

Households and the Environment: Energy Use

2007



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2007

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- . not available for any reference period
- .. not available for a specific reference period
- ... not applicable
- 0 true zero or a value rounded to zero
- 0^s value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded
- p preliminary
- r revised
- x suppressed to meet the confidentiality requirements of the *Statistics Act*
- E use with caution
- F too unreliable to be published

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Highlights

Heating equipment and fuel

- Furnaces were the most common type of heating system used by Canadian households (56%).
- Electric baseboard systems were most prevalent in Quebec (61%).
- Boilers were used by half of the households in Prince Edward Island (51%).
- Natural gas was used in almost half (47%) of households in Canada, primarily by those in Alberta (88%), Saskatchewan (80%), Ontario (68%), Manitoba (56%) and British Columbia (56%).
- Electricity was the second most common fuel source (37%) used by Canadian households.
- Electricity was most frequently reported by households in Quebec (77%), Newfoundland and Labrador (61%) and New Brunswick (59%).
- Heating oil was used most frequently by households in Prince Edward Island (68%) and Nova Scotia (55%).

Energy consumption¹

- Canadian households used almost 1.4 million terajoules (TJ) of energy in 2007.
- An average household's energy consumption in 2007 was 106 gigajoules (GJ).
- Households in Alberta (129 GJ) and Saskatchewan (126 GJ) had the highest average energy consumption.
- Households in Quebec (94 GJ) and British Columbia (98 GJ) had the lowest average energy consumption.

Characteristics of households and dwellings

- Average household energy consumption was lower for apartment dwellers (44 GJ) than those in single-family dwellings (137 GJ).
- Households that rented their dwelling used less (56 GJ) energy than households that owned their dwelling (126 GJ).
- Energy use increased with income.

Energy-saving and retrofitting practices

- The most common practice was closing drapes or blinds during the day (85%).
- One-third of households used five or more energy-saving compact fluorescent lights (CFLs).
- Programmable thermostats were more common in dwellings with larger heated areas.

1. For information about the units of measure please see the "Units of energy" text box in the "Analysis" section.

- Between 2003 and 2007, 50% of households that owned their dwelling and were not in apartments made at least one improvement to their dwelling intended to reduce energy consumption.
- Households in Prince Edward Island (60%), Ontario (58%) and Manitoba (55%) were most likely to have made at least one retrofitting improvement.
- Dwellings built before 1996 were much more likely to have been retrofitted compared to newer dwellings.

Introduction

Households can have a significant impact on the environment. The Households and the Environment Survey (HES) aims to measure the behaviours of Canadian households with respect to the environment. First conducted in 1991, it has since been conducted in 1994, 2006 and most recently in 2007.

The Households and the Environment Survey—Energy Use Supplement was a follow-up survey to the HES that asked more detailed information relating to the characteristics and energy use of dwellings.

This report presents results for the following themes covered by the 2007 HES Energy Use Supplement:

- Heating fuels and heating equipment;
- Energy consumption by household and dwelling characteristics;
- Energy-saving practices and retrofitting practices.

The HES Energy Use Supplement was conducted with the cooperation and support of Natural Resources Canada (NRCan). Further data and analysis from this survey are also available from NRCan's Office of Energy Efficiency.¹

1. See Web site: <http://oee.nrcan-rncan.gc.ca>

Analysis

Canadian households use energy to heat, cool and light their homes, heat water, and run appliances such as stoves, refrigerators, air conditioners, and other devices such as televisions and computers. While heating and cooling account for much of the energy used by a household, appliances and other devices also contribute to household energy use.

Energy sources include electricity, natural gas, oil, propane and wood. The amount of energy consumed can depend on many factors. Climate, fuel prices, household size, and dwelling size can all influence the quantity of energy used by a household.

Air pollutants and greenhouse gas emissions are by-products of energy production and consumption and can have an impact on the environment.¹ Households may choose to reduce their environmental impact by curbing their energy use, which can also result in less money being spent by the household on energy. In 2007, households spent on average \$1,147 on electricity and \$610 on natural gas.²

There are a number of ways that households can reduce their energy consumption. The use of programmable thermostats, compact fluorescent light bulbs (CFLs) and clotheslines or drying racks can result in a reduction in the amount of energy used by the household. As well, physical changes to the dwelling, such as switching to more efficient heating and cooling systems, upgrading the dwelling's insulation and caulking leaky windows, are other ways to reduce energy consumption.

Heating equipment and heating fuel

Furnaces³ were the main type of heating system used by households in 2007 (56%), followed by electric baseboard heating (24%) and boilers (8%) (Chart 1). A small percentage of households used heating stoves, electric radiant heating or other systems as their dwelling's main heating equipment.

However, this pattern was not seen everywhere in the country. Forced-air furnaces were used mainly in the Prairies (85%), Ontario (76%) and British Columbia (56%), though electric heating systems were also fairly common in British Columbia (24%). Sixty-one percent of households in Quebec used electric baseboard heating systems, compared to 47% in Newfoundland and Labrador, 35% in New Brunswick and 22% in Nova Scotia. Half of the households in Prince Edward Island used a boiler as the main heating system (51%).

Natural gas and electricity were the most common types of energy used for home heating in 2007. Almost half (47%) of Canadian households used natural gas as their main heating fuel, while 37% used electricity. A further 9% used oil, 6% used wood or wood pellets and 1% used propane.

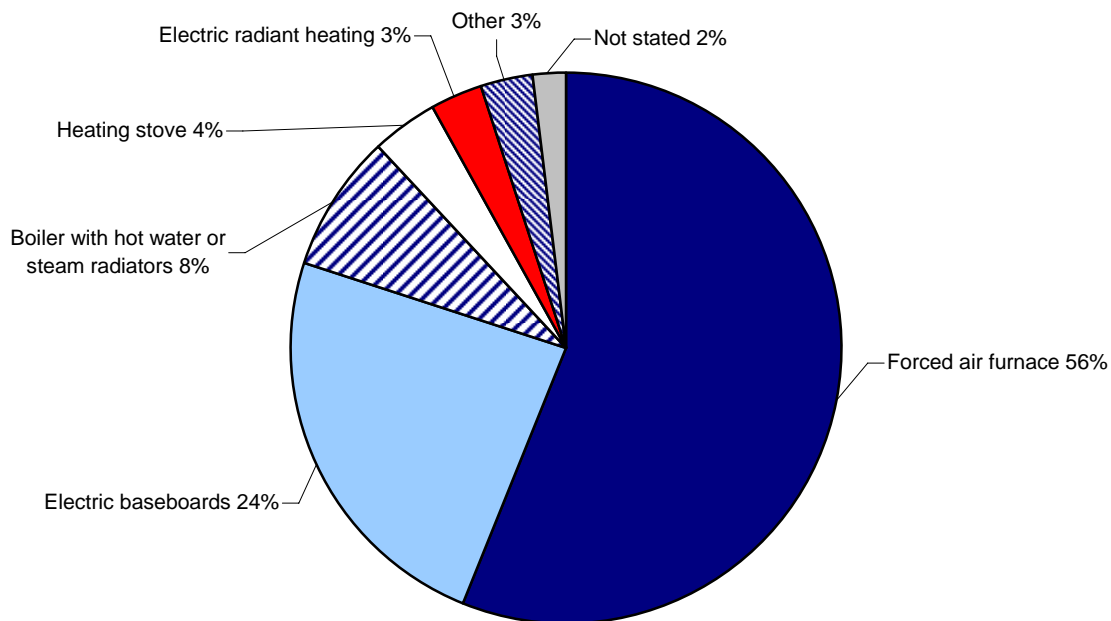
The type of heating fuel used is dependent on the type of heating system, as can be seen in Table 2. Natural gas usage was predominant in Ontario and Western Canada, while households in Quebec used primarily electricity. Households in the Atlantic provinces were heated primarily with oil, electricity and wood or wood pellets.

1. Emission of air pollutants and greenhouse gas emissions differs for different types of energy. See Statistics Canada, 2004, *Human Activity and the Environment: Annual Statistics 2004*, Catalogue no. 16-201-X. For example electricity generation at natural gas or coal fired plants will result in emissions, while hydro-electric generation will not. Burning natural gas or oil in the home will also result in air pollutants and GHG emissions, while wood burning releases air pollutants such as particulate matter, volatile organic compounds and carbon monoxide.

2. Statistics Canada, CANSIM table 203-0003 (accessed August 27, 2009).

3. The terms "forced-air furnace" and "furnace" are used interchangeably in this paper.

Chart 1
Main heating system, 2007



Note(s): Includes households whose main source of heat was supplied by the dwelling unit and who did not use a heat pump or who used a heat pump that was not the main source of heat for their dwelling.

Source(s): Statistics Canada, Households and the Environment Survey: Energy Use Supplement, 2007, Catalogue no.11-526-S.

Units of energy

Energy is measured in units known as Joules (J). Because a Joule is a relatively small amount of energy, energy consumption is often discussed in terms of gigajoules (1×10^9 J or 1,000,000,000 J), denoted by GJ, and terajoules (1×10^{12} J or 1,000,000,000,000 J), denoted by TJ. To help put things in perspective:

- 4,184 Joules are required to raise the temperature of 1 litre of water by 1 degree Celsius.
- The propane cylinder found on most propane BBQs holds approximately 9 kg of propane, which is roughly 0.45 GJ of energy.
- 1 GJ is equal to slightly more than 2 propane cylinders like the ones used on most gas BBQs.
- The energy content of a 30 litre tank of gasoline is about one gigajoule.
- 1 TJ is equal to slightly more than 2,200 propane cylinders.
- 1 railway tanker carrying propane contains about 113,000 L of propane, which is about 3 TJ of energy.

Energy use

Energy is used in the home for heating, cooling, lighting, cooking, and many other functions. In 2007, Canadian households consumed 1,368,955 terajoules (TJ) of energy in the home (Table 3-1). This includes energy from sources including electricity, natural gas, oil, wood and wood pellets and propane.⁴

The average Canadian household consumed 106 gigajoules (GJ) of energy in 2007 for use in the home (Table 3-2)

Households in Alberta (129 GJ) and Saskatchewan (126 GJ) had the highest average energy consumptions per household, while households in Quebec (94 GJ) and British Columbia (98 GJ) had some of the lowest consumption levels (Table 3-2).

Natural gas (43%) and electricity (38%) consumption represented the bulk of household energy use. However, wood and wood pellets accounted for 13% of total household energy use, followed by oil (6%).

Electricity

Electricity is used by households for lighting and powering appliances. Over a third of households also used electricity as their main source of heating, while others used it for supplementary heating. Households consumed 520,250 TJ of electricity in 2007 (Table 3-1), with average electricity consumption of 40 GJ per household (Table 3-2).

Electricity was the principal source of energy used in three provinces (Table 3-1). In Quebec, it accounted for 61% of total energy use, compared to 54% in Newfoundland and Labrador, and 53% in New Brunswick. Electricity accounted for 42% of total household energy use in Manitoba, 37% in British Columbia, 33% in Nova Scotia, 30% in Ontario, 25% in Prince Edward Island, 24% in Saskatchewan and 20% in Alberta.

Average per household use of electricity was highest in Newfoundland and Labrador (62 GJ), New Brunswick (60 GJ) and Quebec (57 GJ). It was lowest in Alberta (26 GJ), Prince Edward Island (30 GJ) and Saskatchewan (30 GJ) (Table 3-2).

Natural gas

Natural gas can be used for home heating, water heating, and also to fuel other large appliances such as stoves, clothes dryers and barbecues. Total household natural gas consumption was 587,183 TJ in 2007 (Table 3-1). Households that used natural gas consumed on average 92 GJ of this fuel (Table 3-2).

Natural gas was the principal energy source for households in Alberta, accounting for 77% of their total energy use (Table 3-1). Natural gas made up 70% of household energy use in Saskatchewan, 58% in Ontario, 52% in British Columbia, and 49% in Manitoba. It is generally unavailable to most households east of Ontario.

Households using natural gas used on average 110 GJ in Alberta per household, 104 GJ in Saskatchewan, 94 GJ in Manitoba, 90 GJ in Ontario, and 81 GJ in British Columbia (Table 3-2).

Other fuels

Heating oil is usually delivered to homes by tank truck and stored in either above-ground or underground storage tanks. Total household use of heating oil in Canada amounted to 76,773 TJ in 2007 (Table 3-1). Households that used oil for home heating used on average 59 GJ of this fuel (Table 3-2), with those in the Atlantic provinces and Ontario having used between 63 and 68 GJ per household on average. Households in Quebec used an average of 51 GJ (Table 3-2).

4. Gasoline used to fuel motor vehicles or gas-powered devices, such as lawnmowers or snowblowers, and energy from small propane tanks purchased from stores for gas barbecues, camping and similar purposes are excluded. Also excluded is energy from those households with solar panels or windmills that did not purchase energy from an energy supplier.

Wood is often used for supplementary heating, though some households also use it as a main fuel source. The efficiency of wood heating depends greatly on the type of wood fireplace or stove used. Fireplaces tend to use wood inefficiently, though the use of fireplace inserts and airtight wood stoves and heaters can improve efficiency. In total, households used 176,107 TJ of energy from wood or wood pellets in 2007 (Table 3-1). Households that used wood as a fuel source consumed on average the equivalent of 101 GJ of wood (Table 3-2).

Propane is used as a main heating fuel by a small proportion of households (1%). In total, households used 8,642 TJ of propane in 2007 (Table 3-1),⁵ an average of 21 GJ for households reporting this type of fuel use (Table 3-2).

Alternative energy sources

Some households use alternative energy sources, such as solar, wind and other sources. In 2007, about 111,600 households, or less than 1% of all Canadian households, used these alternative sources of energy.

Energy use, by household and dwelling characteristics

Household energy use varies depending on many different factors. For example, households with more household members may need more electricity for water heating and cooking. Households with larger homes may use more energy for space heating. Household energy use may also depend on the age of the dwelling, as a result of different energy-efficiency and construction standards.

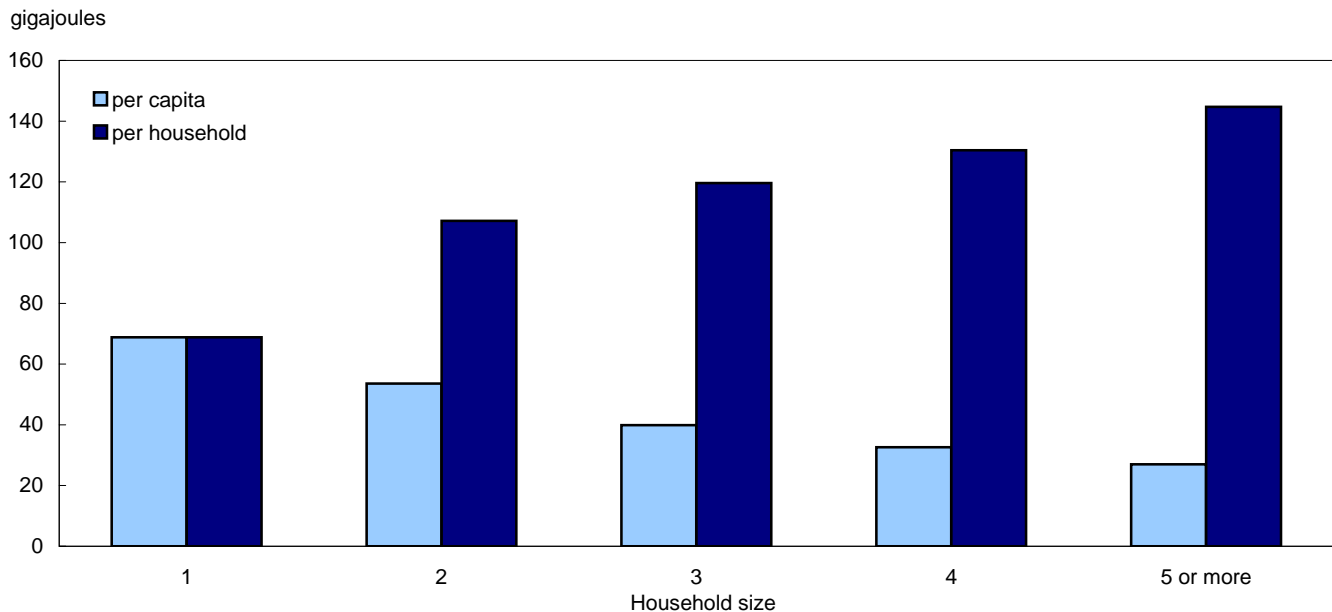
Which part of the country a household is located in also influences how much energy it requires. Households living in areas with a shorter heating season will likely use less energy than those in other areas. For example, households in Victoria, British Columbia likely consume less energy for heating purposes than would those in Saskatoon due to Victoria's shorter heating season.

The following section compares two measures of energy intensity: average household energy consumption and average consumption per square metre of heated area, by various household and dwelling characteristics.

Overall, smaller households use less energy than larger households. Single-person households used on average 69 GJ of energy in 2007 compared to 107 gigajoules for two-person households and 130 GJ for 4-person households (Table 4-1 and Chart 2). Similarly, energy use per square metre was lowest for one-person households (0.68 GJ/m²) compared to 0.90 GJ/m² for 4-person households. Though energy use increased with household size, on a per person basis, small households consumed more energy.

5. Includes propane delivered by an energy supplier. Does not include small tanks of propane purchased from stores for gas barbecues, camping or other equipment.

Chart 2
Average energy use, 2007



Source(s): Statistics Canada, Households and the Environment Survey: Energy Use Supplement, 2007, Catalogue no.11-526-S.

Households living in smaller dwellings used on average less energy than those living in larger dwellings. Households living in dwellings that had a heated area less than 56 m² in size⁶ used on average 47 GJ, compared to 169 GJ for households that heated 232 m² or more (Table 4-2). However, energy consumption per square metre was highest for smaller dwellings. Households that heated less than 56 m² used on average 1.18 GJ/m² compared to 0.58 GJ/m² for those in the largest dwellings. Energy consumption per square metre was lowest in British Columbia and highest in Saskatchewan. Variations in climate likely contributed to these differences in energy consumption.

Households living in apartments used less energy on average (44 GJ) than households living in single-detached dwellings (137 GJ) (Table 4-3). Apartments also used less energy per square metre of heated area. These dwellings are often smaller, may have fewer large appliances, and may have lower heating needs because of shared walls. Apartments used on average 0.51 GJ/m² compared to 0.92 GJ/m² for single-detached dwellings.

Energy use was lower for households that rented (56 GJ) compared to households that owned their dwelling (126 GJ) (Table 4-4). Energy consumption per square metre of heated area was 0.60 GJ/m² for households that rented compared to 0.89 GJ/m² for households that owned. Two-thirds of households that rented lived in an apartment rather than in other types of dwellings.

Households living in dwellings built in the early 20th century used on average more energy than households in dwellings built after 1946 (Table 4-5). Modern construction practices and building codes have incorporated energy-efficient designs and features, such as improved insulation. The per square metre energy consumption varies according to the age of the dwelling. However, the size of dwellings also varies according to age—dwellings built after 1996 were larger on average than all other dwellings, while those built during the immediate post-WW II era were the smallest.

Household energy use increased with income. Households earning less than \$20,000 used on average 67 GJ of energy in 2007. This figure increased to 93 GJ for those earning between \$20,000 and \$40,000. Households earning \$150,000 or more used on average 148 GJ of energy (Table 4-6). Households with a total income less than \$20,000 had the lowest energy consumption per square metre (0.71 GJ/m²), followed by households with income

6. The calculation for the heated area of a dwelling excludes basements and garages.

above \$150,000 (0.78 GJ/m²). The heated area of the dwelling also varied according to income, with the highest income earners heating double the area of low income earners.⁷

Energy use was also higher for households where at least one member had a post-secondary education compared to those where the highest level of education attained was no higher than high school graduation (Table 4-7). Households with higher education tend to have higher incomes.⁸ This can influence other factors such as the type and size of dwelling. Households with a university education heated larger areas than households with high school and less than high school education. However, looking at energy use per square metre of heated area, households with at least one member who had a university degree had the lowest energy intensity (0.77 GJ/m²).

Energy-saving and retrofitting practices

Households can take various measures to reduce their energy consumption. Major efforts might involve retrofitting projects such as adding insulation, installing new windows, or purchasing more efficient heating equipment. However, many households use simple methods to try to reduce their overall energy use. For example, they may use programmable thermostats, close drapes or blinds during the hottest part of the day, or use energy-efficient light bulbs.

Energy-saving practices

The Households and the Environment Survey and the HES Energy Use Supplement collected information on a number of different energy-saving practices including:

- using programmable thermostats;
- using compact fluorescent light bulbs (CFLs);
- washing laundry in cold water;
- turning off computer monitors when they are not in use;
- turning off gas fireplace pilot lights in summer;
- air drying dishes in the dishwasher;
- using dimmers on lights;
- unplugging electronics when away for extended periods;
- reducing heating or cooling in certain areas of the dwelling;
- using a clothesline or drying rack;
- using fans for cooling in summer;
- closing blinds or drapes during the hottest part of the day.

The most commonly used practice was closing the drapes or blinds during the day, with fully 85% of households stating they engaged in this practice (Table 5). Two-thirds of households used fans for cooling, 63% used clotheslines or drying racks, 61% reduced heating or cooling in certain areas of the dwelling and 56% unplugged electronics when away for extended periods. Half of households used dimmers on lights and 33% used five or more CFLs.

7. Households with annual incomes of \$150,000 or more heated 191 m² vs. 95 m² for households with annual incomes of less than \$20,000.

8. Statistics Canada, 2008, *Income and Earnings Highlight Tables*, 2006 Census, Catalogue no. 97-563-XWE2006002.

Some energy-saving practices for which information was collected were only applicable to households with specific equipment or appliances. For example, 44% of households with a gas fireplace turned off the pilot light in summer, 57% of households with desktop computers turned off the monitor when it was not in use and 47% of households with a washer washed and rinsed laundry in cold water. Thirty-six percent of households with one or more thermostat used one that was programmable, while 13% of households that had a dishwasher air dried their dishes with the dishwasher door open.

Participation in some of the different energy-saving practices varied by province and region (Table 5). For example clothesline and drying rack use was more common in Newfoundland and Labrador (79%), Nova Scotia (77%) and New Brunswick (74%) than in Saskatchewan (48%), Alberta (53%) or British Columbia (54%). Households in the Prairie provinces were most likely to close the blinds during the hottest part of the day (93%). Households in Ontario (46%) and Alberta (40%) were most likely to use programmable thermostats⁹ while households in Quebec were the least likely to use 5 or more CFLs (26%).

Energy-saving practices, by household and dwelling characteristics

Use of energy-saving practices also varied according to some household and dwelling characteristics. For example, single-person households were most likely to turn off their computer monitor when it was not in use. Close to two-thirds of single-person households turned off their monitor compared to half of four-person households (Table 6-1).

Programmable thermostats and CFLs were more common for households that lived in single detached dwellings they owned with larger heated areas and that had higher incomes. Forty-three percent of households that lived in single-detached dwellings used programmable thermostats, compared to 18% of those in apartments (Table 6-3). Similarly, 41% of households in single-detached dwellings used five or more CFLs compared to 17% of those in apartments.

Households that lived in older dwellings were the most likely to use a clothesline or drying rack and to use fans for cooling. More than three-quarters of households in homes built before 1946 used clotheslines or drying racks compared to 56% of those in homes built since 1996 (Table 6-5). As well, 74% of these households used fans for cooling compared to 59% of those in recently built homes.

Certain households were more likely to engage in a range of energy-saving practices than others. Households that used a greater number of selected energy-saving practices were also likely to live in single-detached homes, have larger household sizes, heat larger areas, and have higher incomes and more education. These households were also more likely to use more energy overall. Households that use more energy-saving practices may also be more likely to have homes with more household features requiring energy use, such as computers, dishwashers, or gas fireplaces. Faced with higher energy bills, households with higher energy usage may also have a greater incentive to try to reduce their consumption than households that use less energy. Although, these households may be using more energy, use of energy-saving practices reduces their energy consumption from what it otherwise would have been.

Retrofitting practices

The HES Energy Use Supplement collected information on the type of retrofitting improvements that have been made to dwellings including:

- insulation;
- heating, venting and cooling equipment;
- doors, windows, exterior siding and caulking;

9. As a percentage of households with one or more thermostat.

- foundations;
- roof structures and surfaces.

Between 2003 and 2007, 50% of households¹⁰ made at least one improvement to their dwelling intended to reduce energy consumption (Table 7). Improvements were made most frequently to doors and windows, siding and caulking (31%), followed by heating, ventilation and cooling equipment (27%). Fourteen percent made improvements to their roof, while 14% improved the insulation.

Households in Prince Edward Island (60%), Ontario (58%) and Manitoba (55%) were the most likely to have made at least one retrofitting improvement (Table 7). Households in British Columbia (40%) and Alberta (40%) were least likely to have retrofitted their dwelling between 2003 and 2007.

Households that lived in older dwellings were more likely to have reported improvements made to reduce energy consumption. Between 2003 and 2007, 57% of households living in dwellings built before 1946 reported that at least one retrofit had been made to their home compared to 51% of households in dwellings built between 1978 and 1995 and 27% that were in dwellings built since 1996 (Table 8).

Summary

The types and amounts of energy used by Canadian households varied across the country. While socio-demographic factors such as household composition, income, education and dwelling type all help to explain these differences, no single factor fully accounts for them. As well, climate and geography almost certainly play roles in the energy consumption behaviours of Canadian households.

Energy-saving practices also varied across demographic groups. Households exercising more conservation practices were also more likely to have lived in single-detached dwellings, have had more people in the household, have had heated larger areas, and have had higher incomes and higher levels of education.

10. Of households that owned their dwelling and that were not located in apartment buildings.

Related products

Selected publications from Statistics Canada

11-526-X Households and the Environment

Selected CANSIM tables from Statistics Canada

153-0059	Households and the environment survey, use of energy-saving lights, Canada and provinces, biennial
153-0060	Households and the environment survey, use of thermostats, Canada and provinces, biennial
153-0061	Households and the environment survey, radon awareness and testing, Canada and provinces, biennial
153-0062	Households and the environment survey, dwelling's main source of water, Canada and provinces, biennial
153-0063	Households and the environment survey, primary type of drinking water consumed, Canada and provinces, biennial
153-0064	Households and the environment survey, use of fertilizer and pesticides, Canada and provinces, biennial
153-0065	Households and the environment survey, awareness of air quality advisories and their influence on behaviours, Canada and provinces, biennial
153-0066	Households and the environment survey, treatment of drinking water, Canada and provinces, biennial

Selected surveys from Statistics Canada

3881 Households and the Environment Survey

Statistical tables

Table 1
Type of main heating equipment used, by province, 2007

	Furnace	Electric baseboards	Boiler	Heating stove	Electric radiant heating	Gas fireplace	Other
	percent						
Canada	56	24	8	4	3	1^E	2^E
Newfoundland and Labrador	25	47	F	F	F	F	F
Prince Edward Island	30	F	51	F	F	F	F
Nova Scotia	35	22	24	13 ^E	F	F	F
New Brunswick	23	35	9 ^E	16	14 ^E	F	F
Quebec	16	61	6 ^E	7	7 ^E	F	2 ^E
Ontario	76	8	7	2	2 ^E	1 ^E	F
Manitoba	73	14 ^E	F	F	F	F	F
Saskatchewan	81	F	11 ^E	F	F	F	F
Alberta	90	F	7 ^E	F	F	F	F
British Columbia	56	21	9	3 ^E	3 ^E	3 ^E	F

Note(s): Includes households whose main source of heat was supplied by the dwelling unit, who did not use a heat pump, or who used a heat pump that was not the main source of heat for their dwelling.

Source(s): Statistics Canada, Households and the Environment Survey: Energy Use, 2007, Catalogue no. 11-526-S.

Table 2
Type of main heating fuel used, by province, 2007

	Electricity	Natural gas	Oil	Wood and wood pellets	Propane	Other
	percent					
Canada	37	47	9	6	1	F
Newfoundland and Labrador	61	F	28	16 ^E	F	F
Prince Edward Island	F	F	68	F	F	F
Nova Scotia	29	F	55	20	F	F
New Brunswick	59	F	17	23	F	F
Quebec	77	4 ^E	11	9	F	F
Ontario	19	68	7	3	2	F
Manitoba	39	56	F	3 ^E	F	F
Saskatchewan	16	80	F	F	F	F
Alberta	12	88	F	F	F	F
British Columbia	33	56	5 ^E	4	F	F

Note(s): Includes households whose main source of heat was supplied by the dwelling unit, who did not use a heat pump, or who used a heat pump that was not the main source of heat for their dwelling.

Source(s): Statistics Canada, Households and the Environment Survey: Energy Use, 2007, Catalogue no. 11-526-S.

Table 3-1
Household energy use, by fuel type and by province, 2007 — Total energy use

	Electricity		Natural gas		Oil		Wood and wood pellets		Propane		All fuel types
	terajoules	percent ¹	terajoules	percent ¹	terajoules	percent ¹	terajoules	percent ¹	terajoules	percent ¹	
Canada	520,250	38	587,183	43	76,773	6	176,107	13	8,642	1	1,368,955
Newfoundland and Labrador	12,518	54	F	F	4,680	20	5,746 ^E	25 ^E	273 ^E	1 ^E	23,216
Prince Edward Island	1,667	25	F	F	3,064	45	1,890 ^E	28 ^E	134 ^E	2 ^E	6,777
Nova Scotia	14,822	33	F	F	15,613	35	12,864	29	354 ^E	1 ^E	44,369
New Brunswick	18,240	53	F	F	4,343 ^E	13 ^E	10,729	31	291 ^E	1 ^E	34,273
Quebec	189,948	61	10,805	3	21,899	7	84,996	27	1,619	1	309,266
Ontario	154,995	30	298,893	58	21,722	4	35,411	7	4,146	1	515,166
Manitoba	20,215	42	23,671	49	F	F	3,370 ^E	7 ^E	F	F	48,093
Saskatchewan	11,699	24	33,956	70	F	F	F	F	F	F	48,482
Alberta	33,704	20	130,037	77	F	F	5,738 ^E	3 ^E	F	F	169,800
British Columbia	62,442	37	88,415	52	3,678 ^E	2 ^E	13,750	8	F	F	169,511

1. As a proportion of all fuel types.

Source(s): Statistics Canada, Households and the Environment Survey: Energy Use, 2007, Catalogue no. 11-526-S.

Table 3-2
Household energy use, by fuel type and by province, 2007 — Average energy use

	Electricity	Natural gas	Oil	Wood and wood pellets	Propane	All fuel types
	gigajoules per household					
Canada	40	92	59	101	21	106
Newfoundland and Labrador	62	F	68	131	11	116
Prince Edward Island	30	F	64	141 ^E	14	123
Nova Scotia	39	F	64	99	9	116
New Brunswick	60	F	64	111	13 ^E	113
Quebec	57	53	51	131	13	94
Ontario	32	90	63	84	34	107
Manitoba	44	94	F	98	F	106
Saskatchewan	30	104	F	67 ^E	F	126
Alberta	26	110	F	42	F	129
British Columbia	36	81	47	71	26 ^E	98

Note(s): Average household energy use for households using the specified type of fuel.

Source(s): Statistics Canada, Households and the Environment Survey: Energy Use, 2007, Catalogue no. 11-526-S.

Table 4-1

Average household energy use, by household and dwelling characteristics, 2007 — Household size

	One	Two	Three	Four	Five or more	Not stated	All households
gigajoules per household							
Canada	69	107	120	130	145	140^E	106
Newfoundland and Labrador	77	119	113	155	F	F	116
Prince Edward Island	77	119	F	F	F	F	123
Nova Scotia	98	114	119	131	F	F	116
New Brunswick	94	107	127	144	F	F	113
Quebec	56	97	112	123	153	F	94
Ontario	71	109	116	127	137	F	107
Manitoba	75	106	133	133	126	F	106
Saskatchewan	99	122	141	162	140	F	126
Alberta	92	129	148	145	161	F	129
British Columbia	58	100	114	124	149	F	98
	One	Two	Three	Four	Five or more	Not stated	Average of all households
gigajoules per m ² of heated area							
Canada	0.68	0.85	0.85	0.90	0.88	1.04^E	0.83
Newfoundland and Labrador	0.70	0.88	0.90	1.09 ^E	F	F	0.88
Prince Edward Island	0.80	0.85	F	F	F	F	0.91
Nova Scotia	0.88	0.91	0.79	0.94	F	F	0.87
New Brunswick	0.85	0.86	0.93	1.05	F	F	0.89
Quebec	0.60	0.87	0.94	0.99	1.01	F	0.84
Ontario	0.67	0.81	0.78	0.84	0.84	F	0.79
Manitoba	0.79	0.96	1.13	1.09	1.02	F	0.97
Saskatchewan	1.01	1.11	1.19	1.16	1.10	F	1.11
Alberta	0.92	0.98	1.03	1.01	0.97	F	0.98
British Columbia	0.57	0.71	0.71	0.70	0.73	F	0.69

Source(s): Statistics Canada, Households and the Environment Survey: Energy Use, 2007, Catalogue no. 11-526-S.

Table 4-2

Average household energy use, by household and dwelling characteristics, 2007 — Size of heated area

	Less than 56 square metres and less than 600 square feet	56 to less than 93 square metres and 600 to less than 1,000 square feet	93 to less than 139 square metres and 1,000 to less than 1,500 square feet	139 to less than 186 square metres and 1,500 to less than 2,000 square feet	186 to less than 232 square metres and 2,000 to less than 2,500 square feet	232 square metres or more and 2,500 square feet or more	All house- holds
gigajoules per household							
Canada	47	72	104	123	149	169	106
Newfoundland and Labrador	F	84	126	109	F	F	116
Prince Edward Island	F	84	112	136	F	F	123
Nova Scotia	F	91	119	116	125	175	116
New Brunswick	F	77	113	131	142 ^E	145	113
Quebec	45	79	92	118	173	139	94
Ontario	48 ^E	66	101	123	147	173	107
Manitoba	F	73	116	137	F	F	106
Saskatchewan	F	103	125	152	178	F	126
Alberta	F	84	128	144	166	210	129
British Columbia	F	50	97	115	122	162	98
gigajoules per m ² of heated area							
Canada	1.18	0.95	0.95	0.78	0.74	0.58	0.83
Newfoundland and Labrador	F	1.06	1.14	0.70	F	F	0.88
Prince Edward Island	F	1.14	1.03	0.86	F	F	0.91
Nova Scotia	F	1.18	1.08	0.75	0.62	0.61	0.87
New Brunswick	F	1.07	1.02	0.85	0.70 ^E	0.51	0.89
Quebec	1.12	1.02	0.86	0.75	0.86	0.47	0.84
Ontario	1.27 ^E	0.88	0.92	0.78	0.73	0.60	0.79
Manitoba	F	0.93	1.07	0.88	F	F	0.97
Saskatchewan	F	1.33	1.15	0.99	0.86	F	1.11
Alberta	F	1.10	1.15	0.90	0.81	0.74	0.98
British Columbia	F	0.66	0.86	0.72	0.61	0.56	0.69

Note(s): The heated area of a dwelling excludes basements and garages.

Source(s): Statistics Canada, Households and the Environment Survey: Energy Use, 2007, Catalogue no. 11-526-S.

Table 4-3

Average household energy use, by household and dwelling characteristics, 2007 — Dwelling type

	Apartment	Multiunit ¹	Single-detached dwelling	All other	All households
gigajoules per household					
Canada	44	88	137	97	106
Newfoundland and Labrador	F	F	124	F	116
Prince Edward Island	68	F	128	F	123
Nova Scotia	86	92	126	F	116
New Brunswick	F	F	126	F	113
Quebec	38	71	143	84	94
Ontario	48	101	136	F	107
Manitoba	35	F	133	F	106
Saskatchewan	69	F	141	F	126
Alberta	57	105	149	127	129
British Columbia	33	80	131	90	98
gigajoules per m ² of heated area					
Canada	0.51	0.73	0.92	1.03	0.83
Newfoundland and Labrador	F	F	0.91	F	0.88
Prince Edward Island	0.89	F	0.87	F	0.91
Nova Scotia	0.88	0.67	0.89	F	0.87
New Brunswick	F	F	0.92	F	0.89
Quebec	0.44	0.63	1.12	0.94	0.84
Ontario	0.54	0.81	0.85	F	0.79
Manitoba	0.42	F	1.12	F	0.97
Saskatchewan	0.78	F	1.16	F	1.11
Alberta	0.70	0.93	1.02	1.25	0.98
British Columbia	0.40	0.61	0.75	0.98	0.69

1. Includes doubles, duplexes and row or terrace homes.

Source(s): Statistics Canada, Households and the Environment Survey: Energy Use, 2007, Catalogue no. 11-526-S.

Table 4-4

Average household energy use, by household and dwelling characteristics, 2007 — Dwelling tenure

	Owned	Rented	All households
gigajoules per household			
Canada	126	56	106
Newfoundland and Labrador	121	73	116
Prince Edward Island	134	83	123
Nova Scotia	122	85	116
New Brunswick	124	63 ^E	113
Quebec	127	45	94
Ontario	125	62	107
Manitoba	131	48	106
Saskatchewan	135	92	126
Alberta	141	76	129
British Columbia	114	51	98
gigajoules per m ² of heated area			
Canada	0.89	0.60	0.83
Newfoundland and Labrador	0.91	0.67	0.88
Prince Edward Island	0.90	1.01 ^E	0.91
Nova Scotia	0.87	0.87	0.87
New Brunswick	0.92	0.69 ^E	0.89
Quebec	0.99	0.51	0.84
Ontario	0.82	0.66	0.79
Manitoba	1.08	0.58	0.97
Saskatchewan	1.13	0.99	1.11
Alberta	1.02	0.77	0.98
British Columbia	0.73	0.50	0.69

Source(s): Statistics Canada, Households and the Environment Survey: Energy Use, 2007, Catalogue no. 11-526-S.

Table 4-5

Average household energy use, by household and dwelling characteristics, 2007 — Dwelling construction period

	Before 1946	Between 1946 and 1960	Between 1961 and 1977	Between 1978 and 1995	After 1996	Not stated	All households
gigajoules per household							
Canada	124	102	100	111	108	76	106
Newfoundland and Labrador	148 ^E	101	121	108	100	F	116
Prince Edward Island	157 ^E	F	109	117	130	F	123
Nova Scotia	138	106	108	121	104	F	116
New Brunswick	109	97 ^E	125	129	93	F	113
Quebec	114	87	94	102	88	55 ^E	94
Ontario	127	102	100	111	107	92	107
Manitoba	130	107	101	118	113	F	106
Saskatchewan	138	123	127	128	118	F	126
Alberta	138	120	120	138	134	F	129
British Columbia	116	116	85	98	102	72	98
gigajoules per m ² of heated area							
Canada	0.95	0.90	0.86	0.81	0.73	0.69	0.83
Newfoundland and Labrador	1.24 ^E	0.80	0.96	0.76	0.70	F	0.88
Prince Edward Island	1.25 ^E	F	0.85	0.90	0.80	F	0.91
Nova Scotia	0.99	0.91	0.88	0.89	0.64	F	0.87
New Brunswick	0.81	0.82	0.99	1.01	0.65	F	0.89
Quebec	0.97	0.88	0.89	0.86	0.73	0.52	0.84
Ontario	0.91	0.88	0.82	0.76	0.67	0.81	0.79
Manitoba	1.16	1.05	1.00	0.93	0.92	F	0.97
Saskatchewan	1.18	1.28	1.19	1.05	0.91	F	1.11
Alberta	1.00	1.14	1.02	1.01	0.92	F	0.98
British Columbia	0.82	0.79	0.69	0.66	0.63	0.56	0.69

Source(s): Statistics Canada, Households and the Environment Survey: Energy Use, 2007, Catalogue no. 11-526-S.

Table 4-6

Average household energy use, by household and dwelling characteristics, 2007 — Household income

	Less than \$20,000	\$20,000 to less than \$40,000	\$40,000 to less than \$60,000	\$60,000 to less than \$80,000	\$80,000 to less than \$100,000	\$100,000 to less than \$150,000	\$150,000 and over	Not stated	All households
gigajoules per household									
Canada	67	93	104	110	112	130	148	104	106
Newfoundland and Labrador	83	104	127	135 ^E	F	133	F	F	116
Prince Edward Island	F	115	108	120	F	F	F	F	123
Nova Scotia	97	114	123	125	128	119	F	99	116
New Brunswick	98	102	118	134	116	118	F	112	113
Quebec	56	85	98	103	112	130	138	86	94
Ontario	66	95	99	108	107	131	148	110	107
Manitoba	62	103	106	108	134	139	F	101	106
Saskatchewan	89	113	126	151	133	142	F	116	126
Alberta	92	104	122	135	126	144	166	121	129
British Columbia	66	85	103	94	98	114	137	100	98
gigajoules per m ² of heated area									
Canada	0.71	0.82	0.90	0.87	0.81	0.86	0.78	0.81	0.83
Newfoundland and Labrador	0.72	0.88	0.98	1.07 ^E	F	0.83	F	F	0.88
Prince Edward Island	F	0.90	0.95	0.84	F	F	F	F	0.91
Nova Scotia	1.05	0.91	0.91	0.87	0.82 ^E	0.82	F	0.82	0.87
New Brunswick	0.98	0.88	0.94	1.00	0.96	0.78	F	0.81	0.89
Quebec	0.64	0.84	0.95	0.86	0.86	0.91	0.83	0.79	0.84
Ontario	0.65	0.79	0.85	0.83	0.77	0.81	0.74	0.82	0.79
Manitoba	0.72	1.03	1.05	0.96	1.01	1.07	F	0.86	0.97
Saskatchewan	0.86	1.11	1.25	1.20	1.07	1.08	F	1.10	1.11
Alberta	0.96	0.88	1.01	1.10	0.91	1.08	0.95	0.92	0.98
British Columbia	0.70	0.66	0.74	0.67	0.65	0.71	0.66	0.66	0.69

Source(s): Statistics Canada, Households and the Environment Survey: Energy Use, 2007, Catalogue no. 11-526-S.

Table 4-7

Average household energy use, by household and dwelling characteristics, 2007 — Education level

	0 to 8 years or some secondary	Grade 11 to 13, graduate	Some post secondary, or post secondary certificate	University	Not stated	All households
gigajoules per household						
Canada	80	100	111	109	105	106
Newfoundland and Labrador	F	115	128	102	F	116
Prince Edward Island	F	110	123	151 ^E	F	123
Nova Scotia	91	125	118	118	F	116
New Brunswick	113	120	115	106	F	113
Quebec	73	90	102	96	F	94
Ontario	84	99	109	111	133	107
Manitoba	87	93	113	120	F	106
Saskatchewan	93	125	126	137	F	126
Alberta	104	109	131	139	F	129
British Columbia	66	100	106	92	102	98
gigajoules per m ² of heated area						
Canada	0.78	0.82	0.89	0.77	0.83	0.83
Newfoundland and Labrador	F	0.90	1.01	0.70	F	0.88
Prince Edward Island	F	0.84	0.94	0.94 ^E	F	0.91
Nova Scotia	0.87	1.00	0.96	0.74	F	0.87
New Brunswick	0.91	0.91	0.98	0.77	F	0.89
Quebec	0.79	0.80	0.94	0.76	F	0.84
Ontario	0.72	0.78	0.85	0.74	1.02 ^E	0.79
Manitoba	0.89	0.95	1.04	0.95	F	0.97
Saskatchewan	0.90	1.07	1.16	1.12	F	1.11
Alberta	1.03	0.99	1.00	0.95	F	0.98
British Columbia	0.60	0.71	0.73	0.65	0.58 ^E	0.69

Note(s): Education level refers to the highest level completed by any member of the household.

Source(s): Statistics Canada, Households and the Environment Survey: Energy Use, 2007, Catalogue no. 11-526-S.

Table 5
Energy-saving practice use, by province, 2007

	Used a programmable thermostat ¹	Used 5 or more CFLs	Washed and rinsed laundry in cold water ²	Turned computer monitor off when not in use ³	Turned off fireplace pilot in summer ⁴	Air dried dishes in dishwasher (door open) ⁵
	percent					
Canada	36	33	47	57	44	13
Newfoundland and Labrador	16 ^E	31	71	50	F	F
Prince Edward Island	24 ^E	37	43	57	F	F
Nova Scotia	18	40	54	55	F	21
New Brunswick	19	32	51	54	41 ^E	19 ^E
Quebec	30	26	68	53	32	16
Ontario	46	38	41	61	44	11
Manitoba	30	28	29	51	30 ^E	F
Saskatchewan	30	39	32	52	31	10 ^E
Alberta	40	36	33	58	43	12
British Columbia	31	32	38	53	55	12
	Used dimmers on household lights	Unplugged electronics when away for extended periods	Reduced heating or cooling in areas of the dwelling	Used a clothesline or drying rack	Used fans for cooling in summer	Closed blinds or drapes during the hottest part of the day
	percent					
Canada	50	56	61	63	66	85
Newfoundland and Labrador	55	74	74	79	60	58
Prince Edward Island	42	65	58	72	79	81
Nova Scotia	41	64	63	77	71	80
New Brunswick	37	55	65	74	70	87
Quebec	49	44	68	72	64	75
Ontario	53	59	58	61	66	89
Manitoba	43	58	59	55	60	93
Saskatchewan	46	55	54	48	67	93
Alberta	49	65	53	53	71	93
British Columbia	52	62	66	54	68	85

1. As a proportion of households that had at least one thermostat in their dwelling.

2. As a proportion of households that used a washer in their dwelling.

3. As a proportion of households that had a desktop computer in their dwelling.

4. As a proportion of households that had a gas-burning fireplace in their dwelling.

5. As a proportion of households that had a dishwasher in their dwelling.

Source(s): Statistics Canada, Households and the Environment Survey: Energy Use, 2007, Catalogue no.11-526-S.

Table 6-1
Energy-saving use, by household and dwelling characteristics, 2007 — Household size

	One	Two	Three	Four	Five or more	Not stated	All households
	percent						
Used a programmable thermostat ¹	24	35	42	48	46	F	36
Used 5 or more CFLs	19	35	38	44	42	F	33
Washed and rinsed laundry in cold water ²	41	48	51	52	44	F	47
Turned computer monitor off when not in use ³	64	58	55	50	55	F	57
Turned off fireplace pilot in summer ⁴	26	47	49	53	51	F	44
Air dried dishes in dishwasher (door open) ⁵	15	15	13	10	7	F	13
Used dimmers on household lights	38	53	53	60	54	F	50
Unplugged electronics when away for extended periods	53	59	56	56	56	63 ^E	56
Reduced heating or cooling in areas of the dwelling	56	62	63	66	62	65 ^E	61
Used a clothesline or drying rack	50	65	68	69	69	42 ^E	63
Used fans for cooling in summer	61	68	67	67	73	50 ^E	66
Closed blinds or drapes during the hottest part of the day	81	85	86	88	87	91	85

1. As a proportion of households that had one or more thermostats in their dwelling.

2. As a proportion of households that used a washer in their dwelling.

3. As a proportion of households that had a desktop computer in their dwelling.

4. As a proportion of households that had a gas-burning fireplace in their dwelling.

5. As a proportion of households that had a dishwasher in their dwelling.

Source(s): Statistics Canada, Households and the Environment Survey: Energy Use, 2007, Catalogue no. 11-526-S.

Table 6-2
Energy-saving use, by household and dwelling characteristics, 2007 — Size of heated area

	Less than 56 square metres and less than 600 square feet	56 to less than 93 square metres and 600 to less than 1,000 square feet	93 to less than 139 square metres and 1,000 to less than 1,500 square feet	139 to less than 186 square metres and 1,500 to less than 2,000 square feet	186 to less than 232 square metres and 2,000 to less than 2,500 square feet	232 square metres and 2,500 square feet or more	All house- holds
	percent						
Used a programmable thermostat ¹	30 ^E	22	36	43	47	51	36
Used 5 or more CFLs	16 ^E	25	35	38	43	43	33
Washed and rinsed laundry in cold water ²	50	49	48	47	46	43	47
Turned computer monitor off when not in use ³	65	56	58	58	56	46	57
Turned off fireplace pilot in summer ⁴	F	32	44	42	56	51	44
Air dried dishes in dishwasher (door open) ⁵	F	16	14	11	12	10 ^E	13
Used dimmers on household lights	24	38	53	57	62	65	50
Unplugged electronics when away for extended periods	46	53	57	58	57	63	56
Reduced heating or cooling in areas of the dwelling	49	55	63	64	69	69	61
Used a clothesline or drying rack	48	57	66	65	66	64	63
Used fans for cooling in summer	62	66	67	69	64	65	66
Closed blinds or drapes during the hottest part of the day	83	80	87	85	88	85	85

- As a proportion of households that had one or more thermostats in their dwelling.
- As a proportion of households that used a washer in their dwelling.
- As a proportion of households that had a desktop computer in their dwelling.
- As a proportion of households that had a gas-burning fireplace in their dwelling.
- As a proportion of households that had a dishwasher in their dwelling.

Note(s): The heated area of a dwelling excludes basements and garages.

Source(s): Statistics Canada, Households and the Environment Survey: Energy Use, 2007, Catalogue no. 11-526-S.

Table 6-3
Energy-saving use, by household and dwelling characteristics, 2007 — Dwelling type

	Apartment	Multi-unit ⁶	Single-detached dwelling	All other	All households
	percent				
Used a programmable thermostat ¹	18	37	43	20	36
Used 5 or more CFLs	17	33	41	34	33
Washed and rinsed laundry in cold water ²	43	56	46	49	47
Turned computer monitor off when not in use ³	56	61	56	61	57
Turned off fireplace pilot in summer ⁴	23	38	50	F	44
Air dried dishes in dishwasher (door open) ⁵	15	12	13	F	13
Used dimmers on household lights	34	47	59	33	50
Unplugged electronics when away for extended periods	52	55	58	55	56
Reduced heating or cooling in areas of the dwelling	51	61	66	70	61
Used a clothesline or drying rack	43	64	71	59	63
Used fans for cooling in summer	62	73	66	72	66
Closed blinds or drapes during the hottest part of the day	79	86	87	91	85

- As a proportion of households that had one or more thermostats in their dwelling.
- As a proportion of households that used a washer in their dwelling.
- As a proportion of households that had a desktop computer in their dwelling.
- As a proportion of households that had a gas-burning fireplace in their dwelling.
- As a proportion of households that had a dishwasher in their dwelling.
- Includes doubles, duplexes and row or terrace homes.

Source(s): Statistics Canada, Households and the Environment Survey: Energy Use, 2007, Catalogue no. 11-526-S.

Table 6-4
Energy-saving use, by household and dwelling characteristics, 2007 — Dwelling tenure

	Owned	Rented	All households
	percent		
Used a programmable thermostat ¹	42	20	36
Used 5 or more CFLs	40	17	33
Washed and rinsed laundry in cold water ²	46	51	47
Turned computer monitor off when not in use ³	56	59	57
Turned off fireplace pilot in summer ⁴	49	16 ^E	44
Air dried dishes in dishwasher (door open) ⁵	12	20	13
Used dimmers on household lights	59	28	50
Unplugged electronics when away for extended periods	58	52	56
Reduced heating or cooling in areas of the dwelling	65	52	61
Used a clothesline or drying rack	68	50	63
Used fans for cooling in summer	65	69	66
Closed blinds or drapes during the hottest part of the day	87	80	85

1. As a proportion of households that had one or more thermostats in their dwelling.

2. As a proportion of households that used a washer in their dwelling.

3. As a proportion of households that had a desktop computer in their dwelling.

4. As a proportion of households that had a gas-burning fireplace in their dwelling

5. As a proportion of households that had a dishwasher in their dwelling.

Source(s): Statistics Canada, Households and the Environment Survey: Energy Use, 2007, Catalogue no. 11-526-S.

Table 6-5
Energy-saving use, by household and dwelling characteristics, 2007 — Dwelling construction period

	Before 1946	Between 1946 and 1960	Between 1961 and 1977	Between 1978 and 1995	After 1996	Not stated	All households
	percent						
Used a programmable thermostat ¹	31	31	36	37	49	19 ^E	36
Used 5 or more CFLs	40	33	33	33	39	12 ^E	33
Washed and rinsed laundry in cold water ²	51	52	46	45	44	59	47
Turned computer monitor off when not in use ³	59	57	58	56	53	61	57
Turned off fireplace pilot in summer ⁴	33	33	36	44	58	F	44
Air dried dishes in dishwasher (door open) ⁵	20	15	14	11	12	F	13
Used dimmers on household lights	47	47	50	57	51	25	50
Unplugged electronics when away for extended periods	56	56	57	54	58	57	56
Reduced heating or cooling in areas of the dwelling	63	59	61	66	65	38	61
Used a clothesline or drying rack	77	66	63	61	56	53	63
Used fans for cooling in summer	74	69	67	67	59	61	66
Closed blinds or drapes during the hottest part of the day	82	83	88	86	87	71	85

1. As a proportion of households that had one or more thermostats in their dwelling.

2. As a proportion of households that used a washer in their dwelling.

3. As a proportion of households that had a desktop computer in their dwelling.

4. As a proportion of households that had a gas-burning fireplace in their dwelling

5. As a proportion of households that had a dishwasher in their dwelling.

Source(s): Statistics Canada, Households and the Environment Survey: Energy Use, 2007, Catalogue no. 11-526-S.

Table 6-6
Energy-saving use, by household and dwelling characteristics, 2007 — Household income

	Less than \$20,000	\$20,000 to less than \$40,000	\$40,000 to less than \$60,000	\$60,000 to less than \$80,000	\$80,000 to less than \$100,000	\$100,000 to less than \$150,000	\$150,000 and over	Not stated	All households
	percent								
Used a programmable thermostat ¹	19	25	30	43	47	49	58	28	36
Used 5 or more CFLs	14	26	34	39	47	44	46	23	33
Washed and rinsed laundry in cold water ²	46	45	47	53	49	49	45	44	47
Turned computer monitor off when not in use ³	62	61	59	57	53	54	47	60	57
Turned off fireplace pilot in summer ⁴	19 ^E	38	38	52	61	55	51	32	44
Air dried dishes in dishwasher (door open) ⁵	17 ^E	20	16	13	10	9	8	11 ^E	13
Used dimmers on household lights	22	38	52	59	61	65	76	40	50
Unplugged electronics when away for extended periods	50	56	55	59	57	58	55	61	56
Reduced heating or cooling in areas of the dwelling	54	58	62	64	65	69	65	53	61
Used a clothesline or drying rack	48	63	63	69	66	69	64	56	63
Used fans for cooling in summer	62	68	69	65	63	70	67	61	66
Closed blinds or drapes during the hottest part of the day	74	85	85	89	87	87	89	84	85

1. As a proportion of households that had one or more thermostats in their dwelling.

2. As a proportion of households that used a washer in their dwelling.

3. As a proportion of households that had a desktop computer in their dwelling.

4. As a proportion of households that had a gas-burning fireplace in their dwelling.

5. As a proportion of households that had a dishwasher in their dwelling.

Source(s): Statistics Canada, Households and the Environment Survey: Energy Use, 2007, Catalogue no. 11-526-S.

Table 6-7
Energy-saving use, by household and dwelling characteristics, 2007 — Education level

	0 to 8 years or some secondary	Grade 11 to 13, graduate	Some post secondary or post secondary certificate	University	Not stated	All house- holds
	percent					
Used a programmable thermostat ¹	19	27	37	43	35	36
Used 5 or more CFLs	15	25	34	41	28 ^E	33
Washed and rinsed laundry in cold water ²	44	45	51	44	51	47
Turned computer monitor off when not in use ³	65	59	57	55	61	57
Turned off fireplace pilot in summer ⁴	21 ^E	35	49	48	F	44
Air dried dishes in dishwasher (door open) ⁵	16	13	13	12	F	13
Used dimmers on household lights	25	39	52	59	41	50
Unplugged electronics when away for extended periods	52	56	55	58	64	56
Reduced heating or cooling in areas of the dwelling	53	53	64	64	48	61
Used a clothesline or drying rack	48	58	65	66	63	63
Used fans for cooling in summer	58	68	69	64	67	66
Closed blinds or drapes during the hottest part of the day	76	85	86	86	85	85

1. As a proportion of households that had one or more thermostats in their dwelling.
2. As a proportion of households that used a washer in their dwelling.
3. As a proportion of households that had a desktop computer in their dwelling.
4. As a proportion of households that had a gas-burning fireplace in their dwelling.
5. As a proportion of households that had a dishwasher in their dwelling.

Note(s): Education level refers to the highest level completed by any member of the household.

Source(s): Statistics Canada, Households and the Environment Survey: Energy Use, 2007, Catalogue no. 11-526-S.

Table 7
Retrofitting practices, by province, 2003 to 2007

	Had made at least one improvement	Insulation	Heating, ventilation or cooling equipment	Doors, windows, exterior siding and caulking	Foundation	Roof structure or surface
	percent					
Canada	50	14	27	31	1^E	14
Newfoundland and Labrador	43	18 ^E	15 ^E	32	F	9 ^E
Prince Edward Island	60	F	32	40	F	F
Nova Scotia	53	18	23	37	F	23
New Brunswick	49	17	20	31	F	18
Quebec	45	11	23	29	F	12
Ontario	58	17	35	36	2 ^E	18
Manitoba	55	17 ^E	28	38	F	13 ^E
Saskatchewan	48	14	25	31	F	9 ^E
Alberta	40	13	24	25	F	8 ^E
British Columbia	40	10	22	23	F	13

Note(s): Only includes households that own their own dwelling and that are not located in an apartment building.

Source(s): Statistics Canada, Households and the Environment Survey: Energy Use, 2007, Catalogue no. 11-526-S.

Table 8
Retrofitting practices, by dwelling construction period, 2003 to 2007

	Before 1946	Between 1946 and 1960	Between 1961 and 1977	Between 1978 and 1995	After 1996	Not stated	All households
	percent						
Had made at least one improvement	57	54	56	51	27	64 ^E	50
Insulation	22	20	17	9	9	F	14
Heating, ventilation or cooling equipment	29	29	32	28	19	F	27
Doors, windows, exterior siding and caulking	37	36	38	31	10	51 ^E	31
Foundation	4 ^E	F	1 ^E	F	F	F	1 ^E
Roof structure or surface	22	16	15	17	F	F	14

Note(s): Only includes households that own their own dwelling and that are not located in an apartment building.

Source(s): Statistics Canada, Households and the Environment Survey: Energy Use, 2007, Catalogue no. 11-526-S.

Methodology and data quality

Introduction

This section provides an overview of the underlying methodology of the Households and the Environment Survey (HES) Energy Use supplement, as well as key aspects of the data quality. It will also provide an understanding of the strengths and limitations of the data. The information may be of particular relevance when making comparisons with data from other surveys or sources of information and when drawing conclusions about the data.

Reference period

The reference period of the HES Energy Use supplement is the 2007 calendar year and collection was conducted between the months of November 2007 and April 2008. Some questions asked the respondent to respond with respect to “winter”, “summer”, “heating season” or “past 12 months”, while some others asked with respect to 2007.

Energy consumption data were collected for the fourteen months prior when the survey was completed by a household and was processed to reflect the 2007 calendar year.

Target population

The target population consisted of households in Canada excluding households located in Yukon, Northwest Territories and Nunavut, households located on Indian reserves or Crown lands, and households consisting entirely of full-time members of the Canadian Armed Forces. Institutions and households of certain remote regions were also excluded.

Variables measured

The objectives of the Energy Use Supplement were to collect data on the energy use characteristics and energy consumption for occupied dwellings in Canada. The energy use information, coupled with energy consumption data obtained from respondents' energy bills or obtained directly from energy suppliers can be used to assess the effectiveness of energy efficiency programs. The survey content also covers the following themes:

- dwelling characteristics;
- household appliances;
- electrical devices; and
- heating and air conditioning.

Instrument design

Working with Natural Resources Canada, the questionnaire was designed by Statistics Canada in accordance with standard practices. Content was developed considering the data needs of both the project and the larger research and policy communities. Testing of the questionnaire was done by Statistics Canada Questionnaire Design Research Centre (QDRC). Focus group sessions for both the "owner/tenant" and "landlord" versions of the questionnaire were conducted in both English and French in Ottawa in February and March 2007.

Sampling

The Households and the Environment Survey - Energy Use is a supplement to the Households and the Environment Survey (HES). The HES was administered from October 2007 to February 2008 to a sub-sample of the dwellings that were part of the Canadian Community Health Survey (CCHS) Cycle 4.1 between January 1st and June 30th, 2007. Therefore the HES sample design is closely tied to that of the CCHS. All HES respondents were sent a paper questionnaire for the Energy Use supplemental survey.

The following table shows the number of responding dwellings for the 2007 HES – Energy Use supplement.

Table A
Responding dwellings for the 2007 Household and the Environment – Energy Use supplement

	Responding dwellings number
Canada	11,241
Newfoundland and Labrador	299
Prince Edward Island	218
Nova Scotia	453
New Brunswick	450
Quebec	2,629
Ontario	3,753
Manitoba	610
Saskatchewan	546
Alberta	905
British Columbia	1,378

Source(s): Statistics Canada, Households and the Environment Survey: Energy Use, 2007, Catalogue no. 11-526-S.

Data collection

Respondents were first contacted between the months of January and June 2007 and asked to complete the Canadian Community Health Survey, Cycle 4.1. They were then surveyed for the telephone portion of the HES between the months of October 2007 and February 2008. Finally, households responding to the telephone portion of the HES were asked to complete a paper questionnaire on energy use. Occupants that were not responsible for the payment of energy bills (mostly renters) were asked to provide the name, address and telephone number of the landlord or property manager in order to collect the necessary information on energy use and also characteristics of the building that the occupant could not provide. An option to complete the survey on-line was available to the respondents and 4% of all respondents chose this mode of collection. Data collection for the HES - Energy Use supplement was carried out between November 2007 and April 2008.

The last step of the survey was to establish contact with the energy suppliers. Residential energy consumption for 2007 was collected directly from the suppliers in cases where the account holder had given their consent to do so.

Data processing

The data were captured using imaging and automated data entry technology. A small proportion of questionnaires, those that could not be read by the optical scanners, were captured using heads-down keying by experienced operators. Questionable zones method with standard quality control measures were used to verify the error rate of the capture operations. For the HES, based on the quality control sample that was selected, it was determined that the overall data capture error rate did not exceed 0.1%.

Editing

The first type of error treated was related to the flow of the questionnaire, where questions which did not apply to the respondent (and should therefore not have been answered) were found to contain answers. In this case a computer edit automatically eliminated superfluous data by following the flow of the questionnaire implied by answers to previous, and in some cases, subsequent questions.

The second type of error treated involved a lack of information in questions which should have been answered. For this type of error, a non-response or “not-stated” code was assigned to the item.

The third type of error treated involved the identification of incoherent entries based on logical relationship between certain questions.

Coding of open-ended questions

A few data items on the questionnaire were reported in an open-ended format. These questions required coding for inclusion on the data file. The open-ended questions related to responses to “other” categories throughout the questionnaire.

Imputation

Imputation is the process that supplies valid values for those variables that have been identified for a change either because of invalid information or because of missing information. The new values are supplied in such a way as to preserve the underlying structure of the data and to ensure that the resulting records will pass all required edits. In other words, the objective is not to reproduce the true microdata values, but rather to establish internally consistent data records that yield good aggregate estimates.

There are three types of non-response. Complete non-response is when the respondent does not provide the minimum set of answers. These records are dropped and accounted for in the weighting process. Item non-response is when the respondent does not provide an answer to one question, but goes on to the next question. These are usually handled using the “not stated” code or are imputed. Finally, partial non-response is when the respondent provides the minimum set of answers but does not finish the interview. These records can be handled as either complete non-response or multiple item non-response.

In the case of the HES - Energy Use supplement, donor imputation was used to fill in missing data for some item non-response and partial non-response.

Weighting and estimation

The principle behind estimation in a probability sample is that each unit in the sample “represents”, besides itself, several other units not in the sample.

The weighting phase is a step which calculates, for each record, what this number is. This weight appears on the microdata file, and must be used to derive meaningful estimates from the survey.

The initial sampling weight was provided to the Households and the Environment Survey by the CCHS and incorporated the probability of selecting the unit in their sample, as well as other adjustments such as the treatment of non-response to the CCHS.

In order to produce the HES Energy Use supplement weights, adjustments to the HES weights were made to account for non-response to the HES Energy Use supplement.

The accuracy of the estimates was assessed using the ratio of the standard error of the survey estimate to the average value of the estimate itself. This measure is called coefficient of variation (CV). This relative measure of sampling error is usually expressed as a percentage (10% instead of 0.1).

Given the complexity of the HES multi-stage survey design and calibration, there is no simple formula that can be used to calculate variance estimates. Therefore, an approximate method was needed. The bootstrap method is used because the sample design and calibration needs to be taken into account when calculating variance estimates.

Quality evaluation

Data were compared to similar HES or Survey of Household Energy Use (SHEU) data from previous surveys to ensure consistency. Household energy use data was also compared to residential energy use data from Manufacturing and Energy Division.¹ Explanations were found for any significant differences. Subject-matter experts confronted the data using other sources as well as by identifying and researching any values that were not consistent with others in the same domain.

Disclosure control

Statistics Canada is prohibited by law from releasing any data that would divulge information obtained under the *Statistics Act* that relates to any identifiable person, business or organization without the prior knowledge or the consent in writing of that person, business or organization. Various confidentiality rules are applied to all data that are released or published to prevent the publication or disclosure of any information deemed confidential. If necessary, data are suppressed to prevent direct or residual disclosure of identifiable data.

Coverage

The coverage error of the CCHS, of which the HES is a subsample, is estimated at less than 2%.

Response rates and sampling error

The response rate for this survey was 51.8%.² Provincial response rates ranged from 46.2% to 57.2%.

The results estimated from the HES Energy Use Supplement are based on a sample of households in Canada. The results obtained from asking the same questions to all Canadian households would differ to some known extent. The extent of this sampling error is quantified by the coefficient of variation (CV) with the following guidelines:

- 16.5% and below: acceptable estimate;
- 16.6% to 33.3%: marginal estimate requiring cautionary note to users; and
- more than 33.3%: unacceptable estimate.

Estimates that do not meet an acceptable level of quality are either flagged for caution or suppressed. CV tables are prepared by Statistics Canada and made available to help users understand the quality of individual estimates.

For example, CVs for the estimates proportion of households that had a forced air furnace in 2007 for Canada and the provinces are as follows:

1. For more information on this comparison, please contact the Information officer from the Environment and Account Statistics Division.
2. As a percentage of the number of HES Energy Use Supplement selected households.

Table B
Coefficients of variation for the estimates proportion of households that had a forced air furnace in 2007

	Proportion of households that had a forced air furnace in 2007
	percent
Canada	1.37
Newfoundland and Labrador	15.95
Prince Edward Island	13.69
Nova Scotia	8.47
New Brunswick	10.69
Quebec	7.91
Ontario	1.86
Manitoba	5.04
Saskatchewan	2.94
Alberta	1.56
British Columbia	4.37

Source(s): Statistics Canada, Households and the Environment Survey: Energy Use, 2007, Catalogue no. 11-526-S.

Data comparability to the Households and the Environment Survey

Some data that were collected through the Households and the Environment Survey were included in the Energy Use supplement and are included in this report. However, a household's response was only included in this report if it had also completed the HES Energy Use supplement paper or internet questionnaire. For this reason, the HES had a larger sample than the HES Energy Use supplement. Estimates may therefore differ slightly.

Data presented in this report on some energy-saving practices (for example, programmable thermostat use) collected during the HES Energy Use supplement may differ slightly from data presented in the *2007 Households and the Environment* report, 11-526-X, released February 10, 2009.

Data comparability to Natural Resource Canada's Survey of Household Energy Use

Natural Resource Canada's Survey of Household Energy Use is based on those respondents to the HES Energy Use Supplement who did not refuse to share their responses with Natural Resource Canada. As not all respondents agreed to share their responses, there may be some differences between the results of the HES Energy Use Supplement and the Survey of Household Energy Use.

Data comparability over time

Many of the questions included on the 2007 HES—Energy Use supplement were previously included in the 2003 Survey of Household Energy Use (SHEU). Summary and detailed data tables are available by contacting Natural Resources Canada or at <http://www.oeo.nrcan.gc.ca/Publications/statistics/sheu03/index.cfm?attr=0>.

For the 2007 version of the survey, total energy consumption data included electricity, natural gas, heating oil, propane and wood or wood pellets. The 2003 SHEU did not include energy consumption from wood or wood pellets. Therefore the total and average energy consumption data presented in this report cannot be directly compared to data previously released through SHEU.