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Energy Use Data Handbook

1990 to 2011



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Natural Resources Canada's Office of Energy Efficiency
Leading Canadians to Energy Efficiency at Home, at Work and on the Road

Aussi disponible en français sous le titre :

Guide de données sur la consommation d'énergie, 1990 à 2011

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This is the twelfth edition of the *Energy Use Data Handbook, 1990 to 2011*, which fulfils part of the mandate of Natural Resources Canada's (NRCan's) Office of Energy Efficiency (OEE) to strengthen and expand Canada's commitment to energy efficiency and to reduce greenhouse gas (GHG) emissions that contribute to climate change.

The main objective of the handbook is to provide a statistical overview of Canada's sectoral energy markets. The GHG emissions figures presented here are for analytical purposes. Readers should consult Environment Canada's publication *National Inventory Report* for the official GHG inventory.

The twelfth edition of the handbook differs from the previous edition in several ways:

- For all sectors, *Report on Energy Supply and Demand in Canada* data from 1995–2010 that was considered “preliminary” last year is now considered “final,” as any necessary adjustments have been made.
- In the residential sector, water heating energy requirements for personal hot water consumption were adjusted higher.
- In the transportation sector, it is assumed that biodiesel fuel was not available until 2001 in Canada and that ethanol was not available until 2005.

The handbook covers five sectors at an aggregate level: residential, commercial/institutional, industrial, transportation and electricity generation. The year 1990 is the reference year for the Kyoto Protocol, and 2011 is the most recent year for which data are available.

This handbook provides data on energy use and GHG emissions as well as information on major activities and relevant indicators influencing energy use. Such data form the foundation for OEE analysis in publications such as *Energy Efficiency Trends in Canada, 1990 to 2011*, which assesses factors influencing changes in energy use and related changes in GHGs.

A comprehensive database, including most data that the OEE uses for its analysis of historical energy use and GHG emissions, is available at <http://oee.nrcan.gc.ca/corporate/statistics/neud/dpa/home.cfm>.

For more information on this product or other services, contact the OEE by e-mail at euc.cec@nrcan-rncan.gc.ca.

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Chapter 1 – Total End-use Sector

1

The Data Situation

The aggregate energy use data presented in this handbook are based on Statistics Canada's *Report on Energy Supply and Demand in Canada* (Cat. No. 57-003-X), Canada's official report on the energy supply and demand balance in Canada. Greenhouse gas emissions data are estimated using emissions factors developed by Environment Canada.

The Office of Energy Efficiency has developed energy models and/or databases for each sector of the economy presented in this report (i.e. residential, commercial/institutional, industrial, transportation and electricity generation) to assess trends in energy use in the Canadian economy. The data situation for each specific sector is outlined at the beginning of the corresponding chapter of this handbook.

Crude oil and natural gas commodity prices (wholesale prices) are provided by the Oil and Gas Policy and Regulatory Affairs Division of Natural Resources Canada. The crude oil wellhead price is provided by the Energy Information Administration of the U.S. Department of Energy.

Due to rounding, the numbers in the tables may not add up or calculate to their reported totals or growth rates.

Total End-use Sector

Canada's Secondary Energy Use and GHG Emissions by Energy Source

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Total Energy Use (PJ)^{a,b,c}	6,936.5	7,539.4	8,123.3	7,885.2	8,140.5	8,335.2	8,581.4	8,575.5	8,437.8	8,872.7	8,756.8	8,402.4	8,541.3	8,807.9	27.0%
Energy Use by Energy Source (PJ)															
Electricity	1,550.1	1,664.6	1,785.4	1,782.4	1,835.5	1,853.6	1,866.8	1,907.2	1,874.8	1,947.1	1,965.5	1,800.8	1,810.4	1,856.8	19.8%
Natural Gas	1,777.6	1,992.9	2,140.8	1,949.3	2,098.6	2,146.7	2,122.3	2,077.5	2,005.2	2,228.9	2,248.3	2,201.7	2,233.2	2,394.3	34.7%
Motor Gasoline ¹	1,176.5	1,219.6	1,329.1	1,346.1	1,385.9	1,407.0	1,433.7	1,428.4	1,430.9	1,474.4	1,459.3	1,478.0	1,518.0	1,562.9	32.9%
Oil ²	1,202.2	1,179.9	1,336.2	1,313.3	1,275.8	1,374.7	1,434.8	1,435.1	1,382.6	1,468.7	1,446.9	1,339.3	1,424.1	1,443.0	20.0%
Aviation Gasoline	5.5	4.2	3.6	3.5	3.4	3.1	2.9	3.3	3.0	3.1	3.0	2.9	2.6	2.1	-61.7%
Aviation Turbo Fuel	181.9	183.9	236.5	215.3	216.7	214.8	240.0	253.6	251.7	254.2	239.6	219.1	227.2	219.9	20.9%
Still Gas and Petroleum Coke	309.9	412.0	375.9	414.7	437.6	437.7	480.8	469.8	509.0	526.4	473.7	512.6	493.3	480.8	55.1%
Wood Waste and Pulping Liquor	341.0	457.6	479.5	429.8	470.4	476.0	573.2	570.5	545.2	519.9	462.4	432.7	420.7	415.8	21.9%
Other ³	313.3	341.1	340.2	342.3	323.5	324.0	327.4	331.4	344.6	348.2	353.2	307.6	314.2	328.3	4.8%
Residential Wood	78.4	83.6	96.2	88.7	93.1	97.4	99.6	98.6	90.9	101.9	104.8	107.8	97.6	104.0	32.6%
Total GHG Emissions Including Electricity (Mt of CO₂e)^{a,b,c,d}	398.8	417.4	464.6	462.6	471.1	488.6	492.7	486.0	476.8	505.5	493.5	464.4	479.5	483.3	21.2%
GHG Emissions by Energy Source (Mt of CO₂e)															
Electricity	86.4	83.3	102.5	110.2	111.2	116.6	110.4	106.8	102.2	106.6	101.5	84.4	88.0	79.4	-8.1%
Natural Gas	90.7	101.1	109.5	99.6	107.6	111.0	109.6	107.3	104.0	117.6	117.9	116.0	118.3	126.6	39.6%
Motor Gasoline	81.3	85.6	92.5	93.9	96.6	98.1	99.4	98.5	98.2	100.7	99.2	100.0	102.3	104.9	29.1%
Oil ²	87.5	85.6	97.2	95.6	92.7	99.9	104.3	104.4	100.6	106.9	105.4	97.2	103.4	104.9	19.9%
Aviation Gasoline	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	-61.7%
Aviation Turbo Fuel	12.8	12.9	16.2	14.7	14.8	14.7	16.4	17.3	17.2	17.4	16.4	15.0	15.5	15.0	17.5%
Still Gas and Petroleum Coke	17.2	23.9	21.6	23.8	24.6	24.7	28.8	27.7	29.5	30.6	27.2	29.6	28.1	27.3	58.4%
Wood Waste and Pulping Liquor	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	54.0%
Other ³	20.7	22.7	22.5	22.4	21.0	21.0	21.2	21.3	22.6	23.0	23.3	19.5	21.4	22.6	9.0%
Residential Wood	1.6	1.7	1.9	1.8	1.9	2.0	2.0	2.0	1.8	2.1	2.1	2.2	2.0	2.1	32.6%
Total GHG Emissions Excluding Electricity (Mt of CO₂e)^{a,b,c,d}	312.4	334.1	362.0	352.4	360.0	372.0	382.3	379.2	374.6	398.9	392.0	380.0	391.5	403.9	29.3%

1) "Motor Gasoline" includes ethanol. See transportation tables for details.

2) "Oil" includes diesel fuel oil, light fuel oil, kerosene and heavy fuel oil.

3) "Other" includes coal, coke, coke oven gas, LPG/NGL, steam and waste fuels from the cement industry.

Sources:

a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2011*, Ottawa, 2013.

b) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2013.

c) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2011*, Simon Fraser University, 2013.

d) Environment Canada, *National Inventory Report 1990–2011: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2013.

Total End-use Sector

1

Canada's Secondary Energy Use by Sector, End Use and Subsector

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Total Energy Use (PJ)^{a,b}	6,936.5	7,539.4	8,123.3	7,885.2	8,140.5	8,335.2	8,581.4	8,575.5	8,437.8	8,872.7	8,756.8	8,402.4	8,541.3	8,807.9	27.0%
Residential (PJ)^{a,b}	1,282.5	1,340.3	1,387.5	1,335.6	1,394.2	1,435.6	1,441.3	1,428.4	1,371.2	1,500.4	1,504.5	1,428.7	1,362.5	1,456.2	13.5%
Space Heating	798.1	840.8	858.8	788.1	839.7	876.3	881.7	860.8	810.2	920.8	932.1	900.6	827.3	899.0	12.6%
Water Heating	251.1	266.4	282.8	285.6	289.5	296.3	294.9	294.2	294.3	305.4	299.3	284.5	279.3	295.1	17.5%
Appliances	174.5	170.4	177.2	182.0	180.6	182.8	187.9	182.9	184.0	190.3	193.9	177.1	177.8	183.5	5.2%
Major Appliances	146.5	136.4	132.3	133.7	130.2	129.5	130.6	125.4	123.9	126.0	125.4	112.6	109.9	109.8	-25.1%
Other Appliances ^c	27.9	33.9	44.9	48.2	50.4	53.3	57.2	57.5	60.1	64.4	68.5	64.5	67.9	73.8	164.2%
Lighting	48.9	49.5	55.6	57.9	57.6	59.4	60.5	57.9	57.2	58.2	59.0	53.2	53.7	54.0	10.3%
Space Cooling	9.8	13.2	13.2	22.0	26.8	20.8	16.2	32.6	25.5	25.8	20.3	13.3	24.4	24.6	149.7%
Commercial/Institutional (PJ)^{a,c}	867.0	960.8	1,068.4	1,047.2	1,109.1	1,126.0	1,111.2	1,083.5	1,024.4	1,095.9	1,130.6	1,078.8	1,054.4	1,102.3	27.1%
Space Heating	471.8	524.3	579.2	540.1	585.9	599.4	586.5	543.3	487.7	528.1	545.7	531.4	476.9	507.7	7.6%
Water Heating	67.5	72.7	89.0	90.3	87.1	90.4	93.0	92.7	93.1	92.5	95.4	92.6	91.8	95.3	41.2%
Auxiliary Equipment	83.2	97.8	126.9	132.7	138.4	146.0	153.8	158.3	164.2	185.7	204.7	195.1	201.9	208.6	150.8%
Auxiliary Motors	91.1	97.1	96.3	93.7	93.5	94.2	94.6	88.1	89.3	92.0	95.9	94.7	97.5	98.5	8.1%
Lighting	114.2	121.9	121.3	120.7	118.9	117.8	118.7	109.1	111.1	116.6	121.0	120.0	123.5	130.4	14.2%
Space Cooling	30.2	39.3	48.7	62.0	77.5	70.4	56.8	83.7	70.9	72.0	59.2	38.0	55.4	54.4	79.7%
Street Lighting ^d	8.9	7.8	6.9	7.7	7.8	7.8	7.8	8.3	8.1	9.0	8.6	7.1	7.5	7.4	-17.4%
Industrial (PJ)^{a,e}	2,710.0	3,017.3	3,166.9	3,024.6	3,140.8	3,201.4	3,368.8	3,361.3	3,356.2	3,484.0	3,337.2	3,179.3	3,271.7	3,327.9	22.8%
Mining	347.6	445.9	510.2	518.0	534.8	633.6	618.8	665.5	710.6	862.2	870.9	940.9	1,008.8	1,042.3	199.8%
Pulp and Paper	728.2	832.5	867.7	794.4	826.7	816.3	901.7	859.9	778.4	750.3	653.5	602.1	579.9	572.8	-21.3%
Iron and Steel	219.4	247.0	260.1	229.3	246.7	241.3	249.7	239.7	251.9	253.8	246.8	187.3	207.1	214.2	-2.4%
Smelting and Refining	183.3	219.3	231.3	246.1	251.0	256.1	248.3	260.3	262.1	255.2	260.5	227.1	239.0	248.3	35.5%
Cement	59.3	61.9	67.1	65.5	69.3	66.3	71.9	72.0	75.0	67.2	65.4	60.7	55.3	55.7	-6.1%
Chemicals	223.2	248.2	260.3	230.5	230.7	214.5	244.4	235.9	247.7	242.8	241.4	231.3	248.4	251.0	12.5%
Petroleum Refining	323.2	356.2	338.2	354.8	380.5	363.0	396.7	356.3	370.5	379.3	345.8	338.2	335.7	321.5	-0.5%
Other Manufacturing	551.1	549.9	563.6	515.4	522.9	524.5	541.6	572.1	556.9	568.7	547.2	504.4	502.1	525.7	-4.6%
Forestry	7.7	7.9	17.2	20.1	20.0	23.0	28.2	28.8	31.3	30.0	30.9	21.4	22.3	19.8	156.3%
Construction	66.9	48.6	51.3	50.6	58.3	62.8	67.8	70.9	71.9	74.5	74.7	65.9	73.0	76.7	14.6%

1) "Other Appliances" includes small appliances such as televisions, video cassette recorders, digital video disc players, radios, computers and toasters.

Sources:

a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2011*, Ottawa, 2013.

b) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2013.

c) Natural Resources Canada, *Commercial/Institutional End-Use Model*, Ottawa, 2013.

d) Natural Resources Canada, *Transportation End-Use Model*, Ottawa, 2013.

e) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2011*, Simon Fraser University, 2013.

f) Statistics Canada, *Electric Power Generation, Transmission and Distribution, 2010*, Ottawa, 2012 (Cat. No. 57-202-X); Data for 2011 estimated by Natural Resources Canada.

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Total End-use Sector

Canada's Secondary Energy Use by Sector, End Use and Subsector (continued)

continued from previous table

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Total Transportation (PJ)^a	1,877.9	2,011.7	2,265.9	2,255.1	2,282.2	2,349.8	2,437.5	2,475.7	2,456.9	2,554.5	2,541.9	2,505.0	2,607.7	2,649.7	41.1%
Passenger Transportation (PJ)^{a,d}	1,179.0	1,191.1	1,272.8	1,273.9	1,308.7	1,314.7	1,352.3	1,363.8	1,351.5	1,399.9	1,375.6	1,368.1	1,393.9	1,414.3	20.0%
Cars	721.2	682.5	627.0	640.3	652.1	648.4	647.7	635.9	628.8	645.9	631.1	632.0	627.6	624.9	-13.4%
Trucks	216.9	271.8	359.4	371.8	389.8	400.4	415.5	423.8	422.8	447.0	447.9	461.8	482.2	510.3	135.3%
Motorcycles	2.5	2.2	2.6	2.7	3.1	3.3	3.6	3.6	3.8	4.1	4.2	5.6	6.1	6.6	164.7%
Buses	53.7	51.5	48.9	44.3	48.2	48.9	47.3	48.8	46.0	48.8	51.6	48.8	51.0	52.7	-1.8%
Air	180.9	180.8	232.0	211.9	212.8	211.1	235.6	249.1	247.5	251.4	237.7	217.6	224.5	217.2	20.1%
Rail	3.8	2.3	3.0	3.0	2.8	2.6	2.5	2.7	2.7	2.8	3.2	2.3	2.5	2.5	-32.5%
Freight Transportation (PJ)^{a,d}	645.6	758.5	912.1	890.9	880.7	940.6	988.4	1,012.9	1,005.0	1,052.8	1,064.0	1,034.7	1,109.0	1,128.0	74.7%
Light Trucks	99.7	120.0	146.7	153.1	157.6	160.8	166.4	167.6	169.5	180.1	180.9	185.6	193.3	205.7	106.3%
Medium Trucks	134.8	162.0	175.1	155.8	145.7	161.5	177.1	154.7	165.3	157.6	153.6	150.6	157.4	161.0	19.4%
Heavy Trucks	212.3	288.8	392.4	377.7	384.6	424.4	436.0	473.0	464.4	491.9	505.3	513.5	549.6	570.4	168.7%
Air	6.5	7.3	8.1	6.9	7.3	6.8	7.2	7.8	7.2	5.8	4.9	4.4	5.3	4.8	-26.1%
Rail	85.7	78.6	81.5	80.7	73.5	74.4	76.6	81.7	85.6	91.8	97.0	62.5	81.2	83.9	-2.1%
Marine	106.5	101.7	108.2	116.7	112.0	112.7	125.1	128.1	113.0	125.7	122.2	118.0	122.3	102.2	-4.1%
Off-Road (PJ)^d	53.3	62.1	81.0	90.3	92.8	94.5	96.8	99.1	100.4	101.8	102.3	102.2	104.8	107.4	101.2%
Agriculture (PJ)^a	199.2	209.3	234.5	222.8	214.2	222.5	222.7	226.5	229.1	238.0	242.7	210.6	244.9	271.7	36.4%

1) "Other Appliances" includes small appliances such as televisions, video cassette recorders, digital video disc players, radios, computers and toasters.

Sources:

- a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2011*, Ottawa, 2013.
 b) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2013.

c) Natural Resources Canada, *Commercial/Institutional End-Use Model*, Ottawa, 2013.

d) Natural Resources Canada, *Transportation End-Use Model*, Ottawa, 2013.

e) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2011*, Simon Fraser University, 2013.

f) Statistics Canada, *Electric Power Generation, Transmission and Distribution, 2010*, Ottawa, 2012 (Cat. No. 57-202-X); Data for 2011 estimated by Natural Resources Canada.

1

Total End-use Sector

Canada's GHG Emissions by Sector, End Use and Subsector – Including Electricity-related Emissions

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Total GHG Emissions Including Electricity (Mt of CO₂e)^{a,b,d,e,f}	398.8	417.4	464.6	462.6	471.1	488.6	492.7	486.0	476.8	505.5	493.5	464.4	479.5	483.3	21.2%
Residential (Mt of CO₂e)^{a,b,e}	68.7	67.5	73.1	72.8	75.2	78.2	76.8	74.3	70.6	77.5	75.3	68.7	66.4	67.6	-1.6%
Space Heating	42.2	42.2	44.0	41.1	43.5	45.6	45.4	43.6	40.8	46.5	45.9	43.1	40.0	42.0	-0.5%
Water Heating	13.5	13.7	15.1	15.6	15.7	16.1	15.8	15.4	15.3	16.0	15.3	14.1	14.0	14.3	5.9%
Appliances	9.7	8.5	10.1	11.2	10.9	11.4	11.1	10.2	10.0	10.4	10.0	8.3	8.6	7.9	-18.6%
Major Appliances	8.1	6.8	7.6	8.2	7.8	8.1	7.7	7.0	6.7	6.9	6.5	5.3	5.3	4.7	-41.8%
Other Appliances ¹	1.6	1.7	2.6	3.0	3.1	3.4	3.4	3.2	3.3	3.5	3.5	3.0	3.3	3.2	102.7%
Lighting	2.7	2.5	3.2	3.6	3.5	3.7	3.6	3.2	3.1	3.2	3.0	2.5	2.6	2.3	-15.4%
Space Cooling	0.5	0.7	0.8	1.4	1.6	1.3	1.0	1.8	1.4	1.4	1.0	0.6	1.2	1.1	91.6%
Commercial/Institutional (Mt of CO₂e)^{a,c,e}	47.4	49.9	58.7	59.6	62.5	64.6	61.9	58.5	54.5	58.5	58.2	52.9	52.6	52.1	9.7%
Space Heating	25.5	27.8	31.0	29.1	31.5	32.4	31.4	28.5	25.4	27.6	27.9	26.6	24.1	25.5	0.0%
Water Heating	3.6	3.9	4.8	4.8	4.7	4.9	5.0	5.0	4.9	4.9	5.0	4.8	4.7	4.9	35.0%
Auxiliary Equipment	4.6	4.9	7.3	8.1	8.3	9.1	9.1	8.9	9.0	10.2	10.6	9.3	9.9	9.1	96.9%
Auxiliary Motors	5.1	4.9	5.5	5.8	5.7	5.9	5.6	4.9	4.9	5.0	5.0	4.4	4.7	4.2	-17.1%
Lighting	6.4	6.1	7.0	7.5	7.2	7.4	7.0	6.1	6.1	6.4	6.3	5.6	6.0	5.6	-12.4%
Space Cooling	1.7	2.0	2.8	3.8	4.6	4.4	3.3	4.7	3.8	3.9	3.0	1.8	2.7	2.3	39.7%
Street Lighting ¹	0.5	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.4	0.5	0.4	0.3	0.4	0.3	-36.6%
Industrial (Mt of CO₂e)^{a,e,f}	137.8	144.1	157.2	155.9	158.0	164.8	167.5	164.2	164.4	175.2	166.8	155.6	163.7	163.0	18.3%
Mining	22.0	27.3	32.5	33.2	34.1	40.8	39.6	41.6	44.4	54.5	54.8	58.7	63.1	64.4	192.5%
Pulp and Paper	24.3	22.4	24.8	23.8	23.3	23.5	22.7	20.0	17.5	17.3	14.2	12.3	11.8	10.8	-55.4%
Iron and Steel	14.3	15.8	16.7	15.1	15.9	15.6	16.0	15.2	16.2	16.4	15.8	11.8	13.1	13.5	-5.9%
Smelting and Refining	10.8	11.7	13.6	15.3	15.2	16.2	15.0	15.0	14.8	14.6	14.3	11.4	12.4	11.7	8.4%
Cement	4.4	4.7	5.2	5.1	5.5	5.5	5.9	5.9	6.1	5.5	5.3	4.9	4.5	4.4	0.9%
Chemicals	10.8	11.8	13.4	12.1	11.9	11.3	12.6	11.9	12.3	12.1	11.8	10.8	11.8	11.8	9.1%
Petroleum Refining	17.9	20.4	19.3	20.3	21.0	20.3	23.5	20.9	21.1	21.6	19.1	18.8	18.5	17.5	-2.4%
Other Manufacturing	28.5	26.3	27.2	26.2	25.9	26.0	25.7	26.9	24.9	26.0	24.3	21.0	22.1	22.4	-21.5%
Forestry	0.6	0.6	1.2	1.5	1.5	1.7	2.0	2.1	2.3	2.2	2.3	1.6	1.6	1.4	158.9%
Construction	4.3	3.2	3.4	3.4	3.8	4.1	4.4	4.7	4.8	4.9	5.0	4.4	4.8	5.1	19.2%

1) "Other Appliances" includes small appliances such as televisions, video cassette recorders, digital video disc players, radios, computers and toasters.

Sources:

- a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2011*, Ottawa, 2013
b) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2013.
c) Natural Resources Canada, *Commercial/Institutional End-Use Model*, Ottawa, 2013.

d) Natural Resources Canada, *Transportation End-Use Model*, Ottawa, 2013.

e) Environment Canada, *National Inventory Report 1990–2011: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2013.

f) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2011*, Simon Fraser University, 2013.

g) Statistics Canada, *Electric Power Generation, Transmission and Distribution, 2010*, Ottawa, 2012 (Cat. No. 57-202-X); Data for 2011 estimated by Natural Resources Canada.

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Total End-use Sector

Canada's GHG Emissions by Sector, End Use and Subsector – Including Electricity-related Emissions (continued)

continued from previous table

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Total Transportation (Mt of CO₂e)^{a,d,e}	131.4	141.9	159.3	158.8	160.7	165.4	171.1	173.3	171.4	177.8	176.5	173.2	180.1	182.5	38.9%
Passenger Transportation (Mt of CO₂e)^{a,d,e}	81.7	83.8	88.7	88.9	91.3	91.7	93.9	94.2	92.9	95.8	93.8	92.9	94.3	95.3	16.6%
Cars	49.8	48.0	43.8	44.8	45.6	45.3	45.0	43.9	43.2	44.1	42.9	42.7	42.3	41.9	-15.8%
Light Trucks	15.1	19.2	25.3	26.2	27.5	28.2	29.1	29.5	29.2	30.7	30.5	31.3	32.5	34.2	127.1%
Motorcycles	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.4	158.0%
Buses	3.6	3.5	3.4	3.1	3.3	3.4	3.3	3.3	3.2	3.4	3.6	3.4	3.5	3.6	0.2%
Air	12.7	12.7	15.9	14.5	14.6	14.4	16.1	17.0	16.9	17.2	16.3	14.9	15.4	14.9	16.7%
Rail	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	-31.8%
Freight Transportation (Mt of CO₂e)^{a,d,e}	46.0	53.9	65.1	63.8	63.1	67.3	70.6	72.4	71.7	75.1	75.9	73.4	78.8	79.9	73.7%
Light Trucks	6.8	8.3	10.3	10.7	11.0	11.3	11.6	11.6	11.6	12.3	12.3	12.5	13.0	13.8	102.7%
Medium Trucks	9.2	11.0	12.0	10.7	10.1	11.2	12.2	10.7	11.4	10.9	10.6	10.4	10.9	11.1	21.0%
Heavy Trucks	14.8	20.1	27.7	26.7	27.2	30.0	30.8	33.5	32.8	34.8	35.8	36.3	38.9	40.4	173.4%
Air	0.5	0.5	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.3	0.3	0.4	0.3	-28.2%
Rail	6.7	6.1	6.4	6.3	5.8	5.8	6.0	6.4	6.7	7.2	7.6	4.9	6.4	6.6	-1.2%
Marine	8.2	7.8	8.2	8.9	8.5	8.5	9.5	9.7	8.6	9.5	9.2	8.9	9.2	7.8	-4.9%
Off-road (Mt of CO₂e)^{d,e}	3.6	4.2	5.5	6.1	6.3	6.4	6.5	6.7	6.8	6.9	6.9	6.9	7.1	7.2	99.3%
Agriculture (Mt of CO₂e)^{a,e}	13.4	14.0	16.2	15.5	14.8	15.5	15.4	15.6	15.8	16.5	16.7	14.1	16.6	18.2	35.6%

1) "Other Appliances" includes small appliances such as televisions, video cassette recorders, digital video disc players, radios, computers and toasters.

Sources:

- a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2011*, Ottawa, 2013
- b) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2013.
- c) Natural Resources Canada, *Commercial/Institutional End-Use Model*, Ottawa, 2013.

d) Natural Resources Canada, *Transportation End-Use Model*, Ottawa, 2013.

e) Environment Canada, *National Inventory Report 1990–2011: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2013.

f) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2011*, Simon Fraser University, 2013.

g) Statistics Canada, *Electric Power Generation, Transmission and Distribution, 2010*, Ottawa, 2012 (Cat. No. 57-202-X); Data for 2011 estimated by Natural Resources Canada.

Total End-use Sector

1

Canada's GHG Emissions by Sector, End Use and Subsector – Excluding Electricity-related Emissions

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Total GHG Emissions Excluding Electricity (Mt of CO₂e)^{a,b,d,e,f}	312.4	334.1	362.0	352.4	360.0	372.0	382.3	379.2	374.6	398.9	392.0	380.0	391.5	403.9	29.3%
Residential (Mt of CO₂e)^{a,b,e}	42.6	43.8	44.6	41.6	43.8	44.7	44.7	43.9	41.7	46.3	45.5	43.7	40.8	44.0	3.2%
Space Heating	33.4	33.7	33.7	30.7	32.7	33.4	33.5	32.6	30.5	34.5	34.1	32.8	30.1	32.5	-2.7%
Water Heating	9.0	9.9	10.6	10.7	10.9	11.1	11.0	11.0	11.0	11.5	11.1	10.6	10.4	11.1	23.3%
Appliances	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	96.0%
Major Appliances	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	96.0%
Other Appliances ¹	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	–
Lighting	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	–
Space Cooling	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	–
Commercial/Institutional (Mt of CO₂e)^{a,c,e}	25.7	28.8	32.6	31.9	33.5	34.6	33.6	31.6	28.8	29.8	29.4	29.1	27.5	29.5	14.6%
Space Heating	22.1	24.8	27.7	26.5	28.3	29.2	28.1	26.0	23.2	24.1	23.5	23.5	22.0	23.6	7.0%
Water Heating	3.2	3.5	4.3	4.5	4.4	4.6	4.6	4.7	4.7	4.7	4.8	4.6	4.5	4.7	47.9%
Auxiliary Equipment	0.3	0.4	0.6	0.7	0.6	0.6	0.7	0.7	0.7	0.8	0.9	0.9	0.9	0.9	167.1%
Auxiliary Motors	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	–
Lighting	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	–
Space Cooling	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	204.5%
Street Lighting ^g	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	–
Industrial (Mt of CO₂e)^{a,e,f}	101.1	107.5	111.5	106.9	109.5	114.2	120.0	117.1	119.0	130.4	125.7	121.8	128.2	131.3	29.9%
Mining	16.3	21.7	26.3	26.5	27.7	34.4	33.4	35.2	38.2	48.0	48.8	53.5	57.9	59.7	267.5%
Pulp and Paper	14.5	12.1	11.8	10.6	10.3	9.7	9.7	8.1	6.9	7.0	5.5	5.4	4.8	4.9	-66.2%
Iron and Steel	12.6	14.3	14.7	12.7	13.4	13.3	13.8	13.2	14.0	14.5	14.1	10.5	11.5	12.1	-4.3%
Smelting and Refining	3.4	3.4	3.6	3.8	3.5	3.6	3.6	3.6	3.4	3.8	3.7	2.6	3.2	3.3	-1.0%
Cement	4.0	4.3	4.7	4.7	5.0	5.0	5.5	5.4	5.7	5.0	4.9	4.6	4.1	4.2	3.3%
Chemicals	7.1	8.3	9.1	7.6	7.4	6.7	7.9	7.5	7.9	7.8	7.9	7.7	8.6	8.7	22.8%
Petroleum Refining	16.7	19.5	18.1	19.0	19.8	19.0	22.4	19.8	20.0	20.5	18.1	17.8	17.5	16.6	-0.8%
Other Manufacturing	21.6	20.0	18.5	17.2	17.2	16.9	17.3	17.5	15.8	16.6	15.6	13.6	14.1	15.2	-29.9%
Forestry	0.6	0.6	1.2	1.5	1.5	1.7	2.0	2.1	2.3	2.2	2.3	1.6	1.6	1.4	158.9%
Construction	4.3	3.2	3.4	3.4	3.8	4.1	4.4	4.7	4.8	4.9	5.0	4.4	4.8	5.1	19.2%

1) "Other Appliances" includes small appliances such as televisions, video cassette recorders, digital video disc players, radios, computers and toasters.

Sources:

- a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2011*, Ottawa, 2013.
b) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2013.
c) Natural Resources Canada, *Commercial/Institutional End-Use Model*, Ottawa, 2013.

d) Natural Resources Canada, *Transportation End-Use Model*, Ottawa, 2013.

e) Environment Canada, *National Inventory Report 1990–2011: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2013.

f) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2011*, Simon Fraser University, 2013.

g) Statistics Canada, *Electric Power Generation, Transmission and Distribution, 2010*, Ottawa, 2012 (Cat. No. 57-202-X); Data for 2011 estimated by Natural Resources Canada.

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Total End-use Sector

Canada's GHG Emissions by Sector, End Use and Subsector – Excluding Electricity-related Emissions (continued)

continued from previous table

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Total Transportation (Mt of CO₂e)^{a,d,e}	131.2	141.7	159.1	158.6	160.5	165.1	170.8	173.1	171.2	177.7	176.4	173.0	180.0	182.4	39.0%
Passenger Transportation (Mt of CO₂e)^{a,d,e}	81.5	83.6	88.5	88.7	91.1	91.5	93.7	94.0	92.7	95.7	93.6	92.7	94.2	95.2	16.8%
Cars	49.8	48.0	43.8	44.8	45.6	45.3	45.0	43.9	43.2	44.1	42.9	42.7	42.3	41.9	-15.8%
Light Trucks	15.1	19.2	25.3	26.2	27.5	28.2	29.1	29.5	29.2	30.7	30.5	31.3	32.5	34.2	127.1%
Motorcycles	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.4	158.0%
Buses	3.5	3.3	3.2	2.9	3.1	3.2	3.1	3.1	3.0	3.3	3.5	3.3	3.4	3.5	2.0%
Air	12.7	12.7	15.9	14.5	14.6	14.4	16.1	17.0	16.9	17.2	16.3	14.9	15.4	14.9	16.7%
Rail	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	-31.8%
Freight Transportation (Mt of CO₂e)^{a,d,e}	46.0	53.9	65.1	63.8	63.1	67.3	70.6	72.4	71.7	75.1	75.9	73.4	78.8	79.9	73.7%
Light Trucks	6.8	8.3	10.3	10.7	11.0	11.3	11.6	11.6	11.6	12.3	12.3	12.5	13.0	13.8	102.7%
Medium Trucks	9.2	11.0	12.0	10.7	10.1	11.2	12.2	10.7	11.4	10.9	10.6	10.4	10.9	11.1	21.0%
Heavy Trucks	14.8	20.1	27.7	26.7	27.2	30.0	30.8	33.5	32.8	34.8	35.8	36.3	38.9	40.4	173.4%
Air	0.5	0.5	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.3	0.3	0.4	0.3	-28.2%
Rail	6.7	6.1	6.4	6.3	5.8	5.8	6.0	6.4	6.7	7.2	7.6	4.9	6.4	6.6	-1.2%
Marine	8.2	7.8	8.2	8.9	8.5	8.5	9.5	9.7	8.6	9.5	9.2	8.9	9.2	7.8	-4.9%
Off-road (Mt of CO₂e)^{d,e}	3.6	4.2	5.5	6.1	6.3	6.4	6.5	6.7	6.8	6.9	6.9	6.9	7.1	7.2	99.3%
Agriculture (Mt of CO₂e)^{a,e}	11.7	12.4	14.2	13.4	12.7	13.2	13.2	13.5	13.8	14.7	14.9	12.4	15.0	16.8	43.3%

1) "Other Appliances" includes small appliances such as televisions, video cassette recorders, digital video disc players, radios, computers and toasters.

Sources:

- a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2011*, Ottawa, 2013.
 b) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2013.
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d) Natural Resources Canada, *Transportation End-Use Model*, Ottawa, 2013.

e) Environment Canada, *National Inventory Report 1990–2011: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2013.

f) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2011*, Simon Fraser University, 2013.

g) Statistics Canada, *Electric Power Generation, Transmission and Distribution, 2010*, Ottawa, 2012 (Cat. No. 57-202-X); Data for 2011 estimated by Natural Resources Canada.

Commodity Prices and Background Indicators

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Commodity Prices															
Crude Oil Prices															
Wellhead U.S. Average (\$US/bbl.) ^a	20.03	14.62	26.72	21.84	22.51	27.56	36.77	50.28	59.69	66.52	94.04	56.35	74.71	95.73	377.9%
Edmonton Par ¹ (\$/m ³) ^b	173.95	151.36	278.98	246.69	251.33	371.37	330.27	432.01	457.54	479.23	642.77	414.33	487.69	597.81	243.7%
Brent Montreal ² (\$/m ³) ^b	187.35	160.31	280.95	267.49	263.13	275.71	336.01	433.55	484.56	504.51	665.16	454.65	532.13	707.18	277.5%
Natural Gas Price at AECO-C Hub (intra-Alberta)³ (\$/GJ)^b	1.34	1.09	4.81	5.91	3.83	6.31	6.52	8.14	6.79	6.27	7.73	3.97	3.95	3.53	163.4%
Background Indicators															
Total GDP (million \$2002)^c	767,172	837,825	1,025,570	1,041,432	1,068,768	1,091,478	1,126,085	1,162,017	1,193,935	1,221,118	1,230,654	1,192,006	1,234,880	1,267,516	65.2%
Industrial	221,187	238,267	297,784	295,031	301,125	305,084	315,536	322,461	323,645	320,752	307,937	274,648	294,083	310,131	40.2%
Commercial/Institutional	477,088	528,086	635,817	659,667	681,987	698,531	722,717	746,157	776,156	802,701	820,982	825,772	846,688	864,711	81.2%
Agriculture ^d	17,344	17,896	20,339	17,176	15,320	17,949	19,868	20,720	20,848	21,165	24,419	23,183	22,910	22,969	32.4%
Electricity Generation	21,608	23,789	23,334	22,246	23,620	23,684	24,014	25,536	25,089	26,113	25,746	24,525	24,340	24,938	15.4%
Multifactor Measure of Productivity (2002 = 100)^e	93.0	94.3	99.6	99.2	100.0	99.5	99.2	99.5	98.8	97.6	95.5	93.1	94.7	94.8	–

- 1) Edmonton crude oil price is based on the price of West Texas Intermediate (WTI) crude, sold on the Chicago Mercantile Exchange. Edmonton par is priced to be competitive with WTI, taking transportation costs into account.
- 2) Brent Montreal crude oil is the cost of Brent crude oil (in the Montreal market) including the transportation costs through the Portland-Montreal oil pipeline.
- 3) AECO-C hub is the main pricing point for Alberta natural gas and represents the major pricing point for Canadian gas.

Sources:

- a) Energy Information Administration (EIA), Domestic Crude Oil First Purchase Prices by Area, http://www.eia.gov/pub/oil_gas/petroleum/data_publications/petroleum_marketing_monthly/current/pdf/pmmall.pdf.
- b) Natural Resources Canada, Oil and Gas Policy and Regulatory Affairs Division, Ottawa, 2012.
- c) Statistics Canada, CANSIM, Table 379-0027 Gross domestic product (GDP) at basic prices, by North American Industry Classification System (NAICS)
- d) The agriculture sector GDP includes Crop Production (NAICS code 111), Animal Production (112) and related Support Activities (1151, 1152).

Chapter 2 – Residential Sector

The Data Situation

Aggregate data on residential energy use are reported in Statistics Canada's *Report on Energy Supply and Demand in Canada* (RES-D) (Cat. No. 57-003-X). To provide more detail on how this energy is used, the Office of Energy Efficiency (OEE) has developed the Residential End-Use Model (REUM). This stock accounting model assesses trends in energy use in the Canadian residential sector by allocating the energy use reported in the RES-D to end-uses using annual stock characteristics and sales data, coupled with usage profiles and unit energy consumption for equipment stock. It is disaggregated at the provincial level and includes four building types, five end uses, nine vintage categories (house age categories) and six fuel types. Some end uses are further disaggregated by equipment type.

Household characteristics are derived from the *Household Facilities and Equipment Survey* for the years prior to 1997 and from Statistics Canada's Survey of Household Spending from 1997 and onward. The two surveys collect similar information but use different methodologies, therefore requiring significant data processing to merge the information. Because Statistics Canada stopped releasing data about vacant housing stock in 2001, the calculation of housing stock for 2001 and onward uses the number of households, new construction completions, and demolished dwellings. Floor space information is acquired by combining housing stock estimates with data from two other Statistics Canada surveys: the *Building Permits Survey* and the OEE-sponsored *Survey of Household Energy Use* (SHEU). This year, data were released for the most recent SHEU, which covered the 2011 calendar year. The newly released data prompted some revisions to average floor space between 2008 and 2010.

Energy consumption information was drawn from the data collected by various industry associations and external studies (some of which are commissioned by the OEE). Specifically, the Canadian Appliance Manufacturers Association, the Heating, Refrigeration and Air Conditioning Institute of Canada, the Energy Technology Database developed by Marbek Resource Consultants Ltd. and the internal expertise of OEE staff were utilized in this regard.

In the 2011 edition, water heating energy requirements for personal hot water consumption were adjusted higher after reviewing some studies, which caused changes to other end uses as a result of the redistribution of total residential energy demand.

The REUM also takes into account the influence of weather on residential energy demand. It uses the number of heating degree-days in *Monthly Values of Degree-Days Below 18.0°C* and the number of cooling degree-days in *Monthly Values of Degree-Days Above 18.0°C* (both reports from Environment Canada).

The residential prices of heating oil and natural gas are weighted averages of regional prices from Statistics Canada's *Energy Statistics Handbook* (Cat. No. 57-601-X). The residential price of electricity is a weighted average of the data found in Hydro-Québec's *Comparison of Electricity Prices in Major North American Cities*.

Due to rounding, the numbers in the tables may not add up or calculate to their reported totals or growth rates.

Residential Sector

Residential Secondary Energy Use by Energy Source and End Use

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Total Energy Use (PJ)^{a,b}	1,282.5	1,340.3	1,387.5	1,335.6	1,394.2	1,435.6	1,441.3	1,428.4	1,371.2	1,500.4	1,504.5	1,428.7	1,362.5	1,456.2	13.5%
Energy Use by Energy Source (PJ)^{a,b}															
Electricity	467.4	473.8	497.6	504.8	517.4	532.8	543.5	543.6	530.4	568.2	576.2	533.9	528.5	550.9	17.9%
Natural Gas	528.4	630.5	646.0	600.5	640.2	670.2	651.1	646.6	618.7	686.1	691.7	660.4	615.2	682.2	29.1%
Heating Oil	186.4	137.5	135.7	128.8	131.0	122.8	135.0	125.8	116.8	128.1	114.7	111.4	104.9	101.0	-45.8%
Other ¹	21.9	14.9	12.0	12.8	12.4	12.4	12.0	13.7	14.5	16.1	17.0	15.2	16.3	18.1	-17.4%
Wood	78.4	83.6	96.2	88.7	93.1	97.4	99.6	98.6	90.9	101.9	104.8	107.8	97.6	104.0	32.6%
Energy Use by End Use (PJ)^b															
Space Heating	798.1	840.8	858.8	788.1	839.7	876.3	881.7	860.8	810.2	920.8	932.1	900.6	827.3	899.0	12.6%
Water Heating	251.1	266.4	282.8	285.6	289.5	296.3	294.9	294.2	294.3	305.4	299.3	284.5	279.3	295.1	17.5%
Appliances	174.5	170.4	177.2	182.0	180.6	182.8	187.9	182.9	184.0	190.3	193.9	177.1	177.8	183.5	5.2%
Major Appliances	146.5	136.4	132.3	133.7	130.2	129.5	130.6	125.4	123.9	126.0	125.4	112.6	109.9	109.8	-25.1%
Other Appliances ²	27.9	33.9	44.9	48.2	50.4	53.3	57.2	57.5	60.1	64.4	68.5	64.5	67.9	73.8	164.2%
Lighting	48.9	49.5	55.6	57.9	57.6	59.4	60.5	57.9	57.2	58.2	59.0	53.2	53.7	54.0	10.3%
Space Cooling	9.8	13.2	13.2	22.0	26.8	20.8	16.2	32.6	25.5	25.8	20.3	13.3	24.4	24.6	149.7%
Activity															
Total Floor Space (million m ²) ^b	1,208	1,360	1,456	1,474	1,497	1,522	1,573	1,625	1,677	1,728	1,781	1,831	1,878	1,924	59.3%
Total Households (thousands) ^{b,c}	9,895	10,900	11,652	11,837	12,014	12,189	12,375	12,587	12,756	12,985	13,164	13,417	13,378	13,514	36.6%
Energy Intensity (GJ/m²)^{a,b}	1.06	0.99	0.95	0.91	0.93	0.94	0.92	0.88	0.82	0.87	0.84	0.78	0.73	0.76	-28.7%
Energy Intensity (GJ/household)^{a,b,c}	129.6	123.0	119.1	112.8	116.0	117.8	116.5	113.5	107.5	115.6	114.3	106.5	101.8	107.8	-16.9%
Heating Degree-day Index^{b,d}	0.92	0.98	0.96	0.88	0.93	0.96	0.95	0.92	0.85	0.93	0.95	0.96	0.87	0.90	–
Cooling Degree-day Index^{b,e}	1.05	1.18	0.91	1.43	1.73	1.32	0.95	1.79	1.38	1.45	1.08	0.93	1.59	1.51	–

1) "Other" includes coal and propane.

2) "Other Appliances" includes small appliances such as televisions, video cassette recorders, digital video disc players, radios, computers and toasters.

Sources:

- a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2011*, Ottawa, 2013.
- b) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2013.
- c) Statistics Canada, *Survey of Household Spending, 1997–2011*, Ottawa, 2013.
- d) Environment Canada, *Climate Summaries, Monthly Values of Degree-Days Below 18.0°C, 1990–2011*, Ottawa.
- e) Environment Canada, *Climate Summaries, Monthly Values of Degree-Days Above 18.0°C, 1990–2011*, Ottawa.

Residential GHG Emissions by Energy Source and End Use – Including and Excluding Electricity-related Emissions

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Total GHG Emissions Including Electricity (Mt of CO₂e)^{a,b,c}	68.7	67.5	73.1	72.8	75.2	78.2	76.8	74.3	70.6	77.5	75.3	68.7	66.4	67.6	-1.6%
GHG Emissions by Energy Source (Mt of CO₂e)^{a,b,c}															
Electricity	26.0	23.7	28.6	31.2	31.3	33.5	32.1	30.4	28.9	31.1	29.8	25.0	25.7	23.6	-9.5%
Natural Gas	26.6	31.5	32.3	30.0	32.0	33.4	32.4	32.1	30.8	34.3	34.3	32.7	30.4	33.6	26.6%
Heating Oil	13.1	9.7	9.5	9.0	9.2	8.6	9.5	8.8	8.2	9.0	8.1	7.8	7.4	7.1	-45.8%
Other ¹	1.4	0.9	0.8	0.8	0.8	0.8	0.8	0.9	0.9	1.0	1.1	1.0	1.1	1.2	-15.9%
Wood	1.6	1.7	1.9	1.8	1.9	2.0	2.0	2.0	1.8	2.1	2.1	2.2	2.0	2.1	32.6%
GHG Emissions by End Use (Mt of CO₂e)^{a,b,c}															
Space Heating	42.2	42.2	44.0	41.1	43.5	45.6	45.4	43.6	40.8	46.5	45.9	43.1	40.0	42.0	-0.5%
Water Heating	13.5	13.7	15.1	15.6	15.7	16.1	15.8	15.4	15.3	16.0	15.3	14.1	14.0	14.3	5.9%
Appliances	9.7	8.5	10.1	11.2	10.9	11.4	11.1	10.2	10.0	10.4	10.0	8.3	8.6	7.9	-18.6%
Major Appliances	8.1	6.8	7.6	8.2	7.8	8.1	7.7	7.0	6.7	6.9	6.5	5.3	5.3	4.7	-41.8%
Other Appliances ²	1.6	1.7	2.6	3.0	3.1	3.4	3.4	3.2	3.3	3.5	3.5	3.0	3.3	3.2	102.7%
Lighting	2.7	2.5	3.2	3.6	3.5	3.7	3.6	3.2	3.1	3.2	3.0	2.5	2.6	2.3	-15.4%
Space Cooling	0.5	0.7	0.8	1.4	1.6	1.3	1.0	1.8	1.4	1.4	1.0	0.6	1.2	1.1	91.6%
GHG Intensity (tonnes/TJ)^{a,b,c}	53.6	50.3	52.7	54.5	53.9	54.5	53.3	52.0	51.5	51.6	50.0	48.1	48.8	46.4	-13.4%
Total GHG Emissions Excluding Electricity (Mt of CO₂e)^{a,b,c}	42.6	43.8	44.6	41.6	43.8	44.7	44.7	43.9	41.7	46.3	45.5	43.7	40.8	44.0	3.2%
GHG Emissions by End Use (Mt of CO₂e)^{a,b,c}															
Space Heating	33.4	33.7	33.7	30.7	32.7	33.4	33.5	32.6	30.5	34.5	34.1	32.8	30.1	32.5	-2.7%
Water Heating	9.0	9.9	10.6	10.7	10.9	11.1	11.0	11.0	11.0	11.5	11.1	10.6	10.4	11.1	23.3%
Appliances	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	96.0%
Major Appliances	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	96.0%
Other Appliances ²	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	–
Lighting	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	–
Space Cooling	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	–
GHG Intensity (tonnes/TJ)^{a,b,c}	33.3	32.7	32.1	31.2	31.4	31.2	31.0	30.7	30.4	30.9	30.3	30.6	29.9	30.2	-9.1%

1) "Other" includes coal and propane.

2) "Other Appliances" includes small appliances such as televisions, video cassette recorders, digital video disc players, radios, computers and toasters.

Sources:

a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2011*, Ottawa, 2013.b) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2013.c) Environment Canada, *National Inventory Report 1990–2011: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2013.

Residential Housing Stock and Floor Space

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Total Housing Stock (thousands)^a	10,428	11,507	12,209	12,349	12,523	12,712	12,922	13,133	13,343	13,546	13,753	13,943	14,120	14,285	37.0%
Housing Stock by Building Type (thousands)															
Single Detached	5,856	6,480	6,911	6,997	7,102	7,212	7,327	7,433	7,537	7,641	7,733	7,819	7,897	7,965	36.0%
Single Attached	970	1,133	1,262	1,288	1,314	1,342	1,379	1,417	1,454	1,491	1,527	1,559	1,590	1,620	67.0%
Apartments	3,380	3,659	3,791	3,818	3,858	3,904	3,961	4,023	4,088	4,146	4,221	4,290	4,354	4,418	30.7%
Mobile Homes	221	235	244	246	249	252	256	260	264	269	272	276	279	282	27.5%
Housing Stock by Vintage (thousands)															
Before 1946	2,154	2,042	1,928	1,906	1,885	1,864	1,843	1,823	1,803	1,783	1,763	1,745	1,725	1,706	-20.8%
1946–1960	1,478	1,418	1,356	1,344	1,332	1,321	1,309	1,298	1,286	1,275	1,264	1,253	1,242	1,231	-16.7%
1961–1977	3,097	3,002	2,906	2,887	2,868	2,850	2,832	2,814	2,796	2,778	2,761	2,744	2,727	2,709	-12.5%
1978–1983	1,753	1,707	1,661	1,652	1,643	1,634	1,625	1,616	1,608	1,599	1,591	1,582	1,574	1,565	-10.7%
1984–1995	1,945	3,337	3,281	3,270	3,258	3,247	3,236	3,225	3,214	3,203	3,192	3,182	3,171	3,160	62.4%
1996–2000 ¹	0	0	1,077	1,075	1,074	1,072	1,071	1,069	1,068	1,066	1,065	1,063	1,062	1,060	351.3%
2001–2005 ²	0	0	0	215	463	724	1,006	1,288	1,287	1,287	1,286	1,286	1,285	1,285	498.4%
2006–2010 ³	0	0	0	0	0	0	0	0	281	555	831	1,088	1,334	1,334	375.2%
2011–2011	0	0	0	0	0	0	0	0	0	0	0	0	0	234	–
Total Floor Space (million m²)^a	1,208	1,360	1,456	1,474	1,497	1,522	1,573	1,625	1,677	1,728	1,781	1,831	1,878	1,924	59.3%
Floor Space by Building Type (million m²)															
Single Detached	793	899	970	983	999	1,017	1,056	1,094	1,133	1,172	1,205	1,237	1,266	1,293	63.1%
Single Attached	110	128	146	150	153	158	164	170	177	184	190	195	200	205	86.5%
Apartments	285	311	318	319	321	324	330	336	342	348	361	373	385	397	39.4%
Mobile Homes	20	21	22	23	23	23	24	24	25	26	26	27	27	28	43.3%
Floor Space by Vintage (million m²)															
Before 1946	238	226	214	212	210	208	209	209	210	210	212	215	217	218	-8.2%
1946–1960	148	142	135	134	133	131	132	133	134	135	136	136	137	138	-6.8%
1961–1977	344	333	316	312	308	304	305	306	307	308	314	321	327	333	-3.1%
1978–1983	219	214	206	204	202	201	202	203	204	205	208	211	214	217	-1.1%
1984–1995	259	446	434	431	428	425	431	436	441	446	444	443	441	439	69.5%
1996–2000 ¹	0	0	151	150	149	149	149	149	150	150	151	153	154	156	387.0%
2001–2005 ²	0	0	0	31	67	105	147	189	191	193	195	198	200	202	550.6%
2006–2010 ³	0	0	0	0	0	0	0	0	41	81	120	156	189	188	362.7%
2011–2011	0	0	0	0	0	0	0	0	0	0	0	0	0	33	–

1) Growth rate shown in the final column entitled "Total Growth 1990–2011" is for 1996 to 2011.

2) Growth rate shown in the final column entitled "Total Growth 1990–2011" is for 2001 to 2011.

3) Growth rate shown in the final column entitled "Total Growth 1990–2011" is for 2006 to 2011.

Source:

a) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2013.

table continued on next page ➞

Residential Housing Stock and Floor Space (continued)

continued from previous table

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Average Size of Housing Unit (m²/house)^a	116	118	119	119	120	120	122	124	126	128	130	131	133	135	16.3%
Average Size by Building Type (m²/house)															
Single Detached	135	139	140	140	141	141	144	147	150	153	156	158	160	162	19.9%
Single Attached	113	113	116	116	117	117	119	120	122	123	124	125	126	127	11.7%
Apartments	84	85	84	84	83	83	83	83	84	84	85	87	88	90	6.6%
Mobile Homes	89	90	91	92	92	93	93	94	94	95	96	97	98	100	12.4%
Average Size by Vintage (m²/house)															
Before 1946	110	111	111	111	111	112	113	115	116	118	120	123	125	128	15.9%
1946–1960	100	100	100	100	100	99	101	103	104	106	107	109	110	112	11.9%
1961–1977	111	111	109	108	107	107	108	109	110	111	114	117	120	123	10.8%
1978–1983	125	125	124	124	123	123	124	125	127	128	131	133	136	138	10.7%
1984–1995	133	134	132	132	131	131	133	135	137	139	139	139	139	139	4.4%
1996–2000 ¹	0	0	140	139	139	139	139	140	140	141	142	144	146	147	7.9%
2001–2005 ²	0	0	0	145	145	145	146	146	148	150	152	154	156	157	8.7%
2006–2010 ³	0	0	0	0	0	0	0	0	144	147	144	143	142	141	-2.6%
2011–2011	0	0	0	0	0	0	0	0	0	0	0	0	0	141	–

1) Growth rate shown in the final column entitled "Total Growth 1990–2011" is for 1996 to 2011.

2) Growth rate shown in the final column entitled "Total Growth 1990–2011" is for 2001 to 2011.

3) Growth rate shown in the final column entitled "Total Growth 1990–2011" is for 2006 to 2011.

Source:

a) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2013.

Residential Space Heating Energy Use by Energy Source and Building Type

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Total Space Heating Energy Use (PJ)^a	798.1	840.8	858.8	788.1	839.7	876.3	881.7	860.8	810.2	920.8	932.1	900.6	827.3	899.0	12.6%
Energy Use by Energy Source (PJ)^a															
Electricity	156.9	168.8	178.9	168.9	178.9	194.2	202.4	196.3	189.4	219.6	229.9	221.0	204.5	221.4	41.1%
Natural Gas	381.5	456.8	460.0	413.8	448.6	471.9	455.7	448.1	421.2	478.1	486.1	465.2	424.6	474.7	24.4%
Heating Oil	164.3	120.0	115.1	107.6	110.2	103.9	115.6	107.8	98.5	109.4	98.6	95.7	88.7	85.5	-47.9%
Other ¹	17.8	12.9	11.2	11.7	11.4	11.4	11.0	12.6	13.1	14.6	15.6	13.9	14.7	16.4	-8.1%
Wood	77.7	82.2	93.7	86.1	90.6	94.8	97.0	95.9	88.1	99.0	101.9	104.8	94.8	101.0	30.1%
Energy Use by Building Type (PJ)^a															
Single Detached	583.7	615.8	632.1	581.0	619.8	644.4	650.0	637.0	602.4	687.0	694.5	669.8	615.6	667.8	14.4%
Single Attached	62.7	68.9	73.2	67.9	72.7	78.0	77.6	76.9	71.7	81.5	82.4	77.5	70.7	76.9	22.6%
Apartments	130.5	134.8	131.9	119.4	125.9	132.7	132.8	126.8	116.8	130.4	133.3	131.8	121.2	132.8	1.7%
Mobile Homes	21.2	21.2	21.7	19.8	21.2	21.3	21.3	20.1	19.3	21.9	21.8	21.6	19.8	21.5	1.6%
Activity															
Total Floor Space (million m ²) ^a	1,208	1,360	1,456	1,474	1,497	1,522	1,573	1,625	1,677	1,728	1,781	1,831	1,878	1,924	59.3%
Energy Intensity (GJ/m²)^a	0.66	0.62	0.59	0.53	0.56	0.58	0.56	0.53	0.48	0.53	0.52	0.49	0.44	0.47	-29.3%
Heat Gains (PJ)^a	88.5	93.6	96.6	91.4	97.0	101.2	101.9	95.9	89.6	100.8	105.1	98.4	89.1	96.5	9.1%
Heating Degree-day Index^{a,b}	0.92	0.98	0.96	0.88	0.93	0.96	0.95	0.92	0.85	0.93	0.95	0.96	0.87	0.90	–

1) "Other" includes coal and propane.

Sources:

- a) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2013.
b) Environment Canada, *Climate Summaries, Monthly Values of Degree-Days Below 18.0°C, 1990–2011*, Ottawa.

Residential Space Heating System Stock Share

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Heating System Stock Share by System Type (%)^a														
Heating Oil – Normal Efficiency	14.0	8.6	3.7	3.1	2.3	1.8	1.4	1.0	0.8	0.6	0.5	0.4	0.3	0.3
Heating Oil – Medium Efficiency	0.3	3.0	6.3	6.7	7.0	7.1	7.3	7.3	7.3	7.3	7.2	7.3	7.3	7.2
Heating Oil – High Efficiency	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Natural Gas – Normal Efficiency	39.0	30.6	22.5	20.9	19.1	17.2	15.1	13.1	11.1	9.3	7.6	6.0	4.6	3.4
Natural Gas – Medium Efficiency	2.1	9.6	15.3	16.3	17.3	18.2	19.2	19.9	20.5	20.9	21.1	21.1	20.8	20.4
Natural Gas – High Efficiency	2.9	5.4	8.9	9.8	10.9	12.1	13.4	14.8	16.0	17.3	18.6	20.0	21.6	23.0
Electric	28.1	28.9	27.8	27.6	27.6	27.8	27.7	27.9	28.3	28.6	28.9	29.0	29.1	29.4
Heat Pump	2.3	2.7	3.4	3.5	3.7	3.8	3.9	4.0	4.1	4.2	4.3	4.5	4.6	4.7
Other ¹	0.8	1.0	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Wood	1.7	1.9	2.2	2.1	2.1	2.1	2.1	2.1	2.0	2.0	1.9	1.9	1.9	1.9
Dual Systems														
Wood/Electric	5.1	4.6	4.9	4.9	4.9	4.9	4.9	4.9	4.8	4.8	4.8	4.8	4.8	4.8
Wood/Heating Oil	2.4	2.1	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Natural Gas/Electric	0.3	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Heating Oil/Electric	0.8	0.9	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.3

1) "Other" includes coal and propane.

Source:

a) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2013.

Residential Lighting and Space Cooling Details

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Total Lighting Energy Use¹ (PJ)^a	48.9	49.5	55.6	57.9	57.6	59.4	60.5	57.9	57.2	58.2	59.0	53.2	53.7	54.0	10.3%
Activity															
Total Households (thousands) ^a	9,895	10,900	11,652	11,837	12,014	12,189	12,375	12,587	12,756	12,985	13,164	13,417	13,378	13,514	36.6%
Energy Intensity (GJ/Household)^a	4.9	4.5	4.8	4.9	4.8	4.9	4.9	4.6	4.5	4.5	4.5	4.0	4.0	4.0	-19.2%
Heat Loss (PJ)^a	20.6	22.2	24.3	23.3	24.7	26.1	26.1	24.2	22.4	24.7	25.7	23.7	21.6	22.8	10.8%
Total Space Cooling Energy Use¹ (PJ)^a	9.8	13.2	13.2	22.0	26.8	20.8	16.2	32.6	25.5	25.8	20.3	13.3	24.4	24.6	149.7%
Energy Use by Cooling System Type (PJ)^a															
Room	2.5	2.7	2.2	3.8	4.7	3.8	2.7	5.2	4.3	4.5	3.4	2.7	4.3	3.9	52.9%
Central	7.3	10.6	11.0	18.2	22.1	17.0	13.6	27.4	21.2	21.3	16.9	10.7	20.1	20.7	183.5%
Activity															
Cooled Floor Space (million m ²) ^a	267	348	482	512	544	582	617	656	711	708	761	781	824	886	232.5%
Energy Intensity (MJ/m²)^a	36.9	38.1	27.5	42.9	49.4	35.8	26.3	49.7	35.8	36.5	26.7	17.1	29.6	27.7	-24.9%
Cooling Degree-day Index^{a,b}	1.05	1.18	0.91	1.43	1.73	1.32	0.95	1.79	1.38	1.45	1.08	0.93	1.59	1.51	–
Total Cooling System Stock (thousands)^a	2,438	3,045	4,030	4,272	4,513	4,808	5,151	5,572	6,144	6,282	6,554	6,600	6,804	6,963	185.6%
System Stock by Type (thousands)^a															
Room	1,067	1,142	1,425	1,533	1,670	1,805	1,795	1,992	2,289	2,446	2,398	2,376	2,431	2,396	124.5%
Central	1,371	1,903	2,605	2,740	2,843	3,003	3,357	3,580	3,855	3,836	4,156	4,223	4,374	4,567	233.1%
New Unit Efficiency^a															
Room (EER)	7.1	9.2	9.4	9.4	9.4	9.4	9.4	9.4	10.9	10.9	10.9	10.9	12.0	12.0	68.8%
Central (SEER)	9.1	10.2	10.3	10.3	10.3	10.3	10.3	10.3	13.0	13.0	13.0	13.0	13.0	13.0	42.2%
Stock Efficiency^a															
Room (EER)	6.8	7.4	8.3	8.4	8.6	8.8	8.9	9.1	9.5	9.8	10.0	10.1	10.4	10.6	55.7%
Central (SEER)	8.6	9.2	9.6	9.7	9.7	9.8	9.9	10.0	10.3	10.5	10.7	10.9	11.1	11.2	30.0%

1) Lighting and space cooling consume only electricity.

Sources:

a) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2013.

b) Environment Canada, *Climate Summaries, Monthly Values of Degree-Days Above 18.0°C, 1990–2011*, Ottawa.

Residential Appliance Details

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Total Appliance Energy Use (PJ)^a	174.5	170.4	177.2	182.0	180.6	182.8	187.9	182.9	184.0	190.3	193.9	177.1	177.8	183.5	5.2%
Energy Use by Energy Source (PJ)^a															
Electricity	170.8	166.3	172.6	177.3	175.7	177.7	182.6	177.4	178.3	183.9	187.1	170.4	171.2	176.1	3.1%
Natural Gas	3.7	4.1	4.6	4.7	4.8	5.1	5.3	5.6	5.8	6.5	6.8	6.7	6.6	7.4	100.5%
Energy Use by Appliance Type (PJ)^a															
Refrigerator	57.5	50.0	44.0	43.7	41.5	39.5	38.8	36.4	35.4	35.4	35.0	30.8	29.5	28.9	-49.8%
Freezer	23.2	20.0	15.8	15.2	14.1	13.5	13.1	12.1	11.6	11.5	11.2	9.9	9.3	9.2	-60.3%
Dishwasher ¹	4.6	4.5	4.5	4.6	4.5	4.5	4.5	4.2	4.1	4.0	3.8	3.4	3.1	3.0	-35.2%
Clothes Washer ¹	3.5	3.9	4.4	4.6	4.5	4.6	4.7	4.4	4.3	4.3	3.9	3.3	3.1	2.9	-16.2%
Clothes Dryer	30.8	30.3	32.7	33.6	33.4	34.3	35.4	34.8	35.1	36.3	36.8	33.5	33.4	33.9	10.1%
Range	26.9	27.6	30.8	32.1	32.1	33.2	34.2	33.4	33.4	34.5	34.6	31.8	31.4	31.9	18.5%
Other Appliances ²	27.9	33.9	44.9	48.2	50.4	53.3	57.2	57.5	60.1	64.4	68.5	64.5	67.9	73.8	164.2%
Activity															
Total Households (thousands) ^{a,b}	9,895	10,900	11,652	11,837	12,014	12,189	12,375	12,587	12,756	12,985	13,164	13,417	13,378	13,514	36.6%
Energy Intensity (GJ/household)^{a,b}	17.6	15.6	15.2	15.4	15.0	15.0	15.2	14.5	14.4	14.7	14.7	13.2	13.3	13.6	-23.0%
Heat Loss by Appliance Type (PJ)^a															
Refrigerator	24.3	22.6	19.4	17.7	17.9	17.5	16.9	15.4	13.9	15.2	15.4	13.8	11.9	12.2	-49.8%
Freezer	9.9	9.1	7.0	6.2	6.2	6.0	5.8	5.2	4.6	5.0	5.0	4.5	3.8	4.0	-59.9%
Dishwasher ¹	0.6	0.7	0.7	0.6	0.6	0.7	0.7	0.6	0.5	0.6	0.6	0.5	0.4	0.4	-34.9%
Clothes Washer ¹	0.8	1.0	1.1	1.0	1.1	1.1	1.1	1.0	0.9	1.0	1.0	0.8	0.7	0.7	-16.0%
Clothes Dryer	3.6	3.8	4.0	3.8	4.0	4.2	4.3	4.1	3.9	4.3	4.5	4.2	3.8	4.0	10.4%
Range	9.5	10.4	11.3	10.8	11.5	12.2	12.4	11.7	10.9	12.3	12.6	11.8	10.5	11.2	17.5%
Other Appliances ²	11.8	15.3	19.8	19.5	21.7	23.6	25.0	24.3	23.6	27.5	30.0	28.9	27.3	31.1	163.1%
Appliances per Household by Appliance Type^{a,b}															
Refrigerator	1.18	1.20	1.23	1.23	1.24	1.24	1.25	1.26	1.27	1.27	1.27	1.27	1.26	1.27	7.5%
Freezer	0.57	0.58	0.58	0.57	0.57	0.57	0.56	0.55	0.55	0.55	0.54	0.54	0.54	0.54	-4.8%
Dishwasher	0.42	0.47	0.52	0.52	0.54	0.55	0.56	0.57	0.58	0.59	0.59	0.60	0.60	0.60	43.4%
Clothes Washer	0.74	0.78	0.81	0.81	0.81	0.81	0.81	0.82	0.82	0.82	0.81	0.82	0.81	0.81	10.4%
Clothes Dryer	0.72	0.76	0.81	0.81	0.82	0.82	0.82	0.83	0.84	0.84	0.84	0.84	0.84	0.84	16.1%
Range	0.98	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	1.00	1.00	1.00	1.00	1.9%
Other Appliances ²	10.12	11.11	12.77	13.37	13.85	14.17	14.66	15.26	15.54	15.77	15.89	16.07	16.18	17.13	69.3%

1) Excludes hot water requirements.

2) "Other Appliances" includes small appliances such as televisions, video cassette recorders, digital video disc players, radios, computers and toasters.

Sources:

a) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2013.b) Statistics Canada, *Survey of Household Spending, 1997–2011*, Ottawa, 2013.

Residential Appliance Unit Energy Consumption (UEC)

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
UEC¹ for New Electric Appliances (kWh/year)^a															
Refrigerator	956	642	640	559	506	487	478	469	481	483	467	430	425	421	-55.9%
Freezer	714	382	391	384	368	369	373	386	380	384	375	356	365	390	-45.3%
Dishwasher ²	277	181	172	170	160	141	123	107	101	96	93	88	84	80	-70.9%
Clothes Washer ²	134	118	113	111	109	101	83	65	58	44	41	37	35	34	-74.8%
Clothes Dryer	1,103	909	910	916	916	914	912	904	905	912	916	921	928	933	-15.4%
Range	772	771	760	763	756	709	653	573	537	524	522	518	522	526	-31.9%
UEC¹ for New Natural Gas Appliances (kWh/year)^a															
Clothes Dryer	925	889	880	880	880	880	880	880	880	880	880	880	880	880	-4.9%
Range	1,357	1,236	1,226	1,226	1,226	1,226	1,226	1,226	1,226	1,226	1,226	1,226	1,226	1,226	-9.7%
UEC¹ for Stock of Electric Appliances (kWh/year)^a															
Refrigerator	1,504	1,262	958	905	857	781	730	689	657	629	604	580	549	527	-64.9%
Freezer	1,272	1,052	733	680	632	588	553	522	495	471	449	428	400	387	-69.5%
Dishwasher ²	338	291	233	224	214	202	190	178	168	151	141	133	122	113	-66.6%
Clothes Washer ²	145	150	145	144	142	139	134	128	123	117	105	95	89	82	-43.6%
Clothes Dryer	1,294	1,186	1,073	1,054	1,037	1,022	1,007	992	978	964	951	940	925	918	-29.1%
Range	803	793	781	779	776	771	761	747	732	716	697	682	664	648	-19.4%
UEC¹ for Stock of Natural Gas Appliances (kWh/year)^a															
Clothes Dryer	1,480	1,122	888	885	883	882	881	880	880	880	880	880	880	880	-40.5%
Range	1,519	1,388	1,305	1,296	1,278	1,264	1,257	1,251	1,246	1,241	1,237	1,234	1,230	1,228	-19.2%

1) Unit energy consumption is based on rated efficiency.

2) Excludes hot water requirements.

Sources:

a) Special tabulations from the Canadian Appliance Manufacturers Association, Mississauga, 2013.

b) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2013.

Residential Water Heating Energy Use and Water Heater Stock Share

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Total Water Heating Energy Use (PJ)^a	251.1	266.4	282.8	285.6	289.5	296.3	294.9	294.2	294.3	305.4	299.3	284.5	279.3	295.1	17.5%
Energy Use by Energy Source (PJ)^a															
Electricity	81.0	76.0	77.3	78.7	78.3	80.7	81.8	79.4	80.0	80.8	79.9	75.9	74.8	74.9	-7.5%
Natural Gas	143.2	169.6	181.4	182.1	186.8	193.2	190.1	192.9	191.8	201.5	198.9	188.5	184.0	200.1	39.8%
Heating Oil	22.1	17.6	20.7	21.2	20.8	18.9	19.5	18.0	18.3	18.7	16.2	15.8	16.2	15.5	-29.8%
Other ¹	4.1	2.0	0.8	1.1	1.0	1.0	1.0	1.2	1.3	1.5	1.5	1.4	1.6	1.7	-58.1%
Wood	0.8	1.3	2.5	2.6	2.5	2.6	2.6	2.7	2.8	2.9	2.8	2.9	2.8	2.9	286.1%
Activity															
Total Households (thousands) ^{a,b}	9,895	10,900	11,652	11,837	12,014	12,189	12,375	12,587	12,756	12,985	13,164	13,417	13,378	13,514	36.6%
Energy Intensity (GJ/household)^{a,b}	25.4	24.4	24.3	24.1	24.1	24.3	23.8	23.4	23.1	23.5	22.7	21.2	20.9	21.8	-13.9%
Water Heater Stock Market Share (%)^a															
Electricity	52.5	49.7	47.4	46.9	46.5	46.3	45.9	45.7	45.5	45.3	45.1	45.1	44.9	44.9	–
Natural Gas	41.5	44.6	46.6	47.1	47.6	48.0	48.4	48.8	48.9	49.3	49.5	49.5	49.7	49.7	–
Heating Oil	5.1	4.7	5.0	5.0	4.9	4.7	4.6	4.5	4.4	4.3	4.3	4.3	4.3	4.2	–
Other ¹	0.6	0.6	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	–
Wood	0.2	0.4	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	–
Heat Loss (PJ)^a	7.2	8.4	9.1	8.4	9.2	9.7	9.6	9.3	8.9	10.2	10.3	10.1	9.1	10.1	40.3%

1) "Other" includes coal and propane.

Sources:

a) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2013.

b) Statistics Canada, *Survey of Household Spending, 1997–2011*, Ottawa, 2013.

Residential Energy Prices and Background Indicators

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Energy Prices by Energy Source (incl. taxes)															
Natural Gas (cents/m ³) ^{a,d}	19.1	22.4	31.9	44.6	36.6	46.9	46.6	51.3	53.0	50.5	52.2	44.0	44.9	43.7	128.7%
Heating Oil (cents/litre) ^{a,d,e}	35.6	35.6	53.6	53.5	49.7	57.2	60.4	78.2	82.0	85.0	111.1	77.6	90.3	112.7	216.5%
Electricity (cents/kWh) ^{b,d}	6.2	7.8	7.9	8.1	8.5	8.6	8.8	9.2	9.4	9.5	9.6	9.5	9.6	10.4	67.3%
Background Indicators															
Consumer Price Index (2002 = 100)^c															
Natural Gas	52.1	62.6	94.2	122.1	100.0	130.1	127.4	136.3	140.5	131.3	146.8	117.3	115.2	111.4	–
Fuel Oil and Other Fuels	72.8	75.1	108.7	108.8	100.0	114.9	126.5	158.7	165.9	172.5	225.4	158.0	183.4	229.6	–
Electricity	68.7	87.3	91.3	92.9	100.0	98.0	102.0	104.9	110.8	112.9	113.2	115.2	120.7	124.3	–
Real Personal Disposable Income per Household (\$2002)^e	56,325	52,997	56,315	56,822	57,165	57,723	59,164	59,460	62,076	63,580	65,344	64,865	66,128	66,025	17.2%
Total Population (thousands)^f	27,691	29,302	30,686	31,019	31,354	31,640	31,941	32,245	32,576	32,928	33,318	33,727	34,127	34,484	24.5%

Sources:

- a) Statistics Canada, *Energy Statistics Handbook*, Ottawa, 2012 (Cat. No. 57-601-X).
b) Hydro-Québec, *Comparison of Electricity Prices in Major North American Cities*, 2011.
c) Informetrica Limited, *The Informetrica Model and Database*, Ottawa, 2012.
d) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2011*, Ottawa, 2013.
e) Statistics Canada, *Total Population, Census Divisions and Census Metropolitan Areas*, Tables 051-0014, 051-0034 and 051-0046, Ottawa, 2012 (CANSIM).
f) Statistics Canada, *Estimates of Population, by Age Group and Sex, Provinces and Territories*, Table 051-0001, Ottawa, 2012 (CANSIM).

Chapter 3 – Commercial/Institutional Sector

The Data Situation

Of all the sectors reviewed in this handbook, the commercial/institutional sector has the most significant limitations with regard to available data.

Aggregate data on commercial/institutional energy use are reported in Statistics Canada's *Report on Energy Supply and Demand in Canada* (RES-D) (Cat. No. 57-003-X) under the "public administration" and "commercial and other institutional" categories. Statistics Canada defines these categories as final consumers not reported in the other end-use sectors. Therefore, energy use data for the commercial/institutional sector essentially represent the residual energy use not accounted for in the residential, industrial, transportation and agriculture sectors.

In the previous publication, data from the new (full) Industrial Consumption of Energy (ICE) survey was integrated into the RES-D from 1995 onward. Also, data from the Survey of Secondary Distributors of Refined Petroleum Products (SSDRPP) were integrated into the RES-D from 2000 onward. Due to more recent adjustments to the 2011 RES-D, energy breakdown in this year's handbook might be slightly different from the 2010 edition.

The Office of Energy Efficiency (OEE) developed the Commercial/Institutional End-Use Model (CEUM) to assess Canadian energy use trends in this sector. The CEUM uses floor space estimates by region and building type and energy intensity by region, building type and end use to allocate energy reported by Statistics Canada in the RES-D to 10 activity types and six end uses. Floor space estimates are developed by Informetrica Limited for the OEE from average costs per unit of floor space and investment flows for new construction. These estimates are categorized using the North American Industry Classification

System (NAICS). The CEUM used the *Survey of Commercial and Institutional Energy Use – Establishments* (SCIEU) as source data for energy intensities. The latest 2011 SCIEU was undertaken by Statistics Canada on behalf of the OEE to collect data for the reference year 2009.

Furthermore, the SCIEU includes new information related to the penetration rate for air conditioners. This information was used to update the penetration rate for air conditioners in the model and to refine the space cooling energy intensity calculation.

The model also takes into account the influence of weather on commercial/institutional energy demand. It uses the number of heating degree-days in *Monthly Values of Degree-Days Below 18.0°C* and the number of cooling degree-days in *Monthly Values of Degree-Days Above 18.0°C* (both reports from Environment Canada).

The commercial/institutional price of heating oil and natural gas are weighted averages of regional prices taken from the Oil and Gas Policy and Regulatory Affairs Division of Natural Resources Canada and Statistics Canada's *Energy Statistics Handbook* (Cat. No. 57-601-X), respectively. The commercial/institutional price of electricity is a weighted average of the data found in Hydro-Québec's *Comparison of Electricity Prices in Major North American Cities*.

Due to rounding, the numbers in the tables may not add up or calculate to their reported totals or growth rates.

Commercial/Institutional Sector

Commercial/Institutional Secondary Energy Use by Energy Source, End Use and Activity Type

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Total Energy Use (PJ)^a	867.0	960.8	1,068.4	1,047.2	1,109.1	1,126.0	1,111.2	1,083.5	1,024.4	1,095.9	1,130.6	1,078.8	1,054.4	1,102.3	27.1%
Energy Use by Energy Source (PJ)^a															
Electricity	390.1	421.2	454.6	447.1	479.2	477.2	479.7	481.4	471.8	524.7	558.6	509.5	515.7	528.4	35.5%
Natural Gas	387.1	427.6	504.1	488.0	517.2	525.1	514.1	504.9	468.5	482.3	495.2	508.7	478.4	503.6	30.1%
Light Fuel Oil and Kerosene	62.0	61.2	55.6	53.8	56.8	56.2	57.9	44.1	33.8	33.8	24.6	17.9	19.1	22.8	-63.2%
Heavy Fuel Oil	11.4	8.6	18.0	21.9	20.5	35.0	25.4	24.7	20.3	19.9	15.2	11.2	8.0	10.9	-4.4%
Steam	0.2	0.4	0.3	0.3	0.3	0.3	0.5	2.6	2.6	3.8	3.8	1.5	0.0	0.0	–
Other ¹	16.3	41.8	35.9	36.0	35.1	32.1	33.6	25.8	27.3	31.4	33.1	30.0	33.1	36.6	125.1%
Energy Use by End Use (PJ)^b															
Space Heating	471.8	524.3	579.2	540.1	585.9	599.4	586.5	543.3	487.7	528.1	545.7	531.4	476.9	507.7	7.6%
Water Heating	67.5	72.7	89.0	90.3	87.1	90.4	93.0	92.7	93.1	92.5	95.4	92.6	91.8	95.3	41.2%
Auxiliary Equipment	83.2	97.8	126.9	132.7	138.4	146.0	153.8	158.3	164.2	185.7	204.7	195.1	201.9	208.6	150.8%
Auxiliary Motors	91.1	97.1	96.3	93.7	93.5	94.2	94.6	88.1	89.3	92.0	95.9	94.7	97.5	98.5	8.1%
Lighting	114.2	121.9	121.3	120.7	118.9	117.8	118.7	109.1	111.1	116.6	121.0	120.0	123.5	130.4	14.2%
Space Cooling	30.2	39.3	48.7	62.0	77.5	70.4	56.8	83.7	70.9	72.0	59.2	38.0	55.4	54.4	79.7%
Street Lighting ^c	8.9	7.8	6.9	7.7	7.8	7.8	7.8	8.3	8.1	9.0	8.6	7.1	7.5	7.4	-17.4%

table continued on next page ➞

1) "Other" includes coal and propane.

2) excludes street lighting

3) "Offices" includes activities related to finance and insurance; real estate and rental and leasing; professional, scientific and technical services; public administration; and others.

Sources:

a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2011*, Ottawa, 2013.

b) Natural Resources Canada, *Commercial/Institutional End-Use Model*, Ottawa, 2013.

c) Informetrica Limited, *The Informetrica Model and Database*, Ottawa, 2012.

d) Environment Canada, *Climate Summaries, Monthly Values of Degree-Days Below 18.0°C, 1990–2011*, Ottawa.

e) Environment Canada, *Climate Summaries, Monthly Values of Degree-Days Above 18.0°C, 1990–2011*, Ottawa.

f) Statistics Canada, *Electric Power Generation, Transmission and Distribution, 2010*, Ottawa, 2012 (Cat. No. 57-202-X); Data for 2011 estimated by Natural Resources Canada.

Commercial/Institutional Sector

3

Commercial/Institutional Secondary Energy Use by Energy Source, End Use and Activity Type (continued)

continued from previous table

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Energy Use by Activity Type² (PJ)^a															
Wholesale Trade	61.8	65.0	69.7	67.8	70.8	71.4	70.1	66.7	62.9	67.2	68.9	65.4	63.0	65.7	6.3%
Retail Trade	142.5	154.1	173.1	170.5	179.7	183.2	183.4	179.2	171.0	184.4	190.5	182.0	176.2	185.9	30.4%
Transportation and Warehousing	51.4	52.6	52.4	49.7	51.2	51.0	49.0	45.3	41.7	44.0	44.6	42.3	40.9	42.4	-17.6%
Information and Cultural Industries	16.7	19.7	23.2	23.0	24.4	25.0	24.5	23.5	22.2	23.6	24.2	23.5	23.0	24.0	44.1%
Offices ³	272.5	313.4	359.1	350.9	375.8	382.2	377.1	377.3	355.3	381.4	399.1	378.8	368.4	386.2	41.7%
Educational Services	112.8	124.9	138.6	136.7	144.5	147.4	144.9	139.0	130.5	138.3	141.0	135.0	134.1	139.2	23.4%
Health Care and Social Assistance	97.2	107.4	118.4	116.7	123.5	124.1	121.9	117.4	111.8	119.2	121.2	116.6	115.8	120.2	23.7%
Arts, Entertainment and Recreation	19.6	24.2	27.2	26.7	28.0	28.5	27.8	27.1	25.8	27.7	28.3	27.7	27.2	28.3	44.1%
Accommodation and Food Services	64.0	70.9	77.7	76.0	80.9	82.8	82.5	79.1	75.9	80.8	83.7	81.2	79.9	84.2	31.6%
Other Services	19.6	20.8	22.1	21.6	22.5	22.6	22.0	20.7	19.2	20.2	20.4	19.2	18.4	19.0	-3.2%
Activity															
Total Floor Space (million m ²) ^c	509.9	558.7	601.1	610.2	620.8	631.2	642.6	654.2	667.3	679.7	693.2	703.8	713.9	729.0	43.0%
Energy Intensity² (GJ/m²)^{a,c}	1.68	1.71	1.77	1.70	1.77	1.77	1.72	1.64	1.52	1.60	1.62	1.52	1.47	1.50	-10.7%
Heating Degree-day Index^{b,d}	0.92	0.98	0.96	0.88	0.93	0.96	0.95	0.92	0.85	0.93	0.95	0.96	0.87	0.90	–
Cooling Degree-day Index^{b,e}	1.05	1.18	0.91	1.43	1.73	1.32	0.95	1.79	1.38	1.45	1.08	0.93	1.59	1.51	–

1) "Other" includes coal and propane.

2) excludes street lighting

3) "Offices" includes activities related to finance and insurance; real estate and rental and leasing; professional, scientific and technical services; public administration; and others.

Sources:

a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2011*, Ottawa, 2013.

b) Natural Resources Canada, *Commercial/Institutional End-Use Model*, Ottawa, 2013.

c) Informetrica Limited, *The Informetrica Model and Database*, Ottawa, 2012.

d) Environment Canada, *Climate Summaries, Monthly Values of Degree-Days Below 18.0°C, 1990–2011*, Ottawa.

e) Environment Canada, *Climate Summaries, Monthly Values of Degree-Days Above 18.0°C, 1990–2011*, Ottawa.

f) Statistics Canada, *Electric Power Generation, Transmission and Distribution, 2010*, Ottawa, 2012 (Cat. No. 57-202-X); Data for 2011 were estimated by Natural Resources Canada.

Commercial/Institutional Sector

Commercial/Institutional GHG Emissions by Energy Source, End Use and Activity Type – Including Electricity-related Emissions

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Total GHG Emissions Including Electricity (Mt of CO₂e)^{a,d}	47.4	49.9	58.7	59.6	62.5	64.6	61.9	58.5	54.5	58.5	58.2	52.9	52.6	52.1	9.7%
GHG Emissions by Energy Source (Mt of CO₂e)^{a,d}															
Electricity	21.7	21.1	26.1	27.6	29.0	30.0	28.4	27.0	25.7	28.7	28.8	23.9	25.1	22.6	4.0%
Natural Gas	19.5	21.4	25.2	24.4	25.8	26.1	25.6	25.1	23.3	24.1	24.5	25.2	23.6	24.8	27.3%
Light Fuel Oil and Kerosene	4.4	4.3	3.9	3.8	4.0	3.9	4.1	3.1	2.4	2.4	1.7	1.2	1.3	1.6	-63.5%
Heavy Fuel Oil	0.9	0.6	1.3	1.6	1.5	2.6	1.9	1.8	1.5	1.5	1.1	0.8	0.6	0.8	-6.1%
Steam	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	–
Other ¹	1.0	2.5	2.2	2.2	2.1	2.0	2.0	1.6	1.7	1.9	2.0	1.8	2.0	2.2	125.9%
GHG Emissions by End Use (Mt of CO₂e)^{b,d}															
Space Heating	25.5	27.8	31.0	29.1	31.5	32.4	31.4	28.5	25.4	27.6	27.9	26.6	24.1	25.5	0.0%
Water Heating	3.6	3.9	4.8	4.8	4.7	4.9	5.0	5.0	4.9	4.9	5.0	4.8	4.7	4.9	35.0%
Auxiliary Equipment	4.6	4.9	7.3	8.1	8.3	9.1	9.1	8.9	9.0	10.2	10.6	9.3	9.9	9.1	96.9%
Auxiliary Motors	5.1	4.9	5.5	5.8	5.7	5.9	5.6	4.9	4.9	5.0	5.0	4.4	4.7	4.2	-17.1%
Lighting	6.4	6.1	7.0	7.5	7.2	7.4	7.0	6.1	6.1	6.4	6.3	5.6	6.0	5.6	-12.4%
Space Cooling	1.7	2.0	2.8	3.8	4.6	4.4	3.3	4.7	3.8	3.9	3.0	1.8	2.7	2.3	39.7%
Street Lighting ^c	0.5	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.4	0.5	0.4	0.3	0.4	0.3	-36.6%
GHG Emissions by Activity Type² (Mt of CO₂e)^{b,d}															
Wholesale Trade	3.4	3.4	3.8	3.8	4.0	4.1	3.9	3.6	3.3	3.6	3.5	3.2	3.1	3.1	-7.9%
Retail Trade	7.7	8.0	9.5	9.7	10.1	10.5	10.2	9.7	9.1	9.8	9.8	8.9	8.8	8.8	13.1%
Transportation and Warehousing	2.8	2.7	2.9	2.8	2.9	2.9	2.7	2.4	2.2	2.3	2.3	2.1	2.0	2.0	-28.2%
Information and Cultural Industries	0.9	1.0	1.3	1.3	1.4	1.4	1.4	1.3	1.2	1.3	1.2	1.2	1.1	1.1	22.7%
Offices ³	14.9	16.3	19.7	19.9	21.1	21.9	20.9	20.3	18.9	20.3	20.6	18.7	18.4	18.3	22.7%
Educational Services	6.2	6.5	7.7	7.8	8.2	8.5	8.1	7.5	7.0	7.4	7.3	6.6	6.7	6.6	5.9%
Health Care and Social Assistance	5.4	5.6	6.6	6.7	7.0	7.2	6.8	6.4	6.0	6.4	6.3	5.7	5.8	5.7	6.1%
Arts, Entertainment and Recreation	1.1	1.3	1.5	1.5	1.6	1.7	1.6	1.5	1.4	1.5	1.5	1.4	1.4	1.3	23.0%
Accommodation and Food Services	3.5	3.7	4.3	4.3	4.6	4.8	4.6	4.3	4.1	4.3	4.3	4.0	4.0	4.0	14.1%
Other Services	1.1	1.1	1.2	1.2	1.3	1.3	1.2	1.1	1.0	1.1	1.0	0.9	0.9	0.9	-17.7%
GHG Intensity (tonnes/TJ)^{a,d}	54.7	51.9	55.0	56.9	56.3	57.4	55.7	54.0	53.2	53.4	51.5	49.1	49.9	47.2	-13.7%

1) "Other" includes coal and propane.

2) excludes street lighting

3) "Offices" includes activities related to finance and insurance; real estate and rental and leasing; professional, scientific and technical services; public administration; and others.

Sources:

a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2011*, Ottawa, 2013.

b) Natural Resources Canada, *Commercial/Institutional End-Use Model*, Ottawa, 2013.

c) Statistics Canada, *Electric Power Generation, Transmission and Distribution, 2010*, Ottawa, 2012 (Cat. No. 57-202-X); Data for 2011 estimated by Natural Resources Canada.

d) Environment Canada, *National Inventory Report 1990–2011: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2013.

Commercial/Institutional Sector

3

Commercial/Institutional GHG Emissions by End Use and Activity Type – Excluding Electricity-related Emissions

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Total GHG Emissions <u>Excluding</u> Electricity (Mt of CO₂e)^{a,d}	25.7	28.8	32.6	31.9	33.5	34.6	33.6	31.6	28.8	29.8	29.4	29.1	27.5	29.5	14.6%
GHG Emissions by End Use (Mt of CO₂e)^{b,d}															
Space Heating	22.1	24.8	27.7	26.5	28.3	29.2	28.1	26.0	23.2	24.1	23.5	23.5	22.0	23.6	7.0%
Water Heating	3.2	3.5	4.3	4.5	4.4	4.6	4.6	4.7	4.7	4.7	4.8	4.6	4.5	4.7	47.9%
Auxiliary Equipment	0.3	0.4	0.6	0.7	0.6	0.6	0.7	0.7	0.7	0.8	0.9	0.9	0.9	0.9	167.1%
Auxiliary Motors	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	–
Lighting	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	–
Space Cooling	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	204.5%
Street Lighting ^c	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	–
GHG Emissions by Activity Type^d (Mt of CO₂e)^{b,d}															
Wholesale Trade	1.8	1.9	2.1	2.1	2.1	2.2	2.1	1.9	1.8	1.8	1.8	1.7	1.6	1.7	-5.3%
Retail Trade	4.2	4.6	5.3	5.2	5.4	5.6	5.5	5.2	4.8	5.0	4.9	4.9	4.6	4.9	16.5%
Transportation and Warehousing	1.6	1.7	1.7	1.7	1.7	1.7	1.6	1.5	1.3	1.3	1.3	1.2	1.2	1.2	-24.0%
Information and Cultural Industries	0.5	0.6	0.7	0.7	0.7	0.8	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6	25.7%
Offices ²	8.1	9.4	11.0	10.7	11.3	11.7	11.3	11.1	10.1	10.5	10.6	10.4	9.8	10.5	28.9%
Educational Services	3.4	3.8	4.2	4.2	4.4	4.5	4.4	4.0	3.6	3.7	3.6	3.6	3.5	3.7	9.7%
Health Care and Social Assistance	2.9	3.3	3.7	3.6	3.8	3.9	3.8	3.5	3.2	3.3	3.2	3.1	3.0	3.2	9.8%
Arts, Entertainment and Recreation	0.6	0.7	0.8	0.8	0.8	0.9	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	27.7%
Accommodation and Food Services	1.9	2.2	2.4	2.4	2.5	2.6	2.6	2.4	2.2	2.3	2.2	2.3	2.2	2.3	19.6%
Other Services	0.6	0.6	0.7	0.6	0.7	0.7	0.7	0.6	0.5	0.5	0.5	0.5	0.5	0.5	-14.4%
GHG Intensity (tonnes/TJ)^{b,d}	29.6	30.0	30.5	30.5	30.2	30.8	30.2	29.1	28.1	27.2	26.0	26.9	26.1	26.7	-9.9%

1) excludes street lighting

2) "Offices" includes activities related to finance and insurance; real estate and rental and leasing; professional, scientific and technical services; public administration; and others.

Sources:

- a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2011*, Ottawa, 2013.
- b) Natural Resources Canada, *Commercial/Institutional End-Use Model*, Ottawa, 2013.
- c) Statistics Canada, *Electric Power Generation, Transmission and Distribution, 2010*, Ottawa, 2012 (Cat. No. 57-202-X); Data for 2011 estimated by Natural Resources Canada.
- d) Environment Canada, *National Inventory Report 1990–2011: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2013.

Commercial/Institutional Sector

Commercial/Institutional Secondary Energy Use by Activity Type and Energy Source

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Total Energy Use for Wholesale Trade (PJ)^a	61.8	65.0	69.7	67.8	70.8	71.4	70.1	66.7	62.9	67.2	68.9	65.4	63.0	65.7	6.3%
Energy Use by Energy Source (PJ)^a															
Electricity	27.4	28.2	29.3	28.5	30.3	29.9	29.9	29.6	28.9	32.2	34.3	31.0	31.0	31.8	16.0%
Natural Gas	29.1	30.3	34.8	33.6	34.6	34.9	34.0	32.1	29.4	30.2	30.4	31.3	28.7	30.1	3.5%
Light Fuel Oil and Kerosene	3.5	3.2	2.3	2.4	2.7	2.6	2.7	2.0	1.5	1.4	1.0	0.6	0.6	0.9	-75.7%
Heavy Fuel Oil	0.6	0.5	0.9	0.9	1.0	1.9	1.4	1.3	1.1	1.2	0.9	0.6	0.6	0.7	8.7%
Steam	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.0	0.0	0.0	–
Other ¹	1.2	2.8	2.4	2.4	2.2	2.0	2.1	1.6	1.7	1.9	2.0	1.8	2.0	2.3	97.8%
Activity															
Floor Space (million m ²) ^b	38.61	39.95	41.05	41.27	41.45	41.87	42.40	42.78	43.38	44.16	44.84	45.11	45.23	46.01	19.2%
Energy Intensity (GJ/m²)^{a,b}	1.60	1.63	1.70	1.64	1.71	1.70	1.65	1.56	1.45	1.52	1.54	1.45	1.39	1.43	-10.8%
Total Energy Use for Retail Trade (PJ)^a	142.5	154.1	173.1	170.5	179.7	183.2	183.4	179.2	171.0	184.4	190.5	182.0	176.2	185.9	30.4%
Energy Use by Energy Source (PJ)^a															
Electricity	63.2	66.7	73.1	72.1	77.3	77.2	78.6	79.7	78.7	88.5	93.9	86.3	86.8	89.8	42.1%
Natural Gas	66.9	71.8	83.7	81.6	86.1	87.8	87.2	84.6	79.1	82.1	84.7	86.8	80.0	84.9	26.8%
Light Fuel Oil and Kerosene	8.1	7.7	7.9	7.9	8.0	7.9	8.3	6.5	4.9	4.7	3.2	2.0	2.0	2.7	-67.3%
Heavy Fuel Oil	1.5	1.2	2.4	2.8	2.6	5.0	3.7	3.8	3.3	3.3	2.5	1.8	1.7	2.0	31.7%
Steam	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.6	0.6	0.0	0.0	0.0	–
Other ¹	2.6	6.7	5.9	6.0	5.7	5.2	5.6	4.3	4.6	5.3	5.6	5.2	5.8	6.5	146.7%
Activity															
Floor Space (million m ²) ^b	80.84	86.04	92.95	94.59	96.19	98.39	101.62	104.12	106.89	109.96	113.08	114.49	115.46	118.76	46.9%
Energy Intensity (GJ/m²)^{a,b}	1.76	1.79	1.86	1.80	1.87	1.86	1.81	1.72	1.60	1.68	1.68	1.59	1.53	1.57	-11.2%

table continued on next page ➞

1) "Other" includes coal and propane.

2) "Offices" includes activities related to finance and insurance; real estate and rental and leasing; professional, scientific and technical services; public administration; and others.

Sources:

a) Natural Resources Canada, *Commercial/Institutional End-Use Model*, Ottawa, 2013.

b) Informetrica Limited, *The Informetrica Model and Database*, Ottawa, 2012.

Commercial/Institutional Sector

3

Commercial/Institutional Secondary Energy Use by Activity Type and Energy Source (continued)

continued from previous table

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Total Energy Use for Transportation and Warehousing (PJ)^a	51.4	52.6	52.4	49.7	51.2	51.0	49.0	45.3	41.7	44.0	44.6	42.3	40.9	42.4	-17.6%
Energy Use by Energy Source (PJ)^a															
Electricity	21.0	20.7	19.7	18.7	19.4	18.9	18.4	17.5	16.8	18.6	19.6	17.7	17.8	18.0	-14.0%
Natural Gas	25.0	25.7	26.4	24.9	26.1	26.2	25.0	23.5	21.3	21.7	22.1	22.6	20.9	21.7	-13.2%
Light Fuel Oil and Kerosene	3.9	3.5	3.6	3.2	3.0	2.9	3.0	2.1	1.5	1.4	0.9	0.5	0.5	0.7	-83.2%
Heavy Fuel Oil	0.7	0.5	1.0	1.2	1.1	1.8	1.2	1.1	0.9	0.8	0.6	0.4	0.5	0.6	-18.5%
Steam	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.3	0.3	0.0	0.0	0.0	–
Other ¹	0.8	2.2	1.7	1.7	1.6	1.3	1.4	0.9	1.0	1.2	1.2	1.1	1.3	1.4	69.7%
Activity															
Floor Space (million m ²) ^b	33.92	34.22	33.72	33.58	33.39	33.41	33.35	33.26	33.37	33.70	33.85	33.83	33.74	33.99	0.2%
Energy Intensity (GJ/m²)^{a,b}	1.52	1.54	1.55	1.48	1.53	1.53	1.47	1.36	1.25	1.30	1.32	1.25	1.21	1.25	-17.7%
Total Energy Use for Information and Cultural Industries (PJ)^a	16.7	19.7	23.2	23.0	24.4	25.0	24.5	23.5	22.2	23.6	24.2	23.5	23.0	24.0	44.1%
Energy Use by Energy Source (PJ)^a															
Electricity	7.6	8.9	10.1	10.0	10.9	10.9	10.9	11.0	10.7	11.8	12.5	11.4	11.5	11.8	55.2%
Natural Gas	7.0	8.3	10.8	10.6	10.8	11.2	10.9	10.4	9.7	10.0	10.1	10.9	10.3	10.8	53.4%
Light Fuel Oil and Kerosene	1.5	1.6	1.3	1.3	1.6	1.5	1.6	1.2	0.9	0.9	0.6	0.4	0.4	0.5	-67.8%
Heavy Fuel Oil	0.3	0.1	0.2	0.3	0.3	0.5	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.1	-78.0%
Steam	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	–
Other ¹	0.3	0.8	0.8	0.8	0.8	0.8	0.8	0.6	0.6	0.7	0.8	0.7	0.8	0.9	202.1%
Activity															
Floor Space (million m ²) ^b	8.97	10.49	11.83	12.07	12.34	12.55	12.71	12.93	13.19	13.39	13.66	13.96	14.15	14.45	61.1%
Energy Intensity (GJ/m²)^{a,b}	1.86	1.88	1.96	1.90	1.98	1.99	1.93	1.82	1.69	1.76	1.77	1.68	1.63	1.66	-10.6%

table continued on next page ➞

1) "Other" includes coal and propane.

2) "Offices" includes activities related to finance and insurance; real estate and rental and leasing; professional, scientific and technical services; public administration; and others.

Sources:

a) Natural Resources Canada, *Commercial/Institutional End-Use Model*, Ottawa, 2013.

b) Informetrica Limited, *The Informetrica Model and Database*, Ottawa, 2012.

Commercial/Institutional Sector

Commercial/Institutional Secondary Energy Use by Activity Type and Energy Source (continued)

continued from previous table

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Total Energy Use for Offices² (PJ)^a	272.5	313.4	359.1	350.9	375.8	382.2	377.1	377.3	355.3	381.4	399.1	378.8	368.4	386.2	41.7%
Energy Use by Energy Source (PJ)^a															
Electricity	121.4	136.8	151.9	149.6	161.4	161.3	162.5	164.9	161.4	179.1	193.4	175.9	177.7	182.5	50.3%
Natural Gas	122.9	139.3	172.0	164.9	178.4	181.3	177.9	180.8	166.6	171.9	177.8	180.2	169.0	178.1	44.9%
Light Fuel Oil and Kerosene	19.4	20.3	16.8	16.4	16.7	17.0	16.9	13.5	10.7	11.9	10.4	9.1	10.2	11.2	-42.6%
Heavy Fuel Oil	3.6	2.8	7.0	8.9	8.5	12.6	9.1	9.0	7.1	7.0	5.4	4.3	1.7	3.6	1.0%
Steam	0.1	0.4	0.3	0.3	0.3	0.3	0.5	1.1	1.0	1.5	1.5	0.0	0.0	0.0	–
Other ¹	5.1	13.7	11.1	10.8	10.5	9.6	10.2	8.1	8.6	9.9	10.6	9.3	9.8	10.9	114.6%
Activity															
Floor Space (million m ²) ^b	193.95	219.73	243.07	247.63	253.03	257.92	262.69	267.84	273.72	278.83	284.96	290.43	294.44	301.22	55.3%
Energy Intensity (GJ/m²)^{a,b}	1.40	1.43	1.48	1.42	1.49	1.48	1.44	1.41	1.30	1.37	1.40	1.30	1.25	1.28	-8.7%
Total Energy Use for Educational Services (PJ)^a	112.8	124.9	138.6	136.7	144.5	147.4	144.9	139.0	130.5	138.3	141.0	135.0	134.1	139.2	23.4%
Energy Use by Energy Source (PJ)^a															
Electricity	51.1	55.1	59.5	58.9	62.8	62.9	62.9	62.7	60.9	67.2	71.2	64.7	66.3	67.5	32.1%
Natural Gas	48.8	54.3	63.1	61.6	65.8	66.8	65.2	62.8	58.2	59.4	60.1	62.2	60.1	62.8	28.5%
Light Fuel Oil and Kerosene	9.1	8.8	8.5	8.2	8.4	8.2	8.5	6.2	4.6	4.3	2.8	1.8	1.8	2.3	-74.3%
Heavy Fuel Oil	1.7	1.3	2.4	3.0	2.6	5.0	3.6	3.4	2.8	2.7	2.1	1.5	1.4	1.6	-4.7%
Steam	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.5	0.5	0.8	0.0	0.0	–
Other ¹	2.1	5.4	5.1	5.1	4.9	4.5	4.7	3.5	3.7	4.2	4.4	4.0	4.5	5.0	135.5%
Activity															
Floor Space (million m ²) ^b	68.14	74.28	79.14	80.56	82.00	83.42	84.59	86.06	87.09	87.98	89.11	90.11	92.73	94.11	38.1%
Energy Intensity (GJ/m²)^{a,b}	1.66	1.68	1.75	1.70	1.76	1.77	1.71	1.61	1.50	1.57	1.58	1.50	1.45	1.48	-10.7%

table continued on next page ➞

1) "Other" includes coal and propane.

2) "Offices" includes activities related to finance and insurance; real estate and rental and leasing; professional, scientific and technical services; public administration; and others.

Sources:

a) Natural Resources Canada, *Commercial/Institutional End-Use Model*, Ottawa, 2013.

b) Informetrica Limited, *The Informetrica Model and Database*, Ottawa, 2012.

Commercial/Institutional Sector

3

Commercial/Institutional Secondary Energy Use by Activity Type and Energy Source (continued)

continued from previous table

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Total Energy Use for Health Care and Social Assistance (PJ)^a	97.2	107.4	118.4	116.7	123.5	124.1	121.9	117.4	111.8	119.2	121.2	116.6	115.8	120.2	23.7%
Energy Use by Energy Source (PJ)^a															
Electricity	43.6	46.9	50.4	49.3	53.3	52.5	52.3	52.1	51.2	57.2	60.0	55.3	56.7	57.6	32.3%
Natural Gas	41.7	46.6	53.1	52.6	55.8	55.9	54.3	53.1	50.1	51.3	52.4	54.2	52.2	54.6	30.9%
Light Fuel Oil and Kerosene	8.5	8.2	8.7	8.0	8.1	7.8	8.3	6.1	4.5	4.4	2.9	1.8	1.8	2.3	-72.5%
Heavy Fuel Oil	1.6	1.2	2.1	2.5	2.2	4.2	3.2	3.0	2.5	2.4	1.9	1.3	1.3	1.5	-6.4%
Steam	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.4	0.4	0.7	0.0	0.0	–
Other ¹	1.9	4.5	4.1	4.3	4.0	3.7	3.8	2.9	3.1	3.5	3.6	3.3	3.8	4.2	123.4%
Activity															
Floor Space (million m ²) ^b	38.16	41.58	44.10	44.77	45.63	45.90	46.48	47.42	48.53	49.47	50.08	50.99	52.36	53.10	39.2%
Energy Intensity (GJ/m²)^{a,b}	2.55	2.58	2.68	2.61	2.71	2.70	2.62	2.48	2.30	2.41	2.42	2.29	2.21	2.26	-11.1%
Total Energy Use for Arts, Entertainment and Recreation (PJ)^a	19.6	24.2	27.2	26.7	28.0	28.5	27.8	27.1	25.8	27.7	28.3	27.7	27.2	28.3	44.1%
Energy Use by Energy Source (PJ)^a															
Electricity	9.0	10.9	11.9	11.7	12.4	12.4	12.3	12.4	12.2	13.7	14.5	13.5	13.6	13.8	53.3%
Natural Gas	8.3	10.2	12.7	12.3	12.2	12.4	12.0	11.8	11.1	11.5	11.9	12.8	12.1	12.7	53.4%
Light Fuel Oil and Kerosene	1.7	1.9	1.4	1.4	2.0	2.0	2.0	1.6	1.3	1.2	0.7	0.4	0.4	0.5	-68.0%
Heavy Fuel Oil	0.3	0.2	0.3	0.5	0.5	0.9	0.6	0.6	0.4	0.4	0.3	0.2	0.1	0.2	-46.7%
Steam	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	–
Other ¹	0.3	1.0	0.9	0.9	1.0	0.9	0.9	0.7	0.7	0.8	0.9	0.8	0.9	1.0	204.2%
Activity															
Floor Space (million m ²) ^b	10.40	12.59	13.73	13.94	14.08	14.30	14.47	14.92	15.25	15.70	15.98	16.40	16.72	17.04	63.8%
Energy Intensity (GJ/m²)^{a,b}	1.89	1.92	1.98	1.92	1.99	1.99	1.92	1.82	1.69	1.77	1.77	1.69	1.63	1.66	-12.1%

table continued on next page ➞

1) "Other" includes coal and propane.

2) "Offices" includes activities related to finance and insurance; real estate and rental and leasing; professional, scientific and technical services; public administration; and others.

Sources:

a) Natural Resources Canada, *Commercial/Institutional End-Use Model*, Ottawa, 2013.

b) Informetrica Limited, *The Informetrica Model and Database*, Ottawa, 2012.

Commercial/Institutional Sector

Commercial/Institutional Secondary Energy Use by Activity Type and Energy Source (continued)

continued from previous table

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Total Energy Use for Accommodation and Food Services (PJ)^a	64.0	70.9	77.7	76.0	80.9	82.8	82.5	79.1	75.9	80.8	83.7	81.2	79.9	84.2	31.6%
Energy Use by Energy Source (PJ)^a															
Electricity	27.8	30.0	32.1	31.3	33.9	34.0	34.5	34.2	33.8	37.7	40.3	37.3	37.8	38.9	39.6%
Natural Gas	29.2	32.3	36.9	35.7	36.6	37.4	36.9	35.9	34.2	35.2	36.8	38.8	36.9	39.3	34.5%
Light Fuel Oil and Kerosene	4.5	4.3	4.5	4.3	5.6	5.6	5.8	4.5	3.5	3.2	2.0	1.2	1.2	1.6	-65.4%
Heavy Fuel Oil	0.8	0.6	1.1	1.6	1.4	2.6	1.8	1.8	1.4	1.4	1.0	0.7	0.4	0.6	-30.4%
Steam	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.0	0.0	0.0	–
Other ¹	1.6	3.7	3.1	3.1	3.5	3.3	3.4	2.7	2.8	3.2	3.5	3.2	3.6	3.9	142.7%
Activity															
Floor Space (million m ²) ^b	24.40	26.76	28.26	28.51	29.28	29.93	30.80	31.41	32.42	33.02	34.16	35.03	35.71	36.93	51.3%
Energy Intensity (GJ/m²)^{ab}	2.62	2.65	2.75	2.66	2.76	2.77	2.68	2.52	2.34	2.45	2.45	2.32	2.24	2.28	-13.0%
Total Energy Use for Other Services (PJ)^a	19.6	20.8	22.1	21.6	22.5	22.6	22.0	20.7	19.2	20.2	20.4	19.2	18.4	19.0	-3.2%
Energy Use by Energy Source (PJ)^a															
Electricity	9.0	9.3	9.5	9.2	9.8	9.6	9.5	9.3	8.9	9.8	10.3	9.2	9.1	9.2	2.3%
Natural Gas	8.2	8.8	10.7	10.4	10.8	11.2	10.6	9.9	8.9	9.0	8.9	9.1	8.4	8.8	7.3%
Light Fuel Oil and Kerosene	1.8	1.6	0.6	0.7	0.7	0.7	0.7	0.6	0.4	0.4	0.3	0.2	0.2	0.3	-84.9%
Heavy Fuel Oil	0.3	0.2	0.4	0.3	0.2	0.4	0.4	0.4	0.4	0.4	0.3	0.2	0.1	0.2	-49.3%
Steam	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	–
Other ¹	0.4	0.8	0.9	1.0	0.9	0.7	0.7	0.5	0.5	0.6	0.6	0.5	0.5	0.6	64.0%
Activity															
Floor Space (million m ²) ^b	12.54	13.07	13.25	13.33	13.45	13.45	13.47	13.47	13.49	13.46	13.46	13.45	13.38	13.43	7.1%
Energy Intensity (GJ/m²)^{ab}	1.56	1.59	1.67	1.62	1.67	1.68	1.63	1.54	1.43	1.50	1.51	1.43	1.38	1.41	-9.6%

1) "Other" includes coal and propane.

2) "Offices" includes activities related to finance and insurance; real estate and rental and leasing; professional, scientific and technical services; public administration; and others.

Sources:

a) Natural Resources Canada, *Commercial/Institutional End-Use Model*, Ottawa, 2013.

b) Informetrica Limited, *The Informetrica Model and Database*, Ottawa, 2012.

Commercial/Institutional Energy Prices and Background Indicators

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Energy Prices by Energy Source (incl. taxes)															
Natural Gas (cents/m ³) ^{a,d}	15.3	17.7	26.4	37.0	31.2	40.0	40.3	43.4	46.0	42.0	46.4	37.8	37.8	33.8	120.2%
Light Fuel Oil (cents/litre) ^a	25.8	22.1	40.1	35.6	34.7	38.7	46.5	61.9	64.2	68.6	94.3	60.9	70.5	94.6	267.3%
Heavy Fuel Oil (cents/litre) ^a	14.1	16.2	28.5	26.9	29.6	31.1	30.7	38.2	39.2	44.3	57.6	46.1	54.7	72.2	413.9%
Electricity (40 kW/10,000 kWh) ¹ (cents/kWh) ^{b,d}	7.7	9.5	8.7	8.8	9.2	9.4	9.7	10.1	10.4	10.7	10.8	10.7	10.8	12.2	58.4%
Electricity (500 kW/100,000 kWh) ¹ (cents/kWh) ^{b,d}	8.4	10.3	9.5	10.0	10.3	11.2	10.9	11.7	11.5	11.5	12.2	11.5	12.3	13.2	56.3%
Background Indicators															
Commercial/Institutional Floor Space (million m ²) ^c	509.9	558.7	601.1	610.2	620.8	631.2	642.6	654.2	667.3	679.7	693.2	703.8	713.9	729.0	43.0%
Commercial/Institutional Employees (thousands) ^c	9,338	9,828	10,937	11,160	11,443	11,751	11,943	12,133	12,454	12,845	13,084	13,112	13,326	13,476	44.3%
Employees (per thousand m ²) ^c	18.3	17.6	18.2	18.3	18.4	18.6	18.6	18.5	18.7	18.9	18.9	18.6	18.7	18.5	0.9%
Commercial/Institutional GDP (million \$2002) ^c	477,088	528,086	635,817	659,667	681,987	698,531	722,717	746,157	776,156	802,701	820,982	825,772	846,688	864,711	81.2%

1) kW refers to power hook-up, whereas kWh refers to monthly electricity consumption.

Sources:

- a) Statistics Canada, *Energy Statistics Handbook*, Ottawa, 2012 (Cat. No. 57-601).
- b) Hydro-Québec, *Comparison of Electricity Prices in Major North American Cities*, 2011.
- c) Informetrica Limited, *The Informetrica Model and Database*, Ottawa, 2012.
- d) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2011*, Ottawa, 2013.
- e) Natural Resources Canada, *Oil and Gas Policy and Regulatory Affairs Division*, Ottawa, 2012.

Chapter 4 – Industrial Sector

The Data Situation

The aggregate energy use data presented for the industrial sector are taken from Statistics Canada's *Report on Energy Supply and Demand in Canada* (RESO) (Cat. No. 57-003-X). The RESO contains data derived primarily from Statistics Canada surveys of energy distributors and end-users as well as administrative records received by Statistics Canada. Such data are then supplemented with data from the National Energy Board and various energy-producing provinces. The major energy survey used for the industrial sector is the *Industrial Consumption of Energy* (ICE)¹ survey (Cat. No. 57-505-X).

Last year, data from the ICE survey were integrated into the RESO from 1995 onward. Also, data from the Survey of Secondary Distributors of Refined Petroleum Products (SSDRPP) were integrated into the RESO from 2000 onward. RESO data from 1995–2010 that were considered “preliminary” last year are now considered “final,” as any necessary adjustments have been made.

To provide more detail about the industrial end-use energy trends over time, the Office of Energy Efficiency (OEE) developed the Industrial End-Use Model (IEUM). The detailed energy use data presented in the IEUM are taken from the ICE survey for 1990 and from 1995 and beyond. Data for 1991 to 1994 are from the Canadian Industrial End-Use Energy Data and Analysis Centre's (CIEEDAC's) report *Energy Intensity Indicators for Canadian Industry 1990–2011*. The OEE also updates its energy end-use database by including energy consumption data from the Annual Census of Mines and other industry associations.

Informetrica Limited has provided physical units, gross domestic product (GDP) and gross output (GO) data, and prediction in physical units (where applicable). Energy intensities for pulp mills and iron and steel are now reported on a GO basis.

Industrial oil and natural gas prices are a weighted average of regional prices taken from the Petroleum Resources Branch of Natural Resources Canada and Statistics Canada's *Energy Statistics Handbook* (Cat. No. 57-601-X), respectively. Electricity prices are a weighted average of the data found in Hydro-Québec's *Comparison of Electricity Prices in Major North American Cities*.

Due to rounding, the numbers in the tables may not add up or calculate to their reported totals or growth rates.

1) From 1991 to 1994, not all of the 49 industries are available because of the conversion to the North American Industrial Classification System (NAICS) in 2001.

Industrial Secondary Energy Use and GHG Emissions by Energy Source

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Total Energy Use (PJ)^{a,d}	2,710.0	3,017.3	3,166.9	3,024.6	3,140.9	3,201.4	3,368.8	3,361.3	3,356.2	3,484.0	3,337.2	3,179.3	3,271.8	3,328.0	22.8%
Energy Use by Energy Source (PJ)^{a,d}															
Electricity	658.4	732.8	795.5	792.6	800.8	804.2	803.5	841.8	833.7	819.1	794.5	720.8	729.8	740.8	12.5%
Natural Gas	837.2	909.6	961.0	835.5	916.9	927.1	934.1	904.3	895.5	1,036.3	1,036.7	1,006.8	1,111.3	1,173.2	40.1%
Diesel Fuel Oil, Light Fuel Oil and Kerosene	127.7	114.6	141.1	138.4	133.4	144.9	158.8	168.6	172.2	185.9	190.2	174.4	210.2	217.3	70.2%
Heavy Fuel Oil	201.1	147.2	143.4	143.8	124.8	149.7	156.0	134.5	118.7	119.7	101.3	89.7	60.4	46.9	-76.7%
Still Gas and Petroleum Coke	309.9	412.0	375.9	414.7	437.6	437.7	480.8	469.8	509.0	526.4	473.7	512.6	493.4	480.8	55.1%
LPG and NGL	26.0	32.3	39.3	41.5	36.2	32.5	34.1	53.6	52.7	58.0	62.1	57.0	67.0	72.4	178.0%
Coal	49.4	46.9	57.8	61.0	54.0	58.4	59.0	53.9	57.4	57.5	57.1	48.2	48.2	46.7	-5.5%
Coke and Coke Oven Gas	131.3	134.4	136.7	129.3	126.5	127.5	125.5	125.5	134.6	126.4	125.8	97.7	109.8	116.9	-10.9%
Wood Waste and Pulping Liquor	341.0	457.6	479.5	429.8	470.4	476.1	573.2	570.5	545.2	519.9	462.4	432.7	420.7	415.8	21.9%
Other ¹	27.9	30.1	36.7	38.3	40.2	43.3	43.8	39.0	37.3	35.0	33.4	39.6	21.2	17.2	-38.3%
Activity															
GDP (million \$2002) ^b	221,187	238,267	297,784	295,031	301,125	305,084	315,536	322,461	323,645	320,752	307,937	274,648	294,083	310,131	40.2%
GO (million \$2002) ^b	572,565	622,946	794,435	793,554	817,837	817,114	839,156	868,690	883,357	873,862	826,557	770,282	805,582	844,475	47.5%
Energy Intensity (MJ/\$2002 – GDP)^{a,b,d}	12.3	12.7	10.6	10.3	10.4	10.5	10.7	10.4	10.4	10.9	10.8	11.6	11.1	10.7	-12.4%
Energy Intensity (MJ/\$2002 – GO)^{a,b,d}	4.7	4.8	4.0	3.8	3.8	3.9	4.0	3.9	3.8	4.0	4.0	4.1	4.1	3.9	-16.7%

1) "Other" includes steam and waste fuels from the cement industry.

Sources:

- a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2011*, Ottawa, 2013.
b) Informetrica Limited, *The Informetrica Model and Database*, Ottawa, 2012.
c) Environment Canada, *National Inventory Report 1990–2011: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2013.
d) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2011*, Simon Fraser University, 2013.

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Industrial Secondary Energy Use and GHG Emissions by Energy Source (continued)

continued from previous table

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Total GHG Emissions Including Electricity (Mt of CO₂e)^{a,c,d}	137.8	144.1	157.2	155.9	158.0	164.8	167.5	164.2	164.4	175.2	166.8	155.6	163.7	163.0	18.3%
GHG Emissions by Energy Source (Mt of CO₂e)^{a,c,d}															
Electricity	36.7	36.7	45.7	49.0	48.5	50.6	47.5	47.2	45.4	44.8	41.0	33.8	35.5	31.7	-13.7%
Natural Gas	43.4	47.0	50.5	44.1	48.7	50.3	50.5	49.0	48.8	58.1	57.9	56.9	62.9	66.4	53.1%
Diesel Fuel Oil, Light Fuel Oil and Kerosene	9.2	8.3	10.3	10.1	9.7	10.5	11.5	12.3	12.5	13.5	13.9	12.7	15.3	15.8	72.1%
Heavy Fuel Oil	15.2	11.1	10.6	10.7	9.3	11.1	11.6	10.0	8.8	8.9	7.5	6.6	4.5	3.5	-77.1%
Still Gas and Petroleum Coke	17.2	24.0	21.6	23.8	24.6	24.7	28.8	27.7	29.5	30.6	27.2	29.6	28.1	27.3	58.4%
LPG and NGL	1.6	2.0	2.4	2.5	2.2	2.0	2.1	3.3	3.2	3.5	3.8	3.5	4.1	4.4	180.9%
Coal	4.5	4.3	5.2	5.5	4.9	5.3	5.3	4.9	5.2	5.2	5.2	4.4	4.4	4.2	-5.6%
Coke and Coke Oven Gas	9.8	10.3	10.4	9.8	9.5	9.6	9.4	9.4	10.1	9.7	9.6	7.4	8.4	9.0	-7.9%
Wood Waste and Pulping Liquor	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	55.0%
Other ¹	0.1	0.3	0.3	0.2	0.4	0.4	0.4	0.3	0.3	0.4	0.4	0.3	0.4	0.4	191.7%
GHG Intensity (tonnes/TJ)^{a,c,d}	50.9	47.8	49.7	51.5	50.3	51.5	49.7	48.9	49.0	50.3	50.0	48.9	50.0	49.0	-3.7%
Total GHG Emissions Excluding Electricity (Mt of CO₂e)^{a,c,d}	101.1	107.5	111.5	106.9	109.5	114.2	120.0	117.1	119.0	130.4	125.7	121.8	128.2	131.3	29.9%
GHG Intensity (tonnes/TJ)^{a,c,d}	37.3	35.6	35.2	35.3	34.9	35.7	35.6	34.8	35.5	37.4	37.7	38.3	39.2	39.5	5.7%

1) "Other" includes steam and waste fuels from the cement industry.

Sources:

- a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2011*, Ottawa, 2013.
- b) Informetrica Limited, *The Informetrica Model and Database*, Ottawa, 2012.
- c) Environment Canada, *National Inventory Report 1990–2011: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2013.
- d) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2011*, Simon Fraser University, 2013.

Industrial Secondary Energy Use by Industry

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Total Energy Use (PJ)^{a,c}	2,710.0	3,017.3	3,166.9	3,024.6	3,140.9	3,201.4	3,368.8	3,361.3	3,356.2	3,484.0	3,337.2	3,179.3	3,271.8	3,328.0	22.8%
Energy Use by Industry (PJ)^{a,c}															
Copper, Nickel, Lead and Zinc Mines	36.6	29.2	23.1	24.5	22.2	21.2	21.7	24.4	23.2	24.9	27.9	23.7	25.3	26.6	-27.2%
Iron Mines	39.8	37.3	34.7	29.9	30.5	35.5	32.2	32.3	31.1	28.8	40.7	44.3	38.7	30.2	-23.9%
Gold and Silver Mines	13.2	12.6	12.8	13.7	14.4	14.1	13.6	13.0	12.6	12.9	13.0	14.1	14.6	14.3	8.2%
Other Metal Mines	9.1	5.6	5.0	8.3	10.4	7.5	6.3	6.6	6.7	6.9	7.3	5.8	5.7	6.4	-29.8%
Salt Mines	2.9	3.4	2.6	2.6	2.4	2.5	2.5	2.5	2.6	2.5	2.6	2.8	2.2	2.1	-29.6%
Potash Mines	27.4	31.8	29.7	28.5	28.3	29.9	31.7	28.6	34.0	35.6	33.4	18.0	23.1	38.5	40.5%
Other Non-Metal Mines	8.0	6.3	7.8	7.5	7.4	8.9	8.9	9.2	9.3	9.0	10.7	9.5	9.4	9.0	13.2%
Upstream Mining	210.7	319.8	394.6	403.0	419.2	514.1	501.8	549.0	591.0	741.7	735.4	823.0	889.8	915.2	334.3%
Fruit and Vegetable Industries	9.1	9.8	12.1	13.0	12.1	12.3	12.0	13.8	13.8	13.3	11.5	14.1	12.0	12.5	37.3%
Dairy Products Industry	11.7	10.5	12.1	11.7	11.7	11.4	11.4	10.7	10.1	9.4	9.1	9.9	8.8	8.8	-24.6%
Meat Products Industries	12.5	13.1	18.0	18.1	16.6	16.2	17.7	18.4	18.9	18.0	20.5	25.4	20.9	21.7	73.0%
Bakery Products Industries	9.2	6.4	6.8	8.2	9.0	8.7	8.7	9.6	9.7	9.9	9.5	10.9	8.4	7.7	-16.3%
Beverage Industries (excluding Breweries)	3.3	5.4	6.1	5.4	5.9	5.8	6.1	6.3	6.0	5.9	5.2	6.1	6.2	5.4	61.1%
Breweries Industries	7.8	6.1	5.7	5.6	5.9	5.3	5.2	5.1	4.2	4.1	3.9	3.7	3.0	3.1	-60.3%
Tobacco Products Industries	1.3	1.0	1.0	1.0	0.9	0.9	0.7	0.8	0.7	0.5	0.3	0.2	0.4	0.3	-75.4%
Textile Mills	13.9	14.7	9.8	8.5	8.1	8.0	8.0	7.7	7.3	6.3	4.8	3.7	3.5	3.2	-76.8%
Textile Products Mills	6.8	6.9	4.0	4.1	4.2	3.5	3.5	3.5	3.0	2.8	2.5	2.1	2.1	2.1	-69.4%
Clothing Industries	6.0	5.3	5.1	5.1	4.9	5.0	4.0	2.1	1.8	1.5	1.5	1.3	1.2	1.5	-75.4%
Leather and Allied Products Industries	1.4	1.0	1.1	1.1	0.9	0.8	0.6	0.3	0.2	0.3	0.3	0.3	0.3	0.2	-82.9%
Wood Products Industries	44.3	47.1	61.9	48.8	52.8	45.3	48.4	50.3	51.3	52.2	52.8	48.6	58.4	57.7	30.3%
Pulp Mills	299.0	370.6	381.6	343.8	352.4	366.2	370.9	347.4	318.0	299.5	254.9	238.1	241.4	233.5	-21.9%
Paper Mills (except Newsprint)	99.4	107.3	117.1	100.5	102.2	116.8	119.4	120.6	86.9	81.8	73.9	81.6	89.8	84.4	-15.1%
Newsprint Mills	245.6	271.9	274.2	242.6	253.4	250.4	236.0	213.9	192.4	182.6	157.1	117.9	122.7	104.8	-57.3%
Paperboard Mills	62.1	65.2	71.1	67.8	68.3	67.6	70.1	65.1	55.6	47.6	46.5	40.9	48.4	46.3	-25.3%
Other Pulp and Paper Manufacturing	22.2	17.6	23.7	39.8	50.6	15.4	105.4	112.9	125.4	138.8	121.1	123.7	77.6	103.7	367.7%
Converted Paper Products Industry	11.1	11.0	12.3	16.4	16.8	17.0	18.0	19.8	16.5	18.1	14.6	22.0	15.6	14.0	25.9%
Printing and Related Support Activities	10.9	7.9	9.7	8.6	8.4	8.7	8.5	8.9	8.5	8.3	9.7	11.6	9.9	9.3	-14.7%
Petroleum Refining	323.3	356.3	338.2	354.8	380.5	363.0	396.7	356.3	370.5	379.3	345.8	338.2	335.7	321.5	-0.5%

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Sources:

- a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2011*, Ottawa, 2013.
b) Informetrica Limited, *The Informetrica Model and Database*, Ottawa, 2012.
c) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2011*, Simon Fraser University, 2013.

Industrial Secondary Energy Use by Industry (continued)

continued from previous table

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Energy Use by Industry (PJ)^{a,c} (continued)															
Petrochemical Industry	32.1	33.8	42.3	44.3	46.7	52.8	58.5	62.1	60.2	60.7	59.5	55.3	41.4	37.5	16.8%
Industrial Gas Industry	5.9	5.8	8.4	8.9	9.1	9.2	10.5	8.3	13.7	12.8	10.8	13.9	16.0	15.2	156.8%
Alkali and Chlorine Manufacturing	30.4	29.9	29.3	24.5	17.6	16.8	17.6	16.0	14.2	8.7	8.1	7.4	2.2	2.7	-91.1%
All Other Basic Inorganic Chemical Manufacturing	28.6	30.7	32.9	34.0	29.9	33.6	36.0	37.4	33.9	28.8	27.9	24.7	22.6	24.1	-15.8%
Chemical Fertilizer (except Potash) Manufacturing	31.9	55.9	63.5	62.1	54.1	58.0	58.2	53.4	55.0	52.9	49.2	45.1	50.0	54.7	71.4%
Other Chemical Manufacturing	94.2	92.1	83.8	56.6	73.3	44.1	63.6	58.8	70.7	79.0	86.0	85.0	116.1	116.7	23.9%
Resin and Synthetic Rubber Industries	48.1	30.6	39.6	36.7	33.5	28.8	28.2	24.6	33.2	32.4	34.8	38.0	40.8	45.1	-6.3%
Motor Vehicle Plastic Parts Manufacturing	2.8	2.7	4.4	5.2	4.2	4.2	5.8	4.7	4.5	3.9	3.7	2.6	3.5	3.7	32.0%
Rubber Products Industries	9.5	9.9	11.3	10.9	11.1	11.2	10.0	10.1	9.5	9.2	8.3	8.3	7.6	8.0	-15.5%
Cement Industry	59.3	61.9	67.1	65.5	69.3	66.4	71.9	72.0	75.0	67.2	65.4	60.7	55.3	55.7	-6.1%
Iron and Steel	219.4	247.0	260.1	229.3	246.7	241.3	249.7	239.7	251.9	253.8	246.8	187.3	207.1	214.2	-2.4%
Primary Production of Alumina and Aluminum	109.8	138.2	149.9	159.9	169.2	178.7	169.8	187.2	188.5	192.2	195.3	172.9	176.3	185.0	68.5%
Other Non-Ferrous Smelting and Refining	73.5	81.0	81.4	86.2	81.8	77.4	78.4	73.1	73.7	63.0	65.2	54.1	62.8	63.3	-13.9%
Fabricated Metal Products Industries	37.3	36.4	32.8	37.3	40.3	39.0	41.2	40.7	38.3	39.3	41.9	35.8	31.2	37.6	0.8%
Machinery Industries	12.2	13.7	13.8	13.3	13.6	15.1	16.0	18.0	16.7	17.6	16.6	15.9	15.1	17.4	42.2%
Computer and Electronic Products Industries	4.6	5.9	6.6	3.7	3.9	4.6	5.1	5.6	5.4	5.8	5.3	5.1	5.4	5.5	19.0%
Electrical Equipment and Components Industries	8.5	7.7	7.0	6.3	5.9	6.7	7.1	7.3	6.8	6.4	6.0	5.3	4.7	4.9	-41.9%
Motor Vehicle Industry	18.5	24.6	27.7	23.6	23.5	24.4	22.7	22.6	21.0	20.2	18.4	14.9	13.5	14.4	-22.0%
Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	3.1	2.9	3.7	2.8	3.0	3.0	3.1	3.5	3.1	3.2	2.5	2.1	1.7	2.1	-33.2%
Motor Vehicle Electrical and Electronic Equipment Manufacturing	0.3	0.3	0.5	0.5	0.7	0.6	0.6	0.6	0.3	0.5	0.3	0.3	0.4	0.3	28.0%
Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	2.1	2.1	2.2	1.6	1.8	1.2	1.3	1.4	1.3	1.3	1.0	1.2	0.6	1.0	-54.7%
Motor Vehicle Brake System Manufacturing	1.8	2.1	2.4	2.9	2.8	2.1	2.2	1.1	0.9	0.7	0.8	0.4	0.4	0.4	-79.9%
Motor Vehicle Transmission and Power Train Parts Manufacturing	3.0	2.0	2.7	2.7	2.8	3.1	3.4	3.7	3.5	3.2	2.7	2.0	2.0	1.6	-47.3%
Motor Vehicle Seating and Interior Trim Manufacturing	1.2	1.2	1.8	1.7	2.0	1.9	2.0	1.9	1.8	1.6	1.4	1.4	1.5	1.4	13.2%

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Sources:

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c) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2011*, Simon Fraser University, 2013.

Industrial Secondary Energy Use by Industry (continued)

continued from previous table

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Energy Use by Industry (PJ)^{a,c} (continued)															
Motor Vehicle Metal Stamping	3.3	3.5	3.8	3.8	4.5	3.5	3.8	3.8	3.7	3.6	3.4	2.6	2.8	2.6	-21.2%
Other Motor Vehicle Parts Manufacturing	3.2	3.2	3.9	4.2	5.9	5.1	5.3	5.0	4.4	4.5	4.8	4.4	3.2	2.5	-22.3%
Furniture and Related Products Industries	6.7	6.7	9.9	10.5	10.9	11.2	10.8	11.6	10.0	10.5	11.0	10.6	9.2	10.0	49.3%
Miscellaneous Manufacturing	4.7	4.1	5.0	5.5	6.3	6.6	6.2	6.1	4.8	6.0	6.5	7.8	6.9	7.3	53.6%
Other Manufacturing n.e.c.	231.0	244.3	218.9	186.9	187.9	203.8	214.1	242.7	236.0	248.6	231.7	185.7	201.2	212.9	-7.9%
Construction	66.9	48.6	51.3	50.6	58.3	62.8	67.8	70.9	71.9	74.5	74.7	65.9	73.1	76.7	14.6%
Forestry	7.7	7.9	17.2	20.1	20.0	23.0	28.2	28.8	31.3	30.0	30.9	21.4	22.3	19.8	156.2%
Activity															
GDP (million \$2002) ^b	221,187	238,267	297,784	295,031	301,125	305,084	315,536	322,461	323,645	320,752	307,937	274,648	294,083	310,131	40.2%
GO (million \$2002) ^b	572,565	622,946	794,435	793,554	817,837	817,114	839,156	868,690	883,357	873,862	826,557	770,282	805,582	844,475	47.5%
Energy Intensity (MJ/\$2002 – GDP)^{a,b,c}	12.3	12.7	10.6	10.3	10.4	10.5	10.7	10.4	10.4	10.9	10.8	11.6	11.1	10.7	-12.4%
Energy Intensity (MJ/\$2002 – GO)^{a,b,c}	4.7	4.8	4.0	3.8	3.8	3.9	4.0	3.9	3.8	4.0	4.0	4.1	4.1	3.9	-16.7%

Sources:

- a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2011*, Ottawa, 2013.
b) Informetrica Limited, *The Informetrica Model and Database*, Ottawa, 2012.
c) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2011*, Simon Fraser University, 2013.

Industrial GHG Emissions by Industry – Including Electricity-related Emissions¹

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Total GHG Emissions Including Electricity (Mt of CO₂e)^{a,b,c}	137.8	144.1	157.2	155.9	158.0	164.8	167.5	164.2	164.4	175.2	166.8	155.6	163.7	163.0	18.3%
GHG Emissions by Industry (Mt of CO₂e)^{a,b,c}															
Copper, Nickel, Lead and Zinc Mines	2.3	1.7	1.5	1.6	1.4	1.4	1.4	1.5	1.4	1.6	1.7	1.4	1.5	1.5	-33.5%
Iron Mines	2.9	2.5	2.4	2.1	2.2	2.6	2.3	2.2	2.2	2.0	2.8	3.0	2.6	1.9	-32.6%
Gold and Silver Mines	0.8	0.7	0.8	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	-3.7%
Other Metal Mines	0.6	0.3	0.3	0.5	0.7	0.5	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.4	-35.1%
Salt Mines	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	-40.0%
Potash Mines	1.8	2.0	1.9	1.9	1.9	2.0	2.1	1.8	2.2	2.3	2.1	1.1	1.4	2.3	31.5%
Other Non-metal Mines	0.5	0.4	0.5	0.5	0.5	0.6	0.6	0.7	0.7	0.6	0.8	0.7	0.7	0.6	17.0%
Upstream Mining	13.0	19.3	24.8	25.5	26.4	32.7	31.9	34.1	36.6	46.7	46.1	51.2	55.6	56.8	336.0%
Fruit and Vegetable Industries	0.5	0.5	0.7	0.8	0.7	0.7	0.7	0.8	0.8	0.7	0.6	0.8	0.7	0.7	30.0%
Dairy Products Industry	0.6	0.5	0.7	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.4	0.4	-32.8%
Meat Products Industries	0.7	0.7	1.0	1.0	0.9	0.9	0.9	1.0	1.0	0.9	1.0	1.2	1.0	1.0	55.2%
Bakery Products Industries	0.5	0.3	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	-23.4%
Beverage Industries (excluding Breweries)	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	44.4%
Breweries Industries	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	-63.4%
Tobacco Products Industries	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-85.7%
Textile Mills	0.7	0.8	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.3	0.2	0.2	0.2	0.2	-79.5%
Textile Products Mills	0.4	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	-72.2%
Clothing Industries	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-78.1%
Leather and Allied Products Industries	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-85.7%
Wood Products Industries	1.5	1.6	1.9	1.7	2.0	1.7	1.8	1.8	1.7	1.8	1.6	1.3	1.5	1.3	-12.5%
Pulp Mills	6.5	5.9	7.0	6.7	6.4	6.5	6.2	5.7	5.2	5.1	4.1	3.5	3.7	3.4	-47.2%
Paper Mills (except Newsprint)	3.4	3.1	3.6	3.5	3.2	3.9	3.8	3.5	2.7	2.7	2.3	2.3	2.2	2.0	-40.0%
Newsprint Mills	11.1	10.4	10.7	10.8	10.6	10.4	9.7	8.2	6.8	6.7	5.3	3.5	3.7	3.1	-72.4%
Paperboard Mills	2.2	2.0	2.3	2.2	2.1	2.1	2.1	1.8	1.6	1.5	1.4	1.1	1.2	1.1	-50.0%

table continued on next page ➞

1) includes only end-use, energy-related GHG emissions

Sources:

- a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2011*, Ottawa, 2013.
- b) Environment Canada, *National Inventory Report 1990–2011: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2013.
- c) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2011*, Simon Fraser University, 2013.

Industrial GHG Emissions by Industry – Including Electricity-related Emissions¹ (continued)

continued from previous table

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
GHG Emissions by Industry (Mt of CO₂e)^{a,b,c} (continued)															
Other Pulp and Paper Manufacturing	1.2	1.0	1.3	0.7	1.0	0.5	0.9	0.8	1.3	1.3	1.2	2.0	1.2	1.2	5.2%
Converted Paper Products Industry	0.6	0.6	0.6	0.9	0.8	0.9	0.9	1.0	0.8	0.9	0.7	1.0	0.7	0.6	3.4%
Printing and Related Support Activities	0.6	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.5	0.6	0.5	0.4	-24.6%
Petroleum Refining	17.9	20.4	19.3	20.3	21.0	20.3	23.6	20.9	21.1	21.6	19.1	18.8	18.5	17.5	-2.4%
Petrochemical Industry	1.7	1.5	2.1	2.2	2.2	2.3	2.5	2.7	2.6	2.8	2.7	2.6	1.9	1.7	-0.6%
Industrial Gas Industry	0.3	0.3	0.5	0.5	0.5	0.6	0.6	0.5	0.7	0.7	0.6	0.7	0.8	0.7	115.2%
Alkali and Chlorine Manufacturing	1.6	1.5	1.6	1.4	1.0	1.0	1.0	0.9	0.8	0.4	0.3	0.3	0.1	0.1	-92.6%
All Other Basic Inorganic Chemical Manufacturing	1.6	1.4	1.7	2.0	1.7	2.0	2.0	2.0	1.8	1.5	1.4	1.2	1.1	1.1	-32.3%
Chemical Fertilizer (except Potash) Manufacturing	1.6	2.8	3.2	3.2	2.8	3.0	2.9	2.7	2.8	2.7	2.5	2.2	2.5	2.7	63.8%
Other Chemical Manufacturing	4.0	4.3	4.3	2.8	3.6	2.5	3.4	3.1	3.7	4.1	4.4	4.0	5.5	5.6	39.4%
Resin and Synthetic Rubber Industries	2.5	1.4	1.9	1.8	1.5	1.3	1.2	1.0	1.5	1.5	1.5	1.6	1.9	1.9	-22.8%
Motor Vehicle Plastic Parts Manufacturing	0.2	0.1	0.2	0.3	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.1	0.2	0.2	13.3%
Rubber Products Industries	0.5	0.5	0.6	0.6	0.6	0.7	0.6	0.6	0.5	0.5	0.4	0.4	0.4	0.4	-25.9%
Cement Industry	4.4	4.7	5.2	5.1	5.5	5.5	5.9	5.9	6.1	5.5	5.3	4.9	4.5	4.4	0.9%
Iron and Steel	14.3	15.8	16.7	15.1	15.9	15.7	16.0	15.2	16.2	16.4	15.8	11.8	13.1	13.5	-5.9%
Primary Production of Alumina and Aluminum	6.2	7.0	8.6	9.8	10.2	11.2	10.1	10.6	10.3	10.6	10.2	8.2	8.6	8.1	31.0%
Other Non-Ferrous Smelting and Refining	4.6	4.7	5.0	5.5	5.1	5.0	4.9	4.4	4.5	4.0	4.0	3.2	3.8	3.6	-21.8%
Fabricated Metal Products Industries	1.9	1.8	1.7	2.0	2.2	2.1	2.2	2.1	2.0	2.1	2.1	1.8	1.6	1.8	-7.7%
Machinery Industries	0.7	0.7	0.7	0.7	0.7	0.8	0.9	1.0	0.9	0.9	0.9	0.8	0.8	0.9	30.8%
Computer and Electronic Products Industries	0.3	0.3	0.4	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.2	-4.0%
Electrical Equipment and Components Industries	0.5	0.4	0.4	0.3	0.3	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.2	0.2	-48.9%
Motor Vehicle Industry	1.0	1.3	1.4	1.2	1.2	1.3	1.2	1.2	1.1	1.1	0.9	0.7	0.7	0.7	-31.3%
Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	0.2	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	-47.1%
Motor Vehicle Electrical and Electronic Equipment Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%

1) includes only end-use, energy-related GHG emissions

table continued on next page ➞

Sources:

- a) Statistics Canada, *Report on Energy Supply and Demand in Canada*, 1990–2011, Ottawa, 2013.
b) Environment Canada, *National Inventory Report 1990–2011: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2013.
c) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2011*, Simon Fraser University, 2013.

Industrial GHG Emissions by Industry – Including Electricity-related Emissions¹ (continued)

continued from previous table

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
GHG Emissions by Industry (Mt of CO₂e)^{a,b,c} (continued)															
Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	-63.6%
Motor Vehicle Brake System Manufacturing	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	-80.0%
Motor Vehicle Transmission and Power Train Parts Manufacturing	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	-66.7%
Motor Vehicle Seating and Interior Trim Manufacturing	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0%
Motor Vehicle Metal Stamping	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	-29.4%
Other Motor Vehicle Parts Manufacturing	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.2	0.2	0.3	0.2	0.2	0.1	-33.3%
Furniture and Related Products Industries	0.3	0.3	0.5	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.4	0.4	30.3%
Miscellaneous Manufacturing	0.3	0.2	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.3	36.0%
Other Manufacturing n.e.c.	12.4	11.9	10.4	9.6	9.0	9.5	9.3	10.7	9.4	10.4	9.6	6.8	8.8	9.2	-25.4%
Construction	4.3	3.2	3.4	3.4	3.8	4.1	4.4	4.7	4.8	4.9	5.0	4.4	4.8	5.1	19.3%
Forestry	0.6	0.6	1.3	1.5	1.5	1.7	2.1	2.1	2.3	2.2	2.3	1.6	1.6	1.4	157.1%
GHG Intensity (tonnes/TJ)^{a,b,c}	50.9	47.8	49.7	51.5	50.3	51.5	49.7	48.9	49.0	50.3	50.0	48.9	50.0	49.0	-3.7%

1) includes only end-use, energy-related GHG emissions

Sources:

- a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2011*, Ottawa, 2013.
b) Environment Canada, *National Inventory Report 1990–2011: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2013.
c) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2011*, Simon Fraser University, 2013.

Industrial GHG Emissions by Industry – Excluding Electricity-related Emissions ¹

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Total GHG Emissions <u>Excluding</u> Electricity (Mt of CO₂e)^{a,b,c}	101.1	107.5	111.5	106.9	109.5	114.2	120.0	117.1	119.0	130.4	125.7	121.8	128.2	131.3	29.9%
GHG Emissions by Industry (Mt of CO₂e)^{a,b,c}															
Copper, Nickel, Lead and Zinc Mines	1.0	0.8	0.7	0.8	0.7	0.6	0.7	0.8	0.8	0.8	1.0	0.9	0.9	0.9	-10.6%
Iron Mines	2.1	1.8	1.6	1.5	1.5	1.8	1.5	1.5	1.8	1.6	2.1	2.5	2.0	1.4	-33.5%
Gold and Silver Mines	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.4	18.9%
Other Metal Mines	0.3	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.3	-23.5%
Salt Mines	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	-41.2%
Potash Mines	1.4	1.7	1.6	1.5	1.5	1.6	1.7	1.4	1.8	1.9	1.7	0.9	1.1	2.0	36.8%
Other Non-metal Mines	0.4	0.3	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.7	0.6	0.6	0.6	37.2%
Upstream Mining	10.4	16.2	21.2	21.4	22.7	29.1	28.2	30.2	32.5	42.4	42.6	48.1	52.6	54.0	422.1%
Fruit and Vegetable Industries	0.4	0.5	0.6	0.6	0.6	0.6	0.5	0.6	0.6	0.5	0.5	0.6	0.5	0.5	19.0%
Dairy Products Industry	0.5	0.4	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	-34.8%
Meat Products Industries	0.5	0.5	0.7	0.7	0.6	0.6	0.7	0.7	0.7	0.6	0.6	0.8	0.7	0.7	60.9%
Bakery Products Industries	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	-47.5%
Beverage Industries (excluding Breweries)	0.1	0.2	0.3	0.2	0.3	0.2	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	58.3%
Breweries Industries	0.3	0.3	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	-67.6%
Tobacco Products Industries	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-75.0%
Textile Mills	0.5	0.5	0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	-83.7%
Textile Products Mills	0.3		0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-76.0%
Clothing Industries	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-78.9%
Leather and Allied Products Industries	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-100.0%
Wood Products Industries	1.1	0.9	1.2	0.8	0.9	0.7	0.8	0.8	0.9	1.0	0.8	0.6	0.7	0.7	-37.1%
Pulp Mills	4.1	3.8	3.7	3.4	3.3	3.3	3.2	2.5	2.2	2.3	1.9	1.8	1.8	1.8	-56.7%
Paper Mills (except Newsprint)	2.2	2.1	2.2	1.9	1.7	1.9	1.9	1.6	1.1	1.1	0.9	0.9	0.8	0.8	-61.8%
Newsprint Mills	5.4	4.5	3.6	3.2	2.9	2.8	2.6	2.0	1.5	1.5	1.0	0.7	0.6	0.6	-89.6%
Paperboard Mills	1.7	1.4	1.6	1.5	1.4	1.5	1.5	1.2	1.0	1.0	0.9	0.7	0.8	0.8	-54.2%

1) includes only end-use, energy-related GHG emissions

Sources:

- a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2011*, Ottawa, 2013.
b) Environment Canada, *National Inventory Report 1990–2011: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2013.
c) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2011*, Simon Fraser University, 2013.

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Industrial GHG Emissions by Industry – Excluding Electricity-related Emissions¹ (continued)

continued from previous table

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
GHG Emissions by Industry (Mt of CO₂e)^{a,b,c} (continued)															
Other Pulp and Paper Manufacturing	1.2	0.3	0.6	0.7	1.0	0.3	0.5	0.6	1.0	1.0	0.9	1.4	0.9	1.0	-15.5%
Converted Paper Products Industry	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.6	0.5	0.5	0.5	0.8	0.5	0.4	-4.8%
Printing and Related Support Activities	0.3	0.2	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	-35.5%
Petroleum Refining	16.8	19.5	18.1	19.0	19.8	19.0	22.4	19.8	20.0	20.5	18.1	17.8	17.5	16.6	-0.8%
Petrochemical Industry	1.5	1.4	1.8	1.9	1.9	2.0	2.3	2.5	2.4	2.5	2.5	2.4	1.8	1.6	1.3%
Industrial Gas Industry	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.4	0.4	950.0%
Alkali and Chlorine Manufacturing	0.8	0.7	0.8	0.5	0.3	0.3	0.4	0.2	0.2	0.1	0.1	0.0	0.0	0.0	-96.3%
All Other Basic Inorganic Chemical Manufacturing	0.4	0.3	0.3	0.4	0.3	0.4	0.4	0.4	0.3	0.3	0.3	0.2	0.2	0.3	-40.5%
Chemical Fertilizer (except Potash) Manufacturing	1.4	2.6	2.9	2.8	2.4	2.6	2.6	2.4	2.4	2.4	2.2	2.0	2.3	2.5	75.7%
Other Chemical Manufacturing	2.9	3.3	3.3	2.0	2.4	1.3	2.2	2.0	2.5	2.5	2.9	2.8	3.8	4.0	38.0%
Resin and Synthetic Rubber Industries	2.0	0.9	1.3	1.1	1.0	0.6	0.6	0.5	0.9	0.9	1.0	1.2	1.3	1.4	-30.9%
Motor Vehicle Plastic Parts Manufacturing	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0%
Rubber Products Industries	0.3	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3	-21.2%
Cement Industry	4.0	4.3	4.7	4.7	5.0	5.0	5.5	5.4	5.7	5.1	4.9	4.6	4.1	4.2	3.2%
Iron and Steel	12.6	14.4	14.7	12.7	13.4	13.3	13.8	13.2	14.0	14.5	14.1	10.5	11.5	12.1	-4.4%
Primary Production of Alumina and Aluminum	0.5	0.7	0.9	1.0	0.9	1.1	1.1	1.2	0.9	1.1	1.1	0.6	0.7	0.8	58.5%
Other Non-Ferrous Smelting and Refining	2.9	2.8	2.8	2.8	2.6	2.5	2.5	2.4	2.5	2.8	2.6	2.1	2.5	2.5	-12.3%
Fabricated Metal Products Industries	1.4	1.4	1.2	1.3	1.5	1.4	1.5	1.4	1.3	1.3	1.3	1.2	1.0	1.2	-13.4%
Machinery Industries	0.4	0.4	0.5	0.5	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	52.8%
Computer and Electronic Products Industries	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0%
Electrical Equipment and Components Industries	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	-63.6%
Motor Vehicle Industry	0.7	1.0	1.0	0.9	0.9	0.9	0.9	0.8	0.8	0.7	0.7	0.5	0.4	0.5	-33.3%
Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	-66.7%
Motor Vehicle Electrical and Electronic Equipment Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	–

1) includes only end-use, energy-related GHG emissions

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Sources:

- a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2011*, Ottawa, 2013.
b) Environment Canada, *National Inventory Report 1990–2011: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2013.
c) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2011*, Simon Fraser University, 2013.

Industrial GHG Emissions by Industry – Excluding Electricity-related Emissions¹ (continued)

continued from previous table

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
GHG Emissions by Industry (Mt of CO₂e)^{a,b,c} (continued)															
Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-71.4%
Motor Vehicle Brake System Manufacturing	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-83.3%
Motor Vehicle Transmission and Power Train Parts Manufacturing	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	-83.3%
Motor Vehicle Seating and Interior Trim Manufacturing	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0%
Motor Vehicle Metal Stamping	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-33.3%
Other Motor Vehicle Parts Manufacturing	0.1	0.1	0.1	0.2	0.3	0.2	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.1	-50.0%
Furniture and Related Products Industries	0.2	0.2	0.3	0.4	0.4	0.4	0.4	0.4	0.2	0.2	0.2	0.2	0.2	0.3	25.0%
Miscellaneous Manufacturing	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2	40.0%
Other Manufacturing n.e.c.	10.3	10.2	7.4	6.5	6.6	7.1	7.3	7.9	6.6	7.6	7.0	4.7	6.3	6.8	-34.5%
Construction	4.3	3.2	3.4	3.4	3.8	4.1	4.4	4.7	4.8	4.9	5.0	4.4	4.8	5.1	19.3%
Forestry	0.6	0.6	1.3	1.5	1.5	1.7	2.1	2.1	2.3	2.2	2.3	1.6	1.6	1.4	157.1%
GHG Intensity (tonnes/TJ)^{a,b,c}	37.3	35.6	35.2	35.3	34.9	35.7	35.6	34.8	35.5	37.4	37.7	38.3	39.2	39.5	5.7%

1) includes only end-use, energy-related GHG emissions

Sources:

- a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2011*, Ottawa, 2013.
b) Environment Canada, *National Inventory Report 1990–2011: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2013.
c) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2011*, Simon Fraser University, 2013.

Industrial Gross Domestic Product by Industry

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Total Gross Domestic Product (million \$2002)^a	221,187	238,267	297,784	295,031	301,125	305,084	315,536	322,461	323,645	320,752	307,937	274,648	294,083	310,131	40.2%
Gross Domestic Product by Industry (million \$2002)^a															
Copper, Nickel, Lead and Zinc Mines	2,373	2,061	2,189	2,167	1,981	1,848	2,004	2,043	2,152	2,176	2,302	1,639	1,734	2,052	-13.5%
Iron Mines	778	668	742	498	497	630	530	561	596	548	538	460	559	504	-35.2%
Gold and Silver Mines	1,344	1,137	1,164	1,249	1,139	1,103	935	887	703	633	626	653	660	649	-51.7%
Other Metal Mines	276	208	389	343	496	462	397	352	321	268	256	283	273	269	-2.5%
Salt Mines	186	218	219	252	230	261	250	245	266	227	295	295	227	266	43.0%
Potash Mines	862	1,054	1,184	1,110	1,160	1,330	1,480	1,464	1,157	1,515	1,318	548	1,192	1,354	57.1%
Other Non-metal Mines	201	229	426	649	839	1,321	1,392	1,290	1,306	1,714	1,507	1,201	1,261	1,131	462.7%
Upstream Mining	32,840	43,365	44,340	44,967	44,787	46,000	47,589	48,751	51,127	52,194	50,845	47,871	50,638	53,654	63.4%
Fruit and Vegetable Industries	1,204	1,544	2,033	2,334	2,380	2,270	2,122	2,044	2,041	2,110	2,103	2,166	2,058	1,988	65.1%
Dairy Products Industry	2,594	2,340	2,300	2,427	2,182	2,188	2,227	2,334	2,410	2,472	2,635	2,631	2,618	2,677	3.2%
Meat Products Industries	2,854	2,653	3,611	3,768	3,575	3,537	3,712	4,261	4,362	4,318	4,408	4,541	4,774	4,633	62.3%
Bakery Products Industries	1,725	2,108	2,197	2,417	2,400	2,207	2,383	2,414	2,553	2,541	2,777	2,925	2,822	2,660	54.2%
Beverage Industries (excluding Breweries)	1,110	1,098	1,643	1,691	1,877	1,911	2,049	2,029	2,171	2,253	2,189	2,064	2,123	2,097	88.9%
Breweries Industries	2,176	2,436	2,273	2,272	2,144	2,113	2,338	2,488	2,529	2,347	2,224	2,201	2,001	1,969	-9.5%
Tobacco Products Industries	2,383	2,454	2,222	1,893	1,857	1,619	1,320	1,197	1,013	634	467	510	586	565	-76.3%
Textile Mills	1,527	1,546	1,760	1,604	1,692	1,406	1,398	1,201	1,025	855	750	673	717	749	-50.9%
Textile Products Mills	845	813	1,175	1,151	1,108	1,100	1,117	1,044	947	871	721	546	591	564	-33.3%
Clothing Industries	3,283	3,216	3,999	3,840	3,563	3,454	2,919	2,560	2,370	1,952	1,568	1,304	1,412	1,364	-58.5%
Leather and Allied Products Industries	644	497	489	414	400	318	246	201	180	193	166	153	165	170	-73.6%
Wood Products Industries	4,867	5,105	6,688	6,017	6,673	6,555	6,757	7,497	7,292	6,362	5,643	4,742	5,470	5,547	14.0%
Pulp Mills	1,202	1,393	1,945	1,750	1,798	1,705	1,852	1,810	1,676	1,744	1,544	1,305	1,426	1,414	17.6%
Paper Mills (except Newsprint)	1,846	1,869	2,194	1,878	2,014	2,577	2,752	2,777	2,285	2,467	2,292	1,997	1,834	1,722	-6.7%
Newsprint Mills	2,925	3,077	3,606	3,098	3,376	2,893	2,804	3,038	2,748	2,703	2,282	1,762	1,871	1,769	-39.5%
Paperboard Mills	995	1,000	1,085	1,004	926	862	840	819	784	760	787	643	675	668	-32.9%
Other Pulp and Paper Manufacturing	2,512	3,180	3,002	3,518	3,350	3,568	3,543	3,578	3,322	3,208	3,010	2,880	2,874	2,948	17.3%
Converted Paper Products Industry	2,520	3,130	3,302	3,551	3,751	3,853	3,765	3,665	3,341	3,174	3,018	2,975	2,962	2,958	17.4%
Printing and Related Support Activities	6,866	5,073	6,065	6,670	6,232	6,064	6,188	6,344	6,170	6,017	5,895	5,196	4,953	4,815	-29.9%
Petroleum Refining	2,611	2,724	2,631	2,713	2,770	2,876	2,818	2,729	2,599	2,677	2,563	2,467	2,539	2,418	-7.4%
Petrochemical Industry	1,103	1,151	1,354	1,185	1,070	917	889	822	964	985	908	631	805	869	-21.2%
Industrial Gas Industry	229	244	269	291	295	311	296	339	387	343	322	299	323	359	56.8%
Alkali and Chlorine Manufacturing	477	422	486	458	415	425	378	390	430	304	259	218	83	95	-80.1%

Source:

a) Informetrica Limited, *The Informetrica Model and Database*, Ottawa, 2012.

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Industrial Gross Domestic Product by Industry (continued)

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	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Gross Domestic Product by Industry (million \$2002)* (continued)															
All Other Basic Inorganic Chemical Manufacturing	450	435	539	629	690	789	697	858	976	965	856	737	843	824	83.1%
Chemical Fertilizer (except Potash) Manufacturing	608	702	1,058	813	673	964	1,067	1,116	1,131	1,013	854	724	717	780	28.3%
Other Chemical Manufacturing	1,325	1,230	1,201	1,013	1,184	1,120	1,250	1,379	1,189	1,342	1,478	1,346	1,420	2,060	55.5%
Resin and Synthetic Rubber Industries	1,116	1,803	2,670	2,345	2,716	2,605	3,258	3,297	3,086	3,359	3,023	2,178	2,350	2,540	127.6%
Motor Vehicle Plastic Parts Manufacturing	514	790	1,314	1,465	1,507	1,623	1,512	1,834	1,755	1,601	1,345	1,058	1,414	1,533	198.2%
Rubber Products Industries	1,147	1,823	2,089	2,058	2,149	2,115	2,163	2,055	1,810	1,671	1,565	1,244	1,502	1,742	51.9%
Cement Industry	767	612	775	809	794	808	906	1,048	1,062	1,030	911	739	792	795	3.7%
Iron and Steel	3,479	4,024	4,170	3,909	4,162	4,145	4,182	4,062	4,030	3,708	3,861	2,279	3,208	3,374	-3.0%
Primary Production of Alumina and Aluminum	1,146	1,522	2,619	2,700	2,808	2,733	3,111	3,363	3,525	3,540	3,532	3,217	3,271	3,296	187.6%
Other Non-ferrous Smelting and Refining	1,085	1,179	1,703	2,006	1,832	1,720	1,863	1,904	1,748	1,593	1,584	1,320	1,457	1,456	34.2%
Fabricated Metal Products Industries	7,840	8,189	14,331	13,729	14,062	13,708	13,458	13,778	14,055	14,078	12,841	10,653	11,455	12,162	55.1%
Machinery Industries	7,058	9,790	12,639	12,404	12,158	11,790	12,707	12,960	13,195	13,213	12,962	10,904	12,046	14,018	98.6%
Computer and Electronic Products Industries	3,083	4,824	11,367	6,510	5,820	6,242	6,636	6,880	6,987	6,879	6,891	6,224	6,531	6,914	124.3%
Electrical Equipment and Components Industries	3,482	2,946	4,600	4,539	3,859	3,051	3,306	3,348	3,153	3,133	3,235	2,834	2,964	3,135	-10.0%
Motor Vehicle Industry	8,093	11,566	15,641	13,570	14,021	13,754	13,872	14,470	13,742	13,577	10,277	7,085	9,886	9,977	23.3%
Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	1,020	1,526	2,211	1,962	2,104	2,208	2,256	2,147	2,053	2,125	1,583	1,327	1,460	1,276	25.1%
Motor Vehicle Electrical and Electronic Equipment Manufacturing	235	352	478	445	334	427	429	432	440	398	298	203	256	288	22.6%
Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	288	431	449	511	606	539	515	535	523	527	428	329	487	485	68.4%
Motor Vehicle Brake System Manufacturing	385	577	664	597	549	594	655	570	500	431	350	249	275	284	-26.2%
Motor Vehicle Transmission and Power Train Parts Manufacturing	645	964	1,421	926	987	973	988	1,042	1,037	1,021	726	425	503	477	-26.0%
Motor Vehicle Seating and Interior Trim Manufacturing	489	732	1,117	756	1,169	1,137	1,257	1,432	1,376	1,182	955	743	948	918	87.7%
Motor Vehicle Metal Stamping	686	1,027	1,438	1,348	1,288	1,458	1,645	1,759	1,516	1,411	1,111	809	951	975	42.1%
Other Motor Vehicle Parts Manufacturing	831	1,243	1,788	2,375	2,287	2,317	2,281	2,217	2,224	1,989	1,639	1,198	1,308	1,371	65.0%
Furniture and Related Products Industries	3,073	3,282	6,004	6,189	6,097	5,577	5,748	5,322	4,953	4,664	4,306	3,599	3,739	3,674	19.6%
Miscellaneous Manufacturing	2,095	2,232	3,515	3,484	3,856	3,910	3,967	3,818	3,945	3,786	3,655	3,364	3,389	3,508	67.4%
Other Manufacturing n.e.c.	25,610	27,878	36,717	39,638	44,342	46,059	46,758	46,145	46,075	43,298	40,798	38,438	38,948	42,649	66.5%
Construction	50,645	41,300	51,585	55,367	57,776	59,709	63,134	66,158	68,687	71,539	73,958	67,309	72,576	75,566	49.2%
Forestry	5,058	5,121	5,528	5,619	5,893	5,764	6,168	6,226	5,936	5,383	4,908	4,018	4,781	5,266	4.1%

Source:

a) Informetrica Limited, *The Informetrica Model and Database*, Ottawa, 2012.

Industrial Energy Intensity by Industry

	Units	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Aggregate Energy Intensity^{a,b,c}	MJ/\$2002 – GDP	12.3	12.7	10.6	10.3	10.4	10.5	10.7	10.4	10.4	10.9	10.8	11.6	11.1	10.7	-12.4%
Energy Intensity by Industry^{a,b,c}																
Copper, Nickel, Lead and Zinc Mines	MJ/tonne	251.1	225.2	236.1	259.6	253.4	254.5	248.3	240.5	245.5	275.2	293.2	277.0	287.1	276.4	10.1%
Iron Mines	MJ/tonne	436.7	400.3	369.6	398.1	407.7	411.4	410.2	372.9	338.5	341.7	434.2	527.0	379.3	279.1	-36.1%
Gold and Silver Mines	MJ/tonne	557.1	502.0	309.8	332.0	346.0	328.2	325.4	320.5	307.4	325.0	341.2	337.4	338.2	411.8	-26.1%
Other Metal Mines	MJ/tonne	409.5	380.4	414.2	596.5	619.7	375.5	328.1	339.3	342.9	341.9	420.8	454.7	421.1	423.8	3.5%
Salt Mines	MJ/tonne	376.1	436.9	285.2	229.2	234.5	217.7	215.9	228.4	221.6	245.6	205.2	212.0	238.4	187.8	-50.1%
Potash Mines	MJ/tonne	3,923.7	3,507.6	3,224.7	3,480.6	3,319.6	3,290.8	3,138.5	2,699.3	4,063.4	3,264.9	3,164.9	4,060.8	2,425.6	3,557.2	-9.3%
Other Non-metal Mines	MJ/\$2002 – GDP	8.3	5.6	6.6	5.9	5.5	6.5	5.9	5.9	6.6	4.6	6.0	6.6	7.3	7.2	-13.4%
Upstream Mining	MJ/\$2002 – GDP	6.4	7.4	8.9	9.0	9.4	11.2	10.6	11.3	11.6	14.2	14.5	17.2	17.6	17.1	165.7%
Fruit and Vegetable Industries	MJ/\$2002 – GO	1.8	1.7	1.8	1.9	1.8	1.8	1.7	2.0	2.0	1.9	1.6	2.0	1.7	1.8	-4.9%
Dairy Products Industry	MJ/kilolitre	1,592.0	1,453.8	1,611.7	1,567.9	1,589.4	1,509.9	1,488.3	1,405.3	1,357.0	1,232.0	1,200.0	1,292.6	1,153.3	1,135.1	-28.7%
Meat Products Industries	MJ/tonne	4,628.9	4,318.3	4,591.1	4,457.2	3,924.0	3,895.1	3,916.7	4,074.5	4,336.9	4,133.9	4,624.8	5,826.0	4,775.6	5,063.0	9.4%
Bakery Products Industries	MJ/\$2002 – GO	1.9	1.2	1.2	1.4	1.6	1.5	1.4	1.5	1.5	1.5	1.4	1.6	1.2	1.1	-40.5%
Beverage Industries (excluding Breweries)	MJ/\$2002 – GO	0.8	1.2	1.2	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.0	1.2	1.1	1.0	15.9%
Breweries Industries	MJ/\$2002 – GDP	1.7	1.4	1.2	1.3	1.4	1.3	1.2	1.1	0.9	0.9	0.8	0.7	0.6	0.6	-65.7%
Tobacco Products Industries	MJ/\$2002 – GO	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.2	0.2	0.1	0.1	0.1	0.1	-62.5%
Textile Mills	MJ/\$2002 – GO	5.4	5.5	2.5	2.0	1.9	1.9	2.1	2.1	2.0	1.9	1.6	1.1	1.1	0.9	-83.0%
Textile Products Mills	MJ/\$2002 – GO	3.4	3.5	1.5	1.4	1.4	1.2	1.1	1.1	1.0	0.9	0.8	0.7	0.7	0.7	-79.8%
Clothing Industries	MJ/\$2002 – GO	0.8	0.8	0.7	0.6	0.6	0.6	0.6	0.3	0.2	0.2	0.3	0.2	0.2	0.2	-77.4%
Leather and Allied Products Industries	MJ/\$2002 – GO	1.6	1.3	1.4	1.1	0.9	0.8	0.8	0.6	0.4	0.5	0.6	0.5	0.5	0.5	-70.2%
Wood Products Industries	MJ/\$2002 – GO	3.0	2.7	3.3	2.7	2.9	2.4	2.4	2.5	2.6	3.0	3.6	3.9	4.2	3.8	26.2%
Pulp Mills	MJ/tonne	41,799.0	36,655.0	34,281.7	35,877.3	35,294.1	35,226.7	35,194.8	32,141.2	30,934.4	28,945.1	26,738.9	30,259.8	26,241.3	24,636.4	-41.1%
Paper Mills (except Newsprint)	MJ/\$2002 – GO	21.1	20.8	20.1	17.6	17.2	19.9	20.3	20.9	14.8	14.4	13.5	15.8	17.4	16.0	-24.0%
Newsprint Mills	MJ/tonne	27,088.3	29,466.9	29,731.5	28,974.8	29,966.2	29,537.2	28,847.6	27,523.8	27,017.0	27,496.3	26,213.5	26,918.4	26,452.5	23,924.5	-11.7%
Paperboard Mills	MJ/tonne	21,942.1	18,932.4	17,563.5	17,230.5	16,910.1	17,638.3	17,716.7	17,494.5	15,218.3	13,682.0	14,365.4	14,780.7	17,322.7	16,883.3	-23.1%
Other Pulp and Paper Manufacturing	MJ/\$2002 – GDP	8.8	5.5	7.9	11.3	15.1	4.3	29.8	31.6	37.8	43.3	40.2	43.0	27.0	35.2	298.8%
Converted Paper Products Industry	MJ/\$2002 – GO	1.5	1.3	1.2	1.6	1.6	1.6	1.7	1.9	1.6	1.8	1.5	2.3	1.7	1.5	0.7%
Printing and Related Support Activities	MJ/\$2002 – GO	1.3	0.9	0.8	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.7	0.8	0.7	0.6	-49.6%

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Sources:

- a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2011*, Ottawa, 2013.
b) Informetrica Limited, *The Informetrica Model and Database*, Ottawa, 2012.
c) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2011*, Simon Fraser University, 2013.

Industrial Energy Intensity by Industry (continued)

continued from previous table

	Units	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Energy Intensity by Industry^{a,b,c} (continued)																
Petroleum Refining	MJ/\$2002 – GO	13.5	13.4	10.8	11.0	10.9	10.7	11.8	11.0	11.2	11.1	10.7	9.8	9.6	8.9	-34.1%
Petrochemical Industry	MJ/tonne	4,597.7	4,042.4	4,279.4	4,725.3	4,623.4	5,265.9	5,433.9	6,930.7	40,958.4	6,002.0	12,552.0	10,953.7	7,751.0	6,941.8	51.0%
Industrial Gas Industry	MJ/\$2002 – GO	11.2	10.2	12.0	12.1	12.2	12.7	14.7	11.1	18.6	18.0	14.7	20.6	23.2	21.3	90.8%
Alkali and Chlorine Manufacturing	MJ/\$2002 – GO	20.0	22.4	16.9	15.5	12.2	12.5	13.9	13.9	11.4	10.8	10.5	11.1	9.3	10.4	-48.3%
All Other Basic Inorganic Chemical Manufacturing	MJ/\$2002 – GO	20.0	22.3	17.1	15.7	12.5	13.5	15.4	14.7	11.9	11.3	11.0	11.0	9.3	10.7	-46.7%
Chemical Fertilizer (except Potash) Manufacturing	MJ/\$2002 – GO	11.1	19.8	20.2	21.8	20.1	18.9	18.6	16.5	18.4	18.0	15.5	15.2	16.1	17.8	61.0%
Other Chemical Manufacturing	MJ/\$2002 – GDP	71.1	74.9	69.8	55.9	61.9	39.3	50.8	42.7	59.4	58.8	58.2	63.2	81.7	56.7	-20.3%
Resin and Synthetic Rubber Industries	MJ/tonne	27,008.4	13,205.3	12,887.6	11,014.1	9,207.1	8,463.2	7,250.2	6,744.8	8,576.1	8,332.3	10,446.5	12,022.0	12,683.1	13,828.1	-48.8%
Motor Vehicle Plastic Parts Manufacturing	MJ/\$2002 – GO	1.4	1.1	1.1	1.5	1.1	1.1	1.5	1.2	1.2	1.2	1.5	1.3	1.4	1.2	-12.9%
Rubber Products Industries	MJ/tonne	2.5	2.2	1.8	1.8	1.7	1.9	1.6	1.6	1.5	1.6	1.6	1.8	1.5	1.5	-41.5%
Cement Industry	MJ/tonne	5,645.5	5,261.0	5,150.6	5,173.4	5,317.6	5,034.6	5,493.0	5,395.4	5,544.6	4,688.5	5,035.2	5,752.1	4,664.7	4,878.2	-13.6%
Iron and Steel	MJ/\$2002 – GO	26.1	26.5	21.9	18.8	19.6	19.7	21.7	19.1	21.1	20.6	22.7	19.5	21.9	21.0	-19.3%
Primary Production of Alumina and Aluminum	MJ/tonne	70,059.1	63,638.3	63,172.9	61,913.4	62,466.3	63,993.1	65,525.0	64,677.3	61,766.8	62,336.8	62,595.0	57,077.5	59,487.8	61,897.4	-11.6%
Other Non-ferrous Smelting and Refining	MJ/tonne	47,912.3	44,351.7	43,551.2	49,796.9	44,762.8	46,065.7	42,214.9	42,211.2	39,789.1	35,734.0	37,455.3	36,390.1	42,159.2	43,246.4	-9.7%
Fabricated Metal Products Industries	MJ/\$2002 – GO	1.6	1.5	1.0	1.2	1.2	1.2	1.2	1.2	1.1	1.2	1.4	1.3	1.1	1.3	-21.7%
Machinery Industries	MJ/\$2002 – GO	0.6	0.7	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7	15.9%
Computer and Electronic Products Industries	MJ/\$2002 – GO	0.4	0.5	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	-46.3%
Electrical Equipment and Components Industries	MJ/\$2002 – GO	1.2	1.1	0.7	0.6	0.6	0.7	0.7	0.7	0.7	0.8	0.8	0.6	0.7	0.7	-43.6%
Motor Vehicle Industry	MJ/\$2002 – GDP	2.3	2.1	1.8	1.7	1.7	1.8	1.6	1.6	1.5	1.5	1.8	2.1	1.4	1.5	-36.4%
Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	MJ/\$2002 – GDP	3.1	1.9	1.7	1.4	1.4	1.4	1.4	1.6	1.5	1.5	1.6	1.6	1.2	1.6	-46.6%
Motor Vehicle Electrical and Electronic Equipment Manufacturing	MJ/\$2002 – GDP	1.1	0.7	1.0	1.1	2.0	1.4	1.3	1.4	0.6	1.1	1.2	1.5	1.5	1.1	2.8%
Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	MJ/\$2002 – GDP	7.4	4.9	4.9	3.0	3.0	2.2	2.5	2.5	2.5	2.5	2.3	3.7	1.3	2.0	-73.0%
Motor Vehicle Brake System Manufacturing	MJ/\$2002 – GDP	4.7	3.6	3.6	4.9	5.1	3.6	3.4	2.0	1.9	1.5	2.2	1.8	1.3	1.3	-73.1%
Motor Vehicle Transmission and Power Train Parts Manufacturing	MJ/\$2002 – GDP	4.6	2.0	1.9	2.9	2.8	3.2	3.5	3.6	3.4	3.2	3.8	4.8	4.1	3.3	-28.8%

table continued on next page ➞

Sources:

- a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2011*, Ottawa, 2013.
b) Informetrica Limited, *The Informetrica Model and Database*, Ottawa, 2012.
c) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2011*, Simon Fraser University, 2013.

Industrial Energy Intensity by Industry (continued)

continued from previous table

	Units	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Energy Intensity by Industry^{a,b,c} (continued)																
Motor Vehicle Seating and Interior Trim Manufacturing	MJ/\$2002 – GDP	2.5	1.7	1.7	2.3	1.7	1.7	1.6	1.4	1.3	1.4	1.4	1.9	1.6	1.5	-39.9%
Motor Vehicle Metal Stamping	MJ/\$2002 – GDP	4.8	3.4	2.7	2.8	3.5	2.4	2.3	2.2	2.4	2.5	3.1	3.3	2.9	2.6	-44.4%
Other Motor Vehicle Parts Manufacturing	MJ/\$2002 – GDP	3.9	2.6	2.2	1.8	2.6	2.2	2.3	2.3	2.0	2.3	2.9	3.7	2.5	1.8	-53.0%
Furniture and Related Products Industries	MJ/\$2002 – GO	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.6	0.7	0.7	0.8	0.7	0.7	-23.4%
Miscellaneous Manufacturing	MJ/\$2002 – GO	0.7	0.5	0.5	0.6	0.7	0.7	0.7	0.7	0.6	0.9	1.0	1.1	1.1	1.0	43.9%
Other Manufacturing n.e.c.	MJ/\$2002 – GDP	9.0	8.8	6.0	4.7	4.2	4.4	4.6	5.3	5.1	5.7	5.7	4.8	5.2	5.0	-44.7%
Construction	MJ/\$2002 – GO	0.6	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	-26.8%
Forestry	MJ/\$2002 – GO	0.8	0.7	1.4	1.7	1.6	1.9	2.1	2.2	2.4	2.5	3.1	2.5	2.3	1.9	135.4%

Sources:

- a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2011*, Ottawa, 2013.
b) Informetrica Limited, *The Informetrica Model and Database*, Ottawa, 2012.
c) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2011*, Simon Fraser University, 2013.

Industrial Energy Prices and Background Indicators

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Energy Prices by Energy Source (incl. taxes)															
Natural Gas (cents/m ³) ^{a,e}	10.5	10.6	17.7	23.9	26.2	32.7	33.7	36.9	36.6	27.2	33.4	23.4	20.5	18.7	78.0%
Light Fuel Oil (cents/litre) ^f	25.8	22.1	40.1	35.6	34.7	38.7	46.5	61.9	64.2	68.6	94.3	60.9	70.5	94.6	267.3%
Heavy Fuel Oil (cents/litre) ^f	14.1	16.2	28.5	26.9	29.6	31.1	30.7	38.2	39.2	44.3	57.6	46.1	54.7	72.2	413.9%
Electricity (1,000 kW/400,000 kWh) ¹ (cents/kWh) ^{b,e}	5.6	7.0	6.9	7.6	7.4	7.9	7.7	8.1	8.2	8.4	9.0	8.4	9.1	9.5	69.2%
Electricity (5,000 kW/3,060,000 kWh) ¹ (cents/kWh) ^{b,e}	4.0	4.9	5.3	6.0	5.7	6.1	5.9	6.2	6.3	6.5	7.1	6.5	7.0	7.5	89.3%
Background Indicators															
Industrial GDP (million \$2002) ^d	221,187	238,267	297,784	295,031	301,125	305,084	315,536	322,461	323,645	320,752	307,937	274,648	294,083	310,131	40.2%
Industrial GO (million \$2002) ^d	572,565	622,946	794,435	793,554	817,837	817,114	839,156	868,690	883,357	873,862	826,557	770,282	805,582	844,475	47.5%
Capacity Utilization Rate (%)^c															
Mining	87.5	85.5	89.4	87.7	88.5	88.9	87.6	84.7	82.9	80.8	77.1	70.0	75.8	79.2	–
Manufacturing	78.2	83.9	86.0	81.7	82.9	81.5	83.5	83.7	82.7	82.8	75.6	71.6	77.2	79.8	–
Pulp and Paper	83.7	92.0	92.1	88.6	90.6	91.1	91.1	89.4	88.3	87.4	87.9	82.0	88.6	87.9	–
Primary Metals ²	85.1	88.3	90.9	86.2	87.8	88.4	91.8	91.5	91.9	92.1	89.0	76.0	78.5	85.1	–
Petroleum Refining	87.5	89.5	92.7	94.9	96.5	95.4	93.9	88.3	83.2	82.5	75.0	77.9	83.8	79.5	–
Chemicals	86.6	85.2	80.1	80.4	80.8	80.9	81.5	80.2	79.8	82.0	75.0	70.9	76.3	77.0	–
Forestry	82.2	81.3	82.6	81.6	83.9	85.5	89.8	84.3	85.0	89.6	93.6	77.3	88.3	91.2	–
Construction	91.1	75.8	88.7	90.5	89.8	88.0	86.1	83.5	81.7	80.2	78.2	69.2	75.0	76.4	–
Industrial Employees (thousands)^d															
Mining	192	173	160	179	170	178	188	211	241	255	265	248	254	254	32.3%
Manufacturing	2,050	1,904	2,249	2,229	2,286	2,275	2,292	2,209	2,107	2,031	1,962	1,782	1,744	1,776	-13.3%
Pulp and Paper	140	121	116	109	106	108	104	102	94	87	91	74	74	71	-49.3%
Primary Metals ²	135	110	109	99	101	97	92	91	90	79	78	67	66	63	-53.5%
Petroleum Refining	25	18	19	17	17	16	17	18	17	19	19	19	18	10	-61.5%
Chemicals	106	99	118	119	125	121	118	116	103	108	109	104	107	104	-2.0%
Forestry	73	93	86	74	74	77	72	70	63	61	55	47	51	55	-25.1%
Construction	816	726	810	824	865	906	953	1,015	1,066	1,131	1,231	1,161	1,217	1,278	56.7%

1) kW refers to power hook-up, whereas kWh refers to monthly electricity consumption.

2) "Primary Metals" includes iron and steel, smelting and refining, and other primary metal activity.

Sources:

- a) Statistics Canada, *Energy Statistics Handbook*, Ottawa, 2012 (Cat. No. 57-601-X).
- b) Hydro-Québec, *Comparison of Electricity Prices in Major North American Cities*, 2011.
- c) Informetrica Limited, *The Informetrica Model and Database*, Ottawa, 2012.
- d) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2011*, Ottawa, 2013
- e) Natural Resources Canada, *Oil and Gas Policy and Regulatory Affairs Division*, Ottawa, 2012.

Chapter 5 – Transportation Sector

The Data Situation

The aggregate data on transportation energy use by energy source are from Statistics Canada's *Report on Energy Supply and Demand in Canada* (RESO) (Cat. No. 57-003-X). Other sources that have more specific data enable the Office of Energy Efficiency to allocate energy use by transportation mode as outlined below.

Using stock, fuel efficiencies and average distances travelled, the Transportation End-Use Model (TEUM) calculates preliminary estimates for road energy use by vehicle type. These preliminary estimates are then calibrated to match the RESO road information to obtain final road energy use estimates.

Aggregate non-road energy use data (rail, air and marine) are obtained directly from the RESO. Rail and air are further disaggregated into passenger and freight transportation based on data from the following Statistics Canada reports: *Rail in Canada* (Cat. No. 52-216-X), *Canadian Civil Aviation* (Cat. No. 51-206-X) and *Service Bulletin: Aviation* (Cat. No. 51-004-X), as well as Canadian Socio-Economic Information Management System (CANSIM) updates. The *Climate Change Air Sub-Group Report* by Sypher: Mueller International Inc., July 1999, is also used in the allocation of air energy use to passenger and freight modes.

Data for vehicle stock in the TEUM were obtained mainly from R.L. Polk & Co. and DesRosiers Automotive Consultants Inc. Specifically, the data were extracted from two databases: Canadian Vehicles in Operation Census (CVIOC) and Trucking Industry Profile (TIP). Statistics Canada's *Road Motor Vehicles, Registrations* (Cat. No. 53-219-X), its *Canadian Vehicle Survey* (CVS) (Cat. No. 53-223-X) and the U.S. Department of Energy's *Transportation Energy Data Book, Edition 25* are used to develop historical car and truck stock data for years in which data from the CVIOC and/or the TIP were not available. The bus

stock information is further disaggregated by bus industry based on the following Statistics Canada reports: *Passenger Bus and Urban Transit Statistics* (PBS) (Cat. No. 53-215-X) and *Service Bulletin: Surface and Marine Transport* (Cat. No. 50-002-X) as well as CANSIM updates.

Car and truck sales are derived from new vehicle registrations from R. L. Polk and from Statistics Canada's *New Motor Vehicle Sales* (Cat. No. 63-007-X).

Laboratory-tested fuel efficiencies for new cars and light trucks are obtained from Transport Canada's *Vehicle Fuel Economy Information System* (VFEIS). Information from the VFEIS is then used in conjunction with provincial sales data obtained from DesRosiers Automotive Consultants Inc. to attain average provincial values for each model year. Medium and heavy truck fuel consumption for the years before 1998 are based on the *Heavy-Duty Truck Fuel Economy and Annual Mileage in Canada* report (Energy and Environmental Analysis, Inc., March 2001) produced for Natural Resources Canada (NRCAN). Data for more recent years are obtained from the CVS while historical data are developed to match the previous data source. On-road fuel efficiency for buses is based on data from the PBS.

The *National Private Vehicle Use Survey – October 1994 to September 1996* and the CVS, conducted by Statistics Canada on behalf of NRCAN and Transport Canada, provide average distances travelled for cars and trucks. The medium and heavy truck average distance travelled from 2000 onward follows the CVS data, while previous years are based on trends from *Trucking in Canada* (Cat. No. 53-222-X) for heavy trucks and the TEUM (2004) for medium trucks. Motorcycle estimates are based on information from the U.S. Department of Transportation and the TEUM assumptions.

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Occupancy rates are essential for calculating the passenger-kilometres travelled for cars and light trucks. Since 1999, occupancy rates have been obtained from the CVS data. Observed trends in Transport Canada's seat belt survey (1992–2002), total population and vehicle stock were used to develop historical data from 1976 to 1998. Motorcycle occupancy rates are based on U.S. Department of Transportation data. Finally, bus occupancy rates are taken from the CVS and the PBS. In the non-road portion, passenger-kilometres are taken directly from *Rail in Canada* for rail and from the *Canadian Civil Aviation* report for air.

Light truck and medium truck tonne-kilometres are calculated using a TEUM assumption on load factor, while heavy truck tonne-kilometres are from the *Trucking in Canada: Trucking Commodity Origin and Destination Survey*. Non-road tonne-kilometres are taken from the *Canadian Civil Aviation*, *Rail in Canada* report and from Transport Canada's Surface and Marine Statistics Division for air, rail and marine, respectively.

Transportation energy prices are weighted averages of regional prices from Statistics Canada's *Energy Statistics Handbook* (Cat. No. 57-601-X). Other transportation indicators are from Informetrica Limited's *The Informetrica Model and Database*.

In Canada, the availability of biofuel data is limited (not reported). In the 2011 edition of this handbook, it is assumed that no biodiesel fuel was consumed before 2001. Starting in 2001, there might have been biodiesel fuel available in Canada, but there are no published data available. For ethanol, there were no published data before 2005, even though ethanol might have been available at that time.

Due to rounding, the numbers in the tables may not add up or calculate to their reported totals or growth rates.

Transportation Secondary Energy Use by Energy Source and Transportation Mode

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Total Energy Use (PJ)^a	1,877.9	2,011.7	2,265.9	2,255.1	2,282.2	2,349.8	2,437.5	2,475.7	2,456.9	2,554.5	2,541.9	2,505.0	2,607.7	2,649.7	41.1%
Passenger Transportation ^b	1,179.0	1,191.1	1,272.8	1,273.9	1,308.7	1,314.7	1,352.3	1,363.8	1,351.5	1,399.9	1,375.6	1,368.1	1,393.9	1,414.3	20.0%
Freight Transportation ^b	645.6	758.5	912.1	890.9	880.7	940.6	988.4	1,012.9	1,005.0	1,052.8	1,064.0	1,034.7	1,109.0	1,128.0	74.7%
Off-road ^{1, b}	53.3	62.1	81.0	90.3	92.8	94.5	96.8	99.1	100.4	101.8	102.3	102.2	104.8	107.4	101.2%
Energy Use by Energy Source (PJ)^a															
Electricity	3.1	3.0	3.1	3.1	3.4	3.4	3.5	3.5	3.5	2.5	2.3	2.4	2.5	2.6	-15.5%
Natural Gas	1.7	2.4	2.4	2.0	1.7	1.7	1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.6	-3.0%
Motor Gasoline	1,120.4	1,179.2	1,282.5	1,296.3	1,332.3	1,352.4	1,381.8	1,368.5	1,369.7	1,393.2	1,375.1	1,394.6	1,413.9	1,440.4	28.6%
Diesel Fuel Oil	469.8	549.6	660.4	647.5	646.5	686.9	716.1	745.2	740.4	772.3	789.3	749.1	817.1	844.9	79.8%
Ethanol	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	6.5	6.6	30.8	33.0	36.8	45.2	63.0	—
Biodiesel Fuel	0.0	0.0	0.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	—
Light Fuel Oil and Kerosene	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—
Heavy Fuel Oil	60.1	56.6	61.4	70.3	65.7	75.7	78.8	83.0	68.7	84.4	84.9	87.0	86.1	63.1	4.9%
Aviation Gasoline	5.5	4.2	3.6	3.5	3.4	3.1	2.9	3.3	3.0	3.1	3.0	2.9	2.6	2.1	-61.7%
Aviation Turbo Fuel	181.9	183.9	236.5	215.3	216.7	214.8	240.0	253.6	251.7	254.2	239.6	219.1	227.2	219.9	20.9%
Propane	35.4	32.8	16.1	17.2	12.4	11.9	12.6	10.3	11.3	12.1	12.8	11.2	11.2	12.0	-65.9%
Energy Use by Transportation Mode (PJ)^b															
Cars	721.2	682.5	627.0	640.3	652.1	648.4	647.7	635.9	628.8	645.9	631.1	632.0	627.6	624.9	-13.4%
Passenger Light Trucks	216.9	271.8	359.4	371.8	389.8	400.4	415.5	423.8	422.8	447.0	447.9	461.8	482.2	510.3	135.3%
Freight Light Trucks	99.7	120.0	146.7	153.1	157.6	160.8	166.4	167.6	169.5	180.1	180.9	185.6	193.3	205.7	106.3%
Medium Trucks	134.8	162.0	175.1	155.8	145.7	161.5	177.1	154.7	165.3	157.6	153.6	150.6	157.4	161.0	19.4%
Heavy Trucks	212.3	288.8	392.4	377.7	384.6	424.4	436.0	473.0	464.4	491.9	505.3	513.5	549.6	570.4	168.7%
Motorcycles	2.5	2.2	2.6	2.7	3.1	3.3	3.6	3.6	3.8	4.1	4.2	5.6	6.1	6.6	164.7%
School Buses	15.1	16.8	14.3	11.7	11.9	13.2	11.3	11.4	12.3	12.4	13.7	13.0	13.4	14.1	-6.8%
Urban Transit	29.0	26.2	27.6	26.1	29.2	29.3	30.3	31.3	27.7	30.1	31.4	31.1	32.9	33.6	16.1%
Inter-city Buses	9.6	8.5	6.9	6.5	7.1	6.3	5.7	6.1	5.9	6.3	6.5	4.7	4.7	5.0	-48.0%
Passenger Air	180.9	180.8	232.0	211.9	212.8	211.1	235.6	249.1	247.5	251.4	237.7	217.6	224.5	217.2	20.1%

table continued on next page ➞

1) "Off-road" includes vehicles not registered for on-road travel such as ATVs, snowmobiles, golf carts and some military vehicles.

2) Excludes non-commercial aviation.

Sources:

a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2011*, Ottawa, 2013.

b) Natural Resources Canada, *Transportation End-Use Model*, Ottawa, 2013.

Transportation Sector

Transportation Secondary Energy Use by Energy Source and Transportation Mode (continued)

continued from previous table

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Energy Use by Transportation Mode (PJ)^a (continued)															
Freight Air	6.5	7.3	8.1	6.9	7.3	6.8	7.2	7.8	7.2	5.8	4.9	4.4	5.3	4.8	-26.1%
Passenger Rail	3.8	2.3	3.0	3.0	2.8	2.6	2.5	2.7	2.7	2.8	3.2	2.3	2.5	2.5	-32.5%
Freight Rail	85.7	78.6	81.5	80.7	73.5	74.4	76.6	81.7	85.6	91.8	97.0	62.5	81.2	83.9	-2.1%
Marine	106.5	101.7	108.2	116.7	112.0	112.7	125.1	128.1	113.0	125.7	122.2	118.0	122.3	102.2	-4.1%
Off-road ¹	53.3	62.1	81.0	90.3	92.8	94.5	96.8	99.1	100.4	101.8	102.3	102.2	104.8	107.4	101.2%
Activity															
Total Passenger-kilometres ² (millions) ^b	496,760	548,828	605,808	614,857	629,129	632,536	651,456	663,091	676,028	700,016	702,763	709,314	736,602	765,373	54.1%
Total Tonne-kilometres (millions) ^b	543,300	614,653	739,865	735,668	766,494	789,019	850,671	888,999	885,711	884,653	855,214	767,247	829,562	826,439	52.1%
Passenger Transportation Energy Intensity² (MJ/Pkm)^b	2.29	2.11	2.06	2.03	2.04	2.04	2.03	2.01	1.95	1.94	1.90	1.89	1.85	1.82	-20.7%
Freight Transportation Energy Intensity (MJ/Tkm)^b	1.19	1.23	1.23	1.21	1.15	1.19	1.16	1.14	1.13	1.19	1.24	1.35	1.34	1.36	14.9%

1) "Off-road" includes vehicles not registered for on-road travel such as ATVs, snowmobiles, golf carts and some military vehicles.

2) excludes non-commercial aviation

Sources:

a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2011*, Ottawa, 2013.

b) Natural Resources Canada, *Transportation End-Use Model*, Ottawa, 2013.

Transportation GHG Emissions by Energy Source and Transportation Mode

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Total GHG Emissions (Mt of CO₂e)^{a,b,c}	131.4	141.9	159.3	158.8	160.7	165.4	171.1	173.3	171.4	177.8	176.5	173.1	180.1	182.5	38.9%
Passenger Transportation ^{b,c}	81.7	83.8	88.7	88.9	91.3	91.7	93.9	94.2	92.9	95.8	93.8	92.9	94.3	95.3	16.6%
Freight Transportation ^{b,c}	46.0	53.9	65.1	63.8	63.1	67.3	70.6	72.4	71.7	75.1	75.9	73.4	78.8	79.9	73.7%
Off-road ^{b,c}	3.6	4.2	5.5	6.1	6.3	6.4	6.5	6.7	6.8	6.9	6.9	6.9	7.1	7.2	99.0%
GHG Emissions by Energy Source (Mt of CO₂e)^{a,b,c}															
Electricity	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	-35.1%
Natural Gas	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-5.0%
Motor Gasoline	77.4	82.8	89.4	90.5	93.0	94.4	95.9	94.5	94.0	95.2	93.5	94.5	95.4	96.8	25.0%
Diesel Fuel Oil	33.8	39.3	47.7	46.8	46.6	49.4	51.6	53.7	53.4	55.7	56.9	53.8	58.8	60.8	79.8%
Ethanol	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.4	0.4	2.0	2.2	2.4	2.9	4.1	—
Biodiesel Fuel	0.0	0.0	0.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	—
Light Fuel Oil and Kerosene	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—
Heavy Fuel Oil	4.5	4.3	4.6	5.2	4.9	5.6	5.9	6.2	5.1	6.3	6.3	6.5	6.4	4.7	3.0%
Aviation Gasoline	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	-61.7%
Aviation Turbo Fuel	12.8	12.9	16.2	14.7	14.8	14.7	16.4	17.3	17.2	17.4	16.4	15.0	15.5	15.0	17.5%
Propane	2.1	2.0	1.0	1.0	0.7	0.7	0.8	0.6	0.7	0.7	0.8	0.7	0.7	0.7	-65.6%
GHG Emissions by Transportation Mode (Mt of CO₂e)^{a,b,c}															
Cars	49.8	48.0	43.8	44.8	45.6	45.3	45.0	43.9	43.2	44.1	42.9	42.7	42.3	41.9	-15.8%
Passenger Light Trucks	15.1	19.2	25.3	26.2	27.5	28.2	29.1	29.5	29.2	30.7	30.5	31.3	32.5	34.2	127.1%
Freight Light Trucks	6.8	8.3	10.3	10.7	11.0	11.3	11.6	11.6	11.6	12.3	12.3	12.5	13.0	13.8	102.7%
Medium Trucks	9.2	11.0	12.0	10.7	10.1	11.2	12.2	10.7	11.4	10.9	10.6	10.4	10.9	11.1	21.0%
Heavy Trucks	14.8	20.1	27.7	26.7	27.2	30.0	30.8	33.5	32.8	34.8	35.8	36.3	38.9	40.4	173.4%
Motorcycles	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.4	158.0%
School Buses	1.0	1.1	1.0	0.8	0.8	0.9	0.8	0.8	0.9	0.9	1.0	0.9	0.9	1.0	-1.6%
Urban Transit	2.0	1.8	1.9	1.8	2.0	2.0	2.1	2.1	1.9	2.1	2.2	2.1	2.3	2.3	17.3%
Inter-city Buses	0.7	0.6	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.5	0.3	0.3	0.4	-47.1%
Passenger Air	12.7	12.7	15.9	14.5	14.6	14.4	16.1	17.0	16.9	17.2	16.3	14.9	15.4	14.9	16.7%

1) "Off-road" includes vehicles not registered for on-road travel such as ATVs, snowmobiles, golf carts and some military vehicles.

Sources:

- a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2011*, Ottawa, 2013.
- b) Natural Resources Canada, *Transportation End-Use Model*, Ottawa, 2013.
- c) Environment Canada, *National Inventory Report 1990–2011: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2013.

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Transportation Sector

Transportation GHG Emissions by Energy Source and Transportation Mode (continued)

continued from previous table

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
GHG Emissions by Transportation Mode (Mt of CO₂e)^{a,b,c} (continued)															
Freight Air	0.5	0.5	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.3	0.3	0.4	0.3	-28.2%
Passenger Rail	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	-31.8%
Freight Rail	6.7	6.1	6.4	6.3	5.8	5.8	6.0	6.4	6.7	7.2	7.6	4.9	6.4	6.6	-1.2%
Marine	8.2	7.8	8.2	8.9	8.5	8.5	9.5	9.7	8.6	9.5	9.2	8.9	9.2	7.8	-4.9%
Off-road ¹	3.6	4.2	5.5	6.1	6.3	6.4	6.5	6.7	6.8	6.9	6.9	6.9	7.1	7.2	99.0%
GHG Intensity (tonnes/TJ)^{a,b,c}	69.9	70.5	70.3	70.4	70.4	70.4	70.2	70.0	69.8	69.6	69.4	69.1	69.1	68.9	-1.6%
GHG Emissions Related to Electricity (Mt of CO₂e)^{a,c}	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	-35.1%

1) "Off-road" includes vehicles not registered for on-road travel such as ATVs, snowmobiles, golf carts and some military vehicles.

Sources:

- a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2011*, Ottawa, 2013.
- b) Natural Resources Canada, *Transportation End-Use Model*, Ottawa, 2013.
- c) Environment Canada, *National Inventory Report 1990–2011: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2013.

Transportation Energy Prices and Background Indicators

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Energy Prices by Energy Source (incl. taxes)															
Regular Unleaded Gasoline ¹ (cents/litre) ^{a,d,e}	58.7	55.6	72.6	70.7	70.5	75.0	82.9	93.4	98.6	103.1	116.4	95.8	104.8	125.2	113.3%
Diesel Fuel Oil ¹ (cents/litre) ^{a,d,e}	51.4	51.1	67.8	68.3	63.1	68.8	75.6	92.8	96.6	99.0	125.2	89.7	101.0	123.3	140.0%
Propane (cents/litre) ^{a,d}	26.6	29.3	43.0	45.1	37.4	50.2	51.3	57.5	62.0	62.2	72.4	61.4	67.2	70.5	164.9%
Excise Tax (cents/litre)^b															
Unleaded Gasoline	8.5	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	17.6%
Leaded Gasoline	9.5	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	15.8%
Diesel Fuel Oil	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	–
Background Indicators															
Consumer Price Index (2002 = 100)^c															
Gasoline and Other Fuels ²	82.7	80.0	103.5	100.8	100.0	106.4	117.6	132.6	139.8	146.1	164.7	135.8	148.2	177.8	–
Public Transportation	52.3	68.8	92.8	94.7	100.0	102.9	105.3	108.6	113.6	114.6	121.4	122.3	121.1	127.9	–
Inter-city Transportation	47.4	63.0	92.1	93.1	100.0	102.3	104.1	107.0	111.7	111.9	119.5	118.6	113.2	121.9	–
Local and Commuter	60.8	78.8	93.9	97.4	100.0	103.9	107.5	111.4	116.7	119.4	124.5	128.8	135.4	138.7	–
GDP at Factor Cost (million \$2002)^e															
Business Sector	615,284	678,056	860,280	872,752	896,598	914,112	945,546	978,197	1,004,002	1,025,638	1,027,685	983,942	1,022,287	1,051,818	70.9%
Transportation	35,200	39,102	47,608	48,606	48,528	49,057	50,894	54,065	55,306	56,248	56,266	54,094	56,939	59,158	68.1%
Real Personal Disposable Income per Household (\$2002)^e	56,325	52,997	56,315	56,822	57,165	57,723	59,164	59,460	62,076	63,580	65,344	64,865	66,128	66,025	17.2%

1) the price at full-service stations

2) "Other Fuels" includes diesel fuel oil, propane, natural gas and any other fuel that would be used for automobile propulsion.

Sources:

- a) Statistics Canada, *Energy Statistics Handbook*, Ottawa, 2012 (Cat. No. 57-601-X).
- b) Canada Revenue Agency, *Current Rates of Excise Taxes – Revised*, Ottawa, 2008; www.cra-arc.gc.ca/E/pub/et/currate/currate-e.html.
- c) Informetrica Limited, *The Informetrica Model and Database*, Ottawa, 2012.
- d) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2011*, Ottawa, 2013.
- e) Statistics Canada, *Total Population, Census Divisions and Census Metropolitan Areas*, Tables 051-0014, 051-0034 and 051-0046, Ottawa, 2012 (CANSIM).

Transportation Sector – Passenger

Passenger Transportation Secondary Energy Use by Energy Source and Transportation Mode

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Passenger Transportation Energy Use (PJ)^a	1,179.0	1,191.1	1,272.8	1,273.9	1,308.7	1,314.7	1,352.3	1,363.8	1,351.5	1,399.9	1,375.6	1,368.1	1,393.9	1,414.3	20.0%
Energy Use by Energy Source (PJ)^a															
Electricity	3.1	3.0	3.1	3.1	3.4	3.4	3.5	3.5	3.5	2.5	2.3	2.4	2.5	2.6	-15.5%
Natural Gas	1.6	2.3	2.3	1.9	1.7	1.7	1.7	1.8	1.8	1.8	1.7	1.8	1.8	1.4	-10.5%
Motor Gasoline	917.9	935.4	971.8	995.6	1,029.1	1,037.4	1,052.1	1,044.5	1,037.7	1,060.5	1,044.0	1,058.3	1,067.5	1,080.3	17.7%
Diesel Fuel Oil	56.2	53.0	55.7	52.7	55.3	54.8	52.5	53.3	50.7	54.3	58.2	54.3	57.6	59.2	5.3%
Ethanol	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	4.9	4.9	23.5	25.4	28.1	34.3	47.4	–
Biodiesel Fuel	0.0	0.0	0.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	–
Aviation Gasoline	5.4	4.1	3.5	3.5	3.4	3.1	2.8	3.3	2.9	3.1	3.0	2.8	2.6	2.1	-61.7%
Aviation Turbo Fuel	175.5	176.7	228.4	208.5	209.4	208.0	232.8	245.8	244.6	248.4	234.7	214.7	222.0	215.1	22.6%
Propane	19.2	16.6	8.0	8.6	6.5	6.3	6.9	6.7	5.5	5.9	6.3	5.6	5.7	6.1	-67.9%
Energy Use by Transportation Mode (PJ)^a															
Cars	721.2	682.5	627.0	640.3	652.1	648.4	647.7	635.9	628.8	645.9	631.1	632.0	627.6	624.9	-13.4%
Light Trucks	216.9	271.8	359.4	371.8	389.8	400.4	415.5	423.8	422.8	447.0	447.9	461.8	482.2	510.3	135.3%
Motorcycles	2.5	2.2	2.6	2.7	3.1	3.3	3.6	3.6	3.8	4.1	4.2	5.6	6.1	6.6	164.7%
School Buses	15.1	16.8	14.3	11.7	11.9	13.2	11.3	11.4	12.3	12.4	13.7	13.0	13.4	14.1	-6.8%
Urban Transit	29.0	26.2	27.6	26.1	29.2	29.3	30.3	31.3	27.7	30.1	31.4	31.1	32.9	33.6	16.1%
Inter-city Buses	9.6	8.5	6.9	6.5	7.1	6.3	5.7	6.1	5.9	6.3	6.5	4.7	4.7	5.0	-48.0%
Air	180.9	180.8	232.0	211.9	212.8	211.1	235.6	249.1	247.5	251.4	237.7	217.6	224.5	217.2	20.1%
Rail	3.8	2.3	3.0	3.0	2.8	2.6	2.5	2.7	2.7	2.8	3.2	2.3	2.5	2.5	-32.5%
Activity															
Total Passenger-kilometres ¹ (millions) ^{a,b,c}	496,760	548,828	605,808	614,857	629,129	632,536	651,456	663,091	676,028	700,016	702,763	709,314	736,602	765,373	54.1%

1) excludes non-commercial aviation

table continued on next page ➞

Sources:

- a) Natural Resources Canada, Transportation End-Use Model, Ottawa, 2013.
 b) Statistics Canada, *Canadian Civil Aviation, 1990–2000*, Ottawa, 2003 (Cat. No. 51-206-X); and Statistics Canada, *Aviation: Service Bulletin* (Cat. No. 51-004-X), Ottawa: Vol. 45, No. 3, 2013.
 c) Statistics Canada, *Rail in Canada, 1990–2009*, Ottawa, 2011 (Cat. No. 52-216-X); and Tables 404-0012 and 404-0016, 2013 (CANSIM).

Transportation Sector – Passenger

5

Passenger Transportation Secondary Energy Use by Energy Source and Transportation Mode (continued)

continued from previous table

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Passenger-kilometres by Transportation Mode (millions)															
Cars ^a	309,985	321,977	309,397	317,756	327,295	328,399	330,388	326,388	324,404	335,866	330,866	333,730	333,808	334,617	7.9%
Light Trucks ^a	75,035	105,388	142,023	148,439	156,205	161,345	168,309	172,573	173,148	184,132	185,921	193,833	204,396	217,510	189.9%
Motorcycles ^a	1,688	1,482	1,727	2,003	2,377	2,548	2,791	3,010	3,213	3,499	3,598	3,217	3,469	3,770	123.4%
School Buses ^a	16,861	22,513	23,301	19,741	21,052	23,834	21,685	23,075	28,847	24,021	25,706	29,097	31,249	31,647	87.7%
Urban Transit ^a	15,121	12,906	14,201	14,795	16,360	16,470	17,347	18,368	19,251	16,487	17,571	18,519	19,817	21,887	44.7%
Inter-city Buses ^a	9,513	9,654	8,728	8,036	9,149	8,179	7,550	8,224	6,985	8,223	7,928	6,822	6,173	7,052	-25.9%
Air ^{1, b}	66,776	73,492	104,882	102,535	95,094	90,326	101,965	109,975	118,729	126,334	129,600	122,683	136,286	147,485	120.9%
Rail ^c	1,782	1,415	1,549	1,553	1,597	1,434	1,421	1,478	1,450	1,453	1,574	1,413	1,404	1,404	-21.2%
Energy Intensity¹ (MJ/Pkm)^{a, b, c}	2.29	2.11	2.06	2.03	2.04	2.04	2.03	2.01	1.95	1.94	1.90	1.89	1.85	1.82	-20.7%

1) excludes non-commercial aviation

Sources:

a) Natural Resources Canada, Transportation End-Use Model, Ottawa, 2013.

b) Statistics Canada, *Canadian Civil Aviation, 1990–2000*, Ottawa, 2003 (Cat. No. 51-206-X); and Statistics Canada, *Aviation: Service Bulletin* (Cat. No. 51-004-X), Ottawa: Vol. 45, No. 3, 2013.

c) Statistics Canada, *Rail in Canada, 1990–2009*, Ottawa, 2011 (Cat. No. 52-216-X); and Tables 404-0012 and 404-0016, 2013 (CANSIM).

Transportation Sector – Passenger

Passenger Transportation GHG Emissions by Energy Source and Transportation Mode

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Passenger Transportation GHG Emissions (Mt of CO₂e)^{b,c}	81.7	83.8	88.7	88.9	91.3	91.7	93.9	94.2	92.9	95.8	93.8	92.9	94.3	95.3	16.6%
GHG Emissions by Energy Source (Mt of CO₂e)^{b,c}															
Electricity	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	-35.1%
Natural Gas	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-12.3%
Motor Gasoline	63.6	66.1	68.1	69.9	72.2	72.7	73.3	72.3	71.4	72.6	71.1	71.7	72.1	72.6	14.1%
Diesel Fuel Oil	4.0	3.7	4.0	3.8	3.9	3.9	3.7	3.8	3.6	3.9	4.1	3.9	4.1	4.2	6.6%
Ethanol	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.3	0.3	1.6	1.7	1.8	2.2	3.1	—
Biodiesel Fuel	0.0	0.0	0.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	—
Aviation Gasoline	0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	-61.7%
Aviation Turbo Fuel	12.3	12.4	15.6	14.2	14.3	14.2	15.9	16.8	16.7	17.0	16.0	14.7	15.2	14.7	19.2%
Propane	1.1	1.0	0.5	0.5	0.4	0.4	0.4	0.4	0.3	0.4	0.4	0.3	0.3	0.4	-67.7%
GHG Emissions by Transportation Mode (Mt of CO₂e)^{b,c}															
Cars	49.8	48.0	43.8	44.8	45.6	45.3	45.0	43.9	43.2	44.1	42.9	42.7	42.3	41.9	-15.8%
Light Trucks	15.1	19.2	25.3	26.2	27.5	28.2	29.1	29.5	29.2	30.7	30.5	31.3	32.5	34.2	127.1%
Motorcycles	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.4	158.0%
School Buses	1.0	1.1	1.0	0.8	0.8	0.9	0.8	0.8	0.9	0.9	1.0	0.9	0.9	1.0	-1.6%
Urban Transit	2.0	1.8	1.9	1.8	2.0	2.0	2.1	2.1	1.9	2.1	2.2	2.1	2.3	2.3	17.3%
Inter-city Buses	0.7	0.6	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.5	0.3	0.3	0.4	-47.1%
Air	12.7	12.7	15.9	14.5	14.6	14.4	16.1	17.0	16.9	17.2	16.3	14.9	15.4	14.9	16.7%
Rail	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	-31.8%
GHG Intensity (tonnes/TJ)^{b,c}	69.3	70.3	69.7	69.8	69.8	69.8	69.4	69.1	68.7	68.5	68.2	67.9	67.7	67.4	-2.8%
GHG Emissions Related to Electricity (Mt of CO₂e)^{a,c}	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	-35.1%

Sources:

- a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2011*, Ottawa, 2013.
- b) Natural Resources Canada, *Transportation End-Use Model*, Ottawa, 2013.
- c) Environment Canada, *National Inventory Report 1990–2011: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2013.

5 Transportation Sector – Passenger

Passenger Road Transportation Secondary Energy Use and GHG Emissions by Energy Source

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Passenger Road Transportation Energy Use (PJ)^a	994.3	1,007.9	1,037.9	1,059.0	1,093.1	1,101.0	1,114.1	1,112.0	1,101.3	1,145.7	1,134.7	1,148.2	1,166.9	1,194.6	20.1%
Energy Use by Energy Source (PJ)^a															
Electricity	3.1	3.0	3.1	3.1	3.4	3.4	3.5	3.5	3.5	2.5	2.3	2.4	2.5	2.6	-15.5%
Natural Gas	1.6	2.3	2.3	1.9	1.7	1.7	1.7	1.8	1.8	1.8	1.7	1.8	1.8	1.4	-10.5%
Motor Gasoline	917.9	935.4	971.8	995.6	1,029.1	1,037.4	1,052.1	1,044.5	1,037.7	1,060.5	1,044.0	1,058.3	1,067.5	1,080.3	17.7%
Diesel Fuel Oil	52.5	50.7	52.7	49.8	52.5	52.2	50.0	50.6	48.0	51.5	55.0	52.0	55.1	56.7	8.0%
Ethanol	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	4.9	4.9	23.5	25.4	28.1	34.3	47.4	–
Biodiesel Fuel	0.0	0.0	0.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	–
Propane	19.2	16.6	8.0	8.6	6.5	6.3	6.9	6.7	5.5	5.9	6.3	5.6	5.7	6.1	-67.9%
Activity															
Passenger-kilometres (millions) ^a	428,202	473,920	499,378	510,769	532,437	540,776	548,070	551,637	555,849	572,229	571,589	585,218	598,912	616,484	44.0%
Energy Intensity (MJ/Pkm)^a	2.32	2.13	2.08	2.07	2.05	2.04	2.03	2.02	1.98	2.00	1.99	1.96	1.95	1.94	-16.6%
Passenger Road Transportation GHG Emissions (Mt of CO₂e)^{a,b}	68.7	70.9	72.6	74.2	76.6	77.1	77.6	76.9	75.8	78.4	77.3	77.8	78.7	80.2	16.8%
GHG Emissions by Energy Source (Mt of CO₂e)^{a,b}															
Electricity	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	-35.1%
Natural Gas	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-12.3%
Motor Gasoline	63.6	66.1	68.1	69.9	72.2	72.7	73.3	72.3	71.4	72.6	71.1	71.7	72.1	72.6	14.1%
Diesel Fuel Oil	3.7	3.5	3.7	3.5	3.7	3.7	3.5	3.6	3.4	3.7	3.9	3.7	3.9	4.0	9.7%
Ethanol	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.3	0.3	1.6	1.7	1.8	2.2	3.1	–
Biodiesel Fuel	0.0	0.0	0.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	–
Propane	1.1	1.0	0.5	0.5	0.4	0.4	0.4	0.4	0.3	0.4	0.4	0.3	0.3	0.4	-67.7%
GHG Intensity (tonne/TJ)^{a,b}	69.1	70.3	70.0	70.1	70.0	70.0	69.6	69.2	68.8	68.4	68.1	67.8	67.5	67.2	-2.7%

Sources:

- a) Natural Resources Canada, *Transportation End-Use Model*, Ottawa, 2013.
b) Environment Canada, *National Inventory Report 1990–2011: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2013.

Transportation Sector – Passenger

Passenger Transportation Explanatory Variables

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Light-duty Vehicles															
Sales (thousands)															
Cars ^{a,d}	872	641	848	865	919	866	826	846	866	881	914	760	723	717	-17.7%
Light Trucks ^{a,d}	303	349	499	499	546	526	513	525	549	597	576	530	627	644	112.8%
Motorcycles	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	–
Stock (thousands)															
Cars ^{a,f}	11,100	10,936	10,684	10,966	11,010	11,046	11,190	11,124	11,263	11,607	12,000	12,098	12,061	11,914	7.3%
Light Trucks ^{a,f}	2,751	3,360	4,498	4,718	4,856	5,036	5,274	5,440	5,507	5,853	6,223	6,480	6,746	6,979	153.7%
Motorcycles ^{a,c}	306	275	311	318	350	373	409	444	485	522	567	595	637	676	121.0%
Average Distance Travelled per Year (km)															
Cars ^a	17,990	18,706	18,306	18,314	18,786	18,785	18,655	18,535	18,193	18,275	17,410	17,418	17,473	17,729	-1.5%
Light Trucks ^a	17,588	18,766	18,521	18,454	18,863	18,781	18,704	18,587	18,417	18,425	17,494	17,510	17,733	18,234	3.7%
Motorcycles ^a	5,020	4,906	5,044	5,158	5,346	5,374	5,375	5,341	5,217	5,274	4,998	5,020	5,054	5,181	3.2%
On-road Average Fuel Consumption (L/100 km)															
Cars ^{a,g}															
Motor Gasoline ¹	10.4	9.6	9.2	9.1	9.0	8.9	8.9	8.8	8.8	8.8	8.7	8.7	8.6	8.6	-17.3%
Diesel Fuel Oil ²	8.1	7.6	6.9	6.8	6.7	6.6	6.5	6.4	6.3	6.3	6.3	6.4	6.4	6.5	-19.4%
Light Trucks ^{a,g}															
Motor Gasoline ¹	13.0	12.4	12.3	12.2	12.1	12.1	12.0	12.0	11.9	11.9	11.9	11.8	11.7	11.7	-10.1%
Diesel Fuel Oil ²	9.8	11.0	11.9	12.0	12.1	12.3	12.4	12.3	12.0	11.8	11.4	10.8	10.1	10.0	1.4%
Motorcycles ^{a,e}															
Motor Gasoline ¹	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.3	4.3	4.2	4.2	5.4	5.4	5.4	14.9%

1) includes ethanol

2) includes biodiesel

3) These series are representative of vehicles produced in the model year, not for vehicles sold in that calendar year.

4) Growth rate shown in the final column entitled Total Growth 1990–2011 is for 1990 to 2010.

Sources:

a) Natural Resources Canada, *Transportation End-Use Model*, Ottawa, 2013.

b) Statistics Canada, *Passenger Bus and Urban Transit Statistics, 1990–2000*, Ottawa, 2002 (Cat. No. 53-215-X); and *The Canadian Passenger Bus and Urban Transit Industries Survey, 2001–2010*, Ottawa, 2012 (Cat. No. 50-002-X); and Tables 408-0008 and 408-0010, 2013 (CANSIM).

c) Statistics Canada, *Road Motor Vehicle Registrations*, Ottawa, 1999 (Cat. No. 53-219-X); and Statistics Canada, *Motor Vehicle Registrations, 2000–2010*, Table 405-0004, Ottawa, 2013 (CANSIM).

d) R.L. Polk & Co., *New Vehicle Registrations, 1990–2011*, Southfield (Detroit), Michigan, 2012.

e) United States Department of Transportation, *National Transportation Statistics*, Table VM-1, 2011.

f) DesRosiers Automotive Consultants, *Canadian Vehicle in Operation Census, 1990–2011*, Richmond Hill (Toronto), 2012.

g) Transport Canada, *Vehicle Fuel Economy Information System, 1979–2009*, Ottawa, 2010.

table continued on next page ➔

Transportation Sector – Passenger

5

Passenger Transportation Explanatory Variables (continued)

continued from previous table

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Lab-tested New Vehicle Fuel Consumption³ (L/100 km)^a															
CAFC Standard Cars ⁴	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	-	—
CAFC Average Car Fleet ⁴	8.2	7.9	7.8	7.8	7.7	7.6	7.5	7.4	7.5	7.2	7.1	6.8	6.8	-	-17.1%
CAFC Standard Light Trucks ⁴	11.8	11.4	11.4	11.4	11.4	11.4	11.4	11.2	10.9	10.6	10.5	10.2	10	-	-15.3%
CAFC Average Light Truck Fleet ⁴	11.4	11.5	11.1	11.0	11.0	10.8	10.9	10.6	10.4	10.1	9.5	9.1	8.5	-	-25.4%
Buses															
Stock (thousands)^{a,c}															
School Buses	44.7	48.8	47.0	43.0	46.3	47.5	46.9	46.9	49.2	48.0	48.4	49.5	50.7	50.3	12.6%
Urban Transit	25.7	21.7	23.4	23.2	24.8	24.1	23.5	24.0	23.0	25.9	27.1	28.1	28.6	30.6	18.9%
Inter-city Buses	6.6	6.8	6.9	7.8	8.3	8.3	7.4	8.0	8.2	8.7	8.6	8.0	8.2	8.3	25.7%
Average Distance Travelled per Year (km)^{a,b}															
School Buses	21,926	25,128	25,414	23,233	22,767	24,802	22,627	23,790	28,045	23,699	24,840	27,243	28,259	28,530	30.1%
Urban Transit	56,037	55,451	54,175	56,440	57,932	59,519	63,733	65,479	71,087	53,630	54,188	54,605	56,964	58,294	4.0%
Inter-city Buses	85,632	83,518	74,465	60,723	65,382	58,466	60,075	60,789	50,226	55,795	54,347	50,353	44,647	50,488	-41.0%

1) includes ethanol

2) includes biodiesel

3) These series are representative of vehicles produced in the model year, not for vehicles sold in that calendar year.

4) The growth rate shown in the final column entitled Total Growth 1990–2011 is for 1990 to 2010.

Sources:

a) Natural Resources Canada, *Transportation End-Use Model*, Ottawa, 2013.

b) Statistics Canada, *Passenger Bus and Urban Transit Statistics, 1990–2000*, Ottawa, 2002 (Cat. No. 53-215-X); and *The Canadian Passenger Bus and Urban Transit Industries Survey, 2001–2010*, Ottawa, 2012 (Cat. No. 50-002-X); and Tables 408-0008 and 408-0010, 2013 (CANSIM).

c) Statistics Canada, *Road Motor Vehicle Registrations*, Ottawa, 1999 (Cat. No. 53-219-X); and Statistics Canada, *Motor Vehicle Registrations, 2000–2010*, Table 405-0004, Ottawa, 2013 (CANSIM).

d) R.L. Polk & Co., *New Vehicle Registrations, 1990–2011*, Southfield (Detroit), Michigan, 2012.

e) United States Department of Transportation, *National Transportation Statistics*, Table VM-1, 2011.

f) DesRosiers Automotive Consultants, *Canadian Vehicle in Operation Census, 1990–2011*, Richmond Hill (Toronto), 2012.

g) Transport Canada, *Vehicle Fuel Economy Information System, 1979–2009*, Ottawa, 2010.

Transportation Sector – Freight

Freight Transportation Secondary Energy Use by Energy Source and Transportation Mode

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Freight Transportation Energy Use (PJ)^a	645.6	758.5	912.1	890.9	880.7	940.6	988.4	1,012.9	1,005.0	1,052.8	1,064.0	1,034.7	1,109.0	1,128.0	74.7%
Energy Use by Energy Source (PJ)^a															
Natural Gas	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	220.1%
Motor Gasoline	149.1	181.7	229.8	210.4	210.4	220.4	232.9	225.5	232.2	233.0	231.1	236.6	244.7	257.2	72.5%
Diesel Fuel Oil	413.6	496.6	604.7	594.8	591.2	632.0	663.6	691.9	689.7	717.9	731.1	694.8	759.5	785.7	90.0%
Ethanol	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1.1	1.2	5.2	5.3	6.1	7.8	11.1	–
Biodiesel Fuel	0.0	0.0	0.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	–
Light Fuel Oil and Kerosene	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	–
Heavy Fuel Oil	60.1	56.6	61.4	70.3	65.7	75.7	78.8	83.0	68.7	84.4	84.9	87.0	86.1	63.1	4.9%
Aviation Gasoline	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-63.0%
Aviation Turbo Fuel	6.4	7.2	8.1	6.8	7.3	6.8	7.2	7.8	7.1	5.8	4.9	4.4	5.2	4.8	-25.7%
Propane	16.2	16.2	8.1	8.6	5.9	5.6	5.6	3.6	5.9	6.2	6.5	5.7	5.5	5.9	-63.6%
Energy Use by Transportation Mode (PJ)^a															
Light Trucks	99.7	120.0	146.7	153.1	157.6	160.8	166.4	167.6	169.5	180.1	180.9	185.6	193.3	205.7	106.3%
Medium Trucks	134.8	162.0	175.1	155.8	145.7	161.5	177.1	154.7	165.3	157.6	153.6	150.6	157.4	161.0	19.4%
Heavy Trucks	212.3	288.8	392.4	377.7	384.6	424.4	436.0	473.0	464.4	491.9	505.3	513.5	549.6	570.4	168.7%
Air	6.5	7.3	8.1	6.9	7.3	6.8	7.2	7.8	7.2	5.8	4.9	4.4	5.3	4.8	-26.1%
Rail	85.7	78.6	81.5	80.7	73.5	74.4	76.6	81.7	85.6	91.8	97.0	62.5	81.2	83.9	-2.1%
Marine	106.5	101.7	108.2	116.7	112.0	112.7	125.1	128.1	113.0	125.7	122.2	118.0	122.3	102.2	-4.1%
Activity															
Total Tonne-kilometres (millions) ^{a,b,c,d,e}	543,300	614,653	739,865	735,668	766,494	789,019	850,671	888,999	885,711	884,653	855,214	767,247	829,562	826,439	52.1%
Tonne-kilometres by Transportation Mode (millions)															
Light Trucks ^a	10,667	13,963	17,537	18,804	19,462	19,978	21,160	21,452	21,792	23,713	23,991	24,893	26,174	27,991	162.4%
Medium Trucks ^a	14,862	19,278	22,271	19,717	18,599	20,886	23,153	20,475	24,470	23,635	22,671	20,896	23,372	24,298	63.5%
Heavy Trucks ^b	77,800	110,000	164,720	170,569	177,012	184,744	224,910	233,583	225,105	224,839	223,802	208,531	221,766	224,325	188.3%
Air ^c	1,754	2,045	2,327	2,172	2,151	1,855	2,013	2,236	2,227	1,997	1,809	1,628	2,085	2,059	17.4%
Rail ^d	248,348	280,477	322,511	323,211	317,807	318,263	338,898	352,140	352,477	358,832	340,092	299,646	341,325	352,091	41.8%
Marine ^e	189,869	188,890	210,499	201,195	231,463	243,293	240,537	259,113	259,640	251,637	242,848	211,653	214,839	195,675	3.1%
Energy Intensity (MJ/Tkm)^a	1.19	1.23	1.23	1.21	1.15	1.19	1.16	1.14	1.13	1.19	1.24	1.35	1.34	1.36	14.9%

Sources:

- a) Natural Resources Canada, *Transportation End-Use Model*, Ottawa, 2013.
b) Statistics Canada, *Trucking in Canada, 1990–2005*, Ottawa, 2007 (Cat. No. 53-222-X); and Table 403-0004, 2013 (CANSIM).

- c) Statistics Canada, *Canadian Civil Aviation, 1990–2000*, Ottawa, 2003 (Cat. No. 51-206-X); and Statistics Canada, *Aviation: Service Bulletin* (Cat. No. 51-004-X), Ottawa: Vol. 45, No. 3, 2013.

- d) Statistics Canada, *Rail in Canada, 1990–2009*, Ottawa, 2011 (Cat. No. 52-216-X); and Tables 404-0012 and 404-0016, Ottawa, 2013 (CANSIM).

- e) Transport Canada, Surface and Marine Statistics and Forecasts Division, Ottawa, 2013.

Transportation Sector – Freight

Freight Transportation GHG Emissions by Energy Source and Transportation Mode

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Freight Transportation GHG Emissions (Mt of CO₂e)^{a,b}	46.0	53.9	65.1	63.8	63.1	67.3	70.6	72.4	71.7	75.1	75.9	73.4	78.8	79.9	73.7%
GHG Emissions by Energy Source (Mt of CO₂e)^{a,b}															
Natural Gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	213.6%
Motor Gasoline	10.2	12.5	15.8	14.6	14.6	15.3	16.1	15.5	15.9	15.9	15.7	16.0	16.5	17.3	69.5%
Diesel Fuel Oil	29.9	35.6	43.7	43.0	42.7	45.5	47.9	49.9	49.8	51.8	52.8	49.9	54.7	56.6	89.5%
Ethanol	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.1	0.1	0.3	0.4	0.4	0.5	0.7	–
Biodiesel Fuel	0.0	0.0	0.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	–
Light Fuel Oil and Kerosene	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	–
Heavy Fuel Oil	4.5	4.3	4.6	5.2	4.9	5.6	5.9	6.2	5.1	6.3	6.3	6.5	6.4	4.7	3.0%
Aviation Gasoline	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-63.0%
Aviation Turbo Fuel	0.5	0.5	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.3	0.3	0.4	0.3	-27.8%
Propane	1.0	1.0	0.5	0.5	0.4	0.3	0.3	0.2	0.4	0.4	0.4	0.3	0.3	0.4	-63.2%
GHG Emissions by Transportation Mode (Mt of CO₂e)^{a,b}															
Light Trucks	6.8	8.3	10.3	10.7	11.0	11.3	11.6	11.6	11.6	12.3	12.3	12.5	13.0	13.8	102.7%
Medium Trucks	9.2	11.0	12.0	10.7	10.1	11.2	12.2	10.7	11.4	10.9	10.6	10.4	10.9	11.1	21.0%
Heavy Trucks	14.8	20.1	27.7	26.7	27.2	30.0	30.8	33.5	32.8	34.8	35.8	36.3	38.9	40.4	173.4%
Air	0.5	0.5	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.3	0.3	0.4	0.3	-28.2%
Rail	6.7	6.1	6.4	6.3	5.8	5.8	6.0	6.4	6.7	7.2	7.6	4.9	6.4	6.6	-1.2%
Marine	8.2	7.8	8.2	8.9	8.5	8.5	9.5	9.7	8.6	9.5	9.2	8.9	9.2	7.8	-4.9%
GHG Intensity (tonne/TJ)^{a,b}	71.3	71.0	71.4	71.6	71.6	71.5	71.5	71.5	71.4	71.3	71.3	70.9	71.0	70.9	-0.6%

Sources:

a) Natural Resources Canada, *Transportation End-Use Model*, Ottawa, 2013.

b) Environment Canada, *National Inventory Report 1990–2011: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2013.

Transportation Sector – Freight

Freight Road Transportation Secondary Energy Use and GHG Emissions by Energy Source

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Freight Road Transportation Energy Use (PJ)^a	446.8	570.9	714.3	686.6	687.9	746.7	779.5	795.3	799.2	829.5	839.9	849.8	900.3	937.1	109.7%
Energy Use by Energy Source (PJ)^a															
Natural Gas	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	220.1%
Motor Gasoline	149.1	181.7	229.8	210.4	210.4	220.4	232.9	225.5	232.2	233.0	231.1	236.6	244.7	257.2	72.5%
Diesel Fuel Oil	281.5	372.9	476.4	467.7	471.5	520.6	540.8	565.2	559.8	584.9	596.8	601.3	642.2	662.7	135.4%
Ethanol	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1.1	1.2	5.2	5.3	6.1	7.8	11.1	–
Biodiesel Fuel	0.0	0.0	0.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	–
Propane	16.2	16.2	8.1	8.6	5.9	5.6	5.6	3.6	5.9	6.2	6.5	5.7	5.5	5.9	-63.6%
Activity															
Tonne-kilometres (millions) ^{b,c}	103,329	143,241	204,528	209,090	215,073	225,608	269,223	275,510	271,367	272,187	270,464	254,320	271,312	276,614	167.7%
Energy Intensity (MJ/Tkm)^a	4.32	3.99	3.49	3.28	3.20	3.31	2.90	2.89	2.95	3.05	3.11	3.34	3.32	3.39	-21.7%
Freight Road Transportation GHG Emissions (Mt of CO₂e)^{a,b}	30.8	39.5	49.9	48.1	48.3	52.4	54.7	55.8	55.9	58.0	58.7	59.3	62.8	65.3	112.2%
GHG Emissions by Energy Source (Mt of CO₂e)^{a,b}															
Natural Gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	213.6%
Motor Gasoline	10.2	12.5	15.8	14.6	14.6	15.3	16.1	15.5	15.9	15.9	15.7	16.0	16.5	17.3	69.5%
Diesel Fuel Oil	19.6	25.9	33.6	33.0	33.3	36.8	38.2	40.0	39.6	41.4	42.2	42.5	45.4	46.9	139.5%
Ethanol	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.1	0.1	0.3	0.4	0.4	0.5	0.7	–
Biodiesel Fuel	0.0	0.0	0.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	–
Propane	1.0	1.0	0.5	0.5	0.4	0.3	0.3	0.2	0.4	0.4	0.4	0.3	0.3	0.4	-63.2%
GHG Intensity (tonne/TJ)^{a,b}	68.8	6869.1	69.9	70.1	70.2	70.2	70.1	70.1	70.0	69.9	69.8	69.8	69.7	69.6	1.2%

Sources:

- a) Natural Resources Canada, *Transportation End-Use Model*, Ottawa, 2013.
b) Environment Canada, *National Inventory Report 1990–2011: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2013.
c) Statistics Canada, *Trucking in Canada, 1990–2005*, Ottawa, 2007 (Cat. No. 53-222-X); and Table 403-0004, 2013 (CANSIM).

Transportation Sector – Freight

Freight Transportation Explanatory Variables

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Trucks															
Sales (thousands)															
Light Trucks ^{a,b}	110	122	170	170	185	177	173	176	183	200	195	180	212	218	97.2%
Medium Trucks ^{a,b}	29	34	44	44	44	44	47	50	59	62	52	34	42	43	49.3%
Heavy Trucks ^{a,b}	16	26	29	22	25	24	30	34	38	29	27	15	19	25	54.5%
Stock (thousands)															
Light Trucks ^{a,c}	1,005	1,176	1,534	1,606	1,648	1,697	1,773	1,826	1,841	1,963	2,104	2,196	2,283	2,361	135.0%
Medium Trucks ^{a,d}	578	615	749	640	667	685	693	703	712	721	729	737	746	755	30.6%
Heavy Trucks ^{a,d}	297	293	301	319	325	332	336	340	344	347	351	354	358	362	21.7%
Average Distance Travelled per Year (km)															
Light Trucks ^a	21,236	22,829	21,574	21,684	21,868	21,797	21,700	21,365	21,523	21,568	20,359	20,245	20,471	21,170	-0.3%
Medium Trucks ^{a,e}	23,366	27,254	24,768	25,480	22,845	24,797	26,938	23,303	27,269	26,021	24,676	22,495	24,857	25,531	9.3%
Heavy Trucks ^{a,e}	72,005	82,161	99,814	90,878	84,755	81,368	90,879	89,422	84,743	92,660	84,573	82,907	83,373	82,552	14.6%
On-road Average Fuel Consumption (L/100 km)															
Light Trucks ^{a,g}															
Motor Gasoline ¹	13.5	12.7	12.6	12.5	12.4	12.3	12.3	12.3	12.2	12.2	12.2	12.0	12.0	12.0	-11.0%
Diesel Fuel Oil ²	10.0	11.1	12.1	12.1	12.3	12.4	12.5	12.5	12.2	12.1	11.7	11.3	10.6	10.5	4.8%
Medium Trucks ^{a,e}															
Motor Gasoline ¹	27.1	26.2	25.6	25.8	25.7	25.5	25.4	25.3	23.0	22.1	23.2	25.4	23.2	23.0	-15.2%
Diesel Fuel Oil ²	27.6	26.7	26.3	26.2	26.2	26.1	26.1	26.0	23.3	23.6	23.3	24.4	23.2	22.8	-17.3%
Heavy Trucks ^{a,e}															
Diesel Fuel Oil ²	42.5	40.0	37.8	37.2	36.5	35.9	35.3	34.7	34.7	34.9	35.4	33.4	33.4	33.0	-22.4%
Lab-tested Light Truck Fuel Consumption³ (L/100 km)^f															
CAFC Standard Light Trucks ⁴	11.8	11.4	11.4	11.4	11.4	11.4	11.4	11.2	10.9	10.6	10.5	10.2	10	n.a.	-15.3%
CAFC Average Light Truck Fleet ⁴	11.4	11.5	11.1	11.0	11.0	10.8	10.9	10.6	10.4	10.1	9.5	9.1	8.5	n.a.	-25.4%

1) includes ethanol

2) includes biodiesel

3) These series are representative of vehicles produced in the model year, not for vehicles sold in that calendar year.

4) The growth rate shown in the final column entitled Total Growth 1990–2011 is for 1990 to 2010.

Sources:

a) Natural Resources Canada, *Transportation End-Use Model*, Ottawa, 2013.

b) R.L. Polk & Co., *New Vehicle Registrations, 1990–2011*, Southfield (Detroit), Michigan, 2012.

c) DesRosiers Automotive Consultants, *Canadian Vehicles in Operation Census, 1990–2011*, Richmond Hill (Toronto), 2012.

d) R.L. Polk & Co., *Truck Industry Profile, 1994–2002*, Southfield (Detroit), Michigan, 2004. Data for 2003 to 2011 estimated by Natural Resources Canada.

e) Statistics Canada, *Canadian Vehicle Survey, 2004–2009*, Ottawa, 2010 (Cat. No. 53-223-X).

f) Transport Canada, *Vehicle Fuel Economy Information System, 1979–2009*, Ottawa, 2010.



Chapter 6 – Electricity Generation Sector

6

The Data Situation

Energy use and production data for the electricity generation sector are reported in Statistics Canada's *Report on Energy Supply and Demand in Canada* (RESO) (Cat. No. 57-003-X). The RESO does not provide energy use data for the electricity generated from wood and other non-specified fuel, hydro and nuclear categories. Electricity production data for these three energy sources are converted to energy use data by using energy content values of 10.500, 3.600 and 11.564 megajoules per kilowatt-hour, respectively.

Gross domestic product data are provided by Informetrica Limited.

Due to rounding, the numbers in the tables may not add up or calculate to their reported totals or growth rates.

Electricity Generation Sector

Electricity Generation Energy Use and Generation by Energy Source

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Total Energy Use (PJ)^{a,b}	3,002.5	3,484.7	3,662.8	3,700.1	3,726.4	3,732.1	3,835.8	3,931.8	3,933.8	4,015.6	3,995.6	3,734.6	3,742.4	3,815.4	27.1%
Energy Use by Energy Source (PJ)^{a,b}															
Natural Gas	80.0	182.1	328.5	350.7	323.0	355.1	347.3	366.5	411.6	425.7	439.8	426.7	509.1	597.6	647.0%
Diesel Fuel Oil, Light Fuel Oil and Kerosene	11.5	8.0	7.8	8.9	7.7	8.4	8.9	9.8	8.1	10.4	7.8	8.2	8.3	8.5	-26.2%
Heavy Fuel Oil	141.4	84.4	114.8	141.2	115.8	141.3	134.8	85.6	58.2	65.4	57.5	53.9	31.3	22.4	-84.1%
Coal	874.5	907.5	1,082.8	1,109.5	1,138.4	1,118.6	1,046.5	1,062.7	1,014.5	1,075.5	1,015.8	849.1	853.6	733.7	-16.1%
Hydro	1,058.3	1,197.7	1,277.3	1,187.6	1,248.9	1,204.4	1,215.4	1,296.1	1,267.0	1,313.6	1,345.8	1,314.4	1,253.2	1,339.5	26.6%
Nuclear	795.2	1,067.4	794.1	836.3	824.0	817.0	985.7	1,004.1	1,068.7	1,019.8	1,047.5	982.8	989.0	1,021.0	28.4%
Wood and Other	37.2	28.2	37.4	45.2	46.6	45.4	44.4	43.7	42.5	46.1	43.5	49.8	56.3	53.6	43.9%
Petroleum Coke, Still Gas, Coke and Coke Oven Gas ¹	4.3	9.4	20.0	20.6	22.1	41.9	52.9	63.3	63.2	59.1	37.9	49.7	41.5	39.2	–
Total Electricity Generated (GWh)^a	467,596	542,739	585,797	569,402	581,068	569,917	580,444	604,370	592,636	614,583	614,926	588,906	579,366	606,659	29.7%
Electricity Generated by Energy Source (GWh)^a															
Natural Gas	9,018	18,577	32,945	38,899	35,688	35,641	37,154	37,436	40,508	42,233	39,070	41,082	47,807	56,122	522.4%
Diesel Fuel Oil, Light Fuel Oil and Kerosene	994	2,411	802	780	723	862	894	932	758	1,031	979	1,071	1,085	1,052	5.8%
Heavy Fuel Oil	13,394	3,451	11,617	14,012	13,535	16,937	16,797	14,608	8,960	10,289	8,332	8,243	5,357	4,566	-65.9%
Coal	76,794	85,192	106,888	102,742	101,754	100,826	91,792	93,992	87,317	96,808	90,987	76,367	77,869	71,367	-7.1%
Hydro	293,985	332,705	354,812	329,881	346,917	334,560	337,606	360,026	351,936	364,877	373,822	365,108	348,110	372,077	26.6%
Nuclear	68,761	92,306	68,674	72,320	71,252	70,652	85,240	86,830	92,419	88,191	90,585	84,992	85,527	88,291	28.4%
Wood and Other	3,546	2,687	3,563	4,306	4,434	4,324	4,232	4,164	4,047	4,392	4,147	4,747	5,361	5,101	43.9%
Petroleum Coke, Still Gas, Coke and Coke Oven Gas ¹	1,105	5,409	6,496	6,462	6,765	6,114	6,730	6,383	6,691	6,762	7,004	7,295	8,251	8,084	631.4%
Activity															
GDP (million \$2002) ^c	21,356	23,498	23,301	22,238	23,620	23,975	24,067	25,593	25,145	26,171	27,364	26,616	26,946	28,029	31.2%
Production (GWh) ^a	467,596	542,739	585,797	569,402	581,068	569,917	580,444	604,370	592,636	614,583	614,926	588,906	579,366	606,659	29.7%
Energy Intensity (GJ/\$2002)^{a,b,c}	0.141	0.148	0.157	0.166	0.158	0.156	0.159	0.154	0.156	0.153	0.146	0.140	0.139	0.136	-3.2%
Energy Intensity (GJ/GWh)^{a,b}	6,421	6,421	6,253	6,498	6,413	6,549	6,608	6,506	6,638	6,534	6,498	6,342	6,459	6,289	-2.1%

1) includes manufactured gases, other petroleum products, other fuels and station service

Sources:

a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2011*, Ottawa, 2013.

b) Natural Resources Canada, *Electricity Energy Use Model*, Ottawa, 2013.

c) Informetrica Limited, *The Informetrica Model and Database*, Ottawa, 2012.

Electricity Generation Sector

Electricity Generation GHG Emissions by Energy Source

	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total Growth 1990–2011
Total GHG Emissions (Mt of CO₂e)^{a,b,c}	95.3	100.1	124.8	130.4	130.2	133.5	127.1	126.8	122.6	129.2	121.8	107.1	109.2	101.8	6.8%
GHG Emissions by Energy Source (Mt of CO₂e)^{a,b,c}															
Natural Gas	4.1	9.2	16.6	17.7	16.3	17.8	17.4	18.4	20.7	21.4	21.9	21.3	25.3	29.7	624.7%
Diesel Fuel Oil, Light Fuel Oil and Kerosene	0.8	0.6	0.6	0.7	0.6	0.6	0.6	0.7	0.6	0.8	0.6	0.6	0.6	0.6	-25.2%
Heavy Fuel Oil	10.7	6.4	8.5	10.4	8.6	10.5	10.0	6.3	4.3	4.8	4.3	4.0	2.3	1.7	-84.4%
Coal	79.4	83.1	97.4	99.9	102.9	101.1	94.6	96.1	91.8	97.2	91.9	77.1	77.5	66.6	-16.1%
Hydro	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	–
Nuclear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	–
Wood and Other	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.1	0.1	–
Petroleum Coke, Still Gas, Coke and Coke Oven Gas ¹	0.4	0.8	1.6	1.7	1.8	3.5	4.4	5.2	5.2	4.9	3.1	4.1	3.4	3.2	–
GHG Intensity² (tonnes/TJ [electricity generated])^{a,b,c}	56.6	51.2	59.2	63.6	62.2	65.0	60.8	58.3	57.5	58.4	55.0	50.5	52.3	46.6	-17.7%
GHG Intensity³ (tonnes/TJ [energy used])^{a,b,c}	31.8	28.7	34.1	35.2	34.9	35.8	33.1	32.2	31.2	32.2	30.5	28.7	29.2	26.7	-16.0%

1) includes manufactured gases, other petroleum products, other fuels and station service

2) emissions per unit of electricity generated. This GHG emissions factor is applied to the end-use electricity consumption for the sectoral analysis including electricity-related emissions.

3) emissions per unit of energy used to produce electricity. The difference between the two emissions factors represents electricity conversion losses (energy used to produce electricity versus the amount of electricity generated).

Sources:

a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2011*, Ottawa, 2013.

b) Natural Resources Canada, *Electricity Energy Use Model*, Ottawa, 2013.

c) Environment Canada, *National Inventory Report 1990–2011: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2013.

Adjustment of Energy Use for Specific Fuel Types in This Handbook With Data in Statistics Canada's *Report on Energy Supply and Demand in Canada (RESD) – 2011* (petajoules)

Notes on sources of energy-use data for five end-use sectors:

Residential: Base data taken from the RESD, (Table 2-1) Residential plus residential wood use (estimated from Natural Resources Canada's Residential End-use Model)

Commercial/Institutional: Base data taken from the RESD, (Table 2-1) Public administration and Commercial and other institutional less (Table 4-1) Public administration and Commercial and other institutional motor gasoline, diesel, aviation gasoline and aviation turbo fuel columns

Industrial: Base data taken from the RESD, (Table 2-1) Total industrial plus (Table 10) Solid wood waste and spent pulping liquor less (Table 8) Wood waste and spent pulping liquor used for electricity generation multiplied by a conversion factor, plus (Table 4-1) Producer consumption for refining and mining industries of still gas, diesel, heavy fuel oil, light fuel oil, kerosene, petroleum coke and refinery LPG columns plus (Canadian Industrial Energy End-Use Data and Analysis Centre) Waste fuels from the cement industry

Transportation: Base data taken from the RESD, (Table 2-1) Total transportation less Pipelines plus (Table 4-1) Public administration and Commercial and other institutional motor gasoline, diesel, aviation gasoline and aviation turbo fuel columns

Agriculture: Base data taken from the RESD, (Table 2-1) representing the sum of Agriculture energy source fuels

A1 – Reallocation of RESD Data

Adjustment of Energy Use for Specific Fuel Types in This Handbook With Data in Statistics Canada's *Report on Energy Supply and Demand in Canada (RESD)* – 2011 (petajoules)

	RESD data, Total Primary and Secondary Energy Use, Before Reallocation	Motor Gasoline – Industrial Sector	Aviation Fuels – Industrial Sector	Aviation Fuels – Agriculture	LFO – Canadian Airlines, Railways, Marine, Pipeline, and Road Transport and Urban Transit	LFO – Retail Pump Sales	Other Adjustments ³	After Reallocation
Sector								
Residential	1,352							1,352
Commercial/Institutional	1,211				0		(0)	1,211
Industrial	2,440	(31)	(2)			3	(0)	2,410
Transportation	2,634	31	2	0	(0)	(3)		2,664
Agriculture	272			(0)				272
Final Demand	7,909	0	0	0	0	0	(0)	7,909
Non-energy	1,079							1,079
Producer Consumption	1,250							1,250
Net Supply	10,238	0	0	0	0	0	(0)	10,238
Fuel Conversion								
Electricity, Steam and Coal/Coke Input Fuels ¹	4,006							4,006
Electricity, Steam and Coal/Coke Production ²	(2,351)							(2,351)
Total Primary	11,892	0	0	0	0	0	(0)	11,892

1) "Electricity, Steam and Coal/Coke Input Fuels" represents the amount of input energy from source fuels (coal, uranium, etc.) that is transformed to electricity, steam, coke and coke gas.

2) "Electricity, Steam and Coal/Coke Production" represents the amount of electricity, steam, coke and coke gas produced. The difference between these items is referred to as conversion losses.

3) Discrepancy between the data for Canada data and the sum of the provinces.

Reconciliation of Data on Energy Use Found in This Handbook With Data in Statistics Canada's *Report on Energy Supply and Demand in Canada (RESO) – 2011* (petajoules)

Notes on sources of energy-use data for five end-use sectors:

Residential: Base data taken from the RESO, (Table 2-1) Residential plus residential wood use (estimated from Natural Resources Canada's Residential End-use Model)

Commercial/Institutional: Base data taken from the RESO, (Table 2-1) Public administration and Commercial and other institutional less (Table 4-1) Public administration and Commercial and other institutional motor gasoline, diesel, aviation gasoline and aviation turbo fuel columns

Industrial: Base data taken from the RESO, (Table 2-1) Total industrial plus (Table 10) Solid wood waste and spent pulping liquor less (Table 8) Wood waste and spent pulping liquor used for electricity generation multiplied by a conversion factor, plus (Table 4-1) Producer consumption for refining and mining industries of still gas, diesel, heavy fuel oil, light fuel oil, kerosene, petroleum coke and refinery LPG columns plus (Canadian Industrial Energy End-Use Data and Analysis Centre) Waste fuels from the cement industry

Transportation: Base data taken from the RESO, (Table 2-1) Total transportation less Pipelines plus (Table 4-1) Public administration and Commercial and other institutional motor gasoline, diesel, aviation gasoline and aviation turbo fuel columns

Agriculture: Base data taken from the RESO, (Table 2-1) representing the sum of Agriculture energy source fuels

A2 – Reconciliation of Data

Reconciliation of Data on Energy Use Found in This Handbook With Data in Statistics Canada's *Report on Energy Supply and Demand in Canada* (RES-D) – 2011 (petajoules)

	RES-D Data After Reallocation	Residential Wood	Commercial & Public Admin. Diesel	Commercial & Public Admin. Aviation Fuels	Commercial & Public Admin. Motor Gasoline	Pipeline Fuels	Wood Waste & Pulping Liquor	Waste Fuels Used in Cement Industry	Re-allocation of Producer Consumption by Refineries and Mining Industries	Data Presented in This Handbook
Sector										
Residential	1,352	104								1,456
Commercial/Institutional	1,211		(63)	(20)	(26)					1,102
Industrial	2,410						416	4	498	3,328
Transportation	2,664		63	20	26	(123)				2,650
Agriculture	272									272
Final Demand	7,909	104	0	0	0	(123)	416	4	498	8,808
Non-energy	1,079									1,079
Producer Consumption	1,250					123			(498)	875
Net Supply	10,238	104	0	0	0	0	416	4	0	10,762
Fuel Conversion										
Electricity, Steam and Coal/Coke Input Fuels ¹	4,006									4,006
Electricity, Steam and Coal/Coke Production ²	(2,351)									(2,351)
Total Primary	11,892	104	0	0	0	0	416	4	0	12,416

1) "Electricity, Steam and Coal/Coke Input Fuels" represents the amount of input energy from source fuels (coal, uranium, etc.) that is transformed to electricity, steam, coke and coke gas.

2) "Electricity, Steam and Coal/Coke Production" represents the amount of electricity, steam, coke and coke gas produced. The difference between these items is referred to as conversion losses.

Reconciliation of Definitions for Estimated Greenhouse Gas Emissions Found in This Handbook With Environment Canada's *National Inventory Report 1990–2011*¹

Introduction

In this handbook, *Energy Use Data Handbook 1990 to 2011* (EUDH), the data on greenhouse gas (GHG) emissions are estimated using emissions factors developed by Environment Canada (EC). The emissions estimates provided here mirror the sectoral definitions used to calculate the estimates presented in EC's *Canada's National Inventory Report 1990–2011* (NIR-2011). Both Natural Resources Canada (NRCan) and EC use the energy demand data from Statistics Canada's *Report on Energy Supply and Demand in Canada* as a base.

However, the two organizations use different sectoral mappings. EC prepares its emissions inventory according to the specifications of the Intergovernmental Panel on Climate Change, while NRCan has developed mapping that is more suited to energy end-use analysis.

The objective of this appendix is to help readers understand the similarities and differences between EUDH and NIR2011 emissions estimates for the five sectors covered in this handbook.

Residential Sector

The EUDH and NIR-2011 differ in their definitions of residential emissions:

- EUDH residential emissions include end-use, electricity-related emissions, which are reported under power generation in NIR-2011.
- Wood energy use differs (EC's estimate is larger than NRCan's). Hence, the GHG emissions related to wood energy use presented here are lower than those in NIR-2011.

Commercial/Institutional Sector

There is only one difference between EUDH and NIR-2011 definitions of commercial/institutional emissions:

- EUDH commercial/institutional emissions include end-use, electricity-related emissions, which NIR-2011 includes under power generation.

¹) Canada's official GHG inventory is available on the Environment Canada Web site at www.ec.gc.ca/ges-ghg/default.asp?lang=En&n=83A34A7A-1.

Reconciliation of Definitions

Industrial Sector

There are many differences between EUDH and NIR-2011 definitions in the industrial sector:

- NIR-2011 reallocates industrial diesel fuel use from the industrial sector to the transportation sector.
- This handbook reallocates producers' consumption of petroleum products from the producers' consumption category to the petroleum refining and upstream mining industries. NIR-2011 reports this as consumption of fossil fuels.
- NIR-2011 reallocates industrial coke use from energy use in the industrial sector to non-energy use in industrial processes.
- EUDH industrial emissions include end-use, electricity-related emissions. NIR-2011 reports them under power generation.
- NIR-2011 includes producers' consumption of non-fossil fuels in the fossil fuel categories. The EUDH does not report this consumption.
- NIR-2011 also reallocates estimates of emissions from upstream oil and gas flaring to fugitive emissions from the fossil fuel sector.

Transportation Sector

The EUDH and NIR-2011 differ in their definitions of transportation emissions:

- NIR-2011 reallocates industrial and agriculture diesel and agriculture motor gasoline to the transportation sector.
- NIR-2011 includes pipeline-related emissions in the transportation sector.
- NIR-2011 excludes emissions resulting from the use of energy in the foreign aviation and marine subsectors.
- EUDH transportation emissions include end-use, electricity-related emissions, which are reported under power generation in NIR-2011.

Electricity Generation Sector

There is only one difference between the EUDH and NIR-2011 for the electricity generation sector:

- NIR-2011 reports emissions from electricity and steam generation at the aggregate level, while the EUDH reports emissions for electricity generation only. Note that in its Annex 9 "Electricity Intensity Tables," NIR-2011 reports detailed emissions from electricity generation that are similar to those found in this handbook.

Activity: Term used to characterize major drivers of energy use in a sector (e.g. floor space area in the commercial/institutional sector).

AECO-C Hub: A hub is a market centre where several pipelines interconnect and where many buyers and sellers trade gas, thereby creating a liquid pricing point. The AECO-C hub is the main pricing point for Alberta natural gas and represents the major pricing point for Canadian gas. Prices are determined via the spot market, which includes all transactions for sales of 30 days or less, but it typically refers to a 30-day sale.

Agriculture: The agriculture sector includes all types of farms, including livestock, field crops, grain and oilseed farms, as well as activities related to hunting and trapping. Energy used in this sector is for farm production and includes energy use by establishments engaged in agricultural activities and in providing services to agriculture. Agriculture energy use is included in total secondary energy use for Canada.

Apartment: This type of dwelling includes dwelling units in apartment blocks or apartment hotels; flats in duplexes or triplexes (i.e. where the division between dwelling units is horizontal); suites in structurally converted houses; living quarters located above or in the rear of stores, restaurants, garages or other business premises; caretakers' quarters in schools, churches, warehouses, etc.; and private quarters for employees in hospitals or other types of institutions.

Appliance: Energy-consuming equipment used in the home for purposes other than air conditioning, centralized water heating and lighting. Includes cooking appliances (gas stoves and ovens, electric stoves and ovens, microwave ovens, and propane or gas grills); cooling appliances (evaporative coolers, attic fans, window or ceiling fans, and portable or table fans); and refrigerators, freezers, clothes washers and dishwashers. Other appliances include small items such as televisions, video cassette recorders, digital video disc players, radios, computers and toasters.

Auxiliary Equipment: With the exception of auxiliary motors (see Auxiliary Motors), “auxiliary equipment” includes stand-alone equipment powered directly from an electrical outlet such as computers, photocopiers, refrigerators and desktop lamps. It also includes equipment that can be powered by natural gas, propane or other fuels, such as clothes dryers and cooking appliances.

Auxiliary Motors: Refers to devices used to transform electric power into mechanical energy in order to perform an operation, such as pumps, ventilators, compressors and conveyors.

Biomass: Includes wood waste and pulping liquor. Wood waste is a fuel consisting of bark, shavings, sawdust and low-grade lumber and lumber rejects from the operation of pulp mills, sawmills and plywood mills. Pulping liquor is a substance primarily made up of lignin and other wood constituents and chemicals that are by-products of the manufacture of chemical pulp.

Capacity Utilization: The rates of capacity use are measures of the intensity with which industries use their production capacity. It is the ratio of an industry's actual output to its estimated potential output.

Carbon Dioxide (CO₂): A compound of carbon and oxygen formed whenever carbon is burned. Carbon dioxide (CO₂) is a colourless gas that absorbs infrared radiation, mostly at wavelengths between 12 and 18 microns. It behaves as a one-way filter, allowing incoming, visible light to pass through in one direction, while preventing outgoing infrared radiation from passing in the opposite direction. The one-way filtering effect of CO₂ causes an excess of the infrared radiation to be trapped in the atmosphere; thus it acts as a “greenhouse” and has the potential to increase the surface temperature of the planet (see Greenhouse Gas).

Company Average Fuel Consumption (CAFC): The Government of Canada encourages improvements in the fuel efficiency of the Canadian new vehicle fleet by setting voluntary annual company average fuel consumption goals for vehicle manufacturers and importers.

Glossary of Terms

Cooling Degree-day (CDD): A measure of how hot a location was over a period, relative to a base temperature. In this handbook, the base temperature is 18.0°C and the period is one year. If the daily average temperature exceeds the base temperature, the number of cooling degree-days (CDDs) for that day is the difference between the two temperatures. However, if the daily average is equal to or less than the base temperature, the number of CDDs for that day is zero. The number of CDDs for a longer period is the sum of the daily CDDs for the days in that period.

Cooling Degree-day Index: A measure of how relatively hot (or cold) a year was when compared with the cooling degree-day (CDD) average. When the CDD index is above (or below) 1, the observed temperature is warmer (or colder) than normal. The CDD normal represents a weighted average of the 1951–1980 CDDs observed in a number of weather stations across Canada. Its value varies from year to year because of population flow.

Dwelling: A dwelling is defined as a structurally separate set of living premises with a private entrance from outside the building or from a common hallway or stairway inside. A private dwelling is one in which one person, a family or other small group of individuals may reside, such as a single house or apartment.

Electricity Conversion Loss: The energy lost during the conversion from primary energy (petroleum, natural gas, coal, hydro, uranium and biomass) into electrical energy. Losses occur during generation, transmission and distribution of electricity and include plant and unaccounted-for uses.

End Use: Any specific activity that requires energy (e.g. refrigeration, space heating, water heating, manufacturing processes and feedstock).

Energy Intensity: The amount of energy use per unit of activity. Examples of activity measures in this report are households, floor space, passenger-kilometres, tonne-kilometres, physical units of production and constant dollar value of gross domestic product.

Energy Source: Any substance that supplies heat or power (e.g. petroleum, natural gas, coal, renewable energy and electricity), including the use of a fuel as a non-energy feedstock.

Floor Space (area): The area enclosed by the exterior walls of a building, measured in square metres. In the residential sector, this excludes parking areas, basements or other floors below ground level; these areas are included in the commercial/institutional sector.

Gigajoule (GJ): One gigajoule equals 1×10^9 joules (see Petajoule).

Greenhouse Gas (GHG): A greenhouse gas (GHG) absorbs and radiates heat in the lower atmosphere that otherwise would be lost in space. The greenhouse effect is essential for life on this planet, since it keeps average global temperatures high enough to support plant and animal growth. The main GHGs are carbon dioxide (CO₂), methane (CH₄), chloro-fluorocarbons (CFCs) and nitrous oxide (N₂O). By far the most abundant GHG is CO₂, accounting for about 70 percent of total GHG emissions (see Carbon Dioxide).

Greenhouse Gas Intensity of Energy: The amount of greenhouse gas emitted per unit of energy used.

Gross Domestic Product (GDP): The total value of goods and services produced within Canada during a given year. Also referred to as annual economic output or, more simply, output. To avoid counting the same output more than once, gross domestic product (GDP) includes only final goods and services – not those that are used to make another product. GDP figures are reported in constant 2002 dollars.

Gross Output (GO): The total value of goods and services produced by an industry. It is the sum of the industry's shipments plus the change in value due to labour and capital investment. Gross output figures are reported in constant 2002 dollars.

Heat Gain: Heat gained by a building from the operation of appliances. These heat gains reduce the space heating load in the winter and increase the space cooling load in the summer.

Heat Loss: Represents the amount of energy released as heat by an appliance or piece of equipment while it is in operation.

Heating Degree-day (HDD): A measure of how cold a location was over a period, relative to a base temperature. In this handbook, the base temperature is 18.0°C and the period is one year. If the daily average temperature is below the base temperature, the number of heating degree-days (HDDs) for that day is the difference between the two temperatures. However, if the daily average temperature is equal to or higher than the base temperature, the number of HDDs for that day is zero. The number of HDDs for a longer period is the sum of the daily HDDs for the days in that period.

Heating Degree-day Index: A measure of how relatively cold (or hot) a year was when compared with the heating degree-day (HDD) average. When the HDD index is above (or below) 1, the observed temperature is colder (or warmer) than normal. The HDD normal represents a weighted average of the 1951–1980 HDDs observed in a number of weather stations across Canada. Its value varies from year to year because of population flow.

Heavy Truck: A truck with a gross vehicle weight that is more than, or equal to, 14,970 kilograms (kg) (33,001 pounds [lb.]). The gross vehicle weight is the weight of the empty vehicle plus the maximum anticipated load weight.

Household: A person or a group of people occupying one dwelling unit is defined as a household. The number of households will, therefore, be equal to the number of occupied dwellings.

Housing Stock: The physical number of dwellings is referred to as the housing stock. Housing stock includes both occupied and unoccupied dwellings, as opposed to the number of households, which refers to the number of occupied dwellings only.

Kilowatt-hour (kWh): The commercial unit of electrical energy equivalent to 1000 watt-hours. A kilowatt-hour can best be visualized as the amount of electricity consumed by ten 100-watt bulbs burning for an hour. One kilowatt-hour equals 3.6 million joules (see Watt).

Light Truck: A truck of up to 3855 kg (8500 lb.) of gross vehicle weight. The gross vehicle weight is the weight of the empty vehicle plus the maximum anticipated load weight. This class of vehicles includes pickup trucks, minivans and sport utility vehicles.

Liquefied Petroleum Gases (LPG) and Gas Plant Natural Gas Liquids (NGL): Propane and butane are liquefied gases extracted from natural gas (i.e. gas plant NGL) or from refined petroleum products (i.e. LPG) at the processing plant.

Medium Truck: A truck with a gross vehicle weight ranging from 3856 to 14,969 kg (8501 to 33,000 lb.). The gross vehicle weight is the weight of the empty vehicle plus the maximum anticipated load weight.

Megajoule (MJ): One megajoule equals 1×10^6 joules (see Petajoule).

Mobile Home: A moveable dwelling designed and constructed to be transported by road on its own chassis to a site and placed on a temporary foundation (such as blocks, posts or a prepared pad). If required, it can be moved to a new location.

Model Year: An annual period in which a national automotive industry organizes its operations and within which new models are announced. For example, if the “model year” is 2004, it begins September 1, 2003, and ends August 31, 2004.

Glossary of Terms

Multifactor Productivity: The ratio of output per unit of combined inputs (capital services and labour services).

North American Industry Classification System (NAICS): A classification system that categorizes establishments into groups with similar economic activities. The structure of the Northern American Industry Classification System, adopted by Statistics Canada in 1997 to replace the 1980 Standard Industrial Classification, was developed by the statistical agencies of Canada, Mexico and the United States.

Passenger-kilometre (Pkm): An activity measure in the passenger transportation subsector describing the transportation of one passenger over a distance of one kilometre.

Petajoule (PJ): One petajoule equals 1×10^{15} joules. A joule is the international unit of measure of energy – the energy produced by the power of one watt flowing for one second. There are 3.6 million joules in one kilowatt-hour (see Kilowatt-hour).

Pulping Liquor: A substance primarily made up of lignin, other wood constituents and chemicals that are by-products of the manufacture of chemical pulp. It can produce steam for industrial processes when burned in a boiler and/or produce electricity through thermal generation.

Sector: The broadest category for which energy consumption and intensity are considered within the Canadian economy (e.g. residential, commercial/institutional, industrial, transportation, agriculture and electricity generation).

Single Attached (dwelling): Each half of a semi-detached (double) house and each section of a row or terrace are defined as single attached dwellings. A single dwelling attached to a non-residential structure also belongs to this category.

Single Detached (dwelling): This type of dwelling is commonly called a single house (i.e. a house containing one dwelling unit and completely separated on all sides from any other building or structure).

Space Cooling: Conditioning of room air for human comfort by a refrigeration unit (e.g. air conditioner or heat pump) or by the circulation of chilled water through a central or district cooling system.

Space Heating: The use of mechanical equipment to heat all or part of a building. Includes the principal space heating unit and any supplementary equipment.

Standard Industrial Classification (SIC): A classification system that categorizes establishments into groups with similar economic activities.

Terajoule (TJ): One terajoule equals 1×10^{12} joules (see Petajoule).

Tonne-kilometre (Tkm): An activity measure for the freight transportation subsector describing the transportation of one tonne over a distance of one kilometre.

Vintage: The year of origin or age of a unit of capital stock (e.g. a building or a car).

Waste Fuel: A designation applied to any number of energy sources other than conventional fuels used in the cement industry. It includes materials such as tires, municipal waste and landfill off-gases.

Water Heater: An automatically controlled vessel designed for heating water and storing heated water.

Water Heating: The use of energy to heat water for hot running water, as well as the use of energy to heat water on stoves and in auxiliary water heating equipment for bathing, cleaning and other non-cooking applications.

Watt (W): A measure of power. For example, a 40-watt light bulb uses 40 watts of electricity (see Kilowatt-hour).

Wood Waste: Fuel consisting of bark, shavings, sawdust, low-grade lumber and lumber rejects from the operation of pulp mills, sawmills and plywood mills.

Appendix D – List of Abbreviations

D

\$2002	Constant 2002 dollars	Mt of CO₂e	Megatonne of Carbon Dioxide Equivalent = 1×10^6 tonnes
bbl.	Barrel	NAICS	North American Industry Classification System
CAFC	Company Average Fuel Consumption	n.e.c.	Not Elsewhere Classified
CANSIM	Canadian Socio-Economic Information Management System	NEUD	National Energy Use Database
CEUM	Commercial/Institutional End-Use Model	NGL	Natural Gas Liquids
CIEEDAC	Canadian Industrial Energy End-Use Data and Analysis Centre	NRCan	Natural Resources Canada
EC	Environment Canada	OEE	Office of Energy Efficiency
EER	Energy Efficiency Ratio	PJ	Petajoule = 1×10^{15} joules
GDP	Gross Domestic Product	Pkm	Passenger-kilometre
GHG	Greenhouse Gas	RESD	<i>Report on Energy Supply and Demand in Canada</i>
GJ	Gigajoule = 1×10^9 joules	REUM	Residential End-Use Model
GO	Gross Output	SEER	Seasonal Energy Efficiency Ratio
GWh	Gigawatt-hour = 1×10^9 Wh	SIC	Standard Industrial Classification
km	Kilometre	TEUM	Transportation End-Use Model
kW	Kilowatt	TJ	Terajoule = 1×10^{12} joules
kWh	Kilowatt-hour = 1×10^3 Wh	Tkm	Tonne-kilometre
L	Litre	UEC	Unit Energy Consumption
LPG	Liquefied Petroleum Gases	W	Watt
m²	Square Metre	Wh	Watt-hour
m³	Cubic Metre		
MJ	Megajoule = 1×10^6 joules		