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Ressources naturelles
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Energy Use Data Handbook

1990 to 2014



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la consommation d'énergie, 1990 à 2014*

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Preface

This is the fourteenth edition of the *Energy Use Data Handbook, 1990 to 2014*, 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 and Climate Change Canada's publication *National Inventory Report* for the official GHG inventory.

The handbook covers five sectors at an aggregate level: residential, commercial/institutional, industrial, transportation and electricity generation. The year 1990 is the reference year, whereas 2014 is the most recent year for which data are available.



Preface

The 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 2014*, 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 on the following website:
<http://oee.nrcan.gc.ca/corporate/statistics/neud/dpa/home.cfm>.

For more information on this product or other services, contact

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Chapter 1

Total End-Use Sector

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 and Climate Change 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 Canadian Oil, Refining and Energy Security Division, Petroleum Resources Branch 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 (Final Demand) and GHG Emissions by Energy Source

	1990	1995	2005	2006	2007
Total Energy Use (PJ)^{a,b,c}	6,957.1	7,547.0	8,505.8	8,378.8	8,778.0
Energy Use by Energy Source (PJ)					
Electricity	1,428.6	1,544.2	1,771.3	1,745.4	1,792.5
Natural Gas	1,777.6	1,992.9	2,077.5	2,005.2	2,228.9
Motor Gasoline ¹	1,176.5	1,219.6	1,428.4	1,430.9	1,474.4
Oil ²	1,202.2	1,179.9	1,435.1	1,382.6	1,468.7
Aviation Gasoline	5.5	4.2	3.3	3.0	3.1
Aviation Turbo Fuel	181.9	183.9	253.6	251.7	254.2
Still Gas and Petroleum Coke	309.9	412.0	469.8	509.0	526.4
Wood Waste and Pulping Liquor	341.0	457.6	570.5	545.2	519.9
Other ³	313.3	341.1	331.4	344.3	347.8
Residential Wood	220.5	211.6	164.9	161.5	162.2
Total GHG Emissions Including Electricity (Mt of CO₂e)^{a,b,c,d}	400.8	420.0	486.1	477.7	504.9
GHG Emissions by Energy Source (Mt of CO₂e)					
Electricity	80.4	78.1	100.4	96.3	99.3
Natural Gas	91.2	101.6	107.9	104.6	118.4
Motor Gasoline	82.2	86.3	99.4	99.1	101.6
Oil ²	87.8	85.9	104.9	101.2	107.5
Aviation Gasoline	0.4	0.3	0.2	0.2	0.2
Aviation Turbo Fuel	12.9	13.1	17.5	17.4	17.5
Still Gas and Petroleum Coke	17.2	24.0	27.7	29.5	30.6
Wood Waste and Pulping Liquor	0.2	0.3	0.4	0.4	0.4
Other ³	23.2	25.4	23.7	25.1	25.5
Residential Wood	5.2	5.0	3.9	3.8	3.8
Total GHG Emissions Excluding Electricity (Mt of CO₂e)^{a,b,c,d}	320.4	341.9	385.7	381.4	405.7

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 and Gas Plant NGL, steam and waste fuels from the cement industry.



1

2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
8,641.3	8,303.8	8,462.2	8,659.2	8,706.5	8,967.7	9,112.5	31.0%

1,790.2	1,650.2	1,658.0	1,692.4	1,690.7	1,716.0	1,755.1	22.9%
2,248.3	2,201.7	2,233.2	2,406.3	2,428.5	2,650.4	2,810.4	58.1%
1,459.3	1,478.0	1,518.0	1,502.8	1,505.9	1,547.4	1,530.1	30.1%
1,446.9	1,339.3	1,424.1	1,454.3	1,410.7	1,417.1	1,420.0	18.1%
3.0	2.9	2.6	2.1	2.6	2.2	1.9	-65.5%
239.6	219.1	227.2	225.3	260.9	271.8	273.7	50.4%
473.7	512.6	493.3	482.1	498.0	478.0	444.8	43.5%
462.4	432.7	420.7	368.7	357.3	390.8	397.7	16.6%
352.8	307.4	314.1	352.0	376.5	320.0	321.8	2.7%
165.1	160.0	171.1	173.2	175.4	174.0	157.1	-28.8%
492.3	464.6	480.0	482.6	481.9	493.7	502.4	25.4%

93.5	78.3	81.5	73.4	67.1	68.5	73.0	-9.2%
118.7	116.8	119.1	128.2	130.2	142.4	150.5	65.1%
100.2	101.1	103.5	102.1	102.0	104.6	103.1	25.4%
106.0	97.8	104.1	106.4	103.3	103.7	103.9	18.3%
0.2	0.2	0.2	0.2	0.2	0.2	0.1	-65.5%
16.5	15.1	15.7	15.6	18.0	18.8	18.9	46.3%
27.2	29.6	27.9	26.7	29.6	28.7	26.5	53.8%
0.4	0.3	0.3	0.3	0.2	0.3	0.3	37.9%
25.8	21.5	23.6	25.9	27.2	22.6	22.4	-3.6%
3.9	3.8	4.0	4.1	4.1	4.1	3.7	-28.8%
398.8	386.3	398.5	409.2	414.8	425.3	429.4	34.0%

Sources:

- Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2014*, Ottawa, 2016 (CANSIM).
- Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2016.
- Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2014*, Simon Fraser University, 2016.
- Environment and Climate Change Canada, *National Inventory Report 1990–2014: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2016.

Total End-Use Sector

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

	1990	1995	2005	2006	2007
Total Energy Use (PJ)^{a,b,c}	6,957.1	7,547.0	8,505.8	8,378.8	8,778.0
<i>Residential (PJ)^{a,b}</i>	1,424.5	1,468.3	1,494.6	1,441.9	1,560.7
Space Heating	957.5	988.6	944.0	893.9	991.6
Water Heating	230.8	245.8	279.4	282.5	295.2
Appliances	176.8	171.0	181.6	183.4	190.2
Major Appliances	148.5	137.0	124.5	123.5	125.9
Other Appliances ¹	28.3	34.0	57.1	59.9	64.3
Lighting	49.5	49.6	57.3	56.8	58.0
Space Cooling	10.0	13.3	32.3	25.4	25.7
<i>Commercial/Institutional (PJ)^{a,c}</i>	745.6	840.4	947.6	895.1	941.3
Space Heating	449.9	511.7	543.1	495.3	523.7
Water Heating	57.7	62.0	75.2	75.1	78.7
Auxiliary Equipment	54.3	63.6	99.4	103.6	106.8
Auxiliary Motors	60.4	68.7	60.4	59.9	61.8
Lighting	84.0	94.1	98.6	100.8	105.2
Space Cooling	30.3	32.5	62.6	52.2	56.1
Street Lighting ¹	8.9	7.8	8.3	8.1	9.0
<i>Industrial (PJ)^{a,e}</i>	2,710.0	3,017.3	3,361.3	3,355.9	3,483.6
Mining	347.6	445.9	665.5	710.6	862.2
Pulp and Paper	728.2	832.5	859.9	778.4	750.3
Iron and Steel	219.4	247.0	239.7	251.9	253.8
Smelting and Refining	183.3	219.3	260.3	262.1	255.2
Cement	59.3	61.9	71.9	74.7	66.8
Chemicals	223.2	248.2	235.9	247.7	242.8
Petroleum Refining	323.2	356.2	356.3	370.5	379.3
Other Manufacturing	551.1	549.9	572.1	556.9	568.7
Forestry	7.7	7.9	28.8	31.3	30.0
Construction	66.9	48.6	70.9	71.9	74.5

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



Total End-Use Sector

1

2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
8,641.3	8,303.8	8,462.2	8,659.2	8,706.8	8,967.7	9,112.5	31.0%
1,564.8	1,480.9	1,436.0	1,525.0	1,457.3	1,517.3	1,560.5	9.5%
998.7	955.4	898.9	962.9	894.8	959.3	996.5	4.1%
292.7	281.4	280.2	299.1	295.6	295.3	300.0	30.0%
194.2	177.6	178.7	183.7	185.3	189.0	191.9	8.5%
125.6	113.0	110.5	111.2	109.8	110.3	109.5	-26.2%
68.6	64.6	68.1	72.5	75.5	78.7	82.3	191.1%
58.9	53.2	53.7	54.4	54.0	54.4	53.8	8.6%
20.3	13.4	24.5	24.9	27.6	19.4	18.3	83.8%
955.2	928.2	902.0	947.8	925.6	924.9	982.9	31.8%
532.9	525.0	487.6	521.2	488.3	508.4	554.2	23.2%
78.9	74.7	73.7	76.1	76.2	72.6	74.5	29.2%
114.5	121.3	123.1	125.9	127.4	132.5	140.8	159.1%
64.4	61.5	57.2	60.3	60.2	60.4	59.0	-2.3%
105.3	102.5	102.4	105.3	108.6	104.5	108.6	29.3%
50.4	36.2	50.5	51.4	57.4	38.8	38.2	25.9%
8.6	7.1	7.5	7.6	7.5	7.6	7.6	-14.7%
3,336.7	3,179.1	3,271.7	3,312.4	3,424.5	3,560.9	3,613.3	33.3%
870.9	940.9	1,008.8	1,043.5	1,150.6	1,266.7	1,300.6	274.2%
653.5	602.1	579.9	543.4	524.9	559.7	551.9	-24.2%
246.8	187.3	207.1	226.8	230.9	214.6	231.6	5.6%
260.5	227.1	239.0	247.8	228.8	224.5	230.9	26.0%
65.0	60.4	55.2	56.7	56.9	54.9	57.5	-3.1%
241.4	231.3	248.4	271.4	272.2	284.4	306.3	37.2%
345.8	338.2	335.7	320.4	343.4	324.2	303.3	-6.2%
547.2	504.4	502.1	504.0	516.1	533.9	533.1	-3.3%
30.9	21.4	22.3	19.8	19.0	19.1	19.2	148.3%
74.7	65.9	73.0	78.5	81.6	79.0	78.9	17.9%

Sources:

- Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2014*, Ottawa, 2016 (CANSIM).
- Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2016.
- Natural Resources Canada, *Commercial/Institutional End-Use Model*, Ottawa, 2016.
- Natural Resources Canada, *Transportation End-Use Model*, Ottawa, 2016.
- Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2014*, Simon Fraser University, 2016.
- Statistics Canada, *Electric Power Generation, Transmission and Distribution 1990–2007* (Cat. No. 57-202-X). Data for reference year 2008 onward were provided on request.

Total End-Use Sector

Canada's Secondary Energy Use (Final Demand) by Sector, End Use and Subsector (cont.)

	1990	1995	2005	2006	2007
Total Transportation (PJ)^a	1,877.9	2,011.7	2,475.7	2,456.9	2,554.5
<i>Passenger Transportation (PJ)^{a,d}</i>	<i>1,154.0</i>	<i>1,176.8</i>	<i>1,338.1</i>	<i>1,313.4</i>	<i>1,358.2</i>
Cars	705.5	669.1	617.5	604.8	620.2
Trucks	215.5	271.8	410.2	404.7	426.3
Motorcycles	2.4	2.1	3.3	3.5	3.7
Buses	46.0	50.7	55.3	50.2	53.7
Air	180.9	180.8	249.1	247.5	251.4
Rail	3.8	2.3	2.7	2.7	2.8
<i>Freight Transportation (PJ)^{a,d}</i>	<i>670.5</i>	<i>772.7</i>	<i>1,038.2</i>	<i>1,042.7</i>	<i>1,094.0</i>
Light Trucks	97.6	118.2	159.6	159.7	169.2
Medium Trucks	120.6	147.7	208.7	239.2	247.1
Heavy Trucks	253.6	319.3	452.4	437.9	454.4
Air	6.5	7.3	7.8	7.2	5.8
Rail	85.7	78.6	81.7	85.6	91.8
Marine	106.5	101.7	128.1	113.0	125.7
<i>Off-Road (PJ)^d</i>	<i>53.3</i>	<i>62.1</i>	<i>99.5</i>	<i>100.8</i>	<i>102.3</i>
<i>Agriculture (PJ)^a</i>	<i>199.2</i>	<i>209.3</i>	<i>226.5</i>	<i>229.1</i>	<i>238.0</i>

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



Total End-Use Sector

1

2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
2,541.9	2,505.0	2,607.7	2,604.4	2,633.6	2,685.9	2,676.8	42.5%
1,326.4	1,316.0	1,338.9	1,328.0	1,354.9	1,387.1	1,365.2	18.3%
601.6	600.3	594.8	576.7	564.1	561.7	537.4	-23.8%
424.2	435.6	452.9	459.7	467.9	489.0	490.6	127.7%
3.8	5.1	5.3	5.4	5.6	5.6	5.5	130.4%
56.0	55.2	58.8	61.3	57.4	61.0	60.2	30.9%
237.7	217.6	224.5	222.1	257.4	267.7	269.5	48.9%
3.2	2.3	2.5	2.8	2.4	2.1	2.0	-46.8%
1,111.9	1,085.9	1,165.0	1,170.2	1,171.1	1,188.8	1,199.5	78.9%
168.7	171.8	177.9	178.8	184.0	192.2	193.3	98.1%
260.9	278.3	311.0	303.9	300.9	315.3	316.0	162.0%
458.2	450.9	467.4	490.6	491.4	495.1	510.3	101.2%
4.9	4.4	5.3	5.3	6.1	6.3	6.1	-6.1%
97.0	62.5	81.2	93.0	94.2	90.9	93.8	9.5%
122.2	118.0	122.3	98.5	94.4	89.0	80.0	-24.9%
103.5	103.1	103.8	106.2	107.7	110.0	112.1	110.1%
242.7	210.6	244.9	269.6	265.3	278.6	279.0	40.1%

Sources:

- Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2014*, Ottawa, 2016 (CANSIM).
- Natural Resources Canada, Residential End-Use Model, Ottawa, 2016.
- Natural Resources Canada, Commercial/Institutional End-Use Model, Ottawa, 2016.
- Natural Resources Canada, Transportation End-Use Model, Ottawa, 2016.
- Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2014*, Simon Fraser University, 2016.
- Statistics Canada, *Electric Power Generation, Transmission and Distribution 1990–2007* (Cat. No. 57-202-X). Data for reference year 2008 onward were provided on request.

Total End-Use Sector

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

	1990	1995	2005	2006	2007
Total GHG Emissions Including Electricity (Mt of CO₂e)^{a,b,d,e,f}	400.8	420.0	486.1	477.7	504.9
<i>Residential (Mt of CO₂e)^{a,b,e}</i>	72.8	71.3	76.8	73.2	79.8
Space Heating	47.0	46.8	46.7	43.8	49.2
Water Heating	12.5	12.6	14.7	14.8	15.5
Appliances	9.9	8.6	10.3	10.1	10.5
<i>Major Appliances</i>	<i>8.3</i>	<i>6.9</i>	<i>7.0</i>	<i>6.8</i>	<i>6.9</i>
<i>Other Appliances¹</i>	<i>1.6</i>	<i>1.7</i>	<i>3.2</i>	<i>3.3</i>	<i>3.6</i>
Lighting	2.8	2.5	3.2	3.1	3.2
Space Cooling	0.6	0.7	1.8	1.4	1.4
<i>Commercial/Institutional (Mt of CO₂e)^{a,c,e}</i>	41.0	44.2	51.3	47.9	50.5
Space Heating	24.4	27.3	28.6	25.9	27.4
Water Heating	3.2	3.3	4.1	4.0	4.2
Auxiliary Equipment	3.1	3.3	5.6	5.7	5.9
Auxiliary Motors	3.4	3.5	3.4	3.3	3.4
Lighting	4.7	4.8	5.6	5.6	5.8
Space Cooling	1.7	1.6	3.5	2.9	3.1
Street Lighting ^g	0.5	0.4	0.5	0.4	0.5
<i>Industrial (Mt of CO₂e)^{a,e,f}</i>	141.2	147.7	167.9	168.2	179.0
Mining	22.4	27.6	42.2	45.0	55.2
Pulp and Paper	24.5	22.5	20.2	17.7	17.5
Iron and Steel	16.5	18.2	17.5	18.7	18.8
Smelting and Refining	10.9	11.9	15.2	15.0	14.8
Cement	4.4	4.7	5.9	6.2	5.5
Chemicals	10.8	11.9	12.0	12.4	12.2
Petroleum Refining	17.9	20.4	20.9	21.1	21.6
Other Manufacturing	28.7	26.6	27.2	25.2	26.2
Forestry	0.6	0.6	2.1	2.3	2.2
Construction	4.3	3.2	4.7	4.8	5.0

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, 1990–2014*, Ottawa, 2016 (CANSIM).
b) Natural Resources Canada, Residential End-Use Model, Ottawa, 2016.
c) Natural Resources Canada, Commercial/Institutional End-Use Model, Ottawa, 2016.



Total End-Use Sector

1

2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
492.3	464.6	480.0	482.6	481.9	493.7	502.4	25.4%
77.6	70.8	69.0	70.1	64.2	66.8	69.9	-4.0%
48.4	45.2	42.3	44.1	39.6	42.3	44.6	-5.1%
15.0	14.0	14.1	14.6	14.0	14.0	14.3	14.0%
10.1	8.4	8.8	8.0	7.4	7.6	8.0	-19.0%
6.5	5.4	5.4	4.9	4.4	4.5	4.6	-44.6%
3.6	3.1	3.3	3.1	3.0	3.1	3.4	115.2%
3.1	2.5	2.6	2.4	2.1	2.2	2.2	-19.7%
1.1	0.6	1.2	1.1	1.1	0.8	0.8	35.9%
49.5	46.2	45.5	45.8	43.2	43.3	46.6	13.7%
27.4	26.6	24.9	26.5	24.7	25.7	27.9	14.2%
4.2	3.9	3.8	3.9	3.9	3.7	3.8	19.7%
6.0	5.8	6.1	5.6	5.2	5.5	6.0	96.5%
3.4	2.9	2.8	2.6	2.4	2.4	2.5	-27.8%
5.5	4.9	5.0	4.6	4.3	4.2	4.5	-4.4%
2.6	1.7	2.5	2.3	2.3	1.6	1.6	-5.5%
0.4	0.3	0.4	0.3	0.3	0.3	0.3	-36.9%
170.5	158.8	167.1	167.5	174.2	179.2	182.1	29.0%
55.5	59.5	63.9	65.2	72.4	79.5	81.4	263.4%
14.3	12.4	11.9	10.9	9.8	10.3	10.4	-57.7%
18.1	13.6	15.0	16.5	16.6	14.7	15.9	-3.4%
14.4	11.5	12.5	11.8	10.2	10.0	10.5	-4.0%
5.3	4.9	4.5	4.6	4.3	4.1	4.4	-1.8%
11.9	10.9	11.9	12.7	12.4	12.9	14.0	28.9%
19.1	18.8	18.5	16.9	19.3	18.4	17.3	-3.8%
24.5	21.2	22.3	22.1	22.2	22.4	21.6	-24.7%
2.3	1.6	1.6	1.5	1.4	1.4	1.4	150.8%
5.0	4.5	4.9	5.3	5.5	5.3	5.3	22.4%

d) Natural Resources Canada, Transportation End-Use Model, Ottawa, 2016.

e) Environment and Climate Change Canada, *National Inventory Report 1990–2014: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2016.

f) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2014*, Simon Fraser University, 2016.

g) Statistics Canada, *Electric Power Generation, Transmission and Distribution 1990–2007* (Cat. No. 57-202-X). Data for reference year 2008 onward were provided on request.

Total End-Use Sector

Canada's GHG Emissions by Sector, End Use and Subsector – Including Electricity-Related Emissions (cont.)

	1990	1995	2005	2006	2007
Total Transportation (Mt of CO₂e)^{a,d,e}	132.3	142.7	174.4	172.5	179.0
<i>Passenger Transportation (Mt of CO₂e)^{a,d,e}</i>	80.9	83.5	93.3	91.2	93.9
Cars	49.3	47.5	43.0	41.9	42.7
Light Trucks	15.1	19.4	28.8	28.2	29.6
Motorcycles	0.2	0.1	0.2	0.2	0.2
Buses	3.1	3.5	3.8	3.5	3.8
Air	12.9	12.8	17.2	17.1	17.4
Rail	0.3	0.2	0.2	0.2	0.2
<i>Freight Transportation (Mt of CO₂e)^{a,d,e}</i>	47.7	54.9	74.3	74.5	78.2
Light Trucks	6.7	8.3	11.2	11.1	11.7
Medium Trucks	8.2	10.1	14.5	16.6	17.2
Heavy Trucks	17.8	22.4	32.3	31.3	32.5
Air	0.5	0.5	0.5	0.5	0.4
Rail	6.7	6.1	6.4	6.7	7.2
Marine	7.9	7.5	9.4	8.3	9.3
<i>Off-Road (Mt of CO₂e)^{d,e}</i>	3.7	4.3	6.8	6.9	7.0
<i>Agriculture (Mt of CO₂e)^{a,e}</i>	13.5	14.1	15.7	15.9	16.6

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, 1990–2014*, Ottawa, 2016 (CANSIM).
b) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2016.
c) Natural Resources Canada, *Commercial/Institutional End-Use Model*, Ottawa, 2016.



2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
177.8	174.6	181.7	181.1	182.7	186.0	185.1	39.8%
91.3	90.3	91.6	90.6	92.1	94.1	92.3	14.1%
41.2	41.0	40.5	39.1	38.1	37.9	36.1	-26.8%
29.2	29.9	30.9	31.2	31.7	33.0	33.0	117.7%
0.3	0.3	0.4	0.4	0.4	0.4	0.4	124.0%
3.9	3.9	4.1	4.3	4.0	4.2	4.1	31.3%
16.4	15.0	15.5	15.3	17.8	18.5	18.6	44.7%
0.2	0.2	0.2	0.2	0.2	0.2	0.2	-46.3%
79.4	77.2	82.9	83.2	83.2	84.4	85.1	78.2%
11.6	11.8	12.1	12.1	12.4	12.9	13.0	93.2%
18.1	19.4	21.7	21.2	21.0	22.0	22.0	166.7%
32.7	32.2	33.4	35.1	35.1	35.4	36.5	104.7%
0.3	0.3	0.4	0.4	0.4	0.4	0.4	-8.7%
7.6	4.9	6.4	7.3	7.4	7.1	7.4	10.6%
9.0	8.7	9.0	7.2	7.0	6.6	5.9	-25.2%
7.1	7.1	7.1	7.3	7.4	7.5	7.7	108.1%
16.8	14.1	16.7	18.2	17.6	18.5	18.7	38.2%

d) Natural Resources Canada, Transportation End-Use Model, Ottawa, 2016.

e) Environment and Climate Change Canada, *National Inventory Report 1990–2014: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2016.

f) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2014*, Simon Fraser University, 2016.

g) Statistics Canada, *Electric Power Generation, Transmission and Distribution 1990–2007* (Cat. No. 57-202-X). Data for reference year 2008 onward were provided on request.

Total End-Use Sector

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

	1990	1995	2005	2006	2007
Total GHG Emissions Excluding Electricity (Mt of CO₂e)^{a,b,d,e,f}	320.4	341.9	385.7	381.4	405.7
<i>Residential (Mt of CO₂e)^{a,b,e}</i>	46.5	47.3	46.0	43.9	48.4
Space Heating	38.1	38.1	35.3	33.1	36.9
Water Heating	8.2	9.0	10.4	10.5	11.1
Appliances	0.2	0.2	0.3	0.3	0.3
<i>Major Appliances</i>	0.2	0.2	0.3	0.3	0.3
<i>Other Appliances¹</i>	0.0	0.0	0.0	0.0	0.0
Lighting	0.0	0.0	0.0	0.0	0.0
Space Cooling	0.0	0.0	0.0	0.0	0.0
<i>Commercial/Institutional (Mt of CO₂e)^{a,c,e}</i>	25.8	29.0	31.7	29.0	30.0
Space Heating	22.5	25.5	27.2	24.5	25.3
Water Heating	3.0	3.2	3.9	3.8	4.0
Auxiliary Equipment	0.2	0.3	0.5	0.5	0.5
Auxiliary Motors	0.0	0.0	0.0	0.0	0.0
Lighting	0.0	0.0	0.0	0.0	0.0
Space Cooling	0.1	0.0	0.2	0.2	0.2
Street Lighting ^g	0.0	0.0	0.0	0.0	0.0
<i>Industrial (Mt of CO₂e)^{a,c,f}</i>	104.1	110.6	120.1	122.2	133.7
Mining	16.6	22.0	35.7	38.7	48.6
Pulp and Paper	14.6	12.2	8.1	6.9	7.0
Iron and Steel	14.8	16.7	15.4	16.4	16.8
Smelting and Refining	3.5	3.5	3.7	3.5	3.9
Cement	4.1	4.4	5.5	5.7	5.0
Chemicals	7.2	8.3	7.5	7.9	7.8
Petroleum Refining	16.8	19.5	19.9	20.0	20.6
Other Manufacturing	21.8	20.2	17.6	15.9	16.7
Forestry	0.6	0.6	2.1	2.3	2.2
Construction	4.3	3.2	4.7	4.8	5.0

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, 1990–2014*, Ottawa, 2016 (CANSIM).
- b) Natural Resources Canada, Residential End-Use Model, Ottawa, 2016.
- c) Natural Resources Canada, Commercial/Institutional End-Use Model, Ottawa, 2016.



Total End-Use Sector

1

2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
398.8	386.3	398.5	409.2	414.8	425.3	429.4	34.0%
47.5	45.5	43.0	46.2	42.6	44.2	45.7	-1.7%
36.3	34.6	32.2	34.4	31.2	32.8	34.2	-10.2%
10.9	10.5	10.5	11.4	11.1	11.0	11.1	35.2%
0.3	0.3	0.3	0.4	0.4	0.4	0.4	106.8%
0.3	0.3	0.3	0.4	0.4	0.4	0.4	106.8%
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	0.0	0.0	0.0	0.0	0.0	0.0	—
29.5	29.2	27.7	29.6	27.8	29.0	31.0	19.8%
24.9	24.8	23.3	25.0	23.3	24.7	26.6	18.0%
4.0	3.8	3.6	3.8	3.8	3.5	3.6	20.1%
0.5	0.5	0.5	0.6	0.6	0.6	0.6	166.5%
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	—
0.2	0.1	0.2	0.2	0.2	0.1	0.1	111.4%
0.0	0.0	0.0	0.0	0.0	0.0	0.0	—
129.0	124.6	131.2	135.8	145.5	149.2	150.5	44.6%
49.5	54.3	58.7	60.5	67.6	73.7	75.4	355.0%
5.5	5.4	4.9	5.2	4.9	5.0	4.9	-66.6%
16.4	12.3	13.5	15.1	15.3	13.5	14.5	-1.7%
3.7	2.7	3.3	3.4	3.0	2.8	2.7	-20.9%
4.9	4.6	4.2	4.3	4.0	3.8	4.1	-0.2%
7.9	7.8	8.6	9.6	9.8	10.5	11.1	54.4%
18.1	17.8	17.4	16.0	18.6	17.7	16.5	-1.9%
15.7	13.7	14.2	14.9	15.4	15.4	14.7	-32.7%
2.3	1.6	1.6	1.5	1.4	1.4	1.4	150.8%
5.0	4.5	4.9	5.3	5.5	5.3	5.3	22.4%

d) Natural Resources Canada, Transportation End-Use Model, Ottawa, 2016.

e) Environment and Climate Change Canada, *National Inventory Report 1990–2014: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2016.

f) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2014*, Simon Fraser University, 2016.

Total End-Use Sector

Canada's GHG Emissions by Sector, End Use and Subsector – Excluding Electricity-Related Emissions (cont.)

	1990	1995	2005	2006	2007
Total Transportation (Mt of CO₂e)^{a,d,e}	132.2	142.6	174.2	172.3	178.9
Passenger Transportation (Mt of CO₂e)^{a,d,e}	80.7	83.3	93.1	91.0	93.7
Cars	49.3	47.5	43.0	41.9	42.7
Light Trucks	15.1	19.4	28.8	28.2	29.6
Motorcycles	0.2	0.1	0.2	0.2	0.2
Buses	3.0	3.3	3.6	3.3	3.6
Air	12.9	12.8	17.2	17.1	17.4
Rail	0.3	0.2	0.2	0.2	0.2
Freight Transportation (Mt of CO₂e)^{a,d,e}	47.7	54.9	74.3	74.5	78.2
Light Trucks	6.7	8.3	11.2	11.1	11.7
Medium Trucks	8.2	10.1	14.5	16.6	17.2
Heavy Trucks	17.8	22.4	32.3	31.3	32.5
Air	0.5	0.5	0.5	0.5	0.4
Rail	6.7	6.1	6.4	6.7	7.2
Marine	7.9	7.5	9.4	8.3	9.3
Off-Road (Mt of CO₂e)^{d,e}	3.7	4.3	6.8	6.9	7.0
Agriculture (Mt of CO₂e)^{a,e}	11.8	12.4	13.6	13.9	14.8

Sources:

a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2014*, Ottawa, 2016 (CANSIM).

d) Natural Resources Canada, *Transportation End-Use Model*, Ottawa, 2016.

e) Environment and Climate Change Canada, *National Inventory Report 1990–2014: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2016.



Total End-Use Sector

1

2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
177.7	174.5	181.6	181.0	182.5	185.8	184.9	39.9%
91.2	90.2	91.5	90.4	91.9	93.9	92.1	14.1%
41.2	41.0	40.5	39.1	38.1	37.9	36.1	-26.8%
29.2	29.9	30.9	31.2	31.7	33.0	33.0	117.7%
0.3	0.3	0.4	0.4	0.4	0.4	0.4	124.0%
3.8	3.8	4.0	4.2	3.8	4.0	3.9	32.8%
16.4	15.0	15.5	15.3	17.8	18.5	18.6	44.7%
0.2	0.2	0.2	0.2	0.2	0.2	0.2	-46.3%
79.4	77.2	82.9	83.2	83.2	84.4	85.1	78.2%
11.6	11.8	12.1	12.1	12.4	12.9	13.0	93.2%
18.1	19.4	21.7	21.2	21.0	22.0	22.0	166.7%
32.7	32.2	33.4	35.1	35.1	35.4	36.5	104.7%
0.3	0.3	0.4	0.4	0.4	0.4	0.4	-8.7%
7.6	4.9	6.4	7.3	7.4	7.1	7.4	10.6%
9.0	8.7	9.0	7.2	7.0	6.6	5.9	-25.2%
7.1	7.1	7.1	7.3	7.4	7.5	7.7	108.1%
15.0	12.5	15.0	16.7	16.3	17.1	17.3	46.8%

Total End-Use Sector

Commodity Prices and Background Indicators

	1990	1995	2005	2006	2007
Commodity Prices					
Crude Oil Prices					
Wellhead U.S. Average (\$US/bbl.) ^a	20.03	14.62	50.28	59.69	66.52
Edmonton Par ¹ (\$/m ³) ^b	173.95	151.36	432.01	457.54	479.23
Brent Montreal ² (\$/m ³) ^b	187.35	160.31	433.55	484.56	504.51
Natural Gas Price at AECO-C Hub (intra-Alberta)³ (\$/GJ)^b	1.34	1.09	8.14	6.79	6.27
Background Indicators					
Total GDP (million \$2007)^c	922,858	1,007,854	1,399,384	1,437,474	1,468,928
Industrial	291,399	311,747	415,009	418,814	418,651
Commercial/Institutional	553,450	613,500	872,436	907,354	937,792
Agriculture ^d	12,609	13,003	15,072	15,156	15,421
Electricity Generation	24,045	26,475	28,539	28,058	29,122
Multifactor Measure of Productivity (2007 = 100)^e	95.3	97.0	102.1	101.2	100.0

- 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 into account transportation costs.
- 2) Brent Montréal crude oil is the cost of Brent crude oil (in the Montréal market) including the transportation costs through the Portland-Montréal 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*, http://www.eia.gov/petroleum/marketing/monthly/archive/2014/2014_03/pdf/pmmtab1.pdf
- b) Natural Resources Canada, Petroleum Resources Branch, Canadian Oil, Refining and Energy Security Division, Ottawa, 2016.
- c) Statistics Canada, *Gross domestic product (GDP) at basic prices, by North American Industry Classification System (NAICS)* CANSIM (Table 379-0031), Ottawa, 2016. Data prior to 1997 were estimated by Canadian Industrial Energy End-Use Data and Analysis Centre, 1990 to 2014, Simon Fraser University, 2016 and Natural Resources Canada.
- d) The agriculture sector GDP includes crop production (NAICS code 111), animal production (112) and their support activities (1151, 1152).
- e) Statistics Canada, *Multifactor productivity, Canada, Business sector*, Table 383-0021, Ottawa, 2016 (CANSIM).



Total End-Use Sector

1

2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
94.04	56.35	74.71	95.73	94.52	95.99	87.39	336.3%
642.77	414.33	487.69	597.81	541.92	583.90	591.50	240.0%
665.16	454.65	532.13	707.18	721.42	720.49	713.61	280.9%
7.73	3.97	3.95	3.53	2.31	3.02	4.17	211.2%
1,478,592	1,429,913	1,476,176	1,524,397	1,552,003	1,584,075	1,623,166	75.9%
407,690	363,527	385,157	403,036	411,331	417,917	432,132	48.3%
955,434	956,078	978,056	1,004,582	1,023,114	1,044,179	1,067,639	92.9%
17,004	16,508	16,168	16,455	16,661	18,881	17,608	39.7%
30,433	28,027	28,509	29,079	28,265	29,310	29,094	21.0%
97.8	95.4	96.9	98.3	97.5	98.3	99.6	–



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 *Survey of Household Energy Use* (SHEU).

Energy consumption information was drawn from the data collected by various industry associations and external studies. Specifically, the Association of Home Appliance Manufacturers Canada, 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.



Residential Sector

2

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 and Climate Change Canada).

The residential prices of heating oil and natural gas are weighted averages of regional prices from Statistics Canada's CANSIM Table 326-0009 for heating oil prices and Table 129-0003 for natural gas prices. 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 Secondary Energy Use (Final Demand) by Energy Source and End Use

	1990	1995	2005	2006	2007
Total Energy Use (PJ)^{a,b}	1,424.5	1,468.3	1,494.6	1,441.9	1,560.7
Total Energy Use (PJ)^{a,b}					
Electricity	467.4	473.8	543.6	530.4	568.2
Natural Gas	528.4	630.5	646.6	618.7	686.1
Heating Oil	186.4	137.5	125.8	116.8	128.1
Other ¹	21.9	14.9	13.7	14.5	16.1
Wood	220.5	211.6	164.9	161.5	162.2
Energy Use by End Use (PJ)^b					
Space Heating	957.5	988.6	944.0	893.9	991.6
Water Heating	230.8	245.8	279.4	282.5	295.2
Appliances	176.8	171.0	181.6	183.4	190.2
Major Appliances	148.5	137.0	124.5	123.5	125.9
Other Appliances ²	28.3	34.0	57.1	59.9	64.3
Lighting	49.5	49.6	57.3	56.8	58.0
Space Cooling	10.0	13.3	32.3	25.4	25.7
Activity					
Total Floor Space (million m ²) ^b	1,208	1,380	1,670	1,708	1,746
Total Households (thousands) ^{b,c}	9,895	10,900	12,587	12,756	12,985
Energy Intensity (GJ/m²)^{a,b}	1.18	1.06	0.89	0.84	0.89
Energy Intensity (GJ/household)^{a,b,c}	144.0	134.7	118.7	113.0	120.2
Heating Degree-Day Index^{b,d}	0.92	0.98	0.92	0.85	0.93
Cooling Degree-Day Index^{b,e}	1.05	1.18	1.79	1.38	1.45

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, 1990–2014*, Ottawa, 2016 (CANSIM).

b) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2016.

c) Statistics Canada, *Survey of Household Spending, 1997–2014*, Ottawa, 2016.

d) Environment and Climate Change Canada, *Climate Summaries, Monthly Values of Degree-Days Below 18.0°C, 1990–2014*, Ottawa.

e) Environment and Climate Change Canada, *Climate Summaries, Monthly Values of Degree-Days Above 18.0°C, 1990–2014*, Ottawa.

Residential Sector

2

2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
1,564.8	1,481.0	1,436.0	1,525.0	1,457.3	1,517.3	1,560.5	9.5%
576.2	533.9	528.5	550.9	544.5	566.4	581.6	24.4%
691.7	660.4	615.2	682.2	632.1	685.6	735.3	39.1%
114.7	111.4	104.9	101.2	86.0	76.0	72.5	-61.1%
17.0	15.2	16.3	17.4	19.4	15.4	14.0	-36.1%
165.1	160.0	171.1	173.2	175.4	174.0	157.1	-28.8%
998.7	955.4	898.9	962.9	894.8	959.3	996.5	4.1%
292.7	281.4	280.2	299.1	295.6	295.3	300.0	30.0%
194.2	177.6	178.7	183.7	185.3	189.0	191.9	8.5%
125.6	113.0	110.5	111.2	109.8	110.3	109.5	-26.2%
68.6	64.6	68.1	72.5	75.5	78.7	82.3	191.1%
58.9	53.2	53.7	54.4	54.0	54.4	53.8	8.6%
20.3	13.4	24.5	24.9	27.6	19.4	18.3	83.8%
1,783	1,818	1,850	1,883	1,912	1,969	1,999	65.5%
13,164	13,417	13,378	13,551	13,706	13,858	13,989	41.4%
0.88	0.81	0.78	0.81	0.76	0.77	0.78	-33.8%
118.9	110.4	107.3	112.5	106.3	109.5	111.6	-22.5%
0.95	0.96	0.87	0.90	0.84	0.93	0.98	–
1.08	0.93	1.59	1.51	1.70	1.18	1.11	–

Residential Sector

Residential Single Detached Secondary Energy Use (Final Demand) by Energy Source and End Use

	1990	1995	2005	2006	2007
Total Single Detached Energy Use (PJ)^{a,b}	1,023.6	1,050.8	1,055.5	1,015.7	1,100.3
Energy Use by Energy Source (PJ)^{a,b}					
Electricity	304.6	311.1	355.4	344.7	369.7
Natural Gas	386.9	461.3	464.5	443.4	492.3
Heating Oil	131.6	95.4	91.9	85.9	95.2
Other ¹	16.0	11.2	10.3	10.9	12.0
Wood	184.6	171.8	133.4	130.9	131.1
Energy Use by End Use (PJ)^b					
Space Heating	722.7	742.0	701.8	665.6	736.5
Water Heating	145.0	154.5	175.0	177.1	185.9
Appliances	110.8	106.6	110.8	111.4	115.7
Lighting	37.4	37.4	43.3	42.9	43.9
Space Cooling	7.6	10.4	24.6	18.7	18.3
Activity					
Total Floor Space (million m ²) ^b	804	924	1,120	1,144	1,167
Total Households (thousands) ^{b,c}	5,558	6,114	7,056	7,152	7,282
Energy Intensity (GJ/m²)^{a,b}	1.27	1.14	0.94	0.89	0.94
Energy Intensity (GJ/household)^{a,b,c}	184.2	171.9	149.6	142.0	151.1
Heating Degree-Day Index^{b,d}	0.92	0.98	0.92	0.85	0.93
Cooling Degree-Day Index^{b,e}	1.05	1.18	1.79	1.38	1.45

1) "Other" includes coal and propane.

Sources:

a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2014*, Ottawa, 2016 (CANSIM).

b) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2016.

c) Statistics Canada, *Survey of Household Spending, 1997–2014*, Ottawa, 2016.

d) Environment and Climate Change Canada, *Climate Summaries, Monthly Values of Degree-Days Below 18.0°C, 1990–2014*, Ottawa.

e) Environment and Climate Change Canada, *Climate Summaries, Monthly Values of Degree-Days Above 18.0°C, 1990–2014*, Ottawa.

Residential Sector

2

2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
1,102.6	1,042.2	1,012.1	1,075.7	1,025.3	1,062.8	1,089.1	6.4%
374.8	345.2	342.4	358.8	353.7	366.3	374.1	22.8%
495.8	472.8	440.1	486.9	450.4	487.3	522.7	35.1%
85.9	83.7	79.3	77.3	65.6	57.8	55.3	-58.0%
12.8	11.4	12.1	12.9	14.2	11.3	10.2	-36.3%
133.4	129.1	138.1	139.8	141.4	140.1	126.9	-31.3%
740.8	706.9	667.4	713.0	662.1	704.2	727.9	0.7%
184.7	177.8	178.2	190.3	188.3	187.7	190.3	31.2%
117.9	107.5	108.1	111.0	111.7	113.9	115.0	3.8%
44.7	40.4	41.0	41.7	41.4	41.8	41.4	10.6%
14.5	9.5	17.4	19.7	21.8	15.3	14.5	90.5%
1,188	1,208	1,227	1,245	1,261	1,289	1,303	62.0%
7,385	7,528	7,517	7,616	7,702	7,786	7,858	41.4%
0.93	0.86	0.83	0.86	0.81	0.82	0.84	-34.3%
149.3	138.4	134.6	141.2	133.1	136.5	138.6	-24.8%
0.95	0.96	0.87	0.90	0.84	0.93	0.98	–
1.08	0.93	1.59	1.51	1.70	1.18	1.11	–

Residential Sector

Residential Single Attached Secondary Energy Use (Final Demand) by Energy Source and End Use

	1990	1995	2005	2006	2007
Total Single Attached Energy Use (PJ)^{a,b}	117.6	127.6	141.1	135.8	147.2
Energy Use by Energy Source (PJ)^{a,b}					
Electricity	42.1	43.5	53.9	52.6	56.1
Natural Gas	48.5	59.7	66.5	63.6	70.8
Heating Oil	14.2	10.7	9.9	9.0	9.5
Other ¹	1.7	1.3	1.3	1.4	1.6
Wood	11.0	12.3	9.4	9.2	9.4
Energy Use by End Use (PJ)^b					
Space Heating	72.1	78.5	80.4	75.6	84.8
Water Heating	22.9	25.8	31.2	31.4	32.7
Appliances	16.4	16.4	18.9	19.3	20.0
Lighting	4.6	4.8	5.8	5.8	5.8
Space Cooling	1.6	2.1	4.8	3.8	3.9
Activity					
Total Floor Space (million m ²) ^b	112	132	172	177	183
Total Households (thousands) ^{b,c}	922	1,067	1,324	1,350	1,382
Energy Intensity (GJ/m²)^{a,b}	1.0	1.0	0.8	0.8	0.8
Energy Intensity (GJ/household)^{a,b,c}	127.5	119.6	106.5	100.6	106.5
Heating Degree-Day Index^{b,d}	0.92	0.98	0.92	0.85	0.93
Cooling Degree-Day Index^{b,e}	1.05	1.18	1.79	1.38	1.45

1) "Other" includes coal and propane.

Sources:

a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2014*, Ottawa, 2016 (CANSIM).

b) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2016.

c) Statistics Canada, *Survey of Household Spending, 1997–2014*, Ottawa, 2016.

d) Environment and Climate Change Canada, *Climate Summaries, Monthly Values of Degree-Days Below 18.0°C, 1990–2014*, Ottawa.

e) Environment and Climate Change Canada, *Climate Summaries, Monthly Values of Degree-Days Above 18.0°C, 1990–2014*, Ottawa.

Residential Sector

2

2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
148.9	138.7	135.4	144.1	137.9	146.2	152.3	29.5%
57.3	51.3	51.9	52.9	52.8	55.0	56.6	34.7%
71.9	68.3	64.2	72.0	66.5	73.5	79.7	64.2%
8.4	8.2	7.7	7.2	6.1	5.6	5.4	-62.3%
1.7	1.5	1.6	1.8	2.1	1.6	1.5	-14.7%
9.7	9.4	10.0	10.2	10.4	10.4	9.2	-17.0%
86.6	82.1	76.8	83.7	77.3	85.8	91.1	26.3%
32.5	31.1	31.0	33.4	33.0	33.2	34.0	48.6%
20.7	18.3	18.6	19.1	19.4	19.8	20.2	23.2%
6.0	5.2	5.2	5.3	5.2	5.3	5.2	13.2%
3.1	2.1	3.8	2.6	3.0	2.1	1.9	16.8%
189	194	198	204	209	219	225	100.0%
1,408	1,443	1,447	1,473	1,498	1,521	1,541	67.2%
0.8	0.7	0.7	0.7	0.7	0.7	0.7	-35.2%
105.7	96.1	93.5	97.8	92.1	96.1	98.8	-22.5%
0.95	0.96	0.87	0.90	0.84	0.93	0.98	–
1.08	0.93	1.59	1.51	1.70	1.18	1.11	–

Residential Sector

Residential Apartments Secondary Energy Use (Final Demand) by Energy Source and End Use

	1990	1995	2005	2006	2007
Total Apartments Energy Use (PJ)^{a,b}	248.7	255.7	266.3	259.2	278.8
Energy Use by Energy Source (PJ)^{a,b}					
Electricity	111.4	109.8	124.2	123.2	131.6
Natural Gas	79.8	94.5	101.7	97.9	107.7
Heating Oil	35.5	28.0	21.1	19.2	20.4
Other ¹	3.4	2.0	1.9	1.9	2.2
Wood	18.6	21.4	17.4	16.9	16.9
Energy Use by End Use (PJ)^b					
Space Heating	137.2	143.2	140.2	131.6	146.7
Water Heating	58.0	60.5	67.7	68.5	70.6
Appliances	46.0	44.5	48.3	49.1	50.7
Lighting	6.8	6.7	7.4	7.3	7.4
Space Cooling	0.7	0.8	2.7	2.7	3.3
Activity					
Total Floor Space (million m ²) ^b	272	303	354	363	371
Total Households (thousands) ^{b,c}	3,208	3,501	3,970	4,015	4,078
Energy Intensity (GJ/m²)^{a,b}	0.92	0.84	0.75	0.72	0.75
Energy Intensity (GJ/household)^{a,b,c}	77.5	73.0	67.1	64.6	68.4
Heating Degree-Day Index^{b,d}	0.92	0.98	0.92	0.85	0.93
Cooling Degree-Day Index^{b,e}	1.05	1.18	1.79	1.38	1.45

1) "Other" includes coal and propane.

Sources:

a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2014*, Ottawa, 2016 (CANSIM).

b) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2016.

c) Statistics Canada, *Survey of Household Spending, 1997–2014*, Ottawa, 2016.

d) Environment and Climate Change Canada, *Climate Summaries, Monthly Values of Degree-Days Below 18.0°C, 1990–2014*, Ottawa.

e) Environment and Climate Change Canada, *Climate Summaries, Monthly Values of Degree-Days Above 18.0°C, 1990–2014*, Ottawa.

Residential Sector

2

2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
279.2	266.7	256.5	271.3	261.5	275.3	286.1	15.0%
133.4	126.9	124.0	128.7	127.8	134.4	140.0	25.7%
108.9	104.5	97.4	108.6	101.1	110.2	117.8	47.5%
17.6	16.7	15.3	13.9	11.9	10.7	10.0	-71.8%
2.3	2.0	2.2	2.4	2.8	2.2	2.0	-40.2%
17.0	16.4	17.6	17.7	17.9	17.9	16.2	-12.8%
147.7	142.9	132.4	142.4	132.6	146.0	154.3	12.4%
69.8	67.2	66.0	70.1	69.2	69.4	70.7	22.0%
51.8	48.1	48.2	49.7	50.4	51.4	52.7	14.6%
7.4	6.8	6.7	6.7	6.7	6.6	6.6	-3.1%
2.5	1.7	3.1	2.4	2.6	1.9	1.8	146.8%
381	390	398	407	416	434	444	63.2%
4,127	4,197	4,166	4,212	4,256	4,298	4,336	35.1%
0.73	0.68	0.64	0.67	0.63	0.63	0.65	-29.5%
67.7	63.5	61.6	64.4	61.4	64.0	66.0	-14.9%
0.95	0.96	0.87	0.90	0.84	0.93	0.98	–
1.08	0.93	1.59	1.51	1.70	1.18	1.11	–

Residential Sector

Residential Mobile Homes Secondary Energy Use (Final Demand) by Energy Source and End Use

	1990	1995	2005	2006	2007
Total Mobile Homes Energy Use (PJ)^{a,b}	34.7	34.2	31.7	31.2	34.5
Energy Use by Energy Source (PJ)^{a,b}					
Electricity	9.4	9.3	10.0	9.8	10.9
Natural Gas	13.2	14.9	13.9	13.8	15.4
Heating Oil	5.0	3.5	2.9	2.7	3.1
Other ¹	0.7	0.4	0.3	0.3	0.3
Wood	6.3	6.1	4.7	4.6	4.8
Energy Use by End Use (PJ)^b					
Space Heating	25.4	24.9	21.7	21.1	23.6
Water Heating	4.9	5.0	5.5	5.5	6.0
Appliances	3.6	3.5	3.6	3.6	3.9
Lighting	0.8	0.8	0.8	0.8	0.8
Space Cooling	0.0	0.0	0.2	0.2	0.2
Activity					
Total Floor Space (million m ²) ^b	20	21	24	24	25
Total Households (thousands) ^{b,c}	207	219	237	239	243
Energy Intensity (GJ/m²)^{a,b}	1.78	1.61	1.34	1.29	1.40
Energy Intensity (GJ/household)^{a,b,c}	167.0	156.4	134.1	130.7	142.0
Heating Degree-Day Index^{b,d}	0.92	0.98	0.92	0.85	0.93
Cooling Degree-Day Index^{b,e}	1.05	1.18	1.79	1.38	1.45

1) "Other" includes coal and propane.

Sources:

a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2014*, Ottawa, 2016 (CANSIM).

b) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2016.

c) Statistics Canada, *Survey of Household Spending, 1997–2014*, Ottawa, 2016.

d) Environment and Climate Change Canada, *Climate Summaries, Monthly Values of Degree-Days Below 18.0°C, 1990–2014*, Ottawa.

e) Environment and Climate Change Canada, *Climate Summaries, Monthly Values of Degree-Days Above 18.0°C, 1990–2014*, Ottawa.

Residential Sector

2

2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
34.1	33.4	32.0	33.9	32.7	33.1	33.0	-4.7%
10.6	10.5	10.1	10.6	10.2	10.7	10.9	16.3%
15.2	14.8	13.6	14.7	14.1	14.6	15.2	14.8%
2.8	2.8	2.7	2.8	2.3	1.9	1.8	-63.8%
0.3	0.3	0.3	0.3	0.3	0.3	0.3	-64.1%
5.0	5.1	5.4	5.5	5.7	5.6	4.8	-23.1%
23.7	23.5	22.2	23.9	22.8	23.3	23.2	-8.4%
5.7	5.4	5.1	5.2	5.2	5.0	5.1	2.9%
3.8	3.7	3.8	3.9	3.8	3.9	3.9	9.3%
0.8	0.8	0.7	0.7	0.7	0.7	0.6	-16.5%
0.1	0.1	0.2	0.1	0.2	0.1	0.1	–
25	25	26	26	27	27	27	40.7%
244	249	248	250	251	252	253	22.0%
1.36	1.31	1.24	1.29	1.23	1.22	1.20	-32.3%
139.3	134.4	129.2	135.6	130.2	131.3	130.5	-21.9%
0.95	0.96	0.87	0.90	0.84	0.93	0.98	–
1.08	0.93	1.59	1.51	1.70	1.18	1.11	–

Residential Sector

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

	1990	1995	2005	2006	2007
Total GHG Emissions Including Electricity (Mt of CO₂e)^{a,b,c}	72.8	71.2	76.0	76.8	73.2
GHG Emissions by Energy Source (Mt of CO₂e)^{a,b,c}					
Electricity	26.3	23.9	31.5	30.8	29.3
Natural Gas	26.7	31.6	30.1	32.3	30.9
Heating Oil	13.2	9.8	9.1	8.9	8.3
Other ¹	1.4	0.9	0.8	0.9	0.9
Wood	5.2	5.0	4.4	3.9	3.8
GHG Emissions by End Use (Mt of CO₂e)^{b,c}					
Space Heating	47.0	46.8	46.7	43.8	49.2
Water Heating	12.5	12.6	14.7	14.8	15.5
Appliances	9.9	8.6	10.3	10.1	10.5
Major Appliances	8.3	6.9	7.0	6.8	6.9
Other Appliances ²	1.6	1.7	3.2	3.3	3.6
Lighting	2.8	2.5	3.2	3.1	3.2
Space Cooling	0.6	0.7	1.8	1.4	1.4
GHG Intensity (tonne/TJ)^{a,b,c}	51.1	48.5	51.4	50.8	51.1
Total GHG Emissions Excluding Electricity (Mt of CO₂e)^{a,b,c}	46.5	47.3	46.0	43.9	48.4
GHG Emissions by End Use (Mt of CO₂e)^{b,c}					
Space Heating	38.1	38.1	35.3	33.1	36.9
Water Heating	8.2	9.0	10.4	10.5	11.1
Appliances	0.2	0.2	0.3	0.3	0.3
Major Appliances	0.2	0.2	0.3	0.3	0.3
Other Appliances ²	0.0	0.0	0.0	0.0	0.0
Lighting	0.0	0.0	0.0	0.0	0.0
Space Cooling	0.0	0.0	0.0	0.0	0.0
GHG Intensity (tonne/TJ)^{a,b,c}	32.6	32.2	30.8	30.5	31.0

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.

Residential Sector

2

2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
77.6	70.8	69.0	70.1	64.2	66.8	69.9	-4.0%
30.1	25.3	26.0	23.9	21.6	22.6	24.2	-8.0%
34.4	32.8	30.5	33.8	31.2	33.7	36.0	34.8%
8.1	7.9	7.4	7.2	6.1	5.4	5.1	-61.1%
1.1	1.0	1.1	1.1	1.2	1.0	0.9	-36.9%
3.9	3.8	4.0	4.1	4.1	4.1	3.7	-28.8%
48.4	45.2	42.3	44.1	39.6	42.3	44.6	-5.1%
15.0	14.0	14.1	14.6	14.0	14.0	14.3	14.0%
10.1	8.4	8.8	8.0	7.4	7.6	8.0	-19.0%
6.5	5.4	5.4	4.9	4.4	4.5	4.6	-44.6%
3.6	3.1	3.3	3.1	3.0	3.1	3.4	115.2%
3.1	2.5	2.6	2.4	2.1	2.2	2.2	-19.7%
1.1	0.6	1.2	1.1	1.1	0.8	0.8	35.9%
49.6	47.8	48.1	45.9	44.1	44.0	44.8	-12.3%
47.5	45.5	43.0	46.2	42.6	44.2	45.7	-1.7%
36.3	34.6	32.2	34.4	31.2	32.8	34.2	-10.2%
10.9	10.5	10.5	11.4	11.1	11.0	11.1	35.2%
0.3	0.3	0.3	0.4	0.4	0.4	0.4	106.8%
0.3	0.3	0.3	0.4	0.4	0.4	0.4	106.8%
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	0.0	0.0	0.0	0.0	0.0	0.0	—
30.4	30.7	30.0	30.3	29.3	29.1	29.3	-10.2%

Sources:

- Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2014*, Ottawa, 2016 (CANSIM).
- Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2016.
- Environment and Climate Change Canada, *National Inventory Report 1990–2014: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2016.

Residential Sector

Residential Single Detached GHG Emissions by Energy Source and End Use – Including and Excluding Electricity-Related Emissions

	1990	1995	2005	2006	2007
Total Single Detached GHG Emissions Including Electricity (Mt of CO₂e)^{a,b,c}	51.4	50.4	53.7	51.0	55.8
GHG Emissions by Energy Source (Mt of CO₂e)^{a,b,c}					
Electricity	17.1	15.7	20.1	19.0	20.5
Natural Gas	19.6	23.1	23.2	22.1	24.7
Heating Oil	9.3	6.8	6.5	6.1	6.8
Other ¹	1.0	0.7	0.7	0.7	0.8
Wood	4.3	4.0	3.1	3.1	3.1
GHG Emissions by End Use (Mt of CO₂e)^{b,c}					
Space Heating	34.8	34.7	34.4	32.3	36.2
Water Heating	7.8	7.9	9.2	9.2	9.7
Appliances	6.2	5.4	6.3	6.1	6.4
Lighting	2.1	1.9	2.5	2.4	2.4
Space Cooling	0.4	0.5	1.4	1.0	1.0
GHG Intensity (tonne/TJ)^{a,b,c}	50.2	47.9	50.8	50.3	50.7
Total Single Detached GHG Emissions Excluding Electricity (Mt of CO₂e)^{a,b,c}	34.2	34.7	33.5	32.0	35.3
GHG Emissions by End Use (Mt of CO₂e)^{b,c}					
Space Heating	28.9	28.8	26.8	25.2	28.0
Water Heating	5.3	5.7	6.6	6.7	7.1
Appliances	0.1	0.1	0.2	0.2	0.2
Lighting	0.0	0.0	0.0	0.0	0.0
Space Cooling	0.0	0.0	0.0	0.0	0.0
GHG Intensity (tonnes/TJ)^{a,b,c}	33.5	33.0	31.8	31.5	32.1

1) "Other" includes coal and propane

Sources:

- a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2014*, Ottawa, 2016 (CANSIM).
- b) Natural Resources Canada, Residential End-Use Model, Ottawa, 2016.
- c) Environment and Climate Change Canada, *National Inventory Report 1990–2014: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2016.

Residential Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
54.3	49.6	48.3	49.3	45.1	46.7	48.7	-5.2%
19.6	16.4	16.8	15.6	14.0	14.6	15.6	-9.2%
24.7	23.5	21.8	24.1	22.2	24.0	25.6	30.9%
6.1	5.9	5.6	5.5	4.7	4.1	3.9	-58.0%
0.8	0.7	0.8	0.8	0.9	0.7	0.6	-37.1%
3.1	3.0	3.2	3.3	3.3	3.3	3.0	-31.3%
35.6	33.2	31.2	32.5	29.2	30.9	32.5	-6.6%
9.5	8.9	9.0	9.3	9.0	8.9	9.1	15.6%
6.1	5.1	5.3	4.8	4.5	4.6	4.8	-22.5%
2.3	1.9	2.0	1.8	1.6	1.7	1.7	-18.2%
0.8	0.5	0.9	0.9	0.9	0.6	0.6	40.9%
49.2	47.6	47.7	45.8	44.0	43.9	44.7	-10.9%
34.7	33.2	31.5	33.7	31.1	32.1	33.1	-3.2%
27.5	26.3	24.5	26.2	23.7	24.8	25.8	-10.7%
7.0	6.7	6.8	7.3	7.1	7.1	7.1	35.5%
0.2	0.2	0.2	0.2	0.2	0.2	0.2	95.5%
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	–
31.5	31.9	31.1	31.3	30.3	30.2	30.4	-9.0%

Residential Sector

Residential Single Attached GHG Emissions by Energy Source and End Use – Including and Excluding Electricity-Related Emissions

	1990	1995	2005	2006	2007
Total Single Attached GHG Emissions Including Electricity (Mt of CO₂e)^{a,b,c}	6.2	6.3	7.4	7.0	7.6
GHG Emissions by Energy Source (Mt of CO₂e)^{a,b,c}					
Electricity	2.4	2.2	3.1	2.9	3.1
Natural Gas	2.5	3.0	3.3	3.2	3.5
Heating Oil	1.0	0.8	0.7	0.6	0.7
Other ¹	0.1	0.1	0.1	0.1	0.1
Wood	0.3	0.3	0.2	0.2	0.2
GHG Emissions by End Use (Mt of CO₂e)^{b,c}					
Space Heating	3.7	3.8	4.1	3.8	4.3
Water Heating	1.2	1.3	1.6	1.6	1.7
Appliances	0.9	0.8	1.1	1.1	1.1
Lighting	0.3	0.2	0.3	0.3	0.3
Space Cooling	0.1	0.1	0.3	0.2	0.2
GHG Intensity (tonne/TJ)^{a,b,c}	52.7	49.6	52.3	51.7	51.9
Total Single Attached GHG Emissions Excluding Electricity (Mt of CO₂e)^{a,b,c}	3.8	4.1	4.3	4.1	4.5
GHG Emissions by End Use (Mt of CO₂e)^{b,c}					
Space Heating	3.0	3.1	3.1	2.9	3.2
Water Heating	0.8	1.0	1.2	1.2	1.3
Appliances	0.0	0.0	0.0	0.0	0.0
Lighting	0.0	0.0	0.0	0.0	0.0
Space Cooling	0.0	0.0	0.0	0.0	0.0
GHG Intensity (tonne/TJ)^{a,b,c}	32.6	32.3	30.7	30.3	30.8

1) "Other" includes coal and propane.

Sources:

- a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2014*, Ottawa, 2016 (CANSIM).
- b) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2016.
- c) Environment and Climate Change Canada, *National Inventory Report 1990–2014: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2016.

Residential Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
7.5	6.7	6.6	6.7	6.2	6.6	6.9	12.0%
3.0	2.4	2.6	2.3	2.1	2.2	2.4	-0.4%
3.6	3.4	3.2	3.6	3.3	3.6	3.9	59.1%
0.6	0.6	0.5	0.5	0.4	0.4	0.4	-62.3%
0.1	0.1	0.1	0.1	0.1	0.1	0.1	-15.8%
0.2	0.2	0.2	0.2	0.2	0.2	0.2	-17.0%
4.3	4.0	3.7	3.9	3.5	3.9	4.2	12.9%
1.7	1.5	1.5	1.6	1.6	1.6	1.6	32.3%
1.1	0.9	0.9	0.8	0.8	0.8	0.8	-7.9%
0.3	0.2	0.3	0.2	0.2	0.2	0.2	-16.3%
0.2	0.1	0.2	0.1	0.1	0.1	0.1	-13.6%
50.3	48.5	48.9	46.7	44.8	44.8	45.6	-13.5%
4.5	4.3	4.1	4.4	4.1	4.4	4.6	19.8%
3.2	3.0	2.8	3.1	2.8	3.0	3.2	8.7%
1.3	1.2	1.2	1.3	1.3	1.3	1.3	55.9%
0.0	0.0	0.0	0.0	0.0	0.0	0.0	114.4%
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	–
30.2	31.0	30.0	30.8	29.6	29.8	30.1	-7.5%

Residential Sector

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

	1990	1995	2005	2006	2007
Total Apartments GHG Emissions Including Electricity (Mt of CO₂e)^{a,b,c}	13.5	12.9	14.1	13.6	14.7
GHG Emissions by Energy Source (Mt of CO₂e)^{a,b,c}					
Electricity	6.3	5.6	7.0	6.8	7.3
Natural Gas	4.0	4.7	5.1	4.9	5.4
Heating Oil	2.5	2.0	1.5	1.4	1.4
Other ¹	0.2	0.1	0.1	0.1	0.1
Wood	0.4	0.5	0.4	0.4	0.4
GHG Emissions by End Use (Mt of CO₂e)^{b,c}					
Space Heating	7.3	7.2	7.2	6.7	7.6
Water Heating	3.2	3.1	3.6	3.6	3.7
Appliances	2.6	2.2	2.7	2.7	2.8
Lighting	0.4	0.3	0.4	0.4	0.4
Space Cooling	0.0	0.0	0.2	0.1	0.2
GHG Intensity (tonne/TJ)^{a,b,c}	54.2	50.5	53.1	52.4	52.6
Total Apartments GHG Emissions Excluding Electricity (Mt of CO₂e)^{a,b,c}	7.2	7.4	7.1	6.8	7.4
GHG Emissions by End Use (Mt of CO₂e)^{b,c}					
Space Heating	5.3	5.3	4.7	4.3	4.8
Water Heating	1.9	2.1	2.4	2.4	2.5
Appliances	0.0	0.1	0.1	0.1	0.1
Lighting	0.0	0.0	0.0	0.0	0.0
Space Cooling	0.0	0.0	0.0	0.0	0.0
GHG Intensity (tonne/TJ)^{a,b,c}	29.0	28.8	26.7	26.1	26.5

1) "Other" includes coal and propane.

Sources:

- a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2014*, Ottawa, 2016 (CANSIM).
- b) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2016.
- c) Environment and Climate Change Canada, *National Inventory Report 1990–2014: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2016.

Residential Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
14.2	12.9	12.6	12.5	11.5	12.1	12.8	-4.9%
7.0	6.0	6.1	5.6	5.1	5.4	5.8	-7.0%
5.4	5.2	4.8	5.4	5.0	5.4	5.8	42.9%
1.2	1.2	1.1	1.0	0.8	0.8	0.7	-71.8%
0.1	0.1	0.1	0.2	0.2	0.1	0.1	-40.6%
0.4	0.4	0.4	0.4	0.4	0.4	0.4	-12.8%
7.4	6.9	6.4	6.6	5.9	6.4	6.9	-5.1%
3.6	3.3	3.3	3.4	3.2	3.2	3.3	5.0%
2.7	2.3	2.4	2.2	2.0	2.1	2.2	-14.5%
0.4	0.3	0.3	0.3	0.3	0.3	0.3	-28.3%
0.1	0.1	0.2	0.1	0.1	0.1	0.1	82.5%
50.8	48.4	49.0	46.1	44.0	43.9	44.8	-17.3%
7.2	6.9	6.5	6.9	6.4	6.7	7.0	-3.1%
4.7	4.5	4.1	4.3	3.9	4.2	4.4	-15.7%
2.4	2.3	2.3	2.5	2.4	2.4	2.4	28.2%
0.1	0.1	0.1	0.1	0.1	0.1	0.1	136.3%
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	–
25.8	25.9	25.2	25.6	24.6	24.4	24.4	-15.8%

Residential Sector

Residential Mobile Homes GHG Emissions by Energy Source and End Use – Including and Excluding Electricity-Related Emissions

	1990	1995	2005	2006	2007
Total Mobile Homes GHG Emissions Including Electricity (Mt of CO₂e)^{a,b,c}	1.8	1.6	1.6	1.6	1.7
GHG Emissions by Energy Source (Mt of CO₂e)^{a,b,c}					
Electricity	0.5	0.5	0.6	0.5	0.6
Natural Gas	0.7	0.8	0.7	0.7	0.8
Heating Oil	0.4	0.2	0.2	0.2	0.2
Other ¹	0.0	0.0	0.0	0.0	0.0
Wood	0.1	0.1	0.1	0.1	0.1
GHG Emissions by End Use (Mt of CO₂e)^{b,c}					
Space Heating	1.2	1.2	1.1	1.0	1.1
Water Heating	0.3	0.3	0.3	0.3	0.3
Appliances	0.2	0.2	0.2	0.2	0.2
Lighting	0.0	0.0	0.0	0.0	0.0
Space Cooling	0.0	0.0	0.0	0.0	0.0
GHG Intensity (tonne/TJ)^{a,b,c}	50.6	48.0	50.4	49.9	50.3
Total Mobile Homes GHG Emissions Excluding Electricity (Mt of CO₂e)^{a,b,c}	1.2	1.2	1.0	1.0	1.1
GHG Emissions by End Use (Mt of CO₂e)^{b,c}					
Space Heating	1.0	1.0	0.8	0.8	0.9
Water Heating	0.2	0.2	0.2	0.2	0.2
Appliances	0.0	0.0	0.0	0.0	0.0
Lighting	0.0	0.0	0.0	0.0	0.0
Space Cooling	0.0	0.0	0.0	0.0	0.0
GHG Intensity (tonne/TJ)^{a,b,c}	35.3	34.1	32.6	32.5	32.8

1) "Other" includes coal and propane.

Sources:

- a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2014*, Ottawa, 2016 (CANSIM).
- b) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2016.
- c) Environment and Climate Change Canada, *National Inventory Report 1990–2014: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2016.

Residential Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
1.7	1.6	1.5	1.5	1.4	1.4	1.5	-16.5%
0.6	0.5	0.5	0.5	0.4	0.4	0.5	-14.0%
0.8	0.7	0.7	0.7	0.7	0.7	0.7	11.4%
0.2	0.2	0.2	0.2	0.2	0.1	0.1	-63.8%
0.0	0.0	0.0	0.0	0.0	0.0	0.0	-64.4%
0.1	0.1	0.1	0.1	0.1	0.1	0.1	-23.1%
1.1	1.1	1.0	1.1	1.0	1.0	1.0	-17.7%
0.3	0.3	0.3	0.3	0.3	0.2	0.2	-8.2%
0.2	0.2	0.2	0.2	0.2	0.2	0.2	-18.4%
0.0	0.0	0.0	0.0	0.0	0.0	0.0	-38.2%
0.0	0.0	0.0	0.0	0.0	0.0	0.0	4026.7%
48.7	47.1	47.2	45.4	43.7	43.4	44.3	-12.4%
1.1	1.1	1.0	1.1	1.0	1.0	1.0	-17.6%
0.9	0.9	0.8	0.9	0.8	0.8	0.8	-22.6%
0.2	0.2	0.2	0.2	0.2	0.2	0.2	7.1%
0.0	0.0	0.0	0.0	0.0	0.0	0.0	71.6%
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	–
32.4	32.2	31.7	31.9	31.3	30.5	30.5	-13.5%

Residential Sector

Residential Housing Stock and Floor Space

	1990	1995	2005	2006	2007
Total Housing Stock (thousands)^a	10,425	11,508	13,149	13,358	13,568
<i>Housing Stock by Building Type (thousands)</i>					
Single Detached	5,853	6,468	7,410	7,514	7,618
Single Attached	970	1,129	1,410	1,447	1,484
Apartments	3,381	3,677	4,072	4,136	4,201
Mobile Homes	221	234	257	260	265
<i>Housing Stock by Vintage (thousands)</i>					
Before 1946	2,150	2,038	1,819	1,799	1,779
1946–1960	1,476	1,416	1,296	1,284	1,273
1961–1977	3,094	2,999	2,811	2,793	2,775
1978–1983	1,762	1,716	1,624	1,616	1,607
1984–1995	1,944	3,339	3,226	3,215	3,204
1996–2000 ¹	0	0	1,074	1,072	1,071
2001–2005 ²	0	0	1,299	1,299	1,298
2006–2010 ³	0	0	0	280	560
2011–2014 ⁴	0	0	0	0	0
Total Floor Space (million m²)^a	1,208	1,380	1,670	1,708	1,746
<i>Floor Space by Building Type (million m²)</i>					
Single Detached	804	924	1,120	1,144	1,167
Single Attached	112	132	172	177	183
Apartments	272	303	354	363	371
Mobile Homes	20	21	24	24	25

1) Growth rate shown in the final column entitled "Total Growth 1990–2014" is for 1996 to 2014.

2) Growth rate shown in the final column entitled "Total Growth 1990–2014" is for 2001 to 2014.

3) Growth rate shown in the final column entitled "Total Growth 1990–2014" is for 2006 to 2014.

4) Growth rate shown in the final column entitled "Total Growth 1990–2014" is for 2011 to 2014.

Source:

a) Natural Resources Canada, Residential End-Use Model, Ottawa, 2016.

Residential Sector

2

2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
13,777	13,970	14,147	14,316	14,485	14,849	15,029	44.2%
7,710	7,795	7,873	7,944	8,013	8,152	8,212	40.3%
1,520	1,552	1,583	1,614	1,645	1,710	1,747	80.2%
4,279	4,350	4,415	4,479	4,545	4,701	4,780	41.4%
268	272	276	279	281	286	289	30.8%
1,760	1,741	1,722	1,703	1,684	1,670	1,651	-23.2%
1,262	1,251	1,240	1,229	1,219	1,210	1,200	-18.7%
2,758	2,741	2,724	2,706	2,689	2,676	2,659	-14.0%
1,598	1,590	1,582	1,573	1,565	1,558	1,550	-12.1%
3,193	3,183	3,172	3,161	3,150	3,141	3,131	61.1%
1,069	1,068	1,066	1,065	1,063	1,062	1,060	349.9%
1,298	1,297	1,297	1,297	1,296	1,296	1,295	503.3%
839	1,098	1,344	1,344	1,344	1,344	1,344	379.3%
0	0	0	237	474	893	1,139	380.2%
1,783	1,818	1,850	1,883	1,912	1,969	1,999	65.5%
1,188	1,208	1,227	1,245	1,261	1,289	1,303	62.0%
189	194	198	204	209	219	225	100.0%
381	390	398	407	416	434	444	63.2%
25	25	26	26	27	27	27	40.7%

Residential Housing Stock and Floor Space (cont.)

	1990	1995	2005	2006	2007
Floor Space by Vintage (million m²)					
Before 1946	235	229	220	219	218
1946–1960	145	142	138	138	138
1961–1977	334	329	321	320	320
1978–1983	230	224	213	212	211
1984–1995	264	455	440	439	437
1996–2000 ¹	0	0	148	148	148
2001–2005 ²	0	0	190	190	189
2006–2010 ³	0	0	0	43	85
2011–2014 ⁴	0	0	0	0	0
Average Size of Housing Unit (m²/house)^a	116	120	127	128	129
Average Size by Building Type (m²/house)					
Single Detached	137	143	151	152	153
Single Attached	116	117	122	123	123
Apartments	80	82	87	88	88
Mobile Homes	88	91	92	93	93
Average Size by Vintage (m²/house)					
Before 1946	109	112	121	122	122
1946–1960	98	101	107	107	108
1961–1977	108	110	114	115	115
1978–1983	130	130	131	131	132
1984–1995	136	136	136	136	136
1996–2000 ¹	0	0	138	138	138
2001–2005 ²	0	0	146	146	146
2006–2010 ³	0	0	0	153	153
2011–2014 ⁴	0	0	0	0	0

1) Growth rate shown in the final column entitled "Total Growth 1990–2014" is for 1996 to 2014.

2) Growth rate shown in the final column entitled "Total Growth 1990–2014" is for 2001 to 2014.

3) Growth rate shown in the final column entitled "Total Growth 1990–2014" is for 2006 to 2014.

4) Growth rate shown in the final column entitled "Total Growth 1990–2014" is for 2011 to 2014.

Source:

a) Natural Resources Canada, Residential End-Use Model, Ottawa, 2016.

Residential Sector

2

2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
217	216	215	214	212	210	208	-11.5%
137	137	136	136	135	134	133	-8.7%
319	318	317	316	314	312	310	-7.0%
211	210	209	208	207	206	205	-10.6%
436	434	433	432	430	429	427	61.8%
147	147	147	147	147	146	146	363.5%
189	189	189	189	189	189	189	489.5%
127	166	203	203	203	203	203	372.7%
0	0	0	38	75	140	178	372.3%
129	130	131	132	132	133	133	14.8%
154	155	156	157	157	158	159	15.5%
124	125	125	126	127	128	129	11.0%
89	90	90	91	91	92	93	15.5%
93	94	94	94	94	95	95	7.6%
123	124	125	126	126	126	126	15.2%
109	109	110	111	111	111	111	12.4%
116	116	116	117	117	117	117	8.1%
132	132	132	133	133	133	133	1.7%
136	137	137	137	137	137	137	0.4%
138	138	138	138	138	138	138	3.0%
146	146	146	146	146	146	146	-2.3%
151	151	151	151	151	151	151	-1.4%
0	0	0	159	158	156	156	-1.7%

Residential Sector

Residential Space Heating Energy Use by Energy Source and Building Type

	1990	1995	2005	2006	2007
Total Space Heating Energy Use (PJ)^a	957.5	988.6	944.0	893.9	991.6
Energy Use by Energy Source (PJ)^a					
Electricity	158.6	171.8	201.4	193.1	222.3
Natural Gas	395.6	473.6	460.3	431.1	486.7
Heating Oil	166.4	121.8	109.4	99.9	110.5
Other ¹	18.2	13.2	12.7	13.2	14.7
Wood	218.6	208.1	160.3	156.5	157.3
Energy Use by Building Type (PJ)^a					
Single Detached	722.7	742.0	701.8	665.6	736.5
Single Attached	72.1	78.5	80.4	75.6	84.8
Apartments	137.2	143.2	140.2	131.6	146.7
Mobile Homes	25.4	24.9	21.7	21.1	23.6
Activity					
Total Floor Space (million m ²) ^a	1,208	1,380	1,670	1,708	1,746
Energy Intensity (GJ/m²)^a	0.79	0.72	0.57	0.52	0.57
Heat Gains (PJ)^a	89.8	94.1	95.1	89.2	100.7
Heating Degree-Day Index^{a,b}	0.92	0.98	0.92	0.85	0.93

1) "Other" includes coal and propane.

Sources:

a) Natural Resources Canada, Residential End-Use Model, Ottawa, 2016.

b) Environment and Climate Change Canada, Climate Summaries, *Monthly Values of Degree-Days Below 18.0°C, 1990–2014*, Ottawa.

Residential Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
998.7	955.4	898.9	962.9	894.8	959.3	996.5	4.1%
231.7	222.5	205.3	222.0	210.8	236.7	250.1	57.7%
491.8	467.6	424.2	471.5	425.9	476.1	518.8	31.1%
99.4	96.5	89.5	86.4	72.2	64.5	62.4	-62.5%
15.7	13.9	14.7	15.7	17.3	13.9	12.8	-30.0%
160.1	155.0	165.2	167.2	168.6	168.1	152.5	-30.3%
740.8	706.9	667.4	713.0	662.1	704.2	727.9	0.7%
86.6	82.1	76.8	83.7	77.3	85.8	91.1	26.3%
147.7	142.9	132.4	142.4	132.6	146.0	154.3	12.4%
23.7	23.5	22.2	23.9	22.8	23.3	23.2	-8.4%
1,783	1,818	1,850	1,883	1,912	1,969	1,999	65.5%
0.56	0.53	0.49	0.51	0.47	0.49	0.50	-37.1%
105.3	98.8	89.8	97.2	91.0	101.5	107.9	20.2%
0.95	0.96	0.87	0.90	0.84	0.93	0.98	–

Residential Sector

Residential Space Heating System Stock Share

	1990	1995	2005	2006	2007
Heating System Stock Share by System Type (%)^a					
Heating Oil – Normal Efficiency	14.0	8.6	1.0	0.8	0.6
Heating Oil – Medium Efficiency	0.3	3.0	7.3	7.3	7.3
Heating Oil – High Efficiency	0.0	0.0	0.0	0.0	0.0
Natural Gas – Normal Efficiency	39.0	30.6	13.1	11.1	9.3
Natural Gas – Medium Efficiency	2.1	9.6	19.9	20.5	20.9
Natural Gas – High Efficiency	2.9	5.4	14.8	16.1	17.3
Electric	28.1	28.9	27.9	28.3	28.6
Heat Pump	2.3	2.7	4.0	4.1	4.2
Other ¹	0.8	1.0	1.0	1.0	1.0
Wood	1.7	1.9	2.1	2.0	2.0
Dual Systems					
Wood/Electric	5.1	4.6	4.9	4.8	4.8
Wood/Heating Oil	2.4	2.1	2.3	2.3	2.3
Natural Gas/Electric	0.3	0.4	0.5	0.5	0.5
Heating Oil/Electric	0.8	0.9	1.2	1.2	1.2

1) "Other" includes coal and propane.

Source:

a) Natural Resources Canada, Residential End-Use Model, Ottawa, 2016.

Residential Sector

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2008	2009	2010	2011	2012	2013	2014
0.5	0.4	0.3	0.3	0.2	0.2	0.1
7.2	7.2	7.2	7.3	7.4	7.4	7.4
0.0	0.0	0.0	0.0	0.0	0.0	0.0
7.6	6.0	4.6	3.4	2.2	1.2	0.7
21.1	21.1	20.8	20.4	19.9	19.1	18.3
18.7	20.0	21.5	22.9	24.3	26.2	27.7
28.9	29.1	29.3	29.5	29.6	29.5	29.3
4.3	4.4	4.5	4.7	4.8	4.8	4.9
1.0	1.0	1.0	1.0	1.0	1.0	1.0
1.9	1.9	1.9	1.9	1.9	1.9	1.9
4.8	4.8	4.8	4.7	4.7	4.7	4.7
2.3	2.3	2.3	2.3	2.3	2.2	2.2
0.5	0.5	0.5	0.5	0.5	0.5	0.5
1.2	1.2	1.3	1.3	1.3	1.3	1.3

Residential Lighting and Space Cooling Details

	1990	1995	2005	2006	2007
Total Lighting Energy Use¹ (PJ)^a	49.5	49.6	57.3	56.8	58.0
Activity					
Total Households (thousands) ^a	9,895	10,900	12,587	12,756	12,985
Energy Intensity (GJ/Household)^a	5.0	4.6	4.6	4.5	4.5
Heat Loss (PJ)^a	20.8	22.3	24.0	22.2	24.6
Total Space Cooling Energy Use¹ (PJ)^a	10.0	13.3	32.3	25.4	25.7
Energy Use by Cooling System Type (PJ)^a					
Room	2.6	2.7	5.2	4.3	4.4
Central	7.4	10.6	27.2	21.0	21.2
Activity					
Cooled Floor Space (million m ²) ^a	268	354	675	728	721
Energy Intensity (MJ/m²)^a	37.2	37.6	47.9	34.8	35.6
Cooling Degree-Day Index^{a,b}	1.05	1.18	1.79	1.38	1.45
Total Cooling System Stock (thousands)^a	2,438	3,045	5,572	6,144	6,282
System Stock by Type (thousands)^a					
Room	1,067	1,142	1,992	2,289	2,446
Central	1,371	1,903	3,580	3,855	3,836
New Unit Efficiency^a					
Room (EER)	7.1	9.2	9.4	10.9	10.9
Central (SEER)	9.1	10.2	10.3	13.0	13.0
Stock Efficiency^a					
Room (EER)	6.8	7.4	9.1	9.5	9.8
Central (SEER)	8.6	9.2	10.0	10.3	10.5

1) Lighting and space cooling consume only electricity.

Sources:

a) Natural Resources Canada, Residential End-Use Model, Ottawa, 2016.

b) Environment and Climate Change Canada, Climate Summaries, *Monthly Values of Degree-Days Above 18.0°C, 1990–2014*, Ottawa.

Residential Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
58.9	53.2	53.7	54.4	54.0	54.4	53.8	8.6%
13,164	13,417	13,378	13,551	13,706	13,858	13,989	41.4%
4.5	4.0	4.0	4.0	3.9	3.9	3.8	-23.2%
25.7	23.7	21.6	23.0	21.3	23.5	24.4	16.9%
20.3	13.4	24.5	24.9	27.6	19.4	18.3	83.8%
3.4	2.7	4.3	3.9	4.5	3.2	3.1	22.1%
16.9	10.7	20.2	21.0	23.1	16.2	15.2	105.4%
765	774	808	854	875	906	930	246.8%
26.5	17.3	30.4	29.1	31.6	21.4	19.7	-47.0%
1.08	0.93	1.59	1.51	1.70	1.18	1.11	–
6,554	6,600	6,804	6,964	7,089	7,271	7,413	204.0%
2,398	2,376	2,431	2,396	2,412	2,422	2,412	126.1%
4,156	4,223	4,374	4,568	4,677	4,849	5,001	264.7%
10.9	10.9	12.0	12.0	12.0	12.0	12.0	68.8%
13.0	13.0	13.0	13.0	13.0	13.0	13.0	42.2%
10.0	10.1	10.4	10.6	10.8	11.0	11.2	63.2%
10.7	10.9	11.1	11.2	11.4	11.6	11.7	36.1%

Residential Sector

Residential Appliance Details

	1990	1995	2005	2006	2007
Total Appliance Energy Use (PJ)^a	176.8	171.0	181.6	183.4	190.2
Energy Use by Energy Source (PJ)^a					
Electricity	173.0	166.9	176.1	177.6	183.7
Natural Gas	3.8	4.1	5.5	5.8	6.5
Energy Use by Appliance Type (PJ)^a					
Refrigerator	58.2	50.2	36.1	35.3	35.4
Freezer	23.5	20.1	12.0	11.6	11.5
Dishwasher ¹	4.7	4.5	4.2	4.1	4.0
Clothes Washer ¹	3.5	3.9	4.4	4.3	4.3
Clothes Dryer	31.2	30.5	34.6	35.0	36.3
Range	27.3	27.7	33.1	33.3	34.5
Other Appliances ²	28.3	34.0	57.1	59.9	64.3
Activity					
Total Households (thousands) ^{a,b}	9,895	10,900	12,587	12,756	12,985
Energy Intensity (GJ/household)^{a,b}	17.9	15.7	14.4	14.4	14.6
Heat Loss by Appliance Type (PJ)^a					
Refrigerator	24.6	22.7	15.2	13.8	15.1
Freezer	10.0	9.2	5.1	4.6	5.0
Dishwasher ¹	0.7	0.7	0.6	0.5	0.6
Clothes Washer ¹	0.8	1.0	1.0	0.9	1.0
Clothes Dryer	3.7	3.9	4.1	3.8	4.3
Range	9.6	10.4	11.6	10.9	12.3
Other Appliances ²	12.0	15.4	24.1	23.5	27.5
Appliances per Household by Appliance Type^{a,b}					
Refrigerator	1.18	1.20	1.26	1.27	1.27
Freezer	0.57	0.58	0.55	0.55	0.55
Dishwasher	0.42	0.47	0.57	0.58	0.59
Clothes Washer	0.74	0.78	0.82	0.82	0.82
Clothes Dryer	0.72	0.76	0.83	0.84	0.84
Range	0.98	0.99	0.99	0.99	0.99
Other Appliances ²	10.12	11.11	15.26	15.54	15.77

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.

Residential Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
194.2	177.6	178.7	183.7	185.3	189.0	191.9	8.5%
187.3	170.7	171.7	175.9	177.6	181.1	183.7	6.2%
6.9	6.9	6.9	7.8	7.7	7.9	8.2	114.0%
35.1	30.8	29.6	29.2	28.5	28.3	27.8	-52.3%
11.2	9.9	9.4	9.3	9.2	9.3	9.3	-60.5%
3.8	3.4	3.2	3.0	2.8	2.7	2.6	-44.5%
3.9	3.3	3.1	3.0	2.8	2.6	2.4	-32.0%
36.8	33.6	33.6	34.3	34.5	35.2	35.5	13.8%
34.8	32.0	31.7	32.5	32.0	32.1	31.9	16.8%
68.6	64.6	68.1	72.5	75.5	78.7	82.3	191.1%
13,164	13,417	13,378	13,551	13,706	13,858	13,989	41.4%
14.7	13.2	13.4	13.6	13.5	13.6	13.7	-23.2%
15.4	13.8	11.9	12.3	11.2	12.3	12.6	-48.9%
5.0	4.5	3.9	4.0	3.7	4.1	4.3	-57.1%
0.6	0.5	0.4	0.4	0.4	0.4	0.4	-40.5%
1.0	0.8	0.7	0.7	0.6	0.6	0.6	-26.9%
4.5	4.2	3.8	4.1	3.8	4.3	4.5	22.6%
12.7	11.9	10.6	11.4	10.4	11.5	12.0	24.5%
30.0	28.9	27.4	30.6	29.6	34.0	37.3	211.3%
1.27	1.27	1.26	1.27	1.27	1.27	1.27	7.5%
0.54	0.54	0.54	0.54	0.54	0.54	0.54	-4.9%
0.59	0.60	0.60	0.60	0.60	0.60	0.60	43.3%
0.81	0.82	0.81	0.81	0.81	0.81	0.81	10.4%
0.84	0.84	0.84	0.84	0.84	0.84	0.84	16.3%
1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.9%
15.89	16.07	16.18	16.33	16.43	16.48	16.82	66.2%

Sources:

- Natural Resources Canada, Residential End-Use Model, Ottawa, 2016.
- Statistics Canada, *Survey of Household Spending, 1997–2014*, Ottawa, 2016.

Residential Sector

Residential Appliance Unit Energy Consumption (UEC)

	1990	1995	2005	2006	2007
UEC¹ for New Electric Appliances (kWh/year)^a					
Refrigerator	956	642	469	481	483
Freezer	714	382	386	380	384
Dishwasher ²	277	181	107	101	96
Clothes Washer ²	134	118	65	58	44
Clothes Dryer	1,103	909	904	905	912
Range	772	771	573	537	524
UEC¹ for New Natural Gas Appliances (kWh/year)^b					
Clothes Dryer	925	889	880	880	880
Range	1,357	1,236	1,226	1,226	1,226
UEC¹ for Stock of Electric Appliances (kWh/year)^b					
Refrigerator	1,504	1,262	689	657	629
Freezer	1,272	1,052	522	495	471
Dishwasher ²	338	291	178	168	151
Clothes Washer ²	145	150	128	123	117
Clothes Dryer	1,294	1,186	992	978	964
Range	803	793	747	732	716
UEC¹ for Stock of Natural Gas Appliances (kWh/year)^b					
Clothes Dryer	1,480	1,122	880	880	880
Range	1,519	1,388	1,251	1,246	1,241

1) Unit energy consumption (UEC) is based on rated efficiency.

2) Excludes hot water requirements.

Sources:

a) Special tabulations from the Canadian Appliance Manufacturers Association, 1990–2011.

Data for 2012 onward were provided by the Association of Home Appliance Manufacturers, Canada, 2016.

b) Natural Resources Canada, Residential End-Use Model, Ottawa, 2016.

Residential Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
467	430	425	421	416	416	416	-56.4%
375	356	365	390	362	362	340	-52.3%
93	88	84	80	75	75	75	-72.9%
41	37	35	34	36	37	34	-74.3%
916	921	928	933	929	929	924	-16.2%
522	518	522	526	525	525	523	-32.3%
880	880	880	880	880	880	880	-4.9%
1,226	1,226	1,226	1,226	1,226	1,226	1,226	-9.7%
604	580	549	527	511	498	485	-67.7%
449	428	400	387	381	378	375	-70.6%
141	133	122	113	105	99	94	-72.2%
105	95	89	82	76	70	64	-55.7%
951	940	925	918	915	915	916	-29.2%
697	682	664	648	632	617	604	-24.8%
880	880	880	880	880	880	880	-40.5%
1,237	1,234	1,230	1,228	1,227	1,226	1,226	-19.3%

Residential Sector

Residential Water Heating Energy Use and Water Heater Stock Share

	1990	1995	2005	2006	2007
Total Water Heating Energy Use (PJ)^a	230.8	245.8	279.4	282.5	295.2
Energy Use by Energy Source (PJ)^a					
Electricity	76.3	72.2	76.4	77.5	78.6
Natural Gas	128.9	152.7	180.8	181.8	192.8
Heating Oil	20.0	15.7	16.4	16.9	17.5
Other ¹	3.7	1.7	1.1	1.2	1.4
Wood	1.9	3.5	4.6	5.0	4.9
Activity					
Total Households (thousands) ^{a,b}	9,895	10,900	12,587	12,756	12,985
Energy Intensity (GJ/household)^{a,b}	23.3	22.6	22.2	22.1	22.7
Water Heater Stock Market Shares (%)^a					
Electricity	52.5	49.7	45.6	45.5	45.2
Natural Gas	41.5	44.6	48.9	49.0	49.3
Heating Oil	5.1	4.7	4.5	4.4	4.3
Other ¹	0.6	0.6	0.4	0.4	0.4
Wood	0.2	0.4	0.7	0.7	0.7
Heat Loss (PJ)^a	7.5	8.6	9.3	8.9	10.3

1) "Other" includes coal and propane.

Sources:

- a) Natural Resources Canada, Residential End-Use Model, Ottawa, 2016.
 b) Statistics Canada, *Survey of Household Spending, 1997–2014*, Ottawa, 2016.

Residential Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
292.7	281.4	280.2	299.1	295.6	295.3	300.0	30.0%
78.0	74.2	73.2	73.7	74.6	74.9	75.8	-0.7%
193.0	185.9	184.1	202.9	198.5	201.6	208.3	61.5%
15.3	15.0	15.4	14.8	13.7	11.5	10.1	-49.5%
1.4	1.3	1.6	1.7	2.0	1.4	1.2	-66.7%
5.0	5.0	5.9	6.0	6.8	5.9	4.6	146.7%
13,164	13,417	13,378	13,551	13,706	13,858	13,989	41.4%
22.2	21.0	20.9	22.1	21.6	21.3	21.4	-8.0%
45.1	44.9	44.7	44.6	44.6	44.2	44.1	—
49.5	49.7	50.0	50.1	50.1	50.6	50.8	—
4.3	4.3	4.2	4.1	4.2	4.0	4.0	—
0.4	0.4	0.4	0.4	0.4	0.4	0.4	—
0.7	0.7	0.7	0.7	0.7	0.7	0.7	—
10.6	10.4	9.5	10.7	9.9	11.0	11.8	57.8%

Residential Energy Prices and Background Indicators

	1990	1995	2005	2006	2007
Energy Prices by Energy Source (incl. taxes)					
Natural Gas (cents/m ³) ^{a,d}	19.1	22.4	51.3	53.0	50.5
Heating Oil (cents/litre) ^{f,d,e}	35.6	35.6	78.2	82.0	85.0
Electricity (cents/kWh) ^{b,d}	6.2	7.8	9.2	9.4	9.5
Background Indicators					
Consumer Price Index (2007 = 100)^c					
Natural Gas	39.7	47.7	103.8	107.0	100.0
Fuel Oil and Other Fuels	42.2	43.5	92.0	96.2	100.0
Electricity	60.9	77.3	92.9	98.1	100.0
Real Personal Disposable Income per Household (\$2007)^{c,g}					
	57,605	54,073	59,357	61,694	62,548
Total Population (thousands)^f					
	27,691	29,302	32,242	32,571	32,888

Sources:

- a) Statistics Canada, *Sales of natural gas*, Table 129-0003, Ottawa, 2016 (CANSIM).
b) Hydro-Québec, *Comparison of Electricity Prices in Major North American Cities*, 2014.
c) Statistics Canada, *Consumer Price Index*, Table 326-0021, Ottawa, 2016 (CANSIM).
d) Statistics Canada, *Report on Energy Supply-Demand in Canada 1990–2014*, Table 128-0016, Ottawa, 2016 (CANSIM).
e) Statistics Canada, *Estimates of Population, by Age Group and Sex for July 1, Canada, Provinces and Territories*, Table 051-0001, Ottawa, 2016 (CANSIM).
f) Statistics Canada, *Average retail prices for gasoline and fuel oil by urban centre*, Table 326-0009, Ottawa, 2016 (CANSIM).
g) Statistics Canada, *Current and Capital Accounts – Households, quarterly*, Table 380-0072, Ottawa, 2016 (CANSIM).

Residential Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
52.2	44.0	44.9	43.7	40.6	41.5	46.1	141.3%
111.1	77.6	90.3	112.7	118.1	118.6	124.9	250.6%
9.6	9.5	9.6	10.4	10.4	10.7	10.9	75.7%
111.8	89.3	87.7	84.8	76.1	81.3	95.0	139.3%
130.7	91.6	106.3	133.1	139.1	139.4	146.4	247.0%
100.3	102.0	106.9	110.1	114.6	117.2	122.6	101.5%
63,712	63,985	66,119	65,738	66,635	68,425	68,496	18.9%
33,246	33,629	34,005	34,343	34,751	35,155	35,544	28.4%

Chapter 3

Commercial/Institutional Sector

The Data Situation

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.

In 2014, Statistics Canada revised the amount of electricity used in the commercial/institutional sector. The revision affects the 2013 data with a backcast to 1990. The reader should be aware that this edition does not include changes from the 2017 CANSIM update. These will be included in the next edition.

To provide more detail on how energy is used and assess Canadian energy use trends in this sector, the Office of Energy Efficiency (OEE) developed the Commercial/Institutional End-Use Model (CEUM). This model is used to allocate the energy use reported in the RES-D to 10 activity types and six end uses. To do so, other information is required, mainly, data on floor space and energy intensity.

Thus, floor space estimates are provided by Environment and Climate Change Canada (ECCC). The data are developed 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). Also, CEUM used the *Survey of Commercial and Institutional Energy Use – Establishments* (SCIEU) as reference for energy intensities. The latest SCIEU was undertaken by Statistics Canada on behalf of the OEE to collect data for the reference year 2009. The results of SCIEU 2014 will be available for the next edition of this handbook.

Furthermore, the SCIEU includes new information related to the penetration rate for air conditioners, which was used to update the model accordingly.



Commercial/Institutional Sector

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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 ECCC).

The commercial/institutional prices of heating oil and natural gas are weighted averages of regional prices. Heating oil prices are provided by the Petroleum Resources Branch of Natural Resources Canada. Natural gas prices are from Statistics Canada's CANSIM Table 129-0003. The commercial/institutional prices of electricity 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.

Commercial/Institutional Sector

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

	1990	1995	2005	2006	2007
Total Energy Use (PJ)^a	745.6	840.4	947.6	895.1	941.3
Energy Use by Energy Source (PJ)^a					
Electricity	268.6	300.8	345.5	342.5	370.1
Natural Gas	387.1	427.6	504.9	468.5	482.3
Light Fuel Oil and Kerosene	62.0	61.2	44.1	33.8	33.8
Heavy Fuel Oil	11.4	8.6	24.7	20.3	19.9
Steam	0.2	0.4	2.6	2.6	3.8
Other ¹	16.3	41.8	25.8	27.3	31.4
Energy Use by End Use (PJ)^b					
Space Heating	449.9	511.7	543.1	495.3	523.7
Water Heating	57.7	62.0	75.2	75.1	78.7
Auxiliary Equipment	54.3	63.6	99.4	103.6	106.8
Auxiliary Motors	60.4	68.7	60.4	59.9	61.8
Lighting	84.0	94.1	98.6	100.8	105.2
Space Cooling	30.3	32.5	62.6	52.2	56.1
Street Lighting ^f	8.9	7.8	8.3	8.1	9.0

1) "Other" includes coal and propane.

Sources:

- a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2014*, CANSIM (Table 128-0016), Ottawa, 2016.
b) Natural Resources Canada, *Commercial/Institutional End-Use Model*, Ottawa, 2016.
f) Statistics Canada, *Electric Power Generation, Transmission and Distribution 1990–2007* (Cat. No. 57-202-X). Data for reference year 2008 onward were provided on request.

Commercial/Institutional Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
955.2	928.2	902.0	947.8	925.6	924.9	982.9	31.8%
383.2	358.9	363.3	374.4	387.5	359.2	375.5	39.8%
495.2	508.7	478.4	503.6	464.4	496.7	536.2	38.5%
24.6	17.9	19.1	22.3	18.3	28.7	33.2	-46.4%
15.2	11.2	8.0	10.8	12.0	3.6	4.1	-64.0%
3.8	1.5	0.0	0.0	0.0	0.3	0.5	163.5%
33.1	30.0	33.1	36.6	43.4	36.4	33.4	105.6%
532.9	525.0	487.6	521.2	488.3	508.4	554.2	23.2%
78.9	74.7	73.7	76.1	76.2	72.6	74.5	29.2%
114.5	121.3	123.1	125.9	127.4	132.5	140.8	159.1%
64.4	61.5	57.2	60.3	60.2	60.4	59.0	-2.3%
105.3	102.5	102.4	105.3	108.6	104.5	108.6	29.3%
50.4	36.2	50.5	51.4	57.4	38.8	38.2	25.9%
8.6	7.1	7.5	7.6	7.5	7.6	7.6	-14.7%

Commercial/Institutional Sector

Commercial/Institutional Secondary Energy Use (Final Demand) by Energy Source, End Use and Activity Type (cont.)

	1990	1995	2005	2006	2007
Energy Use by Activity Type² (PJ)^b					
Wholesale Trade	53.2	56.9	58.4	55.0	57.6
Retail Trade	123.0	135.3	157.0	149.5	158.2
Transportation and Warehousing	45.1	47.0	41.2	38.0	39.6
Information and Cultural Industries	14.2	17.0	20.1	18.9	20.0
Offices ³	234.5	273.7	330.9	311.3	328.1
Educational Services	95.7	108.4	120.4	113.0	118.1
Health Care and Social Assistance	83.0	93.7	101.6	96.5	101.0
Arts, Entertainment and Recreation	16.5	20.9	23.2	22.0	23.5
Accommodation and Food Services	54.9	61.8	68.6	65.9	69.1
Other Services	16.5	17.9	18.0	16.7	17.2
Activity					
Total Floor Space (million m ²) ^c	509.9	558.7	654.2	667.3	679.7
Energy Intensity² (GJ/m²)^{a,c}	1.44	1.49	1.44	1.33	1.37
Heating Degree-Day Index^{b,d}	0.92	0.98	0.92	0.85	0.93
Cooling Degree-Day Index^{b,e}	1.05	1.18	1.79	1.38	1.45

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:

- Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2014*, CANSIM (Table 128-0016), Ottawa, 2016.
- Natural Resources Canada, *Commercial/Institutional End-Use Model*, Ottawa, 2016.
- Informetrica Limited, *The Informetrica Model*, 1990–2011. Data for 2012 onward are provided by Environment and Climate Change Canada. They assumed responsibility for operating *The Informetrica Model* as Informetrica Limited ceased its operations.
- Environment and Climate Change Canada, *Climate Summaries, Monthly Values of Degree-Days Below 18.0°C, 1990–2014*, Ottawa.
- Environment and Climate Change Canada, *Climate Summaries, Monthly Values of Degree-Days Above 18.0°C, 1990–2014*, Ottawa.
- Statistics Canada, *Electric Power Generation, Transmission and Distribution 1990–2007* (Cat. No. 57-202-X). Data for reference year 2008 onward were provided on request.

Commercial/Institutional Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
58.0	56.2	53.6	55.9	54.0	53.1	56.3	5.8%
161.2	156.7	150.4	157.5	153.3	151.2	161.3	31.1%
39.7	37.8	36.5	38.1	36.4	35.8	37.8	-16.3%
20.1	20.0	19.6	20.4	20.0	19.6	21.1	48.8%
337.2	326.5	316.2	332.1	324.3	331.9	350.8	49.6%
118.2	115.5	114.0	120.3	118.0	117.5	126.3	32.0%
101.1	98.9	97.3	103.4	102.5	100.5	107.0	28.9%
23.6	23.5	23.0	24.2	23.7	23.2	24.8	50.1%
70.4	69.6	68.2	72.0	70.5	69.1	74.0	34.8%
17.1	16.4	15.6	16.3	15.5	15.3	16.1	-2.6%
693.2	703.8	713.9	721.6	732.1	743.1	754.7	48.0%
1.37	1.31	1.25	1.30	1.25	1.23	1.29	-10.5%
0.95	0.96	0.87	0.90	0.84	0.93	0.98	–
1.08	0.93	1.59	1.51	1.70	1.18	1.11	–

Commercial/Institutional Sector

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

	1990	1995	2005	2006	2007
Total GHG Emissions Including Electricity (Mt of CO₂e)^{a,d}	41.0	44.2	51.3	47.9	50.5
GHG Emissions by Energy Source (Mt of CO₂e)^{a,d}					
Electricity	15.1	15.2	19.6	18.9	20.5
Natural Gas	19.6	21.5	25.2	23.4	24.2
Light Fuel Oil and Kerosene	4.4	4.3	3.1	2.4	2.4
Heavy Fuel Oil	0.9	0.7	1.8	1.5	1.5
Steam	0.0	0.0	0.0	0.0	0.0
Other ¹	1.0	2.5	1.6	1.7	1.9
GHG Emissions by End Use (Mt of CO₂e)^{b,d}					
Space Heating	24.4	27.3	28.6	25.9	27.4
Water Heating	3.2	3.3	4.1	4.0	4.2
Auxiliary Equipment	3.1	3.3	5.6	5.7	5.9
Auxiliary Motors	3.4	3.5	3.4	3.3	3.4
Lighting	4.7	4.8	5.6	5.6	5.8
Space Cooling	1.7	1.6	3.5	2.9	3.1
Street Lighting ^c	0.5	0.4	0.5	0.4	0.5
GHG Emissions by Activity Type² (Mt of CO₂e)^{b,d}					
Wholesale Trade	2.9	3.0	3.1	2.9	3.1
Retail Trade	6.7	7.1	8.5	8.0	8.5
Transportation and Warehousing	2.5	2.5	2.2	2.0	2.1
Information and Cultural Industries	0.8	0.9	1.1	1.0	1.1
Offices ³	12.9	14.4	17.8	16.6	17.5
Educational Services	5.3	5.7	6.5	6.1	6.3
Health Care and Social Assistance	4.6	5.0	5.5	5.2	5.4
Arts, Entertainment and Recreation	0.9	1.1	1.3	1.2	1.3
Accommodation and Food Services	3.0	3.3	3.8	3.6	3.7
Other Services	0.9	1.0	1.0	0.9	0.9
GHG Intensity (tonne/TJ)^{a,d}	54.9	52.6	54.2	53.5	53.6

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.

Commercial/Institutional Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
49.5	46.2	45.5	45.8	43.2	43.3	46.6	13.7%
20.0	17.0	17.9	16.2	15.4	14.3	15.6	3.3%
24.6	25.3	23.7	24.9	22.9	24.4	26.2	34.0%
1.7	1.3	1.3	1.6	1.3	2.0	2.3	-47.6%
1.1	0.8	0.6	0.8	0.9	0.3	0.3	-64.6%
0.0	0.0	0.0	0.0	0.0	0.0	0.0	—
2.0	1.8	2.0	2.2	2.7	2.3	2.1	111.5%
27.4	26.6	24.9	26.5	24.7	25.7	27.9	14.2%
4.2	3.9	3.8	3.9	3.9	3.7	3.8	19.7%
6.0	5.8	6.1	5.6	5.2	5.5	6.0	96.5%
3.4	2.9	2.8	2.6	2.4	2.4	2.5	-27.8%
5.5	4.9	5.0	4.6	4.3	4.2	4.5	-4.4%
2.6	1.7	2.5	2.3	2.3	1.6	1.6	-5.5%
0.4	0.3	0.4	0.3	0.3	0.3	0.3	-36.9%
3.0	2.8	2.7	2.7	2.5	2.5	2.7	-8.4%
8.3	7.8	7.6	7.6	7.1	7.0	7.6	13.7%
2.0	1.9	1.8	1.8	1.7	1.7	1.8	-27.0%
1.0	1.0	1.0	1.0	0.9	0.9	1.0	27.0%
17.5	16.3	16.0	16.1	15.1	15.5	16.6	28.7%
6.1	5.7	5.7	5.8	5.5	5.5	6.0	13.9%
5.3	4.9	4.9	5.0	4.8	4.8	5.1	11.8%
1.2	1.2	1.2	1.2	1.1	1.1	1.2	28.1%
3.7	3.5	3.5	3.5	3.3	3.3	3.5	17.2%
0.9	0.8	0.8	0.8	0.7	0.7	0.8	-17.4%
51.8	49.8	50.5	48.3	46.6	46.8	47.4	-13.7%

Sources:

- Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2014*, CANSIM (Table 128-0016), Ottawa, 2016.
- Natural Resources Canada, *Commercial/Institutional End-Use Model*, Ottawa, 2016.
- Statistics Canada, *Electric Power Generation, Transmission and Distribution 1990–2007* (Cat. No. 57-202-X). Data for reference year 2008 onward were provided on request.
- Environment and Climate Change Canada, *National Inventory Report 1990–2014: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2016.

Commercial/Institutional Sector

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

	1990	1995	2005	2006	2007
Total GHG Emissions <u>Excluding</u> Electricity (Mt of CO₂e)^{a,d}	25.8	29.0	31.7	29.0	30.0
GHG Emissions by End Use (Mt of CO₂e)^{b,d}					
Space Heating	22.5	25.5	27.2	24.5	25.3
Water Heating	3.0	3.2	3.9	3.8	4.0
Auxiliary Equipment	0.2	0.3	0.5	0.5	0.5
Auxiliary Motors	0.0	0.0	0.0	0.0	0.0
Lighting	0.0	0.0	0.0	0.0	0.0
Space Cooling	0.1	0.1	0.2	0.2	0.2
Street Lighting ^c	0.0	0.0	0.0	0.0	0.0
GHG Emissions by Activity Type^e (Mt of CO₂e)^{b,d}					
Wholesale Trade	1.8	2.0	1.9	1.8	1.8
Retail Trade	4.2	4.6	5.2	4.8	5.0
Transportation and Warehousing	1.6	1.7	1.5	1.3	1.3
Information and Cultural Industries	0.5	0.6	0.7	0.6	0.6
Offices ²	8.2	9.5	11.1	10.1	10.6
Educational Services	3.4	3.8	4.0	3.7	3.7
Health Care and Social Assistance	3.0	3.3	3.5	3.2	3.3
Arts, Entertainment and Recreation	0.6	0.7	0.8	0.7	0.7
Accommodation and Food Services	1.9	2.2	2.4	2.2	2.3
Other Services	0.6	0.6	0.6	0.5	0.5
GHG Intensity (tonne/TJ)^{a,d}	34.7	34.5	33.5	32.4	31.8

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, 1990–2014*, CANSIM (Table 128-0016), Ottawa, 2016.

b) Natural Resources Canada, *Commercial/Institutional End-Use Model*, Ottawa, 2016.

c) Statistics Canada, *Electric Power Generation, Transmission and Distribution 1990–2007* (Cat. No. 57-202-X). Data for reference year 2008 onward were provided on request.

d) Environment and Climate Change Canada, *National Inventory Report 1990–2014: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2016.

Commercial/Institutional Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
29.5	29.2	27.7	29.6	27.8	29.0	31.0	19.8%
24.9	24.8	23.3	25.0	23.3	24.7	26.6	18.0%
4.0	3.8	3.6	3.8	3.8	3.5	3.6	20.1%
0.5	0.5	0.5	0.6	0.6	0.6	0.6	166.5%
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	–
0.2	0.1	0.2	0.2	0.2	0.1	0.1	111.4%
0.0	0.0	0.0	0.0	0.0	0.0	0.0	–
1.8	1.7	1.6	1.7	1.6	1.6	1.8	-4.1%
5.0	4.9	4.6	4.8	4.6	4.7	5.1	19.6%
1.3	1.3	1.2	1.3	1.2	1.2	1.3	-21.8%
0.6	0.6	0.6	0.6	0.6	0.6	0.7	32.9%
10.6	10.5	9.8	10.5	9.9	10.4	10.9	33.5%
3.6	3.6	3.5	3.7	3.5	3.7	4.0	19.2%
3.2	3.1	3.1	3.3	3.2	3.3	3.5	18.9%
0.7	0.7	0.7	0.7	0.7	0.7	0.8	34.4%
2.2	2.2	2.1	2.3	2.2	2.2	2.4	24.6%
0.5	0.5	0.5	0.5	0.5	0.5	0.5	-13.7%
30.9	31.4	30.7	31.2	30.0	31.3	31.5	-9.1%

Commercial/Institutional Sector

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

	1990	1995	2005	2006	2007
Total Energy Use for Wholesale Trade (PJ)^a	53.2	56.9	58.4	55.0	57.6
Energy Use by Energy Source (PJ)^a					
Electricity	18.8	20.2	21.3	21.0	22.6
Natural Gas	29.0	30.3	32.0	29.4	30.2
Light Fuel Oil and Kerosene	3.5	3.2	2.0	1.6	1.4
Heavy Fuel Oil	0.6	0.5	1.3	1.1	1.1
Steam	0.0	0.0	0.2	0.2	0.2
Other ¹	1.2	2.8	1.6	1.7	2.0
Activity					
Floor Space (million m ²) ^b	38.61	39.95	42.78	43.38	44.16
Energy Intensity (GJ/m²)^{a,b}	1.38	1.43	1.37	1.27	1.30
Total Energy Use for Retail Trade (PJ)^a	123.0	135.3	157.0	149.5	158.2
Energy Use by Energy Source (PJ)^a					
Electricity	43.7	47.9	57.3	57.2	62.1
Natural Gas	66.9	71.8	84.6	79.1	82.1
Light Fuel Oil and Kerosene	8.2	7.7	6.7	5.0	4.8
Heavy Fuel Oil	1.5	1.2	3.6	3.1	3.2
Steam	0.0	0.0	0.4	0.4	0.6
Other ¹	2.6	6.7	4.4	4.7	5.5
Activity					
Floor Space (million m ²) ^b	80.84	86.04	104.12	106.89	109.96
Energy Intensity (GJ/m²)^{a,b}	1.52	1.57	1.51	1.40	1.44

1) "Other" includes coal and propane.

Sources:

- a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2014*, CANSIM (Table 128-0016), Ottawa, 2016.
 b) Informetrica Limited, *The Informetrica Model*, 1990–2011. Data for 2012 onward are provided by Environment and Climate Change Canada. They assumed responsibility for operating *The Informetrica Model* as Informetrica Limited ceased its operations.

Commercial/Institutional Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
58.0	56.2	53.6	55.9	54.0	53.1	56.3	5.8%
23.5	21.9	21.8	22.3	22.8	20.6	21.4	13.8%
30.4	31.3	28.7	29.9	27.3	29.1	31.4	8.2%
0.9	0.5	0.7	0.8	0.5	1.0	1.2	-66.2%
0.9	0.6	0.4	0.5	0.8	0.2	0.3	-52.8%
0.2	0.0	0.0	0.0	0.0	0.0	0.0	–
2.1	1.9	2.1	2.3	2.6	2.1	1.9	67.0%
44.84	45.11	45.23	45.34	45.52	45.88	46.33	20.0%
1.29	1.25	1.19	1.23	1.19	1.16	1.21	-11.8%
161.2	156.7	150.4	157.5	153.3	151.2	161.3	31.1%
64.4	61.0	61.1	62.9	64.6	58.4	61.2	40.1%
84.9	86.9	80.0	84.1	77.4	82.8	89.6	33.9%
3.1	1.7	2.2	2.6	1.7	3.2	4.0	-51.6%
2.5	1.7	1.1	1.3	2.2	0.6	0.9	-38.9%
0.6	0.0	0.0	0.0	0.0	0.0	0.0	–
5.7	5.3	6.0	6.6	7.4	6.2	5.6	111.4%
113.08	114.49	115.46	116.22	117.52	119.26	121.19	49.9%
1.43	1.37	1.30	1.35	1.30	1.27	1.33	-12.5%

Commercial/Institutional Sector

Commercial/Institutional Secondary Energy Use (Final Demand) by Activity Type and Energy Source (cont.)

	1990	1995	2005	2006	2007
Total Energy Use for Transportation and Warehousing (PJ)^a	45.1	47.0	41.2	38.0	39.6
Energy Use by Energy Source (PJ)^a					
Electricity	14.7	15.2	13.1	12.8	13.8
Natural Gas	25.0	25.6	23.7	21.5	22.0
Light Fuel Oil and Kerosene	3.9	3.5	2.2	1.5	1.4
Heavy Fuel Oil	0.7	0.5	1.1	0.9	0.8
Steam	0.0	0.0	0.2	0.2	0.3
Other ¹	0.9	2.3	1.0	1.1	1.3
Activity					
Floor Space (million m ²) ^b	33.92	34.22	33.26	33.37	33.70
Energy Intensity (GJ/m²)^{a,b}	1.33	1.37	1.24	1.14	1.17
Total Energy Use for Information and Cultural Industries (PJ)^a	14.2	17.0	20.1	18.9	20.0
Energy Use by Energy Source (PJ)^a					
Electricity	5.1	6.1	7.4	7.4	8.1
Natural Gas	7.0	8.3	10.4	9.7	9.9
Light Fuel Oil and Kerosene	1.5	1.6	1.2	0.9	0.8
Heavy Fuel Oil	0.3	0.1	0.4	0.3	0.3
Steam	0.0	0.0	0.0	0.0	0.1
Other ¹	0.3	0.8	0.6	0.6	0.7
Activity					
Floor Space (million m ²) ^b	8.97	10.49	12.93	13.19	13.39
Energy Intensity (GJ/m²)^{a,b}	1.58	1.62	1.55	1.44	1.49

1) "Other" includes coal and propane.

Sources:

a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2014*, CANSIM (Table 128-0016), Ottawa, 2016.

b) Informetrica Limited, *The Informetrica Model*, 1990–2011. Data for 2012 onward are provided by Environment and Climate Change Canada. They assumed responsibility for operating *The Informetrica Model* as Informetrica Limited ceased its operations.

Commercial/Institutional Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
39.7	37.8	36.5	38.1	36.4	35.8	37.8	-16.3%
14.2	13.0	12.9	13.4	13.5	12.0	12.4	-15.2%
22.4	22.7	21.1	22.0	19.9	21.3	22.6	-9.5%
0.9	0.5	0.6	0.7	0.5	0.8	1.1	-71.3%
0.6	0.5	0.4	0.5	0.7	0.2	0.2	-63.7%
0.3	0.0	0.0	0.0	0.0	0.0	0.0	–
1.3	1.2	1.4	1.5	1.8	1.5	1.4	54.6%
33.85	33.83	33.74	33.69	33.61	33.64	33.75	-0.5%
1.17	1.12	1.08	1.13	1.08	1.06	1.12	-15.8%
20.1	20.0	19.6	20.4	20.0	19.6	21.1	48.8%
8.4	7.9	8.0	8.2	8.6	7.7	8.0	57.8%
10.1	10.8	10.2	10.8	9.9	10.5	11.5	63.8%
0.5	0.4	0.4	0.5	0.4	0.6	0.7	-51.6%
0.3	0.2	0.1	0.1	0.1	0.0	0.0	-85.7%
0.1	0.0	0.0	0.0	0.0	0.0	0.0	–
0.8	0.7	0.8	0.9	1.0	0.8	0.8	158.1%
13.66	13.96	14.15	14.29	14.50	14.73	14.99	67.1%
1.47	1.44	1.39	1.43	1.38	1.33	1.41	-11.0%

Commercial/Institutional Sector

Commercial/Institutional Secondary Energy Use (Final Demand) by Activity Type and Energy Source (cont.)

	1990	1995	2005	2006	2007
Total Energy Use for Offices² (PJ)^a	234.5	273.7	330.9	311.3	328.1
Energy Use by Energy Source (PJ)^a					
Electricity	83.4	97.2	118.4	117.1	125.5
Natural Gas	122.9	139.3	180.9	166.9	172.3
Light Fuel Oil and Kerosene	19.5	20.3	13.7	10.8	12.1
Heavy Fuel Oil	3.6	2.8	8.6	6.8	6.7
Steam	0.1	0.4	1.1	1.0	1.5
Other ¹	5.1	13.8	8.2	8.6	10.0
Activity					
Floor Space (million m ²) ^b	193.95	219.73	267.84	273.72	278.83
Energy Intensity (GJ/m²)^{a,b}	1.21	1.25	1.24	1.14	1.18
Total Energy Use for Educational Services (PJ)^a	95.7	108.4	120.4	113.0	118.1
Energy Use by Energy Source (PJ)^a					
Electricity	33.9	38.6	44.2	43.5	47.2
Natural Gas	48.8	54.3	62.8	58.2	59.5
Light Fuel Oil and Kerosene	9.1	8.8	5.9	4.1	3.6
Heavy Fuel Oil	1.7	1.3	3.5	3.0	2.9
Steam	0.0	0.0	0.3	0.3	0.5
Other ¹	2.1	5.4	3.7	3.9	4.4
Activity					
Floor Space (million m ²) ^b	68.14	74.28	86.06	87.09	87.98
Energy Intensity (GJ/m²)^{a,b}	1.40	1.46	1.40	1.30	1.34

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) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2014*, CANSIM (Table 128-0016), Ottawa, 2016.

b) Informetrica Limited, *The Informetrica Model*, 1990–2011. Data for 2012 onward are provided by Environment and Climate Change Canada. They assumed responsibility for operating *The Informetrica Model* as Informetrica Limited ceased its operations.

Commercial/Institutional Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
337.2	326.5	316.2	332.1	324.3	331.9	350.8	49.6%
131.4	123.3	124.9	128.1	133.0	129.5	135.6	62.5%
178.3	180.9	170.2	178.7	166.0	177.5	190.3	54.9%
10.1	8.5	8.2	9.4	8.4	12.3	13.4	-31.4%
5.2	4.3	3.1	4.9	3.8	1.7	1.2	-67.1%
1.5	0.0	0.0	0.0	0.0	0.3	0.5	—
10.7	9.5	9.9	10.9	13.0	10.7	9.8	91.7%
284.96	290.43	294.44	297.66	302.35	307.06	312.10	60.9%
1.18	1.12	1.07	1.12	1.07	1.08	1.12	-7.1%
118.2	115.5	114.0	120.3	118.0	117.5	126.3	32.0%
48.6	45.3	46.4	48.0	49.9	45.5	47.9	41.2%
60.2	62.2	60.0	63.7	58.1	63.0	68.8	40.8%
2.3	1.6	2.0	2.3	1.6	2.8	3.5	-61.3%
2.2	1.4	1.0	1.1	1.8	0.4	0.7	-58.8%
0.5	0.8	0.0	0.0	0.0	0.0	0.0	—
4.5	4.1	4.7	5.2	6.6	5.7	5.4	155.0%
89.11	90.11	92.73	94.42	96.15	98.21	100.32	47.2%
1.33	1.28	1.23	1.27	1.23	1.20	1.26	-10.4%

Commercial/Institutional Sector

Commercial/Institutional Secondary Energy Use (Final Demand) by Activity Type and Energy Source (cont.)

	1990	1995	2005	2006	2007
Total Energy Use for Health Care and Social Assistance (PJ)^a	83.0	93.7	101.6	96.5	101.0
<i>Energy Use by Energy Source (PJ)^a</i>					
Electricity	29.2	32.9	36.2	36.1	39.0
Natural Gas	41.8	46.7	53.0	49.9	51.1
Light Fuel Oil and Kerosene	8.5	8.3	6.2	4.8	4.9
Heavy Fuel Oil	1.6	1.2	3.4	2.7	2.5
Steam	0.0	0.0	0.3	0.3	0.4
Other ¹	1.9	4.6	2.5	2.7	3.1
<i>Activity</i>					
Floor Space (million m ²) ^b	38.16	41.58	47.42	48.53	49.47
Energy Intensity (GJ/m²)^{a,b}	2.18	2.25	2.14	1.99	2.04
Total Energy Use for Arts, Entertainment and Recreation (PJ)^a	16.5	20.9	23.2	22.0	23.5
<i>Energy Use by Energy Source (PJ)^a</i>					
Electricity	6.0	7.5	8.5	8.5	9.5
Natural Gas	8.3	10.3	11.8	11.1	11.5
Light Fuel Oil and Kerosene	1.7	1.9	1.5	1.2	1.0
Heavy Fuel Oil	0.3	0.2	0.6	0.5	0.5
Steam	0.0	0.0	0.0	0.0	0.1
Other ¹	0.3	1.0	0.7	0.8	0.9
<i>Activity</i>					
Floor Space (million m ²) ^b	10.40	12.59	14.92	15.25	15.70
Energy Intensity (GJ/m²)^{a,b}	1.59	1.66	1.55	1.45	1.50

1) "Other" includes coal and propane.

Sources:

a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2014*, CANSIM (Table 128-0016), Ottawa, 2016.

b) Informetrica Limited, *The Informetrica Model*, 1990–2011. Data for 2012 onward are provided by Environment and Climate Change Canada. They assumed responsibility for operating *The Informetrica Model* as Informetrica Limited ceased its operations.

Commercial/Institutional Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
101.1	98.9	97.3	103.4	102.5	100.5	107.0	28.9%
39.9	37.4	38.3	40.1	42.3	37.6	39.1	33.8%
52.0	53.9	51.6	54.6	50.4	53.8	58.0	38.7%
3.7	2.6	2.8	3.2	2.9	4.5	5.4	-37.1%
1.9	1.4	1.2	1.6	1.7	0.3	0.5	-67.7%
0.4	0.7	0.0	0.0	0.0	0.0	0.0	–
3.2	2.9	3.4	3.9	5.1	4.2	4.0	114.0%
50.08	50.99	52.36	53.41	55.12	55.88	56.54	48.2%
2.02	1.94	1.86	1.94	1.86	1.80	1.89	-13.0%
23.6	23.5	23.0	24.2	23.7	23.2	24.8	50.1%
9.7	9.2	9.4	9.7	10.1	9.0	9.4	58.5%
11.9	12.8	12.1	12.8	11.8	12.5	13.7	65.5%
0.6	0.4	0.4	0.5	0.4	0.6	0.7	-56.8%
0.3	0.2	0.1	0.1	0.2	0.0	0.0	-84.1%
0.1	0.0	0.0	0.0	0.0	0.0	0.0	–
1.0	0.9	1.0	1.1	1.2	1.0	0.9	167.7%
15.98	16.40	16.72	17.00	17.29	17.54	17.81	71.3%
1.48	1.43	1.38	1.42	1.37	1.32	1.39	-12.4%

Commercial/Institutional Sector

Commercial/Institutional Secondary Energy Use (Final Demand) by Activity Type and Energy Source (cont.)

	1990	1995	2005	2006	2007
Total Energy Use for Accommodation and Food Services (PJ)^a	54.9	61.8	68.6	65.9	69.1
Energy Use by Energy Source (PJ)^a					
Electricity	19.0	21.2	24.2	24.4	26.5
Natural Gas	29.1	32.2	35.6	33.8	34.7
Light Fuel Oil and Kerosene	4.4	4.3	4.4	3.6	3.4
Heavy Fuel Oil	0.8	0.6	1.9	1.5	1.4
Steam	0.0	0.0	0.1	0.1	0.2
Other ¹	1.5	3.6	2.4	2.5	2.9
Activity					
Floor Space (million m ²) ^b	24.40	26.76	31.41	32.42	33.02
Energy Intensity (GJ/m²)^{a,b}	2.25	2.31	2.18	2.03	2.09
Total Energy Use for Other Services (PJ)^a	16.5	17.9	18.0	16.7	17.2
Energy Use by Energy Source (PJ)^a					
Electricity	5.9	6.4	6.6	6.4	6.8
Natural Gas	8.2	8.8	10.0	8.9	9.0
Light Fuel Oil and Kerosene	1.8	1.6	0.5	0.3	0.3
Heavy Fuel Oil	0.3	0.2	0.4	0.4	0.4
Steam	0.0	0.0	0.0	0.0	0.1
Other ¹	0.4	0.8	0.5	0.6	0.6
Activity					
Floor Space (million m ²) ^b	12.54	13.07	13.47	13.49	13.46
Energy Intensity (GJ/m²)^{a,b}	1.32	1.37	1.34	1.24	1.28

1) "Other" includes coal and propane.

Sources:

- a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2014*, CANSIM (Table 128-0016), Ottawa, 2016.
b) Informetrica Limited, *The Informetrica Model*, 1990–2011. Data for 2012 onward are provided by Environment and Climate Change Canada. They assumed responsibility for operating *The Informetrica Model* as Informetrica Limited ceased its operations.

Commercial/Institutional Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
70.4	69.6	68.2	72.0	70.5	69.1	74.0	34.8%
27.6	26.1	26.8	27.6	28.6	25.4	26.7	40.3%
36.1	38.2	36.1	38.2	35.5	37.6	41.0	40.9%
2.3	1.6	1.6	1.9	1.7	2.6	2.9	-33.9%
1.0	0.7	0.5	0.7	0.6	0.1	0.1	-85.0%
0.2	0.0	0.0	0.0	0.0	0.0	0.0	–
3.2	3.0	3.3	3.6	4.1	3.4	3.2	114.3%
34.16	35.03	35.71	36.26	36.73	37.58	38.36	57.2%
2.06	1.99	1.91	1.98	1.92	1.84	1.93	-14.3%
17.1	16.4	15.6	16.3	15.5	15.3	16.1	-2.6%
7.0	6.4	6.3	6.5	6.5	5.8	6.1	2.7%
8.9	9.1	8.5	8.8	8.0	8.6	9.1	11.9%
0.2	0.1	0.2	0.3	0.2	0.3	0.4	-79.0%
0.3	0.2	0.1	0.1	0.2	0.0	0.0	-89.1%
0.1	0.0	0.0	0.0	0.0	0.0	0.0	–
0.6	0.6	0.6	0.6	0.7	0.6	0.5	36.2%
13.46	13.45	13.38	13.34	13.29	13.30	13.35	6.4%
1.27	1.22	1.17	1.22	1.17	1.15	1.21	-8.5%

Commercial/Institutional Sector

Commercial/Institutional Energy Prices and Background Indicators

	1990	1995	2005	2006	2007
Energy Prices by Energy Source (incl. taxes)					
Natural Gas (cents/m ³) ^{a,d}	15.3	17.7	43.4	46.0	42.0
Light Fuel Oil (cents/litre) ^e	25.8	22.1	61.9	64.2	68.6
Heavy Fuel Oil (cents/litre) ^e	14.1	16.2	38.2	39.2	44.3
Electricity (40 kW/10,000 kWh) ¹ (cents/kWh) ^{b,d}	7.7	9.5	10.1	10.4	10.7
Electricity (500 kW/100,000 kWh) ¹ (cents/kWh) ^{b,d}	8.4	10.3	11.7	11.5	11.5
Background Indicators					
Commercial/Institutional Floor Space (million m ²) ^c	509.9	558.7	654.2	667.3	679.7
Commercial/Institutional Employees (thousands) ^{f,g,c}	8,708	9,191	11,369	11,678	12,034
Employees (per thousand m ²) ^{f,g}	17.1	16.4	17.4	17.5	17.7
Commercial/Institutional GDP (million \$ 2007) ^h	553,450	613,500	872,436	907,354	937,792

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

Sources:

- a) Statistics Canada, *Sales of natural gas*, CANSIM (Table 129-0003), Ottawa, 2016
- b) Hydro-Québec, *Comparison of Electricity Prices in Major North American Cities*, 2014.
- c) Informetrica Limited, *The Informetrica Model*, 1990–2011. Data for 2012 onward are provided by Environment and Climate Change Canada. They assumed responsibility for operating *The Informetrica Model* as Informetrica Limited ceased its operations.
- d) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2014*, CANSIM (Table 128-0016), Ottawa, 2016.
- e) Natural Resources Canada, Petroleum Resources Branch, Pipelines, Gas and LNG Division, Ottawa, 2016.
- f) Statistics Canada, *Labour Force Survey*, CANSIM (Table 282-0008), and *Survey of Employment, Payrolls and Hours*, CANSIM (Tables 281-0005 and 281-0024), Ottawa, 2016.
- g) Statistics Canada, *Gross domestic product (GDP) at basic prices, by North American Industry Classification System (NAICS)* CANSIM (Table 379-0031), Ottawa, 2016. Data prior to 1997 were estimated by Natural Resources Canada using GDP at basic prices, CANSIM (Table 379-0027).

Commercial/Institutional Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
46.4	37.8	38.0	33.8	30.7	31.4	35.6	132.1%
94.3	60.9	70.5	94.6	96.9	98.5	99.3	285.5%
57.6	46.1	54.7	72.2	77.0	74.2	72.2	414.0%
10.8	10.7	10.8	12.2	12.2	12.6	11.2	46.1%
12.2	11.5	12.3	13.2	13.9	15.3	13.1	55.3%
693.2	703.8	713.9	721.6	732.1	743.1	754.7	48.0%
12,236	12,241	12,481	12,629	12,763	12,953	13,064	50.0%
17.7	17.4	17.5	17.5	17.4	17.4	17.3	1.4%
955,434	956,078	978,056	1,004,582	1,023,114	1,044,179	1,067,639	92.9%



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* (RES-D) (Cat. No. 57-003-X). The RESD 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).

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 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 Energy End-Use Data and Analysis Centre's (CIEEDAC's) report *Energy Intensity Indicators for Canadian Industry 1990–2014*. The OEE also updates its energy end-use database by including energy consumption data from the Annual Census of Mines and other industry associations.

Gross domestic product (GDP) data at basic prices are from Statistics Canada, Table 379-0031, Ottawa, 2016 (CANSIM); data prior to 1997 were estimated by the CIEEDAC.

¹ From 1991 to 1994, not all of the 59 industries are available because of the conversion to the North American Industrial Classification System (NAICS) in 2001.



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Industrial Sector

Industrial oil and natural gas prices are weighted averages of regional prices. Heating oil prices are provided by the Petroleum Resources Branch of Natural Resources Canada. Natural gas prices are from Statistics Canada's CANSIM Table 129-0003. 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.

Industrial Secondary Energy Use (Final Demand) and GHG Emissions by Energy Source

	1990	1995	2005	2006	2007
Total Energy Use (PJ)^{a,d}	2,710.0	3,017.3	3,361.3	3,355.9	3,483.6
Energy Use by Energy Source (PJ)^{a,d}					
Electricity	658.4	732.8	841.8	833.7	819.1
Natural Gas	837.2	909.6	904.3	895.5	1,036.3
Diesel Fuel Oil, Light Fuel Oil and Kerosene	127.7	114.6	168.6	172.2	185.9
Heavy Fuel Oil	201.1	147.2	134.5	118.7	119.7
Still Gas and Petroleum Coke	309.9	412.0	469.8	509.0	526.4
LPG and Gas Plant NGL	26.0	32.3	53.6	52.7	58.0
Coal	49.4	46.9	53.9	57.4	57.5
Coke and Coke Oven Gas	131.3	134.4	125.5	134.6	126.4
Wood Waste and Pulping Liquor	341.0	457.6	570.5	545.2	519.9
Other ¹	27.9	30.1	38.9	37.0	34.6
Activity					
GDP (million \$2007) ^{b,d}	291,399	311,747	415,009	418,814	418,651
Energy Intensity (MJ/\$2007 – GDP)^{a,b,d}	9.3	9.7	8.1	8.0	8.3

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

Sources:

- a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2014*, Ottawa, 2016 (CANSIM).
b) Statistics Canada, *Gross domestic product (GDP) at basic prices, by North American Industry Classification System (NAICS)* CANSIM (Table 379-0031), Ottawa, 2016. Data prior to 1997 were estimated by Canadian Industrial Energy End-Use Data and Analysis Centre, 1990 to 2014, Simon Fraser University, 2016 and Natural Resources Canada.
d) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2014*, Simon Fraser University, 2016.



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Industrial Sector

2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
3,336.7	3,179.1	3,271.7	3,312.4	3,424.5	3,560.9	3,613.3	33.3%
794.5	720.8	729.8	730.5	721.4	750.2	759.7	15.4%
1,036.7	1,006.8	1,111.3	1,185.1	1,292.7	1,428.1	1,496.3	78.7%
190.2	174.4	210.2	223.6	220.0	222.4	217.7	70.5%
101.3	89.7	60.4	44.8	43.9	42.1	40.5	-79.9%
473.7	512.6	493.4	482.1	498.0	478.0	444.8	43.5%
62.1	57.0	67.0	72.4	86.0	73.3	68.4	162.9%
57.1	48.2	48.2	56.5	54.3	46.9	47.5	-3.9%
125.8	97.7	109.8	120.4	120.0	99.1	101.8	-22.4%
462.4	432.7	420.7	368.7	357.3	390.8	397.7	16.6%
32.9	39.3	21.1	28.3	31.0	30.0	38.8	39.1%
407,690	363,527	385,157	403,036	411,331	417,917	432,132	48.3%
8.2	8.8	8.5	8.2	8.3	8.5	8.4	-10.1%

Industrial Secondary Energy Use (Final Demand) and GHG Emissions by Energy Source (cont.)

	1990	1995	2005	2006	2007
Total GHG Emissions Including Electricity (Mt of CO₂e)^{a,c,d}	141.2	147.7	167.9	168.2	179.0
GHG Emissions by Energy Source (Mt of CO₂e)^{a,c,d}					
Electricity	37.1	37.1	47.7	46.0	45.4
Natural Gas	43.6	47.3	49.4	49.2	58.6
Diesel Fuel Oil, Light Fuel Oil and Kerosene	9.3	8.4	12.4	12.7	13.8
Heavy Fuel Oil	15.3	11.2	10.1	8.9	9.0
Still Gas and Petroleum Coke	17.2	24.0	27.7	29.5	30.6
LPG and Gas Plant NGL	1.6	2.0	3.3	3.2	3.6
Coal	4.5	4.3	4.9	5.2	5.2
Coke and Coke Oven Gas	12.2	12.9	11.7	12.7	12.1
Wood Waste and Pulping Liquor	0.2	0.3	0.4	0.4	0.4
Other ¹	0.1	0.3	0.3	0.3	0.4
GHG Intensity (tonne/TJ)^{a,c,d}	52.1	48.9	49.9	50.1	51.4
Total GHG Emissions Excluding Electricity (Mt of CO₂e)^{a,c,d}	104.1	110.6	120.1	122.2	133.7
GHG Intensity (tonne/TJ)^{a,c,d}	38.4	36.7	35.7	36.4	38.4

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

Sources:

- a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2014*, Ottawa, 2016 (CANSIM).
 c) Environment and Climate Change Canada, *National Inventory Report 1990–2014: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2016.
 d) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2014*, Simon Fraser University, 2016.



Industrial Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
170.5	158.8	167.1	167.5	174.2	179.2	182.1	29.0%
41.5	34.2	35.9	31.7	28.6	29.9	31.6	-14.7%
58.4	57.5	63.5	67.7	74.2	82.3	86.2	97.5%
14.1	13.0	15.6	16.6	16.4	16.6	16.2	73.7%
7.6	6.7	4.5	3.4	3.3	3.2	3.0	-80.2%
27.2	29.6	27.9	26.7	29.6	28.7	26.5	53.8%
3.8	3.5	4.1	4.4	5.3	4.5	4.2	164.6%
5.2	4.4	4.4	5.2	5.0	4.3	4.3	-4.6%
12.0	9.3	10.5	11.4	11.3	9.1	9.6	-21.5%
0.4	0.3	0.3	0.3	0.2	0.3	0.3	35.0%
0.4	0.3	0.3	0.3	0.4	0.3	0.3	158.3%
51.1	50.0	51.1	50.6	50.9	50.3	50.4	-3.2%
129.0	124.6	131.2	135.8	145.5	149.2	150.5	44.6%
38.7	39.2	40.1	41.0	42.5	41.9	41.7	8.5%

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Industrial Sector

Industrial Secondary Energy Use (Final Demand) by Industry

	1990	1995	2005	2006	2007
Total Energy Use (PJ)^{a,c}	2,710.0	3,017.3	3,361.3	3,355.9	3,483.6
Energy Use by Industry (PJ)^{a,c}					
Copper, Nickel, Lead and Zinc Mines	36.6	29.2	24.4	23.2	24.8
Iron Mines	39.8	37.3	32.3	31.1	28.8
Gold and Silver Mines	13.2	12.6	13.0	12.6	12.9
Other Metal Mines	9.1	5.6	6.6	6.7	6.9
Salt Mines	2.9	3.4	2.5	2.6	2.5
Potash Mines	27.4	31.8	28.6	34.0	35.4
Other Non-Metal Mines	8.0	6.3	9.2	9.3	9.0
Upstream Mining	210.7	319.8	549.0	591.0	741.9
Fruit and Vegetable Industries	9.1	9.8	13.8	13.8	13.3
Dairy Products Industry	11.7	10.5	10.7	10.1	9.4
Meat Products Industries	12.5	13.1	18.4	18.9	18.0
Bakery Products Industries	9.2	6.4	9.6	9.7	9.9
Beverage Industries (excluding breweries)	3.3	5.4	6.3	6.0	5.9
Breweries Industries	7.8	6.1	5.1	4.2	4.1
Tobacco Products Industries	1.3	1.0	0.8	0.7	0.5
Textile Mills	13.9	14.7	7.7	7.3	6.3
Textile Products Mills	6.8	6.9	3.5	3.0	2.8
Clothing Industries	6.0	5.3	2.1	1.8	1.5
Leather and Allied Products Industries	1.4	1.0	0.3	0.2	0.3
Wood Products Industries	44.3	47.1	50.3	51.3	52.2
Pulp Mills	299.0	370.6	347.4	318.0	299.5
Paper Mills (except newsprint)	99.4	107.3	120.6	86.9	81.8
Newsprint Mills	245.6	271.9	213.9	192.4	182.6
Paperboard Mills	62.1	65.2	65.1	55.6	47.6
Other Pulp and Paper Manufacturing	22.2	17.6	112.9	125.4	138.8
Converted Paper Products Industry	11.1	11.0	19.8	16.5	18.1
Printing and Related Support Activities	10.9	7.9	8.9	8.5	8.3
Petroleum Refining	323.3	356.3	356.3	370.5	379.3

Sources:

- a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2014*, Ottawa, 2016 (CANSIM).
 c) Statistics Canada, *Gross domestic product (GDP) at basic prices, by North American Industry Classification System (NAICS)*, Table 379-0031, Ottawa, 2016 (CANSIM). Data prior to 1997 were estimated by Canadian Industrial Energy End-Use Data and Analysis Centre, 1990 to 2014, Simon Fraser University, 2016 and Natural Resources Canada.

Industrial Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
3,336.7	3,179.1	3,271.7	3,312.4	3,424.5	3,560.9	3,613.3	33.3%
27.9	23.7	25.4	26.4	29.7	31.0	31.9	-12.9%
40.7	44.3	38.7	30.9	34.2	37.4	38.4	-3.4%
13.0	14.1	14.6	16.2	18.3	23.5	26.5	101.1%
7.3	5.8	5.7	6.5	7.3	7.8	9.5	3.8%
2.6	2.8	2.2	2.1	2.1	2.3	2.6	-12.6%
33.3	18.0	23.2	38.7	35.8	31.2	30.9	12.6%
10.7	9.5	9.4	9.1	8.8	8.4	8.5	6.8%
735.4	822.9	889.7	913.7	1,014.4	1,125.1	1,152.5	447.0%
11.5	14.1	12.0	11.8	13.4	11.0	11.9	31.6%
9.1	9.9	8.8	8.9	9.5	9.6	10.1	-13.3%
20.5	25.4	20.9	21.4	26.4	23.1	21.3	69.5%
9.5	10.9	8.4	7.7	10.4	9.4	8.2	-10.4%
5.2	6.1	6.2	5.2	5.8	5.4	6.2	87.7%
3.9	3.7	3.0	2.7	3.1	2.8	2.9	-63.2%
0.3	0.2	0.4	0.3	0.3	0.3	0.4	-72.2%
4.8	3.7	3.5	3.2	3.9	3.7	2.4	-82.7%
2.5	2.1	2.1	2.0	2.3	2.5	2.5	-63.4%
1.5	1.3	1.2	1.3	1.6	1.5	1.4	-76.6%
0.3	0.3	0.3	0.2	0.2	0.3	0.3	-80.7%
52.8	48.6	58.4	59.8	62.4	54.7	64.6	46.0%
254.9	238.1	241.4	216.2	202.3	217.6	229.6	-23.2%
73.9	81.6	89.8	84.6	82.3	64.5	65.1	-34.5%
157.1	117.9	122.7	100.3	88.5	112.9	106.8	-56.5%
46.5	40.9	48.4	47.2	40.5	37.1	38.0	-38.8%
121.1	123.7	77.6	95.1	111.4	127.6	112.5	407.4%
14.6	22.0	15.6	13.9	14.3	15.8	16.8	50.9%
9.7	11.6	9.9	9.2	9.8	9.3	7.7	-29.0%
345.8	338.2	335.7	320.4	343.4	324.2	303.3	-6.2%

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Industrial Sector

Industrial Secondary Energy Use (Final Demand) by Industry (cont.)

	1990	1995	2005	2006	2007
Petrochemical Industry	32.1	33.8	62.1	60.2	60.7
Industrial Gas Industry	5.9	5.8	8.3	13.7	12.8
Alkali and chlorine manufacturing	30.4	29.9	16.0	14.2	8.7
All other basic inorganic chemical manufacturing	28.6	30.7	37.4	33.9	28.8
Chemical fertilizer (except potash) manufacturing	31.9	55.9	53.4	55.0	52.9
Other Chemical Manufacturing	94.2	92.1	58.8	70.7	79.0
Resin and Synthetic Rubber Industries	48.1	30.6	24.6	33.2	32.4
Motor Vehicle Plastic Parts Manufacturing	2.8	2.7	4.7	4.5	3.9
Rubber Products Industries	9.5	9.9	10.1	9.5	9.2
Cement Industry	59.3	61.9	71.9	74.7	66.8
Iron and Steel	219.4	247.0	239.7	251.9	253.8
Primary Production of Alumina and Aluminum	109.8	138.2	187.2	188.5	192.2
Other Non-Ferrous Smelting and Refining	73.5	81.0	73.1	73.7	63.0
Fabricated Metal Products Industries	37.3	36.4	40.7	38.3	39.3
Machinery Industries	12.2	13.7	18.0	16.7	17.6
Computer and Electronic Products Industries	4.6	5.9	5.6	5.4	5.8
Electrical Equipment and Components Industries	8.5	7.7	7.3	6.8	6.4
Motor Vehicle Industry	18.5	24.6	22.6	21.0	20.2
Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	3.1	2.9	3.5	3.1	3.2
Motor Vehicle Electrical and Electronic Equipment Manufacturing	0.3	0.3	0.6	0.3	0.5
Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	2.1	2.1	1.4	1.3	1.3
Motor Vehicle Brake System Manufacturing	1.8	2.1	1.1	0.9	0.7
Motor Vehicle Transmission and Power Train Parts Manufacturing	3.0	2.0	3.7	3.5	3.2
Motor Vehicle Seating and Interior Trim Manufacturing	1.2	1.2	1.9	1.8	1.6
Motor Vehicle Metal Stamping	3.3	3.5	3.8	3.7	3.6
Other Motor Vehicle Parts Manufacturing	3.2	3.2	5.0	4.4	4.5

Industrial Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
59.5	55.3	41.4	53.3	46.8	53.4	40.5	25.9%
10.8	13.9	16.0	15.3	23.0	23.0	56.8	858.0%
8.1	7.4	2.2	2.4	2.6	2.6	2.8	-90.8%
27.9	24.7	22.6	24.5	26.5	25.2	28.8	0.6%
49.2	45.1	50.0	55.0	52.9	62.0	45.8	43.4%
86.0	85.0	116.1	121.0	120.4	118.2	131.7	39.7%
34.8	38.0	40.8	48.4	47.3	47.6	40.1	-16.6%
3.7	2.6	3.5	3.7	3.5	3.0	3.1	12.9%
8.3	8.3	7.6	7.3	8.0	6.9	6.6	-30.8%
65.0	60.4	55.2	56.7	57.0	54.9	57.5	-3.1%
246.8	187.3	207.1	226.8	230.9	214.6	231.6	5.6%
195.3	172.9	176.3	187.2	175.8	179.3	179.6	63.6%
65.2	54.1	62.8	60.6	53.0	45.3	51.3	-30.3%
41.9	35.8	31.2	32.7	38.3	34.3	31.8	-14.7%
16.6	15.9	15.1	15.9	20.6	19.5	19.1	56.4%
5.3	5.1	5.4	5.5	6.9	5.6	5.7	22.5%
6.0	5.3	4.7	4.5	5.5	5.7	5.5	-34.9%
18.4	14.9	13.5	14.3	15.2	14.5	14.8	-20.0%
2.5	2.1	1.7	2.1	2.2	1.7	2.1	-34.5%
0.3	0.3	0.4	0.3	0.4	0.3	0.3	20.0%
1.0	1.2	0.6	1.0	1.1	0.9	1.1	-47.2%
0.8	0.4	0.4	0.4	0.4	0.3	0.3	-82.1%
2.7	2.0	2.0	1.5	3.4	1.6	2.2	-26.2%
1.4	1.4	1.5	1.4	1.4	1.2	1.3	9.1%
3.4	2.6	2.8	2.6	3.1	2.7	2.9	-10.7%
4.8	4.4	3.2	2.4	2.7	2.4	2.2	-31.0%

Industrial Secondary Energy Use (Final Demand) by Industry (cont.)

	1990	1995	2005	2006	2007
Furniture and Related Products Industries	6.7	6.7	11.6	10.0	10.5
Miscellaneous Manufacturing	4.7	4.1	6.1	4.8	6.0
Other Manufacturing n.e.c.	231.0	244.3	242.7	236.0	248.6
Construction	66.9	48.6	70.9	71.9	74.5
Forestry	7.7	7.9	28.8	31.3	30.0
Activity					
GDP (million \$2007) ^{b,c}	291,399	311,747	415,009	418,814	418,651
Energy Intensity (MJ/\$2007 – GDP)^{a,b,c}	9.3	9.7	8.1	8.0	8.3

Sources:

- a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2014*, Ottawa, 2016 (CANSIM).
- b) Environment and Climate Change Canada, *National Inventory Report 1990–2014: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2016.
- c) Statistics Canada, *Gross domestic product (GDP) at basic prices, by North American Industry Classification System (NAICS)*, Table 379-0031, Ottawa, 2016 (CANSIM). Data prior to 1997 were estimated by Canadian Industrial Energy End-Use Data and Analysis Centre, 1990 to 2014, Simon Fraser University, 2016 and Natural Resources Canada.



Industrial Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
11.0	10.6	9.2	9.1	9.3	8.8	8.7	29.7%
6.5	7.8	6.9	6.8	6.9	6.6	7.1	51.3%
231.7	185.7	201.2	196.6	176.9	220.9	221.5	-4.1%
74.7	65.9	73.1	78.6	81.6	79.0	78.9	17.9%
30.9	21.4	22.3	19.8	19.0	19.1	19.2	148.2%
407,690	363,527	385,157	403,036	411,331	417,917	432,132	48.3%
8.2	8.8	8.5	8.2	8.3	8.5	8.4	-10.1%

Industrial GHG Emissions by Industry – Including Electricity-Related Emissions¹

	1990	1995	2005	2006	2007
Total GHG Emissions Including Electricity (Mt of CO₂e)^{a,b,c}	141.2	147.7	167.9	168.2	179.0
GHG Emissions by Industry (Mt of CO₂e)^{a,b,c}					
Copper, Nickel, Lead and Zinc Mines	2.3	1.7	1.6	1.5	1.6
Iron Mines	3.1	2.7	2.3	2.3	2.1
Gold and Silver Mines	0.8	0.7	0.8	0.8	0.8
Other Metal Mines	0.6	0.3	0.4	0.4	0.4
Salt Mines	0.2	0.2	0.2	0.2	0.2
Potash Mines	1.8	2.1	1.9	2.2	2.3
Other Non-Metal Mines	0.5	0.4	0.7	0.7	0.7
Upstream Mining	13.1	19.5	34.4	36.9	47.2
Fruit and Vegetable Industries	0.5	0.5	0.8	0.8	0.8
Dairy Products Industry	0.6	0.5	0.6	0.5	0.5
Meat Products Industries	0.7	0.7	1.0	1.0	0.9
Bakery Products Industries	0.5	0.3	0.5	0.5	0.5
Beverage Industries (excluding breweries)	0.2	0.3	0.3	0.3	0.3
Breweries Industries	0.4	0.3	0.3	0.2	0.2
Tobacco Products Industries	0.1	0.1	0.0	0.0	0.0
Textile Mills	0.7	0.8	0.4	0.4	0.3
Textile Products Mills	0.4	0.4	0.2	0.2	0.2
Clothing Industries	0.3	0.3	0.1	0.1	0.1
Leather and Allied Products Industries	0.1	0.1	0.0	0.0	0.0
Wood Products Industries	1.5	1.6	1.8	1.7	1.8
Pulp Mills	6.6	6.0	5.7	5.2	5.1
Paper Mills (except newsprint)	3.4	3.1	3.5	2.7	2.7
Newsprint Mills	11.2	10.5	8.3	6.8	6.8
Paperboard Mills	2.2	2.0	1.9	1.6	1.5
Other Pulp and Paper Manufacturing	1.2	1.0	0.8	1.4	1.3

1) Includes only end-use energy-related GHG emissions.

Sources:

- a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2014*, Ottawa, 2016 (CANSIM).
b) Environment and Climate Change Canada, *National Inventory Report 1990–2014: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2016.
c) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2014*, Simon Fraser University, 2016.



Industrial Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
170.5	158.8	167.1	167.5	174.2	179.2	182.1	29.0%
1.7	1.4	1.5	1.5	1.7	1.8	1.8	-20.1%
2.9	3.2	2.7	2.0	2.2	2.3	2.4	-20.0%
0.8	0.8	0.9	0.9	1.0	1.3	1.5	82.9%
0.5	0.4	0.3	0.4	0.4	0.4	0.5	-8.6%
0.2	0.2	0.1	0.1	0.1	0.1	0.2	-25.0%
2.1	1.1	1.4	2.4	2.2	1.8	1.8	0.6%
0.8	0.7	0.7	0.6	0.6	0.6	0.6	14.8%
46.7	51.8	56.2	57.3	64.2	71.1	72.5	452.8%
0.6	0.8	0.7	0.6	0.7	0.5	0.6	12.0%
0.5	0.5	0.5	0.4	0.4	0.4	0.5	-25.0%
1.0	1.3	1.0	1.0	1.2	1.1	1.0	47.1%
0.5	0.5	0.4	0.4	0.5	0.4	0.4	-18.8%
0.3	0.3	0.3	0.3	0.3	0.3	0.3	61.1%
0.2	0.2	0.2	0.1	0.2	0.1	0.1	-65.9%
0.0	0.0	0.0	0.0	0.0	0.0	0.0	-71.4%
0.2	0.2	0.2	0.2	0.2	0.2	0.1	-85.1%
0.1	0.1	0.1	0.1	0.1	0.1	0.1	-66.7%
0.1	0.1	0.1	0.1	0.1	0.1	0.1	-81.3%
0.0	0.0	0.0	0.0	0.0	0.0	0.0	-85.7%
1.6	1.3	1.5	1.4	1.6	1.4	1.6	7.2%
4.1	3.5	3.7	3.3	2.9	3.0	3.2	-51.6%
2.4	2.3	2.2	2.0	1.5	1.6	1.6	-51.8%
5.3	3.6	3.7	3.0	2.5	2.9	2.7	-75.7%
1.4	1.1	1.2	1.3	1.1	1.1	1.1	-48.6%
1.2	2.0	1.2	1.3	1.7	1.7	1.7	45.3%

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Industrial Sector

Industrial GHG Emissions by Industry – Including Electricity-Related Emissions¹ (cont.)

	1990	1995	2005	2006	2007
Converted Paper Products Industry	0.6	0.6	1.0	0.8	0.9
Printing and Related Support Activities	0.6	0.4	0.5	0.5	0.4
Petroleum Refining	18.0	20.4	20.9	21.1	21.7
Petrochemical Industry	1.7	1.5	2.7	2.6	2.8
Industrial Gas Industry	0.3	0.3	0.5	0.8	0.7
Alkali and chlorine manufacturing	1.6	1.5	0.9	0.8	0.4
All other basic inorganic chemical manufacturing	1.6	1.4	2.0	1.8	1.5
Chemical fertilizer (except potash) manufacturing	1.6	2.8	2.7	2.8	2.7
Other Chemical Manufacturing	4.0	4.4	3.1	3.7	4.2
Resin and Synthetic Rubber Industries	2.5	1.4	1.1	1.5	1.5
Motor Vehicle Plastic Parts Manufacturing	0.2	0.1	0.3	0.2	0.2
Rubber Products Industries	0.5	0.5	0.6	0.5	0.5
Cement Industry	4.5	4.7	5.9	6.2	5.5
Iron and Steel	16.5	18.2	17.5	18.7	18.8
Primary Production of Alumina and Aluminum	6.2	7.1	10.7	10.5	10.7
Other Non-Ferrous Smelting and Refining	4.7	4.8	4.5	4.5	4.1
Fabricated Metal Products Industries	2.0	1.8	2.1	2.0	2.1
Machinery Industries	0.7	0.7	1.0	0.9	0.9
Computer and Electronic Products Industries	0.3	0.3	0.3	0.3	0.3
Electrical Equipment and Components Industries	0.5	0.4	0.4	0.4	0.3
Motor Vehicle Industry	1.0	1.3	1.2	1.1	1.1
Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	0.2	0.1	0.2	0.2	0.2

1) Includes only end-use energy-related GHG emissions.

Industrial Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
0.7	1.0	0.7	0.6	0.6	0.7	0.8	25.0%
0.5	0.6	0.5	0.4	0.4	0.4	0.4	-37.9%
19.2	18.8	18.5	16.9	19.3	18.4	17.3	-3.8%
2.7	2.6	1.9	2.5	2.2	2.5	1.9	9.5%
0.6	0.7	0.8	0.7	1.1	1.1	2.7	721.2%
0.3	0.3	0.1	0.1	0.1	0.1	0.1	-92.6%
1.4	1.2	1.1	1.1	1.1	1.1	1.3	-20.4%
2.5	2.2	2.5	2.7	2.6	3.0	2.2	34.8%
4.4	4.0	5.5	5.6	5.4	5.1	5.9	46.3%
1.6	1.6	1.9	1.9	2.0	1.9	1.5	-38.3%
0.2	0.1	0.2	0.2	0.2	0.1	0.1	-6.7%
0.5	0.5	0.4	0.4	0.4	0.3	0.3	-40.7%
5.3	4.9	4.5	4.6	4.3	4.1	4.4	-1.8%
18.2	13.6	15.0	16.5	16.6	14.7	15.9	-3.4%
10.4	8.3	8.7	8.3	7.2	7.4	7.7	23.3%
4.1	3.2	3.8	3.5	3.0	2.7	2.8	-39.8%
2.1	1.8	1.6	1.6	1.8	1.6	1.5	-24.1%
0.9	0.8	0.8	0.8	1.0	0.9	0.9	36.9%
0.3	0.2	0.3	0.3	0.3	0.2	0.3	0.0%
0.3	0.3	0.2	0.2	0.2	0.3	0.3	-44.4%
1.0	0.7	0.7	0.7	0.7	0.7	0.7	-33.0%
0.1	0.1	0.1	0.1	0.1	0.1	0.1	-58.8%

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Industrial Sector

Industrial GHG Emissions by Industry – Including Electricity-Related Emissions¹ (cont.)

	1990	1995	2005	2006	2007
Motor Vehicle Electrical and Electronic Equipment Manufacturing	0.0	0.0	0.0	0.0	0.0
Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	0.1	0.1	0.1	0.1	0.1
Motor Vehicle Brake System Manufacturing	0.1	0.1	0.1	0.1	0.0
Motor Vehicle Transmission and Power Train Parts Manufacturing	0.3	0.1	0.2	0.2	0.2
Motor Vehicle Seating and Interior Trim Manufacturing	0.1	0.1	0.1	0.1	0.1
Motor Vehicle Metal Stamping	0.2	0.2	0.2	0.2	0.2
Other Motor Vehicle Parts Manufacturing	0.2	0.2	0.3	0.2	0.2
Furniture and Related Products Industries	0.3	0.3	0.6	0.5	0.5
Miscellaneous Manufacturing	0.3	0.2	0.3	0.3	0.3
Other Manufacturing n.e.c.	12.4	12.0	10.8	9.5	10.5
Construction	4.3	3.2	4.7	4.8	5.0
Forestry	0.6	0.6	2.1	2.3	2.2
GHG Intensity (tonne/TJ)^{a,b,c}	52.1	48.9	49.9	50.1	51.4

1) Includes only end-use energy-related GHG emissions.

Sources:

- a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2014*, Ottawa, 2016 (CANSIM).
- b) Environment and Climate Change Canada, *National Inventory Report 1990–2014: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2016.
- c) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2014*, Simon Fraser University, 2016.



Industrial Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
0.1	0.1	0.0	0.1	0.1	0.0	0.1	-54.5%
0.0	0.0	0.0	0.0	0.0	0.0	0.0	-90.0%
0.1	0.1	0.1	0.1	0.2	0.1	0.1	-60.0%
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0%
0.2	0.1	0.1	0.1	0.1	0.1	0.1	-27.8%
0.3	0.2	0.2	0.1	0.1	0.1	0.1	-47.4%
0.5	0.5	0.4	0.4	0.4	0.4	0.4	24.2%
0.3	0.4	0.3	0.3	0.3	0.3	0.3	32.0%
9.7	6.9	8.9	9.4	8.1	9.5	8.9	-28.5%
5.0	4.5	4.9	5.3	5.5	5.3	5.3	22.6%
2.3	1.6	1.6	1.5	1.4	1.4	1.4	151.8%
51.1	50.0	51.1	50.6	50.9	50.3	50.4	-3.2%

Industrial GHG Emissions by Industry – Excluding Electricity-Related Emissions¹

	1990	1995	2005	2006	2007
Total GHG Emissions <u>Excluding Electricity</u> (Mt of CO₂e)^{a,b,c}	104.1	110.6	120.1	122.2	133.7
<i>GHG Emissions by Industry (Mt of CO₂e)^{a,b,c}</i>					
Copper, Nickel, Lead and Zinc Mines	1.1	0.8	0.8	0.8	0.9
Iron Mines	2.3	2.0	1.6	1.9	1.6
Gold and Silver Mines	0.4	0.4	0.3	0.3	0.3
Other Metal Mines	0.3	0.2	0.2	0.3	0.3
Salt Mines	0.2	0.2	0.1	0.1	0.1
Potash Mines	1.5	1.8	1.5	1.9	1.9
Other Non-Metal Mines	0.4	0.3	0.6	0.6	0.6
Upstream Mining	10.4	16.3	30.5	32.9	42.9
Fruit and Vegetable Industries	0.4	0.5	0.6	0.6	0.6
Dairy Products Industry	0.5	0.4	0.4	0.4	0.3
Meat Products Industries	0.5	0.5	0.7	0.7	0.6
Bakery Products Industries	0.4	0.3	0.3	0.3	0.3
Beverage Industries (excluding breweries)	0.1	0.2	0.3	0.3	0.2
Breweries Industries	0.3	0.3	0.2	0.2	0.2
Tobacco Products Industries	0.0	0.0	0.0	0.0	0.0
Textile Mills	0.5	0.5	0.2	0.2	0.2
Textile Products Mills	0.3	0.3	0.1	0.1	0.1
Clothing Industries	0.2	0.2	0.1	0.0	0.0
Leather and Allied Products Industries	0.0	0.0	0.0	0.0	0.0
Wood Products Industries	1.1	0.9	0.8	0.9	1.0
Pulp Mills	4.1	3.8	2.6	2.2	2.3
Paper Mills (except newsprint)	2.2	2.2	1.7	1.1	1.2
Newsprint Mills	5.5	4.5	2.0	1.5	1.6
Paperboard Mills	1.7	1.5	1.2	1.0	1.0
Other Pulp and Paper Manufacturing	1.2	0.3	0.6	1.0	1.0

1) Includes only end-use energy-related GHG emissions.

Sources:

- a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2014*, Ottawa, 2016 (CANSIM).
b) Environment and Climate Change Canada, *National Inventory Report 1990–2014: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2016.
c) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2014*, Simon Fraser University, 2016.



Industrial Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
129.0	124.6	131.2	135.8	145.5	149.2	150.5	44.6%
1.0	0.9	0.9	0.9	1.1	1.2	1.2	12.4%
2.2	2.6	2.1	1.5	1.6	1.7	1.8	-21.6%
0.3	0.3	0.4	0.5	0.6	0.8	0.9	144.7%
0.3	0.3	0.2	0.3	0.3	0.3	0.4	2.9%
0.1	0.2	0.1	0.1	0.1	0.1	0.1	-29.4%
1.8	0.9	1.1	2.0	1.8	1.5	1.4	-1.4%
0.7	0.6	0.6	0.6	0.6	0.6	0.6	37.2%
43.1	48.6	53.2	54.6	61.6	67.6	69.0	561.5%
0.5	0.6	0.5	0.5	0.5	0.4	0.4	-4.8%
0.3	0.4	0.3	0.3	0.3	0.3	0.3	-26.1%
0.6	0.8	0.7	0.7	0.9	0.8	0.7	47.8%
0.3	0.3	0.2	0.2	0.3	0.3	0.3	-32.5%
0.2	0.2	0.2	0.2	0.2	0.2	0.2	100.0%
0.2	0.2	0.1	0.1	0.1	0.1	0.1	-70.6%
0.0	0.0	0.0	0.0	0.0	0.0	0.0	-75.0%
0.1	0.1	0.1	0.1	0.1	0.1	0.1	-88.0%
0.1	0.1	0.1	0.1	0.1	0.1	0.1	-64.0%
0.0	0.0	0.0	0.0	0.0	0.0	0.0	-78.9%
0.0	0.0	0.0	0.0	0.0	0.0	0.0	-75.0%
0.8	0.7	0.7	0.7	0.9	0.9	1.1	1.0%
1.9	1.8	1.8	1.8	1.5	1.6	1.7	-58.2%
0.9	0.9	0.8	0.8	0.6	0.7	0.5	-77.4%
1.0	0.7	0.6	0.5	0.5	0.5	0.4	-92.3%
0.9	0.7	0.8	1.0	0.8	0.8	0.9	-48.5%
0.9	1.4	0.9	1.1	1.5	1.5	1.4	17.9%

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Industrial Sector

Industrial GHG Emissions by Industry – Excluding Electricity-Related Emissions¹ (cont.)

	1990	1995	2005	2006	2007
Converted Paper Products Industry	0.4	0.4	0.6	0.5	0.6
Printing and Related Support Activities	0.3	0.2	0.2	0.2	0.2
Petroleum Refining	16.8	19.5	19.9	20.0	20.6
Petrochemical Industry	1.5	1.4	2.5	2.4	2.5
Industrial Gas Industry	0.0	0.0	0.0	0.0	0.0
Alkali and chlorine manufacturing	0.8	0.8	0.2	0.2	0.1
All other basic inorganic chemical manufacturing	0.4	0.3	0.4	0.3	0.3
Chemical fertilizer (except potash) manufacturing	1.4	2.6	2.4	2.5	2.4
Other Chemical Manufacturing	2.9	3.3	2.0	2.5	2.5
Resin and Synthetic Rubber Industries	2.1	1.0	0.5	0.9	0.9
Motor Vehicle Plastic Parts Manufacturing	0.1	0.1	0.1	0.1	0.1
Rubber Products Industries	0.3	0.4	0.3	0.3	0.3
Cement Industry	4.1	4.4	5.5	5.8	5.0
Iron and Steel	14.8	16.7	15.4	16.5	16.9
Primary Production of Alumina and Aluminum	0.5	0.7	1.2	0.9	1.1
Other Non-Ferrous Smelting and Refining	2.9	2.8	2.5	2.6	2.8
Fabricated Metal Products Industries	1.4	1.4	1.4	1.3	1.3
Machinery Industries	0.4	0.4	0.5	0.5	0.5
Computer and Electronic Products Industries	0.1	0.1	0.1	0.1	0.1
Electrical Equipment and Components Industries	0.3	0.3	0.2	0.2	0.2
Motor Vehicle Industry	0.7	1.0	0.8	0.8	0.7
Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	0.1	0.1	0.1	0.1	0.1
Motor Vehicle Electrical and Electronic Equipment Manufacturing	0.0	0.0	0.0	0.0	0.0

1) Includes only end-use energy-related GHG emissions.



Industrial Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
0.5	0.8	0.5	0.4	0.4	0.5	0.5	11.6%
0.2	0.3	0.2	0.2	0.2	0.2	0.2	-35.5%
18.1	17.8	17.4	16.0	18.6	17.7	16.5	-1.8%
2.5	2.4	1.8	2.3	2.1	2.4	1.7	11.7%
0.0	0.3	0.4	0.4	0.9	0.9	2.2	-
0.1	0.0	0.0	0.0	0.0	0.0	0.0	-97.6%
0.3	0.2	0.2	0.3	0.3	0.5	0.4	-11.9%
2.2	2.0	2.3	2.5	2.4	2.8	2.0	41.8%
2.9	2.8	3.9	4.1	4.2	3.9	4.7	61.1%
1.0	1.2	1.4	1.4	1.5	1.4	1.1	-46.3%
0.1	0.1	0.1	0.1	0.1	0.1	0.1	-12.5%
0.3	0.3	0.2	0.2	0.2	0.2	0.2	-42.4%
4.9	4.6	4.2	4.3	4.0	3.8	4.1	-0.2%
16.4	12.3	13.5	15.1	15.3	13.5	14.5	-1.6%
1.1	0.6	0.7	1.0	1.0	1.0	1.0	75.9%
2.6	2.1	2.5	2.5	2.1	1.9	1.8	-38.8%
1.3	1.2	1.0	1.1	1.2	1.1	1.0	-32.9%
0.5	0.5	0.5	0.5	0.6	0.6	0.6	54.1%
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0%
0.2	0.1	0.1	0.1	0.1	0.1	0.1	-60.6%
0.7	0.5	0.4	0.5	0.5	0.5	0.5	-32.9%
0.0	0.0	0.0	0.0	0.0	0.0	0.0	-66.7%
0.0	0.0	0.0	0.0	0.0	0.0	0.0	-

Industrial GHG Emissions by Industry – Excluding Electricity-Related Emissions¹ (cont.)

	1990	1995	2005	2006	2007
Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	0.1	0.1	0.0	0.0	0.0
Motor Vehicle Brake System Manufacturing	0.1	0.1	0.0	0.0	0.0
Motor Vehicle Transmission and Power Train Parts Manufacturing	0.2	0.1	0.1	0.1	0.1
Motor Vehicle Seating and Interior Trim Manufacturing	0.0	0.0	0.1	0.1	0.1
Motor Vehicle Metal Stamping	0.1	0.1	0.1	0.1	0.1
Other Motor Vehicle Parts Manufacturing	0.1	0.1	0.2	0.1	0.1
Furniture and Related Products Industries	0.2	0.2	0.4	0.2	0.2
Miscellaneous Manufacturing	0.2	0.1	0.2	0.1	0.1
Other Manufacturing n.e.c.	10.4	10.2	8.0	6.7	7.7
Construction	4.3	3.2	4.7	4.8	5.0
Forestry	0.6	0.6	2.1	2.3	2.2
GHG Intensity (tonne/TJ)^{a,b,c}	38.4	36.7	35.7	36.4	38.4

1) Includes only end-use energy-related GHG emissions.

Sources:

- a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2014*, Ottawa, 2016 (CANSIM).
- b) Environment and Climate Change Canada, *National Inventory Report 1990–2014: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2016.
- c) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2014*, Simon Fraser University, 2016.



Industrial Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
0.0	0.0	0.0	0.0	0.0	0.0	0.0	-57.1%
0.0	0.0	0.0	0.0	0.0	0.0	0.0	-83.3%
0.1	0.0	0.0	0.0	0.1	0.0	0.0	-81.0%
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
0.1	0.1	0.1	0.1	0.1	0.1	0.1	-33.3%
0.2	0.1	0.1	0.1	0.1	0.1	0.1	-50.0%
0.2	0.2	0.2	0.2	0.2	0.2	0.3	40.0%
0.2	0.2	0.2	0.2	0.2	0.2	0.2	6.7%
7.0	4.7	6.3	6.9	6.3	6.9	6.4	-38.2%
5.0	4.5	4.9	5.3	5.5	5.3	5.3	22.6%
2.3	1.6	1.6	1.5	1.4	1.4	1.4	151.8%
38.7	39.2	40.1	41.0	42.5	41.9	41.7	8.5%

Industrial Gross Domestic Product by Industry

	1990	1995	2005	2006	2007
Total Gross Domestic Product (million \$2007)^{a,b}	291,399	311,747	415,009	418,814	418,651
Gross Domestic Product by Industry (million \$2007)^{a,b}					
Copper, Nickel, Lead and Zinc Mines	12,823	11,140	11,048	11,618	11,761
Iron Mines	2,184	1,875	1,554	1,703	1,539
Gold and Silver Mines	3,802	3,218	2,512	1,992	1,791
Other Metal Mines	1,583	1,195	2,030	1,854	1,539
Salt Mines	200	233	262	285	243
Potash Mines	773	955	1,388	1,019	1,708
Other Non-Metal Mines	205	234	1,318	1,334	1,751
Upstream Mining	61,829	82,148	98,295	101,946	102,775
Fruit and Vegetable Industries	1,305	1,636	2,132	2,131	2,207
Dairy Products Industry	2,827	2,476	2,446	2,533	2,590
Meat Products Industries	3,990	3,605	5,744	5,872	5,811
Bakery Products Industries	1,692	2,067	2,368	2,506	2,492
Beverage Industries (excluding breweries)	1,337	1,252	2,103	2,238	2,330
Breweries Industries	3,250	3,471	3,286	3,339	3,103
Tobacco Products Industries	3,891	3,891	1,778	1,509	960
Textile Mills	1,674	1,695	1,317	1,124	937
Textile Products Mills	926	892	1,144	1,038	955
Clothing Industries	3,473	3,358	2,653	2,456	2,023
Leather and Allied Products Industries	678	521	208	187	200
Wood Products Industries	3,173	3,328	4,893	4,754	4,148
Pulp Mills	912	1,057	1,373	1,272	1,323
Paper Mills (except newsprint)	1,401	1,418	2,107	1,734	1,872
Newsprint Mills	2,219	2,334	2,305	2,085	2,051
Paperboard Mills	755	758	621	595	577
Other Pulp and Paper Manufacturing	3,026	3,481	4,029	3,689	3,481

Source:

- a) Statistics Canada, *Gross domestic product (GDP) at basic prices, by North American Industry Classification System (NAICS)* CANSIM (Table 379-0031), Ottawa, 2016. Data prior to 1997 were estimated by Canadian Industrial Energy-End Use Data and Analysis Centre, 1990 to 2014, Simon Fraser University, 2016 and Natural Resources Canada.
- b) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2014*, Simon Fraser University, 2016.



Industrial Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
407,690	363,527	385,157	403,036	411,331	417,917	432,132	48.3%
12,398	8,410	8,697	11,286	11,186	11,484	11,845	-7.6%
1,501	1,380	1,593	1,531	1,607	1,699	1,871	-14.3%
1,740	1,849	1,796	1,696	1,707	2,125	2,360	-37.9%
1,514	1,677	1,719	1,645	1,749	1,495	1,827	15.4%
312	285	231	276	240	261	280	40.0%
1,372	342	1,159	1,319	1,084	1,186	1,244	60.9%
1,620	1,351	1,335	1,267	1,165	1,258	1,380	573.2%
99,880	93,088	98,555	104,299	101,988	105,255	111,386	80.2%
2,205	2,137	2,044	1,969	2,003	1,977	1,983	52.0%
2,757	2,706	2,693	2,674	2,719	2,833	2,829	0.1%
5,914	5,876	6,358	6,311	5,682	5,492	5,680	42.4%
2,764	2,859	2,684	2,454	2,383	2,352	2,511	48.4%
2,314	2,217	2,317	2,298	2,391	2,432	2,504	87.3%
3,067	2,969	2,831	2,813	2,863	2,836	2,883	-11.3%
753	792	896	862	865	869	829	-78.7%
833	720	735	747	749	670	720	-57.0%
800	584	605	564	565	506	543	-41.4%
1,645	1,367	1,447	1,405	1,428	1,425	1,469	-57.7%
174	160	169	176	179	179	184	-72.9%
3,648	2,919	3,274	3,339	3,450	3,640	3,780	19.1%
1,189	917	1,136	1,126	988	1,000	1,037	13.7%
1,765	1,404	1,461	1,371	1,203	1,218	1,263	-9.9%
1,757	1,238	1,490	1,408	1,236	1,250	1,297	-41.6%
606	452	538	532	467	472	490	-35.1%
3,298	3,018	2,981	2,891	3,038	2,859	3,011	-0.5%

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Industrial Sector

Industrial Gross Domestic Product by Industry (cont.)

	1990	1995	2005	2006	2007
Converted Paper Products Industry	2,810	3,443	4,011	3,655	3,482
Printing and Related Support Activities	7,058	5,148	6,386	6,209	6,055
Petroleum Refining	5,415	5,667	6,408	6,045	6,147
Petrochemical Industry	811	846	604	709	724
Industrial Gas Industry	140	149	352	361	272
Alkali and chlorine manufacturing	361	319	266	292	217
All other basic inorganic chemical manufacturing	341	330	586	665	689
Chemical fertilizer (except potash) manufacturing	738	841	1,346	1,363	1,218
Other Chemical Manufacturing	630	614	722	621	612
Resin and Synthetic Rubber Industries	576	915	1,691	1,587	1,722
Motor Vehicle Plastic Parts Manufacturing	549	845	1,960	1,876	1,711
Rubber Products Industries	1,051	1,634	1,817	1,597	1,501
Cement Industry	906	723	1,238	1,254	1,217
Iron and Steel	3,673	4,159	4,621	4,571	4,599
Primary Production of Alumina and Aluminum	1,007	1,378	3,740	3,915	3,964
Other Non-Ferrous Smelting and Refining	2,906	3,163	5,525	5,090	4,682
Fabricated Metal Products Industries	8,257	8,371	14,053	14,331	14,361
Machinery Industries	7,643	10,455	13,858	14,074	14,000
Computer and Electronic Products Industries	3,600	5,555	8,100	8,148	7,859
Electrical Equipment and Components Industries	4,240	3,542	3,955	3,746	3,735
Motor Vehicle Industry	5,894	8,259	10,257	9,742	9,533
Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	965	1,443	2,030	1,942	2,010
Motor Vehicle Electrical and Electronic Equipment Manufacturing	223	333	409	416	376
Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	273	408	506	495	498
Motor Vehicle Brake System Manufacturing	365	546	539	473	408
Motor Vehicle Transmission and Power Train Parts Manufacturing	610	912	985	981	966



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Industrial Sector

2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
3,298	3,018	2,982	2,891	3,038	2,859	3,011	7.2%
5,970	5,123	4,681	4,471	4,437	4,461	4,420	-37.4%
6,007	6,320	5,947	5,617	5,800	5,821	5,678	4.9%
663	446	618	652	630	646	680	-16.2%
305	250	271	320	309	317	333	137.9%
176	147	62	69	67	69	63	-82.5%
581	497	633	659	689	653	657	92.7%
971	666	636	662	609	681	634	-14.1%
655	626	795	821	741	814	898	42.5%
1,588	1,095	1,324	1,493	1,484	1,809	1,823	216.5%
1,466	1,128	1,487	1,642	1,696	1,788	1,842	235.5%
1,409	1,243	1,396	1,544	1,538	1,505	1,501	42.8%
1,112	933	914	932	958	921	969	7.0%
4,517	2,629	3,678	3,900	4,124	4,044	4,473	21.8%
3,942	3,400	3,347	3,500	3,357	3,153	3,114	209.2%
4,613	3,811	4,095	4,308	4,186	4,155	4,079	40.4%
13,102	11,141	11,592	12,547	13,466	12,957	13,241	60.4%
13,675	11,273	11,422	13,678	14,248	14,119	14,420	88.7%
7,675	6,912	7,234	7,149	6,271	5,745	5,950	65.3%
3,827	3,506	3,433	3,773	3,723	3,811	3,717	-12.3%
7,229	5,057	7,623	7,789	8,870	8,582	8,801	49.3%
1,515	1,238	1,406	1,359	1,527	1,486	1,612	67.0%
285	189	247	307	345	335	364	63.2%
410	307	469	517	580	565	613	124.5%
335	232	265	300	337	328	356	-2.5%
695	397	484	508	571	556	603	-1.1%

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Industrial Sector

Industrial Gross Domestic Product by Industry (cont.)

	1990	1995	2005	2006	2007
Motor Vehicle Seating and Interior Trim Manufacturing	463	693	1,354	1,301	1,118
Motor Vehicle Metal Stamping	649	971	1,664	1,434	1,334
Other Motor Vehicle Parts Manufacturing	785	1,175	2,097	2,103	1,881
Furniture and Related Products Industries	3,746	3,947	6,340	5,905	5,563
Miscellaneous Manufacturing	2,402	2,525	4,323	4,457	4,248
Other Manufacturing n.e.c.	23,714	28,790	43,583	44,511	44,030
Construction	72,696	59,346	94,414	98,021	102,098
Forestry	5,974	6,064	6,354	6,112	5,655



Industrial Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
914	693	913	978	1,098	1,069	1,160	150.5%
1,063	755	916	1,039	1,167	1,136	1,232	89.8%
1,568	1,118	1,260	1,450	1,628	1,585	1,719	119.0%
5,167	4,203	4,236	4,082	4,084	4,319	4,439	18.5%
3,865	3,646	3,719	3,936	3,746	4,281	4,212	75.4%
43,284	38,230	37,852	39,322	40,260	40,894	43,064	81.6%
104,738	98,211	105,559	109,208	117,567	120,026	121,668	67.4%
5,244	4,370	4,917	5,355	5,245	5,653	5,580	-6.6%

Industrial Energy Intensity by Industry

	Units	1990	1995	2005	2005	2007
Aggregate Energy Intensity^{a,b,c}	MJ/\$2007 – GDP	9.3	9.7	8.1	8.0	8.3
Energy Intensity by Industry^{a,b,c}						
Copper, Nickel, Lead and Zinc Mines	MJ/tonne	251.1	225.2	240.5	245.5	275.1
Iron Mines	MJ/tonne	436.7	400.3	372.9	338.5	341.7
Gold and Silver Mines	MJ/tonne	557.1	502.0	320.5	307.4	325.0
Other Metal Mines	MJ/tonne	409.5	380.4	339.3	342.9	341.8
Salt Mines	MJ/tonne	376.1	436.9	228.4	221.6	244.9
Potash Mines	MJ/tonne	3,924	3,508	2,699	4,063	3,251
Other Non-Metal Mines	MJ/\$2007 – GDP	38.8	26.8	7.0	7.0	5.2
Upstream Mining	MJ/\$2007 – GDP	3.4	3.9	5.6	5.8	7.2
Fruit and Vegetable Industries	MJ/\$2007 – GDP	7.0	6.0	6.5	6.5	6.0
Dairy Products Industry	MJ/kilolitre	1.7	1.4	1.1	1.1	1.0
Meat Products Industries	MJ/tonne	4,629	4,318	4,074	4,337	4,133
Bakery Products Industries	MJ/\$2007 – GDP	5.4	3.1	4.1	3.9	4.0
Beverage Industries (excluding breweries)	MJ/\$2007 – GDP	2.5	4.3	3.0	2.7	2.5
Breweries Industries	MJ/\$2007 – GDP	2.4	1.8	1.6	1.3	1.3
Tobacco Products Industries	MJ/\$2007 – GDP	0.3	0.3	0.5	0.5	0.5
Textile Mills	MJ/\$2007 – GDP	8.3	8.7	5.8	6.5	6.7
Textile Products Mills	MJ/\$2007 – GDP	7.3	7.8	3.0	2.9	2.9
Clothing Industries	MJ/\$2007 – GDP	1.7	1.6	0.8	0.7	0.8
Leather and Allied Products Industries	MJ/\$2007 – GDP	2.1	2.0	1.5	1.2	1.3
Wood Products Industries	MJ/\$2007 – GDP	14.0	14.2	10.3	10.8	12.6
Pulp Mills	MJ/\$2007 – GDP	327.8	350.6	253.0	250.0	226.4
Paper Mills (except newsprint)	MJ/\$2007 – GDP	71.0	75.7	57.3	50.1	43.7
Newsprint Mills	MJ/tonne	27,088	29,467	27,524	27,017	27,496

Sources:

- a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2014*, Ottawa, 2016 (CANSIM).
- b) Statistics Canada, Gross domestic product (GDP) at basic prices, by *North American Industry Classification System (NAICS)* CANSIM (Table 379-0031), Ottawa, 2016. Data prior to 1997 were estimated by Canadian Industrial Energy End-Use Data and Analysis Centre, 1990 to 2014, Simon Fraser University, 2016 and Natural Resources Canada.
- c) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2014*, Simon Fraser University, 2016.



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Industrial Sector

2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
8.2	8.8	8.5	8.2	8.3	8.5	8.4	-10.1%
293.1	277.1	287.2	273.7	268.3	283.8	256.1	2.0%
434.2	527.0	379.3	298.9	301.2	299.4	305.1	-30.1%
341.1	337.4	338.3	468.0	485.2	426.6	411.8	-26.1%
420.8	454.7	421.2	422.9	365.0	373.6	401.9	-1.9%
205.0	212.2	239.0	186.4	220.6	213.5	210.5	-44.0%
3,161	4,069	2,434	3,574	3,855	3,082	2,931	-25.3%
6.6	7.0	7.0	7.2	7.5	6.7	6.2	-84.1%
7.4	8.8	9.0	8.8	10.0	10.7	10.4	203.5%
5.2	6.6	5.9	6.0	6.7	5.6	6.0	-13.4%
0.9	1.0	0.9	1.0	1.0	1.0	1.0	-41.1%
4,605	5,832	4,756	4,986	6,192	5,431	4,951	7.0%
3.4	3.8	3.1	3.2	4.4	4.0	3.3	-39.7%
2.3	2.8	2.7	2.3	2.4	2.2	2.5	0.4%
1.3	1.2	1.1	1.0	1.1	1.0	1.0	-58.6%
0.4	0.3	0.4	0.4	0.4	0.4	0.4	31.3%
5.7	5.1	4.8	4.3	5.2	5.5	3.3	-59.9%
3.1	3.6	3.5	3.6	4.0	5.0	4.6	-37.5%
0.9	0.9	0.8	0.9	1.1	1.1	1.0	-44.2%
1.6	1.8	1.6	1.3	1.3	1.5	1.5	-30.0%
14.5	16.7	17.8	17.9	18.1	15.0	17.1	22.6%
214.4	259.7	212.5	192.0	204.8	217.6	221.4	-32.5%
41.9	58.1	61.5	61.7	68.4	53.0	51.6	-27.4%
26,214	26,918	26,452	22,885	22,838	28,432	26,599	-1.8%

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Industrial Sector

Industrial Energy Intensity by Industry (cont.)

	Units	1990	1995	2005	2005	2007
Paperboard Mills	MJ/tonne	21,942	18,932	17,494	15,218	13,682
Other Pulp and Paper Manufacturing	MJ/\$2007 – GDP	7.3	5.1	28.0	34.0	39.9
Converted Paper Products Industry	MJ/\$2007 – GDP	4.0	3.2	4.9	4.5	5.2
Printing and Related Support Activities	MJ/\$2007 – GDP	1.5	1.5	1.4	1.4	1.4
Petroleum Refining	MJ/\$2007 – GDP	59.7	62.9	55.6	61.3	61.7
Petrochemical Industry	MJ/tonne	4,598	4,042	6,931	40,958	6,002
Industrial Gas Industry	MJ/\$2007 – GDP	42.3	38.6	23.6	37.9	47.0
Alkali and chlorine manufacturing	MJ/\$2007 – GDP	84.1	93.9	60.0	48.7	39.9
All other basic inorganic chemical manufacturing	MJ/\$2007 – GDP	83.9	93.0	63.8	51.0	41.8
Chemical fertilizer (except potash) manufacturing	MJ/\$2007 – GDP	43.3	66.5	39.6	40.4	43.5
Other Chemical Manufacturing	MJ/\$2007 – GDP	149.6	150.0	81.5	113.8	129.0
Resin and Synthetic Rubber Industries	MJ/tonne	27,008	13,205	6,745	8,576	8,332
Motor Vehicle Plastic Parts Manufacturing	MJ/\$2007 – GDP	5.1	3.2	2.4	2.4	2.3
Rubber Products Industries	MJ/tonne	2.2	1.9	1.4	1.3	1.4
Cement Industry	MJ/tonne	5,646	5,261	5,391	5,521	4,661
Iron and Steel	MJ/\$2007 – GDP	59.7	59.4	51.9	55.1	55.2
Primary Production of Alumina and Aluminum	MJ/tonne	70,283	63,580	64,521	61,767	62,337
Other Non-Ferrous Smelting and Refining	MJ/tonne	47,912	44,352	42,211	39,789	35,734
Fabricated Metal Products Industries	MJ/\$2007 – GDP	4.5	4.3	2.9	2.7	2.7
Machinery Industries	MJ/\$2007 – GDP	1.6	1.3	1.3	1.2	1.3
Computer and Electronic Products Industries	MJ/\$2007 – GDP	1.3	1.1	0.7	0.7	0.7
Electrical Equipment and Components Industries	MJ/\$2007 – GDP	2.0	2.2	1.8	1.8	1.7
Motor Vehicle Industry	MJ/\$2007 – GDP	3.1	3.0	2.2	2.2	2.1
Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	MJ/\$2007 – GDP	3.2	2.0	1.7	1.6	1.6



Industrial Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
14,365	14,781	17,323	17,207	16,591	14,442	14,363	-34.5%
36.7	41.0	26.0	32.9	36.7	44.6	37.4	409.7%
4.4	7.3	5.2	4.8	4.7	5.5	5.6	40.7%
1.6	2.3	2.1	2.1	2.2	2.1	1.7	13.0%
57.6	53.5	56.5	57.0	59.2	55.7	53.4	-10.5%
12,552	11,056	7,757	10,006	8,828	10,071	7,343	59.7%
35.3	55.6	59.1	47.7	74.3	72.5	170.6	302.9%
46.0	50.1	35.9	35.2	38.8	37.7	44.4	-47.3%
48.0	49.6	35.7	37.2	38.4	38.6	43.8	-47.8%
50.6	67.7	78.6	83.0	86.9	91.0	72.2	67.0%
131.4	135.8	146.0	147.4	162.5	145.2	146.6	-2.0%
10,446	12,022	12,683	14,825	14,858	13,597	11,778	-56.4%
2.5	2.3	2.3	2.2	2.0	1.7	1.7	-66.2%
1.4	1.5	0.9	1.0	1.1	0.9	0.8	-62.8%
5,000	5,728	4,657	4,967	4,794	4,988	5,080	-10.0%
54.7	71.2	56.3	58.2	56.0	53.1	51.8	-13.3%
62,555	57,059	59,488	62,656	63,203	60,422	62,845	-10.6%
37,520	36,390	42,131	41,371	36,503	30,012	34,678	-27.6%
3.2	3.2	2.7	2.6	2.9	2.7	2.4	-46.8%
1.2	1.4	1.3	1.2	1.4	1.4	1.3	-17.5%
0.7	0.7	0.8	0.8	1.1	1.0	1.0	-25.8%
1.6	1.5	1.4	1.2	1.5	1.5	1.5	-25.5%
2.5	3.0	1.8	1.8	1.7	1.7	1.7	-46.5%
1.7	1.7	1.2	1.6	1.5	1.2	1.3	-60.8%

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Industrial Sector

Industrial Energy Intensity by Industry (cont.)

	Units	1990	1995	2005	2005	2007
Motor Vehicle Electrical and Electronic Equipment Manufacturing	MJ/\$2007 – GDP	1.1	0.8	1.5	0.6	1.2
Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	MJ/\$2007 – GDP	7.8	5.2	2.7	2.6	2.6
Motor Vehicle Brake System Manufacturing	MJ/\$2007 – GDP	4.9	3.8	2.1	2.0	1.6
Motor Vehicle Transmission and Power Train Parts Manufacturing	MJ/\$2007 – GDP	4.9	2.2	3.8	3.6	3.3
Motor Vehicle Seating and Interior Trim Manufacturing	MJ/\$2007 – GDP	2.6	1.8	1.4	1.4	1.4
Motor Vehicle Metal Stamping	MJ/\$2007 – GDP	5.0	3.6	2.3	2.6	2.7
Other Motor Vehicle Parts Manufacturing	MJ/\$2007 – GDP	4.1	2.7	2.4	2.1	2.4
Furniture and Related Products Industries	MJ/\$2007 – GDP	1.8	1.7	1.8	1.7	1.9
Miscellaneous Manufacturing	MJ/\$2007 – GDP	2.0	1.6	1.4	1.1	1.4
Other Manufacturing n.e.c.	MJ/\$2007 – GDP	9.7	8.5	5.6	5.3	5.7
Construction	MJ/\$2007 – GDP	0.9	0.8	0.8	0.7	0.7
Forestry	MJ/\$2007 – GDP	1.3	1.3	4.5	5.1	5.3



Industrial Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
1.2	1.7	1.6	1.0	1.0	0.9	0.8	-28.1%
2.4	4.0	1.4	1.9	1.9	1.5	1.9	-76.4%
2.2	1.9	1.4	1.2	1.1	0.9	0.9	-81.6%
3.9	5.2	4.2	3.0	6.0	2.9	3.7	-25.4%
1.5	2.0	1.6	1.4	1.3	1.1	1.1	-56.5%
3.2	3.5	3.0	2.5	2.6	2.3	2.4	-53.0%
3.1	4.0	2.5	1.7	1.7	1.5	1.3	-68.4%
2.1	2.5	2.2	2.2	2.3	2.1	2.0	9.5%
1.7	2.2	1.8	1.7	1.8	1.6	1.7	-13.8%
5.4	4.9	5.3	5.0	4.4	5.4	5.1	-47.2%
0.7	0.7	0.7	0.7	0.7	0.7	0.7	-29.3%
5.9	4.9	4.5	3.7	3.6	3.4	3.4	166.7%

Industrial Energy Prices and Background Indicators

	1990	1995	2005	2006	2007
Energy Prices by Energy Source (incl. taxes)					
Natural Gas (cents/m ³) ^{a,e}	10.5	10.6	36.9	36.6	27.2
Light Fuel Oil (cents/litre) ^f	25.8	22.1	61.9	64.2	68.6
Heavy Fuel Oil (cents/litre) ^f	14.1	16.2	38.2	39.2	44.3
Electricity (1,000 kW/400,000 kWh) ¹ (cents/kWh) ^{b,a}	5.6	7.0	8.1	8.2	8.4
Electricity (5,000 kW/3,060,000 kWh) ¹ (cents/kWh) ^{b,e}	4.0	4.9	6.2	6.3	6.5
Background Indicators					
Industrial GDP (million \$2007) ^g	291,399	311,747	415,009	418,814	418,651
Capacity Utilization Rate (%)^c					
Mining	79.8	88.6	85.1	84.1	83.0
Manufacturing	78.2	83.7	83.5	82.6	82.8
<i>Pulp and Paper</i>	<i>83.7</i>	<i>92.0</i>	<i>89.4</i>	<i>88.3</i>	<i>87.4</i>
<i>Primary Metals²</i>	<i>85.1</i>	<i>88.3</i>	<i>91.5</i>	<i>91.9</i>	<i>92.1</i>
<i>Petroleum Refining</i>	<i>87.5</i>	<i>89.5</i>	<i>88.3</i>	<i>83.2</i>	<i>82.5</i>
<i>Chemicals</i>	<i>86.6</i>	<i>85.2</i>	<i>80.2</i>	<i>79.8</i>	<i>82.0</i>
Forestry	78.3	84.9	92.7	89.6	83.7
Construction	96.2	80.9	91.7	91.6	91.3
Industrial Employees (thousands)^d					
Mining	192	173	213	245	259
Manufacturing	2,050	1,904	2,203	2,102	2,026
<i>Pulp and Paper</i>	<i>124</i>	<i>100</i>	<i>88</i>	<i>84</i>	<i>79</i>
<i>Primary Metals²</i>	<i>91</i>	<i>85</i>	<i>79</i>	<i>81</i>	<i>79</i>
<i>Petroleum Refining</i>	<i>19</i>	<i>12</i>	<i>16</i>	<i>16</i>	<i>17</i>
<i>Chemicals</i>	<i>96</i>	<i>81</i>	<i>93</i>	<i>91</i>	<i>89</i>
Forestry	73	93	70	63	60
Construction	816	726	1,022	1,066	1,127

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.



Industrial Sector

2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
33.5	23.4	20.5	18.6	14.0	16.4	21.0	100.2%
94.3	60.9	70.5	94.6	96.9	98.5	99.3	285.5%
57.6	46.1	54.7	72.2	77.0	74.2	72.2	414.0%
9.0	8.4	9.0	9.5	10.0	11.4	10.5	86.1%
7.1	6.5	7.0	7.5	8.0	9.5	8.4	111.1%
407,690	363,527	385,157	403,036	411,331	417,917	432,132	48.3%
78.9	70.4	75.8	79.8	75.7	75.8	77.8	–
76.1	72.0	77.2	79.6	80.6	79.7	81.5	–
87.9	82.0	88.6	87.9	86.4	88.5	88.9	–
89.0	76.0	78.5	85.1	83.0	83.2	81.0	–
75.0	77.9	83.8	79.5	79.4	79.0	83.0	–
75.0	70.9	75.3	75.8	77.0	77.2	77.8	–
81.0	66.0	79.0	88.1	86.2	90.0	84.5	–
89.1	80.5	84.4	84.1	87.4	88.4	89.6	–
266	246	252	272	297	300	308	60.1%
1,927	1,745	1,711	1,722	1,747	1,723	1,711	-16.5%
74	67	63	62	58	58	57	-54.1%
69	59	61	62	61	58	58	-36.2%
18	16	18	19	19	20	19	-1.6%
89	81	79	81	85	83	82	-14.8%
54	48	51	48	51	50	49	-33.1%
1,236	1,190	1,242	1,295	1,323	1,370	1,372	68.1%

Sources:

- Statistics Canada, *Energy Statistics Handbook*, 1990–2010, (Cat. No. 57-601-X). Data for 2011 onward are taken from Statistics Canada, *Average retail prices for gasoline and fuel oil by urban centre*, Table 326-0009, Ottawa, 2016 (CANSIM).
- Hydro-Québec, *Comparison of Electricity Prices in Major North American Cities*, 2014.
- Statistics Canada, Table 028-0002, Ottawa, 2016 (CANSIM).
- Statistics Canada, *Labour Force Survey*, Table 282-0008, and Survey of Employment, Payrolls and Hours, Tables 281-0005 and 281-0024, Ottawa, 2016 (CANSIM).
- Statistics Canada, *Report on Energy Supply-Demand in Canada, 1990–2014*, Ottawa, 2016 (CANSIM).
- Natural Resources Canada, Petroleum Resources Branch, Pipelines, Gas and LNG Division, Ottawa, 2016.
- Statistics Canada, *Gross domestic product (GDP) at basic prices, by North American Industry Classification System (NAICS)* CANSIM (Table 379-0031), Ottawa, 2016. Data prior to 1997 were estimated by Canadian Industrial Energy End-Use Data and Analysis Centre, 1990 to 2014, Simon Fraser University, 2016 and Natural Resources Canada.

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* (RESD) (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 RESD road information to obtain final road energy use estimates.

Aggregate non-road energy use data (rail, air and marine) are obtained directly from the RESD. Rail and air are further disaggregated into passenger and freight transportation based on data from the following Statistics Canada's 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 are obtained mainly from R. L. Polk & Co. and DesRosiers Automotive Consultants Inc. Specifically, the data are extracted from two databases: Canadian Vehicles in Operation Census (CVIOC) and Trucking Industry Profile (TIP). Statistics Canada's *Road Motor Vehicles, Registrations* (CANSIM Table 403-0004), 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



Transportation Sector

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Statistics Canada's reports: *Passenger Bus and Urban Transit Statistics* (PBS) (Cat. No. 53-215-X), *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 Efficiency 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.

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* and then adjusted using a TEUM assumption. 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 (motor gasoline and diesel fuel oil) are weighted averages of regional prices from Statistics Canada's CANSIM Table 326-0009. Other transportation prices indices are from Statistics Canada's CANSIM Table 326-0021.



Transportation Sector

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In Canada, the availability of biofuel data is limited (not reported). In the 2014 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 Sector

Transportation Secondary Energy Use (Final Demand) by Energy Source and Transportation Mode

	1990	1995	2005	2006	2007
Total Energy Use (PJ)^a	1,877.9	2,011.7	2,475.7	2,456.9	2,554.5
Passenger Transportation ^b	1,154.0	1,176.8	1,338.1	1,313.4	1,358.2
Freight Transportation ^b	670.5	772.7	1,038.2	1,042.7	1,094.0
Off-Road ^{1, b}	53.3	62.1	99.5	100.8	102.3
Energy Use by Energy Source (PJ)^a					
Electricity	3.1	3.0	3.5	3.5	2.5
Natural Gas	1.7	2.4	1.9	1.9	1.9
Motor Gasoline	1,120.4	1,179.2	1,368.5	1,369.7	1,393.2
Diesel Fuel Oil	469.8	549.6	745.2	740.4	772.3
Ethanol	0.0	0.0	6.5	6.6	30.8
Biodiesel Fuel	0.0	0.0	0.0	0.0	0.0
Light Fuel Oil and Kerosene	0.0	0.0	0.0	0.0	0.0
Heavy Fuel Oil	60.1	56.6	83.0	68.7	84.4
Aviation Gasoline	5.5	4.2	3.3	3.0	3.1
Aviation Turbo Fuel	181.9	183.9	253.6	251.7	254.2
Propane	35.4	32.8	10.3	11.3	12.1

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, 1990–2014*, Ottawa, 2016.

b) Natural Resources Canada, *Transportation End-Use Model*, Ottawa, 2016.

Transportation Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
2,541.9	2,505.0	2,607.7	2,604.4	2,633.6	2,685.9	2,676.8	42.5%
1,326.4	1,316.0	1,338.9	1,328.0	1,354.9	1,387.1	1,365.2	18.3%
1,111.9	1,085.9	1,165.0	1,170.2	1,171.1	1,188.8	1,199.5	78.9%
103.5	103.1	103.8	106.2	107.7	110.0	112.1	110.1%
2.3	2.4	2.5	2.6	4.0	4.4	4.5	43.9%
1.9	1.9	1.9	1.6	1.7	1.5	3.9	135.4%
1,375.1	1,394.6	1,413.9	1,377.0	1,379.1	1,422.1	1,402.7	25.2%
789.3	749.1	817.1	856.1	840.2	850.1	862.3	83.5%
33.0	36.8	45.2	66.4	69.4	64.2	68.2	–
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	–
84.9	87.0	86.1	61.2	62.8	59.4	50.1	-16.7%
3.0	2.9	2.6	2.1	2.6	2.2	1.9	-65.5%
239.6	219.1	227.2	225.3	260.9	271.8	273.7	50.4%
12.8	11.2	11.2	12.0	13.0	10.4	9.5	-73.0%

Transportation Sector

Transportation Secondary Energy Use (Final Demand) by Energy Source and Transportation Mode (cont.)

	1990	1995	2005	2006	2007
Energy Use by Transportation Mode (PJ)^b					
Cars	705.5	669.1	617.5	604.8	620.2
Passenger Light Trucks	215.5	271.8	410.2	404.7	426.3
Freight Light Trucks	97.6	118.2	159.6	159.7	169.2
Medium Trucks	120.6	147.7	208.7	239.2	247.1
Heavy Trucks	253.6	319.3	452.4	437.9	454.4
Motorcycles	2.4	2.1	3.3	3.5	3.7
School Buses	13.5	16.2	13.2	13.5	13.6
Urban Transit	24.6	26.2	35.0	30.2	33.1
Inter-City Buses	7.9	8.2	7.1	6.5	7.0
Passenger Air	180.9	180.8	249.1	247.5	251.4
Freight Air	6.5	7.3	7.8	7.2	5.8
Passenger Rail	3.8	2.3	2.7	2.7	2.8
Freight Rail	85.7	78.6	81.7	85.6	91.8
Marine	106.5	101.7	128.1	113.0	125.7
Off-Road ¹	53.3	62.1	99.5	100.8	102.3
Activity					
Total Passenger-kilometres ² (millions) ^b	492,296	545,583	660,022	666,433	688,478
Total Tonne-kilometres (millions) ^b	574,552	651,060	895,494	895,950	897,347
Passenger Transportation Energy Intensity² (MJ/Pkm)^b					
	2.26	2.10	1.98	1.92	1.91
Freight Transportation Energy Intensity (MJ/Tkm)^b					
	1.17	1.19	1.16	1.16	1.22

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.

Source:

b) Natural Resources Canada, Transportation End-Use Model, Ottawa, 2016.

Transportation Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
601.6	600.3	594.8	576.7	564.1	561.7	537.4	-23.8%
424.2	435.6	452.9	459.7	467.9	489.0	490.6	127.7%
168.7	171.8	177.9	178.8	184.0	192.2	193.3	98.1%
260.9	278.3	311.0	303.9	300.9	315.3	316.0	162.0%
458.2	450.9	467.4	490.6	491.4	495.1	510.3	101.2%
3.8	5.1	5.3	5.4	5.6	5.6	5.5	130.4%
14.9	14.7	15.5	16.2	14.3	13.4	12.7	-5.8%
34.0	35.1	37.9	39.7	37.9	42.1	42.3	71.8%
7.1	5.3	5.5	5.4	5.2	5.6	5.3	-33.5%
237.7	217.6	224.5	222.1	257.4	267.7	269.5	48.9%
4.9	4.4	5.3	5.3	6.1	6.3	6.1	-6.1%
3.2	2.3	2.5	2.8	2.4	2.1	2.0	-46.8%
97.0	62.5	81.2	93.0	94.2	90.9	93.8	9.5%
122.2	118.0	122.3	98.5	94.4	89.0	80.0	-24.9%
103.5	103.1	103.8	106.2	107.7	110.0	112.1	110.1%
688,277	695,190	722,109	734,513	740,725	750,288	750,744	52.5%
870,092	783,756	850,677	852,418	886,341	917,275	971,573	69.1%
1.87	1.85	1.82	1.78	1.80	1.82	1.79	-20.9%
1.28	1.39	1.37	1.37	1.32	1.30	1.23	5.8%

Transportation Sector

Transportation GHG Emissions by Energy Source and Transportation Mode

	1990	1995	2005	2006	2007
Total GHG Emissions (Mt of CO₂e)^{a,b,c}	132.3	142.7	174.4	172.5	179.0
Passenger Transportation ^{b,c}	80.9	83.5	93.3	91.2	93.9
Freight Transportation ^{b,c}	47.7	54.9	74.3	74.5	78.2
Off-Road ^{1,b,c}	3.7	4.3	6.8	6.9	7.0

GHG Emissions by Energy Source (Mt of CO₂e)^{a,b,c}

Electricity	0.2	0.2	0.2	0.2	0.1
Natural Gas	0.1	0.1	0.1	0.1	0.1
Motor Gasoline	78.4	83.5	95.3	94.9	96.1
Diesel Fuel Oil	33.7	39.2	53.8	53.5	55.8
Ethanol	0.0	0.0	0.4	0.4	2.1
Biodiesel Fuel	0.0	0.0	0.0	0.0	0.0
Light Fuel Oil and Kerosene	0.0	0.0	0.0	0.0	0.0
Heavy Fuel Oil	4.6	4.3	6.2	5.2	6.3
Aviation Gasoline	0.4	0.3	0.2	0.2	0.2
Aviation Turbo Fuel	12.9	13.1	17.5	17.4	17.5
Propane	2.1	2.0	0.6	0.7	0.7

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, 1990–2014*, Ottawa, 2016.
- b) Natural Resources Canada, *Transportation End-Use Model*, Ottawa, 2016.
- c) Environment and Climate Change Canada, *National Inventory Report 1990–2014: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2016.

Transportation Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
177.8	174.6	181.7	181.1	182.7	186.0	185.1	39.8%
91.3	90.3	91.6	90.6	92.1	94.1	92.3	14.1%
79.4	77.2	82.9	83.2	83.2	84.4	85.1	78.2%
7.1	7.1	7.1	7.3	7.4	7.5	7.7	107.7%
0.1	0.1	0.1	0.1	0.2	0.2	0.2	6.4%
0.1	0.1	0.1	0.1	0.1	0.1	0.2	128.0%
94.4	95.5	96.5	93.7	93.5	96.2	94.6	20.8%
57.1	54.0	59.0	61.8	60.7	61.4	62.3	84.9%
2.2	2.4	3.0	4.3	4.5	4.2	4.4	–
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	–
6.4	6.5	6.5	4.6	4.7	4.5	3.8	-18.2%
0.2	0.2	0.2	0.2	0.2	0.2	0.1	-65.5%
16.5	15.1	15.7	15.6	18.0	18.8	18.9	46.3%
0.8	0.7	0.7	0.7	0.8	0.6	0.6	-72.8%

Transportation Sector

Transportation GHG Emissions by Energy Source and Transportation Mode (cont.)

	1990	1995	2005	2006	2007
GHG Emissions by Transportation Mode (Mt of CO ₂ e) ^{a,b,c}					
Cars	49.3	47.5	43.0	41.9	42.7
Passenger Light Trucks	15.1	19.4	28.8	28.2	29.6
Freight Light Trucks	6.7	8.3	11.2	11.1	11.7
Medium Trucks	8.2	10.1	14.5	16.6	17.2
Heavy Trucks	17.8	22.4	32.3	31.3	32.5
Motorcycles	0.2	0.1	0.2	0.2	0.2
School Buses	0.9	1.1	0.9	1.0	1.0
Urban Transit	1.7	1.8	2.4	2.1	2.3
Inter-City Buses	0.6	0.6	0.5	0.5	0.5
Passenger Air	12.9	12.8	17.2	17.1	17.4
Freight Air	0.5	0.5	0.5	0.5	0.4
Passenger Rail	0.3	0.2	0.2	0.2	0.2
Freight Rail	6.7	6.1	6.4	6.7	7.2
Marine	7.9	7.5	9.4	8.3	9.3
Off-Road ¹	3.7	4.3	6.8	6.9	7.0
GHG Intensity (tonne/TJ)^{a,b,c}	70.5	70.9	70.5	70.2	70.1
GHG Emissions Related to Electricity (Mt of CO ₂ e) ^{a,c}					
	0.2	0.2	0.2	0.2	0.1

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, 1990–2014*, Ottawa, 2016.
- b) Natural Resources Canada, *Transportation End-Use Model*, Ottawa, 2016.
- c) Environment and Climate Change Canada, *National Inventory Report 1990–2014: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2016.

Transportation Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
41.2	41.0	40.5	39.1	38.1	37.9	36.1	-26.8%
29.2	29.9	30.9	31.2	31.7	33.0	33.0	117.7%
11.6	11.8	12.1	12.1	12.4	12.9	13.0	93.2%
18.1	19.4	21.7	21.2	21.0	22.0	22.0	166.7%
32.7	32.2	33.4	35.1	35.1	35.4	36.5	104.7%
0.3	0.3	0.4	0.4	0.4	0.4	0.4	124.0%
1.1	1.0	1.1	1.2	1.0	1.0	0.9	-0.1%
2.4	2.4	2.6	2.8	2.6	2.9	2.8	69.4%
0.5	0.4	0.4	0.4	0.4	0.4	0.4	-32.4%
16.4	15.0	15.5	15.3	17.8	18.5	18.6	44.7%
0.3	0.3	0.4	0.4	0.4	0.4	0.4	-8.7%
0.2	0.2	0.2	0.2	0.2	0.2	0.2	-46.3%
7.6	4.9	6.4	7.3	7.4	7.1	7.4	10.6%
9.0	8.7	9.0	7.2	7.0	6.6	5.9	-25.2%
7.1	7.1	7.1	7.3	7.4	7.5	7.7	107.7%
70.0	69.7	69.7	69.5	69.4	69.2	69.1	-1.9%
0.1	0.1	0.1	0.1	0.2	0.2	0.2	6.4%

Transportation Sector

Transportation Energy Prices and Background Indicators

	1990	1995	2005	2006	2007
Energy Prices by Energy Source (incl. taxes)					
Regular Unleaded Gasoline ¹ (cents/litre) ^{a,d,e}	58.7	55.6	93.4	98.6	103.1
Diesel Fuel Oil I (cents/litre) ^{a,d,e}	51.4	51.1	92.8	96.6	99.0
Propane (cents/litre) ^{a,d,f}	26.6	29.3	57.5	62.0	62.2
Excise Tax (cents/litre)^b					
Unleaded Gasoline	8.5	10.0	10.0	10.0	10.0
Leaded Gasoline	9.5	11.0	11.0	11.0	11.0
Diesel Fuel Oil	4.0	4.0	4.0	4.0	4.0
Background Indicators					
Consumer Price Index (2007 = 100)^c					
Gasoline and Other Fuels ²	56.6	54.8	90.8	95.7	100.0
Public Transportation	45.6	60.0	94.8	99.1	100.0
Inter-City Transportation	42.4	56.3	95.6	99.8	100.0
Local and Commuter	50.9	66.0	93.3	97.7	100.0
GDP at Factor Cost (million \$2007)^c					
Business Sector	733,190	807,991	1,167,255	1,197,688	1,222,180
Transportation	37,406	42,498	57,798	59,272	60,246
Real Personal Disposable Income per Household (\$2007)^e					
	51,664	48,496	53,235	55,331	56,097

1) 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:

- Statistics Canada, *Energy Statistics Handbook*, 1990–2010, (Cat. No. 57-601-X). Data for 2011 onward are taken from Statistics Canada, *Average retail prices for gasoline, Diesel and fuel oil by urban centre*, Table 326-0009, Ottawa, 2016 (CANSIM).
- Canada Revenue Agency, *Current Rates of Excise Taxes - Revised*, Ottawa, 2008; www.cra-arc.gc.ca/E/pub/et/currate/currate-e.html.
- Statistics Canada, *Consumer Price Index*, Table 326-0021, Ottawa, 2016 (CANSIM).
- Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2014*, Ottawa, 2016.
- Statistics Canada, *Total Population, Census Divisions and Census Metropolitan Areas*, Tables 051-0014, 051-0034 and 051-0046, Ottawa, 2016 (CANSIM).
- Natural Resources Canada, Petroleum Resources Branch, Pipelines, Gas and LNG Division, Ottawa, 2016.

Transportation Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
116.4	95.8	104.8	125.6	128.5	128.2	128.1	118.2%
125.2	89.7	101.0	123.3	124.8	124.4	124.2	141.8%
72.4	61.4	67.2	70.5	70.7	70.5	79.4	198.1%
10.0	10.0	10.0	10.0	10.0	10.0	10.0	17.6%
11.0	11.0	11.0	11.0	11.0	11.0	11.0	15.8%
4.0	4.0	4.0	4.0	4.0	4.0	4.0	–
112.7	93.0	101.4	121.7	124.8	125.5	125.8	122.2%
105.9	106.7	105.7	111.6	114.2	116.4	117.7	157.9%
106.8	106.0	101.2	108.9	111.4	113.3	113.7	168.4%
104.3	107.9	113.4	116.2	119.0	121.6	124.7	144.9%
1,222,661	1,166,021	1,206,805	1,251,275	1,276,587	1,306,982	1,343,883	83.3%
60,293	57,838	60,279	62,725	63,635	64,476	67,049	79.2%
57,141	57,386	59,300	58,958	59,762	61,368	61,432	18.9%

Transportation Sector

Passenger Transportation Secondary Energy Use (Final Demand) by Energy Source and Transportation Mode

	1990	1995	2005	2006	2007
Passenger Transportation Energy Use (PJ)^a	1,154.0	1,176.8	1,338.1	1,313.4	1,358.2
Energy Use by Energy Source (PJ)^a					
Electricity	3.1	3.0	3.5	3.5	2.5
Natural Gas	1.6	2.3	1.7	1.7	1.8
Motor Gasoline	902.4	921.2	1,010.1	994.6	1,013.9
Diesel Fuel Oil	47.2	53.5	62.8	55.8	60.1
Ethanol	0.0	0.0	4.8	4.7	22.7
Biodiesel Fuel	0.0	0.0	0.0	0.0	0.0
Aviation Gasoline	5.4	4.1	3.3	2.9	3.1
Aviation Turbo Fuel	175.5	176.7	245.8	244.6	248.4
Propane	18.8	16.0	6.1	5.4	5.8
Energy Use by Transportation Mode (PJ)^a					
Cars	705.5	669.1	617.5	604.8	620.2
Light Trucks	215.5	271.8	410.2	404.7	426.3
Motorcycles	2.4	2.1	3.3	3.5	3.7
School Buses	13.5	16.2	13.2	13.5	13.6
Urban Transit	24.6	26.2	35.0	30.2	33.1
Inter-City Buses	7.9	8.2	7.1	6.5	7.0
Air	180.9	180.8	249.1	247.5	251.4
Rail	3.8	2.3	2.7	2.7	2.8
Activity					
Total Passenger-kilometres ¹ (millions) ^{a,b,c}	492,296	545,583	660,022	666,433	688,478

1) Excludes non-commercial aviation.

Sources:

- a) Natural Resources Canada, Transportation End-Use Model, Ottawa, 2016.
 b) Statistics Canada, *Canadian Civil Aviation, 1990–2000*, Ottawa, 2003 (Cat. No. 51-206-X); and
 Statistics Canada, *Aviation: Service Bulletins*, Ottawa: Vol. 48 No. 6, 2016 (Cat. No. 51-004-X).
 c) Statistics Canada, *Rail in Canada, 1990–2009*, Ottawa, 2011 (Cat. No. 52-216-X); and
 Tables 404-0012 and 404-0016, Ottawa, 2016 (CANSIM).

Transportation Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
1,326.4	1,316.0	1,338.9	1,328.0	1,354.9	1,387.1	1,365.2	18.3%
2.3	2.4	2.5	2.6	4.0	4.4	4.5	43.9%
1.7	1.7	1.7	1.3	1.4	1.2	3.5	117.1%
990.6	1,000.6	1,006.2	979.1	973.1	995.4	969.4	7.4%
63.3	61.8	66.3	69.9	64.0	68.3	66.4	40.9%
24.5	27.0	32.5	47.3	48.7	45.1	47.3	–
0.0	0.0	0.0	0.0	0.0	0.0	0.0	–
3.0	2.8	2.6	2.1	2.6	2.2	1.9	-65.7%
234.7	214.7	222.0	220.0	254.8	265.5	267.6	52.5%
6.2	5.0	5.2	5.7	6.3	5.0	4.6	-75.5%
601.6	600.3	594.8	576.7	564.1	561.7	537.4	-23.8%
424.2	435.6	452.9	459.7	467.9	489.0	490.6	127.7%
3.8	5.1	5.3	5.4	5.6	5.6	5.5	130.4%
14.9	14.7	15.5	16.2	14.3	13.4	12.7	-5.8%
34.0	35.1	37.9	39.7	37.9	42.1	42.3	71.8%
7.1	5.3	5.5	5.4	5.2	5.6	5.3	-33.5%
237.7	217.6	224.5	222.1	257.4	267.7	269.5	48.9%
3.2	2.3	2.5	2.8	2.4	2.1	2.0	-46.8%
688,277	695,190	722,109	734,513	740,725	750,288	750,744	52.5%

Transportation Sector

Passenger Transportation Secondary Energy Use (Final Demand) by Energy Source and Transportation Mode (cont.)

	1990	1995	2005	2006	2007
Passenger-kilometres by Transportation Mode (millions)					
Cars ^a	311,376	320,184	320,106	315,629	326,141
Light Trucks ^a	75,089	105,100	168,781	167,440	177,724
Motorcycles ^a	1,604	1,398	2,773	2,941	3,195
School Buses ^a	15,013	21,739	26,854	31,620	26,402
Urban Transit ^e	12,821	12,905	20,502	20,942	18,112
Inter-City Buses ^a	7,835	9,349	9,553	7,682	9,118
Air ^{1, b}	66,776	73,492	109,975	118,729	126,334
Rail ^c	1,782	1,415	1,478	1,450	1,453
Energy Intensity¹ (MJ/Pkm)^{a, b, c}	2.26	2.10	1.98	1.92	1.91

1) Excludes non-commercial aviation.

Sources:

- a) Natural Resources Canada, Transportation End-Use Model, Ottawa, 2016.
- b) Statistics Canada, *Canadian Civil Aviation, 1990–2000*, Ottawa, 2003 (Cat. No. 51-206-X); and Statistics Canada, *Aviation: Service Bulletins*, Ottawa: Vol. 48 No. 6, 2016 (Cat. No. 51-004-X).
- c) Statistics Canada, *Rail in Canada, 1990–2009*, Ottawa, 2011 (Cat. No. 52-216-X); and Tables 404-0012 and 404-0016, Ottawa, 2016 (CANSIM).

Transportation Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
319,531	321,202	320,400	312,940	309,064	309,753	297,453	-4.5%
178,702	185,439	194,852	199,949	204,242	215,464	217,314	189.4%
3,268	2,910	3,033	3,087	3,205	3,201	3,118	94.5%
27,973	32,899	36,179	36,534	34,544	31,775	30,688	104.4%
18,999	20,892	22,793	25,832	25,310	25,289	25,642	100.0%
8,630	7,752	7,162	7,660	6,664	7,563	7,158	-8.6%
129,600	122,683	136,286	147,107	156,323	155,876	168,043	151.7%
1,574	1,413	1,404	1,404	1,374	1,365	1,327	-25.5%
1.87	1.85	1.82	1.78	1.80	1.82	1.79	-20.9%

Transportation Sector

Passenger Transportation GHG Emissions by Energy Source and Transportation Mode

	1990	1995	2005	2006	2007
Passenger Transportation GHG Emissions (Mt of CO₂e)^{b,c}	80.9	83.5	93.3	91.2	93.9
<i>GHG Emissions by Energy Source (Mt of CO₂e)^{b,c}</i>					
Electricity	0.2	0.2	0.2	0.2	0.1
Natural Gas	0.1	0.1	0.1	0.1	0.1
Motor Gasoline	63.3	65.6	70.6	69.1	70.1
Diesel Fuel Oil	3.3	3.8	4.5	4.0	4.3
Ethanol	0.0	0.0	0.3	0.3	1.5
Biodiesel Fuel	0.0	0.0	0.0	0.0	0.0
Aviation Gasoline	0.4	0.3	0.2	0.2	0.2
Aviation Turbo Fuel	12.5	12.5	17.0	16.9	17.1
Propane	1.1	1.0	0.4	0.3	0.4
<i>GHG Emissions by Transportation Mode (Mt of CO₂e)^{b,c}</i>					
Cars	49.3	47.5	43.0	41.9	42.7
Light Trucks	15.1	19.4	28.8	28.2	29.6
Motorcycles	0.2	0.1	0.2	0.2	0.2
School Buses	0.9	1.1	0.9	1.0	1.0
Urban Transit	1.7	1.8	2.4	2.1	2.3
Inter-City Buses	0.6	0.6	0.5	0.5	0.5
Air	12.9	12.8	17.2	17.1	17.4
Rail	0.3	0.2	0.2	0.2	0.2
GHG Intensity (tonne/TJ)^{b,c}	70.1	71.0	69.7	69.4	69.1
GHG Emissions Related to Electricity (Mt of CO₂e)^{b,c}	0.2	0.2	0.2	0.2	0.1

Sources:

- a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2014*, Ottawa, 2016.
- b) Natural Resources Canada, *Transportation End-Use Model*, Ottawa, 2016.
- c) Environment and Climate Change Canada, *National Inventory Report 1990–2014: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2016.

Transportation Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
91.3	90.3	91.6	90.6	92.1	94.1	92.3	14.1%
0.1	0.1	0.1	0.1	0.2	0.2	0.2	6.4%
0.1	0.1	0.1	0.1	0.1	0.1	0.2	110.3%
68.1	68.6	68.7	66.6	65.9	67.2	65.3	3.1%
4.5	4.4	4.8	5.0	4.6	4.9	4.8	42.4%
1.6	1.8	2.1	3.1	3.2	2.9	3.0	–
0.0	0.0	0.0	0.0	0.0	0.0	0.0	–
0.2	0.2	0.2	0.2	0.2	0.2	0.1	-65.7%
16.2	14.8	15.3	15.2	17.6	18.3	18.5	48.3%
0.4	0.3	0.3	0.3	0.4	0.3	0.3	-75.2%
41.2	41.0	40.5	39.1	38.1	37.9	36.1	-26.8%
29.2	29.9	30.9	31.2	31.7	33.0	33.0	117.7%
0.3	0.3	0.4	0.4	0.4	0.4	0.4	124.0%
1.1	1.0	1.1	1.2	1.0	1.0	0.9	-0.1%
2.4	2.4	2.6	2.8	2.6	2.9	2.8	69.4%
0.5	0.4	0.4	0.4	0.4	0.4	0.4	-32.4%
16.4	15.0	15.5	15.3	17.8	18.5	18.6	44.7%
0.2	0.2	0.2	0.2	0.2	0.2	0.2	-46.3%
68.8	68.6	68.4	68.2	68.0	67.8	67.6	-3.6%
0.1	0.1	0.1	0.1	0.2	0.2	0.2	6.4%

Transportation Sector

Passenger Road Transportation Secondary Energy Use (Final Demand) and GHG Emissions by Energy Source

	1990	1995	2005	2006	2007
Passenger Road Transportation Energy Use (PJ)^a	969.3	993.7	1,086.3	1,063.2	1,103.9
Energy Use by Energy Source (PJ)^a					
Electricity	3.1	3.0	3.5	3.5	2.5
Natural Gas	1.6	2.3	1.7	1.7	1.8
Motor Gasoline	902.4	921.2	1,010.1	994.6	1,013.9
Diesel Fuel Oil	43.4	51.2	60.2	53.1	57.3
Ethanol	0.0	0.0	4.8	4.7	22.7
Biodiesel Fuel	0.0	0.0	0.0	0.0	0.0
Propane	18.8	16.0	6.1	5.4	5.8
Activity					
Passenger-kilometres (millions) ^a	423,738	470,675	548,569	546,254	560,691
Energy Intensity (MJ/Pkm)^a	2.29	2.11	1.98	1.95	1.97
Passenger Road Transportation GHG Emissions (Mt of CO₂e)^{a,b}	67.8	70.5	75.9	73.8	76.3
GHG Emissions by Energy Source (Mt of CO₂e)^{a,b}					
Electricity	0.2	0.2	0.2	0.2	0.1
Natural Gas	0.1	0.1	0.1	0.1	0.1
Motor Gasoline	63.3	65.6	70.6	69.1	70.1
Diesel Fuel Oil	3.1	3.6	4.3	3.8	4.1
Ethanol	0.0	0.0	0.3	0.3	1.5
Biodiesel Fuel	0.0	0.0	0.0	0.0	0.0
Propane	1.1	1.0	0.4	0.3	0.4
GHG Intensity (tonne/TJ)^{a,b}	69.9	70.9	69.9	69.5	69.1

Sources:

- a) Natural Resources Canada, Transportation End-Use Model, Ottawa, 2016.
 b) Environment and Climate Change Canada, *National Inventory Report 1990–2014: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2016.

Transportation Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
1,085.5	1,096.2	1,111.9	1,103.2	1,095.1	1,117.3	1,093.7	12.8%
2.3	2.4	2.5	2.6	4.0	4.4	4.5	43.9%
1.7	1.7	1.7	1.3	1.4	1.2	3.5	117.1%
990.6	1,000.6	1,006.2	979.1	973.1	995.4	969.4	7.4%
60.1	59.5	63.8	67.1	61.6	66.2	64.4	48.5%
24.5	27.0	32.5	47.3	48.7	45.1	47.3	–
0.0	0.0	0.0	0.0	0.0	0.0	0.0	–
6.2	5.0	5.2	5.7	6.3	5.0	4.6	-75.5%
557,102	571,094	584,418	586,002	583,028	593,046	581,374	37.2%
1.95	1.92	1.90	1.88	1.88	1.88	1.88	-17.8%
74.7	75.1	75.9	75.0	74.1	75.4	73.5	8.5%
0.1	0.1	0.1	0.1	0.2	0.2	0.2	6.4%
0.1	0.1	0.1	0.1	0.1	0.1	0.2	110.3%
68.1	68.6	68.7	66.6	65.9	67.2	65.3	3.1%
4.3	4.3	4.6	4.8	4.4	4.7	4.6	50.8%
1.6	1.8	2.1	3.1	3.2	2.9	3.0	–
0.0	0.0	0.0	0.0	0.0	0.0	0.0	–
0.4	0.3	0.3	0.3	0.4	0.3	0.3	-75.2%
68.8	68.5	68.3	68.0	67.7	67.5	67.2	-3.8%

Passenger Transportation Explanatory Variables

	1990	1995	2005	2006	2007
Light-Duty Vehicles					
Sales (thousands)					
Cars ^{1,a,d}	872	641	846	866	881
Light Trucks ^{1,a,d}	282	331	493	499	542
Motorcycles	n.a.	n.a.	n.a.	n.a.	n.a.
Stock (thousands)					
Cars ^{a,f}	11,100	10,936	11,124	11,263	11,607
Light Trucks ^{a,f}	2,761	3,372	5,458	5,525	5,872
Motorcycles ^{a,c}	306	275	444	485	522
Average Distance Travelled per Year (km)					
Cars ^a	18,071	18,602	18,178	17,701	17,746
Light Trucks ^a	17,538	18,650	18,120	17,752	17,726
Motorcycles ^a	4,770	4,628	4,920	4,775	4,815
On-Road Average Fuel Consumption (L/100 km)					
Cars ^{a,g}					
Motor Gasoline ²	10.1	9.5	8.8	8.7	8.7
Diesel Fuel Oil ³	7.8	7.3	6.2	6.4	6.4
Light Trucks ^{a,g}					
Motor Gasoline ²	12.9	12.4	11.8	11.8	11.8
Diesel Fuel Oil ³	10.0	11.3	12.1	12.2	12.1
Motorcycles ^{a,g}					
Motor Gasoline ²	4.7	4.7	4.3	4.3	4.2

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

2) Includes Ethanol.

3) Includes Biodiesel.

Sources:

a) Natural Resources Canada, Transportation End-Use Model, Ottawa, 2016.

c) Statistics Canada, *Road Motor Vehicle Registrations*, Ottawa, 1999 (Cat. No. 53-219-X); and

d) Statistics Canada, *Motor Vehicle Registration, 2000–2014*, Table 405-0004, Ottawa, 2016 (CANSIM).

e) R.L. Polk & Co., *New Vehicle Registrations, 1990–2013*, Southfield (Detroit), Michigan, 2015.

f) United States Department of Transportation, *National Transportation Statistics*, Table VM-1, 2015.

g) DesRosiers Automotive Consultants, *Canadian Vehicles in Operation Census, 1990–2014*, Richmond Hill (Toronto), 2016.

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

Transportation Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
914	760	723	717	762	783	805	-7.7%
524	484	574	590	601	642	679	140.9%
n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	—
12,000	12,098	12,061	11,914	11,921	12,255	12,565	13.2%
6,243	6,501	6,758	7,003	7,168	7,668	8,164	195.7%
567	595	616	631	661	672	688	125.2%
16,814	16,764	16,771	16,580	16,364	15,951	14,938	-17.3%
16,760	16,697	16,874	16,707	16,667	16,434	15,563	-11.3%
4,539	4,541	4,569	4,542	4,498	4,419	4,207	-11.8%
8.6	8.6	8.5	8.5	8.4	8.4	8.3	-17.6%
6.5	6.5	6.6	6.7	6.7	6.8	6.8	-13.1%
11.7	11.6	11.5	11.5	11.4	11.3	11.3	-12.4%
11.5	10.9	10.4	9.9	9.4	9.1	8.8	-12.2%
4.2	5.4	5.4	5.4	5.4	5.4	5.4	14.9%

Passenger Transportation Explanatory Variables (cont.)

	1990	1995	2005	2006	2007
Lab-Tested New Vehicle Fuel Consumption³ (L/100 km)^g					
CAFC Standard Cars ⁴	8.6	8.6	8.6	8.6	8.6
CAFC Average Car Fleet ⁴	8.2	7.9	7.4	7.5	7.2
CAFC Standard Light Trucks ⁴	11.8	11.4	11.2	10.9	10.6
CAFC Average Light Truck Fleet ⁴	11.4	11.5	10.6	10.4	10.1
Buses					
Stock (thousands)^{a,c}					
School Buses	44.7	48.8	46.9	49.2	48.0
Urban Transit	25.7	21.7	24.0	23.0	25.9
Inter-City Buses	6.6	6.8	8.0	8.2	8.7
Average Distance Travelled per Year (km)^{a,b}					
School Buses	19,523	24,264	27,687	30,741	26,048
Urban Transit	47,513	55,446	73,086	77,332	58,915
Inter-City Buses	70,531	80,882	70,608	55,238	61,865

3) Includes Biodiesel.

4) Growth rate shown in the final column entitled "Total Growth 1990–2014" is for 1990 to 2010.

Sources:

- a) Natural Resources Canada, Transportation End-Use Model, Ottawa, 2016.
- 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, 2001–2010*, Ottawa, 2013 (Cat. No. 50-002-X); and Tables 408-0008 and 408-0010, Ottawa, 2016 (CANSIM).
- c) Statistics Canada, *Road Motor Vehicle Registrations*, Ottawa, 1999 (Cat. No. 53-219-X); and Statistics Canada, *Motor Vehicle Registration, 2000–2014*, Table 405-0004, Ottawa, 2016 (CANSIM).
- g) Transport Canada, *Vehicle Fuel Economy Information System, 1979–2009*, Ottawa, 2010.

Transportation Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
8.6	8.6	8.6	n.a.	n.a.	n.a.	n.a.	0.0%
7.1	6.8	6.8	n.a.	n.a.	n.a.	n.a.	-17.1%
10.5	10.2	10.0	n.a.	n.a.	n.a.	n.a.	-15.3%
9.5	9.1	8.5	n.a.	n.a.	n.a.	n.a.	-25.4%
48.4	49.5	50.0	49.8	49.7	49.4	48.8	9.1%
27.1	28.1	28.2	28.8	29.5	30.2	30.8	19.7%
8.6	8.0	8.1	8.0	8.2	9.3	10.3	56.8%
27,031	30,802	33,136	33,253	31,198	28,881	27,677	41.8%
58,592	61,601	66,359	73,012	69,355	67,615	66,700	40.4%
59,159	57,219	52,459	56,886	47,929	48,123	41,082	-41.8%

Transportation Sector

Freight Transportation Secondary Energy Use (Final Demand) by Energy Source and Transportation Mode

	1990	1995	2005	2006	2007
Freight Transportation Energy Use (PJ)^a	670.5	772.7	1,038.2	1,042.7	1,094.0
Energy Use by Energy Source (PJ)^a					
Natural Gas	0.1	0.1	0.2	0.1	0.1
Motor Gasoline	164.6	195.9	259.5	274.8	279.1
Diesel Fuel Oil	422.6	496.1	682.4	684.6	712.2
Ethanol	0.0	0.0	1.2	1.4	6.0
Biodiesel Fuel	0.0	0.0	0.0	0.0	0.0
Light Fuel Oil and Kerosene	0.0	0.0	0.0	0.0	0.0
Heavy Fuel Oil	60.1	56.6	83.0	68.7	84.4
Aviation Gasoline	0.1	0.1	0.0	0.0	0.0
Aviation Turbo Fuel	6.4	7.2	7.8	7.1	5.8
Propane	16.6	16.8	4.2	5.9	6.2
Energy Use by Transportation Mode (PJ)^a					
Light Trucks	97.6	118.2	159.6	159.7	169.2
Medium Trucks	120.6	147.7	208.7	239.2	247.1
Heavy Trucks	253.6	319.3	452.4	437.9	454.4
Air	6.5	7.3	7.8	7.2	5.8
Rail	85.7	78.6	81.7	85.6	91.8
Marine	106.5	101.7	128.1	113.0	125.7
Activity					
Total Tonne-kilometres (millions) ^{a,b,c,d,e}	574,552	651,060	895,494	895,950	897,347
Tonne-kilometres by Transportation Mode (millions)					
Light Trucks ^a	10,508	13,706	20,606	20,717	22,509
Medium Trucks ^a	13,630	17,928	27,937	35,751	37,589
Heavy Trucks ^b	110,443	148,014	233,462	225,138	224,783
Air ^c	1,754	2,045	2,236	2,227	1,997
Rail ^d	248,348	280,477	352,140	352,477	358,832
Marine ^e	189,869	188,890	259,113	259,640	251,637
Energy Intensity (MJ/Tkm)^a	1.17	1.19	1.16	1.16	1.22

Sources:

- a) Natural Resources Canada, Transportation End-Use Model, Ottawa, 2016.
b) Statistics Canada, *Trucking in Canada, 1990–2005*, Ottawa, 2007 (Cat. No. 53-222-X); and Table 403-0004, Ottawa, 2016 (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. 48, No.6, 2016.
d) Statistics Canada, *Rail in Canada, 1990–2009*, Ottawa, 2011 (Cat. No. 52-216-X); and Tables 404-0012 and 404-0016, Ottawa, 2016 (CANSIM).
e) Transport Canada, Surface and Marine Statistics and Forecasts Division, Ottawa, 2016.

Transportation Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
1,111.9	1,085.9	1,165.0	1,170.2	1,171.1	1,188.8	1,199.5	78.9%
0.1	0.2	0.2	0.3	0.3	0.3	0.4	666.2%
283.2	293.4	306.9	296.6	303.4	321.3	326.2	98.2%
726.0	687.4	750.9	786.2	776.2	781.8	795.8	88.3%
6.2	7.3	9.6	14.3	15.6	14.4	15.9	–
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	–
84.9	87.0	86.1	61.2	62.8	59.4	50.1	-16.7%
0.0	0.0	0.0	0.0	0.0	0.0	0.0	-55.3%
4.9	4.4	5.2	5.3	6.0	6.3	6.1	-5.6%
6.6	6.3	6.0	6.4	6.7	5.4	4.9	-70.2%
168.7	171.8	177.9	178.8	184.0	192.2	193.3	98.1%
260.9	278.3	311.0	303.9	300.9	315.3	316.0	162.0%
458.2	450.9	467.4	490.6	491.4	495.1	510.3	101.2%
4.9	4.4	5.3	5.3	6.1	6.3	6.1	-6.1%
97.0	62.5	81.2	93.0	94.2	90.9	93.8	9.5%
122.2	118.0	122.3	98.5	94.4	89.0	80.0	-24.9%
870,092	783,756	850,677	852,418	886,341	917,275	971,573	69.1%
22,659	23,325	24,423	24,831	25,660	27,037	27,336	160.1%
38,835	38,744	46,393	45,965	46,271	49,224	50,169	268.1%
223,849	208,576	221,612	231,644	241,672	251,534	276,313	150.2%
1,809	1,628	2,085	2,212	2,283	2,269	2,369	35.0%
340,092	299,829	341,325	352,091	371,074	386,132	415,452	67.3%
242,848	211,653	214,839	195,675	199,380	201,080	199,935	5.3%
1.28	1.39	1.37	1.37	1.32	1.30	1.23	5.8%

Transportation Sector

Freight Transportation GHG Emissions by Energy Source and Transportation Mode

	1990	1995	2005	2006	2007
Freight Transportation GHG Emissions (Mt of CO₂e)^{a,b}	47.7	54.9	74.3	74.5	78.2
GHG Emissions by Energy Source (Mt of CO₂e)^{a,b}					
Natural Gas	0.0	0.0	0.0	0.0	0.0
Motor Gasoline	11.4	13.6	17.9	18.9	19.2
Diesel Fuel Oil	30.3	35.4	49.3	49.5	51.5
Ethanol	0.0	0.0	0.1	0.1	0.4
Biodiesel Fuel	0.0	0.0	0.0	0.0	0.0
Light Fuel Oil and Kerosene	0.0	0.0	0.0	0.0	0.0
Heavy Fuel Oil	4.6	4.3	6.2	5.2	6.3
Aviation Gasoline	0.0	0.0	0.0	0.0	0.0
Aviation Turbo Fuel	0.5	0.5	0.5	0.5	0.4
Propane	1.0	1.0	0.3	0.4	0.4
GHG Emissions by Transportation Mode (Mt of CO₂e)^{a,b}					
Light Trucks	6.7	8.3	11.2	11.1	11.7
Medium Trucks	8.2	10.1	14.5	16.6	17.2
Heavy Trucks	17.8	22.4	32.3	31.3	32.5
Air	0.5	0.5	0.5	0.5	0.4
Rail	6.7	6.1	6.4	6.7	7.2
Marine	7.9	7.5	9.4	8.3	9.3
GHG Intensity (tonne/TJ)^{a,b}	71.2	71.1	71.6	71.4	71.4

Sources:

a) Natural Resources Canada, Transportation End-Use Model, Ottawa, 2016.

b) Environment and Climate Change Canada, *National Inventory Report 1990–2014: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2016.

Transportation Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
79.4	77.2	82.9	83.2	83.2	84.4	85.1	78.2%
0.0	0.0	0.0	0.0	0.0	0.0	0.0	642.1%
19.4	20.0	20.9	20.1	20.6	21.7	22.0	94.0%
52.5	49.5	54.2	56.8	56.1	56.5	57.5	89.6%
0.4	0.5	0.6	0.9	1.0	0.9	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	0.0	–
6.4	6.5	6.5	4.6	4.7	4.5	3.8	-18.2%
0.0	0.0	0.0	0.0	0.0	0.0	0.0	-55.3%
0.3	0.3	0.4	0.4	0.4	0.4	0.4	-8.2%
0.4	0.4	0.4	0.4	0.4	0.3	0.3	-70.0%
11.6	11.8	12.1	12.1	12.4	12.9	13.0	93.2%
18.1	19.4	21.7	21.2	21.0	22.0	22.0	166.7%
32.7	32.2	33.4	35.1	35.1	35.4	36.5	104.7%
0.3	0.3	0.4	0.4	0.4	0.4	0.4	-8.7%
7.6	4.9	6.4	7.3	7.4	7.1	7.4	10.6%
9.0	8.7	9.0	7.2	7.0	6.6	5.9	-25.2%
71.4	71.1	71.2	71.1	71.1	71.0	70.9	-0.4%

Transportation Sector

Freight Road Transportation Secondary Energy Use (Final Demand) and GHG Emissions by Energy Source

	1990	1995	2005	2006	2007
Freight Road Transportation Energy Use (PJ)^a	471.8	585.1	820.6	836.9	870.7
Energy Use by Energy Source (PJ)^a					
Natural Gas	0.1	0.1	0.2	0.1	0.1
Motor Gasoline	164.6	195.9	259.5	274.8	279.1
Diesel Fuel Oil	290.6	372.4	555.6	554.7	579.2
Ethanol	0.0	0.0	1.2	1.4	6.0
Biodiesel Fuel	0.0	0.0	0.0	0.0	0.0
Propane	16.6	16.8	4.2	5.9	6.2
Activity					
Tonne-kilometres (millions) ^{a, c}	134,581	179,648	282,005	281,606	284,880
Energy Intensity (MJ/Tkm)^a	3.51	3.26	2.91	2.97	3.06
Freight Road Transportation GHG Emissions (Mt of CO₂e)^{a, b}					
	32.8	40.8	57.9	59.0	61.3
GHG Emissions by Energy Source (Mt of CO₂e)^{a, b}					
Natural Gas	0.0	0.0	0.0	0.0	0.0
Motor Gasoline	11.4	13.6	17.9	18.9	19.2
Diesel Fuel Oil	20.4	26.2	39.7	39.6	41.4
Ethanol	0.0	0.0	0.1	0.1	0.4
Biodiesel Fuel	0.0	0.0	0.0	0.0	0.0
Propane	1.0	1.0	0.3	0.4	0.4
GHG Intensity (tonne/TJ)^{a, b}	69.5	69.7	70.6	70.5	70.4

Sources:

- a) Natural Resources Canada, Transportation End-Use Model, Ottawa, 2016.
 b) Environment and Climate Change Canada, *National Inventory Report 1990–2014: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2016.
 c) Statistics Canada, *Trucking in Canada, 1990–2005*, Ottawa, 2007 (Cat. No. 53-222-X); and Table 403-0004, Ottawa, 2016 (CANSIM).

Transportation Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
887.8	901.0	956.3	973.3	976.4	1,002.6	1,019.6	116.1%
0.1	0.2	0.2	0.3	0.3	0.3	0.4	666.2%
283.2	293.4	306.9	296.6	303.4	321.3	326.2	98.2%
591.7	593.8	633.5	655.8	650.4	661.2	672.1	131.3%
6.2	7.3	9.6	14.3	15.6	14.4	15.9	–
0.0	0.0	0.0	0.0	0.0	0.0	0.0	–
6.6	6.3	6.0	6.4	6.7	5.4	4.9	-70.2%
285,342	270,646	292,428	302,440	313,604	327,795	353,817	162.9%
3.11	3.33	3.27	3.22	3.11	3.06	2.88	-17.8%
62.4	63.3	67.2	68.3	68.5	70.3	71.4	117.9%
0.0	0.0	0.0	0.0	0.0	0.0	0.0	642.1%
19.4	20.0	20.9	20.1	20.6	21.7	22.0	94.0%
42.3	42.4	45.3	46.9	46.5	47.3	48.0	135.3%
0.4	0.5	0.6	0.9	1.0	0.9	1.0	–
0.0	0.0	0.0	0.0	0.0	0.0	0.0	–
0.4	0.4	0.4	0.4	0.4	0.3	0.3	-70.0%
70.3	70.3	70.2	70.2	70.1	70.1	70.0	0.8%

Transportation Sector

Freight Transportation Explanatory Variables

	1990	1995	2005	2006	2007
Trucks					
Sales (thousands)					
Light Trucks ^{a,b}	102	114	163	165	179
Medium Trucks ^{a,b}	45	59	94	127	138
Heavy Trucks ^{a,b}	16	26	34	38	29
Stock (thousands)					
Light Trucks ^{a,c}	995	1,165	1,808	1,823	1,944
Medium Trucks ^{a,d}	572	581	887	1,001	1,115
Heavy Trucks ^{a,d}	297	293	359	376	386
Average Distance Travelled per Year (km)					
Light Trucks ^a	21,126	22,635	20,723	20,663	20,673
Medium Trucks ^{a,e}	21,663	26,842	25,210	28,341	26,762
Heavy Trucks ^{a,e}	51,886	70,538	94,264	86,571	87,026
On-Road Average Fuel Consumption (L/100 km)					
Light Trucks ^{a,f}					
Motor Gasoline ¹	13.3	12.7	12.1	12.1	12.1
Diesel Fuel Oil ²	10.1	11.4	12.3	12.4	12.4
Medium Trucks ^{a,e}					
Motor Gasoline ¹	27.1	26.2	25.3	23.0	22.0
Diesel Fuel Oil ²	27.6	26.7	26.0	23.3	23.6
Heavy Trucks ^{a,e}					
Diesel Fuel Oil ²	42.5	40.0	34.9	35.2	35.3
Lab-Tested Light Truck Fuel Consumption³ (L/100 km)⁴					
CAFC Standard Light Trucks ⁴	11.8	11.4	11.2	10.9	10.6
CAFC Average Light Truck Fleet ⁴	11.4	11.5	10.6	10.4	10.1

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

2) Includes Ethanol.

3) Includes Biodiesel.

4) Growth rate shown in the final column entitled "Total Growth 1990–2014" is for 1990 to 2010.

Sources:

a) Natural Resources Canada, Transportation End-Use Model, Ottawa, 2016.

b) R.L. Polk & Co., *New Vehicle Registrations, 1990–2013*, Southfield (Detroit), Michigan, 2015.

c) DesRosiers Automotive Consultants, *Canadian Vehicles in Operation Census, 1990–2014*, Richmond Hill (Toronto), 2016.

d) R.L. Polk & Co., *Truck Industry Profile, 1994–2002*, Southfield (Detroit), Michigan, 2004. Data for 2003 to 2010 estimated by Natural Resources Canada. 2010–2014 data were based on CANSIM Table 405-0004.

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.

Transportation Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
175	162	192	197	200	214	226	122.9%
123	97	116	118	132	135	139	212.2%
27	15	19	25	33	30	27	63.8%
2,084	2,174	2,258	2,338	2,387	2,553	2,722	173.7%
1,231	1,315	1,405	1,432	1,450	1,513	1,603	180.3%
393	391	396	415	432	433	455	53.1%
19,417	19,155	19,317	18,966	19,193	18,913	17,930	-15.1%
25,039	23,381	26,203	25,481	25,332	25,826	24,838	14.7%
85,579	89,911	91,536	92,773	90,602	91,988	91,279	75.9%
12.0	11.9	11.8	11.7	11.7	11.6	11.6	-13.3%
11.9	11.5	11.0	10.5	10.0	9.6	9.2	-9.5%
23.2	25.3	23.2	23.0	22.8	22.4	22.1	-18.5%
23.3	24.4	23.2	22.8	22.4	22.1	21.7	-21.2%
35.6	33.5	33.6	33.2	32.8	32.5	32.1	-24.6%
10.5	10.2	10.0	n.a.	n.a.	n.a.	n.a.	—
9.5	9.1	8.5	n.a.	n.a.	n.a.	n.a.	—





Chapter 6 Electricity Generation Sector

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* (RES-D) (Cat. No. 57-003-X). The RES-D 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 using energy content values of 10.500, 3.600 and 11.564 megajoules per kilowatt-hour, respectively.

Gross domestic product (GDP) data at basic prices are from Statistics Canada, Table 379-0031, Ottawa, 2016 (CANSIM); data prior to 1997 were estimated by the Canadian Industrial Energy End-Use Data and Analysis Centre.

*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	2005	2006	2007
Total Energy Use (PJ)^{a,b}	3,002.5	3,484.7	3,931.8	3,933.8	4,015.6
Energy Use by Energy Source (PJ)^{a,b}					
Natural Gas	80.0	182.1	366.5	411.6	425.7
Diesel Fuel Oil, Light Fuel Oil and Kerosene	11.5	8.0	9.8	8.1	10.4
Heavy Fuel Oil	141.4	84.4	85.6	58.2	65.4
Coal	874.5	907.5	1062.7	1014.5	1075.5
Hydro	1058.3	1197.7	1296.1	1267.0	1313.6
Nuclear	795.2	1067.4	1004.1	1068.7	1019.8
Wood and Other	37.2	28.2	43.7	42.5	46.1
Petroleum Coke, Still Gas, Coke and Coke Oven Gas ¹	4.3	9.4	63.3	63.2	59.1
Total Electricity Generated (GWh)^a	467,596	542,739	604,370	592,636	614,583
Electricity Generated by Energy Source (GWh)^a					
Natural Gas	9,018	18,577	37,436	40,508	42,233
Diesel Fuel Oil, Light Fuel Oil and Kerosene	994	2,411	932	758	1,031
Heavy Fuel Oil	13,394	3,451	14,608	8,960	10,289
Coal	76,794	85,192	93,992	87,317	96,808
Hydro	293,985	332,705	360,026	351,936	364,877
Nuclear	68,761	92,306	86,830	92,419	88,191
Wood and Other	3,546	2,687	4,164	4,047	4,392
Petroleum Coke, Still Gas, Coke and Coke Oven Gas ¹	1,105	5,409	6,383	6,691	6,762
Activity					
GDP (million \$2007) ^c	24,044	26,475	28,539	28,058	29,122
Production (GWh) ^a	467,596	542,739	604,370	592,636	614,583
Energy Intensity (GJ/\$2007)^{a,b,c}	0.125	0.132	0.138	0.140	0.138
Energy Intensity (GJ/GWh)^{a,b}	6,421	6,421	6,506	6,638	6,534

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

Sources:

- a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2014*, Ottawa, 2016.
b) Natural Resources Canada, *Electricity Energy Use Model*, Ottawa, 2016.
c) Statistics Canada, *Gross domestic product (GDP) at basic prices, by North American Industry Classification System (NAICS) CANSIM (Table 379-0031)*, Ottawa, 2016. Data prior to 1997 were estimated by Canadian Industrial Energy-End Use Data and Analysis Centre, 1990 to 2014, Simon Fraser University, 2016 and Natural Resources Canada.

Electricity Generation Sector

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2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
3,995.6	3,734.6	3,742.4	3,855.6	3,900.0	3,815.1	3,694.6	23.1%
439.8	426.7	509.1	580.2	595.3	584.5	583.8	629.8%
7.8	8.2	8.3	9.6	10.6	9.7	11.8	2.2%
57.5	53.9	31.3	23.7	22.0	19.8	25.1	-82.2%
1015.8	849.1	853.6	742.3	683.6	689.5	692.9	-20.8%
1345.8	1314.4	1253.2	1339.5	1407.0	1401.0	1363.6	28.8%
1047.5	982.8	989.0	1021.0	1034.9	952.6	851.0	7.0%
43.5	49.8	56.3	101.6	109.3	109.9	109.5	194.2%
37.9	49.7	41.5	37.7	37.3	48.0	56.8	1,225.7%
614,926	588,906	579,366	608,181	619,809	609,783	588,024	25.8%
39,070	41,082	47,807	56,479	57,317	54,527	52,329	480.3%
979	1,071	1,085	1,052	1,035	1,130	1,335	34.3%
8,332	8,243	5,357	4,570	4,655	4,877	6,284	-53.1%
90,987	76,367	77,869	72,838	63,080	63,791	62,539	-18.6%
373,822	365,108	348,110	372,077	390,837	389,174	378,787	28.8%
90,585	84,992	85,527	88,291	89,492	82,378	73,587	7.0%
4,147	4,747	5,361	9,674	10,408	10,469	10,431	194.2%
7,004	7,295	8,251	3,199	2,986	3,437	2,732	147.2%
30,433	28,027	28,509	29,079	28,265	29,310	29,094	21.0%
614,926	588,906	579,366	608,181	619,809	609,783	588,024	25.8%
0.131	0.133	0.131	0.133	0.138	0.130	0.127	1.7%
6,498	6,342	6,459	6,340	6,292	6,256	6,283	-2.2%

Electricity Generation Sector

Electricity Generation GHG Emissions by Energy Source

	1990	1995	2005	2006	2007
Total GHG Emissions (Mt of CO₂e)^{a,b,c}	96.3	101.1	127.9	123.7	130.3
GHG Emissions by Energy Source					
(Mt of CO₂e)^{a,b,c}					
Natural Gas	4.1	9.2	18.5	20.8	21.5
Diesel Fuel Oil, Light Fuel Oil and Kerosene	0.8	0.6	0.7	0.6	0.8
Heavy Fuel Oil	10.8	6.4	6.4	4.3	4.9
Coal	80.2	84.0	97.0	92.7	98.2
Hydro	0.0	0.0	0.0	0.0	0.0
Nuclear	0.0	0.0	0.0	0.0	0.0
Wood and Other	0.0	0.0	0.0	0.0	0.1
Petroleum Coke, Still Gas, Coke and Coke Oven Gas ¹	0.4	0.8	5.2	5.2	4.9
GHG Intensity²					
(tonnes/TJ [electricity generated])^{a,b,c}					
	57.2	51.7	58.8	58.0	58.9
GHG Intensity³					
(tonnes/TJ [energy used])^{a,b,c}					
	32.1	29.0	32.5	31.4	32.4

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 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, 1990–2014*, Ottawa, 2016.

b) Natural Resources Canada, *Electricity Energy Use Model*, Ottawa, 2016.

c) Environment and Climate Change Canada, *National Inventory Report 1990–2014: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2016.

Electricity Generation Sector

6

2008	2009	2010	2011	2012	2013	2014	Total Growth 1990–2014
122.9	108.0	110.1	102.9	97.9	98.6	99.3	3.1%
22.1	21.4	25.4	28.9	29.5	29.0	28.8	600.3%
0.6	0.6	0.6	0.7	0.8	0.7	0.9	3.1%
4.3	4.0	2.3	1.8	1.6	1.5	1.9	-82.5%
92.8	77.9	78.2	68.2	62.8	63.3	62.9	-21.5%
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	0.1	0.1	0.1	0.1	0.1	0.1	–
3.1	4.1	3.4	3.1	3.1	4.0	4.7	–
55.5	51.0	52.8	47.0	43.9	44.9	46.9	-18.0%
30.8	28.9	29.4	26.7	25.1	25.8	26.9	-16.2%

Appendix A

Reconciliation of Data

Reconciliation of Data with Statistics Canada's *Report on Energy Supply and Demand in Canada (RES D)* – 2014 (petajoules)

Sector	RES D Data	Residential Wood	Commercial & Public Admin. Diesel	Industrial; Commercial & Public Admin. Aviation Fuels	Industrial; Commercial & Public Admin. Motor Gasoline	LFO – Canadian Airlines, Railways, Road Transport and Urban Transit
Residential	1,403	157				
Commercial/Institutional	1,070		(51)	(19)	(18)	1
Industrial	2,781			(1)	(34)	
Transportation	2,726		51	21	52	(1)
Agriculture	279					
Final Demand	8,259	157	0	0	0	0
Non-Energy	993					
Producer Consumption	1,445					
Net Supply	10,697	157	0	0	0	0
Fuel Conversion						
Electricity, Steam & Coal/Coke Input Fuels ¹	3,820					
Electricity, Steam & Coal/Coke Production ²	(2,397)					
Total Primary	12,120	157	0	0	0	0

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

Residential: Base data taken from RES D (Table 2-1) Residential plus residential wood use (provided by Environment and Climate Change Canada).

Commercial/Institutional: Base data taken from RES D (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 RES D (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, less Motor gasoline from Industrial Sector, less Aviation fuels from Industrial Sector.

Reconciliation of Data

A

LFO – Retail Pump Sales	Pipeline Fuels	Wood Waste & Pulping Liquor	Waste Fuels Used in Cement Industry	Re-allocation of Producer Consumption by Refineries and Mining Industries	Other Adjustments ³	Data Presented in This Report
						1,560
						983
1		399	4	466	(2)	3,613
(1)	(171)					2,677
						279
0	(171)	399	4	466	(2)	9,112
						993
	171			(466)		1,149
0	0	399	4	0	(2)	11,255
						3,820
						(2,397)
0	0	399	4	0	(2)	12,678

Transportation: Base data taken from 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, plus Motor gasoline from Industrial Sector, plus Aviation fuels from Industrial Sector.

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

- 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 total Canada data and the sum of the provinces.

Appendix B

Reconciliation of Definitions

Reconciliation of Definitions for Estimated Greenhouse Gas Emissions Found in This Handbook With Environment and Climate Change Canada's *National Inventory Report 1990–2014*²

Introduction

In this handbook, *Energy Use Data Handbook 1990 to 2014* (EUDH), the data on greenhouse gas (GHG) emissions are estimated using emissions factors developed by Environment and Climate Change Canada (ECCC). The emissions estimates provided here mirror the sectoral definitions used to calculate the estimates presented in ECCC's *Canada's National Inventory Report 1990–2014* (NIR-2014). Both Natural Resources Canada (NRCan) and ECCC 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. ECCC 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 NIR 2014 emissions estimates for the five sectors covered in this handbook.

² Canada's official GHG inventory is available on the Environment and Climate Change Canada website at www.ec.gc.ca/ges-ghg/default.asp?lang=En&n=83A34A7A-1.

Reconciliation of Definitions

B

Residential Sector

EUDH and NIR-2014 differ in their definitions of residential emissions:

- EUDH residential emissions include end-use, electricity-related emissions, which are reported under power generation in NIR-2014.

Commercial/Institutional Sector

There is only one difference between EUDH and NIR-2014 definitions of commercial/institutional emissions:

- EUDH commercial/institutional emissions include end-use, electricity-related emissions, which NIR-2014 includes under power generation.

Industrial Sector

There are many differences between EUDH and NIR-2014 definitions in the industrial sector:

- NIR-2014 reallocates industrial diesel fuel use from the industrial sector to the transportation sector.
- EUDH reallocates producers' consumption of petroleum products from the producers' consumption category to the petroleum refining and upstream mining industries. NIR-2014 reports this as consumption of fossil fuels.
- NIR-2014 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-2014 reports them under power generation.
 - NIR-2014 includes producers' consumption of non-fossil fuels in the fossil fuel categories. EUDH does not report this consumption.
 - NIR-2014 also reallocates estimates of emissions from upstream oil and gas flaring to fugitive emissions from the fossil fuel sector.

Transportation Sector

EUDH and NIR-2014 differ in their definitions of transportation emissions:

- NIR-2014 reallocates industrial and agriculture diesel and agriculture motor gasoline to the transportation sector.
- NIR-2014 includes pipeline-related emissions in the transportation sector.
- NIR-2014 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-2014.

Electricity Generation Sector

There is only one difference between EUDH and NIR-2014 for the electricity generation sector:

- NIR-2014 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-2014 reports detailed emissions from electricity generation that are similar to those found in this handbook.

Appendix C

Glossary of Terms

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 (Final Demand) 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).

Glossary of Terms



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.

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), chlorofluorocarbons (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.

Glossary of Terms



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 2007 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 2007 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 1,000 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 3,855 kg (8,500 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 3,856 to 14,969 kg (8,501 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).

Glossary of Terms



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.

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).

Glossary of Terms



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

\$2007	Constant 2007 dollars
bbl.	Barrel
CAFC	Company average fuel consumption
CANSIM	Canadian socio-economic information management system
CEUM	Commercial/institutional end-use model
CIEEDAC	Canadian Industrial Energy End-Use Data and Analysis Centre
ECCC	Environment and Climate Change Canada
EER	Energy efficiency ratio
GDP	Gross domestic product
GHG	Greenhouse gas
GJ	Gigajoule = 1×10^9 joules
GO	Gross output
GWh	Gigawatt-hour = 1×10^9 Wh
km	Kilometre
kW	Kilowatt
kWh	Kilowatt-hour = 1×10^3 Wh
L	Litre
LPG	Liquefied petroleum gases
m ²	Square metre
m ³	Cubic metre
MJ	Megajoule = 1×10^6 joules
Mt of CO ₂ e	Megatonne of carbon dioxide equivalent = 1×10^6 tonnes
NAICS	North American Industry Classification System
n.e.c.	Not elsewhere classified
NEUD	National Energy Use Database
NGL	Natural gas liquids
NRCan	Natural Resources Canada
OEE	Office of Energy Efficiency

List of Abbreviations

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PJ	Petajoule = 1×10^{15} joules
Pkm	Passenger-kilometre
RES D	<i>Report on Energy Supply and Demand in Canada</i>
REUM	Residential end-use model
SEER	Seasonal energy efficiency ratio
SIC	Standard industrial classification
TEUM	Transportation end-use model
TJ	Terajoule = 1×10^{12} joules
Tkm	Tonne-kilometre
UEC	Unit energy consumption
W	Watt
Wh	Watt-hour