Natural Resources Canada

Ressources naturelles Canada

Energy Use Data Handbook

1990 to 2013

Canada

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Preface

This is the thirteenth edition of the *Energy Use Data Handbook, 1990 to 2013*, which fulfils part of the mandate of Natural Resources Canada's (NRCan's) Office of Energy Efficiency (OEE) to strengthen and expand Canada's commitment to energy efficiency and to reduce greenhouse gas (GHG) emissions that contribute to climate change.

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

The thirteenth edition of the handbook differs from the previous edition in two ways:

- In the residential sector, energy use by wood was adjusted upward to include wood fuel for heating in secondary residences. Previously, the handbook data only included the use of wood fuel in primary residences.
- Data include Statistics Canada's revisions related to the amount of electricity used in the commercial and institutional sector. These revisions affect the 2013 data with a backcast to 1990.

The handbook covers five sectors at an aggregate level: residential, commercial/institutional, industrial, transportation and electricity generation.

This handbook provides data on energy use and GHG emissions as well as information on major activities and relevant indicators influencing energy use. Such data provide the foundation for OEE analysis in publications such as *Energy Efficiency Trends in Canada, 1990 to 2013*, 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 Web site: oee.nrcan.gc.ca/corporate/statistics/neud/dpa/home.cfm.

For more information on this product or other services, contact

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The Data Situation

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

The Office of Energy Efficiency has developed energy models and 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 used for each specific sector is outlined at the beginning of the corresponding chapter of this handbook (Data Situation).

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.

1 Total End-Use Sector

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

	1990	1995	2001	2005	2006
Total Energy Use (PJ)[a,b,c]	**6,957.1**	**7,547.0**	**7,849.1**	**8,505.8**	**8,378.8**
Energy Use by Energy Source (PJ)					
Electricity	1,428.6	1,544.2	1,648.9	1,771.3	1,745.4
Natural Gas	1,777.6	1,992.9	1,949.3	2,077.5	2,005.2
Motor Gasoline[1]	1,176.5	1,219.6	1,346.1	1,428.4	1,430.9
Oil[2]	1,202.2	1,179.9	1,313.3	1,435.1	1,382.6
Aviation Gasoline	5.5	4.2	3.5	3.3	3.0
Aviation Turbo Fuel	181.9	183.9	215.3	253.6	251.7
Still Gas and Petroleum Coke	309.9	412.0	414.7	469.8	509.0
Wood Waste and Pulping Liquor	341.0	457.6	429.8	570.5	545.2
Other[3]	313.3	341.1	342.3	331.4	344.3
Residential Wood	220.5	211.6	186.0	164.9	161.5
Total GHG Emissions Including Electricity (Mt of CO_2e)[a,b,c,d]	**401.1**	**420.3**	**462.8**	**486.4**	**478.0**
GHG Emissions by Energy Source (Mt of CO_2e)					
Electricity	80.4	78.0	103.0	100.4	96.3
Natural Gas	91.1	101.6	100.1	107.8	104.5
Motor Gasoline	82.1	86.3	94.7	99.4	99.1
Oil[2]	88.3	86.4	96.5	105.4	101.6
Aviation Gasoline	0.4	0.3	0.3	0.2	0.2
Aviation Turbo Fuel	12.9	13.1	14.9	17.5	17.4
Still Gas and Petroleum Coke	17.2	23.9	23.8	27.7	29.5
Wood Waste and Pulping Liquor	0.2	0.3	0.3	0.4	0.4
Other[3]	23.2	25.4	24.9	23.7	25.1
Residential Wood	5.2	5.0	4.4	3.9	3.8
Total GHG Emissions Excluding Electricity (Mt of CO_2e)[a,b,c,d]	**320.6**	**342.3**	**359.8**	**386.0**	**381.7**

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.

Total End-Use Sector 1

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
8,778.0	**8,641.3**	**8,303.8**	**8,462.2**	**8,659.2**	**8,706.8**	**8,924.0**	**28.3%**
1,792.5	1,790.2	1,650.2	1,658.0	1,692.4	1,690.3	1,720.9	20.5%
2,228.9	2,248.3	2,201.7	2,233.2	2,406.3	2,428.5	2,573.9	44.8%
1,474.4	1,459.3	1,478.0	1,518.0	1,502.8	1,506.1	1,547.4	31.5%
1,468.7	1,446.9	1,339.3	1,424.1	1,454.3	1,410.7	1,408.3	17.1%
3.1	3.0	2.9	2.6	2.1	2.6	2.2	-60.1%
254.2	239.6	219.1	227.2	225.3	260.9	270.7	48.8%
526.4	473.7	512.6	493.3	482.1	498.0	489.8	58.1%
519.9	462.4	432.7	420.7	368.7	357.3	412.3	20.9%
347.8	352.8	307.4	314.1	352.0	377.1	324.5	3.6%
162.2	165.1	160.0	171.1	173.2	175.4	174.0	-21.1%
505.2	**492.4**	**464.6**	**479.9**	**482.1**	**481.8**	**487.0**	**21.4%**
99.3	93.5	78.3	81.5	73.4	67.1	67.0	-16.7%
118.2	118.4	116.6	118.8	127.8	129.8	136.9	50.2%
101.6	100.2	101.0	103.4	102.0	101.9	104.4	27.2%
107.9	106.4	98.2	104.5	106.8	103.6	103.4	17.2%
0.2	0.2	0.2	0.2	0.2	0.2	0.2	-60.1%
17.5	16.5	15.1	15.7	15.6	18.0	18.7	44.7%
30.6	27.2	29.6	27.9	26.1	29.6	29.1	68.8%
0.4	0.4	0.3	0.3	0.3	0.2	0.3	41.8%
25.5	25.8	21.5	23.6	25.9	27.2	22.9	-1.4%
3.8	3.9	3.8	4.0	4.1	4.1	4.1	-21.1%
405.9	**399.0**	**386.3**	**398.5**	**408.7**	**414.7**	**420.0**	**31.0%**

Sources:

a) Statistics Canada, *Report on Energy Supply and Demand in Canada 2013* Ottawa, 2015 (CANSIM).

b) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2015.

c) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2013*, Simon Fraser University, 2015.

d) Environment Canada, *National Inventory Report 1990-2013: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2015.

1 Total End-Use Sector

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

	1990	1995	2001	2005	2006
Total Energy Use (PJ)[a,b,c]	**6,957.1**	**7,547.0**	**7,849.1**	**8,505.8**	**8,378.8**
Residential (PJ)[a,b]	***1,424.5***	***1,468.3***	***1,432.9***	***1,494.6***	***1,441.9***
Space Heating	957.5	988.7	907.3	944.2	894.0
Water Heating	230.8	245.8	266.1	279.3	282.4
Appliances	176.8	171.0	180.4	181.5	183.3
Major Appliances	148.5	136.9	132.6	124.5	123.5
Other Appliances[1]	28.3	34.0	47.8	57.1	59.9
Lighting	49.5	49.6	57.3	57.3	56.8
Space Cooling	10.0	13.3	21.9	32.3	25.4
Commercial/Institutional (PJ)[a,c]	***745.6***	***840.4***	***913.7***	***947.6***	***895.1***
Space Heating	449.9	511.7	547.7	543.1	495.3
Water Heating	57.7	62.0	73.9	75.2	75.1
Auxiliary Equipment	54.3	63.6	83.3	99.4	103.6
Auxiliary Motors	60.4	68.7	61.0	60.4	59.9
Lighting	84.0	94.1	93.1	98.6	100.8
Space Cooling	30.3	32.5	47.0	62.6	52.2
Street Lighting[f]	8.9	7.8	7.7	8.3	8.1
Industrial (PJ)[a,e]	***2,710.0***	***3,017.3***	***3,024.6***	***3,361.3***	***3,355.9***
Mining	347.6	445.9	518.0	665.5	710.6
Pulp and Paper	728.2	832.5	794.4	859.9	778.4
Iron and Steel	219.4	247.0	229.3	239.7	251.9
Smelting and Refining	183.3	219.3	246.1	260.3	262.1
Cement	59.3	61.9	65.5	71.9	74.7
Chemicals	223.2	248.2	230.5	235.9	247.7
Petroleum Refining	323.2	356.2	354.8	356.3	370.5
Other Manufacturing	551.1	549.9	515.4	572.1	556.9
Forestry	7.7	7.9	20.1	28.8	31.3
Construction	66.9	48.6	50.6	70.9	71.9

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

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
8,778.0	**8,641.3**	**8,303.8**	**8,462.2**	**8,659.2**	**8,706.8**	**8,924.0**	**28.3%**
1,560.7	***1,564.8***	***1,481.0***	***1,436.0***	***1,525.0***	***1,457.3***	***1,517.5***	***6.5%***
991.8	998.9	955.7	899.1	964.2	895.9	960.3	0.3%
295.1	292.6	281.3	280.1	298.2	294.9	294.6	27.7%
190.1	194.1	177.5	178.6	183.4	185.0	188.7	6.7%
125.9	125.6	112.9	110.5	111.0	109.6	110.1	-25.9%
64.3	68.5	64.6	68.1	72.4	75.4	78.6	177.8%
58.0	58.9	53.1	53.7	54.3	54.0	54.5	10.1%
25.7	20.3	13.4	24.5	24.9	27.6	19.4	94.6%
941.3	***955.2***	***928.2***	***902.0***	***947.8***	***925.6***	***917.1***	***23.0%***
523.7	532.9	525.0	487.6	521.2	488.2	506.5	12.6%
78.7	78.9	74.7	73.7	76.1	76.2	71.4	23.8%
106.8	114.5	121.3	123.1	125.9	127.4	130.9	140.9%
61.8	64.4	61.5	57.2	60.3	60.2	60.1	-0.6%
105.2	105.3	102.5	102.4	105.3	108.6	103.4	23.1%
56.1	50.4	36.2	50.5	51.4	57.4	37.4	23.2%
9.0	8.6	7.1	7.5	7.6	7.6	7.4	-17.2%
3,483.6	***3,336.7***	***3,179.1***	***3,271.7***	***3,312.4***	***3,425.1***	***3,525.3***	***30.1%***
862.2	870.9	940.9	1,008.8	1,043.5	1,150.6	1,182.0	240.0%
750.3	653.5	602.1	579.9	543.4	524.9	578.7	-20.5%
253.8	246.8	187.3	207.1	226.8	230.9	209.3	-4.6%
255.2	260.5	227.1	239.0	247.8	228.8	232.6	26.9%
66.8	65.0	60.4	55.2	56.7	57.5	55.6	-6.4%
242.8	241.4	231.3	248.4	271.4	272.2	277.3	24.2%
379.3	345.8	338.2	335.7	320.4	343.4	336.6	4.1%
568.7	547.2	504.4	502.1	504.0	516.1	553.0	0.3%
30.0	30.9	21.4	22.3	19.8	19.0	19.1	146.7%
74.5	74.7	65.9	73.0	78.5	81.6	81.2	21.4%

Sources:

a) Statistics Canada, *Report on Energy Supply and Demand in Canada 2013,* Ottawa, 2015 (CANSIM).
b) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2015.
c) Natural Resources Canada, *Commercial/Institutional End-Use Model*, Ottawa, 2015.
e) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2013*, Simon Fraser University, 2015.
f) Statistics Canada, Electric Power Generation, *Transmission and Distribution, 2006-2011*, Ottawa, 2013 (Cat. No. 57-202-X).

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

	1990	1995	2001	2005	2006
Total Transportation (PJ)[a]	**1,877.9**	**2,011.7**	**2,255.1**	**2,475.7**	**2,456.9**
Passenger Transportation (PJ) [a,d]	***1,151.1***	***1,172.6***	***1,243.5***	***1,331.7***	***1,307.7***
Cars	706.1	668.9	618.1	613.0	601.6
Trucks	211.6	267.2	359.6	408.1	402.0
Motorcycles	2.4	2.2	2.6	3.4	3.6
Buses	46.3	51.1	48.2	55.4	50.2
Air	180.9	180.8	211.9	249.1	247.5
Rail	3.8	2.3	3.0	2.7	2.7
Freight Transportation (PJ) [a,d]	***673.4***	***777.0***	***921.3***	***1,044.9***	***1,048.7***
Light Trucks	97.3	117.9	147.8	160.7	160.7
Medium Trucks	123.3	151.6	184.6	213.4	244.1
Heavy Trucks	254.1	319.9	384.7	453.2	438.1
Air	6.5	7.3	6.9	7.8	7.2
Rail	85.7	78.6	80.7	81.7	85.6
Marine	106.5	101.7	116.7	128.1	113.0
Off-Road (PJ)[d]	***53.3***	***62.1***	***90.3***	***99.1***	***100.4***
Agriculture (PJ)[a]	**199.2**	**209.3**	**222.8**	**226.5**	**229.1**

Sources:

a) Statistics Canada, *Report on Energy Supply and Demand in Canada 2013*, Ottawa, 2015 (CANSIM).
d) Natural Resources Canada, *Transportation End-Use Model*, Ottawa, 2015.

Total End-Use Sector 1

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
2,554.5	**2,541.9**	**2,505.0**	**2,607.7**	**2,604.4**	**2,633.6**	**2,685.5**	**43.0%**
1,352.6	***1,321.6***	***1,310.6***	***1,332.9***	***1,322.2***	***1,348.2***	***1,379.6***	***19.9%***
616.5	598.5	596.8	591.0	572.7	559.4	555.1	-21.4%
424.2	422.3	433.4	450.5	457.4	465.4	488.2	130.7%
3.8	3.9	5.3	5.5	5.8	6.1	6.3	156.9%
53.8	56.0	55.2	58.9	61.4	57.5	61.3	32.4%
251.4	237.7	217.6	224.5	222.1	257.4	266.7	47.4%
2.8	3.2	2.3	2.5	2.8	2.4	2.1	-44.0%
1,100.1	***1,118.0***	***1,092.2***	***1,171.7***	***1,176.7***	***1,177.7***	***1,197.6***	***77.8%***
170.5	170.0	173.1	179.3	180.3	185.4	194.4	99.8%
251.9	265.7	283.3	316.2	308.9	306.1	321.5	160.8%
454.4	458.2	450.9	467.5	490.7	491.5	496.8	95.5%
5.8	4.9	4.4	5.3	5.3	6.1	6.3	-4.0%
91.8	97.0	62.5	81.2	93.0	94.2	90.9	6.1%
125.7	122.2	118.0	122.3	98.5	94.4	87.7	-17.7%
101.8	***102.3***	***102.2***	***103.2***	***105.5***	***107.7***	***108.3***	***103.1%***
238.0	**242.7**	**210.6**	**244.9**	**269.6**	**265.1**	**278.6**	**39.9%**

1 Total End-Use Sector

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

	1990	1995	2001	2005	2006
Total GHG Emissions Including Electricity (Mt of CO_2e)[a,b,d,e,f]	**401.1**	**420.3**	**462.8**	**486.4**	**478.0**
Residential (Mt of CO_2e)[a,b,e]	***72.8***	***71.2***	***76.0***	***76.8***	***73.2***
Space Heating	47.0	46.8	45.3	46.7	43.8
Water Heating	12.5	12.6	14.5	14.7	14.8
Appliances	9.9	8.6	11.2	10.3	10.1
Major Appliances	*8.3*	*6.9*	*8.2*	*7.0*	*6.8*
Other Appliances[1]	*1.6*	*1.7*	*3.0*	*3.2*	*3.3*
Lighting	2.8	2.5	3.6	3.2	3.1
Space Cooling	0.6	0.7	1.4	1.8	1.4
Commercial/Institutional (Mt of CO_2e)[a,c,e]	***41.0***	***44.2***	***51.7***	***51.3***	***47.9***
Space Heating	24.4	27.3	29.5	28.6	25.9
Water Heating	3.2	3.3	4.0	4.1	4.0
Auxiliary Equipment	3.1	3.2	5.2	5.6	5.7
Auxiliary Motors	3.4	3.5	3.8	3.4	3.3
Lighting	4.7	4.8	5.8	5.6	5.6
Space Cooling	1.7	1.6	2.9	3.5	2.9
Street Lighting[g]	0.5	0.4	0.5	0.5	0.4
Industrial (Mt of CO_2e)[a,e,f]	***141.1***	***147.6***	***159.3***	***167.7***	***168.0***
Mining	22.4	27.6	33.5	42.0	44.8
Pulp and Paper	24.5	22.5	24.0	20.2	17.7
Iron and Steel	16.5	18.2	17.4	17.5	18.7
Smelting and Refining	10.9	11.9	15.5	15.2	15.0
Cement	4.4	4.7	5.2	5.9	6.2
Chemicals	10.8	11.9	12.2	12.0	12.4
Petroleum Refining	17.9	20.4	20.3	20.9	21.1
Other Manufacturing	28.7	26.6	26.4	27.2	25.2
Forestry	0.6	0.6	1.5	2.1	2.3
Construction	4.3	3.2	3.4	4.7	4.8

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 2013,* Ottawa, 2015 (CANSIM).
b) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2015.
c) Natural Resources Canada, *Commercial/Institutional End-Use Model*, Ottawa, 2015.

Total End-Use Sector 1

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
505.2	**492.4**	**464.6**	**479.9**	**482.1**	**481.8**	**487.0**	**21.4%**
79.8	***77.6***	***70.8***	***69.0***	***70.1***	***64.2***	***66.2***	***-9.0%***
49.2	48.4	45.2	42.3	44.1	39.6	42.1	-10.5%
15.5	15.0	14.0	14.1	14.5	14.0	13.9	10.7%
10.5	10.1	8.4	8.8	8.0	7.4	7.4	-25.2%
6.9	*6.5*	*5.4*	*5.4*	*4.9*	*4.4*	*4.4*	*-47.6%*
3.6	*3.6*	*3.1*	*3.3*	*3.1*	*3.0*	*3.1*	*92.2%*
3.2	3.1	2.5	2.6	2.4	2.1	2.1	-23.8%
1.4	1.1	0.6	1.2	1.1	1.1	0.8	34.7%
50.5	***49.5***	***46.2***	***45.5***	***45.8***	***43.2***	***42.5***	***3.6%***
27.5	27.4	26.6	24.9	26.5	24.7	25.4	4.2%
4.2	4.2	3.9	3.8	3.9	3.9	3.6	13.8%
5.9	6.0	5.8	6.1	5.6	5.2	5.3	72.2%
3.4	3.4	2.9	2.8	2.6	2.4	2.3	-31.2%
5.8	5.5	4.9	5.0	4.6	4.3	4.0	-14.8%
3.1	2.6	1.7	2.5	2.3	2.3	1.5	-13.1%
0.5	0.4	0.3	0.4	0.3	0.3	0.3	-42.7%
178.8	***170.3***	***158.5***	***166.8***	***166.7***	***173.8***	***173.6***	***23.0%***
55.0	55.3	59.2	63.6	64.7	72.0	73.2	227.5%
17.5	14.3	12.4	11.9	10.9	9.8	10.5	-57.2%
18.8	18.1	13.6	15.0	16.5	16.6	14.3	-13.1%
14.8	14.4	11.5	12.5	11.8	10.2	10.2	-6.6%
5.5	5.3	4.9	4.5	4.6	4.3	4.2	-6.4%
12.2	11.9	10.9	11.9	12.7	12.4	12.7	16.9%
21.6	19.1	18.8	18.5	16.6	19.3	18.9	5.3%
26.2	24.5	21.2	22.3	22.1	22.2	22.8	-20.7%
2.2	2.3	1.6	1.6	1.5	1.4	1.4	149.3%
5.0	5.0	4.5	4.9	5.3	5.5	5.5	26.5%

d) Natural Resources Canada, *Transportation End-Use Model*, Ottawa, 2015.
e) Environment Canada, *National Inventory Report, 1990–2013: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2015.
f) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2013*, Simon Fraser University, 2015.
g) Statistics Canada, *Electric Power Generation, Transmission and Distribution, 2006-2011*, Ottawa, 2013 (Cat. No. 57-202-X).

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

	1990	1995	2001	2005	2006
Total Transportation (Mt of CO_2e)[a,d,e]	**132.6**	**143.1**	**160.1**	**174.8**	**172.9**
Passenger Transportation (Mt of CO_2e)[a,d,e]	***80.6***	***83.2***	***87.6***	***92.9***	***90.8***
Cars	49.2	47.5	43.6	42.7	41.7
Light Trucks	14.9	19.1	25.6	28.6	28.0
Motorcycles	0.2	0.1	0.2	0.2	0.2
Buses	3.2	3.5	3.4	3.9	3.5
Air	12.9	12.8	14.6	17.2	17.1
Rail	0.3	0.2	0.2	0.2	0.2
Freight Transportation (Mt of CO_2e)[a,d,e]	***48.3***	***55.6***	***66.4***	***75.2***	***75.3***
Light Trucks	6.7	8.3	10.4	11.2	11.1
Medium Trucks	8.4	10.4	12.7	14.8	17.0
Heavy Trucks	17.8	22.5	27.4	32.4	31.3
Air	0.5	0.5	0.5	0.5	0.5
Rail	6.7	6.1	6.4	6.4	6.8
Marine	8.2	7.8	8.9	9.8	8.6
Off-Road (Mt of CO_2e)[d,e]	***3.7***	***4.3***	***6.2***	***6.8***	***6.9***
Agriculture (Mt of CO_2e)[a,e]	***13.6***	***14.2***	***15.6***	***15.7***	***15.9***

Sources:

a) Statistics Canada, *Report on Energy Supply and Demand in Canada 2013,* Ottawa, 2015 (CANSIM).
d) Natural Resources Canada, *Transportation End-Use Model*, Ottawa, 2015.
e) Environment Canada, *National Inventory Report, 1990–2013: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2015.

1 Total End-Use Sector

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
179.4	**178.2**	**174.8**	**181.9**	**181.3**	**182.9**	**186.1**	**40.4%**
93.5	***91.0***	***89.9***	***91.2***	***90.1***	***91.6***	***93.5***	***16.0%***
42.5	41.1	40.8	40.2	38.8	37.8	37.4	-24.1%
29.4	29.1	29.7	30.7	31.0	31.4	32.9	121.3%
0.3	0.3	0.4	0.4	0.4	0.4	0.4	149.8%
3.8	3.9	3.9	4.1	4.3	4.0	4.2	33.8%
17.4	16.4	15.0	15.5	15.3	17.8	18.4	43.2%
0.2	0.2	0.2	0.2	0.2	0.2	0.2	-43.4%
78.9	***80.2***	***77.9***	***83.7***	***84.0***	***84.0***	***85.2***	***76.3%***
11.8	11.7	11.8	12.2	12.2	12.5	13.1	95.3%
17.5	18.5	19.7	22.0	21.5	21.3	22.4	165.6%
32.5	32.7	32.2	33.4	35.1	35.1	35.5	98.9%
0.4	0.3	0.3	0.4	0.4	0.4	0.4	-6.7%
7.2	7.7	4.9	6.4	7.3	7.4	7.2	7.2%
9.6	9.3	9.0	9.3	7.5	7.2	6.7	-18.5%
7.0	***7.0***	***7.0***	***7.1***	***7.2***	***7.4***	***7.4***	***101.1%***
16.6	***16.8***	***14.2***	***16.7***	***18.2***	***17.7***	***18.6***	***36.8%***

1 Total End-Use Sector

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

	1990	1995	2001	2005	2006
Total GHG Emissions Excluding Electricity (Mt of CO_2e)[a,b,d,e,f]	**320.6**	**342.3**	**359.8**	**386.0**	**381.7**
Residential (Mt of CO_2e)[a,b,e]	***46.5***	***47.3***	***44.4***	***46.0***	***43.9***
Space Heating	38.1	38.1	34.3	35.3	33.2
Water Heating	8.2	9.0	9.9	10.4	10.5
Appliances	0.2	0.2	0.2	0.3	0.3
Major Appliances	*0.2*	*0.2*	*0.2*	*0.3*	*0.3*
Other Appliances[1]	*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
Commercial/Institutional (Mt of CO_2e)[a,c,e]	***25.9***	***29.0***	***32.1***	***31.7***	***29.0***
Space Heating	22.6	25.5	27.8	27.2	24.5
Water Heating	3.0	3.2	3.7	3.9	3.8
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	0.1	0.2	0.2
Street Lighting[g]	0.0	0.0	0.0	0.0	0.0
Industrial (Mt of CO_2e)[a,e,f]	***104.0***	***110.6***	***109.8***	***120.0***	***122.1***
Mining	16.5	21.9	26.8	35.5	38.6
Pulp and Paper	14.6	12.2	10.6	8.1	6.9
Iron and Steel	14.8	16.7	14.9	15.4	16.4
Smelting and Refining	3.5	3.5	3.8	3.7	3.5
Cement	4.1	4.4	4.7	5.5	5.7
Chemicals	7.2	8.3	7.7	7.5	7.9
Petroleum Refining	16.8	19.5	19.1	19.8	20.0
Other Manufacturing	21.8	20.2	17.3	17.6	15.9
Forestry	0.6	0.6	1.5	2.1	2.3
Construction	4.3	3.2	3.4	4.7	4.8

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 2013,* Ottawa, 2015 (CANSIM).
b) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2015.
c) Natural Resources Canada, *Commercial/Institutional End-Use Model*, Ottawa, 2015.

Total End-Use Sector 1

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
405.9	**399.0**	**386.3**	**398.5**	**408.7**	**414.7**	**420.0**	**31.0%**
48.4	***47.5***	***45.5***	***43.0***	***46.2***	***42.6***	***44.2***	***-5.0%***
36.9	36.3	34.6	32.2	34.5	31.2	32.9	-13.8%
11.1	10.9	10.5	10.5	11.3	11.0	10.9	33.1%
0.3	0.3	0.3	0.3	0.4	0.4	0.4	99.4%
0.3	*0.3*	*0.3*	*0.3*	*0.4*	*0.4*	*0.4*	*99.4%*
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	–
0.0	0.0	0.0	0.0	0.0	0.0	0.0	–
30.0	***29.5***	***29.2***	***27.7***	***29.6***	***27.8***	***28.5***	***10.1%***
25.3	24.9	24.8	23.3	25.0	23.3	24.3	7.8%
4.0	4.0	3.8	3.6	3.8	3.8	3.5	15.5%
0.5	0.5	0.5	0.5	0.6	0.6	0.6	148.2%
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	–
0.2	0.2	0.1	0.2	0.2	0.2	0.1	98.9%
0.0	0.0	0.0	0.0	0.0	0.0	0.0	–
133.4	***128.8***	***124.3***	***130.9***	***135.0***	***145.2***	***144.2***	***38.6%***
48.4	49.2	54.0	58.4	60.0	67.2	67.6	309.2%
7.0	5.5	5.4	4.9	5.2	4.9	5.3	-63.6%
16.8	16.4	12.3	13.5	15.1	15.3	13.2	-10.6%
3.9	3.7	2.7	3.3	3.4	3.0	3.0	-13.5%
5.0	4.9	4.6	4.2	4.3	4.0	3.9	-4.6%
7.8	7.9	7.8	8.6	9.6	9.8	10.4	44.6%
20.6	18.1	17.8	17.4	15.7	18.6	18.2	8.1%
16.7	15.7	13.7	14.2	14.9	15.4	15.8	-27.5%
2.2	2.3	1.6	1.6	1.5	1.4	1.4	149.3%
5.0	5.0	4.5	4.9	5.3	5.5	5.5	26.5%

d) Natural Resources Canada, *Transportation End-Use Model*, Ottawa, 2015.
e) Environment Canada, *National Inventory Report, 1990–2013: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2015.
f) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2013*, Simon Fraser University, 2015.
g) Statistics Canada, *Electric Power Generation, Transmission and Distribution, 2006-2011*, Ottawa, 2013 (Cat. No. 57-202-X).

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

	1990	1995	2001	2005	2006
Total Transportation (Mt of CO_2e)[a,d,e]	**132.4**	**143.0**	**159.9**	**174.6**	**172.7**
Passenger Transportation (Mt of CO_2e)[a,d,e]	***80.4***	***83.1***	***87.4***	***92.7***	***90.6***
Cars	49.2	47.5	43.6	42.7	41.7
Light Trucks	14.9	19.1	25.6	28.6	28.0
Motorcycles	0.2	0.1	0.2	0.2	0.2
Buses	3.0	3.3	3.2	3.7	3.3
Air	12.9	12.8	14.6	17.2	17.1
Rail	0.3	0.2	0.2	0.2	0.2
Freight Transportation (Mt of CO_2e)[a,d,e]	***48.3***	***55.6***	***66.4***	***75.2***	***75.3***
Light Trucks	6.7	8.3	10.4	11.2	11.1
Medium Trucks	8.4	10.4	12.7	14.8	17.0
Heavy Trucks	17.8	22.5	27.4	32.4	31.3
Air	0.5	0.5	0.5	0.5	0.5
Rail	6.7	6.1	6.4	6.4	6.8
Marine	8.2	7.8	8.9	9.8	8.6
Off-Road (Mt of CO_2e)[d,e]	***3.7***	***4.3***	***6.2***	***6.8***	***6.9***
Agriculture (Mt of CO_2e)[a,e]	***11.8***	***12.5***	***13.5***	***13.6***	***13.9***

Sources:

a) Statistics Canada, *Report on Energy Supply and Demand in Canada 2013* Ottawa, 2015 (CANSIM).
d) Natural Resources Canada, *Transportation End-Use Model*, Ottawa, 2015.
e) Environment Canada, *National Inventory Report, 1990–2013: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2015.

Total End-Use Sector

1

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
179.3	**178.1**	**174.7**	**181.8**	**181.2**	**182.7**	**186.0**	**40.4%**
93.4	***90.9***	***89.8***	***91.0***	***90.0***	***91.4***	***93.3***	***16.1%***
42.5	41.1	40.8	40.2	38.8	37.8	37.4	-24.1%
29.4	29.1	29.7	30.7	31.0	31.4	32.9	121.3%
0.3	0.3	0.4	0.4	0.4	0.4	0.4	149.8%
3.6	3.8	3.8	4.0	4.2	3.8	4.0	35.9%
17.4	16.4	15.0	15.5	15.3	17.8	18.4	43.2%
0.2	0.2	0.2	0.2	0.2	0.2	0.2	-43.4%
78.9	***80.2***	***77.9***	***83.7***	***84.0***	***84.0***	***85.2***	***76.3%***
11.8	11.7	11.8	12.2	12.2	12.5	13.1	95.3%
17.5	18.5	19.7	22.0	21.5	21.3	22.4	165.6%
32.5	32.7	32.2	33.4	35.1	35.1	35.5	98.9%
0.4	0.3	0.3	0.4	0.4	0.4	0.4	-6.7%
7.2	7.7	4.9	6.4	7.3	7.4	7.2	7.2%
9.6	9.3	9.0	9.3	7.5	7.2	6.7	-18.5%
7.0	***7.0***	***7.0***	***7.1***	***7.2***	***7.4***	***7.4***	***101.1%***
14.8	***15.1***	***12.5***	***15.1***	***16.8***	***16.4***	***17.2***	***45.2%***

1 Total End-Use Sector

Commodity Prices and Background Indicators

	1990	1995	2001	2005	2006
Commodity Prices					
Crude Oil Prices					
Wellhead U.S. Average ($US/bbl.)[a]	20.03	14.62	21.84	50.28	59.69
Edmonton Par[1] ($/m^3)[b]	173.95	151.36	246.69	432.01	457.54
Brent Montreal[2] ($/m^3)[b]	187.35	160.31	267.49	433.55	484.56
Natural Gas Price at AECO-C Hub (intra-Alberta)[3] ($/GJ)[b]	***1.34***	***1.09***	***5.91***	***8.14***	***6.79***
Background Indicators					
Total GDP (million $2007)[c]	***921,454***	***1,006,320***	***1,252,413***	***1,397,259***	***1,435,292***
Industrial	284,856	305,871	375,782	406,284	409,874
Commercial/Institutional	557,211	617,678	775,608	878,357	913,504
Agriculture[d]	13,625	14,057	13,532	16,345	16,439
Electricity Generation	23,565	25,947	24,352	27,969	27,498
Multifactor Measure of Productivity (2007 = 100)[e]	***95.4***	***97.3***	***101.9***	***102.1***	***101.3***

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*, 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, 2015.
c) Statistics Canada, *Gross domestic product (GDP) at basic prices, by North American Industry Classification System (NAICS), annual*, Table 379-0031, Ottawa, 2015 (CANSIM).
Data prior to 1997 were estimated by Canadian Industrial Energy End-Use Data and Analysis Centre, 1990 to 2013, Simon Fraser University, 2015 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, Table 383-0021, Ottawa, 2015 (CANSIM).

Total End-Use Sector 1

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
66.52	94.04	56.35	74.71	95.73	94.52	96.13	379.9%
479.23	642.77	414.33	487.69	597.81	541.92	583.90	235.7%
504.51	665.16	454.65	532.13	707.18	721.42	720.49	284.6%
6.27	***7.73***	***3.97***	***3.95***	***3.53***	***2.31***	***3.02***	***125.0%***
1,466,693	***1,480,704***	***1,436,281***	***1,483,154***	***1,523,730***	***1,551,539***	***1,582,178***	***71.7%***
409,802	401,038	360,572	381,800	396,455	404,662	409,523	43.8%
944,136	962,692	963,899	986,511	1,012,681	1,030,877	1,051,757	88.8%
16,723	18,878	17,855	17,601	17,736	18,126	20,614	51.3%
28,541	30,283	28,907	29,481	30,061	30,222	31,330	33.0%
100.0	***98.0***	***95.8***	***97.5***	***98.4***	***97.7***	***98.2***	–

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* (RESD) (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 RESD to end uses applying 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).

2 Residential Sector

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.

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

The residential prices of heating oil and natural gas are weighted averages of regional prices from Statistics Canada's *Energy Statistics Handbook* (Cat. No. 57-601-X) and CANSIM. 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.

2 Residential Sector

Residential Secondary Energy Use by Energy Source and End Use

	1990	1995	2001	2005	2006
Total Energy Use (PJ)[a,b]	**1,424.5**	**1,468.3**	**1,432.9**	**1,494.6**	**1,441.9**
Energy Use by Energy Source (PJ)[a,b]					
Electricity	467.4	473.8	504.8	543.6	530.4
Natural Gas	528.4	630.5	600.5	646.6	618.7
Heating Oil	186.4	137.5	128.8	125.8	116.8
Other[1]	21.9	14.9	12.8	13.7	14.5
Wood	220.5	211.6	186.0	164.9	161.5
Energy Use by End-Use (PJ)[b]					
Space Heating	957.5	988.7	907.3	944.2	894.0
Water Heating	230.8	245.8	266.1	279.3	282.4
Appliances	176.8	171.0	180.4	181.5	183.3
Major Appliances	*148.5*	*136.9*	*132.6*	*124.5*	*123.5*
Other Appliances[2]	*28.3*	*34.0*	*47.8*	*57.1*	*59.9*
Lighting	49.5	49.6	57.3	57.3	56.8
Space Cooling	10.0	13.3	21.9	32.3	25.4
Activity					
Total Floor Space (million m^2)[b]	1,208	1,380	1,532	1,671	1,709
Total Households (thousands)[b,c]	9,895	10,900	11,837	12,587	12,756
Energy Intensity (GJ/m^2)[a,b]	**1.18**	**1.06**	**0.94**	**0.89**	**0.84**
Energy Intensity (GJ/household)[a,b,c]	**144.0**	**134.7**	**121.1**	**118.7**	**113.0**
Heating Degree-Day Index[b,d]	**0.92**	**0.98**	**0.88**	**0.92**	**0.85**
Cooling Degree-Day Index[b,e]	**1.05**	**1.18**	**1.43**	**1.79**	**1.38**

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, 1990–2013*, Ottawa, 2015.
b) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2015.

c) Statistics Canada, *Survey of Household Spending, 1997–2013*, Ottawa, 2015.
d) Environment Canada, Climate Summaries, *Monthly Values of Degree-Days Below 18.0°C, 1990–2013*, Ottawa.
e) Environment Canada, Climate Summaries, *Monthly Values of Degree-Days Above 18.0°C, 1990–2013*, Ottawa.

Residential Sector 2

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
1,560.7	**1,564.8**	**1,481.0**	**1,436.0**	**1,525.0**	**1,457.3**	**1,517.5**	**6.5%**
568.2	576.2	533.9	528.5	550.9	544.5	566.4	21.2%
686.1	691.7	660.4	615.2	682.2	632.1	685.3	29.7%
128.1	114.7	111.4	104.9	101.2	86.0	76.4	-59.0%
16.1	17.0	15.2	16.3	17.4	19.4	15.4	-29.8%
162.2	165.1	160.0	171.1	173.2	175.4	174.0	-21.1%
991.8	998.9	955.7	899.1	964.2	895.9	960.3	0.3%
295.1	292.6	281.3	280.1	298.2	294.9	294.6	27.7%
190.1	194.1	177.5	178.6	183.4	185.0	188.7	6.7%
125.9	*125.6*	*112.9*	*110.5*	*111.0*	*109.6*	*110.1*	*-25.9%*
64.3	*68.5*	*64.6*	*68.1*	*72.4*	*75.4*	*78.6*	*177.8%*
58.0	58.9	53.1	53.7	54.3	54.0	54.5	10.1%
25.7	20.3	13.4	24.5	24.9	27.6	19.4	94.6%
1,747	1,784	1,819	1,851	1,884	1,913	1,969	63.0%
12,985	13,164	13,417	13,378	13,514	13,670	13,820	39.7%
0.89	**0.88**	**0.81**	**0.78**	**0.81**	**0.76**	**0.77**	**-34.6%**
120.2	**118.9**	**110.4**	**107.3**	**112.8**	**106.6**	**109.8**	**-23.7%**
0.93	**0.95**	**0.96**	**0.87**	**0.90**	**0.84**	**0.93**	**–**
1.45	**1.08**	**0.93**	**1.59**	**1.51**	**1.70**	**1.18**	**–**

2 Residential Sector

Residential Single Detached Secondary Energy Use by Energy Source and End Use

	1990	1995	2001	2005	2006
Total Single Detached Energy Use (PJ)[a,b]	**1,023.6**	**1,050.9**	**1,020.2**	**1,055.9**	**1,016.1**
Energy Use by Energy Source (PJ)[a,b]					
Electricity	304.6	311.1	331.7	355.4	344.7
Natural Gas	386.8	461.4	435.8	464.9	443.8
Heating Oil	131.6	95.4	91.7	91.9	85.9
Other[1]	16.0	11.2	9.8	10.3	10.9
Wood	184.5	171.8	151.3	133.4	130.9
Energy Use by End Use (PJ)[b]					
Space Heating	722.7	742.1	681.2	702.0	665.7
Water Heating	145.0	154.5	167.2	175.1	177.2
Appliances	110.8	106.6	111.2	110.8	111.5
Lighting	37.4	37.4	43.2	43.4	43.0
Space Cooling	7.6	10.4	17.5	24.6	18.7
Activity					
Total Floor Space (million m^2)[b]	805	924	1,030	1,121	1,145
Total Households (thousands)[b,c]	5,558	6,116	6,642	7,062	7,158
Energy Intensity (GJ/m^2)[a,b]	**1.27**	**1.14**	**0.99**	**0.94**	**0.89**
Energy Intensity (GJ/household)[a,b,c]	**184.2**	**171.8**	**153.6**	**149.5**	**142.0**
Heating Degree-Day Index[b,d]	**0.92**	**0.98**	**0.88**	**0.92**	**0.85**
Cooling Degree-Day Index[b,e]	**1.05**	**1.18**	**1.43**	**1.79**	**1.38**

1) "Other" includes coal and propane.

Sources:

a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2013*, Ottawa, 2015.
b) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2015.

c) Statistics Canada, *Survey of Household Spending, 1997–2013*, Ottawa, 2015.
d) Environment Canada, Climate Summaries, *Monthly Values of Degree-Days Below 18.0°C, 1990–2013*, Ottawa.
e) Environment Canada, Climate Summaries, *Monthly Values of Degree-Days Above 18.0°C, 1990–2013*, Ottawa.

Residential Sector 2

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
1,100.7	**1,103.1**	**1,042.6**	**1,012.5**	**1,076.1**	**1,025.7**	**1,063.3**	**3.9%**
369.7	374.8	345.1	342.4	358.7	353.6	366.1	20.2%
492.7	496.2	473.2	440.5	487.4	450.9	487.7	26.1%
95.1	85.9	83.7	79.3	77.3	65.6	58.1	-55.9%
12.0	12.8	11.4	12.1	12.9	14.2	11.3	-29.7%
131.1	133.4	129.1	138.1	139.8	141.4	140.1	-24.1%
736.7	741.0	707.2	667.6	713.7	662.8	704.9	-2.5%
186.0	184.9	178.0	178.3	190.0	188.1	187.5	29.3%
115.7	117.9	107.5	108.1	110.9	111.6	113.7	2.6%
43.9	44.8	40.4	41.0	41.6	41.4	41.9	12.2%
18.3	14.5	9.5	17.4	19.7	21.8	15.3	101.5%
1,169	1,190	1,210	1,229	1,247	1,262	1,290	60.3%
7,289	7,392	7,536	7,525	7,604	7,691	7,774	39.9%
0.94	**0.93**	**0.86**	**0.82**	**0.86**	**0.81**	**0.82**	**-35.2%**
151.0	**149.2**	**138.3**	**134.5**	**141.5**	**133.4**	**136.8**	**-25.7%**
0.93	**0.95**	**0.96**	**0.87**	**0.90**	**0.84**	**0.93**	**–**
1.45	**1.08**	**0.93**	**1.59**	**1.51**	**1.70**	**1.18**	**–**

2 Residential Sector

Residential Single Attached Secondary Energy Use by Energy Source and End Use

	1990	1995	2001	2005	2006
Total Single Attached Energy Use (PJ)[a,b]	**117.6**	**127.4**	**129.6**	**140.6**	**135.2**
Energy Use by Energy Source (PJ)[a,b]					
Electricity	42.1	43.5	49.2	53.8	52.5
Natural Gas	48.5	59.6	59.1	66.1	63.2
Heating Oil	14.2	10.7	10.2	9.9	9.0
Other[1]	1.7	1.3	1.1	1.3	1.4
Wood	11.1	12.3	10.0	9.4	9.2
Energy Use by End Use (PJ)[b]					
Space Heating	72.2	78.5	73.3	80.2	75.4
Water Heating	22.9	25.7	29.0	30.9	31.2
Appliances	16.4	16.4	18.4	18.8	19.2
Lighting	4.6	4.7	5.7	5.8	5.7
Space Cooling	1.6	2.1	3.2	4.8	3.8
Activity					
Total Floor Space (million m^2)[b]	112	132	153	171	177
Total Households (thousands)[b,c]	922	1,064	1,208	1,317	1,342
Energy Intensity (GJ/m^2)[a,b]	**1.05**	**0.97**	**0.85**	**0.82**	**0.76**
Energy Intensity (GJ/household)[a,b,c]	**127.6**	**119.7**	**107.3**	**106.7**	**100.7**
Heating Degree-Day Index[b,d]	**0.92**	**0.98**	**0.88**	**0.92**	**0.85**
Cooling Degree-Day Index[b,e]	**1.05**	**1.18**	**1.43**	**1.79**	**1.38**

1) "Other" includes coal and propane.

Sources:

a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2013*, Ottawa, 2015.
b) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2015.

c) Statistics Canada, *Survey of Household Spending, 1997–2013*, Ottawa, 2015.
d) Environment Canada, Climate Summaries, *Monthly Values of Degree-Days Below 18.0°C, 1990–2013*, Ottawa.
e) Environment Canada, Climate Summaries, *Monthly Values of Degree-Days Above 18.0°C, 1990–2013*, Ottawa.

Residential Sector 2

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
146.6	**148.3**	**138.1**	**134.8**	**143.5**	**137.3**	**145.6**	**23.8%**
55.9	57.1	51.2	51.8	52.8	52.7	55.0	30.7%
70.3	71.4	67.8	63.7	71.5	66.0	73.0	50.4%
9.4	8.4	8.2	7.7	7.2	6.1	5.7	-60.3%
1.6	1.7	1.5	1.6	1.8	2.0	1.6	-8.2%
9.4	9.7	9.4	10.0	10.2	10.4	10.4	-6.2%
84.6	86.4	81.9	76.7	83.7	77.2	85.8	18.8%
32.4	32.3	30.8	30.7	33.0	32.6	32.8	43.6%
19.8	20.5	18.2	18.4	19.0	19.2	19.7	20.1%
5.8	5.9	5.1	5.2	5.2	5.2	5.2	14.4%
3.9	3.1	2.1	3.8	2.6	3.0	2.1	28.1%
183	188	193	198	203	208	218	94.5%
1,374	1,400	1,434	1,438	1,459	1,483	1,506	63.4%
0.80	**0.79**	**0.72**	**0.68**	**0.71**	**0.66**	**0.67**	**-36.4%**
106.7	**105.9**	**96.3**	**93.8**	**98.4**	**92.6**	**96.7**	**-24.2%**
0.93	**0.95**	**0.96**	**0.87**	**0.90**	**0.84**	**0.93**	**–**
1.45	**1.08**	**0.93**	**1.59**	**1.51**	**1.70**	**1.18**	**–**

2 Residential Sector

Residential Apartments Secondary Energy Use by Energy Source and End Use

	1990	1995	2001	2005	2006
Total Apartments Energy Use (PJ)[a,b]	**248.7**	**255.7**	**250.8**	**266.2**	**259.1**
Energy Use by Energy Source (PJ)[a,b]					
Electricity	111.4	109.8	114.3	124.1	123.2
Natural Gas	79.8	94.5	91.9	101.6	97.8
Heating Oil	35.5	28.0	23.6	21.1	19.2
Other[1]	3.4	2.0	1.6	1.9	1.9
Wood	18.6	21.4	19.4	17.4	16.9
Energy Use by End Use (PJ)[b]					
Space Heating	137.2	143.2	130.6	140.2	131.6
Water Heating	58.0	60.5	64.5	67.6	68.4
Appliances	46.0	44.4	47.2	48.3	49.1
Lighting	6.8	6.7	7.5	7.4	7.3
Space Cooling	0.7	0.8	1.0	2.7	2.7
Activity					
Total Floor Space (million m^2)[b]	272	303	326	354	363
Total Households (thousands)[b,c]	3,208	3,500	3,756	3,968	4,013
Energy Intensity (GJ/m^2)[a,b]	**0.92**	**0.84**	**0.77**	**0.75**	**0.71**
Energy Intensity (GJ/household)[a,b,c]	**77.5**	**73.0**	**66.8**	**67.1**	**64.6**
Heating Degree-Day Index[b,d]	**0.92**	**0.98**	**0.88**	**0.92**	**0.85**
Cooling Degree-Day Index[b,e]	**1.05**	**1.18**	**1.43**	**1.79**	**1.38**

1) "Other" includes coal and propane.

Sources:

a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2013*, Ottawa, 2015.
b) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2015.

c) Statistics Canada, *Survey of Household Spending, 1997–2013*, Ottawa, 2015.
d) Environment Canada, Climate Summaries, *Monthly Values of Degree-Days Below 18.0°C, 1990–2013*, Ottawa.
e) Environment Canada, Climate Summaries, *Monthly Values of Degree-Days Above 18.0°C, 1990–2013*, Ottawa.

Residential Sector

2

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
278.6	**279.1**	**266.5**	**256.4**	**271.1**	**261.3**	**275.0**	**10.6%**
131.5	133.4	126.9	124.0	128.6	127.7	134.4	20.7%
107.6	108.8	104.4	97.3	108.4	101.0	109.8	37.5%
20.4	17.6	16.7	15.3	14.0	11.9	10.7	-69.8%
2.2	2.3	2.0	2.2	2.4	2.8	2.2	-35.6%
16.9	17.0	16.4	17.6	17.7	17.9	17.9	-4.0%
146.7	147.7	142.9	132.4	142.6	132.8	146.1	6.4%
70.6	69.7	67.1	65.9	69.8	68.9	69.2	19.3%
50.6	51.8	48.0	48.2	49.6	50.3	51.3	11.4%
7.4	7.4	6.8	6.7	6.7	6.6	6.6	-2.2%
3.3	2.5	1.7	3.1	2.4	2.6	1.9	156.9%
371	381	390	398	407	416	433	59.3%
4,076	4,124	4,194	4,163	4,197	4,242	4,284	33.5%
0.75	**0.73**	**0.68**	**0.64**	**0.67**	**0.63**	**0.64**	**-30.6%**
68.4	**67.7**	**63.5**	**61.6**	**64.6**	**61.6**	**64.2**	**-17.2%**
0.93	**0.95**	**0.96**	**0.87**	**0.90**	**0.84**	**0.93**	**–**
1.45	**1.08**	**0.93**	**1.59**	**1.51**	**1.70**	**1.18**	**–**

2 Residential Sector

Residential Mobile Homes Secondary Energy Use by Energy Source and End Use

	1990	1995	2001	2005	2006
TotalMobile Homes Energy Use (PJ)[a,b]	**34.6**	**34.3**	**32.2**	**32.0**	**31.5**
Energy Use by Energy Source (PJ)[a,b]					
Electricity	9.4	9.4	9.6	10.1	10.0
Natural Gas	13.2	14.9	13.7	14.0	13.9
Heating Oil	5.0	3.5	3.2	2.9	2.7
Other[1]	0.7	0.4	0.4	0.3	0.3
Wood	6.3	6.1	5.3	4.7	4.6
Energy Use by End Use (PJ)[b]					
Space Heating	25.3	24.9	22.4	21.8	21.2
Water Heating	4.9	5.0	5.3	5.5	5.6
Appliances	3.6	3.5	3.6	3.6	3.6
Lighting	0.8	0.8	0.9	0.8	0.8
Space Cooling	0.0	0.0	0.1	0.2	0.2
Activity					
Total Floor Space (million m^2)[b]	19	21	22	24	24
Total Households (thousands)[b,c]	208	220	231	240	242
Energy Intensity (GJ/m^2)[a,b]	**1.78**	**1.61**	**1.43**	**1.34**	**1.29**
Energy Intensity (GJ/household)[a,b,c]	**166.7**	**156.0**	**139.4**	**133.5**	**130.0**
Heating Degree-Day Index[b,d]	**0.92**	**0.98**	**0.88**	**0.92**	**0.85**
Cooling Degree-Day Index[b,e]	**1.05**	**1.18**	**1.43**	**1.79**	**1.38**

1) "Other" includes coal and propane.

Sources:

a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2013*, Ottawa, 2015.
b) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2015.

c) Statistics Canada, *Survey of Household Spending, 1997–2013*, Ottawa, 2015.
d) Environment Canada, Climate Summaries, *Monthly Values of Degree-Days Below 18.0°C, 1990–2013*, Ottawa.
e) Environment Canada, Climate Summaries, *Monthly Values of Degree-Days Above 18.0°C, 1990–2013*, Ottawa.

Residential Sector 2

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
34.8	**34.4**	**33.8**	**32.3**	**34.3**	**33.0**	**33.5**	**-3.3%**
11.1	10.8	10.7	10.3	10.8	10.4	10.9	16.3%
15.5	15.3	14.9	13.7	14.9	14.3	14.7	11.5%
3.1	2.9	2.8	2.7	2.8	2.3	1.9	-61.5%
0.3	0.3	0.3	0.3	0.3	0.3	0.3	-58.9%
4.8	5.0	5.1	5.4	5.5	5.7	5.6	-10.6%
23.8	23.8	23.7	22.4	24.1	23.0	23.5	-7.0%
6.1	5.8	5.4	5.2	5.3	5.3	5.1	4.3%
4.0	3.8	3.8	3.8	4.0	3.9	4.0	10.7%
0.9	0.8	0.8	0.8	0.8	0.7	0.7	-9.3%
0.2	0.1	0.1	0.2	0.1	0.2	0.1	–
25	25	26	26	27	27	27	41.1%
246	248	253	252	254	255	256	23.3%
1.40	**1.36**	**1.31**	**1.23**	**1.29**	**1.23**	**1.22**	**-31.4%**
141.3	**138.5**	**133.6**	**128.4**	**135.2**	**129.7**	**130.8**	**-21.5%**
0.93	**0.95**	**0.96**	**0.87**	**0.90**	**0.84**	**0.93**	**–**
1.45	**1.08**	**0.93**	**1.59**	**1.51**	**1.70**	**1.18**	**–**

2 Residential Sector

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

	1990	1995	2001	2005	2006
Total GHG Emissions Including Electricity (Mt of CO_2e)[a,b,c]	**72.8**	**71.2**	**76.0**	**76.8**	**73.2**
GHG Emissions by Energy Source (Mt of CO_2e)[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 CO_2e)[b,c]					
Space Heating	47.0	46.8	45.3	46.7	43.8
Water Heating	12.5	12.6	14.5	14.7	14.8
Appliances	9.9	8.6	11.2	10.3	10.1
Major Appliances	*8.3*	*6.9*	*8.2*	*7.0*	*6.8*
Other Appliances[2]	*1.6*	*1.7*	*3.0*	*3.2*	*3.3*
Lighting	2.8	2.5	3.6	3.2	3.1
Space Cooling	0.6	0.7	1.4	1.8	1.4
GHG Intensity (tonnes/TJ)[a,b,c]	**51.1**	**48.5**	**53.0**	**51.4**	**50.8**
Total GHG Emissions Excluding Electricity (Mt of CO_2e)[a,b,c]	**46.5**	**47.3**	**44.4**	**46.0**	**43.9**
GHG Emissions by End Use (Mt of CO_2e)[b,c]					
Space Heating	38.1	38.1	34.3	35.3	33.2
Water Heating	8.2	9.0	9.9	10.4	10.5
Appliances	0.2	0.2	0.2	0.3	0.3
Major Appliances	*0.2*	*0.2*	*0.2*	*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 (tonnes/TJ)[a,b,c]	**32.7**	**32.2**	**31.0**	**30.8**	**30.5**

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

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
79.8	**77.6**	**70.8**	**69.0**	**70.1**	**64.2**	**66.2**	**-9.0%**
31.5	30.1	25.3	26.0	23.9	21.6	22.1	-16.1%
34.4	34.4	32.9	30.5	33.8	31.2	33.7	26.2%
9.1	8.1	7.9	7.4	7.2	6.1	5.4	-59.0%
1.0	1.1	1.0	1.1	1.1	1.2	1.0	-30.5%
3.8	3.9	3.8	4.0	4.1	4.1	4.1	-21.1%
49.2	48.4	45.2	42.3	44.1	39.6	42.1	-10.5%
15.5	15.0	14.0	14.1	14.5	14.0	13.9	10.7%
10.5	10.1	8.4	8.8	8.0	7.4	7.4	-25.2%
6.9	*6.5*	*5.4*	*5.4*	*4.9*	*4.4*	*4.4*	*-47.6%*
3.6	*3.6*	*3.1*	*3.3*	*3.1*	*3.0*	*3.1*	*92.2%*
3.2	3.1	2.5	2.6	2.4	2.1	2.1	-23.8%
1.4	1.1	0.6	1.2	1.1	1.1	0.8	34.7%
51.2	**49.6**	**47.8**	**48.1**	**45.9**	**44.1**	**43.7**	**-14.6%**
48.4	**47.5**	**45.5**	**43.0**	**46.2**	**42.6**	**44.2**	**-5.0%**
36.9	36.3	34.6	32.2	34.5	31.2	32.9	-13.8%
11.1	10.9	10.5	10.5	11.3	11.0	10.9	33.1%
0.3	0.3	0.3	0.3	0.4	0.4	0.4	99.4%
0.3	*0.3*	*0.3*	*0.3*	*0.4*	*0.4*	*0.4*	*99.4%*
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	–
0.0	0.0	0.0	0.0	0.0	0.0	0.0	–
31.0	**30.4**	**30.7**	**30.0**	**30.3**	**29.3**	**29.1**	**-10.8%**

Sources:

a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2013*, Ottawa, 2015.
b) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2015.
c) Environment Canada, *National Inventory Report 1990–2013: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2015.

2 Residential Sector

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

	1990	1995	2001	2005	2006
Total Single Detached GHG Emissions Including Electricity (Mt of CO_2e)[a,b,c]	**51.4**	**50.4**	**53.3**	**53.7**	**51.1**
GHG Emissions by Energy Source (Mt of CO_2e)[a,b,c]					
Electricity	17.1	15.7	20.7	20.1	19.0
Natural Gas	19.6	23.2	21.9	23.2	22.2
Heating Oil	9.3	6.8	6.5	6.5	6.1
Other[1]	1.0	0.7	0.6	0.7	0.7
Wood	4.3	4.0	3.6	3.1	3.1
GHG Emissions by End Use (Mt of CO_2e)[b,c]					
Space Heating	34.8	34.7	33.4	34.4	32.3
Water Heating	7.8	7.9	9.1	9.2	9.3
Appliances	6.2	5.4	6.9	6.3	6.1
Lighting	2.1	1.9	2.7	2.5	2.4
Space Cooling	0.4	0.5	1.1	1.4	1.0
GHG Intensity (tonnes/TJ)[a,b,c]	**50.2**	**47.9**	**52.2**	**50.8**	**50.3**
Total GHG Emissions Excluding Electricity (Mt of CO_2e)[a,b,c]	**34.3**	**34.7**	**32.5**	**33.5**	**32.0**
GHG Emissions by End Use (Mt of CO_2e)[b,c]					
Space Heating	28.9	28.8	26.1	26.8	25.2
Water Heating	5.3	5.7	6.3	6.6	6.7
Appliances	0.1	0.1	0.1	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**	**31.9**	**31.8**	**31.5**

1) "Other" includes coal and propane.

Sources:

a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2013*, Ottawa, 2015.
b) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2015.
c) Environment Canada, *National Inventory Report 1990–2013: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2015.

Residential Sector

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2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
55.8	**54.3**	**49.6**	**48.3**	**49.3**	**45.2**	**46.4**	**-9.8%**
20.5	19.6	16.4	16.8	15.6	14.0	14.3	-16.8%
24.7	24.7	23.5	21.9	24.2	22.3	24.0	22.7%
6.7	6.1	5.9	5.6	5.5	4.7	4.1	-55.9%
0.8	0.8	0.7	0.8	0.8	0.9	0.7	-30.3%
3.1	3.1	3.0	3.2	3.3	3.3	3.3	-24.1%
36.2	35.6	33.3	31.2	32.5	29.2	30.8	-11.4%
9.8	9.5	8.9	9.0	9.3	9.0	8.8	12.7%
6.4	6.1	5.1	5.3	4.8	4.5	4.5	-28.1%
2.4	2.3	1.9	2.0	1.8	1.6	1.6	-22.4%
1.0	0.8	0.5	0.9	0.9	0.9	0.6	39.4%
50.7	**49.2**	**47.6**	**47.7**	**45.8**	**44.0**	**43.6**	**-13.1%**
35.3	**34.7**	**33.3**	**31.5**	**33.7**	**31.1**	**32.1**	**-6.2%**
28.0	27.6	26.3	24.5	26.2	23.8	24.8	-14.0%
7.1	7.0	6.7	6.8	7.3	7.1	7.1	33.9%
0.2	0.2	0.2	0.2	0.2	0.2	0.2	88.9%
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	–
32.1	**31.5**	**31.9**	**31.1**	**31.4**	**30.3**	**30.2**	**-9.7%**

2 Residential Sector

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

	1990	1995	2001	2005	2006
Total Single Attached GHG Emissions Including Electricity (Mt of CO_2e)[a,b,c]	**6.2**	**6.3**	**7.1**	**7.4**	**7.0**
GHG Emissions by Energy Source (Mt of CO_2e)[a,b,c]					
Electricity	2.4	2.2	3.1	3.1	2.9
Natural Gas	2.5	3.0	3.0	3.3	3.2
Heating Oil	1.0	0.8	0.7	0.7	0.6
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 CO_2e)[b,c]					
Space Heating	3.7	3.8	3.8	4.1	3.8
Water Heating	1.2	1.3	1.6	1.6	1.6
Appliances	0.9	0.8	1.1	1.1	1.1
Lighting	0.3	0.2	0.4	0.3	0.3
Space Cooling	0.1	0.1	0.2	0.3	0.2
GHG Intensity (tonnes/TJ)[a,b,c]	**52.7**	**49.6**	**54.5**	**52.3**	**51.7**
Total GHG Emissions Excluding Electricity (Mt of CO_2e)[a,b,c]	**3.8**	**4.1**	**4.0**	**4.3**	**4.1**
GHG Emissions by End Use (Mt of CO_2e)[b,c]					
Space Heating	3.0	3.1	2.8	3.1	2.8
Water Heating	0.8	1.0	1.1	1.2	1.2
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 (tonnes/TJ)[a,b,c]	**32.6**	**32.3**	**30.8**	**30.6**	**30.3**

1) "Other" includes coal and propane.

Sources:

a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2013*, Ottawa, 2015.
b) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2015.
c) Environment Canada, *National Inventory Report 1990–2013: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2015.

Residential Sector

2

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
7.6	**7.5**	**6.7**	**6.6**	**6.7**	**6.2**	**6.5**	**4.4%**
3.1	3.0	2.4	2.5	2.3	2.1	2.1	-9.6%
3.5	3.6	3.4	3.2	3.5	3.3	3.6	46.3%
0.7	0.6	0.6	0.5	0.5	0.4	0.4	-60.3%
0.1	0.1	0.1	0.1	0.1	0.1	0.1	-9.2%
0.2	0.2	0.2	0.2	0.2	0.2	0.2	-6.2%
4.3	4.3	4.0	3.7	3.9	3.5	3.9	4.2%
1.7	1.6	1.5	1.5	1.6	1.6	1.6	26.6%
1.1	1.1	0.9	0.9	0.8	0.8	0.8	-15.6%
0.3	0.3	0.2	0.3	0.2	0.2	0.2	-20.9%
0.2	0.2	0.1	0.2	0.1	0.1	0.1	-11.4%
51.9	**50.3**	**48.5**	**48.9**	**46.7**	**44.8**	**44.5**	**-15.7%**
4.5	**4.5**	**4.3**	**4.0**	**4.4**	**4.1**	**4.3**	**13.0%**
3.2	3.2	3.0	2.8	3.1	2.7	3.0	1.7%
1.3	1.3	1.2	1.2	1.3	1.3	1.3	50.5%
0.0	0.0	0.0	0.0	0.0	0.0	0.0	103.8%
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	–
30.8	**30.2**	**30.9**	**30.0**	**30.7**	**29.6**	**29.8**	**-8.7%**

2 Residential Sector

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

	1990	1995	2001	2005	2006
Total Apartments GHG Emissions Including Electricity (Mt of CO_2e)[a,b,c]	**13.5**	**12.9**	**14.0**	**14.1**	**13.6**
GHG Emissions by Energy Source (Mt of CO_2e)[a,b,c]					
Electricity	6.3	5.5	7.1	7.0	6.8
Natural Gas	4.0	4.7	4.6	5.1	4.9
Heating Oil	2.5	2.0	1.7	1.5	1.4
Other[1]	0.2	0.1	0.1	0.1	0.1
Wood	0.4	0.5	0.5	0.4	0.4
GHG Emissions by End Use (Mt of CO_2e)[b,c]					
Space Heating	7.3	7.2	6.9	7.3	6.7
Water Heating	3.2	3.1	3.6	3.6	3.6
Appliances	2.6	2.2	2.9	2.7	2.7
Lighting	0.4	0.3	0.5	0.4	0.4
Space Cooling	0.0	0.0	0.1	0.2	0.1
GHG Intensity (tonnes/TJ)[a,b,c]	**54.2**	**50.5**	**55.7**	**53.1**	**52.4**
Total GHG Emissions Excluding Electricity (Mt of CO_2e)[a,b,c]	**7.2**	**7.4**	**6.8**	**7.1**	**6.8**
GHG Emissions by End Use (Mt of CO_2e)[b,c]					
Space Heating	5.3	5.3	4.6	4.7	4.3
Water Heating	1.9	2.1	2.2	2.4	2.4
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 (tonnes/TJ)[a,b,c]	**29.0**	**28.8**	**27.3**	**26.7**	**26.1**

1) "Other" includes coal and propane.

Sources:

a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2013*, Ottawa, 2015.
b) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2015.
c) Environment Canada, *National Inventory Report 1990–2013: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2015.

Residential Sector

2

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
14.7	**14.2**	**12.9**	**12.6**	**12.5**	**11.5**	**12.0**	**-11.3%**
7.3	7.0	6.0	6.1	5.6	5.1	5.2	-16.5%
5.4	5.4	5.2	4.8	5.4	5.0	5.4	33.7%
1.4	1.2	1.2	1.1	1.0	0.8	0.8	-69.8%
0.1	0.1	0.1	0.1	0.2	0.2	0.1	-35.8%
0.4	0.4	0.4	0.4	0.4	0.4	0.4	-4.0%
7.6	7.4	6.9	6.4	6.6	5.9	6.4	-12.4%
3.7	3.6	3.3	3.3	3.4	3.2	3.2	1.3%
2.8	2.7	2.3	2.4	2.2	2.0	2.0	-21.9%
0.4	0.4	0.3	0.3	0.3	0.3	0.3	-32.3%
0.2	0.1	0.1	0.2	0.1	0.1	0.1	77.7%
52.6	**50.8**	**48.4**	**49.0**	**46.1**	**44.0**	**43.5**	**-19.8%**
7.4	**7.2**	**6.9**	**6.5**	**6.9**	**6.4**	**6.7**	**-6.8%**
4.8	4.7	4.5	4.1	4.4	3.9	4.2	-19.8%
2.5	2.4	2.3	2.3	2.5	2.4	2.4	25.8%
0.1	0.1	0.1	0.1	0.1	0.1	0.1	128.1%
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	–
26.5	**25.8**	**25.9**	**25.2**	**25.6**	**24.6**	**24.4**	**-15.7%**

2 Residential Sector

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

	1990	1995	2001	2005	2006
Total Mobile Homes GHG Emissions Including Electricity (Mt of CO_2e)[a,b,c]	**1.7**	**1.6**	**1.7**	**1.6**	**1.6**
GHG Emissions by Energy Source (Mt of CO_2e)[a,b,c]					
Electricity	0.5	0.5	0.6	0.6	0.5
Natural Gas	0.7	0.8	0.7	0.7	0.7
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 CO_2e)[b,c]					
Space Heating	1.2	1.2	1.1	1.1	1.0
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	0.1	0.0	0.0
Space Cooling	0.0	0.0	0.0	0.0	0.0
GHG Intensity (tonnes/TJ)[a,b,c]	**50.6**	**48.0**	**51.8**	**50.4**	**49.9**
Total GHG Emissions Excluding Electricity (Mt of CO_2e)[a,b,c]	**1.2**	**1.2**	**1.1**	**1.0**	**1.0**
GHG Emissions by End Use (Mt of CO_2e)[b,c]					
Space Heating	1.0	1.0	0.9	0.8	0.8
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 (tonnes/TJ)[a,b,c]	**35.3**	**34.1**	**33.2**	**32.5**	**32.4**

1) "Other" includes coal and propane.

Sources:

a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2013*, Ottawa, 2015.
b) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2015.
c) Environment Canada, *National Inventory Report 1990–2013: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2015.

Residential Sector 2

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
1.8	**1.7**	**1.6**	**1.5**	**1.6**	**1.4**	**1.4**	**-17.6%**
0.6	0.6	0.5	0.5	0.5	0.4	0.4	-19.5%
0.8	0.8	0.7	0.7	0.7	0.7	0.7	8.7%
0.2	0.2	0.2	0.2	0.2	0.2	0.1	-61.5%
0.0	0.0	0.0	0.0	0.0	0.0	0.0	-59.0%
0.1	0.1	0.1	0.1	0.1	0.1	0.1	-10.6%
1.2	1.1	1.1	1.0	1.1	1.0	1.0	-18.6%
0.3	0.3	0.3	0.3	0.3	0.3	0.2	-7.7%
0.2	0.2	0.2	0.2	0.2	0.2	0.2	-22.4%
0.0	0.0	0.0	0.0	0.0	0.0	0.0	-37.3%
0.0	0.0	0.0	0.0	0.0	0.0	0.0	–
50.3	**48.8**	**47.1**	**47.2**	**45.4**	**43.7**	**43.1**	**-14.8%**
1.1	**1.1**	**1.1**	**1.0**	**1.1**	**1.0**	**1.0**	**-16.7%**
0.9	0.9	0.9	0.8	0.9	0.8	0.8	-21.8%
0.2	0.2	0.2	0.2	0.2	0.2	0.2	8.6%
0.0	0.0	0.0	0.0	0.0	0.0	0.0	69.9%
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	–
32.7	**32.3**	**32.1**	**31.6**	**31.8**	**31.2**	**30.4**	**-13.9%**

2 Residential Sector

Residential Housing Stock and Floor Space

	1990	1995	2001	2005	2006
Total Housing Stock (thousands)[a]	**10,426**	**11,508**	**12,354**	**13,150**	**13,359**
Housing Stock by Building Type (thousands)					
Single Detached	5,854	6,470	6,978	7,414	7,518
Single Attached	970	1,127	1,281	1,405	1,443
Apartments	3,381	3,676	3,848	4,071	4,135
Mobile Homes	221	235	246	259	263
Housing Stock by Vintage (thousands)					
Before 1946	2,150	2,039	1,902	1,819	1,799
1946–1960	1,477	1,417	1,342	1,296	1,284
1961–1977	3,095	3,000	2,884	2,812	2,794
1978–1983	1,761	1,715	1,659	1,624	1,615
1984–1995	1,943	3,338	3,270	3,225	3,214
1996–2000[1]	0	0	1,081	1,075	1,073
2001–2005[2]	0	0	215	1,299	1,299
2006–2010[3]	0	0	0	0	281
2011–2013[4]	0	0	0	0	0
Total Floor Space (million m^2)[a]	**1,208**	**1,380**	**1,532**	**1,671**	**1,709**
Floor Space by Building Type (million m^2)					
Single Detached	805	924	1030	1,121	1,145
Single Attached	112	132	153	171	177
Apartments	272	303	326	354	363
Mobile Homes	19	21	22	24	24

1) Growth rate shown in the final column entitled "Total Growth 1990-2013" is for 1996 to 2013.
2) Growth rate shown in the final column entitled "Total Growth 1990-2013" is for 2001 to 2013.
3) Growth rate shown in the final column entitled "Total Growth 1990-2013" is for 2006 to 2013.
4) Growth rate shown in the final column entitled "Total Growth 1990-2013" is for 2011 to 2013.

Source:
a) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2015.

Residential Sector 2

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
13,572	**13,781**	**13,977**	**14,154**	**14,319**	**14,488**	**14,840**	**42.3%**
7,624	7,716	7,803	7,881	7,949	8,017	8,152	39.3%
1,480	1,516	1,548	1,578	1,609	1,641	1,707	76.1%
4,200	4,278	4,350	4,414	4,478	4,545	4,690	38.7%
268	271	276	280	283	285	290	31.4%
1,780	1,760	1,741	1,722	1,703	1,685	1,670	-22.3%
1,273	1,262	1,252	1,241	1,230	1,219	1,210	-18.0%
2,776	2,759	2,742	2,725	2,707	2,690	2,677	-13.5%
1,606	1,598	1,589	1,581	1,572	1,564	1,557	-11.6%
3,203	3,192	3,182	3,171	3,160	3,149	3,140	61.6%
1,072	1,070	1,069	1,067	1,066	1,064	1,063	-1.7%
1,298	1,298	1,298	1,297	1,297	1,296	1,296	503.5%
562	842	1,104	1,350	1,350	1,350	1,349	380.8%
0	0	0	0	234	471	877	275.1%
1,747	**1,784**	**1,819**	**1,851**	**1,884**	**1,913**	**1,969**	**63.0%**
1,169	1,190	1,210	1,229	1,247	1,262	1,290	60.3%
183	188	193	198	203	208	218	94.5%
371	381	390	398	407	416	433	59.3%
25	25	26	26	27	27	27	41.1%

2 Residential Sector

Residential Housing Stock and Floor Space (cont.)

	1990	1995	2001	2005	2006
Floor Space by Vintage (million m²)					
Before 1946	235	229	223	220	219
1946–1960	145	142	140	138	138
1961–1977	334	329	325	321	321
1978–1983	229	224	216	213	212
1984–1995	264	456	447	441	439
1996–2000[1]	0	0	149	148	148
2001–2005[2]	0	0	32	190	190
2006–2010[3]	0	0	0	0	43
2011–2013[4]	0	0	0	0	0
Average Size of Housing Unit (m²/house)[a]	**116**	**120**	**124**	**127**	**128**
Average Size by Building Type (m²/house)					
Single Detached	137	143	148	151	152
Single Attached	116	117	119	122	123
Apartments	80	82	85	87	88
Mobile Homes	88	91	91	92	93
Average Size by Vintage (m²/house)					
Before 1946	109	112	117	121	122
1946–1960	98	101	104	107	107
1961–1977	108	110	113	114	115
1978–1983	130	130	130	131	131
1984–1995	136	137	137	137	137
1996–2000[1]	0	0	138	138	138
2001–2005[2]	0	0	149	146	146
2006–2010[3]	0	0	0	0	153
2011–2013[4]	0	0	0	0	0

1) Growth rate shown in the final column entitled "Total Growth 1990-2013" is for 1996 to 2013.
2) Growth rate shown in the final column entitled "Total Growth 1990-2013" is for 2001 to 2013.
3) Growth rate shown in the final column entitled "Total Growth 1990-2013" is for 2006 to 2013.
4) Growth rate shown in the final column entitled "Total Growth 1990-2013" is for 2011 to 2013.

Source:
a) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2015.

Residential Sector 2

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
218	217	216	215	214	212	210	-10.6%
138	137	137	136	136	135	134	-7.9%
320	319	318	317	316	314	313	-6.4%
211	210	210	209	208	207	206	-10.1%
438	436	435	433	432	430	429	62.3%
148	148	147	147	147	147	147	-1.7%
189	189	189	189	189	189	189	489.5%
86	127	167	204	204	204	204	374.6%
0	0	0	0	37	74	138	271.3%
129	**129**	**130**	**131**	**132**	**132**	**133**	**14.5%**
153	154	155	156	157	157	158	15.1%
123	124	125	125	126	127	128	10.5%
88	89	90	90	91	91	92	14.8%
93	93	94	94	94	94	95	7.4%
122	123	124	125	126	126	126	15.2%
108	109	109	110	111	111	111	12.4%
115	116	116	116	117	117	117	8.2%
131	132	132	132	132	132	132	1.7%
137	137	137	137	137	137	137	0.4%
138	138	138	138	138	138	138	0.0%
146	146	146	146	146	146	146	-2.3%
153	151	151	151	151	151	151	-1.3%
0	0	0	0	158	158	157	-1.0%

2 Residential Sector

Residential Space Heating Energy Use by Energy Source and Building Type

	1990	1995	2001	2005	2006
Total Space Heating Energy Use (PJ)[a]	**957.5**	**988.7**	**907.3**	**944.2**	**894.0**
Energy Use by Energy Source (PJ)[a]					
Electricity	158.6	171.9	174.9	201.5	193.2
Natural Gas	395.6	473.7	429.9	460.3	431.2
Heating Oil	166.4	121.8	109.9	109.4	99.9
Other[1]	18.2	13.2	11.9	12.7	13.2
Wood	218.6	208.1	180.7	160.3	156.5
Energy Use by Building Type (PJ)[a]					
Single Detached	722.7	742.1	681.2	702.0	665.7
Single Attached	72.2	78.5	73.3	80.2	75.4
Apartments	137.2	143.2	130.6	140.2	131.6
Mobile Homes	25.3	24.9	22.4	21.8	21.2
Activity					
Total Floor Space (million m^2)[a]	1,208	1,380	1,532	1,671	1,709
Energy Intensity (GJ/m^2)[a]	**0.79**	**0.72**	**0.59**	**0.57**	**0.52**
Heat Gains (PJ)[a]	**89.8**	**94.1**	**90.6**	**95.1**	**89.2**
Heating Degree-Day Index[a,b]	**0.92**	**0.98**	**0.88**	**0.92**	**0.85**

1) "Other" includes coal and propane.

Sources:
a) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2015.
b) Environment Canada, Climate Summaries, *Monthly Values of Degree-Days Below 18.0°C, 1990–2013*, Ottawa.

Residential Sector 2

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
991.8	**998.9**	**955.7**	**899.1**	**964.2**	**895.9**	**960.3**	**0.3%**
222.4	231.8	222.6	205.4	222.4	211.1	236.9	49.3%
486.8	491.9	467.8	424.3	472.4	426.6	476.4	20.4%
110.5	99.4	96.5	89.5	86.3	72.1	64.8	-61.1%
14.7	15.7	13.9	14.7	15.8	17.3	14.0	-23.3%
157.3	160.1	155.0	165.2	167.3	168.7	168.2	-23.1%
736.7	741.0	707.2	667.6	713.7	662.8	704.9	-2.5%
84.6	86.4	81.9	76.7	83.7	77.2	85.8	18.8%
146.7	147.7	142.9	132.4	142.6	132.8	146.1	6.4%
23.8	23.8	23.7	22.4	24.1	23.0	23.5	-7.0%
1,747	1,784	1,819	1,851	1,884	1,913	1,969	63.0%
0.57	**0.56**	**0.53**	**0.49**	**0.51**	**0.47**	**0.49**	**-38.5%**
100.7	**105.3**	**98.8**	**89.8**	**97.0**	**90.8**	**101.5**	**–**
0.93	**0.95**	**0.96**	**0.87**	**0.90**	**0.84**	**0.93**	**–**

2 Residential Sector

Residential Space Heating System Stock Share

	1990	1995	2001	2005	2006
Heating System Stock Share by System Type (%)[a]					
Heating Oil – Normal Efficiency	14.0	8.6	3.1	1.0	0.8
Heating Oil – Medium Efficiency	0.3	3.0	6.7	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	20.9	13.1	11.1
Natural Gas – Medium Efficiency	2.1	9.6	16.3	19.9	20.5
Natural Gas – High Efficiency	2.9	5.4	9.8	14.8	16.1
Electric	28.1	28.9	27.6	27.9	28.3
Heat Pump	2.3	2.7	3.5	4.0	4.1
Other[1]	0.8	1.0	1.1	1.0	1.0
Wood	1.7	1.9	2.1	2.1	2.0
Dual Systems					
Wood/Electric	5.1	4.6	4.9	4.9	4.8
Wood/Heating Oil	2.4	2.1	2.3	2.3	2.3
Natural Gas/Electric	0.3	0.4	0.4	0.5	0.5
Heating Oil/Electric	0.8	0.9	1.1	1.2	1.2

1) "Other" includes coal and propane.

Source:
a) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2015.

2007	2008	2009	2010	2011	2012	2013
0.6	0.5	0.4	0.3	0.3	0.2	0.2
7.3	7.2	7.2	7.2	7.2	7.4	7.4
0.0	0.0	0.0	0.0	0.0	0.0	0.0
9.3	7.6	6.0	4.6	3.4	2.2	1.2
20.9	21.1	21.1	20.8	20.4	19.9	19.1
17.3	18.7	20.0	21.5	22.9	24.3	26.2
28.6	28.9	29.1	29.3	29.5	29.6	29.5
4.2	4.3	4.4	4.5	4.7	4.8	4.8
1.0	1.0	1.0	1.0	1.0	1.0	1.0
2.0	1.9	1.9	1.9	1.9	1.9	1.9
4.8	4.8	4.8	4.8	4.7	4.7	4.7
2.3	2.3	2.3	2.3	2.3	2.3	2.2
0.5	0.5	0.5	0.5	0.5	0.5	0.5
1.2	1.2	1.2	1.3	1.3	1.3	1.3

2 Residential Sector

Residential Lighting and Space Cooling Details

	1990	1995	2001	2005	2006
Total Lighting Energy Use[1] (PJ)[a]	**49.5**	**49.6**	**57.3**	**57.3**	**56.8**
Activity					
Total Households (thousands)[a]	9,895	10,900	11,837	12,587	12,756
Energy Intensity (GJ/Household)[a]	**5.0**	**4.6**	**4.8**	**4.6**	**4.5**
Heat Loss (PJ)[a]	**20.8**	**22.3**	**23.0**	**24.0**	**22.2**
Total Space Cooling Energy Use[1] (PJ)[a]	**10.0**	**13.3**	**21.9**	**32.3**	**25.4**
Energy Use by Cooling System Type (PJ)[a]					
Room	2.6	2.7	3.8	5.2	4.3
Central	7.4	10.6	18.1	27.2	21.0
Activity					
Cooled Floor Space (million m^2)[a]	268	354	534	675	728
Energy Intensity (MJ/m^2)[a]	**37.2**	**37.6**	**41.0**	**47.9**	**34.8**
Cooling Degree-Day Index[a,b]	**1.05**	**1.18**	**1.43**	**1.79**	**1.38**
Total Cooling System Stock (thousands)[a]	**2,438**	**3,045**	**4,272**	**5,572**	**6,144**
System Stock by Type (thousands)[a]					
Room	1,067	1,142	1,533	1,992	2,289
Central	1,371	1,903	2,740	3,580	3,855
New Unit Efficiency[a]					
Room (EER)	7.1	9.2	9.4	9.4	10.9
Central (SEER)	9.1	10.2	10.3	10.3	13.0
Stock Efficiency[a]					
Room (EER)	6.8	7.4	8.4	9.1	9.5
Central (SEER)	8.6	9.2	9.7	10.0	10.3

1) Lighting and space cooling consume only electricity.

Sources:

a) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2015.

b) Environment Canada, Climate Summaries, *Monthly Values of Degree-Days Above 18.0°C, 1990–2013*, Ottawa.

Residential Sector

2

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
58.0	**58.9**	**53.1**	**53.7**	**54.3**	**54.0**	**54.5**	**10.1%**
12,985	13,164	13,417	13,378	13,514	13,670	13,820	39.7%
4.5	**4.5**	**4.0**	**4.0**	**4.0**	**3.9**	**3.9**	**-21.2%**
24.6	**25.7**	**23.7**	**21.6**	**23.0**	**21.3**	**23.5**	**13.0%**
25.7	**20.3**	**13.4**	**24.5**	**24.9**	**27.6**	**19.4**	**94.6%**
4.4	3.4	2.7	4.3	3.9	4.5	3.2	23.3%
21.2	16.9	10.7	20.2	21.0	23.1	16.2	119.5%
721	765	774	808	855	875	906	238.0%
35.6	**26.5**	**17.3**	**30.4**	**29.1**	**31.6**	**21.4**	**-42.4%**
1.45	**1.08**	**0.93**	**1.59**	**1.51**	**1.70**	**1.18**	**12.7%**
6,282	**6,554**	**6,600**	**6,804**	**6,963**	**7,088**	**7,270**	**198.2%**
2,446	2,398	2,376	2,431	2,396	2,412	2,422	127.0%
3,836	4,156	4,223	4,374	4,567	4,676	4,848	253.6%
10.9	10.9	10.9	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%
9.8	10.0	10.1	10.4	10.6	10.8	11.0	61.1%
10.5	10.7	10.9	11.1	11.2	11.4	11.6	34.2%

2 Residential Sector

Residential Appliance Details

	1990	1995	2001	2005	2006
Total Appliance Energy Use (PJ)[a]	**176.8**	**171.0**	**180.4**	**181.5**	**183.3**
Energy Use by Energy Source (PJ)[a]					
Electricity	173.0	166.8	175.7	176.0	177.5
Natural Gas	3.8	4.1	4.6	5.5	5.8
Energy Use by Appliance Type (PJ)[a]					
Refrigerator	58.2	50.2	43.3	36.1	35.3
Freezer	23.5	20.1	15.1	12.0	11.6
Dishwasher[1]	4.7	4.5	4.5	4.2	4.1
Clothes Washer[1]	3.5	3.9	4.5	4.4	4.3
Clothes Dryer	31.2	30.5	33.3	34.6	35.0
Range	27.3	27.7	31.8	33.1	33.3
Other Appliances[2]	28.3	34.0	47.8	57.1	59.9
Activity					
Total Households (thousands)[a,b]	9,895	10,900	11,837	12,587	12,756
Energy Intensity (GJ/household)[a,b]	**17.9**	**15.7**	**15.2**	**14.4**	**14.4**
Heat Loss by Appliance Type (PJ)[a]					
Refrigerator	24.6	22.7	17.5	15.2	13.8
Freezer	10.0	9.2	6.2	5.1	4.6
Dishwasher[1]	0.7	0.7	0.6	0.6	0.5
Clothes Washer[1]	0.8	1.0	1.0	1.0	0.9
Clothes Dryer	3.7	3.9	3.8	4.1	3.8
Range	9.6	10.4	10.7	11.6	10.9
Other Appliances[2]	12.0	15.4	19.3	24.1	23.5
Appliances per Household by Appliance type[a,b]					
Refrigerator	1.18	1.20	1.23	1.26	1.27
Freezer	0.57	0.58	0.57	0.55	0.55
Dishwasher	0.42	0.47	0.52	0.57	0.58
Clothes Washer	0.74	0.78	0.81	0.82	0.82
Clothes Dryer	0.72	0.76	0.81	0.83	0.84
Range	0.98	0.99	0.99	0.99	0.99
Other Appliances[2]	10.12	11.11	13.37	15.26	15.54

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 2

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
190.1	**194.1**	**177.5**	**178.6**	**183.4**	**185.0**	**188.7**	**6.7%**
183.7	187.2	170.6	171.7	175.6	177.2	180.8	4.5%
6.5	6.9	6.9	6.9	7.8	7.7	7.9	105.6%
35.4	35.1	30.8	29.6	29.1	28.5	28.3	-51.4%
11.5	11.2	9.9	9.4	9.3	9.2	9.3	-60.4%
4.0	3.8	3.4	3.2	3.0	2.8	2.7	-41.7%
4.3	3.9	3.3	3.1	3.0	2.8	2.6	-26.5%
36.3	36.8	33.6	33.5	34.2	34.4	35.1	12.6%
34.5	34.7	32.0	31.7	32.4	31.9	32.0	17.1%
64.3	68.5	64.6	68.1	72.4	75.4	78.6	177.8%
12,985	13,164	13,417	13,378	13,514	13,670	13,820	39.7%
14.6	**14.7**	**13.2**	**13.3**	**13.6**	**13.5**	**13.7**	**-23.6%**
15.1	15.4	13.8	11.9	12.3	11.2	12.2	-50.3%
5.0	5.0	4.5	3.9	4.0	3.7	4.1	-59.1%
0.6	0.6	0.5	0.4	0.4	0.4	0.4	-40.3%
1.0	1.0	0.8	0.7	0.7	0.6	0.6	-24.7%
4.3	4.5	4.2	3.8	4.1	3.8	4.3	15.6%
12.3	12.7	11.9	10.6	11.3	10.4	11.5	18.9%
27.5	30.0	28.9	27.4	30.5	29.6	33.9	183.0%
1.27	1.27	1.27	1.26	1.27	1.27	1.27	7.5%
0.55	0.54	0.54	0.54	0.54	0.54	0.54	-4.9%
0.59	0.59	0.60	0.60	0.60	0.60	0.60	43.3%
0.82	0.81	0.82	0.81	0.81	0.81	0.81	10.3%
0.84	0.84	0.84	0.84	0.84	0.84	0.84	16.2%
0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.9%
15.77	15.89	16.07	16.18	16.33	16.43	16.48	62.8%

Sources:

a) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2015.

b) Statistics Canada, *Survey of Household Spending, 1997–2013*, Ottawa, 2015.

2 Residential Sector

Residential Appliance Unit Energy Consumption

	1990	1995	2001	2005	2006
UEC[1] for New Electric Appliances (kWh/year)[a]					
Refrigerator	956	642	559	469	481
Freezer	714	382	384	386	380
Dishwasher[2]	277	181	170	107	101
Clothes Washer[2]	134	118	111	65	58
Clothes Dryer	1,103	909	916	904	905
Range	772	771	763	573	537
UEC[1] 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
UEC[1] for Stock of Electric Appliances (kWh/year)[b]					
Refrigerator	1,504	1,262	905	689	657
Freezer	1,272	1,052	680	522	495
Dishwasher[2]	338	291	224	178	168
Clothes Washer[2]	145	150	144	128	123
Clothes Dryer	1,294	1,186	1,054	992	978
Range	803	793	779	747	732
UEC[1] for Stock of Natural Gas Appliances (kWh/year)[b]					
Clothes Dryer	1,480	1,122	885	880	880
Range	1,519	1,388	1,296	1,251	1,246

1) Unit energy consumption (UEC) is based on rated efficiency.
2) excludes hot water requirements.

Sources:

a) Special Tabulations from Canadian Appliance Manufacturers Association, 1990–2011, Mississauga, 2013. Data for 2012 and 2013 from the Association of Home Appliance Manufacturers, Canada, 2015.
b) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2015.

Residential Sector 2

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
483	467	430	425	421	416	416	-56.4%
384	375	356	365	390	362	362	-49.2%
96	93	88	84	80	75	75	-72.9%
44	41	37	35	34	36	37	-72.4%
912	916	921	928	933	929	929	-15.8%
524	522	518	522	526	525	525	-32.0%
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%
629	604	580	549	527	511	498	-66.9%
471	449	428	400	387	381	377	-70.3%
151	141	133	122	113	105	99	-70.6%
117	105	95	89	82	76	70	-51.7%
964	951	940	925	918	915	915	-29.3%
716	697	682	664	648	632	618	-23.1%
880	880	880	880	880	880	880	-40.5%
1,241	1,237	1,234	1,230	1,228	1,227	1,226	-19.3%

2 Residential Sector

Residential Water Heating Energy Use and Water Heater Stock Share

	1990	1995	2001	2005	2006
Total Water Heating Energy Use (PJ)[a]	**230.8**	**245.8**	**266.1**	**279.3**	**282.4**
Energy Use by Energy Source (PJ)[a]					
Electricity	76.3	72.2	75.0	76.4	77.4
Natural Gas	128.9	152.7	166.0	180.8	181.7
Heating Oil	20.0	15.7	18.8	16.4	16.9
Other[1]	3.7	1.7	1.0	1.1	1.2
Wood	1.9	3.5	5.3	4.6	5.0
Activity					
Total Households (thousands)[a,b]	9,895	10,900	11,837	12,587	12,756
Energy Intensity (GJ/household)[a,b]	**23.3**	**22.5**	**22.5**	**22.2**	**22.1**
Water Heater Stock Market Share (%)[a]					
Electricity	52.5	49.7	46.9	45.6	45.5
Natural Gas	41.5	44.6	47.1	48.9	49.0
Heating Oil	5.1	4.7	5.0	4.5	4.4
Other[1]	0.6	0.6	0.3	0.4	0.4
Wood	0.2	0.4	0.6	0.7	0.7
Heat Loss (PJ)[a]	**7.5**	**8.6**	**8.4**	**9.3**	**8.9**

1) "Other" includes coal and propane.

Sources:

a) Natural Resources Canada, *Residential End-Use Model*, Ottawa, 2015.

b) Statistics Canada, *Survey of Household Spending, 1997–2013*, Ottawa, 2015.

Residential Sector

2

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
295.1	**292.6**	**281.3**	**280.1**	**298.2**	**294.9**	**294.6**	**27.7%**
78.6	78.0	74.2	73.2	73.7	74.5	74.8	-2.0%
192.7	192.9	185.8	184.0	202.0	197.8	201.0	55.9%
17.5	15.3	15.0	15.4	14.9	13.9	11.6	-41.7%
1.4	1.4	1.3	1.6	1.7	2.0	1.4	-62.1%
4.9	5.0	5.0	5.9	5.9	6.7	5.8	208.9%
12,985	13,164	13,417	13,378	13,514	13,670	13,820	39.7%
22.7	**22.2**	**21.0**	**20.9**	**22.1**	**21.6**	**21.3**	**-8.6%**
45.2	45.1	44.9	44.7	44.7	44.7	44.3	–
49.3	49.5	49.7	50.0	50.0	49.9	50.5	–
4.3	4.3	4.2	4.2	4.2	4.2	4.1	–
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	–
10.3	**10.6**	**10.4**	**9.5**	**10.6**	**9.9**	**10.9**	**46.0%**

2 Residential Sector

Residential Energy Prices and Background Indicators

	1990	1995	2001	2005	2006
Energy Prices by Energy Source (incl. taxes)					
Natural Gas (cents/m^3)[a,d]	19.1	22.4	44.6	51.3	53.0
Heating Oil (cents/litre)[a,d,e]	35.6	35.6	53.5	78.2	82.0
Electricity (cents/kWh)[b,d]	6.2	7.8	8.1	9.2	9.4
Background Indicators					
Consumer Price Index (2007 = 100)[c]					
Natural Gas	39.7	47.7	93.0	103.8	107.0
Fuel Oil and Other Fuels	42.2	43.5	63.1	92.0	96.2
Electricity	60.9	77.3	82.3	92.9	98.1
Real Personal Disposable Income per Household ($2007)[c]	***54,959***	***51,383***	***54,548***	***56,117***	***58,457***
Total Population (thousands)[f]	***27,691***	***29,302***	***31,021***	***32,242***	***32,571***

Sources:

a) 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, 2015 (CANSIM).
b) Hydro-Québec, *Comparison of Electricity Prices in Major North American Cities*, 2013.
c) Statistics Canada, Table 326-0021, Ottawa, 2015 (CANSIM).
d) Statistics Canada, R*eport on Energy Supply-Demand in Canada 1990-2013*, Ottawa, 2015.
e) Statistics Canada, *Total Population, Census Divisions and Census Metropolitan Areas*, Tables 051-0014. 051-0034 and 051-0046, Ottawa, 2015 (CANSIM).
f) Statistics Canada, *Estimates of Population, by Age Group and Sex, Provinces and Territories*, Table 051-0001, Ottawa, 2015 (CANSIM).

Residential Sector 2

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
50.5	52.2	44.0	44.9	43.7	40.6	41.2	115.4%
85.0	111.1	77.6	90.3	112.7	118.1	118.7	233.2%
9.5	9.6	9.5	9.6	10.4	10.4	10.7	72.3%
100.0	111.8	89.3	87.7	84.8	76.1	81.3	–
100.0	130.7	91.6	106.3	133.1	139.1	139.4	–
100.0	100.3	102.0	106.9	110.1	114.6	117.2	–
59,158	***60,189***	***60,063***	***61,362***	***61,698***	***62,593***	***63,689***	***15.9%***
32,888	***33,246***	***33,629***	***34,005***	***34,343***	***34,752***	***35,154***	***27.0%***

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* (RESD) (Cat. No. 57-003-X) under the "public administration" and "commercial and other institutional" categories. Statistics Canada defines these categories as final consumers not reported in the other end-use sectors.

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 reflects the revisions made by Statistics Canada. Consequently, the energy breakdown will be slightly different from the previous editions.

The Office of Energy Efficiency (OEE) developed the Commercial/Institutional End-Use Model (CEUM) to assess Canadian energy use trends in this sector. The CEUM uses floor space estimates by region and building type and energy intensity by region, building type and end use to allocate energy reported by Statistics Canada in the RESD to 10 activity types and six end uses. Floor space estimates are provided by Environment Canada from average costs per unit of floor space and investment flows for new construction. These estimates are categorized using the North American Industry Classification System (NAICS). The CEUM used the *Survey of Commercial and Institutional Energy Use – Establishments* (SCIEU) as source data for energy intensities. The latest SCIEU was conducted by Statistics Canada on behalf of the OEE to collect data for the reference year 2009. The results of SCIEU 2014 are forthcoming and will be available for the next edition of this handbook.

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

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

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

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

3 Commercial/Institutional Sector

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

	1990	1995	2001	2005	2006
Total Energy Use (PJ)[a]	**745.6**	**840.4**	**913.7**	**947.6**	**895.1**
Energy Use by Energy Source (PJ)[a]					
Electricity	268.6	300.8	313.6	345.5	342.5
Natural Gas	387.1	427.6	488.0	504.9	468.5
Light Fuel Oil and Kerosene	62.0	61.2	53.8	44.1	33.8
Heavy Fuel Oil	11.4	8.6	21.9	24.7	20.3
Steam	0.2	0.4	0.3	2.6	2.6
Other[1]	16.3	41.8	36.0	25.8	27.3
Energy Use by End Use (PJ)[b]					
Space Heating	449.9	511.7	547.7	543.1	495.3
Water Heating	57.7	62.0	73.9	75.2	75.1
Auxiliary Equipment	54.3	63.6	83.3	99.4	103.6
Auxiliary Motors	60.4	68.7	61.0	60.4	59.9
Lighting	84.0	94.1	93.1	98.6	100.8
Space Cooling	30.3	32.5	47.0	62.6	52.2
Street Lighting[f]	8.9	7.8	7.7	8.3	8.1

1) "Other" includes coal and propane.

Sources:

a) Statistics Canada, *Report on Energy Supply-Demand in Canada, 1990-2013*, Ottawa, 2015.
b) Natural Resources Canada, *Commercial/Institutional End-Use Model*, Ottawa, 2015.
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 3

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
941.3	**955.2**	**928.2**	**902.0**	**947.8**	**925.6**	**917.1**	**23.0%**
370.1	383.2	358.9	363.3	374.4	387.5	359.2	33.7%
482.3	495.2	508.7	478.4	503.6	464.4	496.7	28.3%
33.8	24.6	17.9	19.1	22.3	18.3	19.9	-67.8%
19.9	15.2	11.2	8.0	10.8	12.0	4.8	-57.5%
3.8	3.8	1.5	0.0	0.0	0.0	0.0	-78.5%
31.4	33.1	30.0	33.1	36.6	43.4	36.4	123.8%
523.7	532.9	525.0	487.6	521.2	488.2	506.5	12.6%
78.7	78.9	74.7	73.7	76.1	76.2	71.4	23.8%
106.8	114.5	121.3	123.1	125.9	127.4	130.9	140.9%
61.8	64.4	61.5	57.2	60.3	60.2	60.1	-0.6%
105.2	105.3	102.5	102.4	105.3	108.6	103.4	23.1%
56.1	50.4	36.2	50.5	51.4	57.4	37.4	23.2%
9.0	8.6	7.1	7.5	7.6	7.6	7.4	-17.2%

3 Commercial/Institutional Sector

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

	1990	1995	2001	2005	2006
Energy Use by Activity Type[2] (PJ)[b]					
Wholesale Trade	53.2	56.9	59.4	58.4	55.0
Retail Trade	123.0	135.3	149.4	157.0	149.5
Transportation and Warehousing	45.1	47.0	44.9	41.2	38.0
Information and Cultural Industries	14.2	17.0	19.6	20.1	18.9
Offices[3]	234.5	273.7	305.6	330.9	311.3
Educational Services	95.7	108.4	118.5	120.4	113.0
Health Care and Social Assistance	83.0	93.7	101.1	101.6	96.5
Arts, Entertainment and Recreation	16.5	20.9	22.9	23.2	22.0
Accommodation and Food Services	54.9	61.8	65.9	68.6	65.9
Other Services	16.5	17.9	18.7	18.0	16.7
Activity					
Total Floor Space (million m^2)[c]	509.9	558.7	610.2	654.2	667.3
Energy Intensity[2] (GJ/m^2)[a,c]	**1.44**	**1.49**	**1.48**	**1.44**	**1.33**
Heating Degree-Day Index[b,d]	**0.92**	**0.98**	**0.88**	**0.92**	**0.85**
Cooling Degree-Day Index[b,e]	**1.05**	**1.18**	**1.43**	**1.79**	**1.38**

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

Sources:
a) Statistics Canada, *Report on Energy Supply-Demand in Canada, 1990-2013*, Ottawa, 2015.
b) Natural Resources Canada, *Commercial/Institutional End-Use Model*, Ottawa, 2015.
c) Informetrica limited, *The Informetrica Model and Database*, 1990-2011. Data for 2012 onward are provided by Environment Canada. They assumed responsibility for operating *The Informetrica Model* as Informetrica Limited ceased its operations.
d) Environment Canada, Climate Summaries, *Monthly Values of Degree-Days Below 18.0°C*, 1990–2013, Ottawa.
e) Environment Canada, Climate Summaries, *Monthly Values of Degree-Days Above 18.0°C*, 1990–2013, Ottawa.

Commercial/Institutional Sector

3

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
57.6	58.0	56.2	53.6	55.9	54.0	53.2	0.1%
158.2	161.2	156.7	150.4	157.5	153.3	151.5	23.2%
39.6	39.7	37.8	36.5	38.1	36.4	35.9	-20.4%
20.0	20.1	20.0	19.6	20.4	20.0	19.8	39.5%
328.1	337.2	326.5	316.2	332.1	324.3	322.4	37.5%
118.1	118.2	115.5	114.0	120.3	118.0	117.9	23.2%
101.0	101.1	98.9	97.3	103.4	102.5	100.9	21.6%
23.5	23.6	23.5	23.0	24.2	23.7	23.4	41.4%
69.1	70.4	69.6	68.2	72.0	70.5	69.4	26.5%
17.2	17.1	16.4	15.6	16.3	15.5	15.3	-7.7%
679.7	693.2	703.8	713.9	721.6	732.1	743.1	45.7%
1.37	**1.37**	**1.31**	**1.25**	**1.30**	**1.25**	**1.22**	**-15.3%**
0.93	**0.95**	**0.96**	**0.87**	**0.90**	**0.84**	**0.93**	**–**
1.45	**1.08**	**0.93**	**1.59**	**1.51**	**1.70**	**1.18**	**–**

3 Commercial/Institutional Sector

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

	1990	1995	2001	2005	2006
Total GHG Emissions Including Electricity (Mt of CO^2e)[a,d]	**41.0**	**44.2**	**51.7**	**51.3**	**47.9**
GHG Emissions by Energy Source (Mt of CO_2e)[a,d]					
Electricity	15.1	15.2	19.6	19.6	18.9
Natural Gas	19.6	21.5	24.5	25.2	23.4
Light Fuel Oil and Kerosene	4.4	4.3	3.8	3.1	2.4
Heavy Fuel Oil	0.9	0.7	1.6	1.8	1.5
Steam	0.0	0.0	0.0	0.0	0.0
Other[1]	1.0	2.5	2.2	1.6	1.7
GHG Emissions by End Use (Mt of CO_2e)[b,d]					
Space Heating	24.4	27.3	29.5	28.6	25.9
Water Heating	3.2	3.3	4.0	4.1	4.0
Auxiliary Equipment	3.1	3.2	5.2	5.6	5.7
Auxiliary Motors	3.4	3.5	3.8	3.4	3.3
Lighting	4.7	4.8	5.8	5.6	5.6
Space Cooling	1.7	1.6	2.9	3.5	2.9
Street Lighting[c]	0.5	0.4	0.5	0.5	0.4
GHG Emissions by Activity Type[2] (Mt of CO_2e)[b,d]					
Wholesale Trade	2.9	3.0	3.3	3.1	2.9
Retail Trade	6.7	7.1	8.4	8.5	8.0
Transportation and Warehousing	2.5	2.5	2.5	2.2	2.0
Information and Cultural Industries	0.8	0.9	1.1	1.1	1.0
Offices[3]	12.9	14.4	17.3	17.9	16.6
Educational Services	5.3	5.7	6.7	6.5	6.1
Health Care and Social Assistance	4.6	5.0	5.8	5.5	5.2
Arts, Entertainment and Recreation	0.9	1.1	1.3	1.3	1.2
Accommodation and Food Services	3.0	3.3	3.7	3.8	3.6
Other Services	0.9	1.0	1.0	1.0	0.9
GHG Intensity (tonnes/TJ)[a,d]	**55.0**	**52.6**	**56.6**	**54.2**	**53.5**

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 3

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
50.5	**49.5**	**46.2**	**45.5**	**45.8**	**43.2**	**42.5**	**3.6%**
20.5	20.0	17.0	17.9	16.2	15.4	14.0	-7.5%
24.2	24.6	25.3	23.7	24.9	22.9	24.4	24.7%
2.4	1.7	1.3	1.3	1.6	1.3	1.4	-68.1%
1.5	1.1	0.8	0.6	0.8	0.9	0.4	-58.3%
0.0	0.0	0.0	0.0	0.0	0.0	0.0	–
1.9	2.0	1.8	2.0	2.2	2.7	2.3	129.7%
27.5	27.4	26.6	24.9	26.5	24.7	25.4	4.2%
4.2	4.2	3.9	3.8	3.9	3.9	3.6	13.8%
5.9	6.0	5.8	6.1	5.6	5.2	5.3	72.2%
3.4	3.4	2.9	2.8	2.6	2.4	2.3	-31.2%
5.8	5.5	4.9	5.0	4.6	4.3	4.0	-14.8%
3.1	2.6	1.7	2.5	2.3	2.3	1.5	-13.1%
0.5	0.4	0.3	0.4	0.3	0.3	0.3	-42.7%
3.1	3.0	2.8	2.7	2.7	2.5	2.4	-15.5%
8.5	8.3	7.8	7.6	7.6	7.1	7.0	4.2%
2.1	2.0	1.9	1.8	1.8	1.7	1.7	-32.1%
1.1	1.0	1.0	1.0	1.0	0.9	0.9	15.9%
17.6	17.5	16.3	16.0	16.1	15.1	14.9	16.0%
6.3	6.1	5.7	5.7	5.8	5.5	5.5	3.7%
5.4	5.3	4.9	4.9	5.0	4.8	4.7	2.5%
1.3	1.2	1.2	1.2	1.2	1.1	1.1	17.6%
3.7	3.7	3.5	3.5	3.5	3.3	3.2	7.2%
0.9	0.9	0.8	0.8	0.8	0.7	0.7	-23.7%
53.6	**51.9**	**49.8**	**50.5**	**48.3**	**46.6**	**46.3**	**-15.8%**

Sources:

a) Statistics Canada, *Report on Energy Supply-Demand in Canada, 1990-2013*, Ottawa, 2015.
b) Natural Resources Canada, *Commercial/Institutional End-Use Model*, Ottawa, 2015.
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 Canada, *National Inventory Report 1990–2013: Greenhouse Gas Sources and Sinks in Canada, Ottawa*, 2015.

3 Commercial/Institutional Sector

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

	1990	1995	2001	2005	2006
Total GHG Emissions Excluding Electricity (Mt of CO_2e)[a,d]	**25.9**	**29.0**	**32.1**	**31.7**	**29.0**
GHG Emissions by End Use (Mt of CO_2e)[b,d]					
Space Heating	22.6	25.5	27.8	27.2	24.5
Water Heating	3.0	3.2	3.7	3.9	3.8
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	0.1	0.2	0.2
Street Lighting[c]	0.0	0.0	0.0	0.0	0.0
GHG Emissions by Activity Type[1] (Mt of CO_2e)[b,d]					
Wholesale Trade	1.8	2.0	2.1	1.9	1.8
Retail Trade	4.2	4.6	5.2	5.2	4.8
Transportation and Warehousing	1.6	1.7	1.7	1.5	1.3
Information and Cultural Industries	0.5	0.6	0.7	0.7	0.6
Offices[2]	8.2	9.5	10.7	11.1	10.1
Educational Services	3.4	3.8	4.2	4.0	3.7
Health Care and Social Assistance	3.0	3.3	3.7	3.5	3.2
Arts, Entertainment and Recreation	0.6	0.7	0.8	0.8	0.7
Accommodation and Food Services	1.9	2.2	2.4	2.4	2.2
Other Services	0.6	0.6	0.7	0.6	0.5
GHG Intensity (tonnes/TJ)[a,d]	**34.7**	**34.5**	**35.2**	**33.5**	**32.4**

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-Demand in Canada, 1990-2013*, Ottawa, 2015.
b) Natural Resources Canada, *Commercial/Institutional End-Use Model*, Ottawa, 2015.
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 Canada, *National Inventory Report 1990–2013: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2015.

Commercial/Institutional Sector 3

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
30.0	**29.5**	**29.2**	**27.7**	**29.6**	**27.8**	**28.5**	**10.1%**
25.3	24.9	24.8	23.3	25.0	23.3	24.3	7.8%
4.0	4.0	3.8	3.6	3.8	3.8	3.5	15.5%
0.5	0.5	0.5	0.5	0.6	0.6	0.6	148.2%
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	–
0.2	0.2	0.1	0.2	0.2	0.2	0.1	98.9%
0.0	0.0	0.0	0.0	0.0	0.0	0.0	–
1.8	1.8	1.7	1.6	1.7	1.6	1.6	-11.3%
5.0	5.0	4.9	4.6	4.9	4.6	4.7	9.8%
1.3	1.3	1.3	1.2	1.3	1.2	1.2	-27.0%
0.6	0.6	0.6	0.6	0.6	0.6	0.6	20.7%
10.6	10.6	10.5	9.8	10.5	9.9	10.1	23.8%
3.7	3.6	3.6	3.5	3.7	3.5	3.7	8.4%
3.3	3.2	3.1	3.1	3.3	3.2	3.2	8.0%
0.7	0.7	0.7	0.7	0.7	0.7	0.7	22.8%
2.3	2.2	2.2	2.1	2.3	2.2	2.2	13.5%
0.5	0.5	0.5	0.5	0.5	0.5	0.5	-20.1%
31.8	**30.9**	**31.5**	**30.7**	**31.2**	**30.0**	**31.0**	**-10.5%**

3 Commercial/Institutional Sector

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

	1990	1995	2001	2005	2006
Total Energy Use for Wholesale Trade (PJ)[a]	**53.2**	**56.9**	**59.4**	**58.4**	**55.0**
Energy Use by Energy Source (PJ)[a]					
Electricity	18.8	20.2	20.2	21.3	21.0
Natural Gas	29.0	30.3	33.6	32.0	29.4
Light Fuel Oil and Kerosene	3.5	3.2	2.4	2.0	1.6
Heavy Fuel Oil	0.6	0.5	0.8	1.3	1.1
Steam	0.0	0.0	0.0	0.2	0.2
Other[1]	1.2	2.8	2.4	1.6	1.7
Activity					
Floor Space (million m^2)[b]	38.61	39.95	41.27	42.78	43.38
Energy Intensity (GJ/m^2)[a,b]	**1.38**	**1.43**	**1.44**	**1.37**	**1.27**
Total Energy Use for Retail Trade (PJ)[a]	**123.0**	**135.3**	**149.4**	**157.0**	**149.5**
Energy Use by Energy Source (PJ)[a]					
Electricity	43.7	47.9	51.0	57.3	57.2
Natural Gas	66.9	71.8	81.6	84.6	79.1
Light Fuel Oil and Kerosene	8.2	7.7	7.9	6.7	5.0
Heavy Fuel Oil	1.5	1.2	2.7	3.6	3.1
Steam	0.0	0.0	0.0	0.4	0.4
Other[1]	2.6	6.7	6.2	4.4	4.7
Activity					
Floor Space (million m^2)[b]	80.84	86.04	94.59	104.12	106.89
Energy Intensity (GJ/m^2)[a,b]	**1.52**	**1.57**	**1.58**	**1.51**	**1.40**

1) "Other" includes coal and propane.

Sources:

a) Statistics Canada, *Report on Energy Supply-Demand in Canada, 1990-2013*, Ottawa, 2015.

b) Informetrica limited, *The Informetrica Model and Database*, 1990-2011. Data for 2012 onward were provided by Environment Canada. They assumed responsibility for operating *The Informetrica Model as Informetrica Limited* ceased its operations.

Commercial/Institutional Sector

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2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
57.6	**58.0**	**56.2**	**53.6**	**55.9**	**54.0**	**53.2**	**0.1%**
22.6	23.5	21.9	21.8	22.3	22.8	21.0	11.8%
30.2	30.4	31.3	28.7	29.9	27.3	29.1	0.1%
1.4	0.9	0.5	0.7	0.8	0.5	0.6	-82.6%
1.1	0.9	0.6	0.4	0.5	0.8	0.4	-45.0%
0.2	0.2	0.0	0.0	0.0	0.0	0.0	-100.0%
2.0	2.1	1.9	2.1	2.3	2.6	2.1	85.7%
44.16	44.84	45.11	45.23	45.34	45.52	45.88	18.8%
1.30	**1.29**	**1.25**	**1.19**	**1.23**	**1.19**	**1.16**	**-15.8%**
158.2	**161.2**	**156.7**	**150.4**	**157.5**	**153.3**	**151.5**	**23.2%**
62.1	64.4	61.0	61.1	62.9	64.6	59.7	36.7%
82.1	84.9	86.9	80.0	84.1	77.4	82.7	23.5%
4.8	3.1	1.7	2.2	2.6	1.7	2.0	-75.9%
3.2	2.5	1.7	1.1	1.3	2.2	1.0	-36.7%
0.6	0.6	0.0	0.0	0.0	0.0	0.0	-100.0%
5.5	5.7	5.3	6.0	6.6	7.4	6.2	135.3%
109.96	113.08	114.49	115.46	116.22	117.52	119.26	47.5%
1.44	**1.43**	**1.37**	**1.30**	**1.35**	**1.30**	**1.27**	**-16.5%**

3 Commercial/Institutional Sector

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

	1990	1995	2001	2005	2006
Total Energy Use for Transportation and Warehousing (PJ)[a]	**45.1**	**47.0**	**44.9**	**41.2**	**38.0**
Energy Use by Energy Source (PJ)[a]					
Electricity	14.7	15.2	13.6	13.1	12.8
Natural Gas	25.0	25.6	25.1	23.7	21.5
Light Fuel Oil and Kerosene	3.9	3.5	3.1	2.2	1.5
Heavy Fuel Oil	0.7	0.5	1.1	1.1	0.9
Steam	0.0	0.0	0.0	0.2	0.2
Other[1]	0.9	2.3	1.8	1.0	1.1
Activity					
Floor Space (million m^2)[b]	33.92	34.22	33.58	33.26	33.37
Energy Intensity (GJ/m^2)[a,b]	**1.33**	**1.37**	**1.34**	**1.24**	**1.14**
Total Energy Use for Information and Cultural Industries (PJ)[a]	**14.2**	**17.0**	**19.6**	**20.1**	**18.9**
Energy Use by Energy Source (PJ)[a]					
Electricity	5.1	6.1	6.6	7.4	7.4
Natural Gas	7.0	8.3	10.6	10.4	9.7
Light Fuel Oil and Kerosene	1.5	1.6	1.3	1.2	0.9
Heavy Fuel Oil	0.3	0.1	0.2	0.4	0.3
Steam	0.0	0.0	0.0	0.0	0.0
Other[1]	0.3	0.8	0.8	0.6	0.6
Activity					
Floor Space (million m^2)[b]	8.97	10.49	12.07	12.93	13.19
Energy Intensity (GJ/m^2)[a,b]	**1.58**	**1.62**	**1.62**	**1.55**	**1.44**

1) "Other" includes coal and propane.

Sources:

a) Statistics Canada, *Report on Energy Supply-Demand in Canada, 1990-2013*, Ottawa, 2015.

b) Informetrica limited, *The Informetrica Model and Database*, 1990-2011. Data for 2012 onward were provided by Environment Canada. They assumed responsibility for operating *The Informetrica Model as Informetrica Limited* ceased its operations.

Commercial/Institutional Sector 3

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
39.6	**39.7**	**37.8**	**36.5**	**38.1**	**36.4**	**35.9**	**-20.4%**
13.8	14.2	13.0	12.9	13.4	13.5	12.3	-16.2%
22.0	22.4	22.7	21.1	22.0	19.9	21.2	-15.4%
1.4	0.9	0.5	0.6	0.7	0.5	0.5	-86.1%
0.8	0.6	0.5	0.4	0.5	0.7	0.4	-44.6%
0.3	0.3	0.0	0.0	0.0	0.0	0.0	-100.0%
1.3	1.3	1.2	1.4	1.5	1.8	1.5	75.2%
33.70	33.85	33.83	33.74	33.69	33.61	33.64	-0.8%
1.17	**1.17**	**1.12**	**1.08**	**1.13**	**1.08**	**1.07**	**-19.7%**
20.0	**20.1**	**20.0**	**19.6**	**20.4**	**20.0**	**19.8**	**39.5%**
8.1	8.4	7.9	8.0	8.2	8.6	7.9	55.4%
9.9	10.1	10.8	10.2	10.8	9.9	10.5	49.6%
0.8	0.5	0.4	0.4	0.5	0.4	0.4	-70.3%
0.3	0.3	0.2	0.1	0.1	0.1	0.0	-87.7%
0.1	0.1	0.0	0.0	0.0	0.0	0.0	-100.0%
0.7	0.8	0.7	0.8	0.9	1.0	0.8	187.8%
13.39	13.66	13.96	14.15	14.29	14.50	14.73	64.3%
1.49	**1.47**	**1.44**	**1.39**	**1.43**	**1.38**	**1.34**	**-15.1%**

3 Commercial/Institutional Sector

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

	1990	1995	2001	2005	2006
Total Energy Use for Offices[2] (PJ)[a]	**234.5**	**273.7**	**305.6**	**330.9**	**311.3**
Energy Use by Energy Source (PJ)[a]					
Electricity	83.4	97.2	104.3	118.4	117.1
Natural Gas	122.9	139.3	165.1	180.9	166.9
Light Fuel Oil and Kerosene	19.5	20.3	16.7	13.7	10.8
Heavy Fuel Oil	3.6	2.8	8.1	8.6	6.8
Steam	0.1	0.4	0.3	1.1	1.0
Other[1]	5.1	13.8	11.1	8.2	8.6
Activity					
Floor Space (million m^2)[b]	193.95	219.73	247.63	267.84	273.72
Energy Intensity (GJ/m^2)[a,b]	**1.21**	**1.25**	**1.23**	**1.24**	**1.14**
Total Energy Use for Educational Services (PJ)[a]	**95.7**	**108.4**	**118.5**	**120.4**	**113.0**
Energy Use by Energy Source (PJ)[a]					
Electricity	33.9	38.6	40.5	44.2	43.5
Natural Gas	48.8	54.3	61.6	62.8	58.2
Light Fuel Oil and Kerosene	9.1	8.8	8.3	5.9	4.1
Heavy Fuel Oil	1.7	1.3	2.8	3.5	3.0
Steam	0.0	0.0	0.0	0.3	0.3
Other[1]	2.1	5.4	5.2	3.7	3.9
Activity					
Floor Space (million m^2)[b]	68.14	74.28	80.56	86.06	87.09
Energy Intensity (GJ/m^2)[a,b]	**1.40**	**1.46**	**1.47**	**1.40**	**1.30**

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-Demand in Canada, 1990-2013*, Ottawa, 2015.
b) Informetrica limited, *The Informetrica Model and Database*, 1990-2011. Data for 2012 onward were provided by Environment Canada. They assumed responsibility for operating *The Informetrica Model as Informetrica Limited* ceased its operations.

Commercial/Institutional Sector 3

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
328.1	**337.2**	**326.5**	**316.2**	**332.1**	**324.3**	**322.4**	**37.5%**
125.5	131.4	123.3	124.9	128.1	133.0	123.4	47.9%
172.3	178.3	180.9	170.2	178.7	166.0	178.0	44.8%
12.1	10.1	8.5	8.2	9.4	8.4	9.1	-53.2%
6.7	5.2	4.3	3.1	4.9	3.8	1.4	-61.9%
1.5	1.5	0.0	0.0	0.0	0.0	0.0	-60.2%
10.0	10.7	9.5	9.9	10.9	13.0	10.6	106.8%
278.83	284.96	290.43	294.44	297.66	302.35	307.06	58.3%
1.18	**1.18**	**1.12**	**1.07**	**1.12**	**1.07**	**1.05**	**-13.2%**
118.1	**118.2**	**115.5**	**114.0**	**120.3**	**118.0**	**117.9**	**23.2%**
47.2	48.6	45.3	46.4	48.0	49.9	46.7	37.6%
59.5	60.2	62.2	60.0	63.7	58.1	62.8	28.7%
3.6	2.3	1.6	2.0	2.3	1.6	1.8	-80.4%
2.9	2.2	1.4	1.0	1.1	1.8	0.8	-51.8%
0.5	0.5	0.8	0.0	0.0	0.0	0.0	-67.9%
4.4	4.5	4.1	4.7	5.2	6.6	5.8	172.9%
87.98	89.11	90.11	92.73	94.43	96.15	98.21	44.1%
1.34	**1.33**	**1.28**	**1.23**	**1.27**	**1.23**	**1.20**	**-14.5%**

3 Commercial/Institutional Sector

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

	1990	1995	2001	2005	2006
Total Energy Use for Health Care and Social Assistance (PJ)[a]	**83.0**	**93.7**	**101.1**	**101.6**	**96.5**
Energy Use by Energy Source (PJ)[a]					
Electricity	29.2	32.9	33.7	36.2	36.1
Natural Gas	41.8	46.7	52.4	53.0	49.9
Light Fuel Oil and Kerosene	8.5	8.3	7.8	6.2	4.8
Heavy Fuel Oil	1.6	1.2	3.4	3.4	2.7
Steam	0.0	0.0	0.0	0.3	0.3
Other[1]	1.9	4.6	3.7	2.5	2.7
Activity					
Floor Space (million m^2)[b]	38.16	41.58	44.77	47.42	48.53
Energy Intensity (GJ/m^2)[a,b]	**2.18**	**2.25**	**2.26**	**2.14**	**1.99**
Total Energy Use for Arts, Entertainment and Recreation (PJ)[a]	**16.5**	**20.9**	**22.9**	**23.2**	**22.0**
Energy Use by Energy Source (PJ)[a]					
Electricity	6.0	7.5	7.8	8.5	8.5
Natural Gas	8.3	10.3	12.3	11.8	11.1
Light Fuel Oil and Kerosene	1.7	1.9	1.4	1.5	1.2
Heavy Fuel Oil	0.3	0.2	0.4	0.6	0.5
Steam	0.0	0.0	0.0	0.0	0.0
Other[1]	0.3	1.0	0.9	0.7	0.8
Activity					
Floor Space (million m^2)[b]	10.40	12.59	13.94	14.92	15.25
Energy Intensity (GJ/m^2)[a,b]	**1.59**	**1.66**	**1.64**	**1.55**	**1.45**

1) "Other" includes coal and propane.

Sources:

a) Statistics Canada, *Report on Energy Supply-Demand in Canada, 1990-2013*, Ottawa, 2015.

b) Informetrica limited, *The Informetrica Model and Database*, 1990-2011. Data for 2012 onward were provided by Environment Canada. They assumed responsibility for operating *The Informetrica Model as Informetrica Limited* ceased its operations.

Commercial/Institutional Sector 3

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
101.0	**101.1**	**98.9**	**97.3**	**103.4**	**102.5**	**100.9**	**21.6%**
39.0	39.9	37.4	38.3	40.1	42.3	39.1	33.9%
51.1	52.0	53.9	51.6	54.6	50.4	53.7	28.4%
4.9	3.7	2.6	2.8	3.2	2.9	3.1	-63.8%
2.5	1.9	1.4	1.2	1.6	1.7	0.7	-55.6%
0.4	0.4	0.7	0.0	0.0	0.0	0.0	-46.0%
3.1	3.2	2.9	3.4	3.9	5.1	4.3	128.9%
49.47	50.08	50.99	52.36	53.41	55.12	55.88	46.4%
2.04	**2.02**	**1.94**	**1.86**	**1.94**	**1.86**	**1.81**	**-17.0%**
23.5	**23.6**	**23.5**	**23.0**	**24.2**	**23.7**	**23.4**	**41.4%**
9.5	9.7	9.2	9.4	9.7	10.1	9.3	56.7%
11.5	11.9	12.8	12.1	12.8	11.8	12.6	51.7%
1.0	0.6	0.4	0.4	0.5	0.4	0.4	-74.3%
0.5	0.3	0.2	0.1	0.1	0.2	0.0	-85.6%
0.1	0.1	0.0	0.0	0.0	0.0	0.0	-100.0%
0.9	1.0	0.9	1.0	1.1	1.2	1.0	199.6%
15.70	15.98	16.40	16.72	17.00	17.29	17.54	68.7%
1.50	**1.48**	**1.43**	**1.38**	**1.42**	**1.37**	**1.33**	**-16.2%**

3 Commercial/Institutional Sector

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

	1990	1995	2001	2005	2006
Total Energy Use for Accommodation and Food Services (PJ)[a]	**54.9**	**61.8**	**65.9**	**68.6**	**65.9**
Energy Use by Energy Source (PJ)[a]					
Electricity	19.0	21.2	21.7	24.2	24.4
Natural Gas	29.1	32.2	35.4	35.6	33.8
Light Fuel Oil and Kerosene	4.4	4.3	4.1	4.4	3.6
Heavy Fuel Oil	0.8	0.6	2.0	1.9	1.5
Steam	0.0	0.0	0.0	0.1	0.1
Other[1]	1.5	3.6	2.7	2.4	2.5
Activity					
Floor Space (million m^2)[b]	24.40	26.76	28.51	31.41	32.42
Energy Intensity (GJ/m^2)[a,b]	**2.25**	**2.31**	**2.31**	**2.18**	**2.03**
Total Energy Use for Other Services (PJ)[a]	**16.5**	**17.9**	**18.7**	**18.0**	**16.7**
Energy Use by Energy Source (PJ)[a]					
Electricity	5.9	6.4	6.3	6.6	6.4
Natural Gas	8.2	8.8	10.5	10.0	8.9
Light Fuel Oil and Kerosene	1.8	1.6	0.7	0.5	0.3
Heavy Fuel Oil	0.3	0.2	0.3	0.4	0.4
Steam	0.0	0.0	0.0	0.0	0.0
Other[1]	0.4	0.8	1.0	0.5	0.6
Activity					
Floor Space (million m^2)[b]	12.54	13.07	13.33	13.47	13.49
Energy Intensity (GJ/m^2)[a,b]	**1.32**	**1.37**	**1.41**	**1.34**	**1.24**

1) "Other" includes coal and propane.

Sources:

a) Statistics Canada, *Report on Energy Supply-Demand in Canada, 1990-2013*, Ottawa, 2015.

b) Informetrica limited, *The Informetrica Model and Database*, 1990-2011. Data for 2012 onward were provided by Environment Canada. They assumed responsibility for operating *The Informetrica Model as Informetrica Limited* ceased its operations.

Commercial/Institutional Sector 3

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
69.1	**70.4**	**69.6**	**68.2**	**72.0**	**70.5**	**69.4**	**26.5%**
26.5	27.6	26.1	26.8	27.6	28.6	26.4	38.5%
34.7	36.1	38.2	36.1	38.2	35.5	37.6	29.3%
3.4	2.3	1.6	1.6	1.9	1.7	1.8	-59.2%
1.4	1.0	0.7	0.5	0.7	0.6	0.2	-80.2%
0.2	0.2	0.0	0.0	0.0	0.0	0.0	-100.0%
2.9	3.2	3.0	3.3	3.6	4.1	3.4	131.2%
33.02	34.16	35.03	35.71	36.26	36.73	37.58	54.0%
2.09	**2.06**	**1.99**	**1.91**	**1.98**	**1.92**	**1.85**	**-17.9%**
17.2	**17.1**	**16.4**	**15.6**	**16.3**	**15.5**	**15.3**	**-7.7%**
6.8	7.0	6.4	6.3	6.5	6.5	6.0	1.2%
9.0	8.9	9.1	8.5	8.8	8.0	8.5	4.5%
0.3	0.2	0.1	0.2	0.3	0.2	0.2	-90.3%
0.4	0.3	0.2	0.1	0.1	0.2	0.0	-90.1%
0.1	0.1	0.0	0.0	0.0	0.0	0.0	-100.0%
0.6	0.6	0.6	0.6	0.6	0.7	0.6	53.8%
13.46	13.46	13.45	13.38	13.34	13.29	13.30	6.1%
1.28	**1.27**	**1.22**	**1.17**	**1.22**	**1.17**	**1.15**	**-12.9%**

3 Commercial/Institutional Sector

Commercial/Institutional Energy Prices and Background Indicators

	1990	1995	2001	2005	2006
Energy Prices by Energy Source (incl. taxes)					
Natural Gas (cents/m^3)[a,d]	15.3	17.7	37.0	43.4	46.0
Light Fuel Oil (cents/litre)[e]	25.8	22.1	35.6	61.9	64.2
Heavy Fuel Oil (cents/litre)[e]	14.1	16.2	26.9	38.2	39.2
Electricity (40 kW/10,000 kWh)[1] (cents/kWh)[b,d]	7.7	9.5	8.8	10.1	10.4
Electricity (500 kW/100,000 kWh)[1] (cents/kWh)[b,d]	8.4	10.3	10.0	11.7	11.5
Background Indicators					
Commercial/Institutional Floor Space (million m^2)[c]	509.9	558.7	610.2	654.2	667.3
Commercial/Institutional Employees (thousands)[f]	8,708	9,302	10,693	11,677	12,032
Employees (per thousand m^2)[c]	17.1	16.6	17.5	17.8	18.0
Commercial/Institutional GDP (million $2007)[g]	557,211	617,678	775,608	878,357	913,504

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

Sources:

a) 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, 2015 (CANSIM).
b) Hydro-Québec, *Comparison of Electricity Prices in Major North American Cities*, 2013.
c) Informetrica limited, *The Informetrica Model and Database*, 1990-2011. Data for 2012 onward are provided by Environment Canada. They assumed responsibility for operating *The Informetrica Model* as Informetrica Limited ceased its operations.
d) Statistics Canada, *Report on Energy Supply-Demand in Canada, 1990-2013*, Ottawa, 2015.
e) Natural Resources Canada, Petroleum Resources Branch, Pipelines, Gas and LNG Division, Ottawa, 2015.
f) Statistics Canada, *Labour Force Survey*, Table 282-0008, and *Survey of Employment, Payrolls and Hours*, Tables 281-0005 and 281-0024, Ottawa, 2015 (CANSIM).
g) Statistics Canada, *Gross domestic product (GDP) at basic prices, by North American Industry Classification System (NAICS), annual*, Table 379-0031, Ottawa, 2015 (CANSIM).
Data prior to 1997 were estimated by Canadian Industrial Energy End-Use Data and Analysis Centre, 1990 to 2013, Simon Fraser University, 2015 and Natural Resources Canada.

Commercial/Institutional Sector

3

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
42.0	46.4	37.8	38.0	33.8	30.7	30.8	101.0%
68.6	94.3	60.9	70.5	94.6	96.9	98.5	282.6%
44.3	57.6	46.1	54.7	72.2	77.0	74.2	427.8%
10.7	10.8	10.7	10.8	12.2	12.2	12.7	64.9%
11.5	12.2	11.5	12.3	13.2	13.9	15.2	80.7%
679.7	693.2	703.8	713.9	721.6	732.1	743.1	45.7%
12,234	12,240	12,481	12,628	12,762	12,952	13,063	50.0%
18.0	17.7	17.7	17.7	17.7	17.7	17.6	3.0%
944,136	962,692	963,899	986,511	1,012,681	1,030,877	1,051,757	88.8%

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* (RESD) (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 presented in the IEUM are taken from the ICE survey for 1990 and from 1995 and beyond. Data for 1991 to1994 are from the Canadian Industrial End-Use Energy Data and Analysis Centre's (CIEEDAC's) report *Energy Intensity Indicators for Canadian Industry 1990–2013*. 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) at basic prices is from Statistics Canada, CANSIM Table 379-0031. Data prior to 1997 were estimated by 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.

4 Industrial Sector

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

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

4 Industrial Sector

Industrial Secondary Energy Use and GHG Emissions by Energy Source

	1990	1995	2001	2005	2006
Total Energy Use (PJ)[a,d]	**2,710.0**	**3,017.3**	**3,024.6**	**3,361.3**	**3,355.9**
Energy Use by Energy Source (PJ)[a,d]					
Electricity	658.4	732.8	792.6	841.8	833.7
Natural Gas	837.2	909.6	835.5	904.3	895.5
Diesel Fuel Oil, Light Fuel Oil and Kerosene	127.7	114.6	138.4	168.6	172.2
Heavy Fuel Oil	201.1	147.2	143.8	134.5	118.7
Still Gas and Petroleum Coke	309.9	412.0	414.7	469.8	509.0
LPG and NGL	26.0	32.3	41.5	53.6	52.7
Coal	49.4	46.9	61.0	53.9	57.4
Coke and Coke Oven Gas	131.3	134.4	129.3	125.5	134.6
Wood Waste and Pulping Liquor	341.0	457.6	429.8	570.5	545.2
Other[1]	27.91	30.14	38.27	38.94	37.02
Activity					
GDP (million $2007)[b]	284,856	305,871	3757,82	406,284	409,874
Energy Intensity (MJ/$2007 – GDP)[a,b,d]	**9.51**	**9.86**	**8.05**	**8.27**	**8.19**

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

Sources:

a) Statistics Canada, *Report on Energy Supply-Demand in Canada, 1990–2013*, Ottawa, 2015 (CANSIM).

b) Statistics Canada, *Gross domestic product (GDP) at basic prices, by North American Industry Classification System (NAICS), annual*, Table 379-0031, Ottawa, 2015 (CANSIM).
Data prior to 1997 were estimated by Canadian Industrial Energy End-Use Data and Analysis Centre, 1990 to 2013, Simon Fraser University, 2015 and Natural Resources Canada.

d) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2013*, Simon Fraser University, 2015.

Industrial Sector 4

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
3,483.6	**3,336.7**	**3,179.1**	**3,271.7**	**3,312.4**	**3,425.1**	**3,525.3**	**30.1%**
819.1	794.5	720.8	729.8	730.5	721.4	755.1	14.7%
1,036.3	1,036.7	1,006.8	1,111.3	1,185.1	1,292.7	1,351.9	61.5%
185.9	190.2	174.4	210.2	223.6	220.0	222.0	73.9%
119.7	101.3	89.7	60.4	44.8	43.9	40.1	-80.1%
526.4	473.7	512.6	493.4	482.1	498.0	489.8	58.1%
58.0	62.1	57.0	67.0	72.4	86.0	73.3	181.7%
57.5	57.1	48.2	48.2	56.5	54.3	51.1	3.4%
126.4	125.8	97.7	109.8	120.4	120.0	97.8	-25.5%
519.9	462.4	432.7	420.7	368.7	357.3	412.3	20.9%
34.55	32.92	39.3	21.05	28.28	31.56	31.81	14.0%
409,802	401,038	360,572	381,800	396,455	404,662	409,523	43.8%
8.5	**8.32**	**8.82**	**8.57**	**8.36**	**8.46**	**8.61**	**-9.5%**

Industrial Secondary Energy Use and GHG Emissions by Energy Source (Cont.)

	1990	1995	2001	2005	2006
Total GHG Emissions Including Electricity (Mt of CO_2e)[a,c,d]	**141.1**	**147.6**	**159.3**	**167.7**	**168.1**
GHG Emissions by Energy Source (Mt of CO_2e)[a,c,d]					
Electricity	37.1	37.0	49.5	47.7	46.0
Natural Gas	43.6	47.2	44.3	49.3	49.1
Diesel Fuel Oil, Light Fuel Oil and Kerosene	9.3	8.4	10.2	12.4	12.7
Heavy Fuel Oil	15.3	11.2	10.8	10.1	8.9
Still Gas and Petroleum Coke	17.2	24.0	23.8	27.7	29.5
LPG and NGL	1.6	2.0	2.5	3.3	3.2
Coal	4.5	4.3	5.5	4.9	5.2
Coke and Coke Oven Gas	12.2	12.9	12.2	11.7	12.7
Wood Waste and Pulping Liquor	0.2	0.3	0.3	0.4	0.4
Other[1]	0.1	0.3	0.2	0.3	0.3
GHG Intensity (tonnes/TJ)[a,c,d]	**52.1**	**48.9**	**52.7**	**49.9**	**50.1**
Total GHG Emissions Excluding Electricity (Mt of CO_2e)[a,c,d]	**104.05**	**110.57**	**109.83**	**119.98**	**122.06**
GHG Intensity (tonnes/TJ)[a,c,d]	**38.4**	**36.6**	**36.3**	**35.7**	**36.4**

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

Sources:

a) Statistics Canada, *Report on Energy Supply-Demand in Canada, 1990–2013*, Ottawa, 2015 (CANSIM).
c) Environment Canada, *National Inventory Report 1990-2013: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2015.
d) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2013*, Simon Fraser University, 2015.

Industrial Sector 4

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
178.8	**170.3**	**158.5**	**166.8**	**166.7**	**173.8**	**173.6**	**23.0%**
45.4	41.5	34.2	35.9	31.7	28.6	29.4	-20.6%
58.4	58.2	57.2	63.2	67.3	73.8	76.8	76.2%
13.8	14.1	13.0	15.6	16.6	16.4	16.5	77.6%
9.0	7.6	6.7	4.5	3.4	3.3	3.0	-80.4%
30.6	27.2	29.6	27.9	26.2	29.6	29.1	68.9%
3.6	3.8	3.5	4.1	4.4	5.3	4.5	183.5%
5.2	5.2	4.4	4.4	5.2	5.0	4.7	3.5%
12.1	12.0	9.3	10.5	11.4	11.3	8.9	-26.6%
0.4	0.4	0.3	0.3	0.3	0.2	0.3	40.0%
0.4	0.4	0.3	0.3	0.3	0.4	0.4	241.7%
51.3	**51.0**	**49.9**	**51.0**	**50.3**	**50.8**	**49.3**	**-5.4%**
133.42	**128.78**	**124.32**	**130.9**	**134.98**	**145.19**	**144.2**	**38.6%**
38.3	**38.6**	**39.1**	**40.0**	**40.8**	**42.4**	**40.9**	**6.6%**

4 Industrial Sector

Industrial Secondary Energy Use by Industry

	1990	1995	2001	2005	2006
Total Energy Use (PJ)[a,c]	**2,710.0**	**3,017.3**	**3,024.6**	**3,361.3**	**3,355.9**
Energy Use by Industry (PJ)[a,c]					
Copper, Nickel, Lead and Zinc Mines	36.6	29.2	24.5	24.4	23.2
Iron Mines	39.8	37.3	29.9	32.3	31.1
Gold and Silver Mines	13.2	12.6	13.7	13.0	12.6
Other Metal Mines	9.1	5.6	8.3	6.6	6.7
Salt Mines	2.9	3.4	2.6	2.5	2.6
Potash Mines	27.4	31.8	28.5	28.6	34.0
Other Non-Metal Mines	8.0	6.3	7.5	9.2	9.3
Upstream Mining	210.7	319.8	403.0	549.0	591.0
Fruit and Vegetable Industries	9.1	9.8	13.0	13.8	13.8
Dairy Products Industry	11.7	10.5	11.7	10.7	10.1
Meat Products Industries	12.5	13.1	18.1	18.4	18.9
Bakery Products Industries	9.2	6.4	8.2	9.6	9.7
Beverage Industries (excluding Breweries)	3.3	5.4	5.4	6.3	6.0
Breweries Industries	7.8	6.1	5.6	5.1	4.2
Tobacco Products Industries	1.3	1.0	1.0	0.8	0.7
Textile Mills	13.9	14.7	8.5	7.7	7.3
Textile Products Mills	6.8	6.9	4.1	3.5	3.0
Clothing Industries	6.0	5.3	5.1	2.1	1.8
Leather and Allied Products Industries	1.4	1.0	1.1	0.3	0.2
Wood Products Industries	44.3	47.1	48.8	50.3	51.3
Pulp Mills	299.0	370.6	343.8	347.4	318.0
Paper Mills (except Newsprint)	99.4	107.3	100.5	120.6	86.9
Newsprint Mills	245.6	271.9	242.6	213.9	192.4
Paperboard Mills	62.1	65.2	67.8	65.1	55.6
Other Pulp and Paper Manufacturing	22.2	17.6	39.8	112.9	125.4
Converted Paper Products Industry	11.1	11.0	16.4	19.8	16.5
Printing and Related Support Activities	10.9	7.9	8.6	8.9	8.5
Petroleum Refining	323.3	356.3	354.8	356.3	370.5

Sources:

a) Statistics Canada, *Report on Energy Supply-Demand in Canada, 1990–2013*, Ottawa, 2015 (CANSIM).

c) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2013*, Simon Fraser University, 2015.

Industrial Sector 4

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
3,483.6	**3,336.7**	**3,179.1**	**3,271.7**	**3,312.4**	**3,425.1**	**3,525.3**	**30.1%**
24.8	27.9	23.7	25.4	26.4	29.7	30.3	-17.1%
28.8	40.7	44.3	38.7	30.9	34.2	33.5	-15.6%
12.9	13.0	14.1	14.6	16.2	18.3	23.2	76.5%
6.9	7.3	5.8	5.7	6.5	7.3	7.5	-17.9%
2.5	2.6	2.8	2.2	2.1	2.1	2.3	-23.1%
35.4	33.3	18.0	23.2	38.7	35.8	31.2	13.7%
9.0	10.7	9.5	9.4	9.1	8.8	8.4	6.0%
741.9	735.4	822.9	889.7	913.7	1,014.4	1,045.6	396.2%
13.3	11.5	14.1	12.0	11.8	13.4	11.0	21.7%
9.4	9.1	9.9	8.8	8.9	9.5	9.0	-22.7%
18.0	20.5	25.4	20.9	21.4	26.4	23.5	87.1%
9.9	9.5	10.9	8.4	7.7	10.4	9.5	3.5%
5.9	5.2	6.1	6.2	5.2	5.8	5.6	68.7%
4.1	3.9	3.7	3.0	2.7	3.1	2.9	-62.9%
0.5	0.3	0.2	0.4	0.3	0.3	0.3	-75.4%
6.3	4.8	3.7	3.5	3.2	3.9	4.5	-67.3%
2.8	2.5	2.1	2.1	2.0	2.3	2.8	-59.1%
1.5	1.5	1.3	1.2	1.3	1.6	1.5	-75.6%
0.3	0.3	0.3	0.3	0.2	0.2	0.3	-82.1%
52.2	52.8	48.6	58.4	59.8	62.4	61.2	38.2%
299.5	254.9	238.1	241.4	216.2	202.3	249.9	-16.4%
81.8	73.9	81.6	89.8	84.6	82.3	64.5	-35.1%
182.6	157.1	117.9	122.7	100.3	88.5	110.1	-55.2%
47.6	46.5	40.9	48.4	47.2	40.5	45.0	-27.5%
138.8	121.1	123.7	77.6	95.1	111.4	109.2	392.5%
18.1	14.6	22.0	15.6	13.9	14.3	20.9	87.8%
8.3	9.7	11.6	9.9	9.2	9.8	10.2	-6.0%
379.3	345.8	338.2	335.7	320.4	343.4	336.6	4.1%

Industrial Secondary Energy Use by Industry (Cont.)

	1990	1995	2001	2005	2006
Petrochemical Industry	32.1	33.8	44.3	62.1	60.2
Industrial Gas Industry	5.9	5.8	8.9	8.3	13.7
Alkali and Chlorine Manufacturing	30.4	29.9	24.5	16.0	14.2
All Other Basic Inorganic Chemical Manufacturing	28.6	30.7	34.0	37.4	33.9
Chemical Fertilizer (except Potash) Manufacturing	31.9	55.9	62.1	53.4	55.0
Other Chemical Manufacturing	94.2	92.1	56.6	58.8	70.7
Resin and Synthetic Rubber Industries	48.1	30.6	36.7	24.6	33.2
Motor Vehicle Plastic Parts Manufacturing	2.8	2.7	5.2	4.7	4.5
Rubber Products Industries	9.5	9.9	10.9	10.1	9.5
Cement Industry	59.3	61.9	65.5	71.9	74.7
Iron and Steel	219.4	247.0	229.3	239.7	251.9
Primary Production of Alumina and Aluminum	109.8	138.2	159.9	187.2	188.5
Other Non-Ferrous Smelting and Refining	73.5	81.0	86.2	73.1	73.7
Fabricated Metal Products Industries	37.3	36.4	37.3	40.7	38.3
Machinery Industries	12.2	13.7	13.3	18.0	16.7
Computer and Electronic Products Industries	4.6	5.9	3.7	5.6	5.4
Electrical Equipment and Components Industries	8.5	7.7	6.3	7.3	6.8
Motor Vehicle Industry	18.5	24.6	23.6	22.6	21.0
Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	3.1	2.9	2.8	3.5	3.1
Motor Vehicle Electrical and Electronic Equipment Manufacturing	0.3	0.3	0.5	0.6	0.3
Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	2.1	2.1	1.6	1.4	1.3
Motor Vehicle Brake System Manufacturing	1.8	2.1	2.9	1.1	0.9
Motor Vehicle Transmission and Power Train Parts Manufacturing	3.0	2.0	2.7	3.7	3.5
Motor Vehicle Seating and Interior Trim Manufacturing	1.2	1.2	1.7	1.9	1.8
Motor Vehicle Metal Stamping	3.3	3.5	3.8	3.8	3.7
Other Motor Vehicle Parts Manufacturing	3.2	3.2	4.2	5.0	4.4

Industrial Sector 4

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
60.7	59.5	55.3	41.4	53.3	46.8	54.4	69.2%
12.8	10.8	13.9	16.0	15.3	23.0	24.6	315.0%
8.7	8.1	7.4	2.2	2.4	2.6	2.6	-91.5%
28.8	27.9	24.7	22.6	24.5	26.5	24.6	-13.9%
52.9	49.2	45.1	50.0	55.0	52.9	53.8	68.6%
79.0	86.0	85.0	116.1	121.0	120.4	117.3	24.4%
32.4	34.8	38.0	40.8	48.4	47.3	47.9	-0.4%
3.9	3.7	2.6	3.5	3.7	3.5	3.1	11.5%
9.2	8.3	8.3	7.6	7.3	8.0	6.6	-30.6%
66.8	65.0	60.4	55.2	56.7	57.5	55.6	-6.4%
253.8	246.8	187.3	207.1	226.8	230.9	209.3	-4.6%
192.2	195.3	172.9	176.3	187.2	175.8	186.6	70.0%
63.0	65.2	54.1	62.8	60.6	53.0	46.0	-37.4%
39.3	41.9	35.8	31.2	32.7	38.3	34.7	-6.8%
17.6	16.6	15.9	15.1	15.9	20.6	20.5	68.1%
5.8	5.3	5.1	5.4	5.5	6.9	5.8	26.2%
6.4	6.0	5.3	4.7	4.5	5.5	6.5	-24.0%
20.2	18.4	14.9	13.5	14.3	15.2	16.0	-13.3%
3.2	2.5	2.1	1.7	2.1	2.2	1.6	-50.5%
0.5	0.3	0.3	0.4	0.3	0.4	0.3	24.0%
1.3	1.0	1.2	0.6	1.0	1.1	0.8	-60.7%
0.7	0.8	0.4	0.4	0.4	0.4	0.3	-82.7%
3.2	2.7	2.0	2.0	1.5	3.4	1.7	-44.0%
1.6	1.4	1.4	1.5	1.4	1.4	1.2	-4.1%
3.6	3.4	2.6	2.8	2.6	3.1	2.9	-11.0%
4.5	4.8	4.4	3.2	2.4	2.7	2.4	-25.1%

Industrial Secondary Energy Use by Industry (Cont.)

	1990	1995	2001	2005	2006
Furniture and Related Products Industries	6.7	6.7	10.5	11.6	10.0
Miscellaneous Manufacturing	4.7	4.1	5.5	6.1	4.8
Other Manufacturing n.e.c.	231.0	244.3	186.9	242.7	236.0
Construction	66.9	48.6	50.6	70.9	71.9
Forestry	7.7	7.9	20.1	28.8	31.3
Activity					
GDP (million $2007)[b]	284,856	305,871	375,782	406,284	409,874
Energy Intensity (MJ/$2007 – GDP)[a,b,c]	**9.5**	**9.9**	**8.1**	**8.3**	**8.2**

Sources:

a) Statistics Canada, *Report on Energy Supply-Demand in Canada, 1990–2013*, Ottawa, 2015 (CANSIM).

b) Statistics Canada, *Gross domestic product (GDP) at basic prices, by North American Industry Classification System (NAICS), annual*, Table 379-0031, Ottawa, 2015 (CANSIM).
Data prior to 1997 were estimated by Canadian Industrial Energy End-Use Data and Analysis Centre, 1990 to 2013, Simon Fraser University, 2015 and Natural Resources Canada.

c) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2013*, Simon Fraser University, 2015.

Industrial Sector 4

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
10.5	11.0	10.6	9.2	9.1	9.3	9.0	33.7%
6.0	6.5	7.8	6.9	6.8	6.9	6.7	42.4%
248.6	231.7	185.7	201.2	196.6	176.9	221.8	-4.0%
74.5	74.7	65.9	73.1	78.6	81.6	81.2	21.4%
30.0	30.9	21.4	22.3	19.8	19.0	19.1	146.5%
409,802	401,038	360,572	381,800	396,455	404,662	409,523	43.8%
8.5	**8.3**	**8.8**	**8.6**	**8.4**	**8.5**	**8.6**	**-9.5%**

4 Industrial Sector

Industrial GHG Emissions by Industry – Including Electricity-Related Emissions[1]

	1990	1995	2001	2005	2006
Total GHG Emissions Including Electricity (Mt of CO_2e)[a,b,c]	**141.1**	**147.6**	**159.3**	**167.7**	**168.1**
GHG Emissions by Industry (Mt of CO_2e)[a,b,c]					
Copper, Nickel, Lead and Zinc Mines	2.3	1.7	1.6	1.6	1.5
Iron Mines	3.1	2.7	2.3	2.3	2.3
Gold and Silver Mines	0.8	0.7	0.9	0.8	0.8
Other Metal Mines	0.6	0.3	0.5	0.4	0.4
Salt Mines	0.2	0.2	0.2	0.2	0.2
Potash Mines	1.8	2.1	1.9	1.8	2.2
Other Non-Metal Mines	0.5	0.4	0.5	0.7	0.7
Upstream Mining	13.1	19.4	25.6	34.3	36.8
Fruit and Vegetable Industries	0.5	0.5	0.8	0.8	0.8
Dairy Products Industry	0.6	0.5	0.6	0.6	0.5
Meat Products Industries	0.7	0.7	1.0	1.0	1.0
Bakery Products Industries	0.5	0.3	0.4	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	0.3	0.2
Tobacco Products Industries	0.1	0.1	0.1	0.0	0.0
Textile Mills	0.7	0.8	0.5	0.4	0.4
Textile Products Mills	0.4	0.4	0.2	0.2	0.2
Clothing Industries	0.3	0.3	0.3	0.1	0.1
Leather and Allied Products Industries	0.1	0.1	0.1	0.0	0.0
Wood Products Industries	1.5	1.6	1.7	1.8	1.7
Pulp Mills	6.6	6.0	6.7	5.7	5.2
Paper Mills (except Newsprint)	3.4	3.1	3.5	3.5	2.7
Newsprint Mills	11.2	10.5	10.9	8.3	6.8
Paperboard Mills	2.2	2.0	2.2	1.9	1.6
Other Pulp and Paper Manufacturing	1.2	1.0	0.7	0.8	1.4

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

Sources:

a) Statistics Canada, *Report on Energy Supply-Demand in Canada, 1990–2013*, Ottawa, 2015 (CANSIM).
b) Environment Canada, *National Inventory Report 1990-2013: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2015.
c) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2013*, Simon Fraser University, 2015.

Industrial Sector 4

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
178.8	**170.3**	**158.5**	**166.8**	**166.7**	**173.8**	**173.6**	**23.0%**
1.6	1.7	1.4	1.5	1.5	1.7	1.7	-26.2%
2.1	2.9	3.2	2.7	2.0	2.2	2.0	-35.1%
0.8	0.8	0.8	0.9	0.9	1.0	1.3	53.7%
0.4	0.5	0.4	0.3	0.4	0.4	0.4	-29.3%
0.2	0.2	0.2	0.1	0.1	0.1	0.1	-35.0%
2.3	2.1	1.1	1.4	2.4	2.1	1.8	0.6%
0.7	0.8	0.7	0.7	0.6	0.6	0.6	13.0%
47.0	46.4	51.6	55.9	56.7	63.9	65.3	398.9%
0.8	0.6	0.8	0.7	0.6	0.7	0.5	6.0%
0.5	0.5	0.5	0.5	0.4	0.4	0.4	-35.9%
0.9	1.0	1.3	1.0	1.0	1.2	1.1	61.8%
0.5	0.5	0.5	0.4	0.4	0.5	0.4	-10.4%
0.3	0.3	0.3	0.3	0.3	0.3	0.3	44.4%
0.2	0.2	0.2	0.2	0.1	0.2	0.1	-68.3%
0.0	0.0	0.0	0.0	0.0	0.0	0.0	-85.7%
0.3	0.2	0.2	0.2	0.2	0.2	0.2	-71.6%
0.2	0.1	0.1	0.1	0.1	0.1	0.1	-63.9%
0.1	0.1	0.1	0.1	0.1	0.1	0.1	-78.1%
0.0	0.0	0.0	0.0	0.0	0.0	0.0	-85.7%
1.8	1.6	1.3	1.5	1.4	1.6	1.5	0.0%
5.1	4.1	3.5	3.7	3.3	2.9	3.4	-48.1%
2.7	2.4	2.3	2.2	2.0	1.5	1.6	-53.8%
6.8	5.3	3.6	3.7	3.0	2.5	2.7	-75.9%
1.5	1.4	1.1	1.2	1.3	1.1	1.1	-48.2%
1.3	1.2	2.0	1.2	1.3	1.7	1.7	44.4%

Industrial GHG Emissions by Industry – Including Electricity-Related Emissions[1] (Cont.)

	1990	1995	2001	2005	2006
Converted Paper Products Industry	0.6	0.6	0.9	1.0	0.8
Printing and Related Support Activities	0.6	0.4	0.5	0.5	0.5
Petroleum Refining	17.9	20.4	20.3	20.9	21.1
Petrochemical Industry	1.7	1.5	2.2	2.7	2.6
Industrial Gas Industry	0.3	0.3	0.5	0.5	0.8
Alkali and Chlorine Manufacturing	1.6	1.5	1.4	0.9	0.8
All Other Basic Inorganic Chemical Manufacturing	1.6	1.4	2.0	2.0	1.8
Chemical Fertilizer (except Potash) Manufacturing	1.6	2.8	3.2	2.7	2.8
Other Chemical Manufacturing	4.0	4.4	2.8	3.1	3.7
Resin and Synthetic Rubber Industries	2.5	1.4	1.8	1.1	1.5
Motor Vehicle Plastic Parts Manufacturing	0.2	0.1	0.3	0.3	0.2
Rubber Products Industries	0.5	0.5	0.6	0.6	0.5
Cement Industry	4.5	4.7	5.2	5.9	6.2
Iron and Steel	16.5	18.2	17.4	17.5	18.7
Primary Production of Alumina and Aluminum	6.2	7.1	9.9	10.7	10.5
Other Non-Ferrous Smelting and Refining	4.7	4.8	5.5	4.5	4.5
Fabricated Metal Products Industries	2.0	1.8	2.0	2.1	2.0
Machinery Industries	0.7	0.7	0.7	1.0	0.9
Computer and Electronic Products Industries	0.3	0.3	0.2	0.3	0.3
Electrical Equipment and Components Industries	0.5	0.4	0.3	0.4	0.4
Motor Vehicle Industry	1.0	1.3	1.3	1.2	1.1
Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	0.2	0.1	0.1	0.2	0.2

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

Industrial Sector 4

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
0.9	0.7	1.0	0.7	0.6	0.6	0.9	45.0%
0.4	0.5	0.6	0.5	0.4	0.4	0.5	-22.4%
21.6	19.1	18.8	18.5	16.6	19.3	18.9	5.4%
2.8	2.7	2.6	1.9	2.5	2.2	2.6	50.9%
0.7	0.6	0.7	0.8	0.7	1.1	1.2	257.6%
0.4	0.3	0.3	0.1	0.1	0.1	0.1	-93.9%
1.5	1.4	1.2	1.1	1.1	1.1	1.1	-31.8%
2.7	2.5	2.2	2.5	2.7	2.6	2.6	58.5%
4.2	4.4	4.0	5.5	5.6	5.4	5.2	29.8%
1.5	1.6	1.6	1.9	1.9	2.0	1.9	-24.2%
0.2	0.2	0.1	0.2	0.2	0.2	0.1	-6.7%
0.5	0.5	0.5	0.4	0.4	0.4	0.3	-40.7%
5.5	5.3	4.9	4.5	4.6	4.4	4.2	-6.5%
18.8	18.2	13.6	15.0	16.5	16.6	14.3	-13.1%
10.7	10.4	8.3	8.7	8.3	7.2	7.5	20.9%
4.1	4.1	3.2	3.8	3.5	3.0	2.7	-42.8%
2.1	2.1	1.8	1.6	1.6	1.8	1.6	-17.9%
0.9	0.9	0.8	0.8	0.8	1.0	0.9	44.6%
0.3	0.3	0.2	0.3	0.3	0.3	0.2	-4.0%
0.3	0.3	0.3	0.2	0.2	0.2	0.3	-37.8%
1.1	1.0	0.7	0.7	0.7	0.7	0.7	-27.0%
0.2	0.1	0.1	0.1	0.1	0.1	0.1	-64.7%

Industrial GHG Emissions by Industry – Including Electricity-Related Emissions[1] (Cont.)

	1990	1995	2001	2005	2006
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	0.2	0.1	0.1
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	0.2	0.3	0.2
Furniture and Related Products Industries	0.3	0.3	0.6	0.6	0.5
Miscellaneous Manufacturing	0.3	0.2	0.3	0.3	0.3
Other Manufacturing n.e.c.	12.4	12.0	9.7	10.8	9.5
Construction	4.3	3.2	3.4	4.7	4.8
Forestry	0.6	0.6	1.5	2.1	2.3
GHG Intensity (tonnes/TJ)[a,b,c]	**52.1**	**48.9**	**52.7**	**49.9**	**50.1**

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

Sources:

a) Statistics Canada, *Report on Energy Supply-Demand in Canada, 1990–2013*, Ottawa, 2015 (CANSIM).
b) Environment Canada, *National Inventory Report 1990-2013: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2015.
c) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2013*, Simon Fraser University, 2015.

Industrial Sector 4

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
0.1	0.1	0.1	0.0	0.1	0.1	0.0	-63.6%
0.0	0.0	0.0	0.0	0.0	0.0	0.0	-90.0%
0.2	0.1	0.1	0.1	0.1	0.2	0.1	-72.0%
0.1	0.1	0.1	0.1	0.1	0.1	0.1	-16.7%
0.2	0.2	0.1	0.1	0.1	0.1	0.1	-27.8%
0.2	0.3	0.2	0.2	0.1	0.1	0.1	-42.1%
0.5	0.5	0.5	0.4	0.4	0.4	0.4	15.2%
0.3	0.3	0.4	0.3	0.3	0.3	0.3	20.0%
10.5	9.7	6.9	8.9	9.4	8.1	9.3	-25.1%
5.0	5.0	4.5	4.9	5.3	5.5	5.5	26.7%
2.2	2.3	1.6	1.6	1.5	1.4	1.4	150.0%
51.3	**51.0**	**49.9**	**51.0**	**50.3**	**50.8**	**49.3**	**-5.4%**

4 Industrial Sector

Industrial GHG Emissions by Industry – Excluding Electricity-Related Emissions[1]

	1990	1995	2001	2005	2006
Total GHG Emissions Excluding Electricity (Mt of CO_2e)[a,b,c]	**104.1**	**110.6**	**109.8**	**120.0**	**122.1**
GHG Emissions by Industry (Mt of CO_2e)[a,b,c]					
Copper, Nickel, Lead and Zinc Mines	1.1	0.8	0.8	0.8	0.8
Iron Mines	2.3	2.0	1.6	1.6	1.9
Gold and Silver Mines	0.4	0.4	0.4	0.3	0.3
Other Metal Mines	0.3	0.2	0.3	0.2	0.3
Salt Mines	0.2	0.2	0.1	0.1	0.1
Potash Mines	1.5	1.7	1.6	1.5	1.8
Other Non-Metal Mines	0.4	0.3	0.5	0.6	0.6
Upstream Mining	10.4	16.3	21.5	30.4	32.7
Fruit and Vegetable Industries	0.4	0.5	0.6	0.6	0.6
Dairy Products Industry	0.5	0.4	0.5	0.4	0.4
Meat Products Industries	0.5	0.5	0.7	0.7	0.7
Bakery Products Industries	0.4	0.3	0.3	0.3	0.3
Beverage Industries (excluding Breweries)	0.1	0.2	0.2	0.3	0.3
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	0.3	0.2	0.2
Textile Products Mills	0.3	0.3	0.2	0.1	0.1
Clothing Industries	0.2	0.2	0.2	0.1	0.0
Leather and Allied Products Industries	0.0	0.0	0.0	0.0	0.0
Wood Products Industries	1.1	0.9	0.9	0.8	0.9
Pulp Mills	4.1	3.8	3.4	2.6	2.2
Paper Mills (except Newsprint)	2.2	2.2	1.9	1.7	1.1
Newsprint Mills	5.5	4.5	3.3	2.0	1.5
Paperboard Mills	1.7	1.5	1.5	1.2	1.0
Other Pulp and Paper Manufacturing	1.2	0.3	0.7	0.6	1.0

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

Sources:

a) Statistics Canada, *Report on Energy Supply-Demand in Canada, 1990–2013*, Ottawa, 2015 (CANSIM).
b) Environment Canada, *National Inventory Report 1990-2013: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2015.
c) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2013*, Simon Fraser University, 2015.

Industrial Sector 4

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
133.4	**128.8**	**124.3**	**130.9**	**135.0**	**145.2**	**144.2**	**38.6%**
0.9	1.0	0.9	0.9	0.9	1.1	1.1	3.8%
1.6	2.2	2.6	2.1	1.5	1.6	1.3	-42.0%
0.3	0.3	0.3	0.4	0.5	0.6	0.8	102.6%
0.3	0.3	0.3	0.2	0.3	0.3	0.3	-20.6%
0.1	0.1	0.2	0.1	0.1	0.1	0.1	-35.3%
1.9	1.7	0.9	1.1	2.0	1.8	1.5	0.0%
0.6	0.7	0.6	0.6	0.6	0.6	0.6	37.2%
42.7	42.9	48.4	52.9	54.1	61.2	62.0	496.2%
0.6	0.5	0.6	0.5	0.5	0.5	0.4	-4.8%
0.3	0.3	0.4	0.3	0.3	0.3	0.3	-37.0%
0.6	0.6	0.8	0.7	0.7	0.9	0.8	80.4%
0.3	0.3	0.3	0.2	0.2	0.3	0.3	-30.0%
0.2	0.2	0.2	0.2	0.2	0.2	0.2	75.0%
0.2	0.2	0.2	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%
0.2	0.1	0.1	0.1	0.1	0.1	0.1	-74.0%
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%
1.0	0.8	0.7	0.7	0.7	0.9	0.9	-16.2%
2.3	1.9	1.8	1.8	1.8	1.5	1.9	-53.8%
1.2	0.9	0.9	0.8	0.8	0.6	0.6	-71.9%
1.6	1.0	0.7	0.6	0.5	0.5	0.5	-90.3%
1.0	0.9	0.7	0.8	1.0	0.8	0.9	-46.7%
1.0	0.9	1.4	0.9	1.1	1.5	1.4	17.9%

Industrial GHG Emissions by Industry – Excluding Electricity-Related Emissions[1] (Cont.)

	1990	1995	2001	2005	2006
Converted Paper Products Industry	0.4	0.4	0.5	0.6	0.5
Printing and Related Support Activities	0.3	0.2	0.3	0.2	0.2
Petroleum Refining	16.8	19.5	19.1	19.9	20.0
Petrochemical Industry	1.5	1.4	1.9	2.5	2.4
Industrial Gas Industry	0.0	0.0	0.1	0.0	0.0
Alkali and Chlorine Manufacturing	0.8	0.8	0.5	0.2	0.2
All Other Basic Inorganic Chemical Manufacturing	0.4	0.3	0.4	0.4	0.3
Chemical Fertilizer (except Potash) Manufacturing	1.4	2.6	2.8	2.4	2.5
Other Chemical Manufacturing	2.9	3.3	2.0	2.0	2.5
Resin and Synthetic Rubber Industries	2.1	1.0	1.2	0.5	0.9
Motor Vehicle Plastic Parts Manufacturing	0.1	0.1	0.2	0.1	0.1
Rubber Products Industries	0.3	0.4	0.4	0.3	0.3
Cement Industry	4.1	4.4	4.7	5.5	5.8
Iron and Steel	14.8	16.7	14.9	15.4	16.5
Primary Production of Alumina and Aluminum	0.5	0.7	1.0	1.2	0.9
Other Non-Ferrous Smelting and Refining	2.9	2.8	2.9	2.5	2.6
Fabricated Metal Products Industries	1.4	1.4	1.3	1.4	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	0.9	0.8	0.8
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
Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	0.1	0.1	0.1	0.0	0.0

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

Industrial Sector 4

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
0.6	0.5	0.8	0.5	0.4	0.4	0.6	37.2%
0.2	0.2	0.3	0.2	0.2	0.2	0.2	-22.6%
20.6	18.1	17.8	17.4	15.7	18.6	18.2	8.1%
2.5	2.5	2.4	1.8	2.3	2.1	2.4	57.1%
0.0	0.0	0.3	0.4	0.4	0.9	1.0	2475.0%
0.1	0.1	0.0	0.0	0.0	0.0	0.0	-98.8%
0.3	0.3	0.2	0.2	0.3	0.3	0.4	4.8%
2.4	2.2	2.0	2.3	2.5	2.4	2.4	70.9%
2.5	2.9	2.8	3.9	4.1	4.2	4.0	37.9%
0.9	1.0	1.2	1.4	1.4	1.5	1.4	-30.2%
0.1	0.1	0.1	0.1	0.1	0.1	0.1	-12.5%
0.3	0.3	0.3	0.2	0.2	0.2	0.2	-42.4%
5.0	4.9	4.6	4.2	4.3	4.0	3.9	-4.4%
16.9	16.4	12.3	13.5	15.1	15.3	13.2	-10.6%
1.1	1.1	0.6	0.7	1.0	1.0	1.0	88.9%
2.8	2.6	2.1	2.5	2.5	2.1	2.0	-32.6%
1.3	1.3	1.2	1.0	1.1	1.2	1.1	-23.1%
0.5	0.5	0.5	0.5	0.5	0.6	0.6	59.5%
0.1	0.1	0.1	0.1	0.1	0.1	0.1	14.3%
0.2	0.2	0.1	0.1	0.1	0.1	0.2	-54.5%
0.7	0.7	0.5	0.4	0.5	0.5	0.5	-26.0%
0.1	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	–
0.0	0.0	0.0	0.0	0.0	0.0	0.0	-71.4%

Industrial GHG Emissions by Industry – Excluding Electricity-Related Emissions[1] (Cont.)

	1990	1995	2001	2005	2006
Motor Vehicle Brake System Manufacturing	0.1	0.1	0.1	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	0.2	0.1
Furniture and Related Products Industries	0.2	0.2	0.4	0.4	0.2
Miscellaneous Manufacturing	0.2	0.1	0.2	0.2	0.1
Other Manufacturing n.e.c.	10.4	10.2	6.5	8.0	6.7
Construction	4.3	3.2	3.4	4.7	4.8
Forestry	0.6	0.6	1.5	2.1	2.3
GHG Intensity (tonnes/TJ)[a,b,c]	**38.4**	**36.6**	**36.3**	**35.7**	**36.4**

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

Sources:

a) Statistics Canada, *Report on Energy Supply-Demand in Canada, 1990–2013*, Ottawa, 2015 (CANSIM).
b) Environment Canada, *National Inventory Report 1990-2013: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2015.
c) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2013*, Simon Fraser University, 2015.

Industrial Sector 4

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
0.0	0.0	0.0	0.0	0.0	0.0	0.0	-83.3%
0.1	0.1	0.0	0.0	0.0	0.1	0.0	-85.7%
0.1	0.0	0.0	0.0	0.0	0.0	0.0	-25.0%
0.1	0.1	0.1	0.1	0.1	0.1	0.1	-22.2%
0.1	0.2	0.1	0.1	0.1	0.1	0.1	-58.3%
0.2	0.2	0.2	0.2	0.2	0.2	0.2	10.0%
0.1	0.2	0.2	0.2	0.2	0.2	0.2	26.7%
7.7	7.0	4.7	6.3	6.9	6.3	6.9	-33.2%
5.0	5.0	4.5	4.9	5.3	5.5	5.5	26.7%
2.2	2.3	1.6	1.6	1.5	1.4	1.4	150.0%
38.3	**38.6**	**39.1**	**40.0**	**40.8**	**42.4**	**40.9**	**6.6%**

4 Industrial Sector

Industrial Gross Domestic Product by Industry

	1990	1995	2001	2005	2006
Total Gross Domestic Product (million $2007)[a]	**284,856**	**305,871**	**375,782**	**406,284**	**409,874**
Gross Domestic Product by Industry (million $2007)[a]					
Copper, Nickel, Lead and Zinc Mines	12,725	11,055	11,871	10,963	11,529
Iron Mines	2,086	1,791	1,319	1,484	1,627
Gold and Silver Mines	3,745	3,170	3,523	2,475	1,962
Other Metal Mines	1,596	1,204	2,029	2,044	1,867
Salt Mines	201	234	278	264	286
Potash Mines	782	967	1,021	1,405	1,032
Other Non-Metal Mines	205	234	679	1,318	1,334
Upstream Mining	61,692	81,899	88,184	97,934	101,578
Fruit and Vegetable Industries	1,297	1,626	2,416	2,121	2,119
Dairy Products Industry	2,801	2,453	2,518	2,423	2,509
Meat Products Industries	3,961	3,579	5,036	5,703	5,829
Bakery Products Industries	1,682	2,055	2,352	2,355	2,489
Beverage Industries (excluding Breweries)	1,322	1,238	1,773	2,079	2,216
Breweries Industries	3,202	3,419	2,980	3,240	3,290
Tobacco Products Industries	3,847	3,847	2,770	1,758	1,492
Textile Mills	1,666	1,687	1,749	1,310	1,118
Textile Products Mills	922	887	1,256	1,139	1,033
Clothing Industries	3,444	3,330	3,947	2,630	2,435
Leather and Allied Products Industries	672	517	424	207	185
Wood Products Industries	3,152	3,307	3,890	4,860	4,724
Pulp Mills	912	1,056	1,335	1,372	1,271
Paper Mills (except Newsprint)	1,400	1,417	1,432	2,106	1,733
Newsprint Mills	2,218	2,333	2,365	2,304	2,084
Paperboard Mills	755	758	765	621	594
Other Pulp and Paper Manufacturing	2,999	3,453	3,903	3,994	3,661

Source:

a) Statistics Canada, *Gross domestic product (GDP) at basic prices, by North American Industry Classification System (NAICS), annual*, Table 379-0031, Ottawa, 2015 (CANSIM).
Data prior to 1997 were estimated by Canadian Industrial Energy End-Use Data and Analysis Centre, 1990 to 2013, Simon Fraser University, 2015 and Natural Resources Canada.

Industrial Sector 4

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
409,802	**401,038**	**360,572**	**381,800**	**396,455**	**404,662**	**409,523**	**43.8%**
11,671	12,337	8,309	8,748	10,483	9,916	10,471	-17.7%
1,470	1,427	1,335	1,587	1,442	1,503	1,644	-21.2%
1,764	1,716	1,845	1,813	1,792	1,791	2,104	-43.8%
1,551	1,519	1,698	1,728	1,660	1,715	1,599	0.2%
244	314	290	234	281	250	268	33.3%
1,727	1,379	349	1,185	1,336	1,146	1,248	59.6%
1,751	1,623	1,369	1,341	1,290	1,191	1,263	516.1%
102,387	100,028	92,706	97,276	101,730	102,763	105,977	71.8%
2,193	2,194	2,144	2,034	2,058	2,071	2,139	64.9%
2,566	2,727	2,712	2,692	2,755	2,825	2,930	4.6%
5,768	5,880	5,909	6,310	6,074	5,801	5,564	40.5%
2,477	2,747	2,864	2,693	2,464	2,334	2,331	38.6%
2,307	2,293	2,222	2,296	2,327	2,279	2,248	70.0%
3,057	3,028	2,972	2,841	3,110	3,164	3,095	-3.3%
949	744	790	895	856	865	866	-77.5%
933	830	725	740	804	786	698	-58.1%
950	798	589	610	607	592	527	-42.8%
2,006	1,636	1,367	1,451	1,405	1,427	1,422	-58.7%
198	173	160	170	176	179	178	-73.5%
4,121	3,640	2,907	3,271	3,321	3,482	3,673	16.5%
1,322	1,188	922	1,139	1,140	1,043	1,055	15.7%
1,871	1,764	1,411	1,465	1,388	1,270	1,285	-8.2%
2,050	1,757	1,245	1,494	1,425	1,304	1,319	-40.5%
576	606	454	539	539	493	498	-34.0%
3,453	3,271	3,020	2,994	3,165	3,173	2,993	-0.2%

Industrial Gross Domestic Product by Industry (Cont.)

	1990	1995	2001	2005	2006
Converted Paper Products Industry	2,786	3,414	3,836	3,978	3,626
Printing and Related Support Activities	7,016	5,118	6,658	6,347	6,172
Petroleum Refining	5,308	5,556	6,648	6,282	5,926
Petrochemical Industry	793	827	862	591	693
Industrial Gas Industry	137	146	174	344	353
Alkali and Chlorine Manufacturing	353	312	339	260	286
All Other Basic Inorganic Chemical Manufacturing	333	322	465	573	650
Chemical Fertilizer (except Potash) Manufacturing	735	837	978	1,339	1,355
Other Chemical Manufacturing	615	601	687	707	608
Resin and Synthetic Rubber Industries	574	910	1,211	1,686	1,579
Motor Vehicle Plastic Parts Manufacturing	545	838	1,547	1,945	1,861
Rubber Products Industries	1,033	1,606	1,775	1,782	1,570
Cement Industry	898	717	947	1,227	1,244
Iron and Steel	3,656	4,141	4,167	4,600	4,549
Primary Production of Alumina and Aluminum	984	1,347	2,927	3,656	3,827
Other Non-Ferrous Smelting and Refining	2,863	3,117	5,747	5,444	5,014
Fabricated Metal Products Industries	8,231	8,345	13,910	14,009	14,287
Machinery Industries	7,596	10,390	13,141	13,774	13,988
Computer and Electronic Products Industries	3,558	5,490	7,774	8,007	8,053
Electrical Equipment and Components Industries	4,205	3,512	5,366	3,922	3,716
Motor Vehicle Industry	5,885	8,246	9,426	10,240	9,726
Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	959	1,436	1,849	2,020	1,931
Motor Vehicle Electrical and Electronic Equipment Manufacturing	221	331	419	406	414
Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	271	406	485	503	492
Motor Vehicle Brake System Manufacturing	363	543	561	536	470
Motor Vehicle Transmission and Power Train Parts Manufacturing	606	907	873	980	976

Industrial Sector 4

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
3,453	3,271	3,020	2,994	3,165	3,174	2,991	7.4%
6,019	5,945	5,136	4,690	4,643	4,682	4,815	-31.4%
6,026	5,971	6,254	5,855	5,557	5,686	5,793	9.1%
708	652	447	615	654	644	623	-21.4%
266	300	250	270	321	316	306	123.4%
212	173	147	62	69	69	71	-79.9%
674	571	497	630	662	704	672	101.8%
1,212	969	694	660	714	708	797	8.4%
598	645	627	791	825	757	734	19.3%
1,714	1,593	1,114	1,346	1,518	1,541	1,731	201.6%
1,698	1,457	1,111	1,466	1,654	1,699	1,774	225.5%
1,475	1,390	1,229	1,379	1,558	1,398	1,329	28.7%
1,206	1,106	909	891	894	878	840	-6.5%
4,578	4,523	2,623	3,771	4,096	4,449	4,272	16.8%
3,875	3,856	3,371	3,357	3,440	3,180	3,461	251.7%
4,613	4,561	3,799	4,391	4,332	4,291	4,461	55.8%
14,317	13,084	11,182	11,611	12,504	13,106	12,617	53.3%
13,914	13,608	11,225	11,376	13,303	13,689	13,449	77.1%
7,767	7,638	7,024	7,464	7,799	6,840	6,134	72.4%
3,704	3,895	3,638	3,594	3,812	3,832	3,835	-8.8%
9,518	7,263	4,983	7,527	7,633	8,708	8,405	42.8%
1,999	1,511	1,236	1,401	1,324	1,625	1,546	61.2%
374	284	189	246	299	367	349	57.9%
496	409	306	467	503	618	587	116.6%
405	334	232	264	293	359	342	-5.8%
961	693	396	483	495	608	578	-4.6%

Industrial Gross Domestic Product by Industry (Cont.)

	1990	1995	2001	2005	2006
Motor Vehicle Seating and Interior Trim Manufacturing	460	689	709	1,347	1,295
Motor Vehicle Metal Stamping	645	966	1,270	1,655	1,426
Other Motor Vehicle Parts Manufacturing	781	1,169	2,237	2,086	2,092
Furniture and Related Products Industries	3,736	3,935	7,329	6,321	5,884
Miscellaneous Manufacturing	2,397	2,519	3,922	4,311	4,448
Other Manufacturing n.e.c.	23,446	28,461	38,293	43,087	44,016
Construction	67,893	55,425	73,820	88,176	91,544
Forestry	5,689	5,776	5,614	6,034	5,806

Industrial Sector 4

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
1,112	911	692	910	952	1,169	1,112	141.7%
1,327	1,060	753	913	1,012	1,242	1,181	83.1%
1,871	1,564	1,116	1,256	1,412	1,733	1,649	111.1%
5,547	5,157	4,216	4,242	4,048	4,063	4,330	15.9%
4,238	3,864	3,672	3,750	3,896	3,835	4,252	77.4%
43,537	42,883	38,079	37,688	38,111	38,619	39,281	67.5%
95,353	98,958	95,461	102,771	105,947	111,460	112,324	65.4%
5,673	5,320	4,630	5,123	5,382	5,250	5,487	-3.6%

4 Industrial Sector

Industrial Energy Intensity by Industry

	Units	1990	1995	2001	2005	2006
Aggregate Energy Intensity[a,b,c]	**MJ/$2007 – GDP**	**9.5**	**9.9**	**8.1**	**8.3**	**8.2**
Energy Intensity by Industry[a,b,c]						
Copper, Nickel, Lead and Zinc Mines	MJ/tonne	251.1	225.2	259.6	240.5	245.5
Iron Mines	MJ/tonne	436.7	400.3	398.1	372.9	338.5
Gold and Silver Mines	MJ/tonne	557.1	502.0	332.0	320.5	307.4
Other Metal Mines	MJ/tonne	409.5	380.4	596.5	339.3	342.9
Salt Mines	MJ/tonne	376.1	436.9	229.2	228.4	221.6
Potash Mines	MJ/tonne	3,923.7	3,507.6	3,480.6	2,699.3	4,063.4
Other Non-Metal Mines	MJ/$2007 – GDP	38.8	26.8	11.1	7.0	7.0
Upstream Mining	MJ/$2007 – GDP	3.4	3.9	4.6	5.6	5.8
Fruit and Vegetable Industries	MJ/$2007 – GDP	7.0	6.0	5.4	6.5	6.5
Dairy Products Industry	MJ/kilolitre	1.7	1.4	1.3	1.1	1.1
Meat Products Industries	MJ/tonne	4,628.9	4,318.3	4,457.2	4,073.8	4,336.5
Bakery Products Industries	MJ/$2007 – GDP	5.5	3.1	3.5	4.1	3.9
Beverage Industries (excluding Breweries)	MJ/$2007 – GDP	2.5	4.3	3.0	3.0	2.7
Breweries Industries	MJ/$2007 – GDP	2.4	1.8	1.9	1.6	1.3
Tobacco Products Industries	MJ/$2007 – GDP	0.3	0.3	0.3	0.5	0.5
Textile Mills	MJ/$2007 – GDP	8.3	8.7	4.8	5.8	6.6
Textile Products Mills	MJ/$2007 – GDP	7.4	7.8	3.3	3.0	2.9
Clothing Industries	MJ/$2007 – GDP	1.7	1.6	1.3	0.8	0.7
Leather and Allied Products Industries	MJ/$2007 – GDP	2.1	2.0	2.5	1.5	1.2
Wood Products Industries	MJ/$2007 – GDP	14.1	14.2	12.5	10.3	10.9
Pulp Mills	MJ/tonne	41,799.0	36,655.0	35,877.3	32,141.2	30,934.4
Paper Mills (except Newsprint)	MJ/$2007 – GDP	71.0	75.7	70.2	57.3	50.2
Newsprint Mills	MJ/tonne	27,088.3	29,466.9	28,974.8	27,523.8	27,017.0

Sources:

a) Statistics Canada, *Report on Energy Supply-Demand in Canada, 1990–2013*, Ottawa, 2015 (CANSIM).

b) Statistics Canada, *Gross domestic product (GDP) at basic prices, by North American Industry Classification System (NAICS), annual*, Table 379-0031, Ottawa, 2015 (CANSIM).
Data prior to 1997 were estimated by Canadian Industrial Energy End-Use Data and Analysis Centre, 1990 to 2013, Simon Fraser University, 2015 and Natural Resources Canada.

c) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2013*, Simon Fraser University, 2015.

Industrial Sector 4

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
8.5	**8.3**	**8.8**	**8.6**	**8.4**	**8.5**	**8.6**	**-9.5%**
275.1	293.1	277.1	287.2	273.7	268.3	263.8	5.0%
341.7	434.2	527.0	379.3	298.9	301.2	262.8	-39.8%
325.0	341.1	337.4	338.3	468.0	485.2	478.2	-14.2%
341.8	420.8	454.7	421.2	422.9	365.0	361.9	-11.6%
244.9	205.0	212.2	239.0	186.4	220.6	208.8	-44.5%
3,250.8	3,161.0	4,069.1	2,434.4	3,574.4	3,854.7	3,080.1	-21.5%
5.2	6.6	6.9	7.0	7.1	7.4	6.7	-82.8%
7.3	7.4	8.9	9.2	9.0	9.9	9.9	188.6%
6.1	5.2	6.6	5.9	5.7	6.5	5.2	-26.2%
1.0	0.9	1.0	0.8	0.8	0.9	0.8	-53.0%
4,133.4	4,604.4	5,831.6	4,762.9	4,995.2	6,198.0	5,531.3	19.5%
4.0	3.5	3.8	3.1	3.1	4.4	4.1	-25.3%
2.6	2.3	2.7	2.7	2.2	2.5	2.5	-0.8%
1.3	1.3	1.2	1.1	0.9	1.0	0.9	-61.7%
0.5	0.4	0.3	0.4	0.4	0.4	0.4	6.1%
6.7	5.8	5.1	4.7	4.0	4.9	6.5	-21.9%
3.0	3.1	3.6	3.5	3.3	3.8	5.3	-28.4%
0.8	0.9	0.9	0.8	0.9	1.1	1.0	-40.8%
1.3	1.6	1.8	1.6	1.3	1.3	1.4	-32.1%
12.7	14.5	16.7	17.9	18.0	17.9	16.7	18.6%
28,945.1	26,738.9	30,259.8	26,241.3	22,818.8	22,232.3	27,468.3	-34.3%
43.7	41.9	57.8	61.3	60.9	64.8	50.2	-29.3%
27,496.3	26,213.5	26,918.4	26,452.5	22,885.5	22,838.1	27,729.6	2.4%

Industrial Energy Intensity by Industry (Cont.)

	Units	1990	1995	2001	2005	2006
Paperboard Mills	MJ/tonne	21,942.1	18,932.4	17,230.5	17,494.5	15,218.3
Other Pulp and Paper Manufacturing	MJ/$2007 – GDP	7.4	5.1	10.2	28.3	34.3
Converted Paper Products Industry	MJ/$2007 – GDP	4.0	3.2	4.3	5.0	4.5
Printing and Related Support Activities	MJ/$2007 – GDP	1.6	1.6	1.3	1.4	1.4
Petroleum Refining	MJ/$2007 – GDP	60.9	64.1	53.4	56.7	62.5
Petrochemical Industry	MJ/tonne	4,597.7	4,042.4	4,725.3	6,930.7	40,958.4
Industrial Gas Industry	MJ/$2007 – GDP	43.3	39.4	51.0	24.2	38.7
Alkali and Chlorine Manufacturing	MJ/$2007 – GDP	86.0	96.0	72.2	61.4	49.7
All Other Basic Inorganic Chemical Manufacturing	MJ/$2007 – GDP	85.9	95.3	73.2	65.2	52.2
Chemical Fertilizer (except Potash) Manufacturing	MJ/$2007 – GDP	43.4	66.8	63.5	39.9	40.6
Other Chemical Manufacturing	MJ/$2007 – GDP	153.2	153.2	82.5	83.2	116.2
Resin and Synthetic Rubber Industries	MJ/tonne	27,008.4	13,205.3	11,014.1	6,744.8	8,576.1
Motor Vehicle Plastic Parts Manufacturing	MJ/$2007 – GDP	5.1	3.2	3.4	2.4	2.4
Rubber Products Industries	MJ/tonne	2.2	1.9	1.5	1.4	1.3
Cement Industry	MJ/tonne	5,645.5	5,261.0	5,173.4	5,391.0	5,521.2
Iron and Steel	MJ/$2007 – GDP	60.0	59.6	55.0	52.1	55.4
Primary Production of Alumina and Aluminum	MJ/tonne	70,059.1	63,638.3	61,913.4	64,677.3	61,766.8
Other Non-Ferrous Smelting and Refining	MJ/tonne	47,912.3	52,823.1	56,159.5	47,659.6	48,011.4
Fabricated Metal Products Industries	MJ/$2007 – GDP	4.5	4.4	2.7	2.9	2.7
Machinery Industries	MJ/$2007 – GDP	1.6	1.3	1.0	1.3	1.2
Computer and Electronic Products Industries	MJ/$2007 – GDP	1.3	1.1	0.5	0.7	0.7
Electrical Equipment and Components Industries	MJ/$2007 – GDP	2.0	2.2	1.2	1.9	1.8
Motor Vehicle Industry	MJ/$2007 – GDP	3.1	3.0	2.5	2.2	2.2
Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	MJ/$2007 – GDP	3.3	2.0	1.5	1.7	1.6

Industrial Sector 4

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
13,682.0	14,365.4	14,780.7	17,322.7	17,206.9	16,590.9	19,992.3	-8.9%
40.2	37.0	41.0	25.9	30.0	35.1	36.5	393.6%
5.2	4.5	7.3	5.2	4.4	4.5	7.0	74.9%
1.4	1.6	2.3	2.1	2.0	2.1	2.1	36.8%
62.9	57.9	54.1	57.3	57.7	60.4	58.1	-4.6%
6,002.0	12,552.0	10,953.7	7,751.0	9,856.0	8,918.7	10,608.0	130.7%
48.0	35.9	55.6	59.3	47.6	72.7	80.4	85.9%
40.8	46.8	50.1	35.9	35.2	37.7	36.3	-57.8%
42.7	48.8	49.6	35.9	37.0	37.6	36.7	-57.3%
43.7	50.7	65.0	75.8	77.0	74.7	67.5	55.5%
132.0	133.4	135.6	146.7	146.7	159.1	159.7	4.3%
8,332.3	10,446.5	12,022.0	12,683.1	14,824.6	14,858.5	13,680.3	-49.3%
2.3	2.5	2.4	2.4	2.2	2.0	1.8	-65.7%
1.4	1.4	1.5	1.8	3.0	1.5	1.2	-42.8%
4,660.6	5,000.4	5,727.8	4,656.6	4,967.4	4,843.6	5,045.9	-10.6%
55.4	54.6	71.4	54.9	55.4	51.9	49.0	-18.4%
62,336.8	62,595.0	57,077.5	59,487.8	62,656.5	63,202.7	62,886.5	-10.2%
41,091.8	42,509.6	35,275.2	40,922.5	39,509.8	34,552.0	30,004.4	-37.4%
2.7	3.2	3.2	2.7	2.6	2.9	2.8	-39.3%
1.3	1.2	1.4	1.3	1.2	1.5	1.5	-5.6%
0.8	0.7	0.7	0.7	0.7	1.0	1.0	-26.9%
1.7	1.6	1.5	1.3	1.2	1.4	1.7	-16.8%
2.1	2.5	3.0	1.8	1.9	1.7	1.9	-39.2%
1.6	1.7	1.7	1.2	1.6	1.4	1.0	-69.3%

Industrial Energy Intensity by Industry (Cont.)

	Units	1990	1995	2001	2005	2006
Motor Vehicle Electrical and Electronic Equipment Manufacturing	MJ/$2007 – GDP	1.2	0.8	1.2	1.5	0.6
Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	MJ/$2007 – GDP	7.9	5.2	3.2	2.7	2.6
Motor Vehicle Brake System Manufacturing	MJ/$2007 – GDP	4.9	3.8	5.2	2.1	2.0
Motor Vehicle Transmission and Power Train Parts Manufacturing	MJ/$2007 – GDP	4.9	2.2	3.1	3.8	3.6
Motor Vehicle Seating and Interior Trim Manufacturing	MJ/$2007 – GDP	2.6	1.8	2.4	1.4	1.4
Motor Vehicle Metal Stamping	MJ/$2007 – GDP	5.1	3.6	3.0	2.3	2.6
Other Motor Vehicle Parts Manufacturing	MJ/$2007 – GDP	4.1	2.7	1.9	2.4	2.1
Furniture and Related Products Industries	MJ/$2007 – GDP	1.8	1.7	1.4	1.8	1.7
Miscellaneous Manufacturing	MJ/$2007 – GDP	2.0	1.6	1.4	1.4	1.1
Other Manufacturing n.e.c.	MJ/$2007 – GDP	9.9	8.6	4.9	5.6	5.4
Construction	MJ/$2007 – GDP	1.0	0.9	0.7	0.8	0.8
Forestry	MJ/$2007 – GDP	1.4	1.4	3.6	4.8	5.4

Industrial Sector 4

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
1.2	1.2	1.7	1.6	1.1	1.0	0.9	-23.5%
2.6	2.4	4.0	1.4	1.9	1.8	1.4	-82.0%
1.6	2.3	1.9	1.4	1.2	1.1	0.9	-81.7%
3.4	3.9	5.2	4.2	3.1	5.6	2.9	-41.3%
1.4	1.5	2.0	1.6	1.4	1.2	1.1	-60.1%
2.7	3.2	3.5	3.0	2.6	2.5	2.5	-51.3%
2.4	3.1	4.0	2.6	1.7	1.6	1.5	-64.5%
1.9	2.1	2.5	2.2	2.3	2.3	2.1	15.0%
1.4	1.7	2.1	1.8	1.7	1.8	1.6	-19.8%
5.7	5.4	4.9	5.3	5.2	4.6	5.7	-42.6%
0.8	0.8	0.7	0.7	0.7	0.7	0.7	-27.3%
5.3	5.8	4.6	4.4	3.7	3.6	3.5	155.9%

4 Industrial Sector

Industrial Energy Prices and Background Indicators

	1990	1995	2001	2005	2006
Energy Prices by Energy Source (incl. taxes)					
Natural Gas (cents/m^3)[a,e]	10.5	10.6	23.9	36.9	36.6
Light Fuel Oil (cents/litre)[f]	25.8	22.1	35.6	61.9	64.2
Heavy Fuel Oil (cents/litre)[f]	14.1	16.2	26.9	38.2	39.2
Electricity (1,000 kW/400,000 kWh)[1] (cents/kWh)[b,e]	5.6	7.0	7.6	8.1	8.2
Electricity (5,000 kW/3,060,000 kWh)[1] (cents/kWh)[b,e]	4.0	4.9	6.0	6.2	6.3
Background Indicators					
Industrial GDP (million $2007)[d]	284,856	305,871	375,782	406,284	409,874
Capacity Utilization Rate (%)[c]					
Mining	87.5	85.5	87.7	84.7	82.9
Manufacturing	78.2	83.9	81.7	83.7	82.7
Pulp and Paper	*83.7*	*92.0*	*88.6*	*89.4*	*88.3*
Primary Metals[2]	*85.1*	*88.3*	*86.2*	*91.5*	*91.9*
Petroleum Refining	*87.5*	*89.5*	*94.9*	*88.3*	*83.2*
Chemicals	*86.6*	*85.2*	*80.4*	*80.2*	*79.8*
Forestry	82.2	81.3	81.6	84.3	85.0
Construction	91.1	75.8	90.5	83.5	81.7
Industrial Employees (thousands)[d]					
Mining	192	173	178	215	245
Manufacturing	2050	1904	2230	2210	2107
Pulp and Paper	*140*	*121*	*108*	*102*	*94*
Primary Metals[2]	*135*	*110*	*98*	*91*	*90*
Petroleum Refining	*25*	*18*	*17*	*18*	*17*
Chemicals	*106*	*99*	*119*	*116*	*103*
Forestry	73	93	74	70	63
Construction	816	726	820	1015	1066

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 4

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
27.2	33.4	23.4	20.5	18.6	14.0	16.5	57.8%
68.6	94.3	60.9	70.5	94.6	96.9	98.5	282.6%
44.3	57.6	46.1	54.7	72.2	77.0	74.2	427.8%
8.4	9.0	8.4	9.0	9.5	10.0	11.4	101.6%
6.5	7.1	6.5	7.0	7.5	8.0	9.4	138.3%
409,802	401,038	360,572	381,800	396,455	404,662	409,523	43.8%
78.8	77.8	70.7	76.6	79.8	77.4	77.3	–
82.8	75.6	71.4	77.2	80.0	81.4	80.2	–
87.4	*87.9*	*82.0*	*88.6*	*87.9*	*86.4*	*88.5*	–
92.1	*89.0*	*76.0*	*78.5*	*85.1*	*83.0*	*83.2*	–
82.5	*75.0*	*77.9*	*83.8*	*79.5*	*79.4*	*79.0*	–
82.0	*75.0*	*70.9*	*75.3*	*75.8*	*77.0*	*77.2*	–
89.6	96.0	76.8	85.2	87.0	83.2	86.8	–
80.6	79.8	74.6	79.1	79.8	83.1	83.8	–
258	269	251	257	271	299	301	56.5%
2031	1963	1782	1744	1760	1786	1734	-15.4%
87	*91*	*74*	*74*	*75*	*68*	*64*	*-54.3%*
79	*78*	*67*	*66*	*68*	*71*	*77*	*-42.9%*
19	*19*	*19*	*18*	*12*	*18*	*15*	*-41.1%*
108	*109*	*104*	*107*	*100*	*95*	*107*	*0.3%*
60	54	46	51	46	52	49	-32.8%
1131	1231	1161	1217	1262	1268	1324	62.3%

Sources:

a) 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, 2015 (CANSIM).
b) Hydro-Québec, *Comparison of Electricity Prices in Major North American Cities*, 2013.
c) Statistics Canada, Table 028-0002, Ottawa, 2015 (CANSIM).
d) Statistics Canada, *Labour Force Survey*, Table 282-0008, and *Survey of Employment, Payrolls and Hours*, Tables 281-0005 and 281-0024, Ottawa, 2015 (CANSIM).
e) Statistics Canada, *Report on Energy Supply-Demand in Canada, 1990–2013*, Ottawa, 2015 (CANSIM).
f) Natural Resources Canada, Petroleum Resources Branch, Pipelines, Gas and LNG Division, Ottawa, 2015.

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

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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.

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Transportation energy prices are weighted averages of regional prices from Statistics Canada's *Energy Statistics Handbook* (Cat. No. 57-601-X) (discontinued). Other transportation indicators are from Statistics Canada's CANSIM Table 326-0021.

In Canada, the availability of biofuel data is limited (not reported). In the 2013 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.

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Transportation Secondary Energy Use by Energy Source and Transportation Mode

	1990	1995	2001	2005	2006
Total Energy Use (PJ)[a]	**1,877.9**	**2,011.7**	**2,255.1**	**2,475.7**	**2,456.9**
Passenger Transportation[b]	1,151.1	1,172.6	1,243.5	1,331.7	1,307.7
Freight Transportation[b]	673.4	777.0	921.3	1,044.9	1,048.7
Off-Road[1,b]	53.3	62.1	90.3	99.1	100.4
Energy Use by Energy Source (PJ)[a]					
Electricity	3.1	3.0	3.1	3.5	3.5
Natural Gas	1.7	2.4	2.0	1.9	1.9
Motor Gasoline	1,120.4	1,179.2	1,296.3	1,368.5	1,369.7
Diesel Fuel Oil	469.8	549.6	647.5	745.2	740.4
Ethanol	0.0	0.0	0.0	6.5	6.6
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	70.3	83.0	68.7
Aviation Gasoline	5.5	4.2	3.5	3.3	3.0
Aviation Turbo Fuel	181.9	183.9	215.3	253.6	251.7
Propane	35.4	32.8	17.2	10.3	11.3

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, 1990–2013*, Ottawa, 2015.
b) Natural Resources Canada, T*ransportation End-Use Model*, Ottawa, 2015.

Transportation Sector

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2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
2,554.5	**2,541.9**	**2,505.0**	**2,607.7**	**2,604.4**	**2,633.6**	**2,685.5**	**43.0%**
1,352.6	1,321.6	1,310.6	1,332.9	1,322.2	1,348.2	1,379.6	19.9%
1,100.1	1,118.0	1,092.2	1,171.7	1,176.7	1,177.7	1,197.6	77.8%
101.8	102.3	102.2	103.2	105.5	107.7	108.3	103.1%
2.5	2.3	2.4	2.5	2.6	4.0	4.4	40.6%
1.9	1.9	1.9	1.9	1.6	1.7	1.5	-10.6%
1,393.2	1,375.1	1,394.6	1,413.9	1,377.0	1,379.1	1,423.7	27.1%
772.3	789.3	749.1	817.1	856.1	840.2	852.0	81.4%
30.8	33.0	36.8	45.2	66.4	69.4	62.6	–
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	–
84.4	84.9	87.0	86.1	61.2	62.8	58.1	-3.4%
3.1	3.0	2.9	2.6	2.1	2.6	2.2	-60.1%
254.2	239.6	219.1	227.2	225.3	260.9	270.7	48.8%
12.1	12.8	11.2	11.2	12.0	13.0	10.4	-70.5%

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Transportation Secondary Energy Use by Energy Source and Transportation Mode (Cont.)

	1990	1995	2001	2005	2006
Energy Use by Transportation Mode (PJ)[b]					
Cars	706.1	668.9	618.1	613.0	601.6
Passenger Light Trucks	211.6	267.2	359.6	408.1	402.0
Freight Light Trucks	97.3	117.9	147.8	160.7	160.7
Medium Trucks	123.3	151.6	184.6	213.4	244.1
Heavy Trucks	254.1	319.9	384.7	453.2	438.1
Motorcycles	2.4	2.2	2.6	3.4	3.6
School Buses	13.6	16.4	12.8	13.3	13.5
Urban Transit	24.7	26.3	28.3	35.0	30.2
Inter-City Buses	7.9	8.4	7.2	7.1	6.5
Passenger Air	180.9	180.8	211.9	249.1	247.5
Freight Air	6.5	7.3	6.9	7.8	7.2
Passenger Rail	3.8	2.3	3.0	2.7	2.7
Freight Rail	85.7	78.6	80.7	81.7	85.6
Marine	106.5	101.7	116.7	128.1	113.0
Off-Road[1]	53.3	62.1	90.3	99.1	100.4
Activity					
Total Passenger-kilometres[2] (millions)[b]	482,718	539,945	602,818	652,493	658,910
Total Tonne-kilometres (millions)[b]	574,721	651,532	760,964	896,144	896,700
Passenger Transportation Energy Intensity[2] (MJ/Pkm)[b]	**2.30**	**2.11**	**2.02**	**1.99**	**1.94**
Freight Transportation Energy Intensity (MJ/Tkm)[b]	**1.17**	**1.19**	**1.21**	**1.17**	**1.17**

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, T*ransportation End-Use Model*, Ottawa, 2015.

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2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
616.5	598.5	596.8	591.0	572.7	559.4	555.1	-21.4%
424.2	422.3	433.4	450.5	457.4	465.4	488.2	130.7%
170.5	170.0	173.1	179.3	180.3	185.4	194.4	99.8%
251.9	265.7	283.3	316.2	308.9	306.1	321.5	160.8%
454.4	458.2	450.9	467.5	490.7	491.5	496.8	95.5%
3.8	3.9	5.3	5.5	5.8	6.1	6.3	156.9%
13.6	14.9	14.7	15.5	16.2	14.4	13.4	-1.3%
33.1	34.0	35.1	37.9	39.8	37.9	42.2	70.9%
7.0	7.1	5.3	5.5	5.4	5.2	5.6	-29.7%
251.4	237.7	217.6	224.5	222.1	257.4	266.7	47.4%
5.8	4.9	4.4	5.3	5.3	6.1	6.3	-4.0%
2.8	3.2	2.3	2.5	2.8	2.4	2.1	-44.0%
91.8	97.0	62.5	81.2	93.0	94.2	90.9	6.1%
125.7	122.2	118.0	122.3	98.5	94.4	87.7	-17.7%
101.8	102.3	102.2	103.2	105.5	107.7	108.3	103.1%
680,490	679,686	686,353	712,913	725,576	731,721	741,728	53.7%
898,121	870,771	784,410	851,409	853,123	887,089	918,265	59.8%
1.93	**1.89**	**1.87**	**1.83**	**1.79**	**1.81**	**1.83**	**-20.6%**
1.22	**1.28**	**1.39**	**1.38**	**1.38**	**1.33**	**1.30**	**11.3%**

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Transportation GHG Emissions by Energy Source and Transportation Mode

	1990	1995	2001	2005	2006
Total GHG Emissions (Mt of CO_2e)[a,b,c]	**132.6**	**143.1**	**160.1**	**174.8**	**172.9**
Passenger Transportation[b,c]	80.6	83.2	87.6	92.9	90.8
Freight Transportation[b,c]	48.3	55.6	66.4	75.2	75.3
Off-Road[b,c]	3.7	4.3	6.2	6.8	6.9
GHG Emissions by Energy Source (Mt of CO_2e)[a,b,c]					
Electricity	0.2	0.2	0.2	0.2	0.2
Natural Gas	0.1	0.1	0.1	0.1	0.1
Motor Gasoline	78.2	83.6	91.2	95.3	94.9
Diesel Fuel Oil	34.1	39.6	47.2	54.2	53.9
Ethanol	0.0	0.0	0.0	0.4	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	5.3	6.2	5.2
Aviation Gasoline	0.4	0.3	0.3	0.2	0.2
Aviation Turbo Fuel	12.9	13.1	14.9	17.5	17.4
Propane	2.1	2.0	1.0	0.6	0.7

Sources:

a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2013*, Ottawa, 2015.
b) Natural Resources Canada, *Transportation End-Use Model*, Ottawa, 2015.
c) Environment Canada, *National Inventory Report 1990–2013: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2015.

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2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
179.4	**178.2**	**174.8**	**181.9**	**181.3**	**182.9**	**186.1**	**40.4%**
93.5	91.0	89.9	91.2	90.1	91.6	93.5	16.0%
78.9	80.2	77.9	83.7	84.0	84.0	85.2	76.3%
7.0	7.0	7.0	7.1	7.2	7.4	7.4	100.8%
0.1	0.1	0.1	0.1	0.1	0.2	0.2	-2.7%
0.1	0.1	0.1	0.1	0.1	0.1	0.1	-13.1%
96.1	94.5	95.4	96.4	93.6	93.5	96.2	23.0%
56.2	57.4	54.2	59.3	62.2	61.0	61.8	81.3%
2.1	2.2	2.4	3.0	4.3	4.5	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	0.0	–
6.3	6.4	6.5	6.5	4.6	4.7	4.4	-5.2%
0.2	0.2	0.2	0.2	0.2	0.2	0.2	-60.1%
17.5	16.5	15.1	15.7	15.6	18.0	18.7	44.7%
0.7	0.8	0.7	0.7	0.7	0.8	0.6	-70.3%

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

	1990	1995	2001	2005	2006
GHG Emissions by Transportation Mode (Mt of CO_2e)[a,b,c]					
Cars	49.2	47.5	43.6	42.7	41.7
Passenger Light Trucks	14.9	19.1	25.6	28.6	28.0
Freight Light Trucks	6.7	8.3	10.4	11.2	11.1
Medium Trucks	8.4	10.4	12.7	14.8	17.0
Heavy Trucks	17.8	22.5	27.4	32.4	31.3
Motorcycles	0.2	0.1	0.2	0.2	0.2
School Buses	0.9	1.1	0.9	0.9	1.0
Urban Transit	1.7	1.8	2.0	2.4	2.1
Inter-City Buses	0.6	0.6	0.5	0.5	0.5
Passenger Air	12.9	12.8	14.6	17.2	17.1
Freight Air	0.5	0.5	0.5	0.5	0.5
Passenger Rail	0.3	0.2	0.2	0.2	0.2
Freight Rail	6.7	6.1	6.4	6.4	6.8
Marine	8.2	7.8	8.9	9.8	8.6
Off-Road[1]	3.7	4.3	6.2	6.8	6.9
GHG Intensity (tonnes/TJ)[a,b,c]	**70.6**	**71.1**	**71.0**	**70.6**	**70.4**
GHG Emissions Related to Electricity (Mt of CO_2e)[a,c]	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**

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, 1990–2013*, Ottawa, 2015.
b) Natural Resources Canada, *Transportation End-Use Model*, Ottawa, 2015.
c) Environment Canada, *National Inventory Report 1990–2013: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2015.

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2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
42.5	41.1	40.8	40.2	38.8	37.8	37.4	-24.1%
29.4	29.1	29.7	30.7	31.0	31.4	32.9	121.3%
11.8	11.7	11.8	12.2	12.2	12.5	13.1	95.3%
17.5	18.5	19.7	22.0	21.5	21.3	22.4	165.6%
32.5	32.7	32.2	33.4	35.1	35.1	35.5	98.9%
0.3	0.3	0.4	0.4	0.4	0.4	0.4	149.8%
1.0	1.1	1.0	1.1	1.2	1.0	1.0	4.7%
2.3	2.4	2.4	2.6	2.8	2.6	2.9	70.3%
0.5	0.5	0.4	0.4	0.4	0.4	0.4	-28.5%
17.4	16.4	15.0	15.5	15.3	17.8	18.4	43.2%
0.4	0.3	0.3	0.4	0.4	0.4	0.4	-6.7%
0.2	0.2	0.2	0.2	0.2	0.2	0.2	-43.4%
7.2	7.7	4.9	6.4	7.3	7.4	7.2	7.2%
9.6	9.3	9.0	9.3	7.5	7.2	6.7	-18.5%
7.0	7.0	7.0	7.1	7.2	7.4	7.4	100.8%
70.2	**70.1**	**69.8**	**69.8**	**69.6**	**69.4**	**69.3**	**-1.8%**
0.1	**0.1**	**0.1**	**0.1**	**0.1**	**0.2**	**0.2**	**-2.7%**

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Transportation Energy Prices and Background Indicators

	1990	1995	2001	2005	2006
Energy Prices by Energy Source (incl. taxes)					
Regular Unleaded Gasoline[1] (cents/litre)[a,d,e]	58.7	55.6	70.7	93.4	98.6
Diesel Fuel Oil[1] (cents/litre)[a,d,e]	51.4	51.1	68.3	92.8	96.6
Propane (cents/litre)[a,d,f]	26.6	29.3	45.1	57.5	62.0
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	69.0	90.8	95.7
Public Transportation	45.6	60.0	82.6	94.8	99.1
Inter-City Transportation	42.4	56.3	83.2	95.6	99.8
Local and Commuter	50.9	66.0	81.6	93.3	97.7
GDP at Factor Cost (million $2007)[c]					
Business Sector	729,465	803,886	1,036,824	1,161,321	1,191,599
Transportation	37,294	42,371	52,468	57,624	59,094
Real Personal Disposable Income per Household ($2007)[c]	***54,959***	***51,383***	***54,548***	***56,117***	***58,457***

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:

a) 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, 2015 (CANSIM).
b) Canada Revenue Agency, *Current Rates of Excise Taxes - Revised*, Ottawa, 2008; www.cra-arc.gc.ca/E/pub/et/currate/currate-e.html
c) Statistics Canada, *Consumer Price Index*, Table 326-0021, Ottawa, 2015 (CANSIM).
d) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2013*, Ottawa, 2015.
e) Statistics Canada, *Total Population, Census Divisions and Census Metropolitan Areas*, Tables 051-0014, 051-0034 and 051-0046, Ottawa, 2015 (CANSIM).
f) Natural Resources Canada, Petroleum Resources Branch, Pipelines, Gas and LNG Division, Ottawa, 2015.

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
103.1	116.4	95.8	104.8	125.6	128.5	128.5	118.9%
99.0	125.2	89.7	101.0	123.3	124.8	124.8	143.1%
62.2	72.4	61.4	67.2	70.5	70.7	69.1	159.6%
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	–
100.0	112.7	93.0	101.4	121.7	124.8	125.5	–
100.0	105.9	106.7	105.7	111.6	114.2	116.4	–
100.0	106.8	106.0	101.2	108.9	111.4	113.3	–
100.0	104.3	107.9	113.4	116.2	119.0	121.6	–
1,215,971	1,220,553	1,168,765	1,210,281	1,250,910	1,278,862	1,307,158	79.2%
60,065	60,238	57,325	59,647	61,724	62,658	63,536	70.4%
59,158	***60,189***	***60,063***	***61,362***	***61,698***	***62,593***	***63,689***	***15.9%***

5 Transportation Sector

Passenger Transportation Secondary Energy Use by Energy Source and Transportation Mode

	1990	1995	2001	2005	2006
Passenger Transportation Energy Use (PJ)[a]	**1,151.1**	**1,172.6**	**1,243.5**	**1,331.7**	**1,307.7**
Energy Use by Energy Source (PJ)[a]					
Electricity	3.1	3.0	3.1	3.5	3.5
Natural Gas	1.6	2.3	1.8	1.7	1.7
Motor Gasoline	899.9	917.5	960.6	1,004.6	989.1
Diesel Fuel Oil	46.7	53.0	58.0	62.0	55.7
Ethanol	0.0	0.0	0.0	4.7	4.7
Biodiesel Fuel	0.0	0.0	0.0	0.0	0.0
Aviation Gasoline	5.4	4.1	3.5	3.3	2.9
Aviation Turbo Fuel	175.5	176.7	208.5	245.8	244.6
Propane	18.8	16.1	8.1	6.1	5.5
Energy Use by Transportation Mode (PJ)[a]					
Cars	706.1	668.9	618.1	613.0	601.6
Light Trucks	211.6	267.2	359.6	408.1	402.0
Motorcycles	2.4	2.2	2.6	3.4	3.6
School Buses	13.6	16.4	12.8	13.3	13.5
Urban Transit	24.7	26.3	28.3	35.0	30.2
Inter-City Buses	7.9	8.4	7.2	7.1	6.5
Air	180.9	180.8	211.9	249.1	247.5
Rail	3.8	2.3	3.0	2.7	2.7
Activity					
Total Passenger-kilometres[1] (millions)[a,b,c]	482,718	539,945	602,818	652,493	658,910

1) excludes non-commercial aviation.

Sources:

a) Natural Resources Canada, *Transportation End-Use Model*, Ottawa, 2015.

b) Statistics Canada, *Canadian Civil Aviation*, 1990–2000, Ottawa, 2003 (Cat. No. 51-206-X) and Statistics Canada, *Aviation: Service Bulletins*, Ottawa: Vol. 47 No. 2, 2015 (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, 2015 (CANSIM).

Transportation Sector

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2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
1,352.6	**1,321.6**	**1,310.6**	**1,332.9**	**1,322.2**	**1,348.2**	**1,379.6**	**19.9%**
2.5	2.3	2.4	2.5	2.6	4.0	4.4	40.6%
1.8	1.7	1.7	1.7	1.3	1.4	1.2	-24.2%
1,008.3	985.8	995.3	1,000.4	973.6	966.9	990.2	10.0%
60.2	63.3	61.8	66.3	69.8	63.9	68.3	46.1%
22.6	24.4	26.9	32.3	47.0	48.4	43.9	–
0.0	0.0	0.0	0.0	0.0	0.0	0.0	–
3.1	3.0	2.8	2.6	2.1	2.6	2.2	-60.0%
248.4	234.7	214.7	222.0	220.0	254.8	264.5	50.7%
5.9	6.3	5.0	5.2	5.7	6.3	5.0	-73.3%
616.5	598.5	596.8	591.0	572.7	559.4	555.1	-21.4%
424.2	422.3	433.4	450.5	457.4	465.4	488.2	130.7%
3.8	3.9	5.3	5.5	5.8	6.1	6.3	156.9%
13.6	14.9	14.7	15.5	16.2	14.4	13.4	-1.3%
33.1	34.0	35.1	37.9	39.8	37.9	42.2	70.9%
7.0	7.1	5.3	5.5	5.4	5.2	5.6	-29.7%
251.4	237.7	217.6	224.5	222.1	257.4	266.7	47.4%
2.8	3.2	2.3	2.5	2.8	2.4	2.1	-44.0%
680,490	679,686	686,353	712,913	725,576	731,721	741,728	53.7%

Passenger Transportation Secondary Energy Use by Energy Source and Transportation Mode (Cont.)

	1990	1995	2001	2005	2006
Passenger-kilometres by Transportation Mode (millions)					
Cars[a]	303,433	315,555	306,783	314,788	310,476
Light Trucks[a]	73,148	103,581	143,590	166,308	164,872
Motorcycles[a]	1,654	1,454	1,934	2,889	3,057
School Buses[a]	15,201	21,988	21,568	26,929	31,682
Urban Transit[a]	12,861	12,945	16,001	20,543	20,951
Inter-City Buses[a]	7,864	9,514	8,853	9,582	7,692
Air[1,b]	66,776	73,492	102,535	109,975	118,729
Rail[c]	1,782	1,415	1,553	1,478	1,450
Energy Intensity[1] (MJ/Pkm)[a,b,c]	**2.30**	**2.11**	**2.02**	**1.99**	**1.94**

1) excludes non-commercial aviation.

Sources:

a) Natural Resources Canada, *Transportation End-Use Model*, Ottawa, 2015.
b) Statistics Canada, *Canadian Civil Aviation*, 1990–2000, Ottawa, 2003 (Cat. No. 51-206-X) and Statistics Canada, *Aviation: Service Bulletins*, Ottawa: Vol. 47 No. 2, 2015 (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, 2015 (CANSIM).

Transportation Sector

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2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
320,686	313,924	315,369	314,583	307,350	303,293	303,923	0.2%
174,998	175,565	182,276	191,309	196,300	200,663	212,166	190.1%
3,321	3,389	3,019	3,144	3,321	3,460	3,586	116.8%
26,463	27,996	32,941	36,221	36,587	34,616	31,919	110.0%
18,111	18,999	20,892	22,796	25,838	25,317	25,369	97.3%
9,124	8,637	7,760	7,170	7,669	6,675	7,604	-3.3%
126,334	129,600	122,683	136,286	147,107	156,323	155,796	133.3%
1,453	1,574	1,413	1,404	1,404	1,374	1,365	-23.4%
1.93	**1.89**	**1.87**	**1.83**	**1.79**	**1.81**	**1.83**	**-20.6%**

5 Transportation Sector

Passenger Transportation GHG Emissions by Energy Source and Transportation Mode

	1990	1995	2001	2005	2006
Passenger Transportation GHG Emissions (Mt of CO_2e)[b,c]	**80.6**	**83.2**	**87.6**	**92.9**	**90.8**
GHG Emissions by Energy Source (Mt of CO_2e)[b,c]					
Electricity	0.2	0.2	0.2	0.2	0.2
Natural Gas	0.1	0.1	0.1	0.1	0.1
Motor Gasoline	63.0	65.4	68.0	70.2	68.8
Diesel Fuel Oil	3.3	3.8	4.2	4.4	4.0
Ethanol	0.0	0.0	0.0	0.3	0.3
Biodiesel Fuel	0.0	0.0	0.0	0.0	0.0
Aviation Gasoline	0.4	0.3	0.3	0.2	0.2
Aviation Turbo Fuel	12.5	12.5	14.4	17.0	16.9
Propane	1.1	1.0	0.5	0.4	0.3
GHG Emissions by Transportation Mode (Mt of CO_2e)[b,c]					
Cars	49.2	47.5	43.6	42.7	41.7
Light Trucks	14.9	19.1	25.6	28.6	28.0
Motorcycles	0.2	0.1	0.2	0.2	0.2
School Buses	0.9	1.1	0.9	0.9	1.0
Urban Transit	1.7	1.8	2.0	2.4	2.1
Inter-City Buses	0.6	0.6	0.5	0.5	0.5
Air	12.9	12.8	14.6	17.2	17.1
Rail	0.3	0.2	0.2	0.2	0.2
GHG Intensity (tonnes/TJ)[b,c]	**70.0**	**71.0**	**70.4**	**69.7**	**69.4**
GHG Emissions Related to Electricity (Mt of CO_2e)[a,c]	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**

Sources:

a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2013*, Ottawa, 2015.
b) Natural Resources Canada, *Transportation End-Use Model*, Ottawa, 2015.
c) Environment Canada, *National Inventory Report 1990–2013: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2015.

Transportation Sector

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2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
93.5	**91.0**	**89.9**	**91.2**	**90.1**	**91.6**	**93.5**	**16.0%**
0.1	0.1	0.1	0.1	0.1	0.2	0.2	-2.7%
0.1	0.1	0.1	0.1	0.1	0.1	0.1	-26.3%
69.7	67.8	68.2	68.2	66.1	65.5	66.8	6.1%
4.3	4.6	4.4	4.8	5.0	4.6	4.9	47.5%
1.5	1.6	1.8	2.1	3.1	3.1	2.8	–
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	0.2	-60.0%
17.1	16.2	14.8	15.3	15.2	17.6	18.3	46.6%
0.4	0.4	0.3	0.3	0.3	0.4	0.3	-73.0%
42.5	41.1	40.8	40.2	38.8	37.8	37.4	-24.1%
29.4	29.1	29.7	30.7	31.0	31.4	32.9	121.3%
0.3	0.3	0.4	0.4	0.4	0.4	0.4	149.8%
1.0	1.1	1.0	1.1	1.2	1.0	1.0	4.7%
2.3	2.4	2.4	2.6	2.8	2.6	2.9	70.3%
0.5	0.5	0.4	0.4	0.4	0.4	0.4	-28.5%
17.4	16.4	15.0	15.5	15.3	17.8	18.4	43.2%
0.2	0.2	0.2	0.2	0.2	0.2	0.2	-43.4%
69.1	**68.9**	**68.6**	**68.4**	**68.1**	**67.9**	**67.8**	**-3.2%**
0.1	**0.1**	**0.1**	**0.1**	**0.1**	**0.2**	**0.2**	**-2.7%**

5 Transportation Sector

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

	1990	1995	2001	2005	2006
Passenger Road Transportation Energy Use (PJ)[a]	**966.4**	**989.4**	**1,028.6**	**1,080.0**	**1,057.5**
Energy Use by Energy Source (PJ)[a]					
Electricity	3.1	3.0	3.1	3.5	3.5
Natural Gas	1.6	2.3	1.8	1.7	1.7
Motor Gasoline	899.9	917.5	960.6	1,004.6	989.1
Diesel Fuel Oil	43.0	50.6	55.0	59.3	53.0
Ethanol	0.0	0.0	0.0	4.7	4.7
Biodiesel Fuel	0.0	0.0	0.0	0.0	0.0
Propane	18.8	16.1	8.1	6.1	5.5
Activity					
Passenger-kilometres (millions)[a]	414,160	465,037	498,730	541,039	538,731
Energy Intensity (MJ/Pkm)[a]	**2.3**	**2.1**	**2.1**	**2.0**	**2.0**
Passenger Road Transportation GHG Emissions (Mt of CO_2e)[a,b]	**67.4**	**70.2**	**72.7**	**75.5**	**73.5**
GHG Emissions by Energy Source (Mt of CO_2e)[a,b]					
Electricity	0.2	0.2	0.2	0.2	0.2
Natural Gas	0.1	0.1	0.1	0.1	0.1
Motor Gasoline	63.0	65.4	68.0	70.2	68.8
Diesel Fuel Oil	3.0	3.6	3.9	4.2	3.8
Ethanol	0.0	0.0	0.0	0.3	0.3
Biodiesel Fuel	0.0	0.0	0.0	0.0	0.0
Propane	1.1	1.0	0.5	0.4	0.3
GHG Intensity (tonne/TJ)[a,b]	**69.8**	**70.9**	**70.7**	**69.9**	**69.5**

Sources:

a) Natural Resources Canada, *Transportation End-Use Model*, Ottawa, 2015.

b) Environment Canada, *National Inventory Report 1990–2013: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2015.

Transportation Sector

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2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
1,098.3	**1,080.7**	**1,090.8**	**1,105.9**	**1,097.3**	**1,088.4**	**1,110.8**	**14.9%**
2.5	2.3	2.4	2.5	2.6	4.0	4.4	40.6%
1.8	1.7	1.7	1.7	1.3	1.4	1.2	-24.2%
1,008.3	985.8	995.3	1,000.4	973.6	966.9	990.2	10.0%
57.4	60.2	59.6	63.8	67.0	61.5	66.2	53.9%
22.6	24.4	26.9	32.3	47.0	48.4	43.9	–
0.0	0.0	0.0	0.0	0.0	0.0	0.0	–
5.9	6.3	5.0	5.2	5.7	6.3	5.0	-73.3%
552,703	548,511	562,256	575,223	577,065	574,025	584,566	41.1%
2.0	**2.0**	**1.9**	**1.9**	**1.9**	**1.9**	**1.9**	**-18.6%**
75.9	**74.3**	**74.7**	**75.4**	**74.5**	**73.6**	**74.9**	**11.1%**
0.1	0.1	0.1	0.1	0.1	0.2	0.2	-2.7%
0.1	0.1	0.1	0.1	0.1	0.1	0.1	-26.3%
69.7	67.8	68.2	68.2	66.1	65.5	66.8	6.1%
4.1	4.3	4.3	4.6	4.8	4.4	4.7	56.3%
1.5	1.6	1.8	2.1	3.1	3.1	2.8	–
0.0	0.0	0.0	0.0	0.0	0.0	0.0	–
0.4	0.4	0.3	0.3	0.3	0.4	0.3	-73.0%
69.1	**68.8**	**68.5**	**68.2**	**67.9**	**67.6**	**67.4**	**-3.3%**

5 Transportation Sector

Passenger Transportation Explanatory Variables

	1990	1995	2001	2005	2006
Light-Duty Vehicles					
Sales (thousands)					
Cars[a,d]	872	641	865	846	866
Light Trucks[a,d]	281	330	471	492	497
Motorcycles	n.a.	n.a.	n.a.	n.a.	n.a.
Stock (thousands)					
Cars[a,f]	11,100	10,936	10,966	11,124	11,263
Light Trucks[a,f]	2,751	3,360	4,718	5,440	5,507
Motorcycles[a,c]	306	275	318	444	485
Average Distance Travelled per Year (km)					
Cars[a]	17,610	18,333	17,682	17,876	17,412
Light Trucks[a]	17,146	18,444	17,851	17,912	17,537
Motorcycles[a]	4,920	4,814	4,980	5,126	4,963
On-Road Average Fuel Consumption (L/100 km)					
Cars[a,g]					
Motor Gasoline[1]	*10.4*	*9.6*	*9.1*	*8.8*	*8.8*
Diesel Fuel Oil[2]	*8.0*	*7.6*	*6.7*	*6.3*	*6.2*
Light Trucks[a,g]					
Motor Gasoline[1]	*13.0*	*12.4*	*12.2*	*12.0*	*11.9*
Diesel Fuel Oil[2]	*9.8*	*11.1*	*12.0*	*12.3*	*12.0*
Motorcycles[a,e]					
Motor Gasoline[1]	*4.7*	*4.7*	*4.7*	*4.3*	*4.3*

1) includes Ethanol.
2) includes Biodiesel.

Sources:

a) Natural Resources Canada, *Transportation End-Use Model*, Ottawa, 2015.
c) Statistics Canada, *Road Motor Vehicle Registrations*, Ottawa, 1999 (Cat. No. 53-219-X); and Statistics Canada, Motor Vehicle Registrations, 2000–2013, Table 405-0004, Ottawa, 2015 (CANSIM).
d) R.L. Polk & Co., *New Vehicle Registrations*, 1990–2013, Southfield (Detroit), Michigan, 2015.
e) United States Department of Transportation, *National Transportation Statistics*, Table VM-1, 2013.
f) DesRosiers Automotive Consultants, *Canadian Vehicle in Operation Census, 1990–2013*, Richmond Hill (Toronto), 2015.
g) Transport Canada, *Vehicle Fuel Economy Information System, 1979–2009*, Ottawa, 2010.

Transportation Sector

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2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
881	914	760	723	717	762	783	-10.2%
540	522	483	572	588	599	640	127.7%
n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	–
11,607	12,000	12,098	12,061	11,914	11,921	12,159	9.5%
5,853	6,223	6,480	6,736	6,979	7,144	7,642	177.8%
522	567	595	616	658	691	725	137.1%
17,449	16,519	16,459	16,466	16,284	16,058	15,775	-10.4%
17,511	16,520	16,466	16,622	16,456	16,430	16,236	-5.3%
5,005	4,708	4,711	4,737	4,689	4,648	4,595	-6.6%
8.8	*8.7*	*8.7*	*8.6*	*8.6*	*8.5*	*8.4*	*-19.0%*
6.2	*6.3*	*6.3*	*6.4*	*6.4*	*6.6*	*6.6*	*-18.0%*
11.9	*11.9*	*11.7*	*11.7*	*11.6*	*11.6*	*11.5*	*-11.7%*
11.8	*11.4*	*10.9*	*10.4*	*9.9*	*9.5*	*9.2*	*-6.4%*
4.2	*4.2*	*5.4*	*5.4*	*5.4*	*5.4*	*5.4*	*14.9%*

Passenger Transportation Explanatory Variables (Cont.)

	1990	1995	2001	2005	2006
Lab-Tested New Vehicle Fuel Consumption[3] (L/100 km)[g]					
CAFC Standard Cars	8.6	8.6	8.6	8.6	8.6
CAFC Average Car Fleet	8.2	7.9	7.8	7.4	7.5
CAFC Standard Light Trucks	11.8	11.4	11.4	11.2	10.9
CAFC Average Light Truck Fleet	11.4	11.5	11.0	10.6	10.4
Buses					
Stock (thousands)[a,c]					
School Buses	44.7	48.8	43.0	46.9	49.2
Urban Transit	26	22	23	24	23
Inter-City Buses	7	7	8	8	8
Average Distance Travelled per Year (km)[a,b]					
School Buses	19,768	24,542	25,384	27,765	30,801
Urban Transit	47,661	55,621	61,042	73,232	77,363
Inter-City Buses	70,789	82,306	66,898	70,826	55,312

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

Sources:

a) Natural Resources Canada, *Transportation End-Use Model*, Ottawa, 2015.
b) Statistics Canada, *Passenger Bus and Urban Transit Statistics, 1990–2000*, Ottawa, 2002 (Cat. No. 53-215-X); and *The Canadian Passenger Bus and Urban Transit Industries Survey, 2001–2010*, Ottawa, 2012 (Cat. No. 50-002-X); and Tables 408-0008 and 408-0010, 2015 (CANSIM).
c) Statistics Canada, *Road Motor Vehicle Registrations*, Ottawa, 1999 (Cat. No. 53-219-X); and Statistics Canada, Motor Vehicle Registrations, 2000–2013, Table 405-0004, Ottawa, 2015 (CANSIM).
g) Transport Canada, *Vehicle Fuel Economy Information System, 1979–2009*, Ottawa, 2010.

Transportation Sector

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2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
8.6	8.6	8.6	8.6	n.a.	n.a.	n.a.	–
7.2	7.1	6.8	6.8	n.a.	n.a.	n.a.	–
10.6	10.5	10.2	10.0	n.a.	n.a.	n.a.	–
10.1	9.5	9.1	8.5	n.a.	n.a.	n.a.	–
48.0	48.4	49.5	50.0	49.8	49.7	49.4	10.5%
26	27	28	28	29	29	30	17.5%
9	9	8	8	8	8	9	41.5%
26,108	27,054	30,842	33,176	33,302	31,264	29,012	46.8%
58,912	58,594	61,602	66,368	73,029	69,375	67,827	42.3%
61,909	59,207	57,277	52,516	56,953	48,005	48,381	-31.7%

5 Transportation Sector

Freight Transportation Secondary Energy Use by Energy Source and Transportation Mode

	1990	1995	2001	2005	2006
Freight Transportation Energy Use (PJ)[a]	**673.4**	**777.0**	**921.3**	**1,044.9**	**1,048.7**
Energy Use by Energy Source (PJ)[a]					
Natural Gas	0.1	0.1	0.1	0.2	0.1
Motor Gasoline	167.1	199.6	245.5	265.3	280.7
Diesel Fuel Oil	423.1	496.7	589.5	683.2	684.8
Ethanol	0.0	0.0	0.0	1.3	1.4
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	60.1	56.6	70.3	83.0	68.7
Aviation Gasoline	0.1	0.1	0.0	0.0	0.0
Aviation Turbo Fuel	6.4	7.2	6.8	7.8	7.1
Propane	16.6	16.7	9.1	4.2	5.9
Energy Use by Transportation Mode (PJ)[a]					
Light Trucks	97.3	117.9	147.8	160.7	160.7
Medium Trucks	123.3	151.6	184.6	213.4	244.1
Heavy Trucks	254.1	319.9	384.7	453.2	438.1
Air	6.5	7.3	6.9	7.8	7.2
Rail	85.7	78.6	80.7	81.7	85.6
Marine	106.5	101.7	116.7	128.1	113.0
Activity					
Total Tonne-kilometres (millions)[a, b, c, d, e]	574,721	651,532	760,964	896,144	896,700
Tonne-kilometres by Transportation Mode (millions)					
Light Trucks[a]	10,400	13,711	18,158	20,597	20,698
Medium Trucks[a]	13,946	18,419	23,746	28,596	36,520
Heavy Trucks[b]	110,405	147,990	192,481	233,462	225,138
Air[c]	1,754	2,045	2,172	2,236	2,227
Rail[d]	248,348	280,477	323,211	352,140	352,477
Marine[e]	189,869	188,890	201,195	259,113	259,640
Energy Intensity (MJ/Tkm)[a]	**1.17**	**1.19**	**1.21**	**1.17**	**1.17**

Sources:

a) Natural Resources Canada, *Transportation End-Use Model*, Ottawa, 2015.
b) Statistics Canada, *Trucking in Canada, 1990–2005*, Ottawa, 2007 (Cat. No. 53-222-X); and Table 403-0004, 2015 (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. 47, No. 2, 2015.

2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
1,100.1	**1,118.0**	**1,092.2**	**1,171.7**	**1,176.7**	**1,177.7**	**1,197.6**	**77.8%**
0.1	0.1	0.2	0.2	0.3	0.3	0.3	383.3%
285.2	289.3	299.7	313.4	302.7	309.6	329.6	97.2%
712.1	725.9	687.3	750.9	786.3	776.3	783.7	85.3%
6.2	6.3	7.4	9.8	14.6	15.9	14.2	–
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	–
84.4	84.9	87.0	86.1	61.2	62.8	58.1	-3.4%
0.0	0.0	0.0	0.0	0.0	0.0	0.0	-68.2%
5.8	4.9	4.4	5.2	5.3	6.0	6.2	-3.3%
6.2	6.5	6.2	6.0	6.3	6.7	5.4	-67.4%
170.5	170.0	173.1	179.3	180.3	185.4	194.4	99.8%
251.9	265.7	283.3	316.2	308.9	306.1	321.5	160.8%
454.4	458.2	450.9	467.5	490.7	491.5	496.8	95.5%
5.8	4.9	4.4	5.3	5.3	6.1	6.3	-4.0%
91.8	97.0	62.5	81.2	93.0	94.2	90.9	6.1%
125.7	122.2	118.0	122.3	98.5	94.4	87.7	-17.7%
898,121	870,771	784,410	851,409	853,123	887,089	918,265	59.8%
22,484	22,589	23,261	24,329	24,739	25,577	27,011	159.7%
38,388	39,584	39,463	47,218	46,762	47,103	50,243	260.3%
224,783	223,849	208,576	221,612	231,644	241,672	251,534	127.8%
1,997	1,809	1,628	2,085	2,212	2,283	2,266	29.2%
358,832	340,092	299,829	341,325	352,091	371,074	386,132	55.5%
251,637	242,848	211,653	214,839	195,675	199,380	201,080	5.9%
1.22	**1.28**	**1.39**	**1.38**	**1.38**	**1.33**	**1.30**	**11.3%**

d) Statistics Canada, *Rail in Canada, 1990–2009*, Ottawa, 2011 (Cat. No. 52-216-X); and Tables 404-0012 and 404-0016, Ottawa, 2015 (CANSIM).
e) Transport Canada, Surface and Maritime Statistics and Forecasts Division, Ottawa, 2015.

5 Transportation Sector

Freight Transportation GHG Emissions by Energy Source and Transportation Mode

	1990	1995	2001	2005	2006
Freight Transportation GHG Emissions (Mt of CO_2e)[a,b]	**48.3**	**55.6**	**66.4**	**75.2**	**75.3**
GHG Emissions by Energy Source (Mt of CO_2e)[a,b]					
Natural Gas	0.0	0.0	0.0	0.0	0.0
Motor Gasoline	11.5	13.9	17.1	18.3	19.3
Diesel Fuel Oil	30.8	35.9	43.0	49.7	49.9
Ethanol	0.0	0.0	0.0	0.1	0.1
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	5.3	6.2	5.2
Aviation Gasoline	0.0	0.0	0.0	0.0	0.0
Aviation Turbo Fuel	0.5	0.5	0.5	0.5	0.5
Propane	1.0	1.0	0.6	0.3	0.4
GHG Emissions by Transportation Mode (Mt of CO_2e)[a,b]					
Light Trucks	6.7	8.3	10.4	11.2	11.1
Medium Trucks	8.4	10.4	12.7	14.8	17.0
Heavy Trucks	17.8	22.5	27.4	32.4	31.3
Air	0.5	0.5	0.5	0.5	0.5
Rail	6.7	6.1	6.4	6.4	6.8
Marine	8.2	7.8	8.9	9.8	8.6
GHG Intensity (tonne/TJ)[a,b]	**71.8**	**71.6**	**72.0**	**71.9**	**71.8**

Sources:

a) Natural Resources Canada, *Transportation End-Use Model*, Ottawa, 2015.

b) Environment Canada, *National Inventory Report 1990–2013: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2015.

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2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
78.9	**80.2**	**77.9**	**83.7**	**84.0**	**84.0**	**85.2**	**76.3%**
0.0	0.0	0.0	0.0	0.0	0.0	0.0	370.0%
19.6	19.8	20.4	21.3	20.5	21.0	22.3	93.5%
51.9	52.9	49.8	54.5	57.2	56.4	56.9	85.0%
0.4	0.4	0.5	0.6	0.9	1.0	0.9	–
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	–
6.3	6.4	6.5	6.5	4.6	4.7	4.4	-5.2%
0.0	0.0	0.0	0.0	0.0	0.0	0.0	-68.2%
0.4	0.3	0.3	0.4	0.4	0.4	0.4	-6.0%
0.4	0.4	0.4	0.4	0.4	0.4	0.3	-67.1%
11.8	11.7	11.8	12.2	12.2	12.5	13.1	95.3%
17.5	18.5	19.7	22.0	21.5	21.3	22.4	165.6%
32.5	32.7	32.2	33.4	35.1	35.1	35.5	98.9%
0.4	0.3	0.3	0.4	0.4	0.4	0.4	-6.7%
7.2	7.7	4.9	6.4	7.3	7.4	7.2	7.2%
9.6	9.3	9.0	9.3	7.5	7.2	6.7	-18.5%
71.8	**71.7**	**71.4**	**71.4**	**71.4**	**71.3**	**71.2**	**-0.8%**

5 Transportation Sector

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

	1990	1995	2001	2005	2006
Freight Road Transportation Energy Use (PJ)[a]	**474.7**	**589.4**	**717.1**	**827.4**	**843.0**
Energy Use by Energy Source (PJ)[a]					
Natural Gas	0.1	0.1	0.1	0.2	0.1
Motor Gasoline	167.1	199.6	245.5	265.3	280.7
Diesel Fuel Oil	291.0	372.9	462.4	556.5	554.9
Ethanol	0.0	0.0	0.0	1.3	1.4
Biodiesel Fuel	0.0	0.0	0.0	0.0	0.0
Propane	16.6	16.7	9.1	4.2	5.9
Activity					
Tonne-kilometres (millions)[a, c]	134,750	180,120	234,385	282,655	282,356
Energy Intensity (MJ/Tkm)[a]	**3.5**	**3.3**	**3.1**	**2.9**	**3.0**
Freight Road Transportation GHG Emissions (Mt of CO_2e)[a,b]	**33.0**	**41.1**	**50.6**	**58.4**	**59.4**
GHG Emissions by Energy Source (Mt of CO_2e)[a,b]					
Natural Gas	0.0	0.0	0.0	0.0	0.0
Motor Gasoline	11.5	13.9	17.1	18.3	19.3
Diesel Fuel Oil	20.4	26.2	33.0	39.7	39.6
Ethanol	0.0	0.0	0.0	0.1	0.1
Biodiesel Fuel	0.0	0.0	0.0	0.0	0.0
Propane	1.0	1.0	0.6	0.3	0.4
GHG Intensity (tonne/TJ)[a,b]	**69.4**	**69.7**	**70.5**	**70.6**	**70.4**

Sources:

a) Natural Resources Canada, T*ransportation End-Use Model*, Ottawa, 2015.
b) Environment Canada, *National Inventory Report 1990–2013: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2015.
c) Statistics Canada, *Trucking in Canada, 1990–2005*, Ottawa, 2007 (Cat. No. 53-222-X); and Table 403-0004, 2015 (CANSIM).

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2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
876.8	**893.9**	**907.3**	**962.9**	**979.8**	**983.0**	**1,012.7**	**113.3%**
0.1	0.1	0.2	0.2	0.3	0.3	0.3	383.3%
285.2	289.3	299.7	313.4	302.7	309.6	329.6	97.2%
579.1	591.6	593.8	633.5	655.9	650.5	663.2	127.9%
6.2	6.3	7.4	9.8	14.6	15.9	14.2	–
0.0	0.0	0.0	0.0	0.0	0.0	0.0	–
6.2	6.5	6.2	6.0	6.3	6.7	5.4	-67.4%
285,655	286,021	271,300	293,159	303,146	314,352	328,787	144.0%
3.1	**3.1**	**3.3**	**3.3**	**3.2**	**3.1**	**3.1**	**-12.6%**
61.7	**62.9**	**63.7**	**67.6**	**68.8**	**68.9**	**70.9**	**115.2%**
0.0	0.0	0.0	0.0	0.0	0.0	0.0	370.0%
19.6	19.8	20.4	21.3	20.5	21.0	22.3	93.5%
41.4	42.3	42.4	45.3	46.9	46.5	47.4	131.8%
0.4	0.4	0.5	0.6	0.9	1.0	0.9	–
0.0	0.0	0.0	0.0	0.0	0.0	0.0	–
0.4	0.4	0.4	0.4	0.4	0.4	0.3	-67.1%
70.4	**70.3**	**70.2**	**70.2**	**70.2**	**70.1**	**70.1**	**0.9%**

5 Transportation Sector

Freight Transportation Explanatory Variables

	1990	1995	2001	2005	2006
Trucks					
Sales (thousands)					
Light Trucks[a,b]	103	115	160	165	166
Medium Trucks[a,b]	45	59	82	94	127
Heavy Trucks[a,b]	16	26	22	34	38
Stock (thousands)					
Light Trucks[a,c]	1,005	1,176	1,606	1,826	1,841
Medium Trucks[a,d]	572	581	720	887	1,001
Heavy Trucks[a,d]	297	293	319	359	376
Average Distance Travelled per Year (km)					
Light Trucks[a]	20,704	22,417	20,939	20,513	20,442
Medium Trucks[a,e]	22,165	27,577	27,259	25,805	28,950
Heavy Trucks[a, e]	51,978	70,676	84,387	94,442	86,609
On-Road Average Fuel Consumption (L/100 km)					
Light Trucks[a,f]					
Motor Gasoline[1]	*13.4*	*12.7*	*12.4*	*12.2*	*12.2*
Diesel Fuel Oil[2]	*10.0*	*11.2*	*12.1*	*12.5*	*12.2*
Medium Trucks[a, e]					
Motor Gasoline[1]	*27.1*	*26.2*	*25.8*	*25.3*	*23.0*
Diesel Fuel Oil[2]	*27.6*	*26.7*	*26.2*	*26.0*	*23.3*
Heavy Trucks[a, e]					
Diesel Fuel Oil[2]	*42.5*	*40.0*	*37.3*	*34.9*	*35.1*
Lab-Tested Light Truck Fuel Consumption[3] (L/100 km)[f]					
CAFC Standard Light Trucks	11.8	11.4	11.4	11.2	10.9
CAFC Average Light Truck Fleet	11.4	11.5	11.0	10.6	10.4

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

Sources:

a) Natural Resources Canada, *Transportation End-Use Model*, Ottawa, 2015.
b) R.L. Polk & Co., *New Vehicle Registrations, 1990–2013*, Southfield (Detroit), Michigan, 2015.
c) DesRosiers Automotive Consultants, *Canadian Vehicles in Operation Census, 1990–2013*, Richmond Hill (Toronto), 2015.
d) R.L. Polk & Co., *Truck Industry Profile, 1994–2002*, Southfield (Detroit), Michigan, 2004. Data for 2003 to 2009 estimated by Natural Resources Canada; Statistics Canada, Table 405-0004 (CANSIM), 2010–2013, Ottawa, 2015.
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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2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
181	177	164	194	199	202	216	110.4%
138	123	97	116	118	132	135	203.3%
29	27	15	19	25	33	30	83.0%
1,963	2,104	2,196	2,280	2,361	2,411	2,578	156.6%
1,115	1,231	1,315	1,405	1,432	1,450	1,513	164.5%
386	393	391	396	415	432	433	45.6%
20,450	19,169	18,918	19,056	18,710	18,940	18,708	-9.6%
27,330	25,522	23,815	26,669	25,923	25,788	26,360	18.9%
87,024	85,581	89,911	91,546	92,794	90,627	92,296	77.6%
12.2	*12.1*	*12.0*	*11.9*	*11.9*	*11.8*	*11.7*	*-12.8%*
12.1	*11.7*	*11.3*	*10.9*	*10.5*	*10.0*	*9.6*	*-3.4%*
22.0	*23.2*	*25.3*	*23.2*	*23.0*	*22.8*	*22.4*	*-17.5%*
23.6	*23.3*	*24.4*	*23.2*	*22.8*	*22.4*	*22.1*	*-19.9%*
35.3	*35.6*	*33.5*	*33.6*	*33.2*	*32.8*	*32.5*	*-23.6%*
10.6	10.5	10.2	10.0	n.a.	n.a.	n.a.	–
10.1	9.5	9.1	8.5	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-Demand in Canada* (RESD) (Cat. No. 57-003-X). The RESD 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 data were provided by Informetrica Limited, The *Informetrica Model and Database*, 1990–2011. Data for 2012 onward were provided by Environment Canada.

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

6 Electricity Generation Sector

Electricity Generation Energy Use and Generation by Energy Source

	1990	1995	2001	2005	2006
Total Energy Use (PJ)[a,b]	**3,002.5**	**3,484.7**	**3,700.1**	**3,931.8**	**3,933.8**
Energy Use by Energy Source (PJ)[a,b]					
Natural Gas	80.0	182.1	350.7	366.5	411.6
Diesel Fuel Oil, Light Fuel Oil and Kerosene	11.5	8.0	8.9	9.8	8.1
Heavy Fuel Oil	141.4	84.4	141.2	85.6	58.2
Coal	874.5	907.5	1,109.5	1,062.7	1,014.5
Hydro	1,058.3	1,197.7	1,187.6	1,296.1	1,267.0
Nuclear	795.2	1,067.4	836.3	1,004.1	1,068.7
Wood and Other	37.2	28.2	45.2	43.7	42.5
Petroleum Coke, Still Gas, Coke and Coke Oven Gas[1]	4.3	9.4	20.6	63.3	63.2
Total Electricity Generated (GWh)[a]	**467,596**	**542,739**	**569,402**	**604,370**	**592,636**
Electricity Generated by Energy Source (GWh)[a]					
Natural Gas	9,018	18,577	38,899	37,436	40,508
Diesel Fuel Oil, Light Fuel Oil and Kerosene	994	2,411	780	932	758
Heavy Fuel Oil	13,394	3,451	14,012	14,608	8,960
Coal	76,794	85,192	102,742	93,992	87,317
Hydro	293,985	332,705	329,881	360,026	351,936
Nuclear	68,761	92,306	72,320	86,830	92,419
Wood and Other	3,546	2,687	4,306	4,164	4,047
Petroleum Coke, Still Gas, Coke and Coke Oven Gas[1]	1,105	5,409	6,462	6,383	6,691
Activity					
GDP (million $2007)[c]	23,565	25,947	24,352	27,969	27,498
Production (GWh)[a]	467,596	542,739	569,402	604,370	592,636
Energy Intensity (GJ/$2007)[a,b,c]	**0.127**	**0.134**	**0.152**	**0.141**	**0.143**
Energy Intensity (GJ/GWh)[a,b]	**6,421**	**6,421**	**6,498**	**6,506**	**6,638**

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

Sources:

a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2013*, Ottawa, 2015.
b) Natural Resources Canada, *Electricity Energy Use Model*, Ottawa, 2015.
c) Informetrica Limited, *The Informetrica Model and Database*, 1990–2011, Ottawa, 2012;
Data for 2012 onward were provided by Environment Canada. They assumed responsibility for operating the Informetrica Model as Informetrica Limited ceased its operations.

Electricity Generation Sector

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2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
4,015.6	**3,995.6**	**3,734.6**	**3,742.4**	**3,855.6**	**3,900.1**	**3,856.6**	**28.4%**
425.7	439.8	426.7	509.1	580.2	595.3	580.8	626.1%
10.4	7.8	8.2	8.3	9.6	10.6	9.7	-15.6%
65.4	57.5	53.9	31.3	23.7	22.0	19.8	-86.0%
1,075.5	1,015.8	849.1	853.6	742.3	683.6	689.5	-21.2%
1,313.6	1,345.8	1,314.4	1,253.2	1,339.5	1,407.0	1,448.2	36.8%
1,019.8	1,047.5	982.8	989.0	1,021.0	1,034.9	952.6	19.8%
46.1	43.5	49.8	56.3	101.6	109.3	111.2	198.6%
59.1	37.9	49.7	41.5	37.7	37.3	44.7	944.5%
614,583	**614,926**	**588,906**	**579,366**	**608,181**	**619,810**	**622,884**	**33.2%**
42,233	39,070	41,082	47,807	56,479	57,317	54,145	500.4%
1,031	979	1,071	1,085	1,052	1,035	1,072	7.8%
10,289	8,332	8,243	5,357	4,570	4,655	4,931	-63.2%
96,808	90,987	76,367	77,869	72,838	63,080	63,964	-16.7%
364,877	373,822	365,108	348,110	372,077	390,838	402,275	36.8%
88,191	90,585	84,992	85,527	88,291	89,492	82,378	19.8%
4,392	4,147	4,747	5,361	9,674	10,408	10,589	198.6%
6,762	7,004	7,295	8,251	3,199	2,986	3,530	219.4%
28,541	30,283	28,907	29,481	30,111	30,284	31,487	33.6%
614,583	614,926	588,906	579,366	608,181	619,810	622,884	33.2%
0.141	**0.132**	**0.129**	**0.127**	**0.128**	**0.129**	**0.122**	**-3.9%**
6,534	**6,498**	**6,342**	**6,459**	**6,340**	**6,292**	**6,191**	**-3.6%**

6 Electricity Generation Sector

Electricity Generation GHG Emissions by Energy Source

	1990	1995	2001	2005	2006
Total GHG Emissions (Mt of CO_2e)[a,b,c]	**96.3**	**101.0**	**131.6**	**127.9**	**123.7**
GHG Emissions by Energy Source (Mt of CO_2e)[a,b,c]					
Natural Gas	4.1	9.2	17.8	18.5	20.8
Diesel Fuel Oil, Light Fuel Oil and Kerosene	0.8	0.6	0.7	0.7	0.6
Heavy Fuel Oil	10.8	6.4	10.5	6.4	4.3
Coal	80.2	84.0	100.9	97.0	92.7
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	0.1	0.0	0.0
Petroleum Coke, Still Gas, Coke and Coke Oven Gas[1]	0.4	0.8	1.7	5.2	5.2
GHG Intensity[2] (tonnes/TJ [electricity generated])[a,b,c]	**57.2**	**51.7**	**64.2**	**58.8**	**58.0**
GHG Intensity[3] (tonnes/TJ [energy used])[a,b,c]	**32.1**	**29.0**	**35.6**	**32.5**	**31.4**

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 electricity conversion losses (energy used to produce electricity versus the amount of electricity generated).

Sources:

a) Statistics Canada, *Report on Energy Supply and Demand in Canada, 1990–2013*, Ottawa, 2015.
b) Natural Resources Canada, *Electricity Energy Use Model*, Ottawa, 2015.
c) Environment Canada, *National Inventory Report 1990–2013: Greenhouse Gas Sources and Sinks in Canada*, Ottawa, 2015.

Electricity Generation Sector

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2007	2008	2009	2010	2011	2012	2013	Total Growth 1990-2013
130.3	**122.9**	**108.0**	**110.1**	**102.8**	**97.9**	**98.0**	**1.8%**
21.5	22.1	21.4	25.4	28.9	29.5	28.7	598.8%
0.8	0.6	0.6	0.6	0.7	0.8	0.7	-14.9%
4.9	4.3	4.0	2.3	1.8	1.6	1.5	-86.3%
98.2	92.8	77.9	78.2	68.2	62.8	63.3	-21.1%
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	–
0.1	0.0	0.1	0.1	0.1	0.1	0.1	–
4.9	3.1	4.1	3.4	3.1	3.1	3.7	–
58.9	**55.5**	**51.0**	**52.8**	**47.0**	**43.9**	**43.7**	**-23.6%**
32.4	**30.8**	**28.9**	**29.4**	**26.7**	**25.1**	**25.4**	**-20.7%**

Appendix A
Reconciliation of Data

Reconciliation of Data with Statistics Canada's *Report on Energy Supply and Demand in Canada* (RESD) – 2013 (petajoules)

	RESD 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
Sector						
Residential	1,343	174				
Commercial/ Institutional	1,018		(58)	(21)	(22)	0
Industrial	2,636			(2)	(35)	
Transportation	2,688		58	23	57	0
Agriculture	279					
Final Demand	**7,964**	**174**	**0**	**0**	**0**	**0**
Non-Energy	1,072					
Producer Consumption	1,406					
Net Supply	**10,443**	**174**	**0**	**0**	**0**	**0**
Fuel Conversion						
Electricity, Steam & Coal/Coke Input Fuels[1]	4,005					
Electricity, Steam & Coal/Coke Production[2]	(2,357)					
Total Primary	**12,090**	**174**	**0**	**0**	**0**	**0**

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

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

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

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

Reconciliation of Data

A

LFO - Retail Pump Sales	Pipeline Fuels	Wood Waste & Ppulping 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
						1,517
						917
0		412	5	508		3,525
0	(140)				(0)	2,686
						279
0	**(140)**	**412**	**5**	**508**	**(0)**	**8,923**
						1,072
	140			(508)		1,038
0	**0**	**412**	**5**	**0**	**(0)**	**11,033**
						4,005
						(2,357)
0	**0**	**412**	**5**	**0**	**(0)**	**12,681**

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 *Canada's National Inventory Report 1990–2013*[1]

Introduction

In this handbook, *Energy Use Data Handbook 1990 to 2013* (EUDH), the data on greenhouse gas (GHG) emissions are estimated using emissions factors developed by Environment Canada (EC). The emissions estimates provided here mirror the sectoral definitions used to calculate the estimates presented in EC's *Canada's National Inventory Report 1990–2013* (NIR-2013). Both Natural Resources Canada (NRCan) and EC use the energy demand data from Statistics Canada's *Report on Energy Supply and Demand in Canada* as a base.

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

The objective of this appendix is to help readers understand the similarities and differences between EUDH and NIR 2013 emissions estimates for the five sectors covered in this handbook.

[1] Canada's official GHG inventory is available on the Environment Canada Web site at www.ec.gc.ca/ges-ghg/default.asp?lang=En&n=5B59470C-1

Reconciliation of Definitions

B

Residential Sector

EUDH and NIR-2013 differ in their definitions of residential emissions:

- EUDH residential emissions include end-use, electricity-related emissions, which are reported under power generation in NIR-2013.

Commercial/Institutional Sector

EUDH and NIR-2013 differ in their definitions of commercial/institutional emissions:

- EUDH commercial/institutional emissions include end-use, electricity-related emissions, which NIR-2013 includes under power generation.

Industrial Sector

There are many differences between EUDH and NIR-2013 definitions in the industrial sector:

- NIR-2013 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-2013 reports this as consumption of fossil fuels.
- NIR-2013 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-2013 reports them under power generation.
  - NIR-2013 includes producers' consumption of non-fossil fuels in the fossil fuel categories. EUDH does not report this consumption.
  - NIR-2013 also reallocates estimates of emissions from upstream oil and gas flaring to fugitive emissions from the fossil fuel sector.

B Reconciliation of Definitions

Transportation Sector

EUDH and NIR-2013 differ in their definitions of transportation emissions:

- NIR-2013 reallocates industrial and agriculture diesel and agriculture motor gasoline to the transportation sector.
- NIR-2013 includes pipeline-related emissions in the transportation sector.
- NIR-2013 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-2013.

Electricity Generation Sector

There is only one difference between EUDH and NIR-2013 for the electricity generation sector:

- NIR-2013 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-2013 reports detailed emissions from electricity generation that are similar to those found in EUDH.

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 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.

C Glossary of Terms

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 (CO_2): A compound of carbon and oxygen formed whenever carbon is burned. Carbon dioxide (CO_2) 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 CO_2 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

C

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.

C Glossary of Terms

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 (CO_2), methane (CH_4), chlorofluorocarbons (CFCs) and nitrous oxide (N_2O). By far the most abundant GHG is CO_2, accounting for about 70 percent of total GHG emissions (see Carbon Dioxide).

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

Gross Domestic Product (GDP): The total value of goods and services produced within Canada during a given year. Also referred to as annual economic output or, more simply, output. To avoid counting the same output more than once, gross domestic product (GDP) includes only final goods and services – not those that are used to make another product. GDP figures are reported in constant 2007 dollars.

Glossary of Terms

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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.

C Glossary of Terms

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 10 100-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).

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.

Glossary of Terms

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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).

C Glossary of Terms

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

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

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

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

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

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

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

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

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

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

Glossary of Terms

C

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

$2002	Constant 2002 dollars
$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
EC	Environment 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_2e	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

List of Abbreviations

D

NGL	Natural gas liquids
NRCan	Natural Resources Canada
OEE	Office of Energy Efficiency
PJ	Petajoule = 1×10^{15} joules
Pkm	Passenger-kilometre
RESD	Report on Energy Supply and Demand in Canada
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