double	9%	11%	10%	9%	6%	8%	9%	0.67
Triple Pane	3%	6%	4%	2%	5%	2%	3%	0.16
Window Frames (All/Most)								
Vinyl	43%	41%	47%	39%	51%	39%	43%	1.04
Wood	32%	34%	30%	34%	29%	35%	33%	1.05
Wood and Vinyl	17%	20%	16%	16%	16%	20%	22%	0.34
Metal	7%	5%	7%	10%	3%	6%	3%	1.47

Table 11. Laundry Equipment – by Electric Energy Efficiency Program Administrator

	Total (n=2,667)	CLC (n=224)	NGRID (n=1,156)	NSTAR (n=830)	Unitil (n=133)	WMECO (n=204)	Munis (n=120)	Adj. Factor
Laundry Equipment								
Private Use	88%	96%	90%	82%	93%	88%	97%	0.96
Common Area Use	8%	2%	7%	13%	2%	8%	3%	1.29
No Use in Building	4%	2%	3%	5%	5%	4%	1%	1.00
Clothes Washer Type[A]								
Top Loading	75%	74%	77%	73%	79%	75%	68%	0.98
Front Loading	25%	26%	23%	27%	21%	25%	32%	1.06
Mean Age of Clothes Washer[A]	6.9	6.9	6.9	6.7	7.1	7.3	7.4	--
Mean Number of Loads per Week[A]								
Total	5.1	4.6	5.2	5	4.9	5	5.8	--
Hot Water	0.7	0.8	0.6	0.8	0.5	0.8	0.8	--
Warm Water	2.1	2.0	2.1	2.1	1.8	2.1	2.3	--
Cold Water	2.3	1.8	2.4	2.1	2.6	2.1	2.8	--
Weekday Use of Laundry Equip. [A]								
Summer (1-5 p.m.)								
Freq./Occasional	71%	74%	73%	67%	68%	74%	75%	--
Rarely/Never	29%	26%	27%	33%	32%	26%	25%	--
Winter (5-7 p.m.)								
Freq./Occasional	69%	54%	72%	67%	58%	73%	67%	--
Rarely/Never	31%	46%	28%	33%	42%	27%	33%	--
Clothes Dryer	86%	94%	88%	80%	90%	85%	92%	0.97
Clothes Dryer Type[B]								
Natural Gas	24%	19%	20%	33%	22%	16%	21%	0.75
Electric	74%	77%	77%	66%	77%	81%	77%	1.11
Bottled Gas	2%	5%	3%	1%	2%	3%	2%	--
Mean Age of Clothes Dryer	7.5	7.7	7.3	7.4	7.7	8.5	7.5	--
Mean % Laundry Loads Line Dried[B]								
Summer	18%	20%	16%	16%	20%	32%	18%	--
Spring/Fall	14%	16%	13%	13%	15%	26%	16%	--
Winter	10%	9%	9%	11%	12%	16%	9%	--

[A] Of customers who have private use of laundry equipment.

[B] Of customers who have a clothes dryer.

Table 12. Food Preparation – by Electric Energy Efficiency Program Administrator

	Total (n=2,667)	CLC (n=224)	NGRID (n=1,156)	NSTAR (n=830)	Unitil (n=133)	WMECO (n=204)	Munis (n=120)	Adj. Factor
Type of Stovetop/Range[A]								
Natural Gas	39%	35%	34%	54%	37%	20%	32%	0.95
Electric	56%	58%	61%	42%	56%	73%	64%	1.05
Bottled Gas	5%	6%	5%	4%	7%	7%	4%	0.79
Other	<1%	<1%	<1%	<1%	0%	1%	0%	--
Mean Age of Stovetop/Range	8.1	8.2	8.2	7.9	9.7	8.5	8.5	1.20
Microwave Oven	95%	97%	96%	94%	97%	94%	98%	1.00
George Foreman Type Indoor Grill	32%	29%	34%	31%	31%	30%	34%	--
Dishwasher	75%	86%	74%	76%	66%	66%	84%	0.94
Mean Dishwasher Loads per Week	3.2	3.3	3.2	3.1	2.7	2.7	3.9	--
Weekday Use of Dishwasher								
Summer (1-5 p.m.)								
Freq./Occasional	44%	63%	45%	39%	51%	45%	45%	--
Rarely/Never	56%	37%	55%	61%	49%	55%	55%	--
Winter (5-7 p.m.)								
Freq./Occasional	60%	60%	62%	56%	63%	54%	69%	--
Rarely/Never	40%	40%	38%	44%	37%	46%	31%	--
Mean Age of Dishwasher	7.3	8.0	7.3	7.0	7.4	8.0	6.7	--

[A] Of customers who have a stovetop/range.

Table 13. Refrigerators and Freezers – by Electric Energy Efficiency Program Administrator

	Total (n=2,667)	CLC (n=224)	NGRID (n=1,156)	NSTAR (n=830)	Unitil (n=133)	WMECO (n=204)	Munis (n=120)	Adj. Factor
Refrigerator	>99%	>99%	>99%	>99%	100%	99%	99%	1.00
2+ Refrigerators	26%	31%	26%	25%	23%	21%	37%	1.03
Mean Number of Refrigerators	1.3	1.3	1.3	1.3	1.3	1.2	1.4	1.00
Refrigerator Style								
Single-Door	13%	13%	13%	13%	10%	15%	9%	0.63
Two-Door	86%	87%	86%	85%	90%	85%	90%	1.05
Three or Four-Door	1%	<1%	1%	1%	--	1%	1%	0.88
Refrigerator Size								
Small (<15 cu. ft.)	14%	18%	15%	13%	17%	15%	17%	0.68
Med. (15-18 cu. ft.)	44%	41%	45%	43%	48%	52%	38%	0.46
Large (>18 cu. ft.)	42%	41%	41%	45%	35%	33%	45%	1.73
Defrost Capabilities								
Automatic (Frost-Free)	91%	93%	92%	89%	91%	90%	91%	1.06
Manual	9%	7%	8%	11%	9%	10%	9%	0.47
Mean Age of Refrigerator	7.9	7.4	7.7	8.0	7.8	8.3	8.5	--
Refrigerator Use								
Year-Round	94%	82%	95%	95%	97%	97%	96%	
Seasonally	6%	18%	5%	5%	3%	3%	4%	--
Stand-Alone Freezer	22%	22%	23%	17%	22%	32%	29%	0.59
Two or More Freezers	1%	1%	1%	1%	2%	3%	2%	0.97
Mean Number of Freezers	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.61
Freezer Style								
Frost-Free	48%	55%	48%	49%	44%	35%	64%	--
Manual Defrost	52%	45%	52%	51%	56%	65%	36%	--
Freezer Size								
Small (<15 cu. ft.)	41%	44%	45%	38%	31%	41%	24%	--
Med. (15-18 cu. ft.)	46%	49%	42%	50%	58%	47%	52%	--
Large (>18 cu. Ft.)	13%	7%	13%	12%	12%	12%	24%	--
Mean Age of Freezer	10.3	10.0	9.8	10.2	9.8	11.2	12.4	--
Freezer Use								
Year-Round	95%	92%	94%	98%	100%	91%	100%	--
Seasonally	5%	8%	6%	2%	--	9%	--	--

Table 14. Entertainment Equipment – by Electric Energy Efficiency Program Administrator

	Total (n=2,667)	CLC (n=224)	NGRID (n=1,156)	NSTAR (n=830)	Unitil (n=133)	WMECO (n=204)	Munis (n=120)	Adj. Factor
Television	99%	99%	99%	99%	100%	98%	99%	1.00
Mean Number of TVs[A]								
Total	2.4	2.6	2.5	2.3	2.5	2.3	2.8	1.15
Standard Tube (CRT)	1.7	2.0	1.8	1.6	1.9	1.7	1.8	1.16
Projection TV	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.36
Flat Panel LCD	0.6	0.5	0.6	0.6	0.5	0.5	0.7	1.38
Flat Panel Plasma	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.67
Mean Hours of Operation								
Primary TV								
Weekday	4.9	4.3	5.2	4.3	5.2	5.5	5.3	--
Weekend	5.8	4.9	6.1	5.3	6.1	6.4	6.4	--
Additional TVs								
Weekday	2.4	2.3	2.4	2.2	2.7	2.5	2.4	--
Weekend	3.0	2.6	2.9	3.0	3.5	3.6	2.9	--
Weekday Use of Primary TV								
Summer (1-5 p.m.)								
Freq./Occasional	59%	59%	63%	52%	74%	67%	64%	--
Rarely/Never	41%	41%	37%	48%	26%	33%	36%	--
Winter (5-7 p.m.)								
Freq./Occasional	85%	76%	87%	81%	95%	93%	89%	--
Rarely/Never	15%	24%	13%	19%	5%	7%	11%	--
Weekday Use of Additional TVs								
Summer (1-5 p.m.)								
Freq./Occasional	37%	43%	39%	33%	47%	42%	38%	--
Rarely/Never	62%	57%	61%	67%	53%	58%	62%	--
Winter (5-7 p.m.)								
Freq./Occasional	56%	46%	57%	57%	67%	62%	56%	--
Rarely/Never	43%	54%	43%	43%	33%	38%	44%	--
Households with Accessories:								
Home Theater	14%	9%	15%	13%	16%	16%	21%	1.39
D/A Converter Box	11%	5%	9%	14%	10%	14%	8%	0.20
Analog Cable Box	8%	7%	9%	9%	8%	6%	5%	1.10
Digital Cable Box	49%	37%	49%	52%	49%	39%	55%	1.25
Digital Cable Box+DVR	22%	10%	22%	24%	16%	10%	33%	0.58
Separate DVR	9%	7%	9%	11%	5%	6%	8%	0.62
Digital Satellite Box	9%	6%	11%	7%	13%	14%	3%	0.99
Video Game Player	26%	18%	27%	25%	31%	28%	25%	1.37
DVD Player, DVD/VCR	69%	66%	70%	67%	75%	69%	70%	1.19
VCR Only	32%	25%	33%	32%	41%	32%	29%	1.12
Stereo	48%	42%	48%	50%	51%	49%	47%	1.48

	Total (n=2,667)	CLC (n=224)	NGRID (n=1,156)	NSTAR (n=830)	Unitil (n=133)	WMECO (n=204)	Munis (n=120)	Adj. Factor
Equipment Always or Often Unplugged/Off at Power Strip:								
Primary TV	9%	13%	8%	10%	7%	7%	6%	--
Additional TVs	9%	11%	9%	10%	8%	9%	7%	--
Audio/TV accessories	10%	9%	10%	11%	5%	15%	5%	--
Other equipment	15%	17%	15%	15%	10%	17%	9%	--

[A] Of customers who have a TV.

Table 15. Home Office – by Electric Energy Efficiency Program Administrator

	Total (n=2,667)	CLC (n=224)	NGRID (n=1,156)	NSTAR (n=830)	Unitil (n=133)	WMECO (n=204)	Munis (n=120)	Adj. Factor
Work from Home	17%	20%	16%	20%	11%	14%	17%	--
Hours per Week Working at Home								
0-10 hrs	39%	37%	35%	46%	43%	34%	35%	--
11-30 hrs	39%	43%	41%	33%	43%	52%	45%	--
More than 30 hrs	22%	20%	24%	21%	15%	14%	20%	--
Computer	82%	69%	84%	84%	78%	74%	85%	1.00
Mean Number of Computers[A]								
Total	1.6	1.5	1.5	1.6	1.5	1.4	1.7	1.31
Flat panel monitor	1.2	1.2	1.2	1.4	1.1	1.1	1.4	1.36
CRT monitor	0.3	0.3	0.4	0.3	0.5	0.4	0.4	1.07
Computer Use								
On	30%	33%	32%	28%	31%	31%	25%	--
In sleep mode	22%	15%	21%	27%	14%	18%	20%	--
Off	47%	53%	47%	45%	55%	51%	55%	--
Households with:								
Telephone (Landline)	87%	89%	88%	82%	87%	88%	97%	0.99
Cell Phone	83%	80%	84%	86%	82%	73%	87%	--
Answering Machine	74%	75%	75%	68%	75%	74%	88%	1.07
Multifunction Device	42%	35%	44%	42%	39%	39%	47%	1.24
Fax Machine	10%	11%	10%	10%	9%	7%	18%	0.70
Printer	54%	49%	55%	55%	49%	53%	60%	0.68
Scanner	20%	18%	20%	19%	16%	25%	21%	0.42
Copier	17%	19%	16%	17%	18%	19%	22%	0.17
Home Network	24%	14%	23%	28%	21%	17%	24%	--

[A] Of customers who have a computer.

Table 16. Lighting – by Electric Energy Efficiency Program Administrator

	Total (n=2,667)	CLC (n=224)	NGRID (n=1,156)	NSTAR (n=830)	Unitil (n=133)	WMECO (n=204)	Munis (n=120)	Adj. Factor
Incandescents								
None	6%	3%	6%	6%	5%	9%	5%	0.42
1-2	13%	12%	14%	12%	13%	15%	7%	0.10
3-5	22%	18%	22%	23%	31%	20%	19%	0.17
6-10	27%	30%	28%	26%	27%	24%	21%	0.28
11 or more	33%	37%	30%	33%	24%	32%	47%	2.45
CFLs								
None	14%	15%	15%	14%	18%	15%	13%	2.10
1-2	18%	16%	17%	21%	10%	13%	14%	1.05
3-5	26%	30%	25%	27%	23%	25%	26%	0.52
6-10	23%	20%	24%	22%	30%	24%	25%	1.02
11 or more	18%	19%	19%	16%	20%	23%	23%	1.12
Halogen Torchieres								
None	74%	76%	75%	70%	74%	81%	79%	1.20
1-2	20%	20%	19%	23%	24%	16%	16%	0.44
3-5	4%	3%	5%	5%	3%	1%	3%	0.22
6-10	1%	1%	1%	1%	--	--	--	1.31
11 or more	1%	--	<1%	1%	--	1%	3%	--
Fluorescent Torchieres								
None	83%	84%	83%	82%	82%	83%	82%	1.16
1-2	14%	12%	13%	14%	15%	17%	14%	0.35
3-5	3%	4%	3%	3%	3%	--	1%	1.31
6-10	1%	--	1%	<1%	--	<1%	3%	--
11 or more	<1%	<1%	<1%	1%	0%	0%	0%	--
Fluorescent Tube Lights								
None	36%	33%	35%	40%	32%	35%	25%	1.02
1-2	33%	30%	34%	32%	35%	34%	37%	0.58
3-5	21%	27%	20%	19%	24%	20%	24%	0.69
6-10	8%	8%	7%	8%	6%	10%	9%	2.39
11 or more	3%	2%	3%	1%	4%	1%	6%	2.28

Table 17. Miscellaneous Appliances – by Electric Energy Efficiency Program Administrator

	Total (n=2,667)	CLC (n=224)	NGRID (n=1,156)	NSTAR (n=830)	Unitil (n=133)	WMECO (n=204)	Munis (n=120)	Adj. Factor
Households with:								
Portable Fan	69%	62%	70%	69%	77%	72%	68%	--
Ceiling Fan	60%	56%	66%	48%	64%	64%	68%	1.02
Attic/Whole-house Fan	10%	6%	10%	10%	12%	8%	17%	0.78
Electronic Household Air Cleaner	9%	9%	10%	9%	8%	8%	14%	--
Humidifier	26%	19%	27%	24%	32%	25%	31%	1.24
Dehumidifier	46%	72%	48%	37%	49%	44%	57%	1.10
Heated Waterbed	2%	2%	2%	2%	<1%	1%	3%	0.97
Sauna - electric	1%	<1%	<1%	1%	1%	<1%	2%	0.97
Electric Whirlpool/Spa	5%	8%	5%	5%	9%	7%	5%	1.46
Electric Water Heater for Pool	1%	1%	2%	1%	<1%	1%	2%	2.92
Pond/Well/Pool Pump	16%	19%	18%	8%	34%	21%	23%	1.45
Cordless Vacuum	16%	16%	16%	16%	13%	17%	19%	--
Battery Charger for Appliances	50%	42%	53%	46%	50%	53%	60%	--
Home Security System	19%	19%	18%	20%	24%	17%	21%	0.97
Elect. Exercise Equip.	18%	11%	19%	15%	9%	19%	23%	1.12
Electric Clocks/Clock Radios	82%	82%	82%	80%	92%	83%	81%	--
Mean Hours/Day for Dehumidifier								
Summer	7.8	9.2	7.4	8.0	7.3	8.0	7.5	--
Spring/Fall	4.3	4.3	4.4	4.7	4.5	3.3	3.8	--
Winter	2.3	1.3	2.5	2.7	3.2	1.9	1.9	--
Mean Hours/Day for Pool Pumps								
Summer	6.3	5.5	6.5	6.1	5.1	4.9	6.9	--
Spring/Fall	2.3	2.7	1.8	3.9	0.1	1.4	3.1	--
Winter	0.7	0.0	0.7	1.6	0.0	0.1	0.7	--

Table 18. Energy Efficiency – by Electric Energy Efficiency Program Administrator

	Total (n=2,667)	CLC (n=224)	NGRID (n=1,156)	NSTAR (n=830)	Unitil (n=133)	WMECO (n=204)	Munis (n=120)	Adj. Factor
ENERGY STAR® Label Familiar (very/somewhat)	80%	79%	80%	80%	73%	83%	78%	--
Influenced Purchase Decision[A]	66%	69%	65%	66%	60%	67%	70%	--
Meaning of ENERGY STAR® Label[A]								
Government Endorsement	2%	1%	2%	2%	4%	2%	0%	--
Tested/Meets Standards	14%	17%	11%	16%	14%	16%	18%	--
High Quality	2%	3%	2%	1%	3%	2%	0%	--
Less Pollution/Good for Environment	3%	<1%	3%	4%	2%	2%	1%	--
Uses Less Energy	76%	74%	78%	74%	73%	71%	79%	--
Lower Utility Bills	4%	4%	4%	3%	4%	6%	2%	--
ENERGYGuide Label Familiar (very/somewhat)	76%	79%	76%	72%	75%	81%	81%	--
Information on ENERGYGuide Label[B]								
Government Endorsement	5%	5%	5%	6%	9%	5%	4%	--
Product is Tested/Meets Standards	23%	23%	23%	23%	25%	20%	26%	--
High Quality	6%	5%	7%	6%	7%	5%	5%	--
Appliance Uses Less Energy	29%	28%	32%	28%	47%	25%	27%	--
How Much Energy the Appliance Uses	58%	51%	57%	61%	54%	59%	61%	--
Compares Energy Use to Similar Models	36%	33%	36%	35%	40%	39%	38%	--
Lower Utility Bills	19%	18%	20%	17%	27%	18%	20%	--
Estimated Yearly Operating Cost	41%	39%	43%	38%	44%	46%	39%	--
Familiarity (very/somewhat) with Programs								
Rebate Program	32%	36%	31%	33%	15%	28%	35%	--
Home Energy Audit	37%	43%	36%	36%	30%	45%	32%	--
ENERGY STAR® Homes	18%	23%	18%	17%	15%	21%	18%	--
Home Performance with ENERGY STAR®	13%	16%	13%	12%	15%	16%	15%	--

	Total (n=2,667)	CLC (n=224)	NGRID (n=1,156)	NSTAR (n=830)	Unitil (n=133)	WMECO (n=204)	Munis (n=120)	Adj. Factor
Products that Should Receive Rebates								
Light Bulbs/Fixtures	39%	36%	43%	37%	43%	37%	33%	--
Clothes Washers	35%	33%	37%	33%	32%	39%	30%	--
Refrig./Freezers	53%	62%	53%	52%	51%	58%	47%	--
Dishwashers	16%	21%	16%	17%	12%	8%	17%	--
Room Air Cond.	16%	7%	17%	17%	14%	14%	12%	--
Central Cool. Systems	26%	28%	24%	28%	16%	20%	33%	--
Heating Systems	65%	74%	63%	67%	67%	64%	65%	--
Windows	60%	58%	61%	58%	71%	58%	63%	--
Insulation	42%	39%	41%	43%	40%	42%	54%	--
Solar DWH	20%	22%	21%	20%	31%	19%	19%	--
Pool Pumps	1%	1%	1%	1%	2%	4%	1%	--
Geotherm Heat Pump	10%	7%	9%	10%	8%	15%	11%	--
Interest in Services and Products								
Green Power	67%	63%	64%	72%	66%	65%	63%	--
Rebate Programs	76%	74%	78%	79%	76%	75%	76%	--
Home Energy Audits	56%	60%	55%	58%	54%	56%	50%	--

[A] Of customers who have seen the ENERGY STAR® label before.

[B] Of customers who have seen the ENERGYGuide label before.

Table 19. Profile of Respondents – by Electric Energy Efficiency Program Administrator

	Total (n=2,667)	CLC (n=224)	NGRID (n=1,156)	NSTAR (n=830)	Unitil (n=133)	WMECO (n=204)	Munis (n=120)	Adj. Factor
Mean Age of Head-of-Household	51.6	55.6	51.8	50.1	51.8	51.1	54	--
Education Level								
High School Graduate or Less	19%	11%	24%	13%	28%	27%	21%	--
College Graduate/ Some College	51%	49%	52%	50%	55%	53%	47%	--
Postgraduate Degree	30%	40%	24%	37%	17%	20%	33%	--
Mean Household Income	77,033	83,816	74,389	82,664	65,931	59,242	86,303	--
Mean Time Lived in Home	11.7	11.7	11.7	11	12.7	12.4	14.4	--
Mean Number of Occupants	2.6	2.5	2.6	2.6	2.7	2.4	2.9	--
Primary Language not English	5%	1%	5%	7%	5%	10%	1%	--

DATA SUMMARY BY BUILDING TYPE

The following tables summarize responses to the mail/Internet survey for all Massachusetts customers ("Total" column) and by type of building the customer lives in. The building type of a customer's residence is based on Question A1 of the survey ("What type of building exists at the service address listed on the front cover of this survey?"). Building types are grouped as follows:

- Single-family: (1) Single-family detached house
- 2-4 units: (2) Townhouse, duplex, or row house; (3) Apartment or condominium (2–4 units)
- 5+ units: (4) Apartment or condominium (5 or more units)
- Other: (5) Mobile home or trailer; (00) Other

The final column presents the adjustment factor developed through the in-home verification visits. For explanations of the development and use of adjustment factors, please refer to the Methodology section.

The number of responses for each building type ("n" in the table headers) represents the total number of surveys completed. It should be noted that not every respondent answered every question; therefore the number of responses for any one question might be smaller than the number presented in the table header. Volume 2 of this report presents more detail about the number of responses for each question as well as significant differences between comparison groups.

Table 20. Home Characteristics – by Building Type

	Total (n=2,667)	Single-Family (n=1,720)	Multi 2-4 Units (n=546)	Multi 5+ Units (n=357)	Other (n=25)	Adj. Factor
Mean No. of People per HH	2.6	2.8	2.4	1.8	1.7	----
Building Type						
SF Detached	67%	100%	0%	0%	0%	0.99
MF (2-4 units)	20%	0%	100%	0%	0%	0.87
MF (5+ units)	12%	0%	0%	100%	0%	1.18
Other	1%	0%	0%	0%	100%	0.50
Own Home	81%	97%	52%	42%	79%	--
Year-Round Occupancy	93%	93%	95%	93%	79%	--
Mean No. of Rooms[A]	6.4	7.1	5.6	3.5	4.9	1.05
Mean Dwelling Size (sq. ft)	1,866	2,096	1,541	1,104	987	--
Home Built						
Before 1930	26%	21%	47%	25%	13%	--
1930-1969	36%	42%	23%	22%	24%	--
1970-1999	30%	30%	23%	39%	63%	--
2000 or later	8%	7%	7%	14%	--	--
Home Remodeled in Last 3 Yrs	25%	27%	23%	16%	25%	--
Natural Gas Service Available	54%	50%	73%	45%	30%	1.14

[A] Excludes bathrooms, halls, pantries, unheated rooms, and garages.

Table 21. Space Heating – by Building Type

	Total (n=2,667)	Single-Family (n=1,720)	Multi 2-4 Units (n=546)	Multi 5+ Units (n=357)	Other (n=25)	Adj. Factor
Mean No. of People per HH	2.6	2.8	2.4	1.8	1.7	----
Home Heating						
Pay to Heat Home	92%	99%	92%	54%	96%	0.98
Heat Part of Rent	7%	<1%	8%	44%	--	--
No Heat	1%	1	--	2%	4%	--
Primary Heating System Type[A]						
Natural Gas	49%	45%	66%	51%	38%	1.06
Electric	8%	4%	10%	46%	14%	0.99
Oil	39%	46%	23%	2%	42%	0.94
Bottled Gas	2%	3%	1%	1%	5%	0.66
Wood or Coal	1%	1%	<1%	--	1%	--
Other	1%	1%	<1%	--	0%	0.50
Mean Age of Primary Heating System[A]	12.3	12.5	11.4	12.2	12.4	--
Uses Additional Heating System	32%	35%	25%	15%	31%	0.87
Additional Heating System Type[AB]						
Natural Gas	2%	2%	4%	--	---	--
Electric	46%	40%	70%	91%	15%	--
Oil	6%	5%	7%	5%	--	--
Bottled Gas	10%	9%	11%	6%	66%	--
Wood or Coal	43%	50%	20%	13%	15%	--
Other	14%	16%	7%	5%	5%	--
Use of Additional Heating System[C]						
Always/Often	49%	52%	49%	25%	42%	--
Rarely/Sometimes	51%	48%	51%	75%	58%	--
Have No Thermostats[C]	5%	3%	5%	19%	1%	1.00
Have Programmable Thermostat(s)[C]	41%	45%	37%	26%	22%	1.00
Mean Number of Thermostats[D]						
Total	2.2	2.2	2.4	1.7	1.7	0.79
Programmable	0.95	1.0	1.1	0.7	0.5	0.73
Standard	1.25	1.3	1.3	1.0	1.2	0.84
Mean Thermostat Setting						
Early a.m. (6-9am)	64.4	64.2	64.5	65.3	64.5	--
Morning (9-1pm)	63.5	63.3	63.5	65.0	65.6	--
Afternoon (1-5pm)	63.7	63.5	63.7	65.1	66.1	--
Evening (5-7pm)	65.8	65.5	65.9	66.7	66.0	--
Night (7pm-6am)	63.0	62.5	63.8	64.6	62.8	--

[A] Of customers who pay to heat their home.
[B] Customers can have more than one additional heating system.
[C] Of customers who heat their residence.
[D] Of customers who have thermostats.

Table 22. Space Cooling – by Building Type

	Total (n=2,667)	Single-Family (n=1,720)	Multi 2-4 Units (n=546)	Multi 5+ Units (n=357)	Other (n=25)	Adj. Factor
Mean No. of People per HH	2.6	2.8	2.4	1.8	1.7	----
Have Air Conditioning (Central or Room)	82%	82%	75%	92%	89%	0.99
Central Air Cooling						
Have CAC	36%	35%	26%	54%	42%	0.82
No CAC	64%	65%	74%	46%	58%	1.13
76-100% of Space Conditioned[A]	82%	82%	82%	86%	69%	1.03
CAC System Type[A]						
Central AC	89%	93%	85%	73%	100%	1.19
Heat Pump	8%	4%	11%	24%	--	0.44
Ductless Mini Split	4%	3%	4%	4%	--	--
Other	2%	2%	4%	3%	--	--
Mean Number of CAC Systems[A]	1.2	1.3	1.2	1.1	1.4	0.99
Mean Age of Main CAC Unit[A]	7.7	7.6	7.1	8.6	10.0	--
Have No Thermostats[B]	8%	5%	10%	19%	--	--
Have Programmable Thermostat(s)[B]	49%	56%	45%	30%	27%	1.20
Mean Number of Thermostats[C]						
Total	1.7	1.8	1.3	1.3	1.5	0.94
Programmable	1.0	1.2	0.8	0.5	0.0	1.00
Standard	0.6	0.6	0.5	0.8	1.5	0.87
Mean Thermostat Setting						
Early a.m. (6-9am)	72.2	72.4	72.3	71.3	72.4	--
Morning (9-1pm)	72.6	72.8	72.9	71.6	72.6	--
Afternoon (1-5pm)	72.5	72.7	72.5	71.5	71.6	--
Evening (5-7pm)	72.0	72.2	71.9	71.2	71.6	--
Night (7pm-6am)	72.1	72.3	72.4	71.2	70.3	--
Room AC						
Have Room AC	63%	60%	62%	75%	74%	--
No Room AC	37%	40%	38%	25%	26%	--
Mean Number of Room ACs[C]	2.0	2.2	1.9	1.4	1.8	--
Mean Age of Room ACs[C]	5.2	5.3	4.7	7.0	7.3	1.25
Mean Size of Room ACs (BTUs)[C]	7,679	8,055	7,698	7,920	7,373	0.93
Always/Often Use Cooling Systems[C]						
Early a.m. (6-9am)	26%	27%	24%	29%	--	--
Morning (9-1pm)	25%	26%	23%	26%	27%	--
Afternoon (1-5pm)	31%	19%	24%	22%	30%	--
Evening (5-7pm)	37%	18%	19%	17%	36%	--
Night (7pm-6am)	37%	38%	34%	42%	--	--

	Total (n=2,667)	Single-Family (n=1,720)	Multi 2-4 Units (n=546)	Multi 5+ Units (n=357)	Other (n=25)	Adj. Factor
CAC: Very/Somewhat likely to						
Install[D]	14%	15%	14%	3%	--	--
Replace[C]	29%	29%	24%	28%	54%	--
Room AC: Very/ Somewhat likely to						
Install[D]	15%	9%	26%	36%	--	--
Replace[C]	41%	42%	36%	41%	66%	--

[A] Of customers who pay to cool their home.

[B] Of customers who have central cooling system.

[C] Of customers who have appliance/equipment.

[D] Of customers who do not have appliance/equipment.

Table 23. Water Heating – by Building Type

	Total (n=2,667)	Single-Family (n=1,720)	Multi 2-4 Units (n=546)	Multi 5+ Units (n=357)	Other (n=25)	Adj. Factor
Mean No. of People per HH	2.6	2.8	2.4	1.8	1.7	----
Water Heating						
Pay for Hot Water	85%	96%	78%	31%	88%	1.04
Part of Rent	13%	1%	20%	68%	12%	--
No Hot Water	2%	3%	2%	1%	--	--
Primary Water Heater Type[A]						
Natural Gas	52%	48%	72%	43%	15%	1.14
Electric	18%	16%	16%	53%	79%	0.89
Oil	26%	32%	11%	4%	5%	0.94
Bottled Gas	4%	4%	1%	--	1%	0.94
Solar	<1%	<1%	--	--	--	--
Other	<1%	<1%	<1%	--	--	--
Mean age of primary water heating system[A]	7.8	8.0	7.0	6.4	7.6	--
Primary water heater has insulation blanket/tank wrap[A]	25%	26%	26%	25%	2%	--
Uses Additional Heating System	3%	3%	4%	1%	6%	0.38
Low-Flow shower-heads installed in some/all showers	67%	68%	66%	56%	57%	0.95
Aerators on some/all faucets	51%	53%	48%	43%	24%	1.18

[A] Of customers who pay for hot water in their home.

Table 24. Building Shell – by Building Type

	Total (n=2,667)	Single-Family (n=1,720)	Multi 2-4 Units (n=546)	Multi 5+ Units (n=357)	Other (n=25)	Adj. Factor
Mean No. of People per HH	2.6	2.8	2.4	1.8	1.7	----
All Exterior Walls Have Insulation	75%	78%	64%	72%	38%	--
Attic/Ceiling Has Insulation	89%	93%	79%	60%	66%	--
Rating of Attic/ Ceiling Insulation						
0-3 in. (<R-10)	13%	12%	20%	12%	60%	0.40
4-6 in. (R-11-19)	54%	54%	56%	53%	40%	1.26
7-10 in. (R-20-30)	24%	25%	17%	35%	0%	1.01
> 10 in. (R-31+)	9%	9%	7%	0%	0%	0.80
Window Type by Pane (All/Most)						
Single w/ Storm	23%	22%	24%	21%	54%	0.74
Single, no Storm	8%	5%	11%	18%	7%	0.14
Double	57%	58%	55%	54%	29%	1.36
Single/Double	9%	11%	8%	5%	10%	0.67
Triple Pane	3%	4%	2%	1%	0%	0.16
Window Frames (All/Most)						
Vinyl	43%	44%	47%	35%	50%	1.04
Wood	32%	34%	31%	23%	13%	1.05
Wood and Vinyl	17%	19%	15%	8%	0%	0.34
Metal	7%	3%	8%	34%	37%	1.47

Table 25. Laundry Equipment – by Building Type

	Total (n=2,667)	Single-Family (n=1,720)	Multi 2-4 Units (n=546)	Multi 5+ Units (n=357)	Other (n=25)	Adj. Factor
Mean No. of People per HH	2.6	2.8	2.4	1.8	1.7	----
Laundry Equipment						
Private Use	88%	98%	82%	43%	74%	0.96
Common Area Use	8%	1%	9%	50%	9%	1.29
No Use in Building	4%	1%	9%	7%	18%	1.00
Clothes Washer Type[A]						
Top Loading	75%	74%	78%	70%	92%	0.98
Front Loading	25%	26%	22%	30%	8%	1.06
Mean Age of Clothes Washer[A]	6.9	7.1	6.5	5.5	9.0	--
Mean Number of Loads per Week[A]						
Total	5.1	5.3	4.6	4.3	3.5	--
Hot Water	0.7	0.7	0.7	0.9	0.3	--
Warm Water	2.1	2.2	1.8	1.7	1.5	--
Cold Water	2.3	2.3	2.2	1.7	1.7	--
Weekday Use of Laundry Equip. [A]						
Summer (1-5 p.m.)						
Freq./Occasional	71%	72%	70%	70%	72%	--
Rarely/Never	29%	28%	30%	30%	28%	--
Winter (5-7 p.m.)						
Freq./Occasional	69%	69%	69%	66%	75%	--
Rarely/Never	31%	31%	31%	34%	25%	--
Clothes Dryer	86%	96%	77%	41%	74%	0.97
Clothes Dryer Type[B]						
Natural Gas	24%	24%	25%	15%	13%	0.75
Electric	74%	73%	74%	85%	87%	1.11
Bottled Gas	2%	3%	1%	0%	0%	--
Mean Age of Clothes Dryer	7.5	7.7	6.8	5.9	9.3	--
Mean % Laundry Loads Line Dried[B]						
Summer	18%	18%	19%	14%	20%	--
Spring/Fall	14%	14%	16%	12%	18%	--
Winter	10%	10%	12%	10%	14%	--

[A] Of customers who have private use of laundry equipment.

[B] Of customers who have a clothes dryer.

Table 26. Food Preparation – by Building Type

	Total (n=2,667)	Single-Family (n=1,720)	Multi 2-4 Units (n=546)	Multi 5+ Units (n=357)	Other (n=25)	Adj. Factor
Mean No. of People per HH	2.6	2.8	2.4	1.8	1.7	----
Type of Stovetop/Range[A]						
Natural Gas	39%	35%	57%	32%	25%	0.95
Electric	56%	58%	42%	67%	61%	1.05
Bottled Gas	5%	7%	2%	<1%	14%	0.79
Other	<1%	<1%	0%	<1%	0%	--
Mean Age of Stovetop/Range	8.1	8.4	7.7	7.4	11.4	1.20
Microwave Oven	95%	97%	93%	90%	93%	1.00
George Foreman Type Indoor Grill	32%	32%	30%	37%	23%	--
Dishwasher	75%	82%	58%	69%	43%	0.94
Mean Dishwasher Loads per Week	3.2	3.5	2.6	2.3	2.4	--
Weekday Use of Dishwasher						
Summer (1-5 p.m.)						
Freq./Occasional	44%	45%	45%	39%	49%	--
Rarely/Never	56%	55%	55%	61%	51%	--
Winter (5-7 p.m.)						
Freq./Occasional	60%	62%	53%	51%	39%	--
Rarely/Never	40%	38%	47%	49%	61%	--
Mean Age of Dishwasher	7.3	7.3	7.3	6.7	10.9	--

[A] Of customers who have a stovetop/range.

Table 27. Refrigerators and Freezers – by Building Type

	Total (n=2,667)	Single-Family (n=2,092)	Multi 2-4 Units (n=577)	Multi 5+ Units (n=312)	Other (n=23)	Adj. Factor
Mean No. of People per HH	2.6	2.8	2.4	1.8	1.7	----
Refrigerator	>99%	100%	99%	100%	100%	1.00
Two or More Refrigerators	26%	34%	16%	4%	7%	1.03
Mean Number of Refrigerators	1.3	1.4	1.2	1.0	1.1	1.00
Refrigerator Style						
Single-Door	13%	13%	14%	13%	7%	0.63
Two-Door	86%	86%	86%	86%	93%	1.05
Three or Four-Door	1%	1%	1%	<1%	0%	0.88
Refrigerator Size						
Small (under 14 cu. ft.)	14%	14%	15%	19%	16%	0.68
Medium (15-18 cu. ft.)	44%	40%	52%	53%	64%	0.46
Large (more than 19 cu. ft.)	42%	46%	33%	28%	20%	1.73
Defrost Capabilities						
Automatic (Frost-Free)	91%	92%	88%	88%	96%	1.06
Manual	9%	8%	12%	12%	4%	0.47
Mean Age of Refrigerator	7.9	8.2	7.2	6.7	6.6	--
Refrigerator Use						
Year-Round	94%	93%	97%	99%	95%	
Seasonally	6%	7%	3%	1%	5%	--
Stand-Alone Freezer	22%	28%	13%	6%	14%	0.59
Two or More Freezers	1%	1%	1%	0%	0%	0.97
Mean Number of Freezers	0.2	0.3	0.1	0.1	0.1	0.61
Freezer Style						
Frost-Free	48%	47%	54%	69%	38%	--
Manual Defrost	52%	53%	46%	31%	62%	--
Freezer Size						
Small (under 15 cu. Ft.)	41%	40%	47%	48%	89%	--
Medium (15-18 cu. Ft.)	46%	46%	46%	42%	11%	--
Large (over 18 cu. Ft)	13%	14%	7%	10%	0%	--
Mean Age of Freezer	10.3	10.8	6.6	11.5	2.8	--
Freezer Use						
Year-Round	95%	95%	93%	74%	100%	--
Seasonally	5%	5%	7%	26%	0%	--

Table 28. Entertainment Equipment – by Building Type

	Total (n=2,667)	Single-Family (n=1,720)	Multi 2-4 Units (n=546)	Multi 5+ Units (n=357)	Other (n=25)	Adj. Factor
Mean No. of People per HH	2.6	2.8	2.4	1.8	1.7	----
Television	99%	99%	98%	98%	95%	1.00
Mean Number of TVs[A]						
Total	2.4	2.6	2.2	1.8	1.6	1.15
Standard Tube (CRT)	1.7	1.8	1.6	1.2	1.5	1.16
Projection TV	0.1	0.1	<0.1	<0.1	<0.1	0.36
Flat Panel LCD	0.6	0.6	0.5	0.5	0.1	1.38
Flat Panel Plasma	0.1	0.1	0.1	<0.1	<0.1	0.67
Mean Hours of Operation						
Primary TV						
Weekday	4.9	4.8	5.0	4.9	5.9	--
Weekend	5.8	5.8	5.9	5.9	5.8	--
Additional TVs						
Weekday	2.4	2.3	2.6	2.3	1.5	--
Weekend	3.0	2.9	3.1	3.0	2.0	--
Weekday Use of Primary TV						
Summer (1-5 p.m.)						
Freq./Occasional	59%	59%	61%	59%	74%	--
Rarely/Never	41%	41%	39%	41%	26%	--
Winter (5-7 p.m.)						
Freq./Occasional	85%	85%	85%	85%	78%	--
Rarely/Never	15%	15%	15%	15%	22%	--
Weekday Use of Additional TVs						
Summer (1-5 p.m.)						
Freq./Occasional	37%	36%	42%	39%	61%	--
Rarely/Never	62%	64%	58%	61%	39%	--
Winter (5-7 p.m.)						
Freq./Occasional	56%	56%	61%	55%	58%	--
Rarely/Never	43%	44%	39%	45%	42%	--
Households with Accessories:						
Home Theater	14%	16%	11%	11%	--	1.39
D/A Converter Box	11%	10%	14%	9%	8%	0.20
Analog Cable Box	8%	8%	6%	11%	20%	1.10
Digital Cable Box	49%	51%	47%	43%	16%	1.25
Digital Cable Box+DVR	22%	25%	16%	16%	6%	0.58
Separate DVR	9%	10%	7%	7%	6%	0.62
Digital Satellite Box	9%	10%	9%	2%	8%	0.99
Video Game Player	26%	27%	25%	19%	6%	1.37
DVD Player, DVD/VCR	69%	71%	69%	61%	33%	1.19
VCR Only	32%	33%	30%	25%	19%	1.12
Stereo	48%	50%	47%	41%	7%	1.48

	Total (n=2,667)	Single-Family (n=1,720)	Multi 2-4 Units (n=546)	Multi 5+ Units (n=357)	Other (n=25)	Adj. Factor
Equipment Always or Often Unplugged/Off at Power Strip:						
Primary TV	9%	7%	13%	12%	8%	--
Additional TVs	9%	7%	15%	15%	--	--
Audio/TV accessories	10%	8%	16%	14%	--	--
Other equipment	15%	13%	20%	16%	--	--

[A] Of customers who have a TV.

Table 29. Home Office – by Building Type

	Total (n=2,667)	Single-Family (n=1,720)	Multi 2-4 Units (n=546)	Multi 5+ Units (n=357)	Other (n=25)	Adj. Factor
Mean No. of People per HH	2.6	2.8	2.4	1.8	1.7	----
Work from Home	17%	19%	15%	15%	5%	--
Hours per Week Working at Home						
0-10 hrs	39%	40%	36%	41%	--	--
11-30 hrs	39%	39%	41%	36%	100%	--
More than 30 hrs	22%	21%	23%	23%	--	--
Computer	82%	84%	80%	76%	36%	1.00
Mean Number of Computers[A]						
Total	1.6	1.7	1.5	1.4	1.0	1.31
Flat panel monitor	1.2	1.3	1.1	1.1	0.6	1.36
CRT monitor	0.3	0.4	0.3	0.2	0.4	1.07
Computer Use						
On	30%	30%	29%	34%	41%	--
In sleep mode	22%	23%	22%	20%	7%	--
Off	47%	47%	49%	46%	52%	--
Households with Products						
Telephone (Landline)						
Cell Phone	87%	92%	77%	71%	100%	0.99
Answering Machine or	83%	84%	84%	81%	60%	--
Service	74%	80%	63%	57%	69%	1.07
Multifunction Machine	42%	47%	35%	30%	19%	1.24
Fax Machine	10%	12%	6%	6%	10%	0.70
Printer	54%	60%	47%	39%	18%	0.68
Scanner	20%	22%	17%	11%	9%	0.42
Copier	17%	20%	14%	10%	9%	0.17
Home Network	24%	25%	22%	21%	--	--

[A] Of customers who have a computer.

Table 30. Lighting – by Building Type

	Total (n=2,667)	Single-Family (n=1,720)	Multi 2-4 Units (n=546)	Multi 5+ Units (n=357)	Other (n=25)	Adj. Factor
Mean No. of People per HH	2.6	2.8	2.4	1.8	1.7	----
Incandescents						
None	6%	5%	9%	9%	0%	0.42
1-2	13%	11%	17%	18%	8%	0.10
3-5	22%	19%	26%	30%	37%	0.17
6-10	27%	27%	26%	25%	38%	0.28
11 or more	33%	39%	21%	17%	17%	2.45
CFLs						
None	14%	12%	18%	24%	8%	2.10
1-2	18%	16%	20%	28%	18%	1.05
3-5	26%	26%	26%	25%	26%	0.52
6-10	23%	24%	23%	18%	41%	1.02
11 or more	18%	22%	12%	5%	8%	1.12
Halogen Torchieres						
None	74%	73%	75%	76%	85%	1.20
1-2	20%	20%	20%	19%	15%	0.44
3-5	4%	5%	3%	4%	--	0.22
6-10	1%	1%	<1%	1%	--	1.31
11 or more	1%	1%	1%	1%	0%	--
Fluorescent Torchieres						
None	83%	82%	85%	81%	100%	1.16
1-2	14%	13%	34%	18%	--	0.35
3-5	3%	4%	24%	1%	--	1.31
6-10	1%	1%	9%	--	--	--
11 or more	<1%	1%	<1%	--	--	--
Fluorescent Tube Lights						
None	36%	30%	46%	57%	54%	1.02
1-2	33%	34%	35%	28%	33%	0.58
3-5	21%	24%	14%	11%	13%	0.69
6-10	8%	9%	4%	4%	--	2.39
11 or more	3%	3%	2%	--	--	2.28

Table 31. Miscellaneous Appliances – by Building Type

	Total (n=2,667)	Single-Family (n=1,720)	Multi 2-4 Units (n=546)	Multi 5+ Units (n=357)	Other (n=25)	Adj. Factor
Mean No. of People per HH	2.6	2.8	2.4	1.8	1.7	----
Households with:						
Portable Fan	69%	70%	72%	61%	58%	--
Ceiling Fan	60%	66%	54%	30%	84%	1.02
Attic/Whole-house Fan	10%	13%	4%	3%	--	0.78
Electronic Household Air Cleaner	9%	10%	8%	6%	--	--
Humidifier	26%	28%	22%	21%	5%	1.24
Dehumidifier	46%	59%	23%	7%	33%	1.10
Heated Waterbed	2%	2%	1%	1%	--	0.97
Sauna - electric	1%	1%	<1%	<1%	--	0.97
Electric Whirlpool/Spa	5%	7%	1%	1%	--	1.46
Electric Water Heater for Pool	1%	2%	<1%	<1%	--	2.92
Pond/Well/Pool Pump	16%	22%	3%	1%	3%	1.45
Cordless Vacuum	16%	16%	15%	16%	5%	--
Battery Charger for Appliances	50%	55%	46%	39%	17%	--
Home Security System	19%	24%	10%	7%	--	0.97
Elect. Exercise Equip.	18%	22%	9%	5%	2%	1.12
Electric Clocks/Clock Radios	82%	85%	77%	71%	57%	--
Mean Hours/Day for Dehumidifier						
Summer	7.8	7.9	7.2	2.5	3.7	--
Spring/Fall	4.3	4.3	4.4	3.2	0.0	--
Winter	2.3	2.2	2.9	3.7	1.4	--
Mean Hours/Day for Pool Pumps						
Summer	6.3	6.3	0.0	0.0	6.3	--
Spring/Fall	2.2	3.3	0.0	0.0	2.2	--
Winter	0.7	0.2	3.6	0.0	0.7	--

Table 32. Energy Efficiency – by Building Type

	Total (n=2,667)	Single-Family (n=1,720)	Multi 2-4 Units (n=546)	Multi 5+ Units (n=357)	Other (n=25)	Adj. Factor
Mean No. of People per HH	2.6	2.8	2.4	1.8	1.7	----
ENERGY STAR® Label Familiar (very/somewhat)	80%	82%	78%	71%	69%	--
Influenced Purchase Decision[A]	66%	69%	62%	59%	59%	--
Meaning of ENERGY STAR® Label[A]						
Government Endorsement	2%	1%	2%	1%	0%	--
Tested/Meets Standards	14%	14%	15%	12%	26%	--
High Quality	2%	2%	1%	1%	0%	--
Less Pollution/Good for Environment	3%	2%	5%	8%	0%	--
Uses Less Energy	76%	78%	72%	74%	74%	--
Lower Utility Bills	4%	3%	5%	5%	0%	--
ENERGYGuide Label Familiar (very/somewhat)	76%	80%	69%	61%	59%	--
Information on ENERGYGuide Label[B]						
Government Endorsement	5%	5%	5%	8%	0%	--
Product is Tested/Meets Standards	23%	22%	24%	24%	40%	--
High Quality	6%	5%	8%	7%	3%	--
Appliance Uses Less Energy	29%	29%	28%	34%	37%	--
How Much Energy the Appliance Uses	58%	58%	58%	62%	55%	--
Compares Energy Use to Similar Models	36%	38%	32%	29%	37%	--
Lower Utility Bills	19%	18%	16%	28%	21%	--
Estimated Yearly Operating Cost	41%	43%	37%	35%	60%	--
Familiarity (very/somewhat) with Programs						
Rebate Program	32%	35%	26%	21%	17%	--
Home Energy Audit Program	37%	40%	32%	23%	32%	--
ENERGY STAR® Homes	18%	18%	19%	20%	11%	--
Home Performance with ENERGY STAR®	13%	13%	14%	11%	11%	--

	Total (n=2,667)	Single-Family (n=1,720)	Multi 2-4 Units (n=546)	Multi 5+ Units (n=357)	Other (n=25)	Adj. Factor
Mean No. of People per HH	2.6	2.8	2.4	1.8	1.7	----
Products that Should Receive Rebates						
Light Bulbs and Fixtures	39%	37%	44%	47%	43%	--
Clothes Washers	35%	32%	43%	35%	47%	--
Refrigerators/Freezers	53%	52%	53%	57%	52%	--
Dishwashers	16%	15%	18%	20%	13%	--
Room Air Conditioners	16%	12%	22%	29%	13%	--
Central Cooling Systems	26%	25%	24%	32%	22%	--
Heating Systems	65%	69%	61%	50%	43%	--
Windows	60%	64%	54%	50%	52%	--
Insulation	42%	46%	37%	30%	35%	--
Solar DWH	20%	22%	17%	18%	17%	--
Pool Pumps	1%	2%	1%	0%	0%	--
Geothermal Heat Pump	10%	10%	8%	10%	0%	--
Interest in Services and Products						
Green Power	67%	65%	72%	72%	34%	--
Rebate Programs	76%	79%	77%	75%	63%	--
Home Energy Audits	56%	59%	52%	46%	57%	--

[A] Of customers who have seen the ENERGY STAR® label before.

[B] Of customers who have seen the ENERGYGuide label before.

Table 33. Profile of Respondents – by Building Type

	Total (n=2,667)	Single-Family (n=1,720)	Multi 2-4 Units (n=546)	Multi 5+ Units (n=357)	Other (n=25)	Adj. Factor
Mean No. of People per HH	2.6	2.8	2.4	1.8	1.7	----
Mean Age of Head-of-Household	51.6	52.8	48.8	48.7	59.1	--
Education Level						--
High School Grad. or Less	19%	17%	23%	21%	44%	
College Grad/Some College	51%	51%	52%	49%	44%	--
Postgraduate Degree	30%	31%	25%	29%	12%	--
Mean Household Income	77,033	85,927	60,141	61,398	28,641	--
Mean Time Lived in Home	11.7	13.5	8.9	6.2	12.5	--
Mean Number of Occupants	2.6	2.8	2.4	1.8	1.7	--
Primary Language not English	5%	3%	11%	11%	2%	--

DATA SUMMARY BY PRIMARY HEATING FUEL

The following tables summarize responses to the mail/Internet survey by the customer's type of primary space heating fuel. The fuel type is based on Question B2A of the survey ("What type of heating system do you use to heat this home? Primary Heating."). Primary heating fuel categories are Natural Gas, Electric, Oil, and Other (including bottled gas, wood or coal, and other). The final column presents the adjustment factor developed through the in-home verification visits. For explanations of the development and use of adjustment factors, please refer to the Methodology section.

The number of responses for each fuel type ("n" in the table headers) represents the total number of surveys completed by customers with that fuel type. It should be noted that not every respondent answered every question; therefore the number of responses for any one question might be smaller than the number presented in the table header. Volume 2 of this report presents more detail about the number of responses for each question as well as significant differences between comparison groups.

Table 34. Home Characteristics – by Primary Heating Fuel Type

	Total (n=2,667)	Natural Gas (n=1,085)	Electric (n=337)	Oil (n=844)	Other (n=101)	Adj. Factor
Building Type						
SF Detached	67%	66%	37%	87%	91%	0.99
MF (2-4 units)	20%	27%	24%	12%	7%	0.87
MF (5+ units)	12%	7%	37%	<1%	1%	1.18
Other	1%	1%	2%	1%	1%	0.50
Own Home	81%	83%	69%	92%	97%	--
Year-Round Occupancy	93%	94%	90%	96%	81%	--
Mean No. of Rooms[A]	6.4	6.6	5.0	7.1	6.9	1.05
Mean Dwelling Size (sq. ft)	1,866	1,907	1,431	2,071	2,082	--
Home Built						
Before 1930	26%	29%	13%	26%	17%	--
1930-1969	36%	33%	26%	43%	24%	--
1970-1999	30%	28%	56%	26%	42%	--
2000 or later	8%	10%	6%	5%	17%	--
Home Remodeled in Last 3 Years	25%	26%	19%	28%	29%	--
Natural Gas Service Available	54%	96%	10%	17%	15%	1.14

[A] Excludes bathrooms, halls, pantries, unheated rooms, and garages.

Table 35. Space Heating – by Primary Heating Fuel Type

	Total (n=2,667)	Natural Gas (n=1,085)	Electric (n=337)	Oil (n=844)	Other (n=101)	Adj. Factor
Home Heating						
Pay to Heat Home	92%	100%	100%	100%	100%	0.98
Heat Part of Rent	7%	--	--	--	--	--
No Heat	1%	--	--	--	--	--
Primary Heating System Type[A]						
Natural Gas	49%	100%	--	--	--	1.06
Electric	8%	--	100%	--	--	0.99
Oil	39%	--	--	100%	--	0.94
Bottled Gas	2%	--	--	--	59%	0.66
Wood or Coal	1%	--	--	--	22%	--
Other	1%	--	--	--	18%	0.50
Mean Age of Primary Heating System[A]	12.3	11.4	18.0	12.6	10.3	--
Uses Additional Heating System	32%	29%	18%	37%	52%	0.87
Additional Heating System Type[AB]						
Natural Gas	2%	--	1%	3%	10%	--
Electric	46%	63%	--	35%	37%	--
Oil	6%	6%	11%	--	35%	--
Bottled Gas	10%	8%	14%	12%	7%	--
Wood or Coal	43%	36%	55%	53%	22%	--
Other	14%	12%	35%	16%	8%	--
Use of Additional Heating System[C]						
Always/Often	49%	45%	58%	54%	56%	--
Rarely/Sometimes	51%	55%	42%	46%	44%	--
Have No Thermostats[C]	5%	3%	8%	1%	18%	1.00
Have Programmable Thermostat(s)[C]	41%	47%	25%	42%	36%	1.00
Mean Number of Thermostats[D]						
Total	2.2	2.0	4.4	2.2	2.4	0.79
Programmable	.95	1.0	.09	1.0	1.3	0.73
Standard	1.25	1.0	3.5	1.2	1.1	0.84
Mean Thermostat Setting						
Early a.m. (6-9am)	64.4	64.8	64.6	63.8	63.0	--
Morning (9-1pm)	63.5	63.8	63.8	62.9	63.3	--
Afternoon (1-5pm)	63.7	64.0	64.0	63.1	63.5	--
Evening (5-7pm)	65.8	66.2	65.6	65.2	64.7	--
Night (7pm-6am)	63.0	63.4	63.6	62.1	62.0	--

[A] Of customers who pay to heat their home.

[B] Customers can have more than one additional heating system.

[C] Of customers who heat their residence.

[D] Of customers who have thermostats.

Table 36. Space Cooling – by Primary Heating Fuel Type

	Total (n=2,667)	Natural Gas (n=1,085)	Electric (n=337)	Oil (n=844)	Other (n=101)	Adj. Factor
Have Air Conditioning (Central or Room)	82%	85%	84%	80%	63%	0.99
Central Air Conditioning/Cooling						
Have Central AC	36%	42%	42%	27%	33%	0.82
Do not Have Central AC	64%	58%	58%	73%	67%	1.13
76-100% of Space Conditioned[A]	82%	87%	78%	78%	84%	1.03
Cooling System Type[A]						
Central Air Conditioning	89%	94%	55%	92%	92%	1.19
Heat Pump	8%	5%	49%	3%	8%	0.44
Ductless Mini Split AC	4%	3%	2%	4%	<1%	--
Other	2%	2%	1%	3%	--	--
Mean Number of Cooling Systems[A]	1.2	1.2	1.2	1.3	1.3	0.99
Mean Age of Main Cooling Unit[A]	7.7	7.6	9.1	7.5	7.5	--
Have No Thermostats[B]	8%	4%	15%	7%	<1%	--
Have Programmable Thermostat(s)[B]	49%	58%	27%	47%	73%	1.20
Mean Number of Thermostats[C]						
Total	1.7	1.6	1.7	1.7	2.3	0.94
Programmable	1.0	1.1	0.7	1.0	1.9	1.00
Standard	0.6	0.5	1.0	0.7	0.4	0.87
Mean Thermostat Setting[C]						
Early Morning (6-9am)	72.2	72.6	71.6	71.9	72.5	--
Morning (9-1pm)	72.6	73.0	71.6	72.4	72.8	--
Afternoon (1pm-5pm)	72.5	72.9	71.5	72.1	72.7	--
Early Evening (5pm-7pm)	72.0	72.4	71.5	71.6	72.1	--
Late Evening/Night (7pm-6am)	72.1	72.6	71.2	71.7	72.8	--
Room Air Conditioning						
Have Room AC	63%	62%	66%	64%	42%	--
Do not Have Room AC	37%	38%	34%	36%	58%	--
Mean Number of Room ACs[C]	2.0	2.1	1.6	2.2	1.9	--
Mean Age of Room ACs[C]	5.2	5.0	6.2	5.5	5.3	1.25
Mean Size of Room ACs (BTUs)[C]	7,679	7,847	8,385	7,895	9,036	0.93
Always/Often Use Cooling Systems[C]						
Early Morning (6-9am)	26%	28%	22%	24%	32%	--
Morning (9-1pm)	25%	27%	19%	23%	37%	--
Afternoon (1pm-5pm)	31%	19%	20%	21%	12%	--
Early Evening (5pm-7pm)	37%	18%	16%	19%	12%	--
Late Evening/Night (7pm-6am)	37%	38%	28%	36%	45%	--
Central Air Conditioning						
Very/Somewhat likely to Install[D]	14%	16%	10%	14%	9%	--
Very/Somewhat likely to Replace[C]	29%	28%	32%	28%	25%	--
Room Air Conditioning						
Very/Somewhat likely to Install[D]	15%	18%	18%	11%	2%	--
Very/Somewhat likely to Replace[C]	41%	40%	46%	41%	44%	--

[A] Of customers who pay to cool their home.

[B] Of customers who have central cooling system.

[C] Of customers who have appliance/equipment.

[D] Of customers who do not have appliance/equipment.

Table 37. Water Heating – by Primary Heating Fuel Type

	Total (n=2,667)	Natural Gas (n=1,085)	Electric (n=337)	Oil (n=844)	Other (n=101)	Adj. Factor
Water Heating						
Pay for Hot Water	85%	94%	70%	92%	98%	1.04
Part of Rent/Condo Fee	13%	6%	29%	2%	2%	--
Do not Have Hot Water	2%	<1%	1%	6%	--	--
Primary Water Heater Type[A]						
Natural Gas	52%	92%	6%	10%	7%	1.14
Electric	18%	7%	90%	19%	33%	0.89
Oil	26%	<1%	2%	67%	11%	0.94
Bottled Gas	4%	<1%	1%	3%	46%	0.94
Solar	<1%	<1%	<1%	<1%	<1%	--
Other	<1%	--	--	<1%	2%	--
Mean age of primary water heating system[A]	7.8	6.5	8.2	9.2	8.5	--
Primary water heater has insulation blanket/tank wrap[A]	25%	23%	32%	26%	29%	--
Uses Additional Heating System	3%	2%	3%	4%	8%	0.38
Low-Flow showerheads installed in some/all showers	67%	67%	63%	68%	68%	0.95
Aerators on some/all faucets	51%	51%	46%	52%	54%	1.18

[A] Of customers who pay for hot water in their home.

Table 38. Building Shell – by Primary Heating Fuel Type

	Total (n=2,667)	Natural Gas (n=1,085)	Electric (n=337)	Oil (n=844)	Other (n=101)	Adj. Factor
All Exterior Walls Have Insulation	75%	75%	84%	75%	76%	--
Attic/Ceiling Has Insulation	89%	89%	86%	92%	94%	--
Rating of Attic/ Ceiling Insulation						
0-3 in. (<R-10)	13%	14%	13%	12%	6%	0.40
4-6 in. (R-11-19)	54%	55%	55%	55%	51%	1.26
7-10 in. (R-20-30)	24%	23%	20%	24%	35%	1.01
> 10 in. (R-31+)	9%	8%	11%	9%	9%	0.80
Window Type by Pane (All/Most)						
Single w/ Storm	23%	21%	26%	25%	16%	0.74
Single, no Storm	8%	8%	12%	6%	1%	0.14
Double	57%	58%	53%	55%	71%	1.36
Single/Double	9%	10%	6%	10%	5%	0.67
Triple Pane	3%	2%	4%	4%	6%	0.16
Window Frames (All/Most)						
Vinyl	43%	47%	40%	41%	43%	1.04
Wood	32%	30%	31%	35%	36%	1.05
Wood and Vinyl	17%	18%	9%	20%	18%	0.34
Metal	7%	5%	20%	4%	3%	1.47

Table 39. Laundry Equipment – by Primary Heating Fuel Type

	Total (n=2,667)	Natural Gas (n=1,085)	Electric (n=337)	Oil (n=844)	Other (n=101)	Adj. Factor
Laundry Equipment						
Private Use	88%	93%	72%	98%	94%	0.96
Use in Common Area	8%	3%	23%	1%	--	1.29
No Use in Building	4%	4%	5%	1%	6%	1.00
Clothes Washer Type[A]						
Top Loading	75%	75%	75%	76%	58%	0.98
Front Loading	25%	25%	25%	24%	42%	1.06
Mean Age of Clothes Washer[A]	6.9	6.8	5.8	7.4	6.4	--
Mean Number of Loads per Week[A]						
Total	5.1	5.1	4.9	5.3	4.9	--
Hot Water	0. 7	0.8	0.8	0.7	0.6	--
Warm Water	2.1	2.1	2.0	2.2	2.0	--
Cold Water	2.3	2.2	2.0	2.5	2.2	--
Weekday Use of Laundry Equip. [A]						
Summer (1-5 p.m.)						
Frequently/Occasionally	71%	70%	78%	72%	72%	--
Rarely/Never	29%	30%	22%	28%	28%	--
Winter (5-7 p.m.)						
Frequently/Occasionally	69%	67%	73%	72%	62%	--
Rarely/Never	31%	33%	27%	28%	38%	--
Clothes Dryer	86%	90%	72%	96%	86%	0.97
Clothes Dryer Type[B]						
Natural Gas	24%	43%	2%	6%	6%	0.75
Electric	74%	56%	96%	91%	67%	1.11
Bottled Gas	2%	<1%	1%	2%	27%	--
Mean Age of Clothes Dryer	7.5	7.4	6.8	7.9	6.9	--
Mean % Laundry Loads Line Dried[B]						
Summer	18%	15%	22%	20%	26%	--
Spring/Fall	14%	12%	18%	16%	21%	--
Winter	10%	9%	11%	11%	13%	--

[A] Of customers who have private use of laundry equipment.

[B] Of customers who have a clothes dryer.

Table 40. Food Preparation – by Primary Heating Fuel Type

	Total (n=2,667)	Natural Gas (n=1,085)	Electric (n=337)	Oil (n=844)	Other (n=101)	Adj. Factor
Type of Stovetop/Range[A]						
Natural Gas	39%	67%	6%	14%	10%	0.95
Electric	56%	32%	92%	78%	53%	1.05
Bottled Gas	5%	1%	2%	8%	36%	0.79
Other	<1%	<1%	0%	<1%	<1%	--
Mean Age of Stovetop/Range	8.1	7.7	9.5	8.7	9.1	1.20
Microwave Oven	95%	96%	95%	96%	96%	1.00
George Foreman Type Indoor Grill	32%	33%	35%	33%	24%	--
Dishwasher	75%	79%	74%	76%	81%	0.94
Mean Dishwasher Loads per Week	3.2	3.2	2.8	3.5	3.4	--
Weekday Use of Dishwasher						
Summer (1-5 p.m.)						
Frequently/Occasionally	44%	44%	46%	44%	41%	--
Rarely/Never	56%	56%	54%	56%	59%	--
Winter (5-7 p.m.)						
Frequently/Occasionally	60%	59%	60%	62%	55%	--
Rarely/Never	40%	41%	40%	38%	45%	--
Mean Age of Dishwasher	7.3	7.0	8.3	7.5	8.0	--

[A] Of customers who have a stovetop/range.

Table 41. Refrigerators and Freezers – by Primary Heating Fuel Type

	Total (n=2,667)	Natural Gas (n=1,085)	Electric (n=337)	Oil (n=844)	Other (n=101)	Adj. Factor
Refrigerator	>99%	99%	99%	100%	100%	1.00
Two or More Refrigerators	26%	27%	12%	32%	31%	1.03
Mean Number of Refrigerators	1.3	1.3	1.1	1.3	1.3	1.00
Refrigerator Style						
Single-Door	13%	13%	10%	13%	14%	0.63
Two-Door	86%	86%	90%	87%	86%	1.05
Three or Four-Door	1%	2%	0%	1%	0%	0.88
Refrigerator Size						
Small (under 14 cu. ft.)	14%	12%	15%	14%	16%	0.68
Medium (15-18 cu. ft.)	44%	40%	48%	46%	39%	0.46
Large (more than 19 cu. ft.)	42%	47%	37%	40%	45%	1.73
Defrost Capabilities						
Automatic (Frost-Free)	91%	91%	91%	91%	93%	1.06
Manual	9%	9%	9%	9%	7%	0.47
Mean Age of Refrigerator	7.9	7.8	7.8	8.3	7.3	--
Refrigerator Use						
Year-Round	94%	95%	94%	96%	87%	
Seasonally	6%	5%	6%	4%	13%	--
Stand-Alone Freezer	22%	20%	13%	28%	35%	0.59
Two or More Freezers	1%	1%	<1%	2%	3%	0.97
Mean Number of Freezers	0.2	0.2	0.1	0.3	0.4	0.61
Freezer Style						
Frost-Free	48%	50%	55%	44%	42%	--
Manual Defrost	52%	50%	45%	56%	58%	--
Freezer Size						
Small (under 15 cu. Ft.)	41%	40%	39%	41%	48%	--
Medium (15-18 cu. Ft.)	46%	47%	35%	47%	40%	--
Large (over 18 cu. Ft)	13%	13%	25%	12%	12%	--
Mean Age of Freezer	10.3	10.4	9.4	10.9	8.6	--
Freezer Use						
Year-Round	95%	93%	86%	99%	87%	--
Seasonally	5%	7%	14%	1%	13%	--

Table 42. Entertainment Equipment – by Primary Heating Fuel Type

	Total (n=2,667)	Natural Gas (n=1,085)	Electric (n=337)	Oil (n=844)	Other (n=101)	Adj. Factor
Television	99%	99%	98%	99%	96%	1.00
Mean Number of TVs[A]						
Total	2.5	2.5	2.2	2.5	2.3	1.15
Standard Tube (CRT)	1.8	1.8	1.6	1.9	1.5	1.16
Projection TV	0.1	0.1	0.1	0.1	0.1	0.36
Flat Panel LCD	0.6	0.6	0.4	0.5	0.7	1.38
Flat Panel Plasma	0.1	0.1	0.1	0.1	0.1	0.67
Mean Hours of Operation						
Primary TV						
Weekday	4.9	4.8	4.9	4.9	4.6	--
Weekend	5.8	5.8	6.2	5.8	5.6	--
Additional TVs						
Weekday	2.4	2.4	2.2	2.4	1.9	--
Weekend	3.0	3.0	2.9	3.0	2.3	--
Weekday Use of Primary TV						
Summer (1-5 p.m.)						
Freq./Occasional	59%	60%	63%	59%	48%	--
Rarely/Never	41%	40%	37%	41%	52%	--
Winter (5-7 p.m.)						
Freq./Occasional	85%	85%	82%	86%	78%	--
Rarely/Never	15%	15%	18%	14%	22%	--
Weekday Use of Additional TVs						
Summer (1-5 p.m.)						
Freq./Occasional	37%	38%	36%	38%	23%	--
Rarely/Never	62%	62%	64%	62%	77%	--
Winter (5-7 p.m.)						
Freq./Occasional	56%	56%	49%	58%	47%	--
Rarely/Never	43%	44%	51%	42%	53%	--
Households with Accessories						
Home Theater	14%	15%	10%	16%	12%	1.39
D/A Converter Box	11%	11%	6%	12%	9%	0.20
Analog Cable Box	8%	8%	9%	7%	9%	1.10
Digital Cable Box	49%	49%	47%	51%	48%	1.25
Digital Cable Box with DVR	22%	25%	20%	23%	23%	0.58
DVR Separate from Cable Box	9%	9%	6%	10%	7%	0.62
Digital Satellite Box	9%	9%	7%	9%	18%	0.99
Video Game Player	26%	25%	26%	28%	34%	1.37
DVD Player (or DVD/VCR)	69%	69%	64%	71%	73%	1.19
VCR Only	32%	33%	20%	34%	24%	1.12
Stereo	48%	51%	36%	50%	55%	1.48
Equipment Always or Often Unplugged/Off at Power Strip:						
Primary TV	9%	9%	11%	7%	6%	--
Additional TVs	9%	11%	10%	7%	2%	--
Audio/TV accessories	10%	11%	14%	8%	2%	--
Other equipment	15%	14%	16%	14%	17%	--

[A] Of customers who have a TV.

Table 43. Home Office – by Primary Heating Fuel Type

	Total (n=2,667)	Natural Gas (n=1,085)	Electric (n=337)	Oil (n=844)	Other (n=101)	Adj. Factor
Work from Home	17%	19%	15%	17%	24%	--
Hours per Week Working at Home						
0-10 hrs	39%	38%	58%	38%	48%	--
11-30 hrs	39%	43%	23%	40%	22%	--
More than 30 hrs	22%	19%	19%	22%	29%	--
Computer	82%	84%	77%	83%	85%	1.00
Mean Number of Computers[A]						
Total	1.6	1.6	1.5	1.6	1.8	1.31
Flat panel monitor	1.3	1.3	1.2	1.2	1.3	1.36
CRT monitor	0.4	0.3	0.3	0.4	0.5	1.07
Computer Use						
On	30%	30%	31%	31%	30%	--
In sleep mode	22%	25%	19%	20%	25%	--
Off	47%	46%	50%	49%	45%	--
Households with Products						
Telephone (Landline)	87%	87%	81%	92%	90%	0.99
Cell Phone	83%	85%	84%	84%	75%	--
Answering Machine or Service	74%	74%	66%	79%	84%	1.07
Multifunction Machine	42%	46%	36%	43%	53%	1.24
Fax Machine	10%	11%	5%	11%	13%	0.70
Printer	54%	54%	54%	59%	63%	0.68
Scanner	20%	20%	17%	21%	24%	0.42
Copier	17%	18%	16%	18%	15%	0.17
Home Network	24%	26%	18%	22%	37%	--

[A] Of customers who have a computer.

Table 44. Lighting – by Primary Heating Fuel Type

	Total (n=2,667)	Natural Gas (n=1,085)	Electric (n=337)	Oil (n=844)	Other (n=101)	Adj. Factor
Incandescents						
None	6%	6%	9%	5%	7%	0.42
1-2	13%	13%	14%	11%	9%	0.10
3-5	22%	22%	25%	19%	20%	0.17
6-10	27%	24%	27%	30%	28%	0.28
11 or more	33%	35%	25%	35%	36%	2.45
CFLs						
None	14%	15%	21%	12%	14%	2.10
1-2	18%	18%	18%	16%	7%	1.05
3-5	26%	26%	24%	26%	21%	0.52
6-10	23%	23%	24%	25%	25%	1.02
11 or more	18%	18%	13%	21%	33%	1.12
Halogen Torchieres						
None	74%	73%	75%	75%	76%	1.20
1-2	20%	20%	17%	19%	20%	0.44
3-5	4%	5%	7%	4%	2%	0.22
6-10	1%	1%	<1%	1%	2%	1.31
11 or more	1%	1%	1%	1%	--	--
Fluorescent Torchieres						
None	83%	83%	80%	84%	81%	1.16
1-2	14%	14%	16%	12%	15%	0.35
3-5	3%	3%	1%	3%	4%	1.31
6-10	1%	<1%	--	1%	1%	--
11 or more	<1%	<1%	2%	<1%	<1%	--
Fluorescent Tube Lights						
None	36%	38%	40%	32%	27%	1.02
1-2	33%	33%	38%	33%	29%	0.58
3-5	21%	19%	17%	24%	28%	0.69
6-10	8%	8%	4%	8%	12%	2.39
11 or more	3%	2%	1%	4%	3%	2.28

Table 45. Miscellaneous Appliances – by Primary Heating Fuel Type

	Total (n=2,667)	Natural Gas (n=1,085)	Electric (n=337)	Oil (n=844)	Other (n=101)	Adj. Factor
Households with:						
Portable Fan	69%	65%	63%	74%	76%	--
Ceiling Fan	60%	62%	48%	66%	77%	1.02
Attic or Whole-house Fan	10%	11%	8%	11%	2%	0.78
Electronic Household Air Cleaner	9%	9%	12%	11%	12%	--
Humidifier	26%	29%	19%	24%	39%	1.24
Dehumidifier	46%	48%	38%	53%	49%	1.10
Heated Waterbed	2%	2%	3%	2%	3%	0.97
Sauna - electric	1%	1%	1%	1%	2%	0.97
Electric Whirlpool Tub/Spa	5%	5%	4%	6%	14%	1.46
Electric Water Heater for Pool	1%	2%	2%	2%	--	2.92
Pond, Well, or Pool Pump	16%	12%	13%	22%	34%	1.45
Cordless Vacuum	16%	16%	13%	16%	22%	--
Battery Charger for Appliances	50%	48%	41%	55%	76%	--
Home Security System	19%	22%	17%	19%	25%	0.97
Electric Exercise Equipment	18%	19%	11%	21%	22%	1.12
Electric Clocks/Clock Radios	82%	81%	19%	86%	91%	--
Mean Hours/Day for Dehumidifier						
Summer	7.8	8.1	6.9	7.6	8.3	--
Spring/Fall	4.3	4.6	4.1	3.9	4.5	--
Winter	2.3	2.4	1.6	2.2	3.2	--
Mean Hours/Day for Pool Pumps						
Summer	6.3	6.9	6.4	6.3	2.5	--
Spring/Fall	2.3	3.0	2.5	1.9	0.8	--
Winter	0.7	0.9	1.3	0.6	0.0	--

Table 46. Energy Efficiency – by Primary Heating Fuel Type

	Total (n=2,667)	Natural Gas (n=1,085)	Electric (n=337)	Oil (n=844)	Other (n=101)	Adj. Factor
ENERGY STAR® Label						
Familiar (very/somewhat)	80%	82%	77%	81%	87%	--
Influenced Purchase Decision[A]	66%	66%	64%	69%	76%	--
Meaning of ENERGY STAR® Label[A]						
Government Endorsement	2%	1%	2%	1%	3%	--
Tested/Meets Standards	14%	15%	12%	13%	9%	--
High Quality	2%	2%	<1%	2%	0%	--
Less Pollution/Good for Environment	3%	4%	3%	3%	2%	--
Uses Less Energy	76%	74%	75%	78%	86%	--
Lower Utility Bills	4%	4%	7%	3%	0%	--
ENERGYGuide Label						
Familiar (very/somewhat)	76%	78%	65%	78%	83%	--
Information on ENERGYGuide Label[B]						
Government Endorsement	5%	6%	9%	5%	4%	--
Product is Tested/Meets Standards	23%	22%	26%	23%	17%	--
High Quality	6%	6%	9%	6%	8%	--
Appliance Uses Less Energy	29%	27%	35%	30%	32%	--
How Much Energy the Appliance Uses	58%	58%	59%	60%	70%	--
Compares Energy Use to Similar Models	36%	36%	37%	37%	44%	--
Lower Utility Bills	19%	18%	16%	19%	22%	--
Est. Yearly Operating Cost	41%	39%	40%	45%	48%	--
Familiarity (very/somewhat) with Programs						
Rebate Program	32%	36%	26%	31%	20%	--
Home Energy Audit Program	37%	40%	33%	37%	38%	--
ENERGY STAR® Homes	18%	20%	15%	16%	17%	--
Home Performance with ENERGY STAR®	13%	15%	10%	12%	8%	--
Products that Should Receive Rebates						
Light Bulbs and Fixtures	39%	39%	42%	37%	29%	--
Clothes Washers	35%	33%	33%	37%	29%	--
Refrigerators/Freezers	53%	53%	55%	53%	47%	--
Dishwashers	16%	17%	19%	14%	10%	--
Room Air Conditioners	16%	14%	17%	14%	2%	--
Central Cooling Systems	26%	29%	30%	21%	27%	--
Heating Systems	65%	68%	64%	66%	75%	--
Windows	60%	61%	53%	60%	66%	--
Insulation	42%	45%	32%	42%	58%	--
Solar DWH	20%	17%	24%	25%	35%	--
Pool Pumps	1%	1%	2%	2%	2%	--
Geothermal Heat Pump	10%	8%	15%	12%	10%	--
Interest in Services and Products						
Green Power	67%	67%	63%	67%	69%	--
Rebate Programs	76%	78%	71%	79%	72%	--
Home Energy Audits	56%	57%	48%	59%	58%	--

[A] Of customers who have seen the ENERGY STAR® label before.

[B] Of customers who have seen the ENERGYGuide label before.

Table 47. Profile of Respondents – by Primary Heating Fuel Type

	Total (n=2,667)	Natural Gas (n=1,085)	Electric (n=337)	Oil (n=844)	Other (n=101)	Adj. Factor
Mean Age of Head-of-Household	51.6	51.4	51.9	52.4	51.4	--
Education Level						
High School Graduate or Less	19%	18%	23%	19%	17%	--
College Graduate/Some College	51%	50%	48%	54%	51%	--
Postgraduate Degree	30%	32%	29%	27%	32%	--
Mean Household Income	77,033	82,002	72,521	78,863	81,122	--
Mean Time Lived in Home	11.7	11.1	10.6	13.8	11	--
Mean Number of Occupants	2.6	2.6	2.5	2.8	2.8	--
Primary Language not English	5%	7%	6%	2%	1%	--

DATA SUMMARY BY INCOME CATEGORY

The following tables summarize responses to the mail/Internet survey by the customer's income category. The income classification is based on survey Questions N3 ("Please check the range that best describes your household's total annual income for 2007, before taxes.") and N5 ("For each of the following age groups, how many people, including you, usually live in this home?"). The income categories are:

- **Low Income:** Household income is less than 60% of the median income in Massachusetts, given the number of people in the household.
- **Threshold:** Household income might be less than 60% of the median income in Massachusetts, but determination cannot be made since the 60% level falls within the customer's income range.
- **Not Low Income:** Household income is 60% or more of the median income in Massachusetts, given the number of people in the household.
- **No Response:** Customer did not provide information for either household income or the size of the household.

The final column presents the adjustment factor developed through the in-home verification visits. For explanations of the development and use of adjustment factors, please refer to the Methodology section.

The number of responses for each income category ("n" in the table headers) represents the total number of surveys completed by customers in that category. It should be noted that not every respondent answered every question; therefore the number of responses for any one question might be smaller than the number presented in the table header.

Table 48. Home Characteristics – by Income Category

	Total (n=2,667)	Low Income (n=395)	Threshold (n=385)	Not Low Income (n=1,415)	No Response (n=472)	Adj. Factor
Building Type						
SF Detached	67%	46%	64%	74%	67%	0.99
MF (2-4 units)	20%	34%	23%	16%	19%	0.87
MF (5+ units)	12%	12%	11%	9%	13%	1.18
Other	1%	1%	1%	<1%	1%	0.50
Own Home	81%	54%	77%	89%	85%	--
Year-Round Occupancy	93%	97%	95%	94%	87%	--
Mean No. of Rooms[A]	6.4	5.3	6.0	6.8	6.4	1.05
Mean Dwelling Size (sq. ft)	1,866	1,525	1,622	2,002	1,867	--
Home Built						
Before 1930	26%	29%	30%	25%	25%	--
1930-1969	36%	41%	38%	35%	37%	--
1970-1999	30%	26%	28%	31%	31%	--
2000 or later	8%	4%	4%	9%	8%	--
Home Remodeled in Last 3 Years	25%	18%	25%	29%	20%	--
Natural Gas Service Available	54%	54%	52%	55%	50%	1.14

[A] Excludes bathrooms, halls, pantries, unheated rooms, and garages.

Table 49. Space Heating – by Income Category

	Total (n=2,667)	Low Income (n=395)	Threshold (n=385)	Not Low Income (n=1,415)	No Response (n=472)	Adj. Factor
Home Heating						
Pay to Heat Home	92%	85%	91%	94%	93%	0.98
Heat Part of Rent	7%	14%	9%	5%	6%	–
No Heat	1%	1%	<1%	<1%	2%	–
Primary Heating System Type[A]						
Natural Gas	49%	49%	44%	51%	48%	1.06
Electric	8%	10%	9%	7%	9%	0.99
Oil	39%	39%	42%	38%	38%	0.94
Bottled Gas	2%	<1%	2%	2%	4%	0.66
Wood or Coal	1%	1%	1%	1%	1%	–
Other	1%	1%	2%	<1%	1%	0.50
Mean Age of Primary Heating System[A]	12.3	12.8	13.4	11.9	12.6	–
Uses Additional Heating System	32%	28%	35%	34%	27%	0.87
Additional Heating System Type[AB]						
Natural Gas	2%	3%	3%	1%	2%	–
Electric	46%	41%	45%	48%	44%	–
Oil	6%	8%	9%	5%	4%	–
Bottled Gas	10%	23%	11%	7%	10%	–
Wood or Coal	43%	35%	36%	49%	37%	–
Other	14%	10%	11%	%14	22%	–
Use of Additional Heating System[C]						
Always/Often	49%	51%	53%	50%	41%	–
Rarely/Sometimes	51%	49%	47%	50%	59%	–
Have No Thermostats[C]	5%	11%	6%	3%	5%	1.00
Have Programmable Thermostat(s)[C]	41%	20%	37%	48%	39%	1.00
Mean Number of Thermostats[D]						
Total	2.2	1.8	2.3	2.3	2.2	0.79
Programmable	1.8	0.4	1.1	1.0	0.9	0.73
Standard	2.0	1.4	1.2	1.3	1.3	0.84
Mean Thermostat Setting						
Early a.m. (6-9am)	64.4	64.8	64.4	64.3	64.1	–
Morning (9-1pm)	63.5	64.4	64.0	63.1	63.8	–
Afternoon (1-5pm)	63.7	64.6	63.9	63.4	63.9	–
Evening (5-7pm)	65.8	65.7	65.6	65.9	65.7	–
Night (7pm-6am)	63.0	63.9	63.0	62.8	62.7	–

[A] Of customers who pay to heat their home.

[B] Customers can have more than one additional heating system.

[C] Of customers who heat their residence.

[D] Of customers who have thermostats.

Table 50. Space Cooling – by Income Category

	Total (n=2,667)	Low Income (n=395)	Threshold (n=385)	Not Low Income (n=1,415)	No Response (n=472)	Adj. Factor
Have Air Conditioning (CAC or Room)	82%	75%	83%	83%	81%	0.99
Central Air Cooling						
Have CAC	36%	23%	27%	40%	40%	0.82
No CAC	64%	77%	73%	38%	60%	1.13
76-100% of Space Conditioned[A]	82%	51%	74%	85%	88%	1.03
CAC System Type[A]						
Central AC	89%	85%	79%	90%	92%	1.19
Heat Pump	8%	5%	12%	9%	5%	0.44
Ductless Mini Split	4%	9%	7%	3%	2%	--
Other	2%	5%	4%	2%	2%	--
Mean Number of CAC Systems[A]	1.2	1.1	1.1	1.3	1.2	0.99
Mean Age of Main CAC Unit[A]	7.7	8.2	8.2	7.5	7.8	--
Have No Thermostats[B]	8%	26%	19%	4%	6%	--
Have Programmable Thermostat(s)[B]	49%	23%	34%	56%	46%	1.20
Mean Number of Thermostats[C]						
Total	1.7	1.1	1.3	1.7	1.7	0.94
Programmable	1.0	0.7	0.6	1.1	1.0	1.00
Standard	0.6	0.4	0.7	0.7	0.6	0.87
Mean Thermostat Setting						
Early a.m. (6-9am)	72.2	69.8	72.0	72.2	73.0	--
Morning (9-1pm)	72.6	70.2	72.3	72.7	73.1	--
Afternoon (1-5pm)	72.5	70.1	72.0	72.6	73.0	--
Evening (5-7pm)	72.0	70.1	71.8	72.0	72.6	--
Night (7pm-6am)	72.1	69.6	71.8	72.1	72.9	--
Room AC						
Have Room AC	63%	67%	71%	59%	61%	--
No Room AC	37%	33%	29%	41%	39%	--
Mean Number of Room ACs[C]	2.0	1.7	2.0	2.2	1.8	--
Mean Age of Room ACs[C]	5.2	5.5	5.1	5.1	5.5	1.25
Mean Size of Room ACs (BTUs)[C]	7,679	7,457	7,370	7,746	7,977	0.93
Always/Often Use Cooling Systems[C]						
Early a.m. (6-9am)	26%	18%	16%	30%	27%	--
Morning (9-1pm)	25%	23%	18%	27%	27%	--
Afternoon (1-5pm)	31%	29%	26%	32%	29%	--
Evening (5-7pm)	37%	31%	32%	40%	37%	--
Night (7pm-6am)	37%	28%	30%	41%	34%	--
CAC: Very/Somewhat likely to						
Install[D]	14%	10%	16%	17%	7%	--
Replace[C]	29%	38%	39%	29%	23%	--
Room AC: Very/ Somewhat likely to						
Install[D]	15%	32%	12%	11%	18%	--
Replace[C]	41%	36%	44%	39%	48%	--

[A] Of customers who pay to cool their home.

[B] Of customers who have central cooling system.

[C] Of customers who have appliance/equipment.

[D] Of customers who do not have appliance/equipment.

Table 51. Water Heating – by Income Category

	Total (n=2,667)	Low Income (n=395)	Threshold (n=385)	Not Low Income (n=1,415)	No Response (n=472)	Adj. Factor
Water Heating						
Pay for Hot Water	85%	73%	83%	88%	84%	1.04
Part of Rent	13%	23%	14%	10%	13%	--
No Hot Water	2%	4%	3%	2%	3%	--
Primary Water Heater Type[A]						
Natural Gas	52%	55%	50%	52%	50%	1.14
Electric	18%	18%	20%	17%	21%	0.89
Oil	26%	24%	28%	27%	23%	0.94
Bottled Gas	4%	2%	3%	3%	6%	0.94
Solar	<1%	<1%	-	<1%	<1%	--
Other	<1%	<1%	<1%	<1%	<1%	--
Mean age of primary water heating system[A]	7.8	7.5	8.1	7.7	7.8	--
Primary water heater has insulation blanket/tank wrap[A]	25%	21%	27%	25%	26%	--
Uses Additional Heating System	3%	3%	4%	3%	2%	0.38
Low-Flow shower-heads installed in some/all showers	67%	65%	67%	67%	65%	0.95
Aerators on some/all faucets	51%	45%	51%	53%	48%	1.18

[A] Of customers who pay for hot water in their home.

Table 52. Building Shell – by Income Category

	Total (n=2,667)	Low Income (n=395)	Threshold (n=385)	Not Low Income (n=1,415)	No Response (n=472)	Adj. Factor
All Exterior Walls Have Insulation	75%	63%	71%	77%	80%	--
Attic/Ceiling Has Insulation	89%	76%	89%	91%	90%	--
Rating of Attic/ Ceiling Insulation						
0-3 in. (<R-10)	13%	16%	16%	12%	12%	0.40
4-6 in. (R-11-19)	54%	58%	59%	54%	51%	1.26
7-10 in. (R-20-30)	24%	20%	19%	26%	25%	1.01
> 10 in. (R-31+)	9%	6%	6%	9%	12%	0.80
Window Type by Pane (All/Most)						
Single w/ Storm	23%	31%	21%	21%	26%	0.74
Single, no Storm	8%	13%	6%	7%	8%	0.14
Double	57%	44%	60%	59%	56%	1.36
Single/Double	9%	9%	9%	11%	6%	0.67
Triple Pane	3%	3%	3%	3%	4%	0.16
Window Frames (All/Most)						
Vinyl	43%	44%	49%	43%	40%	1.04
Wood	32%	29%	24%	34%	34%	1.05
Wood and Vinyl	17%	13%	18%	17%	19%	0.34
Metal	7%	13%	9%	5%	7%	1.47

Table 53. Laundry Equipment – by Income Category

	Total (n=2,667)	Low Income (n=395)	Threshold (n=385)	Not Low Income (n=1,415)	No Response (n=472)	Adj. Factor
Laundry Equipment						
Private Use	88%	75%	88%	93%	87%	0.96
Common Area Use	8%	16%	8%	6%	9%	1.29
No Use in Building	4%	9%	4%	2%	5%	1.00
Clothes Washer Type[A]						
Top Loading	75%	86%	79%	70%	80%	0.98
Front Loading	25%	14%	21%	30%	20%	1.06
Mean Age of Clothes Washer[A]	6.9	7.1	6.9	6.6	7.8	--
Mean Number of Loads per Week[A]						
Total	5.1	4.9	5.3	5.2	4.7	--
Hot Water	0.7	0.8	0.8	0.7	0.6	--
Warm Water	2.1	1.6	2.0	2.2	2.2	--
Cold Water	2.3	2.5	2.4	2.3	1.9	--
Weekday Use of Laundry Equip. [A]						
Summer (1-5 p.m.)						
Freq./Occasional	71%	79%	79%	68%	72%	--
Rarely/Never	29%	21%	21%	32%	28%	--
Winter (5-7 p.m.)						
Freq./Occasional	69%	70%	75%	68%	64%	--
Rarely/Never	31%	30%	25%	32%	36%	--
Clothes Dryer	86%	69%	85%	91%	84%	0.97
Clothes Dryer Type[B]						
Natural Gas	24%	19%	22%	25%	25%	0.75
Electric	74%	79%	76%	73%	72%	1.11
Bottled Gas	2%	2%	2%	2%	3%	--
Mean Age of Clothes Dryer	7.5	8.0	7.2	7.3	8.3	--
Mean % Laundry Loads Line Dried[B]						
Summer	18%	28%	19%	16%	19%	--
Spring/Fall	14%	22%	15%	13%	14%	--
Winter	10%	14%	8%	10%	9%	--

[A] Of customers who have private use of laundry equipment.

[B] Of customers who have a clothes dryer.

Table 54. Food Preparation – by Income Category

	Total (n=2,667)	Low Income (n=395)	Threshold (n=385)	Not Low Income (n=1,415)	No Response (n=472)	Adj. Factor
Type of Stovetop/Range[A]						
Natural Gas	39%	41%	39%	40%	36%	0.95
Electric	56%	55%	58%	54%	60%	1.05
Bottled Gas	5%	4%	3%	6%	5%	0.79
Other	<1%	-	<1%	<1%	-	--
Mean Age of Stovetop/Range	8.1	7.9	8.2	7.9	9.2	1.20
Microwave Oven	95%	89%	97%	97%	95%	1.00
George Foreman Type Indoor Grill	32%	28%	35%	32%	35%	--
Dishwasher	75%	46%	68%	86%	74%	0.94
Mean Dishwasher Loads per Week	3.2	2.9	3.0	3.3	3.3	--
Weekday Use of Dishwasher						
Summer (1-5 p.m.)						
Freq./Occasional	44%	43%	50%	42%	49%	--
Rarely/Never	56%	57%	50%	58%	51%	--
Winter (5-7 p.m.)						
Freq./Occasional	60%	59%	64%	60%	56%	--
Rarely/Never	40%	41%	35%	40%	44%	--
Mean Age of Dishwasher	7.3	8.2	7.3	6.9	8.3	--

[A] Of customers who have a stovetop/range.

Table 55. Refrigerators and Freezers – by Income Category

	Total (n=2,667)	Low Income (n=395)	Threshold (n=385)	Not Low Income (n=1,415)	No Response (n=472)	Adj. Factor
Refrigerator	>99%	99%	>99%	>99%	>99%	1.00
Two or More Refrigerators	26%	19%	19%	31%	22%	1.03
Mean Number of Refrigerators	1.3	1.2	1.2	1.3	1.2	1.00
Refrigerator Style						
Single-Door	13%	14%	12%	12%	13%	0.63
Two-Door	86%	85%	87%	86%	86%	1.05
Three or Four-Door	1%	<1%	1%	1%	<1%	0.88
Refrigerator Size						
Small (under 14 cu. ft.)	14%	19%	15%	13%	16%	0.68
Medium (15-18 cu. ft.)	44%	50%	45%	42%	45%	0.46
Large (more than 19 cu. ft.)	42%	31%	40%	45%	39%	1.73
Defrost Capabilities						
Automatic (Frost-Free)	91%	88%	92%	91%	91%	1.06
Manual	9%	12%	8%	9%	9%	0.47
Mean Age of Refrigerator	7.9	7.4	8.2	7.8	8.4	--
Refrigerator Use						
Year-Round	94%	97%	95%	95%	90%	
Seasonally	6%	3%	5%	5%	10%	--
Stand-Alone Freezer	22%	25%	26%	20%	24%	0.59
Two or More Freezers	1%	2%	1%	1%	1%	0.97
Mean Number of Freezers	0.2	0.3	0.3	0.2	0.2	0.61
Freezer Style						
Frost-Free	48%	57%	42%	50%	42%	--
Manual Defrost	52%	43%	58%	50%	58%	--
Freezer Size						
Small (under 15 cu. Ft.)	41%	36%	46%	40%	42%	--
Medium (15-18 cu. Ft.)	46%	45%	43%	48%	44%	--
Large (over 18 cu. Ft)	13%	20%	11%	12%	15%	--
Mean Age of Freezer	10.3	9.9	8.9	10.6	11.1	--
Freezer Use						
Year-Round	95%	98%	92%	97%	90%	--
Seasonally	5%	2%	8%	3%	10%	--

Table 56. Entertainment Equipment – by Income Category

	Total (n=2,667)	Low Income (n=395)	Threshold (n=385)	Not Low Income (n=1,415)	No Response (n=472)	Adj. Factor
Television	99%	98%	99%	99%	99%	1.00
Mean Number of TVs[A]						
Total	2.4	2.2	2.4	2.5	2.3	1.15
Standard Tube (CRT)	1.7	1.8	1.9	1.7	1.7	1.16
Projection TV	<0.1	<0.1	<0.1	0.1	<0.1	0.36
Flat Panel LCD	0.6	0.3	0.5	0.6	0.5	1.38
Flat Panel Plasma	<0.1	<0.1	<0.1	0.1	<0.1	0.67
Mean Hours of Operation						
Primary TV						
Weekday	4.9	5.9	5.5	4.5	4.7	--
Weekend	5.8	6.7	6.5	5.6	5.4	--
Additional TVs						
Weekday	2.4	3.4	2.6	2.1	2.6	--
Weekend	3.0	4.6	3.5	2.6	3.1	--
Weekday Use of Primary TV						
Summer (1-5 p.m.)						
Freq./Occasional	59%	78%	69%	52%	61%	--
Rarely/Never	41%	22%	31%	48%	48%	--
Winter (5-7 p.m.)						
Freq./Occasional	85%	91%	89%	85%	78%	--
Rarely/Never	15%	9%	11%	15%	22%	--
Weekday Use of Additional TVs						
Summer (1-5 p.m.)						
Freq./Occasional	38%	62%	47%	31%	41%	--
Rarely/Never	62%	38%	53%	69%	59%	--
Winter (5-7 p.m.)						
Freq./Occasional	56%	69%	64%	52%	57%	--
Rarely/Never	43%	31%	36%	48%	43%	--
Households with Accessories:						
Home Theater	14%	9%	13%	17%	11%	1.39
D/A Converter Box	11%	15%	12%	10%	9%	0.20
Analog Cable Box	8%	9%	9%	8%	10%	1.10
Digital Cable Box	49%	36%	49%	51%	49%	1.25
Digital Cable Box+DVR	22%	11%	20%	27%	15%	0.58
Separate DVR	9%	6%	6%	11%	9%	0.62
Digital Satellite Box	9%	9%	10%	9%	6%	0.99
Video Game Player	26%	27%	25%	28%	17%	1.37
DVD Player, DVD/VCR	69%	57%	63%	74%	62%	1.19
VCR Only	32%	33%	26%	34%	30%	1.12
Stereo	48%	38%	36%	54%	46%	1.48
Equipment Always or Often Unplugged/Off at Power Strip:						
Primary TV	9%	13%	9%	7%	11%	--
Additional TVs	9%	17%	9%	7%	11%	--
Audio/TV accessories	10%	20%	8%	10%	9%	--
Other equipment	15%	18%	15%	13%	21%	--

[A] Of customers who have a TV.

Table 57. Home Office – by Income Category

	Total (n=2,667)	Low Income (n=395)	Threshold (n=385)	Not Low Income (n=1,415)	No Response (n=472)	Adj. Factor
Work from Home	17%	9%	10%	22%	16%	--
Hours per Week Working at Home						
0-10 hrs	39%	27%	28%	39%	52%	--
11-30 hrs	39%	43%	43%	40%	30%	--
More than 30 hrs	22%	30%	29%	20%	18%	--
Computer	82%	66%	78%	91%	70%	1.00
Mean Number of Computers[A]						
Total	1.6	1.4	1.4	1.7	1.5	1.31
Flat panel monitor	1.2	1.1	1.0	1.3	1.2	1.36
CRT monitor	0.3	0.4	0.4	0.3	0.3	1.07
Computer Use						
On	30%	39%	34%	30%	27%	--
In sleep mode	22%	15%	18%	24%	20%	--
Off	47%	46%	48%	47%	53%	--
Households with Products						
Telephone (Landline)	87%	79%	86%	89%	89%	0.99
Cell Phone	83%	70%	82%	90%	75%	--
Answering Machine/Svc	74%	57%	77%	87%	73%	1.07
Multifunction Machine	42%	24%	37%	51%	33%	1.24
Fax Machine	10%	6%	8%	13%	7%	0.70
Printer	54%	36%	54%	61%	49%	0.68
Scanner	20%	15%	21%	22%	14%	0.42
Copier	17%	12%	18%	19%	16%	0.17
Home Network	24%	9%	15%	32%	17%	--

[A] Of customers who have a computer.

Table 58. Lighting – by Income Category

	Total (n=2,667)	Low Income (n=395)	Threshold (n=385)	Not Low Income (n=1,415)	No Response (n=472)	Adj. Factor
Incandescents						
None	6%	12%	8%	4%	6%	0.42
1-2	13%	20%	13%	11%	15%	0.10
3-5	22%	25%	28%	20%	18%	0.17
6-10	27%	29%	26%	27%	26%	0.28
11 or more	33%	14%	25%	38%	36%	2.45
CFLs						
None	14%	17%	11%	15%	12%	2.10
1-2	18%	25%	17%	16%	21%	1.05
3-5	26%	23%	29%	26%	28%	0.52
6-10	23%	20%	24%	24%	21%	1.02
11 or more	18%	14%	19%	20%	17%	1.12
Halogen Torchieres						
None	74%	72%	79%	73%	77%	1.20
1-2	20%	20%	17%	21%	19%	0.44
3-5	4%	6%%	3%	5%	3%	0.22
6-10	1%	1%	-	1%	1%	1.31
11 or more	1%	1%	1%	1%	<1%	--
Fluorescent Torchieres						
None	83%	84%	85%	83%	78%	1.16
1-2	14%	14%	13%	13%	17%	0.35
3-5	3%	1%	2%	3%	4%	1.31
6-10	1%	-	<1%	1%	-	--
11 or more	<1%	-	-	1%	1%	--
Fluorescent Tube Lights						
None	36%	42%	29%	38%	31%	1.02
1-2	33%	35%	40%	29%	40%	0.58
3-5	21%	15%	19%	22%	21%	0.69
6-10	8%	7%	8%	9%	4%	2.39
11 or more	3%	1%	4%	3%	4%	2.28

Table 59. Miscellaneous Appliances – by Income Category

	Total (n=2,667)	Low Income (n=395)	Threshold (n=385)	Not Low Income (n=1,415)	No Response (n=472)	Adj. Factor
Households with:						
Portable Fan	69%	74%	72%	69%	64%	--
Ceiling Fan	60%	51%	63%	61%	59%	1.02
Attic/Whole-house Fan	10%	6%	10%	11%	9%	0.78
Electronic Household Air Cleaner	9%	8%	10%	10%	8%	--
Humidifier	26%	19%	24%	28%	24%	1.24
Dehumidifier	46%	30%	39%	50%	53%	1.10
Heated Waterbed	2%	1%	2%	2%	2%	0.97
Sauna - electric	1%	0%	0%	1%	0%	0.97
Electric Whirlpool/Spa	5%	1%	2%	8%	3%	1.46
Electric Water Heater for Pool	1%	2%	0%	2%	1%	2.92
Pond/Well/Pool Pump	16%	11%	14%	17%	17%	1.45
Cordless Vacuum	16%	12%	15%	18%	14%	--
Battery Charger for Appliances	50%	37%	50%	58%	38%	--
Home Security System	19%	8%	13%	23%	20%	0.97
Elect. Exercise Equip.	18%	11%	13%	22%	13%	1.12
Electric Clocks/Clock Radios	82%	71%	80%	86%	78%	--
Mean Hours/Day for Dehumidifier						
Summer	7.8	6.3	7.8	7.9	8.1	--
Spring/Fall	4.3	3.5	3.4	4.5	4.5	--
Winter	2.3	3.2	1.5	2.5	1.8	--
Mean Hours/Day for Pool Pumps						
Summer	6.3	4.3	4.9	6.9	6.1	--
Spring/Fall	2.3	1.9	1.6	2.6	1.6	--
Winter	0.7	1.0	0.7	0.7	0.6	--

Table 60. Energy Efficiency – by Income Category

	Total (n=2,667)	Low Income (n=395)	Threshold (n=385)	Not Low Income (n=1,415)	No Response (n=472)	Adj. Factor
ENERGY STAR® Label						
Familiar (very/somewhat)	80%	67%	79%	85%	75%	--
Influenced Purchase Decision[A]	66%	55%	65%	71%	63%	--
Meaning of ENERGY STAR® Label[A]						
Government Endorsement	2%	2%	2%	1%	2%	--
Tested/Meets Standards	14%	14%	16%	13%	15%	--
High Quality	2%	2%	2%	1%	3%	--
Less Pollution/Good for Environment	3%	4%	3%	3%	3%	--
Uses Less Energy	76%	71%	74%	78%	76%	--
Lower Utility Bills	4%	7%	4%	3%	2%	--
ENERGYGuide Label						
Familiar (very/somewhat)	76%	63%	73%	81%	73%	--
Information on ENERGYGuide Label[B]						
Government Endorsement	5%	7%	6%	5%	6%	--
Product is Tested/Meets Standards	23%	24%	23%	23%	21%	--
High Quality	6%	9%	8%	5%	5%	--
Appliance Uses Less Energy	29%	37%	33%	26%	32%	--
How Much Energy the Appliance Uses	58%	48%	57%	61%	57%	--
Compares Energy Use to Similar Models	36%	24%	29%	40%	35%	--
Lower Utility Bills	19%	26%	19%	18%	17%	--
Est. Yearly Operating Cost	41%	29%	40%	44%	39%	--
Familiarity (very/somewhat) with Programs						
Rebate Program	32%	25%	30%	34%	30%	--
Home Energy Audit Program	37%	29%	34%	39%	40%	--
ENERGY STAR® Homes	18%	16%	18%	19%	17%	--
Home Performance with ENERGY STAR®	13%	14%	11%	13%	13%	--
Products that Should Receive Rebates						
Light Bulbs and Fixtures	39%	53%	38%	37%	41%	--
Clothes Washers	35%	38%	36%	34%	36%	--
Refrigerators/Freezers	53%	59%	59%	49%	59%	--
Dishwashers	16%	12%	15%	16%	20%	--
Room Air Conditioners	16%	30%	17%	13%	13%	--
Central Cooling Systems	26%	10%	19%	31%	21%	--
Heating Systems	65%	50%	63%	69%	64%	--
Windows	60%	53%	60%	62%	53%	--
Insulation	42%	31%	45%	44%	40%	--
Solar DWH	20%	19%	19%	22%	17%	--
Pool Pumps	1%	2%	1%	1%	2%	--
Geothermal Heat Pump	10%	7%	11%	10%	8%	--

	Total (n=2,667)	Low Income (n=395)	Threshold (n=385)	Not Low Income (n=1,415)	No Response (n=472)	Adj. Factor
Interest in Services and Products						
Green Power	67%	65%	62%	71%	56%	--
Rebate Programs	78%	73%	75%	81%	73%	--
Home Energy Audits	56%	54%	54%	59%	46%	--

[A] Of customers who have seen the ENERGY STAR® label before.

[B] Of customers who have seen the ENERGYGuide label before.

Table 61. Profile of Respondents – by Income Category

	Total (n=2,667)	Low Income (n=395)	Threshold (n=385)	Not Low Income (n=1,415)	No Response (n=472)	Adj. Factor
Mean Age of Head-of-Household	51.6	51.4	51.9	50.6	55.0	--
Education Level						
High School Graduate or Less	19%	48%	30%	8%	21%	--
College Graduate/Some College	51%	46%	57%	52%	50%	--
Postgraduate Degree	30%	6%	14%	40%	29%	--
Mean Household Income	77,034	19,840	46,090	101,502	64,188	--
Mean Time Lived in Home	11.7	11.0	12.1	11.2	13.7	--
Mean Number of Occupants	2.6	2.7	2.7	2.6	2.5	--
Primary Language not English	5%	14%	5%	4%	3%	--