IDAHO SINGLE-FAMILY HOMES

State Summary Statistics

2014
Full RBSA Dataset: *http://bit.ly/1rTVSjg*
neea.org

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EXECUTIVE SUMMARY

The purpose of this report is to provide a summary of Idaho's single-family home energy use based on the Northwest Energy Efficiency Alliance's (NEEA) 2011 Residential Building Stock Assessment (RBSA) findings. It is accompanied by three other state-specific reports for Montana, Oregon and Washington. Each state-specific report includes overall housing utility and energy statistics, and details the type and efficiency of housing components including windows, insulation, appliances and heating fuel types within each region of each state. The state-specific report findings are largely from the 2011 RBSA study, except where supplemental data sources have been noted.

The RBSA is sponsored by NEEA and was conducted by Ecotope, Inc. with support by Ecova™, Delta-T, Inc., and ORC International. The primary objective of the RBSA is to develop an inventory and profile of the Northwest's existing residential building stock based on field data from a representative, random sample of existing homes. The RBSA establishes the 2011 regional housing stock baseline for three residence categories: single-family homes, manufactured homes, and multi-family homes.

The results will guide future planning efforts and provide a solid base for assessing residential program energy savings throughout the Northwest. Ecotope designed the RBSA sample to include all public and investor-owned utilities in Idaho, western Montana, Oregon and Washington. The final RBSA sample included 99 utilities: 89 public utilities, seven investor-owned utilities, and three natural gas-only utilities. Field surveys were conducted on more than 1,850 sites across the Northwest, including more than 1,400 single-family homes.

The regional single-family, manufactured, and multi-family homes RBSA reports, and other state-specific single-family summary reports are available on NEEA's RBSA website. Also on the website is the RBSA Metering study, which studied 101 sites from the single-family home sample with a full set of instruments designed to assess electric and other energy uses across a variety of residential end uses.

Any questions or comments can be directed to Aaron James or the Market Research and Evaluation department at NEEA.

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The Northwest Energy Efficiency Alliance (NEEA) is an alliance of more than 140 Northwest utilities and energy efficiency organizations working on behalf of more than 13 million energy consumers. NEEA leverages its strong regional partnerships to effect market transformation by accelerating the adoption of energy-efficient products, services and practices.

Note: All RBSA data used in this report is weighted. The initial RBSA reports only have raw, un-weighted numbers so in some cases this will result in different numbers being reported.

Table of Contents

QUICK DEMOGRAPHIC OVERVIEW

As of 2012, the state of Idaho had an estimated population of 1.6 million, growing at about the same rate as the rest of the United States between 2010 and 2012. Idaho had 673,054 housing units with 577,648 households. Idaho has 2.66 persons per household compared to 2.61 nationally. The median value of owner-occupied housing units in Idaho is $167,100, and the median household income is $47,015, compared to $181,400 and $53,046 respectively nationwide. The majority of Idaho's population is concentrated within around the Boise area.

People Quick Facts[1]	Idaho	REGION	USA
Population, 2012 estimate	1,595,590	13,395,755	313,873,685
Population, percent change, April 1, 2010 to July 1, 2012	+1.80%	+2.85%	+1.70%
Language other than English spoken at home, percent of persons age 5+, 2007-2011	10.40%	15.20%	20.50%
Mean travel time to work (minutes), workers age 16+, 2008-2012	20.10	23.36	25.40
Housing units, 2012	673,054	5,757,995	132,452,405
Homeownership rate, 2008-2012	70.10%	64.70%	66.10%
Housing units in multi-unit structures, percent, 2008-2012	23.30%	24.03%	25.90%
Median value of owner-occupied housing units, 2008-2012	$167,100.00	$247,641.00	$181,400.00
Households, 2008-2012	577,648	5,112,705	115,226,802
Persons per household, 2008-2012	2.66	2.51	2.61
Per capita money income in the past 12 months (2011 dollars), 2008-2012	$22,581.00	$28,080.00	$28,051.00
Median household income, 2008-2012	$47,015.00	$54,085.00	$53,046.00
Persons below poverty level, percent, 2008-2012	15.10%	13.86%	14.90%

[1] Staff, "State & County QuickFacts." U.S. Census Bureau Website. U.S. Department of Commerce, 17 Dec 2013. Web. 8 Jan 2014. *quickfacts.census.gov/qfd/states/41000.html*

UTILITY AND ENERGY STATISTICS[2]

There are 802,219 utility customers in Idaho, 673,378 of which are residential accounts. Residential customers in Idaho account for 937 average megawatts (aMW) of demand and 8.2 million megawatt hours (MWh) of usage. Eighty-four percent of residential accounts, representing 82 percent of usage, are with Investor Owned Utilities (IOUs). IOU customers pay around 12 percent less per kilowatt-hour (kWh) than other utilities, and use around 12 percent less kWh per month.

Customers by Utility Type (2012)	Cooperatives	Municipalities	BPA	Investor Owned Utilities	Total
Residential	64,404	44,264	-	564,710	673,378
Commercial & Industrial	9,654	8,002	1	111,184	128,841
Public Street & Highway Lighting	-	-	-	-	-
Other Public Authorities/ Transportation	-	-	-	-	-
Interdepartmental	-	-	-	-	-
Irrigation	-	-	-	-	-
Other Sales to Retail Energy Customers	-	-	-	-	-
Total Customers	74,058	52,266	1	675,894	802,219

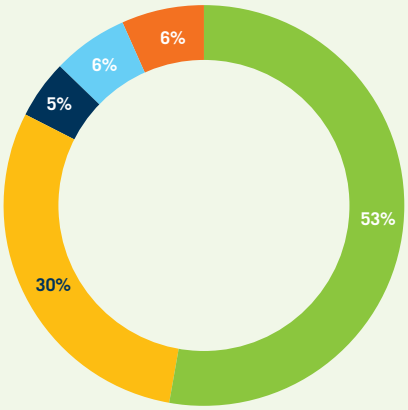
Residential Electricity Cost	Cooperatives	Municipalities	Public Utility Districts	Investor Owned Utilities	Total
Average Cost per kWh	9.02¢	6.76¢	-	8.78¢	8.67¢
Average Monthly Cost	$101.74	$100.66	-	$89.11	$91.08
Average Annual Cost	$1,220.86	$1,207.96	-	$1,069.32	$1,092.95
Average Monthly kWh	1,128	1,116	-	988	1,010
Average Annual kWh	13,535	13,392	-	11,855	12,117
Total Annual MWh	871,719	592,763	-	6,694,867	8,159,349
Total Annual aMW	100	68	-	769	937

[2] *http://www.eia.gov/electricity/sales_revenue_price/xls/table6.xls; http://www.eia.gov/electricity/sales_revenue_price/xls/table7.xls; http://www.eia.gov/electricity/sales_revenue_price/xls/table8.xls ; http://www.eia.gov/electricity/sales_revenue_price/xls/table9.xls*

HOUSING FACTS
Location

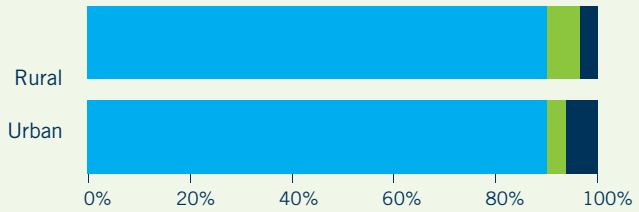
Eighty-three percent of housing units in Idaho are Single-Family (SF) homes, and 68 percent of all SF homes are in urban counties[3]. Nearly all SF homes are detached, with less than 10 percent being either townhouse/rowhouses or duplex/triplex/quadplexes. Eighty-seven percent of SF homes are owner-occupied. Housing in rural and urban counties have about the same average age – 37 to 38 years, with nearly two-thirds being built after 1970, and 40 percent built since 1990 or after. Housing sizes have grown slightly, with urban and rural homes being close in size (2,135 ft^2 and 2,065 ft^2 respectively). There appears to be a difference in the number of rooms, with urban homes having one more room per house than rural homes on average (12.7 vs. 11.6 rooms respectively).

Housing Type



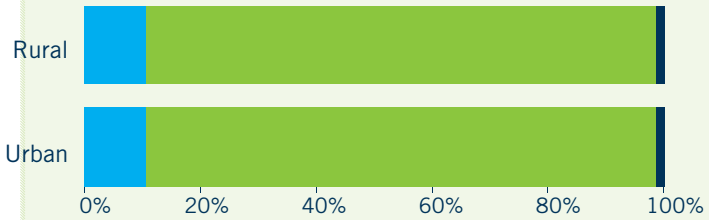
- Rural Manufactured Home
- Urban Manufactured Home
- Multi-Family Home
- Rural Single-Family Home
- Urban Single-Family Home

Single-Family Homes
(by Type and Region)



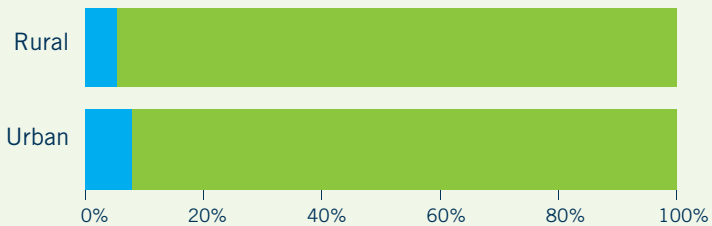
- Single-Family, Detached
- Duplex, Triplex, or Fourplex
- Townhouse or Rowhouse

Renters vs. Owners
(by Region)



- Rent
- Own
- Other

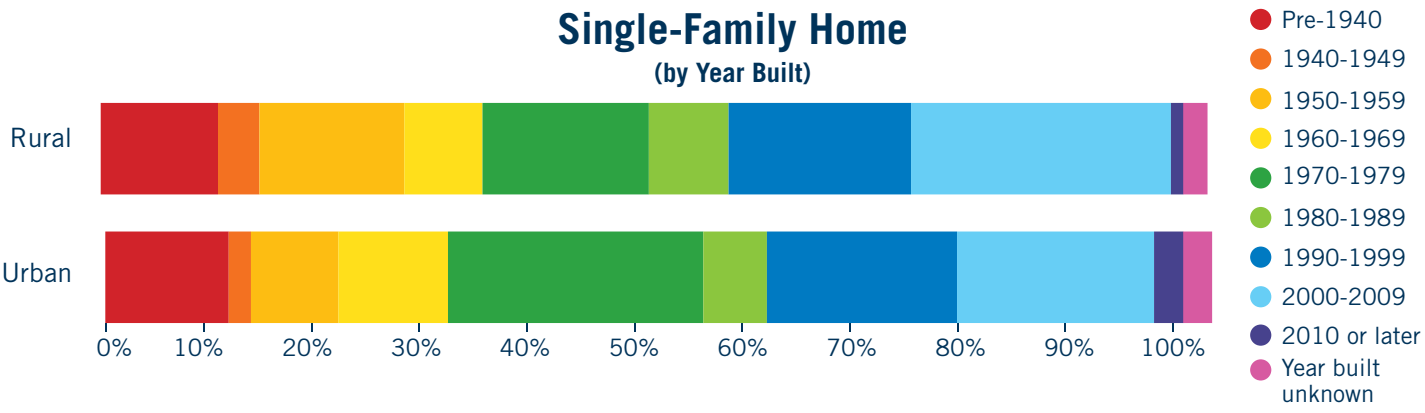
Public Assistance Recipients
(by Region)



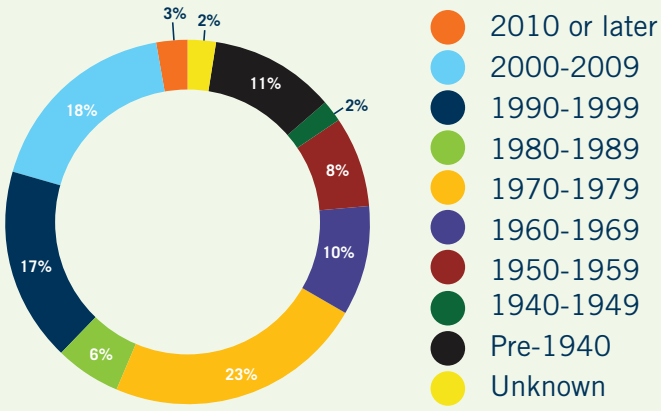
- Public Assistance Recipients
- None

[3]Urban/Rural is based on the 2013 USDA Rural-Urban Continuum Codes with those counties in codes 1-3 considered to be Urban and all others considered to be Rural. http://www.ers.usda.gov/data-products/rural-urban-continuum-codes.aspx

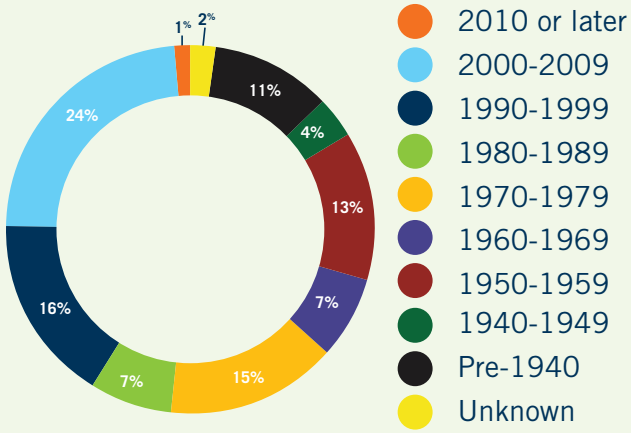
Single-Family Home
(by Year Built)



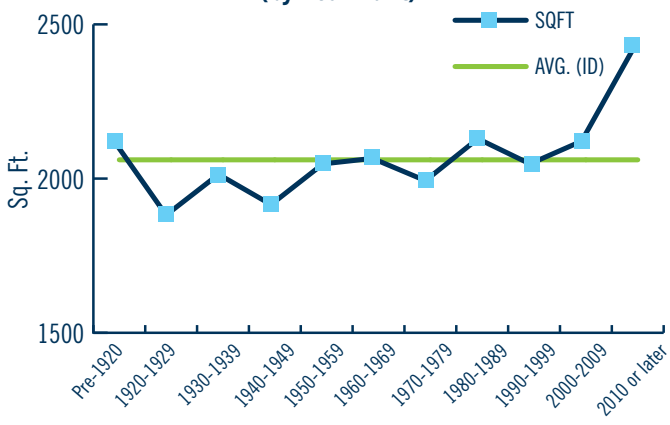
Urban Single-Family Home
(Year Built)



Rural Single-Family Home
(Year Built)



Average Home Size
(by Year Built)



Single-Family Home Statistics

	Avg. Age (Years)	Avg. Square Feet	Avg. # Rooms	Avg. # of Floors
Urban	38	2,135	12.7	1.3
Rural	37	2,065	11.6	1.2
Idaho	37	2,109	12.3	1.3

TYPICAL HOUSE BY REGION[4]

Rural Idaho

Built in 1976/Moved in: 1998
2,065 ft² -- 3.2 Bedrooms/2.0 Bath
1.2 floors, 11.6 rooms

Heating:
Gas Forced Air Heat (2002) or
Electric Baseboard

Refrigerator:
19 ft³/Built in 1997

Air Conditioning (AC):
53% have AC
Most Common: Central AC (55%)

Television:
Primary: 35"- 2006 (On for 6.2 hrs daily)
Secondary: 29"- 2005

Water Heater:
52g Electric/Built in 2001

Washer:
Top-Load-1999
Dryer:
Electric-2000

Urban Idaho

Built in 1975/Moved in: 1999
2,134 ft² -- 3.5 Bedrooms/2.4 Bath
1.3 floors, 12.7 rooms

Heating:
Gas Forced Air (1999)

Refrigerator:
19 ft³/Built in 1996

Air Conditioning (AC):
72% have AC
Most Common: Central AC (64%)

Television:
Primary: 37"- 2005 (On for 5.8 hrs daily)
Secondary: 27"- 200

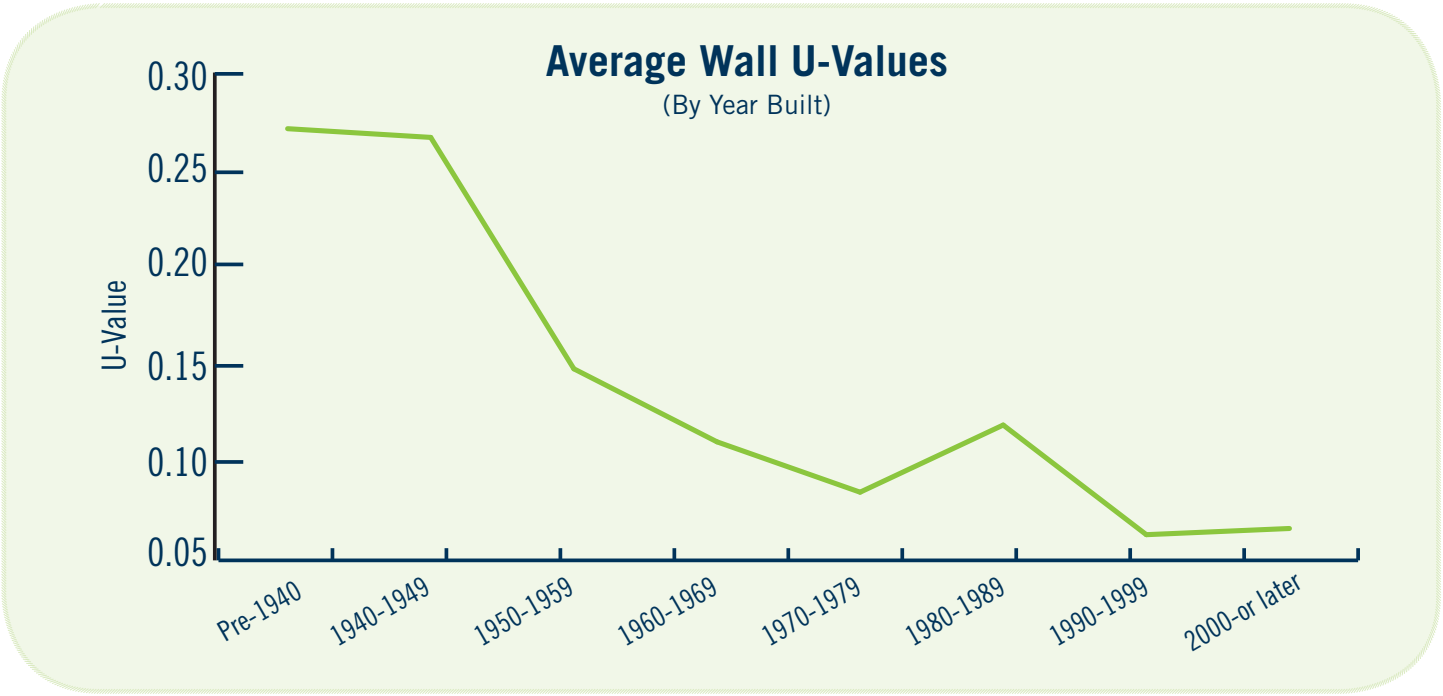
Water Heater:
46g Gas/Built in 2001 or
50g Electric/Built in 2002

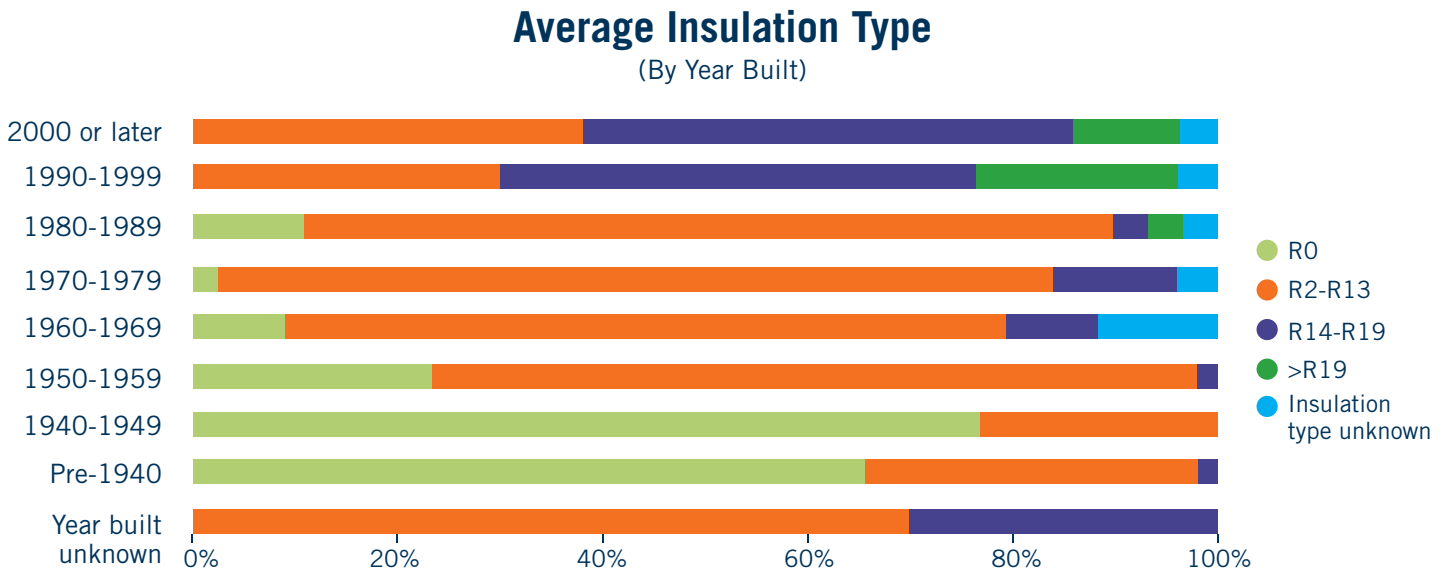
Washer:
Top-Load-1998
Dryer:
Electric-1999

[4]There were 185 total observations in Idaho.
RURAL Idaho includes counties designated rural by the US Department of Agriculture's Urban/Rural index and includes 76 observations.
URBAN Idaho includes counties designated urban by the US Department of Agriculture's Urban/Rural index and includes 109 observations.

INSULATION

As building codes have required better wall insulation, the average U-value for walls, which describes how well a building element conducts heat, has decreased significantly from 0.27 for homes built prior to the 1950s, to around 0.06 to 0.07 since the 1990s. A significant majority of houses built prior to 1990 have lower R-values. R-value is a measure of thermal resistance, and is expressed as the thickness of the material (U-value is the inverse of R-value). Houses built prior to 1990 had wall insulation of R-13 or less. Most houses built since 1990 have insulation of R-14 or better.

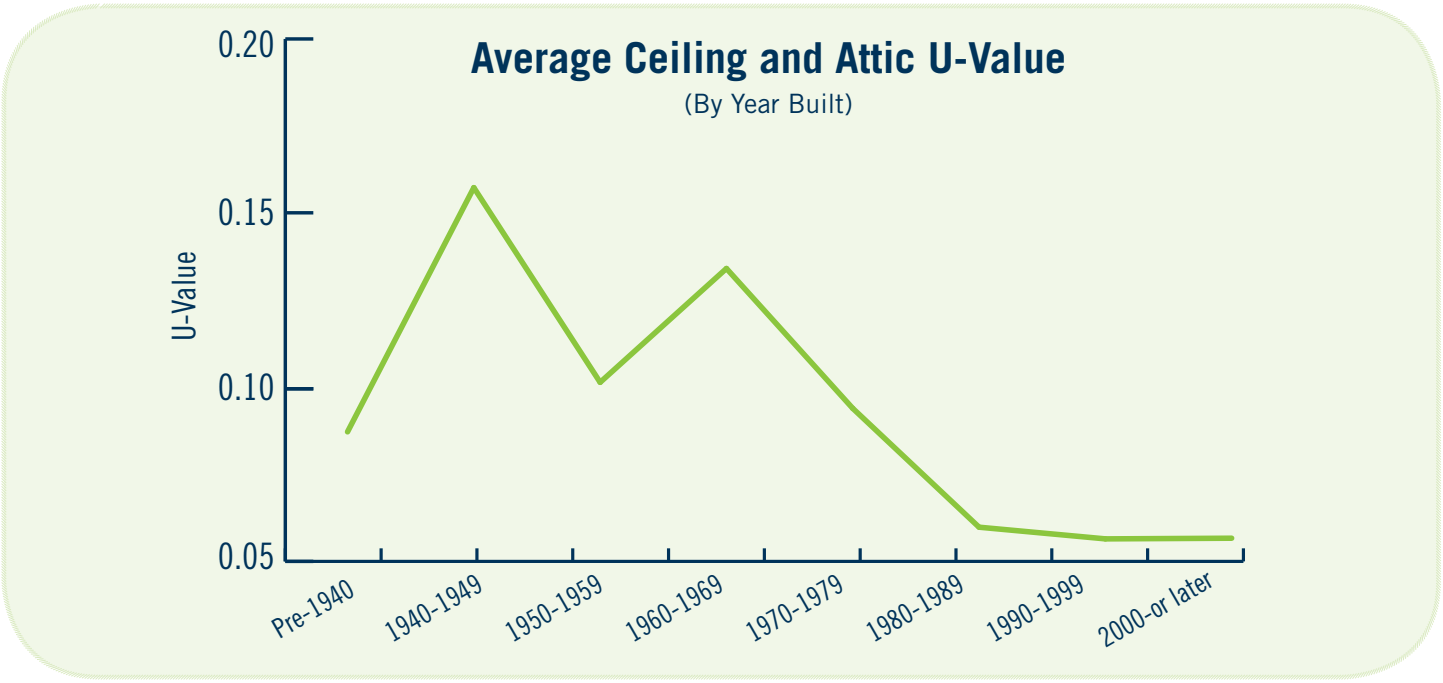


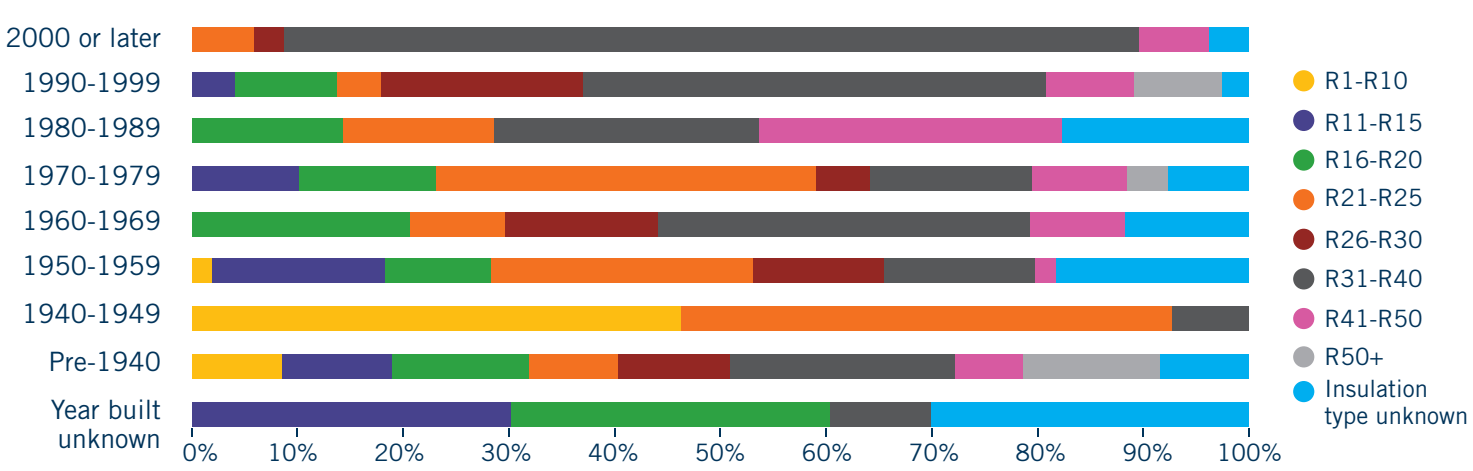


CEILINGS AND ATTICS/ FLOORS

As with walls, the average U-value for ceilings has dropped significantly as building codes have increased ceiling insulation requirements. Houses built prior to the 1970s have ceiling U-values of 0.10 or more. U-values have dropped since the 1970s, to around 0.58 for houses built since the 1990s. Homes built prior to the 1980s primarily have ceiling insulation of R-25 or less. Ceiling insulation has increased, with most homes built since the 1990s having ceiling insulation greater than R-30.

While floor insulation has likely seen similar trends, surveyors were only able to collect data on about 13 percent of homes in the RBSA study, so similar statistics are not available.

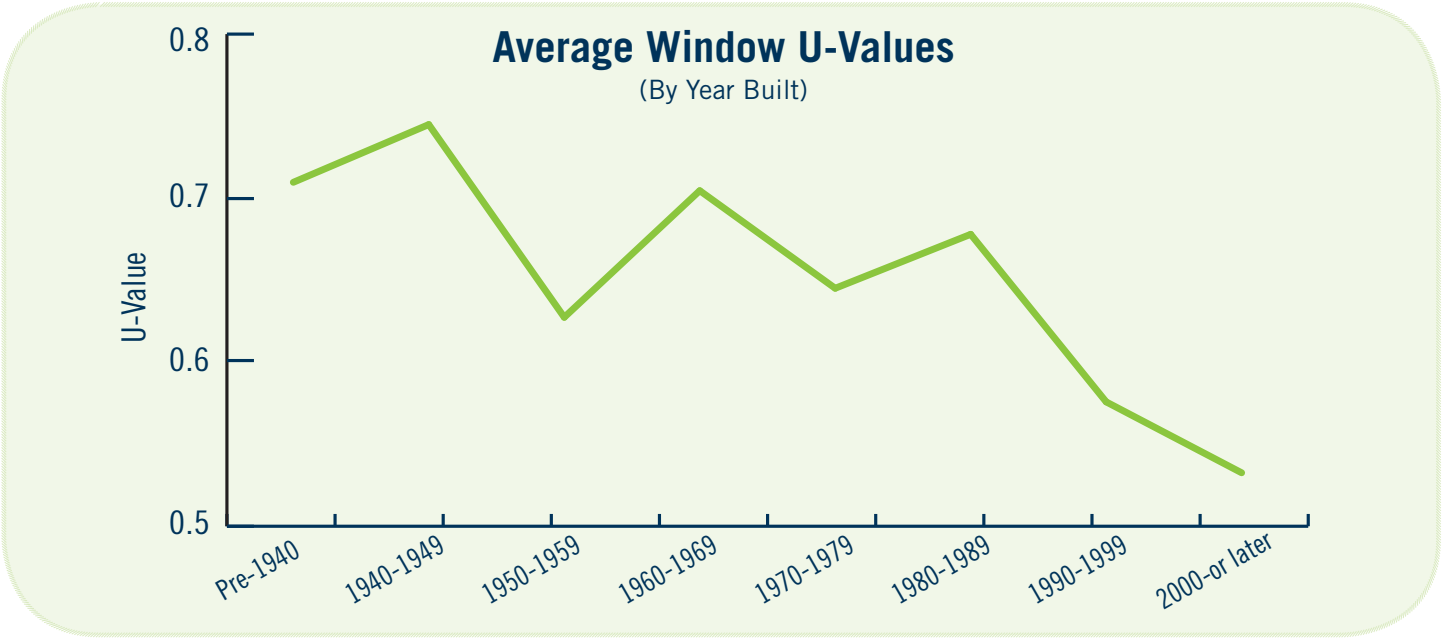


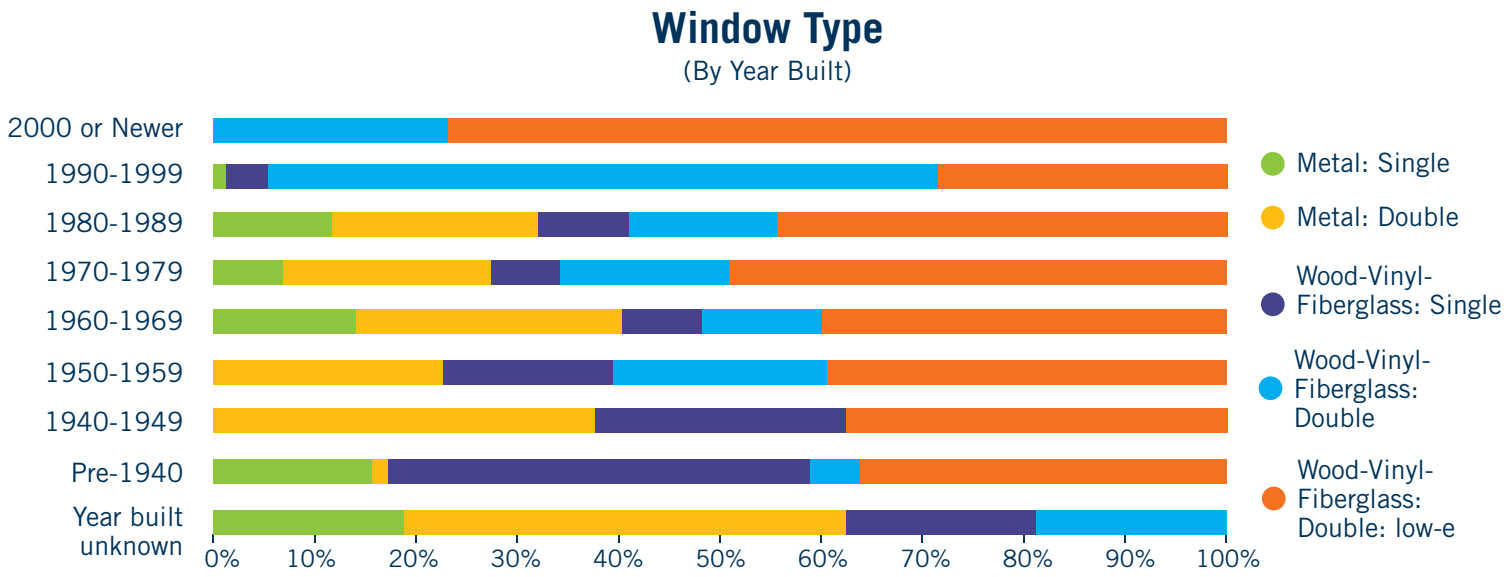


WINDOWS

As with walls and ceilings, window U-values have also dropped - from 0.63 to 0.74 in homes built prior to the 1990s, to 0.53 in homes built in 2000 or later. Prior to the 1970s, most houses were built with wood, and later, aluminum, single-pane windows. Building codes and new technologies brought in double-pane, insulated windows, and vinyl and fiberglass frames, significantly dropping window U-values.

Nearly all windows since the mid-90s are insulated double-paned glass with wood/vinyl/fiberglass frames. Most homes built since 2000 also have low-e glass.



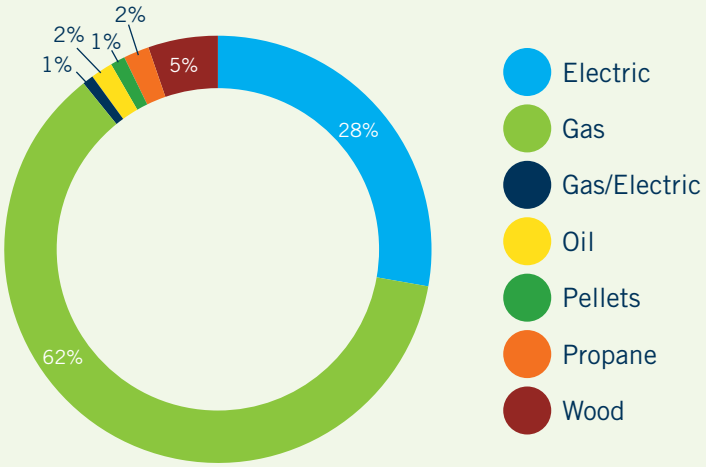


HEATING

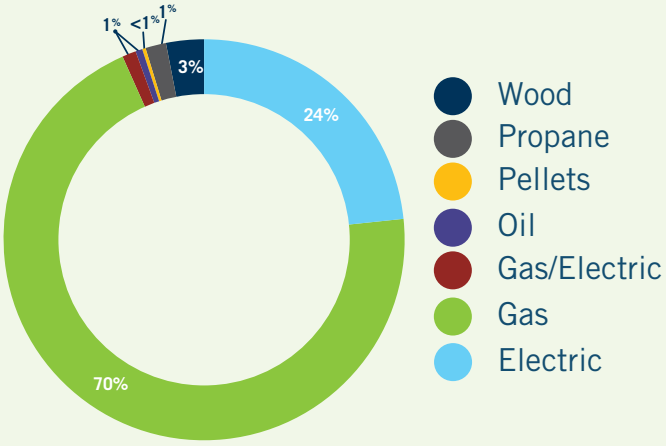
The most prevalent heating fuel for SF homes in Idaho is gas (62 percent) followed by electric heat (28 percent). In urban counties, gas is much more prevalent, with 70 percent of all homes using gas. Rural counties are more diverse in their heating, with 46 percent using gas, 36 percent using electric heat, and nine percent using wood.

State Heating Fuel Type

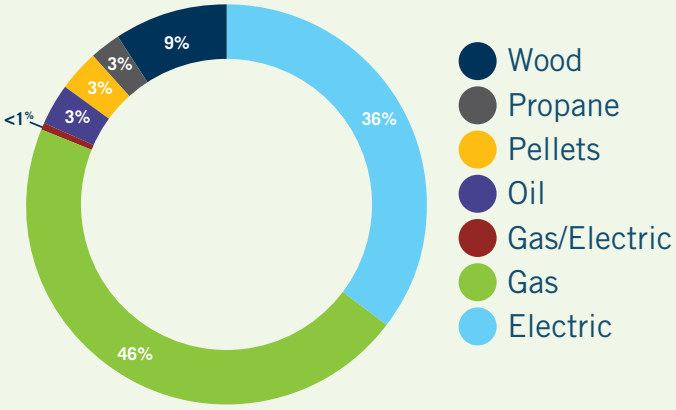
(Single-Family Homes)



Urban Single-Family Home/ Heating Fuel Type

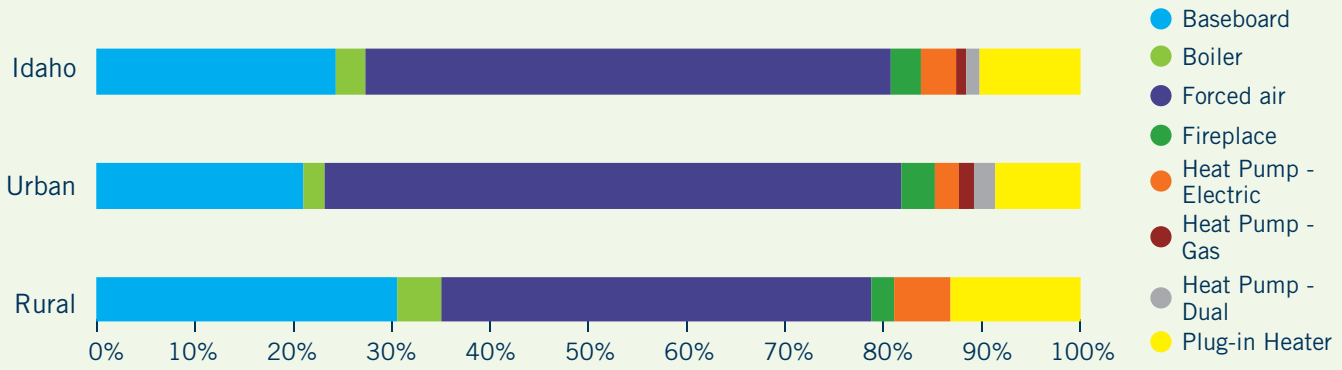


Rural Single-Family Home/ Heating Fuel Type



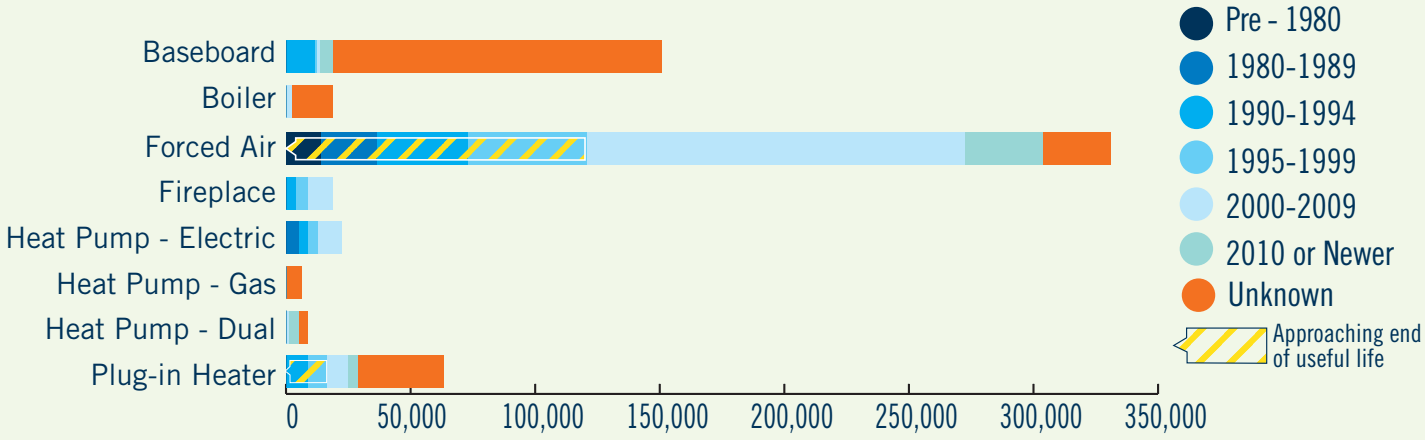
The dominant heat source in Idaho is forced air (53 percent), followed by baseboard heat (24 percent) and plug-in heaters (10 percent). Forced air is not quite as dominant in rural counties as it is in urban counties (44 vs. 59 percent respectively), with zonal heating being used nearly as much (31 percent baseboard and 13 percent plug-in). More than one-third of all forced air units (36 percent) are at, or nearing, their life expectancies (estimated around 15 years). There is not enough year of manufacture information on baseboard units to understand how many are potential replacement candidates due to age.

Primary Heating Types



Primary Heat Source Age

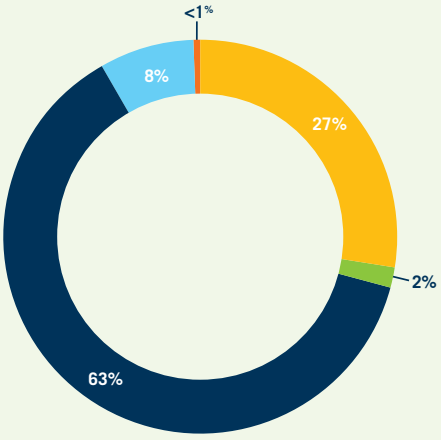
(by Total Number of Units)



LIGHTING

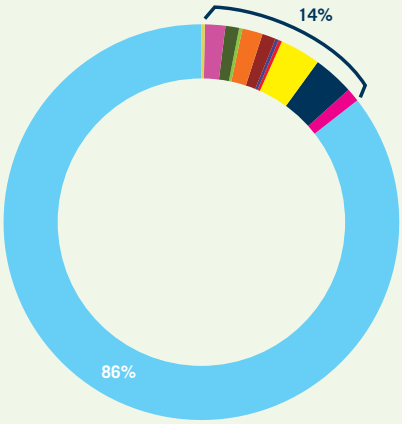
Compact Fluorescent Bulbs (CFLs) now account for 27 percent of all SF home lighting in Idaho, while incandescent bulbs remain the dominant light source, making up 63 percent of all bulbs. 60W incandescent bulbs are the most populous bulb, making up half of all incandescents (46 percent), and 28 percent of lamps overall. 60W bulbs still number more than all CFLs combined (3.3 million vs. 3.2 million respectively). Of CFLs, 86 percent are twisted bulbs. LED lights were too new to register before 2012.

Lamp Type



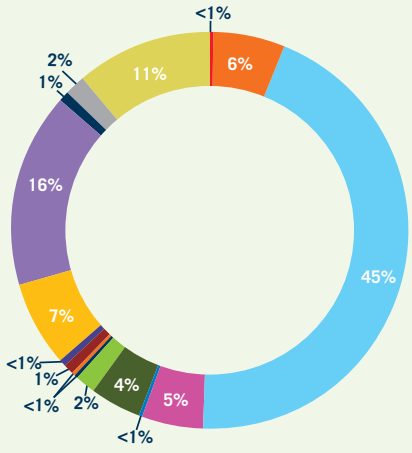
- Other
- Linear Fluorescent
- Incandescent
- Halogen
- Compact Fluorescent

CFL Bulb Type



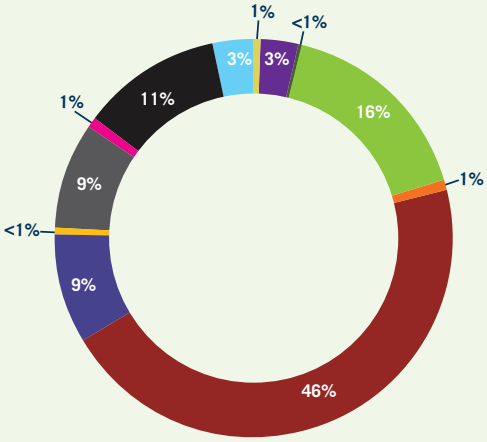
- Twist
- Straight tube
- Reflector
- Pin base
- Other
- Mini base
- Globe
- Flood
- Decorative
- Circline (screw bulb)
- A shape bulb
- 3-way CFL

Fixture Type



- Wall Mount
- Track
- Torchiere
- Table
- Recessed can
- Recessed - other
- Other
- Low bay
- High bay
- Garage door opener
- Floor lamp
- Exterior
- Chandelier
- Ceiling fixture
- Ceiling fan
- Architectural

Incandescent Wattage



- >100W
- 100W
- 76W-99W
- 75W
- 70W
- 61W-69W
- 60W
- 41W-59W
- 40W
- 26W-39W
- 25W
- <24W

Single Family Home: Lamp Category by Lighting Lamp Type – Total Lamps							
	Compact Fluorescent	Halogen	Incandescent	Linear Fluorescent	Other	Total	% of Total*
3-Way CFL	17,528	0	0	0	0	17,528	0.15%
3-Way Incandescent	0	0	188,397	0	0	188,397	1.61%
A Shape Bulb	50,975	0	0	0	0	50,975	0.44%
Circline (Screw bulb)	32,671	0	0	0	0	32,671	0.28%
Clear	0	0	323,283	0	0	323,283	2.76%
Colored	0	0	3,786	0	0	3,786	0.03%
Decorative	13,742	0	450,691	0	0	464,433	3.97%
Flood	54,286	0	0	0	0	54,286	0.46%
Fluorescent Other	0	0	0	26,500	0	26,500	0.23%
Fluorescent Unknown	0	0	0	16,336	0	16,336	0.14%
Globe	30,078	0	406,362	0	0	436,439	3.73%
Heat Lamp	0	0	40,034	0	0	40,034	0.34%
LED Interior	0	0	0	0	26,500	26,500	0.23%
Multifaceted Reflector	0	69,846	0	0	0	69,846	0.60%
Mini Base	4,978	0	256,483	0	0	261,461	2.23%
Other	1,193	36,248	17,320	0	3,786	58,546	0.50%
Parabolic Aluminized Reflector	0	22,506	0	0	0	22,506	0.19%
Pin Base	114,916	0	0	0	0	114,916	0.98%
Quartz Tube	0	85,255	0	0	0	85,255	0.73%
Reflector	105,585	0	748,608	0	0	854,193	7.30%
Standard A Lamp	0	0	4,896,669	0	0	4,896,669	41.85%
Straight Tube	37,233	0	0	0	0	37,233	0.32%
T-12	0	0	0	603,464	0	603,464	5.16%
T-4	0	0	0	4,770	0	4,770	0.04%
T-5	0	0	0	27,693	0	27,693	0.24%
T-8	0	0	0	217,849	0	217,849	1.86%
Twist	2,767,033	0	0	0	0	2,767,033	23.65%
Total	3,230,216	213,855	7,331,632	896,612	30,286	11,702,601	100%
	27.60%	1.83%	62.65%	7.66%	0.26%	100%	

*Rounded to the nearest tenth

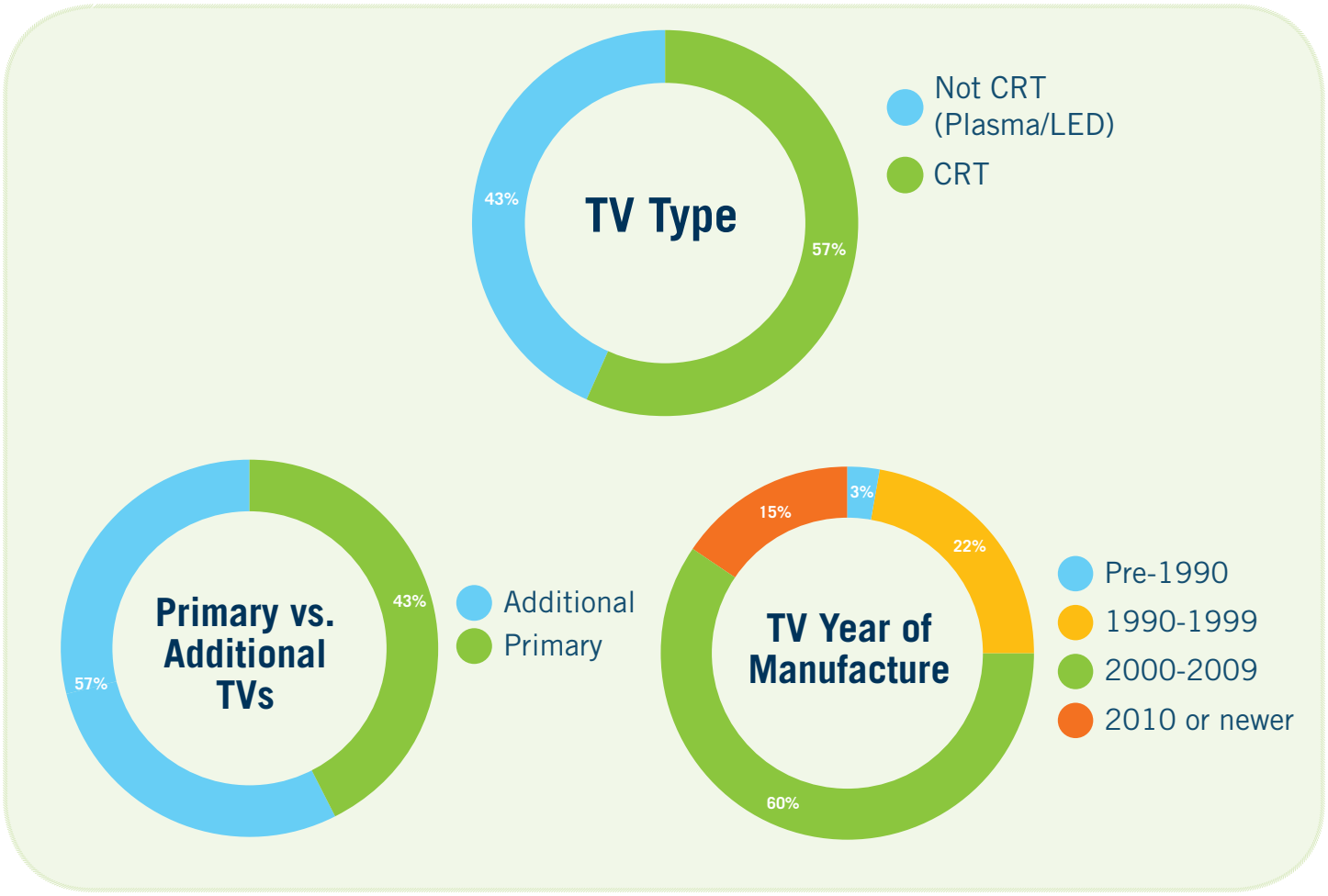
Single Family Home: Lamp Category by Lighting Fixture Type – Total Lamps							
Lighting Fixture Type	Compact Fluorescent	Halogen	Incandescent	Linear Fluorescent	Other	Total	% of Total*
Architectural	1,192	10,941	32,463	11,149	0	55,744	0.48%
Ceiling Fan	221,693	1,192	441,719	0	3,785	668,390	5.71%
Ceiling Fixture	1,601,064	39,826	2,807,496	768,162	7,572	5,224,119	44.62%
Chandelier (Hanging)	144,994	8,764	431,137	0	0	584,895	5.00%
Exit	0	0	1,192	0	0	1,192	0.01%
Exterior	0	0	13,742	0	0	13,742	0.12%
Floor Lamp	165,890	13,742	317,680	7,572	0	504,884	4.31%
Garage Door Opener	7,572	0	191,407	0	0	198,979	1.70%
High Bay	0	0	6,171	0	0	6,171	0.05%
Low Bay	0	0	3,786	15,143	0	18,929	0.16%
Other	11,357	8,764	68,503	24,891	15,143	128,658	1.10%
Recessed - Other	4,978	0	33,447	11,357	0	49,782	0.43%
Recessed Can	198,295	7,363	590,289	0	3,785	799,733	6.83%
Table	526,823	44,028	1,288,757	7,155	0	1,866,763	15.94%
Touchiere	31,479	43,820	34,848	0	0	110,146	0.94%
Track	35,264	23,282	129,492	0	0	188,038	1.61%
Wall Mount	279,614	13,325	939,506	51,183	3,786	1,287,414	11.00%
Total	3,230,215	215,048	7,331,634	896,612	34,072	11,707,580	100%
	27.59%	1.84%	62.62%	7.66%	0.29%	100%	

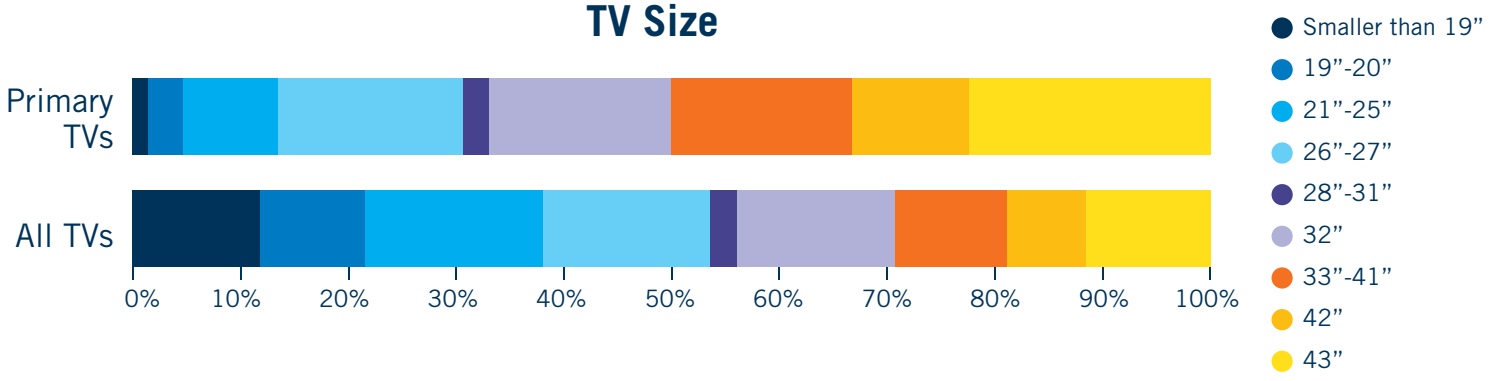
*Rounded to the nearest tenth

MAJOR HOUSEHOLD APPLIANCES

Televisions

Slightly more TVs in SF homes are Cathode Ray Tube (CRT) rather than non-CRT (Plasma or LED) – 57 percent vs. 43 percent respectively. Fifty-seven percent of the TVs in SF homes are not primary use TVs, they are secondary or 'additional' TVs. Seventy-five percent of TVs were manufactured in 2000 or after, with 15 percent made in 2010 or later. Most TVs are 27" or smaller (54 percent). However, most primary use television sets are 33" or larger. On average, primary use TVs are reported to be on for 5.8 hours each day.

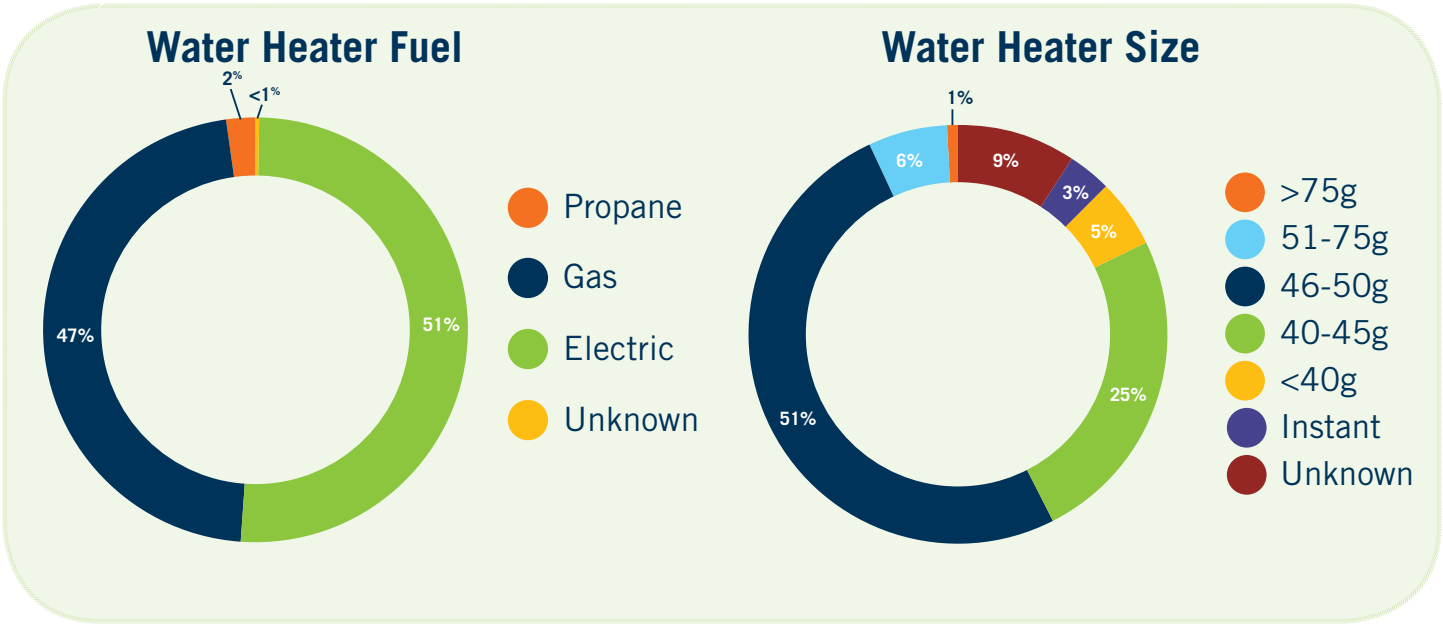


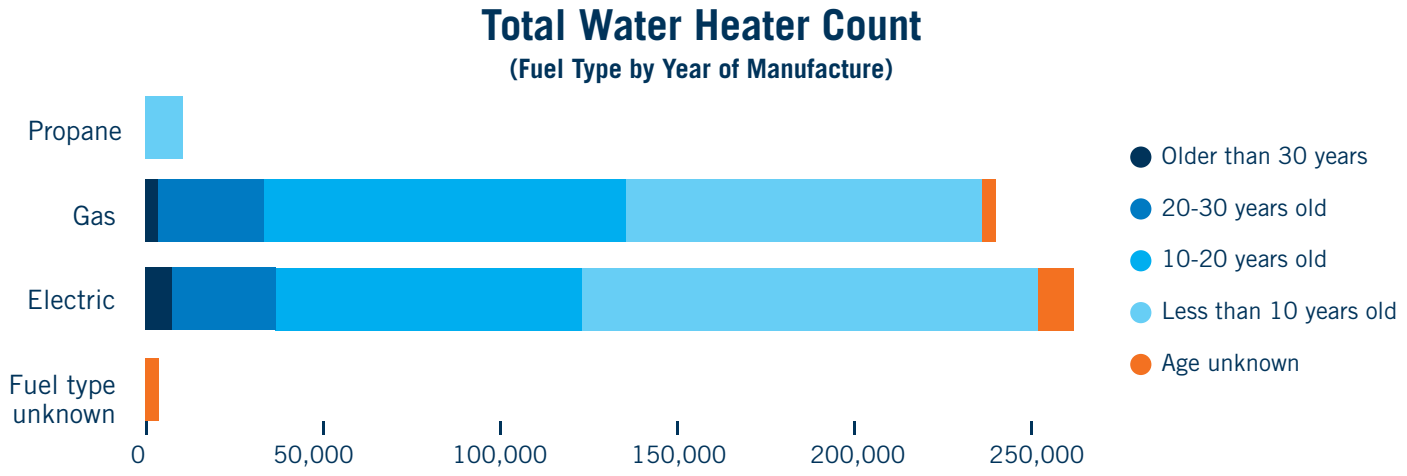


Water Heaters

Electric water heaters are slightly more prominent than gas water heaters in Idaho SF homes (51 vs. 47 percent respectively). 46-50 gallon water tanks are by far the most common (51 percent), followed by 40-45 gallon tanks (25 percent). Instant water heaters make up three percent of SF home water heaters.

According to Lowes[5], the estimated life expectancy of a water heater is 8 to 12 years, based on the manufacturer's suggested service life. While life expectancy varies with local weather, unit design, installation quality and maintenance level, half of all SF home water heaters are 10 years or older (52 percent), and potentially need to be replaced. Forty-seven percent of electric water heaters and 56 percent of gas water heaters are older than 10 years, and are potential candidates for replacement. This does not include those whose year of manufacture is unknown (four and two percent respectively).



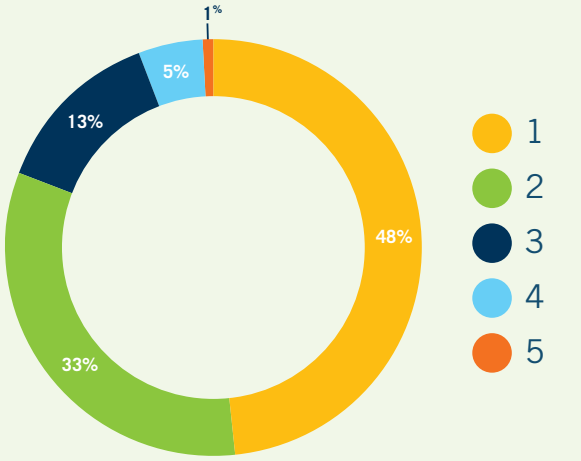


[5]"When to Replace a Water Heater." Lowes Web Site. N.p., n.d. Web. 8 Jan 2014. < http://www.lowes.com/cd_Install a Water Heater_495279775_ >.

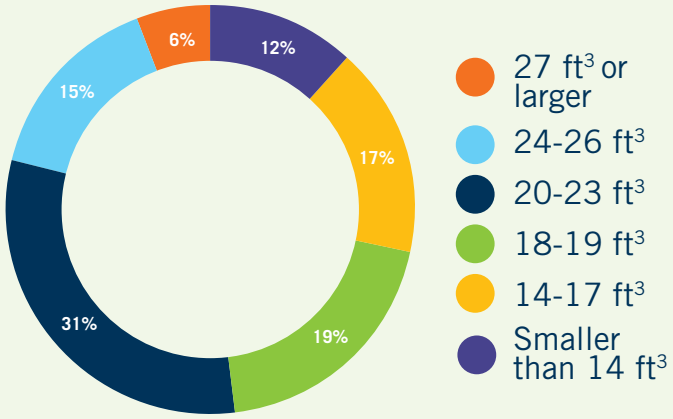
Refrigerators/Freezers

Fifty-two percent of SF homes have more than one refrigerator/freezer, which includes refrigerators, freezers, wine coolers, and small refrigerators. Fifty percent of all refrigerators are between 18 ft³ and 23 ft³. More than 70 percent of refrigerators have been manufactured since the National Appliance Energy Conservation Act (NAECA) of 1987, though most were built before 2010. Approximately 488,190 refrigerators are older than 14 years - which is past the estimated life expectancy for refrigerators[6]. Side-by-side refrigerators/freezers are the dominant model, comprising 48 percent of refrigerators, and 31 percent of all refrigerators and freezers.

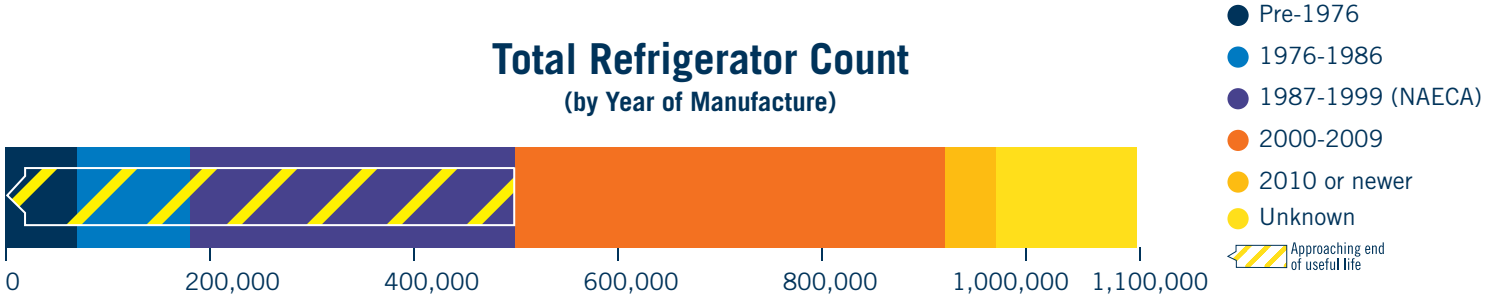
Number of Refrigerators/Freezers per Home



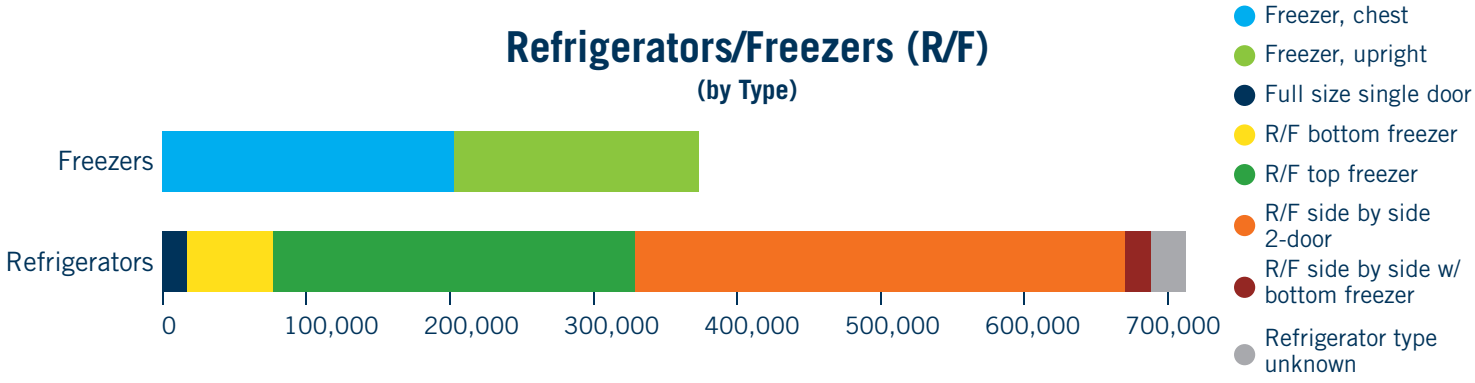
Refrigerator/Freezer Size



Total Refrigerator Count
(by Year of Manufacture)



Refrigerators/Freezers (R/F)
(by Type)



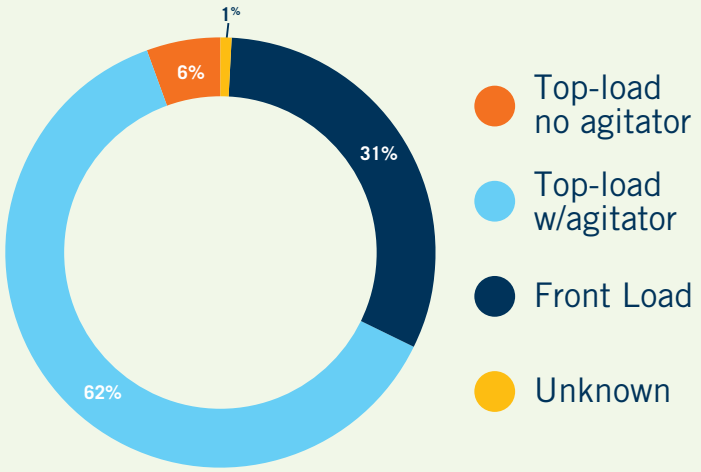
[6]Appliance Statistical Review via http://www.oldhouseweb.com/how-to-advice/life-expectancy.shtml

Clothes Washers/Dryers

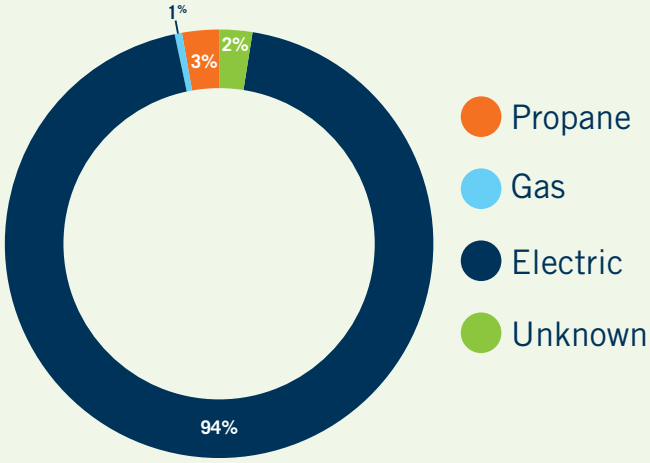
Top-load washing machines are dominant in SF homes, making up 68 percent of all washing machines. Despite gas being available in a great number of homes and a popular fuel for heat or hot water, nearly all dryers are electric (94 percent).

Washing machines and dryers both average 14 to 15 years old in SF homes. Roughly two-thirds of washers (326,861) and dryers (346,174) are more than 10 years old, which is at or near their estimated life expectancies (13 years and 14 years respectively).[7]

Washer Type

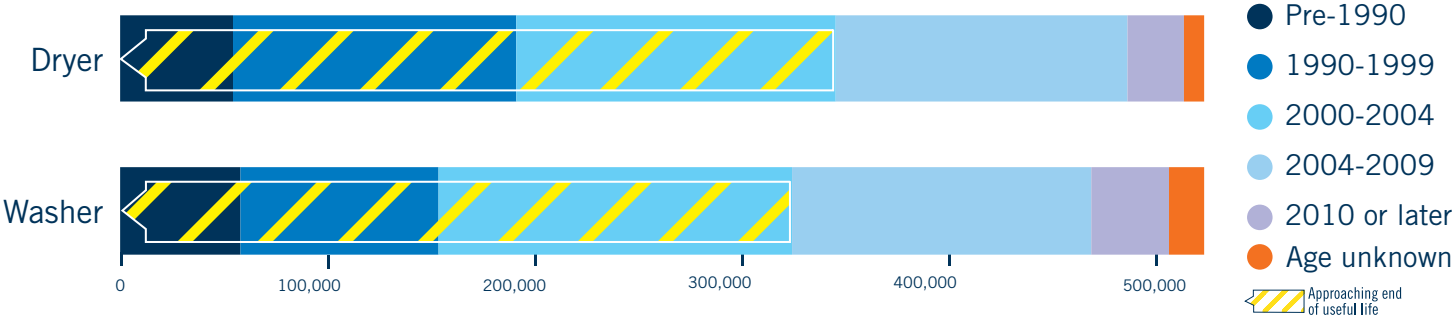


Dryer Fuel Type



Total Washer/Dryer Count

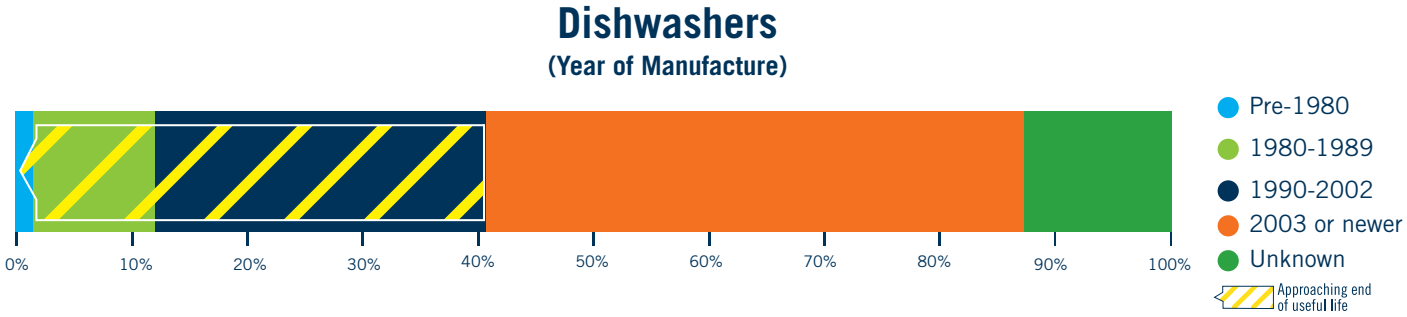
(by Year of Manufacture)

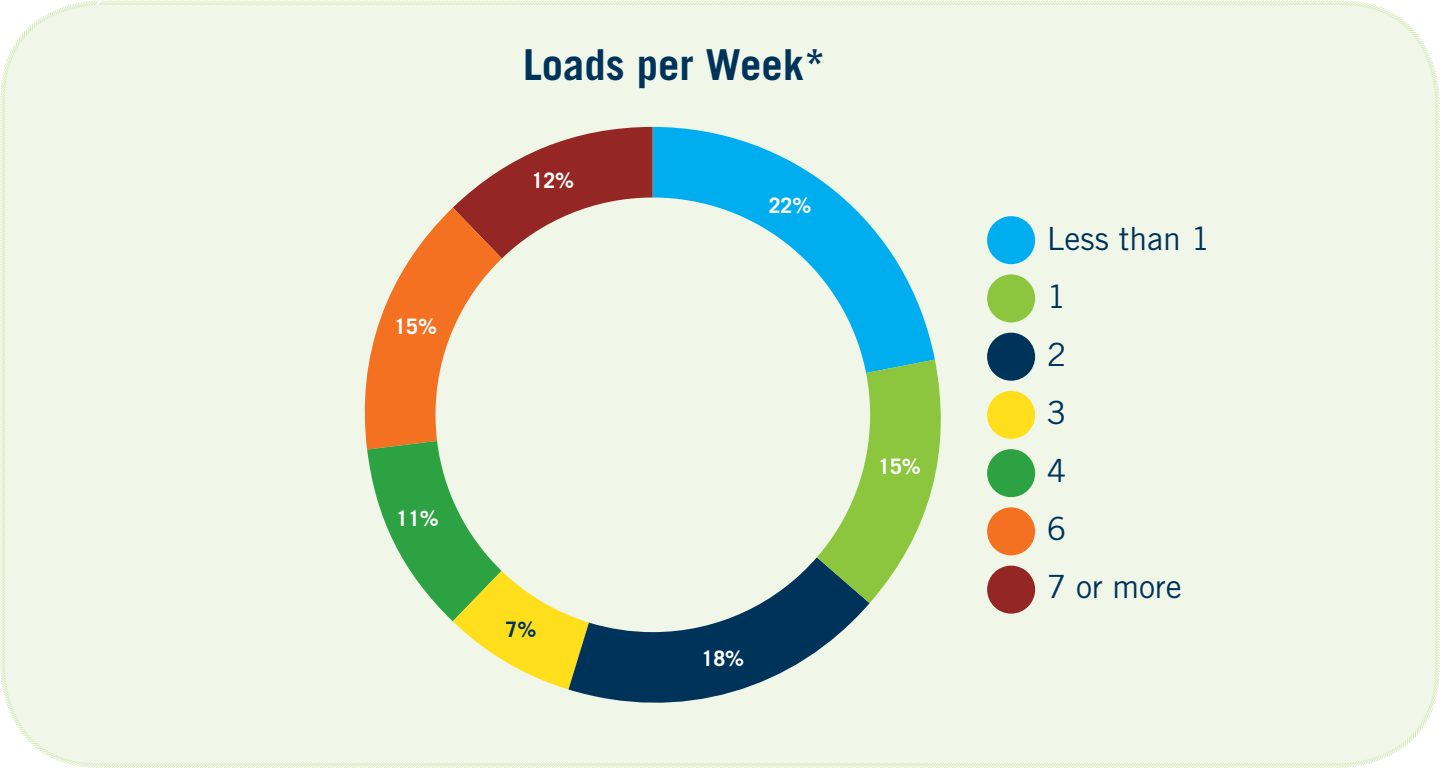


[7]Appliance Statistical Review via http://www.oldhouseweb.com/how-to-advice/life-expectancy.shtml

Dishwashers

Forty-one percent of households (around 215,000) have a dishwasher older than 10 years – which is past the estimated life expectancy for dishwashers. Fifty-five percent of households run two or fewer dishwasher loads per week.





*Very small sample – only 28 homes reported load per week data