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Energy Use Data Handbook

1990 to 2007

Canada

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Preface

This is the eighth edition of the *Energy Use Data Handbook, 1990 to 2007*, 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 in are for analytical purposes. Readers should consult Environment Canada's publication *Canada's Greenhouse Gas Inventory* for the official GHG inventory.

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

- Data are presented for 1990 to 2007 for all sectors.
- In the industrial sector, the lime industry is now reported as part of "Other Manufacturing" for confidentiality reasons.
- In the residential sector, we have subdivided the vintage category "1996–2007" into three parts: "1996–2000," "2001–2005" and "2006-2007."
- The agriculture table is no longer published in the handbook. However, detailed tables are still available in electronic version on the OEE Web site.

The handbook covers five sectors at an aggregate level: residential, commercial/institutional, industrial, transportation and electricity generation. The year 1990 is the reference year for the Kyoto Protocol, whereas 2007 is the most recent year for which actual data are available.

Preface

This handbook provides data on energy use and GHG emissions as well as information on major activities and relevant indicators influencing energy use. Such data form the foundation for OEE analysis in publications such as *Energy Efficiency Trends in Canada, 1990 to 2007*, 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/tables07*.

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

This handbook was prepared by Naima Behidj, Monique Brugger, Dominic Demers, Ann Kowal, Yantao Liu, Craig Wadsworth, Michael Warbanski and Fumiko Yamada, all staff members of the Demand Policy and Analysis Division of the OEE, which is part of NRCan. The project leader was John Appleby, with Chuck Spelay and Michel Francoeur providing overall direction.

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Total End-Use Sector

chapter 1

The Data Situation

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

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

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

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

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

	1990	1995	2000	2001
Total Energy Use (PJ) [a,b,c]	**6,936.3**	**7,437.7**	**8,095.6**	**7,896.2**
Energy Use by Energy Source (PJ)				
Electricity	1,550.1	1,670.2	1,799.1	1,797.2
Natural Gas	1,777.6	1,982.2	2,127.8	1,961.9
Motor Gasoline	1,176.5	1,214.9	1,341.8	1,358.4
Oil [1]	1,202.2	1,193.8	1,346.4	1,328.5
Aviation Gasoline	5.5	4.1	3.6	3.5
Aviation Turbo Fuel	181.9	183.2	235.9	215.1
Still Gas and Petroleum Coke	309.9	352.6	341.4	378.8
Wood Waste and Pulping Liquor	341.0	407.0	464.4	425.2
Other [2]	313.3	346.0	338.7	338.6
Residential Wood	78.2	83.8	96.6	89.1
Total GHG Emissions Including Electricity (Mt of CO_2e) [a,b,c,d]	**395.3**	**410.9**	**467.2**	**463.6**
GHG Emissions by Energy Source (Mt of CO_2e)				
Electricity	86.3	85.2	113.4	118.2
Natural Gas	89.5	99.1	106.5	98.0
Motor Gasoline	81.2	85.0	91.9	93.0
Oil [1]	87.4	86.5	97.8	96.5
Aviation Gasoline	0.4	0.3	0.3	0.3
Aviation Turbo Fuel	13.0	13.1	16.4	15.0
Still Gas and Petroleum Coke	15.1	17.4	17.1	19.2
Wood Waste and Pulping Liquor	0.2	0.2	0.2	0.2
Other [2]	22.1	24.1	23.5	23.3
Residential Wood	0.0	0.0	0.0	0.0
Total GHG Emissions Excluding Electricity (Mt of CO_2e) [a,b,c,d]	**309.0**	**325.7**	**353.8**	**345.4**

1) "Oil" includes diesel fuel oil, light fuel oil, kerosene and heavy fuel oil.
2) "Other" includes coal, coke, coke oven gas, LPG and Gas Plant NGL, steam and waste fuels from the cement industry.

Sources:
a) Statistics Canada, *Report on Energy Supply-Demand in Canada, 199*0-2007, Ottawa, February 2009.
b) Natural Resources Canada, Residential End-Use Model, Ottawa, August 2009.
c) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2007*, Simon Fraser University, March 2009.
d) Environment Canada, *Canada's Greenhouse Gas Inventory* 1990–2007, Ottawa, April 2009.

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
8,192.9	8,433.5	8,571.4	8,511.8	8,284.1	8,870.5	27.9%
1,855.0	1,878.1	1,902.5	1,929.6	1,877.9	1,927.8	24.4%
2,111.0	2,188.6	2,168.8	2,096.7	2,060.2	2,303.9	29.6%
1,386.0	1,408.0	1,434.8	1,429.2	1,432.0	1,485.9	26.3%
1,295.3	1,411.6	1,455.8	1,490.6	1,403.4	1,479.2	23.0%
3.5	3.2	2.9	3.0	3.0	3.1	-43.9%
224.6	222.5	246.2	255.8	252.8	248.8	36.7%
443.1	437.2	415.9	402.4	438.0	491.6	58.6%
458.5	468.0	514.4	468.2	383.9	492.0	44.3%
322.2	318.4	330.2	337.3	341.4	335.4	7.1%
93.7	98.0	100.0	98.9	91.6	102.8	31.4%
470.1	490.0	491.5	482.7	474.9	501.6	26.9%
115.6	123.0	118.4	112.2	110.3	114.7	33.0%
105.4	109.0	108.0	104.2	102.6	114.4	27.8%
94.6	95.8	97.4	96.8	96.8	100.3	23.5%
93.8	102.2	105.4	107.9	101.6	107.0	22.4%
0.3	0.2	0.2	0.2	0.2	0.2	-43.9%
15.7	15.5	17.2	17.8	17.6	17.3	33.0%
22.3	22.1	22.0	21.0	22.0	24.6	62.3%
0.2	0.2	0.2	0.2	0.2	0.2	36.4%
22.1	22.0	22.6	22.2	23.5	22.8	3.1%
0.0	0.0	0.0	0.0	0.0	0.0	31.4%
354.4	367.1	373.0	370.5	364.6	386.9	25.2%

Canada's Secondary Energy Use by Sector, End-Use and Sub-Sector

	1990	1995	2000	2001
Total Energy Use (PJ) [a,b,e]	**6,936.3**	**7,437.7**	**8,095.6**	**7,896.2**
Residential (PJ) [a,b]	1,282.3	1,342.9	1,384.4	1,329.0
Space Heating	794.4	846.7	870.2	799.0
Water Heating	243.0	254.9	259.1	258.0
Appliances	182.8	174.5	181.7	186.9
Major Appliances	153.3	138.4	133.7	135.4
Other Appliances [1]	29.5	36.2	48.0	51.5
Lighting	51.7	52.7	59.2	61.7
Space Cooling	10.5	14.1	14.2	23.3
Commercial/Institutional (PJ) [a,c]	867.0	960.9	1,072.8	1,060.9
Space Heating	471.9	524.4	578.8	550.0
Water Heating	67.4	72.6	89.8	91.9
Auxiliary Equipment	83.2	97.8	133.2	137.4
Auxiliary Motors	91.1	97.1	95.9	95.2
Lighting	114.2	121.9	120.2	119.2
Space Cooling	30.3	39.3	47.2	59.5
Street Lighting [f]	8.9	7.8	7.7	7.7
Industrial (PJ) [a,e]	2,710.0	2,919.8	3,124.5	3,010.8
Mining	347.8	449.4	520.9	531.0
Pulp and Paper	726.1	794.9	853.3	754.4
Iron and Steel	219.4	247.8	257.6	228.5
Smelting and Refining	183.3	220.3	234.7	248.8
Cement	59.3	61.2	63.6	61.9
Chemicals	223.2	253.1	230.1	207.8
Petroleum Refining	323.1	302.1	295.1	311.4
Other Manufacturing	553.2	534.2	602.9	600.8
Forestry	7.7	7.9	16.2	18.3
Construction	66.9	48.9	49.9	47.9

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-Demand in Canada, 199*0-2007, Ottawa, February 2009.
b) Natural Resources Canada, Residential End-Use Model, Ottawa, August 2009.
c) Natural Resources Canada, Commercial/Institutional End-Use Model, Ottawa, August 2009.
d) Natural Resources Canada, Transportation End-Use Model, Ottawa, August 2009.
e) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2007*, Simon Fraser University, March 2009.
f) Statistics Canada, *Electric Power Generation, Transmission and Distribution 2007*, Ottawa, April 2009 (Cat. No. 57-202-X).

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
8,192.9	**8,433.5**	**8,571.4**	**8,511.8**	**8,284.1**	**8,870.5**	**27.9%**
1,380.4	1,436.1	1,413.1	1,395.5	1,335.0	1,447.2	12.9%
847.9	899.4	882.5	855.4	805.7	908.1	14.3%
257.6	263.0	254.4	254.4	250.7	257.9	6.2%
185.3	188.9	194.5	189.9	190.6	192.4	5.3%
131.5	132.3	133.7	128.9	126.9	126.4	-17.5%
53.7	56.6	60.8	61.0	63.7	66.0	123.8%
61.3	63.0	64.1	61.4	61.0	60.8	17.8%
28.3	21.8	17.5	34.5	27.1	27.9	166.5%
1,131.5	1,166.5	1,172.8	1,162.2	1,090.0	1,141.6	31.7%
594.5	615.6	618.4	594.7	534.7	572.5	21.3%
91.3	98.8	102.6	100.8	98.1	94.7	40.6%
146.4	158.1	169.2	172.5	177.1	189.7	127.9%
95.0	95.0	95.5	87.7	88.7	90.4	-0.8%
119.5	119.3	119.7	108.5	108.3	110.3	-3.4%
77.0	71.8	59.5	89.7	74.8	75.5	149.1%
7.8	7.8	7.8	8.3	8.3	8.4	-5.5%
3,168.1	3,257.8	3,311.6	3,244.2	3,155.5	3,471.6	28.1%
551.9	652.7	635.9	680.6	710.5	867.0	149.3%
777.4	803.7	826.2	783.2	649.5	668.7	-7.9%
239.5	233.7	235.2	236.9	233.6	224.0	2.1%
255.0	263.3	250.2	268.5	269.3	271.5	48.2%
66.4	63.4	65.4	63.0	70.5	69.7	17.4%
200.4	191.1	213.9	207.4	208.3	204.8	-8.2%
381.1	358.6	340.3	302.0	315.3	362.3	12.2%
625.2	615.9	661.8	620.5	616.2	721.5	30.4%
17.1	18.8	22.7	21.6	21.5	19.6	153.4%
54.2	56.7	59.9	60.5	60.7	62.4	-6.7%

continued on next table ⇨

Canada's Secondary Energy Use by Sector, End-Use and Sub-Sector (Continued)

	1990	1995	2000	2001
Total Transportation (PJ) [a]	1,877.9	2,004.9	2,282.1	2,277.4
Passenger Transportation (PJ) [a,d]	1,184.7	1,186.4	1,284.7	1,284.5
Cars	735.2	689.5	647.0	656.6
Trucks	208.0	261.1	352.5	366.5
Motorcycles	2.5	2.3	2.6	2.8
Buses	53.2	51.1	48.2	43.9
Air	180.9	180.1	231.5	211.9
Rail	5.1	2.5	2.9	2.9
Freight Transportation (PJ) [a,d]	639.8	756.4	916.3	902.4
Light Trucks	96.2	115.2	143.3	149.6
Medium Trucks	134.0	165.4	177.6	159.3
Heavy Trucks	212.3	288.4	393.2	384.9
Air	6.5	7.3	8.0	6.7
Rail	84.4	78.5	80.2	78.8
Marine	106.5	101.7	114.0	123.2
Off-Road (PJ) [d]	53.3	62.1	81.1	90.4
Agriculture (PJ) [a]	199.2	209.2	231.9	218.1

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-Demand in Canada, 199*0-2007, Ottawa, February 2009.
b) Natural Resources Canada, Residential End-Use Model, Ottawa, August 2009.
c) Natural Resources Canada, Commercial/Institutional End-Use Model, Ottawa, August 2009.
d) Natural Resources Canada, Transportation End-Use Model, Ottawa, August 2009.
e) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2007*, Simon Fraser University, March 2009.
f) Statistics Canada, *Electric Power Generation, Transmission and Distribution 2007*, Ottawa, April 2009 (Cat. No. 57-202-X).

⇦ continued from previous table

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
2,306.1	2,361.3	2,465.1	2,501.3	2,492.2	2,595.2	38.2%
1,318.0	1,326.9	1,363.3	1,370.6	1,358.6	1,412.5	19.2%
662.8	663.0	662.4	650.9	644.1	668.0	-9.1%
381.1	390.7	405.9	413.9	413.5	442.4	112.7%
3.1	3.3	3.6	3.6	3.8	4.1	67.0%
47.8	48.7	47.2	48.7	46.1	49.8	-6.3%
220.5	218.7	241.7	250.9	248.6	245.6	35.7%
2.6	2.5	2.4	2.5	2.5	2.6	-49.4%
895.3	939.8	1,005.2	1,032.1	1,034.2	1,085.1	69.6%
152.9	156.1	161.6	163.0	164.9	177.1	84.1%
148.1	162.4	178.4	156.0	167.0	159.8	19.3%
404.8	440.0	471.0	517.7	516.8	549.2	158.7%
7.5	7.0	7.4	7.9	7.1	6.3	-3.9%
71.5	71.3	72.6	76.4	78.9	83.9	-0.6%
110.5	103.1	114.2	111.2	99.5	109.0	2.3%
92.8	94.6	96.6	98.7	99.4	97.6	83.0%
206.8	211.8	208.9	208.5	211.4	215.0	7.9%

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

	1990	1995	2000	2001
Total GHG Emissions Including Electricity (Mt of CO_2e) [a,b,d,e,f]	**395.3**	**410.9**	**467.2**	**463.6**
Residential (Mt of CO_2e) [a,b,e]	67.1	66.5	73.8	72.6
Space Heating	40.5	41.1	43.8	40.7
Water Heating	13.0	13.1	14.0	14.0
Appliances	10.2	8.9	11.4	12.2
Major Appliances	8.5	7.1	8.4	8.8
Other Appliances [1]	1.6	1.8	3.0	3.4
Lighting	2.9	2.7	3.7	4.1
Space Cooling	0.6	0.7	0.9	1.5
Commercial/Institutional (Mt of CO_2e) [a,c,e]	47.4	50.3	61.7	62.4
Space Heating	25.5	27.9	31.4	29.9
Water Heating	3.6	3.9	4.9	5.0
Auxiliary Equipment	4.7	5.0	8.4	9.0
Auxiliary Motors	5.1	5.0	6.0	6.3
Lighting	6.4	6.2	7.6	7.8
Space Cooling	1.7	2.0	2.9	3.9
Street Lighting [g]	0.5	0.4	0.5	0.5
Industrial (Mt of CO_2e) [a,e,f]	135.8	138.6	156.4	154.6
Mining	18.7	22.9	28.4	29.0
Pulp and Paper	24.2	22.4	25.4	23.9
Iron and Steel	15.8	17.2	18.1	16.6
Smelting and Refining	10.7	11.9	14.8	16.2
Cement	4.3	4.5	4.8	4.8
Chemicals	10.8	12.0	12.2	11.1
Petroleum Refining	17.9	17.4	17.4	18.4
Other Manufacturing	28.4	26.5	30.8	30.1
Forestry	0.6	0.6	1.2	1.3
Construction	4.3	3.2	3.3	3.2

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

Sources:

a) Statistics Canada, *Report on Energy Supply-Demand in Canada, 199*0-2007, Ottawa, February 2009.
b) Natural Resources Canada, Residential End-Use Model, Ottawa, August 2009.
c) Natural Resources Canada, Commercial/Institutional End-Use Model, Ottawa, August 2009.
d) Natural Resources Canada, Transportation End-Use Model, Ottawa, August 2009.
e) Environment Canada, *Canada's Greenhouse Gas Inventory 1990–2007*, Ottawa, April 2009.
f) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2007*, Simon Fraser University, March 2009.
g) Statistics Canada, *Electric Power Generation, Transmission and Distribution 2007*, Ottawa, April 2009 (Cat. No. 57-202-X).

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
470.1	**490.0**	**491.5**	**482.7**	**474.9**	**501.6**	**26.9%**
73.2	77.7	74.5	71.2	68.6	74.3	10.7%
42.4	45.6	43.9	41.4	39.2	44.2	9.2%
13.8	14.2	13.5	13.3	13.1	13.4	3.2%
11.5	12.3	12.0	11.0	11.1	11.4	12.2%
8.1	8.6	8.3	7.4	7.4	7.5	-12.3%
3.3	3.7	3.8	3.5	3.7	3.9	139.2%
3.8	4.1	4.0	3.6	3.6	3.6	25.9%
1.8	1.4	1.1	2.0	1.6	1.7	184.9%
65.0	68.8	67.8	65.2	61.3	64.5	36.0%
32.3	33.9	34.1	32.6	29.1	31.2	22.1%
5.0	5.5	5.7	5.5	5.4	5.2	42.2%
9.1	10.3	10.5	10.0	10.4	11.3	142.5%
5.9	6.2	5.9	5.1	5.2	5.4	6.0%
7.4	7.8	7.5	6.3	6.4	6.6	3.3%
4.7	4.6	3.7	5.2	4.4	4.4	164.5%
0.5	0.5	0.5	0.5	0.5	0.5	1.0%
157.2	164.9	163.7	158.7	158.0	168.5	24.1%
29.2	34.7	33.7	35.3	36.4	44.4	137.6%
22.7	23.6	23.8	20.4	18.3	17.5	-27.7%
16.9	16.6	16.6	16.5	16.7	15.5	-2.1%
15.9	17.2	15.7	16.0	16.1	16.5	53.3%
5.1	5.2	5.3	5.0	5.7	5.6	30.1%
10.4	10.2	11.1	10.6	10.8	10.6	-1.6%
21.8	21.0	20.6	18.5	18.5	20.9	17.1%
30.4	31.4	31.3	30.9	30.0	32.0	12.5%
1.2	1.4	1.7	1.6	1.6	1.4	155.9%
3.5	3.7	3.9	3.9	4.0	4.1	-5.7%

continued on next table ⇨

Canada's GHG Emissions by Sector, End-Use and Sub-Sector – Including Electricity-Related Emissions (Continued)

	1990	1995	2000	2001
Total Transportation (Mt of CO_2e) [a,d,e]	131.6	141.3	159.1	158.7
Passenger Transportation (Mt of CO_2e) [a,d,e]	82.3	83.4	88.6	88.4
Cars	50.7	48.4	44.4	45.0
Light Trucks	14.4	18.4	24.2	25.2
Motorcycles	0.2	0.2	0.2	0.2
Buses	3.6	3.5	3.3	3.1
Air	13.0	12.9	16.1	14.8
Rail	0.4	0.2	0.2	0.2
Freight Transportation (Mt of CO_2e) [a,d,e]	45.6	53.7	65.0	64.2
Light Trucks	6.5	7.9	9.8	10.2
Medium Trucks	9.1	11.3	12.1	10.9
Heavy Trucks	14.8	20.1	27.6	27.0
Air	0.5	0.5	0.6	0.5
Rail	6.6	6.1	6.3	6.2
Marine	8.2	7.8	8.7	9.3
Off-Road (Mt of CO_2e) [d,e]	3.6	4.2	5.5	6.1
Agriculture (Mt of CO_2e) [a,e]	13.4	14.1	16.2	15.3

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

Sources:

a) Statistics Canada, *Report on Energy Supply-Demand in Canada, 199*0-2007, Ottawa, February 2009.
b) Natural Resources Canada, Residential End-Use Model, Ottawa, August 2009.
c) Natural Resources Canada, Commercial/Institutional End-Use Model, Ottawa, August 2009.
d) Natural Resources Canada, Transportation End-Use Model, Ottawa, August 2009.
e) Environment Canada, *Canada's Greenhouse Gas Inventory 1990–2007*, Ottawa, April 2009.
f) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2007*, Simon Fraser University, March 2009.
g) Statistics Canada, *Electric Power Generation, Transmission and Distribution 2007*, Ottawa, April 2009 (Cat. No. 57-202-X).

⇦ continued from previous table

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
160.4	163.9	170.9	173.3	172.4	179.4	36.4%
90.5	90.9	93.2	93.5	92.5	96.0	16.6%
45.3	45.1	44.9	44.0	43.4	44.9	-11.5%
26.1	26.7	27.7	28.2	28.1	30.0	107.8%
0.2	0.2	0.2	0.2	0.3	0.3	64.1%
3.3	3.4	3.3	3.3	3.2	3.4	-4.4%
15.4	15.3	16.9	17.5	17.3	17.1	32.0%
0.2	0.2	0.2	0.2	0.2	0.2	-48.9%
63.6	66.6	71.2	73.2	73.2	76.8	68.4%
10.4	10.6	11.0	11.1	11.2	12.0	83.2%
10.2	11.2	12.3	10.7	11.5	11.0	20.4%
28.4	30.9	33.1	36.4	36.3	38.6	161.3%
0.5	0.5	0.5	0.5	0.5	0.4	-6.5%
5.6	5.6	5.7	6.0	6.2	6.6	0.4%
8.4	7.8	8.7	8.4	7.6	8.3	1.3%
6.3	6.4	6.5	6.7	6.7	6.6	81.2%
14.3	14.8	14.5	14.3	14.6	14.9	10.8%

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

	1990	1995	2000	2001
Total GHG Emissions Excluding Electricity (Mt of CO_2e) [a,b,d,e,f]	**309.0**	**325.7**	**353.8**	**345.4**
Residential (Mt of CO_2e) [a,b,e]	41.1	42.3	42.5	39.4
Space Heating	31.2	31.8	31.7	28.7
Water Heating	9.7	10.3	10.5	10.4
Appliances	0.2	0.2	0.2	0.2
Major Appliances	0.1	0.1	0.1	0.1
Other Appliances [1]	0.2	0.2	0.2	0.2
Lighting	0.0	0.0	0.0	0.0
Space Cooling	0.0	0.0	0.0	0.0
Commercial/Institutional (Mt of CO_2e) [a,c,e]	25.7	28.9	33.1	33.1
Space Heating	22.1	24.9	28.0	27.7
Water Heating	3.2	3.5	4.3	4.6
Auxiliary Equipment	0.4	0.4	0.6	0.6
Auxiliary Motors	0.0	0.0	0.0	0.0
Lighting	0.0	0.0	0.0	0.0
Space Cooling	0.1	0.1	0.1	0.2
Street Lighting [g]	0.0	0.0	0.0	0.0
Industrial (Mt of CO_2e) [a,e,f]	99.1	100.9	105.3	101.4
Mining	12.9	17.1	20.8	20.8
Pulp and Paper	14.5	12.1	11.4	10.2
Iron and Steel	14.2	15.6	15.8	13.9
Smelting and Refining	3.3	3.2	3.2	3.5
Cement	3.9	4.2	4.3	4.3
Chemicals	7.1	8.5	7.9	6.8
Petroleum Refining	16.7	16.5	16.1	17.1
Other Manufacturing	21.6	20.0	21.2	20.4
Forestry	0.6	0.6	1.2	1.3
Construction	4.3	3.2	3.3	3.2

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

Sources:

a) Statistics Canada, *Report on Energy Supply-Demand in Canada, 199*0-2007, Ottawa, February 2009.
b) Natural Resources Canada, Residential End-Use Model, Ottawa, August 2009.
c) Natural Resources Canada, Commercial/Institutional End-Use Model, Ottawa, August 2009.
d) Natural Resources Canada, Transportation End-Use Model, Ottawa, August 2009.
e) Environment Canada, *Canada's Greenhouse Gas Inventory 1990–2007*, Ottawa, April 2009.
f) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2007*, Simon Fraser University, March 2009.
g) Statistics Canada, *Electric Power Generation, Transmission and Distribution 2007*, Ottawa, April 2009 (Cat. No. 57-202-X).

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
354.4	**367.1**	**373.0**	**370.5**	**364.6**	**386.9**	**25.2%**
41.0	42.8	40.7	39.6	37.5	41.2	0.1%
30.3	32.0	30.4	29.2	27.3	30.6	-2.1%
10.4	10.6	10.1	10.1	9.9	10.3	6.2%
0.2	0.3	0.3	0.3	0.3	0.3	69.3%
0.1	0.1	0.1	0.1	0.1	0.1	-9.4%
0.2	0.3	0.3	0.3	0.3	0.3	69.3%
0.0	0.0	0.0	0.0	0.0	0.0	–
0.0	0.0	0.0	0.0	0.0	0.0	–
35.2	37.8	37.7	37.0	33.5	35.1	36.4%
29.7	31.7	31.6	30.6	27.3	29.0	31.3%
4.6	5.1	5.2	5.3	5.1	5.0	55.5%
0.7	0.7	0.8	0.8	0.8	0.9	139.2%
0.0	0.0	0.0	0.0	0.0	0.0	–
0.0	0.0	0.0	0.0	0.0	0.0	–
0.2	0.2	0.2	0.3	0.2	0.2	325.5%
0.0	0.0	0.0	0.0	0.0	0.0	–
105.9	110.4	111.7	108.7	108.9	118.5	19.6%
21.4	26.5	25.5	27.5	28.5	35.8	177.0%
9.5	9.5	9.7	7.5	6.1	5.9	-59.0%
14.3	14.2	14.4	14.2	14.7	13.4	-5.7%
3.2	3.3	3.3	3.5	3.3	3.4	2.0%
4.7	4.7	4.8	4.6	5.2	5.2	31.4%
6.2	5.8	6.8	6.5	6.8	6.7	-6.4%
20.5	19.6	19.2	17.1	17.0	19.2	14.7%
21.3	21.8	22.5	22.3	21.7	23.5	8.9%
1.2	1.4	1.7	1.6	1.6	1.4	155.9%
3.5	3.7	3.9	3.9	4.0	4.1	-5.7%

continued on next table ⇨

Canada's GHG Emissions by Sector, End-Use and Sub-Sector – Excluding Electricity-Related Emissions (Continued)

	1990	1995	2000	2001
Total Transportation (Mt of CO_2e) [a,d,e]	131.4	141.2	158.9	158.5
Passenger Transportation (Mt of CO_2e) [a,d,e]	82.1	83.3	88.4	88.2
Cars	50.7	48.4	44.4	45.0
Light Trucks	14.4	18.4	24.2	25.2
Motorcycles	0.2	0.2	0.2	0.2
Buses	3.4	3.3	3.1	2.8
Air	13.0	12.9	16.1	14.8
Rail	0.4	0.2	0.2	0.2
Freight Transportation (Mt of CO_2e) [a,d,e]	45.6	53.7	65.0	64.2
Light Trucks	6.5	7.9	9.8	10.2
Medium Trucks	9.1	11.3	12.1	10.9
Heavy Trucks	14.8	20.1	27.6	27.0
Air	0.5	0.5	0.6	0.5
Rail	6.6	6.1	6.3	6.2
Marine	8.2	7.8	8.7	9.3
Off-Road (Mt of CO_2e) [d,e]	3.6	4.2	5.5	6.1
Agriculture (Mt of CO_2e) [a,e]	11.7	12.4	14.0	13.0

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

Sources:

a) Statistics Canada, *Report on Energy Supply-Demand in Canada, 199*0-2007, Ottawa, February 2009.
b) Natural Resources Canada, Residential End-Use Model, Ottawa, August 2009.
c) Natural Resources Canada, Commercial/Institutional End-Use Model, Ottawa, August 2009.
d) Natural Resources Canada, Transportation End-Use Model, Ottawa, August 2009.
e) Environment Canada, *Canada's Greenhouse Gas Inventory 1990–2007*, Ottawa, April 2009.
f) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2007*, Simon Fraser University, March 2009.
g) Statistics Canada, *Electric Power Generation, Transmission and Distribution 2007*, Ottawa, April 2009 (Cat. No. 57-202-X).

⇦ continued from previous table

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
160.2	163.7	170.7	173.1	172.2	179.2	36.4%
90.3	90.7	93.0	93.3	92.3	95.8	16.7%
45.3	45.1	44.9	44.0	43.4	44.9	-11.5%
26.1	26.7	27.7	28.2	28.1	30.0	107.8%
0.2	0.2	0.2	0.2	0.3	0.3	64.1%
3.1	3.2	3.0	3.1	3.0	3.3	-3.9%
15.4	15.3	16.9	17.5	17.3	17.1	32.0%
0.2	0.2	0.2	0.2	0.2	0.2	-48.9%
63.6	66.6	71.2	73.2	73.2	76.8	68.4%
10.4	10.6	11.0	11.1	11.2	12.0	83.2%
10.2	11.2	12.3	10.7	11.5	11.0	20.4%
28.4	30.9	33.1	36.4	36.3	38.6	161.3%
0.5	0.5	0.5	0.5	0.5	0.4	-6.5%
5.6	5.6	5.7	6.0	6.2	6.6	0.4%
8.4	7.8	8.7	8.4	7.6	8.3	1.3%
6.3	6.4	6.5	6.7	6.7	6.6	81.2%
12.1	12.4	12.2	12.2	12.5	13.0	10.6%

Commodity Prices and Background Indicators

	1990	1995	2000	2001
Commodity Prices				
Crude Oil Prices				
Wellhead U.S. Average ($US/bbl.) [a]	20.03	14.62	26.72	21.84
Edmonton Par [1] ($/m^3) [b]	173.95	151.36	278.98	246.69
Brent Montréal [2] ($/m^3) [b]	187.35	160.31	280.95	267.49
Natural Gas Price at AECO-C Hub (intra-Alberta) [3] ($/GJ) [b]	1.34	1.09	4.81	5.91
Background Indicators				
Total GDP (million $ 2002) c	773,596	847,195	1,025,949	1,042,300
Industrial	221,114	238,231	297,784	295,031
Commercial/Institutional	472,440	522,376	629,442	652,376
Agriculture	18,274	17,949	20,450	17,489
Electricity Generation	21,356	23,498	23,301	22,238
Multifactor Measure of Productivity (2002 = 100) [c]	**93.6**	**94.7**	**99.8**	**99.5**

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 by Area*, http://tonto.eia.doe.gov/dnav/pet/pet_pri_dfp1_k_m.htm.
b) Natural Resources Canada, Oil and Gas Policy and Regulatory Affairs Division, Ottawa, May 2008.
c) Informetrica Limited, *TI Model and Database*, Ottawa, December 2008.

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
22.51	27.56	36.77	50.28	59.69	66.52	232.1%
253.44	274.10	333.87	436.00	457.54	479.23	175.5%
263.13	275.71	336.01	433.55	484.56	504.51	169.3%
3.83	6.31	6.52	8.14	6.79	6.27	367.9%
1,068,788	1,091,069	1,129,663	1,161,437	1,195,030	1,223,773	58.2%
301,125	305,084	315,549	321,631	325,596	324,397	46.7%
674,072	690,435	714,892	735,942	765,028	792,977	67.8%
15,750	18,354	20,379	21,149	20,831	20,518	12.3%
23,620	23,975	24,125	25,559	25,126	25,999	21.7%
100.0	**99.6**	**99.1**	**99.3**	**99.0**	**98.0**	

Residential Sector

chapter 2

The Data Situation

Aggregate data on residential energy use are reported in Statistics Canada's *Report on Energy Supply-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 using annual stock characteristics and sales data, coupled with usage profiles and unit energy consumption for equipment stock. It is disaggregated at the provincial level and includes four building types, five end-uses, eight vintage categories (house age categories) and six fuel types. Some end-uses are further disaggregated by equipment type.

Residential housing stock estimates 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. Significant processing of the data is necessary to merge the information. Floor space information is acquired by combining housing stock estimates with data from two other Statistics Canada surveys: the *Building Permits Survey* and the OEE-sponsored *Survey of Household Energy Use* (SHEU).

Energy consumption information was drawn from the data collected by various industry associations and external studies (some of which are commissioned by the OEE). Specifically, the Canadian Appliance Manufacturers Association, the Heating, Refrigeration and Air Conditioning Institute of Canada (HRAI), 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*, two reports from Environment Canada.

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

In this edition, some of the assumptions and methodologies embodied in the model were revised to better reflect the latest available survey data, technology and/or use patterns. For example, with the release of 2007 SHEU data, it was necessary to revise the assumptions made on the number of different types of light bulbs used by households back to 2004. The revisions reflected the incrementally higher penetration rates of more energy-efficient light bulbs.

The methodology for calculating housing stock was also further improved. Instead of mapping from Statistics Canada vintages to building code vintages, the new methodology uses new construction permits and the base year data to obtain housing stock by building code vintage for the years beyond the base year.

Heating system life tables were also revised based on the best available information, including the federal government's efforts to promote the use of high-efficiency heating equipment as well as furnace shipment data from the HRAI. The revisions resulted in an increase in high-efficiency furnace stock combined with a decline in normal-efficiency furnace stock, which led to slight changes in energy use for space heating.

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

Residential Secondary Energy Use by Energy Source and End-Use

	1990	1995	2000	2001
Total Energy Use (PJ) [a,b]	**1,282.3**	**1,342.9**	**1,384.4**	**1,329.0**
Energy Use by Energy Source (PJ) [a,b]				
Electricity	467.4	473.8	497.6	504.9
Natural Gas	528.4	630.5	644.8	601.0
Heating Oil	186.4	138.0	132.4	121.1
Other [1]	21.9	16.8	13.0	13.1
Wood	78.2	83.8	96.6	89.1
Energy Use by End-Use (PJ) [b]				
Space Heating	794.4	846.7	870.2	799.0
Water Heating	243.0	254.9	259.1	258.0
Appliances	182.8	174.5	181.7	186.9
Major Appliances	153.3	138.4	133.7	135.4
Other Appliances [2]	29.5	36.2	48.0	51.5
Lighting	51.7	52.7	59.2	61.7
Space Cooling	10.5	14.1	14.2	23.3
Activity				
Total Floor Space (million m^2) [b]	1,207	1,360	1,457	1,479
Total Households (thousands) [b,c]	9,895	10,900	11,652	11,837
Energy Intensity (GJ/m^2) [a,b]	**1.06**	**0.99**	**0.95**	**0.90**
Energy Intensity (GJ/household) [a,b,c]	**129.6**	**123.2**	**118.8**	**112.3**
Heating Degree-Day Index [b,d]	**0.92**	**0.98**	**0.96**	**0.88**
Cooling Degree-Day Index [b,e]	**1.05**	**1.18**	**0.91**	**1.43**

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-Demand in Canada 1990–2007*, Ottawa, February 2009.
b) Natural Resources Canada, Residential End-Use Model, Ottawa, August 2009.
c) Statistics Canada, *Survey of Household Spending, 1997–2007*, Ottawa, June 2009.
d) Environment Canada, *Climate Summaries, Monthly Values of Degree-Days below 18.0°C, 1990–2007*, Ottawa.
e) Environment Canada, *Climate Summaries, Monthly Values of Degree-Days above 18.0°C, 1990–2007*, Ottawa.

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
1,380.4	**1,436.1**	**1,413.1**	**1,395.5**	**1,335.0**	**1,447.2**	**12.9%**
517.5	532.8	543.5	543.6	529.1	557.1	19.2%
640.2	670.2	651.1	646.6	617.4	683.6	29.4%
116.5	122.8	106.0	92.7	82.4	87.9	-52.8%
12.4	12.4	12.4	13.8	14.5	15.9	-27.3%
93.7	98.0	100.0	98.9	91.6	102.8	31.4%
847.9	899.4	882.5	855.4	805.7	908.1	14.3%
257.6	263.0	254.4	254.4	250.7	257.9	6.2%
185.3	188.9	194.5	189.9	190.6	192.4	5.3%
131.5	132.3	133.7	128.9	126.9	126.4	-17.5%
53.7	56.6	60.8	61.0	63.7	66.0	123.8%
61.3	63.0	64.1	61.4	61.0	60.8	17.8%
28.3	21.8	17.5	34.5	27.1	27.9	166.5%
1,502	1,526	1,575	1,627	1,675	1,731	43.5%
12,014	12,189	12,375	12,587	12,756	12,985	31.2%
0.92	**0.94**	**0.90**	**0.86**	**0.80**	**0.84**	**-21.4%**
114.9	**117.8**	**114.2**	**110.9**	**104.7**	**111.5**	**-14.0%**
0.93	**0.96**	**0.95**	**0.92**	**0.85**	**0.93**	
1.73	**1.32**	**0.95**	**1.79**	**1.38**	**1.45**	

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

	1990	1995	2000	2001
Total GHG Emissions Including Electricity (Mt of CO_2e) [a,b,c]	**67.1**	**66.5**	**73.8**	**72.6**
GHG Emissions by Energy Source (Mt of CO_2e) [a,b,c]				
Electricity	26.0	24.2	31.4	33.2
Natural Gas	26.6	31.5	32.3	30.0
Heating Oil	13.1	9.7	9.3	8.5
Other [1]	1.4	1.1	0.8	0.8
Wood	0.0	0.0	0.0	0.0
GHG Emissions by End-Use (Mt of CO_2e) [b,c]				
Space Heating	40.5	41.1	43.8	40.7
Water Heating	13.0	13.1	14.0	14.0
Appliances	10.2	8.9	11.4	12.2
Major Appliances	8.5	7.1	8.4	8.8
Other Appliances [2]	1.6	1.8	3.0	3.4
Lighting	2.9	2.7	3.7	4.1
Space Cooling	0.6	0.7	0.9	1.5
GHG Intensity (tonne/TJ) [a,b,c]	**52.3**	**49.5**	**53.3**	**54.6**
Total GHG Emissions Excluding Electricity (Mt of CO_2e) [a,b,c]	**41.1**	**42.3**	**42.5**	**39.4**
GHG Emissions by End-Use (Mt of CO_2e) [b,c]				
Space Heating	31.2	31.8	31.7	28.7
Water Heating	9.7	10.3	10.5	10.4
Appliances	0.2	0.2	0.2	0.2
Major Appliances	0.2	0.2	0.2	0.2
Other Appliances [2]	0.0	0.0	0.0	0.0
Lighting	0.0	0.0	0.0	0.0
Space Cooling	0.0	0.0	0.0	0.0
GHG Intensity (tonne/TJ) [a,b,c]	**32.1**	**31.5**	**30.7**	**29.6**

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-Demand in Canada 1990–2007*, Ottawa, February 2009.
b) Natural Resources Canada, Residential End-Use Model, Ottawa, August 2009.
c) Environment Canada, *Canada's Greenhouse Gas Inventory 1990–2007*, Ottawa, April 2009.

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
73.2	**77.7**	**74.5**	**71.2**	**68.6**	**74.3**	**10.7%**
32.3	34.9	33.8	31.6	31.1	33.1	27.4%
32.0	33.4	32.4	32.2	30.8	33.9	27.5%
8.2	8.6	7.4	6.5	5.8	6.2	-52.9%
0.8	0.8	0.8	0.9	0.9	1.0	-26.1%
0.0	0.0	0.0	0.0	0.0	0.0	31.4%
42.4	45.6	43.9	41.4	39.2	44.2	9.2%
13.8	14.2	13.5	13.3	13.1	13.4	3.2%
11.5	12.3	12.0	11.0	11.1	11.4	12.2%
8.1	8.6	8.3	7.4	7.4	7.5	-12.3%
3.3	3.7	3.8	3.5	3.7	3.9	139.2%
3.8	4.1	4.0	3.6	3.6	3.6	25.9%
1.8	1.4	1.1	2.0	1.6	1.7	184.9%
53.1	**54.1**	**52.7**	**51.0**	**51.4**	**51.4**	**-1.9%**
41.0	**42.8**	**40.7**	**39.6**	**37.5**	**41.2**	**0.1%**
30.3	32.0	30.4	29.2	27.3	30.6	-2.1%
10.4	10.6	10.1	10.1	9.9	10.3	6.2%
0.2	0.3	0.3	0.3	0.3	0.3	69.3%
0.2	0.3	0.3	0.3	0.3	0.3	69.3%
0.0	0.0	0.0	0.0	0.0	0.0	–
0.0	0.0	0.0	0.0	0.0	0.0	–
0.0	0.0	0.0	0.0	0.0	0.0	–
29.7	**29.8**	**28.8**	**28.4**	**28.1**	**28.4**	**-11.3%**

Residential Housing Stock and Floor Space

	1990	1995	2000	2001
Total Housing Stock (thousands) [a]	**10,418**	**11,505**	**12,218**	**12,381**
Housing Stock by Building Type (thousands)				
Single Detached	5,853	6,482	6,913	7,017
Single Attached	968	1,125	1,257	1,285
Apartments	3,377	3,664	3,804	3,833
Mobile Homes	220	235	245	247
Housing Stock by Vintage (thousands)				
Before 1946	2,163	2,052	1,934	1,912
1946-1960	1,483	1,424	1,360	1,348
1961-1977	3,103	3,009	2,911	2,892
1978-1983	1,703	1,649	1,593	1,582
1984-1995	1,966	3,372	3,314	3,303
1996-2000 [1]	0	0	1,106	1,105
2001-2005 [2]	0	0	0	242
2006–2007 [3]	0	0	0	0
Total Floor Space (million m²) [a]	**1,207**	**1,360**	**1,457**	**1,479**
Floor Space by Building Type (million m²)				
Single Detached	793	899	970	986
Single Attached	110	128	145	149
Apartments	285	312	319	320
Mobile Homes	19	21	22	23
Floor Space by Vintage (million m²)				
Before 1946	239	227	215	212
1946-1960	148	142	135	134
1961-1977	344	334	317	312
1978-1983	214	207	198	196
1984-1995	262	450	438	435
1996-2000 [1]	0	0	154	153
2001-2005 [2]	0	0	0	35
2006–2007 [3]	0	0	0	0

1) Growth rate shown in the final column entitled "Total Growth 1990–2007" is for 1996 to 2007.
2) Growth rate shown in the final column entitled "Total Growth 1990–2007" is for 2001 to 2007.
3) Growth rate shown in the final column entitled "Total Growth 1990–2007" is for 2006 to 2007.

Source:
a) Natural Resources Canada, Residential End-Use Model, Ottawa, August 2009.

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
12,556	**12,730**	**12,920**	**13,125**	**13,299**	**13,521**	**29.8%**
7,123	7,225	7,334	7,452	7,547	7,675	31.1%
1,315	1,346	1,377	1,408	1,436	1,468	51.7%
3,868	3,906	3,954	4,007	4,056	4,114	21.8%
250	252	255	258	260	264	20.1%
1,888	1,864	1,840	1,816	1,792	1,769	-18.2%
1,334	1,321	1,307	1,294	1,280	1,267	-14.6%
2,871	2,851	2,829	2,808	2,786	2,765	-10.9%
1,570	1,558	1,545	1,533	1,520	1,508	-11.5%
3,290	3,278	3,265	3,253	3,239	3,226	64.1%
1,103	1,101	1,099	1,098	1,095	1,094	354.4%
499	758	1,034	1,324	1,324	1,323	447.6%
0	0	0	0	264	568	115.2%
1,502	**1,526**	**1,575**	**1,627**	**1,675**	**1,731**	**43.5%**
1,003	1,019	1,058	1,099	1,136	1,180	48.9%
154	158	164	169	175	181	65.2%
322	325	329	335	339	345	21.1%
23	23	24	24	25	25	29.0%
210	208	208	208	208	209	-12.6%
133	131	132	133	133	134	-9.4%
308	304	304	305	306	307	-10.9%
194	192	193	194	194	195	-9.0%
432	429	434	439	444	449	71.6%
153	152	152	153	153	153	366.8%
72	110	151	196	198	201	470.5%
0	0	0	0	38	85	122.0%

continued on next table ⇨

Residential Housing Stock and Floor Space (Continued)

	1990	1995	2000	2001
Average Size of Housing Unit (m^2/house) [a]	**116**	**118**	**119**	**119**
Average Size by Building Type (m^2/house)				
Single Detached	135	139	140	141
Single Attached	113	113	116	116
Apartments	84	85	84	84
Mobile Homes	89	90	91	92
Average Size by Vintage (m^2/house)				
Before 1946	110	110	111	111
1946-1960	100	100	100	100
1961-1977	111	111	109	108
1978-1983	126	126	125	124
1984-1995	133	133	132	132
1996-2000 [1]	0	0	139	139
2001-2005 [2]	0	0	0	146
2006–2007 [3]	0	0	0	0

1) Growth rate shown in the final column entitled "Total Growth 1990–2007" is for 1996 to 2007.
2) Growth rate shown in the final column entitled "Total Growth 1990–2007" is for 2001 to 2007.
3) Growth rate shown in the final column entitled "Total Growth 1990–2007" is for 2006 to 2007.

Source:
a) Natural Resources Canada, Residential End-Use Model, Ottawa, August 2009.

⇦ continued from previous table

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
120	120	122	124	126	128	10.6%
141	141	144	147	150	154	13.5%
117	118	119	120	122	124	8.9%
83	83	83	84	84	84	-0.5%
92	93	93	94	94	95	7.4%
111	111	113	115	116	118	6.9%
99	99	101	103	104	106	6.1%
107	106	108	109	110	111	0.0%
124	123	125	126	128	129	2.8%
131	131	133	135	137	139	4.5%
139	138	139	139	140	140	2.7%
145	145	146	148	150	152	4.2%
0	0	0	0	144	149	3.2%

Residential Space Heating Energy Use by Energy Source and Building Type

	1990	1995	2000	2001
Total Space Heating Energy Use (PJ) [a]	**794.4**	**846.7**	**870.2**	**799.0**
Energy Use by Energy Source (PJ) [a]				
Electricity	166.0	181.2	192.5	182.5
Natural Gas	370.5	448.9	460.1	417.4
Heating Oil	163.0	119.9	112.1	101.0
Other [1]	17.5	14.4	11.8	11.9
Wood	77.4	82.3	93.7	86.1
Energy Use by Building Type (PJ) [a]				
Single Detached	581.0	619.7	640.0	588.8
Single Attached	62.5	69.2	74.0	68.7
Apartments	130.0	136.4	134.3	121.6
Mobile Homes	20.9	21.4	21.9	20.0
Activity				
Total Floor Space (million m^2) [a]	1,207	1,360	1,457	1,479
Energy Intensity (GJ/m^2) [a]	**0.66**	**0.62**	**0.60**	**0.54**
Heat Gains (PJ) [a]	**97.8**	**102.0**	**105.7**	**99.6**
Heating Degree-Day Index [a,b]	**0.92**	**0.98**	**0.96**	**0.88**

1) "Other" includes coal and propane.

Sources:
a) Natural Resources Canada, Residential End-Use Model, Ottawa, August 2009.
b) Environment Canada, Climate Summaries, *Monthly Values of Degree-Days below 18.0°C, 1990–2007*, Ottawa.

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
847.9	**899.4**	**882.5**	**855.4**	**805.7**	**908.1**	**14.3%**
193.2	208.9	217.0	209.2	202.2	228.9	37.9%
454.4	480.1	466.3	458.5	432.0	489.5	32.1%
98.0	103.9	90.7	79.2	69.8	75.5	-53.7%
11.5	11.4	11.5	12.6	13.2	14.6	-16.5%
90.8	95.0	97.0	95.8	88.5	99.6	28.6%
625.5	661.2	651.1	633.9	599.7	678.5	16.8%
73.4	80.1	77.9	76.2	71.1	79.9	27.8%
127.6	136.5	132.6	125.6	116.2	128.9	-0.9%
21.3	21.7	21.0	19.6	18.7	20.8	-0.4%
1,502	1,526	1,575	1,627	1,675	1,731	43.5%
0.56	**0.59**	**0.56**	**0.53**	**0.48**	**0.52**	**-20.3%**
105.0	**110.6**	**110.9**	**105.3**	**98.1**	**108.7**	**11.2%**
0.93	**0.96**	**0.95**	**0.92**	**0.85**	**0.93**	

Residential Space Heating System Stock Share

	1990	1995	2000	2001
Heating System Stock Share by System Type (%) [a]				
Heating Oil – Normal Efficiency	14.0	8.6	3.8	3.1
Heating Oil – Medium Efficiency	0.3	3.0	6.3	6.7
Heating Oil – High Efficiency	0.0	0.0	0.0	0.0
Natural Gas – Normal Efficiency	39.7	31.5	23.3	21.6
Natural Gas – Medium Efficiency	1.4	8.8	15.1	16.3
Natural Gas – High Efficiency	2.9	5.4	8.2	9.0
Electric Baseboard	28.1	29.0	27.8	27.7
Heat Pump	2.3	2.7	3.4	3.5
Other [1]	0.8	1.0	1.1	1.1
Wood	1.7	1.9	2.2	2.1
Dual Systems				
Wood/Electric	5.1	4.6	4.9	4.9
Wood/Heating Oil	2.4	2.1	2.3	2.4
Natural Gas/Electric	0.3	0.4	0.4	0.4
Heating Oil/Electric	0.8	0.9	1.1	1.1

1) "Other" includes coal and propane.

Source:
a) Natural Resources Canada, Residential End-Use Model, Ottawa, August 2009.

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
2.4	1.8	1.4	1.1	0.9	0.7	
7.0	7.1	7.2	7.5	7.5	7.6	
0.0	0.0	0.0	0.0	0.0	0.0	
19.8	17.9	15.9	13.8	11.9	10.0	
17.7	18.8	20.1	21.2	22.2	23.2	
9.8	10.7	11.6	12.6	13.6	14.7	
27.7	27.9	27.8	27.7	27.8	27.8	
3.6	3.8	3.9	4.0	4.1	4.2	
1.1	1.0	1.0	1.0	1.0	1.0	
2.1	2.1	2.1	2.1	2.0	2.0	
4.9	4.9	4.9	4.9	4.9	4.8	
2.3	2.4	2.3	2.3	2.3	2.3	
0.5	0.5	0.5	0.5	0.5	0.5	
1.2	1.2	1.2	1.2	1.2	1.2	

Residential Lighting and Space Cooling Details

	1990	1995	2000	2001
Total Lighting Energy Use [1] (PJ) [a]	**51.7**	**52.7**	**59.2**	**61.7**
Activity				
Total Households (thousands) [a]	9,895	10,900	11,652	11,837
Energy Intensity (GJ/Household) [a]	**5.2**	**4.8**	**5.1**	**5.2**
Heat Loss (PJ) [a]	**21.7**	**23.6**	**25.9**	**24.8**
Total Space Cooling Energy Use [1] (PJ) [a]	**10.5**	**14.1**	**14.2**	**23.3**
Energy Use by Cooling System Type (PJ) [a]				
Room	2.7	2.9	2.4	4.1
Central	7.7	11.3	11.8	19.3
Activity				
Cooled Floor Space (million m^2) [a]	267	348	482	513
Energy Intensity (MJ/m^2) [a]	**39.3**	**40.6**	**29.5**	**45.5**
Cooling Degree-Day Index [a,b]	**1.05**	**1.18**	**0.91**	**1.43**
Total Cooling System Stock (thousands) [a]	**2,438**	**3,045**	**4,030**	**4,272**
System Stock by Type (thousands) [a]				
Room	1,067	1,142	1,425	1,533
Central	1,371	1,903	2,605	2,740
New Unit Efficiency [a]				
Room (EER)	7.1	9.2	9.4	9.4
Central (SEER)	9.1	10.2	10.3	10.3
Stock Efficiency [a]				
Room (EER)	6.8	7.4	8.3	8.4
Central (SEER)	8.6	9.2	9.6	9.7

1) Lighting and space cooling consume only electricity.

Sources:

a) Natural Resources Canada, Residential End-Use Model, Ottawa, August 2009.

b) Environment Canada, Climate Summaries, *Monthly Values of Degree-Days above 18.0°C, 1990–2007*, Ottawa.

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
61.3	63.0	64.1	61.4	61.0	60.8	17.8 %
12,014	12,189	12,375	12,587	12,756	12,985	31.2 %
5.1	5.2	5.2	4.9	4.8	4.7	-10.2 %
26.1	27.6	27.6	25.8	23.9	26.1	20.4 %
28.3	21.8	17.5	34.5	27.1	27.9	166.5 %
5.0	4.0	2.9	5.6	4.8	5.1	85.6 %
23.4	17.8	14.6	28.9	22.3	22.8	195.2 %
544	582	617	656	712	708	165.7 %
52.1	37.5	28.3	52.6	38.1	39.4	0.3 %
1.73	1.32	0.95	1.79	1.38	1.45	
4,513	4,808	5,151	5,572	6,144	6,282	157.7 %
1,670	1,805	1,795	1,992	2,289	2,446	129.3 %
2,843	3,003	3,357	3,580	3,855	3,836	179.8 %
9.4	9.4	9.4	9.4	9.4	9.4	31.5 %
10.3	10.3	10.3	10.3	13.0	13.0	42.2 %
8.6	8.8	8.9	9.1	9.2	9.3	35.8 %
9.7	9.8	9.9	10.0	10.3	10.5	21.6 %

Residential Appliance Details

	1990	1995	2000	2001
Total Appliance Energy Use (PJ) [a]	**182.8**	**174.5**	**181.7**	**186.9**
Energy Use by Energy Source (PJ) [a]				
Electricity	179.2	170.5	177.1	182.2
Natural Gas	3.6	4.0	4.5	4.7
Energy Use by Appliance Type (PJ) [a]				
Refrigerator	60.7	49.9	44.3	44.2
Freezer	24.7	20.3	16.2	15.6
Dishwasher [1]	3.9	3.7	3.3	3.3
Clothes Washer [1]	2.7	2.7	2.8	2.9
Clothes Dryer	33.0	32.6	34.5	35.4
Range	28.3	29.2	32.7	34.0
Other Appliances [2]	29.5	36.2	48.0	51.5
Activity				
Total Households (thousands) [a,b]	9,895	10,900	11,652	11,837
Energy Intensity (GJ/household) [a,b]	**18.5**	**16.0**	**15.6**	**15.8**
Heat Loss by Appliance Type (PJ) [a]				
Refrigerator	25.6	22.5	19.5	17.9
Freezer	10.5	9.2	7.2	6.4
Dishwasher [1]	0.6	0.6	0.5	0.4
Clothes Washer [1]	0.6	0.7	0.7	0.6
Clothes Dryer	3.9	4.1	4.3	4.0
Range	10.0	11.0	12.0	11.4
Other Appliances [2]	12.5	16.3	21.2	20.8
Appliances per Household by Appliance Type [a,b]				
Refrigerator	1.18	1.20	1.23	1.23
Freezer	0.57	0.58	0.58	0.57
Dishwasher	0.42	0.47	0.52	0.52
Clothes Washer	0.74	0.78	0.81	0.81
Clothes Dryer	0.72	0.76	0.81	0.81
Range	0.98	0.99	0.99	0.99
Other Appliances [2]	10.12	11.11	12.77	13.37

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

Sources:
a) Natural Resources Canada, Residential End-Use Model, Ottawa, August 2009.
b) Statistics Canada, Survey of Household Spending, 1997–2007, Ottawa, June 2009.

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
185.3	**188.9**	**194.5**	**189.9**	**190.6**	**192.4**	**5.3%**
180.4	183.7	189.2	184.1	184.8	186.2	3.9%
4.9	5.2	5.4	5.7	5.7	6.2	71.7%
42.2	41.8	41.8	39.6	37.9	36.7	-39.6%
14.4	13.8	13.3	12.4	11.9	11.8	-52.3%
3.1	3.0	3.0	2.7	2.5	2.3	-40.3%
2.8	2.8	2.8	2.6	2.4	2.3	-15.9%
35.0	35.8	36.7	36.2	36.6	37.4	13.4%
34.1	35.1	36.1	35.4	35.4	35.9	27.0%
53.7	56.6	60.8	61.0	63.7	66.0	123.8%
12,014	12,189	12,375	12,587	12,756	12,985	31.2%
15.4	**15.5**	**15.7**	**15.1**	**14.9**	**14.8**	**-19.8%**
18.1	18.5	18.2	16.8	14.9	15.8	-38.3%
6.3	6.2	5.9	5.3	4.8	5.2	-50.8%
0.4	0.4	0.4	0.4	0.3	0.3	-39.2%
0.7	0.7	0.7	0.6	0.5	0.6	-13.9%
4.2	4.4	4.5	4.3	4.0	4.5	15.9%
12.1	12.9	13.1	12.5	11.6	12.9	29.4%
23.0	25.0	26.5	25.9	25.0	28.5	128.4%
1.24	1.24	1.25	1.26	1.27	1.27	8.0%
0.57	0.57	0.56	0.55	0.55	0.55	-3.1%
0.54	0.55	0.56	0.57	0.57	0.58	37.2%
0.81	0.81	0.81	0.82	0.82	0.82	10.9%
0.82	0.82	0.82	0.83	0.84	0.85	17.2%
0.99	0.99	0.99	0.99	0.99	0.99	1.1%
13.85	14.17	14.66	15.22	15.46	15.65	54.6%

Residential Appliance Unit Energy Consumption (UEC)

	1990	1995	2000	2001
UEC [1] for New Electric Appliances (kWh/year) [a]				
Refrigerator	956	642	640	559
Freezer	714	382	391	393
Dishwasher [2]	227	140	120	116
Clothes Washer [2]	97	77	67	65
Clothes Dryer	1,103	909	910	916
Range	772	771	760	763
UEC [1] for New Natural Gas Appliances (kWh/year) [b]				
Clothes Dryer	925	889	880	880
Range	1,357	1,236	1,226	1,226
UEC [1] for Stock of Electric Appliances (kWh/year) [b]				
Refrigerator	1,502	1,180	903	859
Freezer	1,279	1,000	705	655
Dishwasher [2]	273	224	160	149
Clothes Washer [2]	107	99	87	84
Clothes Dryer	1,316	1,197	1,061	1,040
Range	803	793	781	779
UEC [1] for Stock of Natural Gas Appliances (kWh/year) [b]				
Clothes Dryer	1,480	1,122	888	885
Range	1,519	1,388	1,305	1,296

1) Unit energy consumption is based on rated efficiency.
2) Excludes hot water requirements.

Sources:
a) Special Tabulations from the Canadian Appliance Manufacturers Association, Mississauga, January 2009.
b) Natural Resources Canada, Residential End-Use Model, Ottawa, August 2009.

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
506	487	478	469	481	483	-49.5%
368	369	373	386	380	384	-46.2%
107	92	79	67	61	57	-75.1%
62	57	46	35	31	23	-76.4%
916	914	912	904	905	912	-17.3%
756	718	653	573	537	524	-32.1%
880	880	880	880	880	880	-4.9%
1,226	1,226	1,226	1,226	1,226	1,226	-9.7%
816	778	742	706	658	618	-58.9%
609	567	531	501	474	453	-64.6%
139	128	118	108	96	87	-68.3%
81	79	75	71	65	59	-44.5%
1,020	1,003	984	971	953	939	-28.7%
776	771	762	747	732	716	-10.8%
883	882	881	880	880	880	-40.5%
1,278	1,264	1,257	1,251	1,243	1,237	-18.6%

Residential Water Heating Energy Use and Water Heater Stock Share

	1990	1995	2000	2001
Total Water Heating Energy Use (PJ) [a]	**243.0**	**254.9**	**259.1**	**258.0**
Energy Use by Energy Source (PJ) [a]				
Electricity	60.1	55.3	54.6	55.1
Natural Gas	154.3	177.5	180.2	178.8
Heating Oil	23.3	18.2	20.3	20.0
Other [1]	4.4	2.4	1.1	1.1
Wood	0.8	1.5	2.9	2.9
Activity				
Total Households (thousands) [a,b]	9,895	10,900	11,652	11,837
Energy Intensity (GJ/household) [a,b]	**24.6**	**23.4**	**22.2**	**21.8**
Water Heater Stock Market Shares (%) [a]				
Electricity	52.4	49.7	47.4	46.9
Natural Gas	41.6	44.6	46.6	47.1
Heating Oil	5.1	4.7	5.0	5.0
Other [1]	0.6	0.6	0.3	0.3
Wood	0.2	0.4	0.6	0.6
Heat Loss (PJ) [a]	**12.5**	**14.2**	**14.5**	**13.2**

1) "Other" includes coal and propane.

Sources:
a) Natural Resources Canada, Residential End-Use Model, Ottawa, August 2009.
b) Statistics Canada, *Survey of Household Spending 1997–2007*, Ottawa, June 2009.

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
257.6	**263.0**	**254.4**	**254.4**	**250.7**	**257.9**	**6.2%**
54.3	55.3	55.8	54.3	54.0	53.2	-11.5%
180.9	184.9	179.4	182.4	179.8	187.8	21.7%
18.5	18.9	15.2	13.5	12.6	12.4	-46.8%
0.9	1.0	1.0	1.1	1.2	1.3	-71.2%
2.9	3.0	3.0	3.1	3.1	3.2	281.8%
12,014	12,189	12,375	12,587	12,756	12,985	31.2%
21.4	**21.6**	**20.6**	**20.2**	**19.7**	**19.9**	**-19.1%**
46.6	46.3	46.0	45.8	45.6	45.3	
47.6	48.0	48.4	48.7	48.9	49.3	
4.8	4.7	4.6	4.5	4.4	4.3	
0.3	0.3	0.4	0.4	0.4	0.4	
0.6	0.6	0.6	0.7	0.7	0.7	
14.1	**14.8**	**14.1**	**13.8**	**13.0**	**14.9**	**18.8%**

Residential Energy Prices and Background Indicators

	1990	1995	2000	2001
Energy Prices by Energy Source (incl. taxes)				
Natural Gas (cents/m^3) [a,d]	19.1	22.4	31.9	44.6
Heating Oil (cents/litre) [a,d,e]	35.6	35.6	53.6	53.5
Electricity (cents/kWh) [b,d]	6.2	7.8	7.9	8.1
Background Indicators				
Consumer Price Index (2002 = 100) [c]				
Natural Gas	52.1	62.6	94.2	122.1
Fuel Oil and Other Fuels	72.8	75.1	108.7	108.8
Electricity	68.7	87.3	91.3	92.9
Real Personal Disposable Income per Household ($2002) [c]	56,324	52,997	56,315	56,822
Total Population (thousands) [f]	27,698	29,302	30,689	31,021

Sources:

a) Statistics Canada, *Energy Statistics Handbook*, Ottawa, May 2009 (Cat. No. 57-601-X).
b) Hydro-Québec, *Comparison of Electricity Prices in Major North American Cities*, April 2007.
c) Informetrica Limited, *TI Model and Database*, Ottawa, December 2008.
d) Statistics Canada, Report on *Energy Supply-Demand in Canada, 199*0-2007, Ottawa, February 2009.
e) Statistics Canada, *Total Population, Census Divisions and Census Metropolitan Areas*, Tables 051-0014 and 051-0034, Ottawa, 2008 (CANSIM).
f) Statistics Canada, *Estimates of Population, by Age Group and Sex, Provinces and Territories*, Table 051-0001, Ottawa, 2008 (CANSIM).

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
36.6	46.9	46.6	51.4	53.0	51.2	168.0%
49.7	57.2	60.4	78.0	81.7	84.7	137.8%
8.5	8.6	8.8	9.2	9.4	9.5	53.9%
100.0	130.1	127.4	136.3	140.5	131.3	
100.0	114.9	126.5	158.7	165.9	172.5	
100.0	98.0	102.0	104.9	110.8	112.9	
57,166	57,723	59,164	59,405	61,773	63,301	12.4%
31,373	31,676	31,995	32,312	32,649	32,976	19.1%

Commercial/ Institutional Sector

chapter 3

The Data Situation

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

Aggregate data on commercial/ institutional energy use are reported in Statistics Canada's *Report on Energy Supply-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. Therefore, energy use data for the commercial/institutional sector essentially represent the residual energy use not accounted for in the residential, industrial, transportation and agriculture sectors.

More specifically, in the recent Energy Use Data Handbook publications, the Office of Energy Efficiency (OEE) reported some anomalies in petroleum products data for the commercial and institutional sector, in particular, a sharp increase in consumption of these products since 1999. Some heavy fuel oil, light fuel oil and kerosene may be erroneously attributed to the commercial sector. There is some evidence that fuel marketers (included in the commercial/ institutional sector) are buying petroleum products from refineries and then re-selling them to other sectors (e.g. industrial, transportation). Natural Resources Canada (NRCan) is working with Statistics Canada to better understand the data trends and to improve the quality of the commercial/institutional data reported.

The 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 ten activity types and six end-uses. Floor space estimates are developed by Informetrica Limited for the OEE from average costs per unit of floor space, and investment flows for new construction. These estimates are categorized using the North American Industry Classification System (NAICS). The CEUM used the 2006 *Commercial and Institutional Consumption of Energy Survey* (CICES) as source data for energy intensities. The CICES collected data for the reference year 2005 and was undertaken by Statistics Canada on behalf of the OEE.

The CICES included 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 NRCan and Statistics Canada's *Energy Statistics Handbook* (Cat. No. 57-601-X), respectively. The commercial/institutional price of electricity is a weighted average of the data found in Hydro-Québec's *Comparison of Electricity Prices in Major North American Cities*.

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

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

	1990	1995	2000	2001
Total Energy Use (PJ) [a]	**867.0**	**960.9**	**1,072.8**	**1,060.9**
Energy Use by Energy Source (PJ) [a]				
Electricity	390.1	421.2	453.0	445.2
Natural Gas	387.1	427.6	503.2	488.4
Light Fuel Oil and Kerosene	62.0	61.2	60.4	63.6
Heavy Fuel Oil	11.4	8.6	19.8	26.8
Steam	0.2	0.4	0.3	0.3
Other [1]	16.3	41.8	36.1	36.6
Energy Use by End-Use (PJ) [b]				
Space Heating	471.9	524.4	578.8	550.0
Water Heating	67.4	72.6	89.8	91.9
Auxiliary Equipment	83.2	97.8	133.2	137.4
Auxiliary Motors	91.1	97.1	95.9	95.2
Lighting	114.2	121.9	120.2	119.2
Space Cooling	30.3	39.3	47.2	59.5
Street Lighting [f]	8.9	7.8	7.7	7.7
Energy Use by Activity Type [2] (PJ) [b]				
Wholesale Trade	58.6	61.7	66.8	65.5
Retail Trade	142.9	155.5	173.7	171.9
Transportation and Warehousing	50.7	52.1	51.9	49.5
Information and Cultural Industries	17.4	20.7	24.4	24.3
Offices [3]	275.0	312.5	360.2	357.9
Educational Services	119.1	132.4	147.3	146.3
Health Care and Social Assistance	86.3	96.0	105.9	104.8
Arts, Entertainment and Recreation	23.1	28.6	32.7	32.5
Accommodation and Food Services	66.5	74.1	81.1	79.9
Other Services	18.5	19.6	21.0	20.6

1) "Other" includes coal and propane.
2) Excludes street lighting.
3) "Offices" includes activities related to finance and insurance; real estate and rental and leasing; professional, scientific and technical services; and public administration.

Sources:
a) Statistics Canada, *Report on Energy Supply-Demand in Canada 1990–2007*, Ottawa, February 2009.
b) Natural Resources Canada, Commercial/Institutional End-Use Model, Ottawa, August 2009.
c) Informetrica Limited, *TI Model and Database*, Ottawa, December 2008.
d) Environment Canada, Climate Summaries, *Monthly Values of Degree-Days below 18.0°C, 1990–2007*, Ottawa.
e) Environment Canada, Climate Summaries, *Monthly Values of Degree-Days above 18.0°C, 1990–2007*, Ottawa.
f) Statistics Canada, *Electric Power Generation, Transmission and Distribution 2007*, Ottawa, April 2009 (Cat. No. 57-202).

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
1,131.5	**1,166.5**	**1,172.8**	**1,162.2**	**1,090.0**	**1,141.6**	**31.7%**
476.8	474.4	483.4	485.9	474.0	494.9	26.9%
517.2	525.1	514.1	504.9	467.6	485.0	25.3%
73.9	80.1	91.5	83.3	75.7	79.1	27.6%
27.4	53.5	48.8	55.6	42.5	47.0	313.7%
0.3	0.3	0.4	2.7	2.5	3.8	1,796.5%
35.9	32.9	34.5	29.7	27.7	31.8	95.8%
594.5	615.6	618.4	594.7	534.7	572.5	21.3%
91.3	98.8	102.6	100.8	98.1	94.7	40.6%
146.4	158.1	169.2	172.5	177.1	189.7	127.9%
95.0	95.0	95.5	87.7	88.7	90.4	-0.8%
119.5	119.3	119.7	108.5	108.3	110.3	-3.4%
77.0	71.8	59.5	89.7	74.8	75.5	149.1%
7.8	7.8	7.8	8.3	8.3	8.4	-5.5%
68.7	70.7	70.8	68.3	63.6	66.1	12.8%
183.6	189.4	193.7	191.9	181.2	191.1	33.7%
51.6	52.1	51.2	48.0	43.8	45.1	-11.0%
26.1	27.2	27.2	26.5	24.7	25.9	48.6%
383.3	396.3	396.8	404.4	379.5	397.4	44.5%
156.1	161.7	162.3	158.0	146.8	153.9	29.2%
112.4	114.7	115.3	112.9	106.4	111.2	28.9%
34.3	35.5	35.2	34.8	32.8	34.9	51.0%
86.0	89.1	90.6	88.1	83.7	87.7	31.9%
21.6	22.1	22.1	21.0	19.3	19.8	7.1%

continued on next table ⇨

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

	1990	1995	2000	2001
Activity				
Total Floor Space (million m^2) [c]	509.9	558.7	601.1	610.2
Energy Intensity [2] (GJ/m^2) [a,c]	**1.68**	**1.71**	**1.77**	**1.73**
Heating Degree-Day Index [b,d]	**0.92**	**0.98**	**0.96**	**0.88**
Cooling Degree-Day Index [b,e]	**1.05**	**1.18**	**0.91**	**1.43**

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; and public administration.

Sources:

a) Statistics Canada, *Report on Energy Supply-Demand in Canada 1990–2007*, Ottawa, February 2009.
b) Natural Resources Canada, Commercial/Institutional End-Use Model, Ottawa, August 2009.
c) Informetrica Limited, *TI Model and Database*, Ottawa, December 2008.
d) Environment Canada, Climate Summaries, *Monthly Values of Degree-Days below 18.0°C, 1990–2007*, Ottawa.
e) Environment Canada, Climate Summaries, *Monthly Values of Degree-Days above 18.0°C, 1990–2007*, Ottawa.
f) Statistics Canada, *Electric Power Generation, Transmission and Distribution 2007*, Ottawa, April 2009 (Cat. No. 57-202).

⇦ continued from previous table

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
620.8	631.2	642.6	654.2	667.3	682.2	33.8%
1.81	1.84	1.81	1.76	1.62	1.66	-1.3%
0.93	0.96	0.95	0.92	0.85	0.93	
1.73	1.32	0.95	1.79	1.38	1.45	

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

	1990	1995	2000	2001
Total GHG Emissions Including Electricity (Mt of CO_2e) [a,d]	**47.4**	**50.3**	**61.7**	**62.4**
GHG Emissions by Energy Source (Mt of CO_2e) [a,d]				
Electricity	21.7	21.5	28.6	29.3
Natural Gas	19.5	21.4	25.2	24.4
Light Fuel Oil and Kerosene	4.4	4.3	4.2	4.5
Heavy Fuel Oil	0.9	0.7	1.5	2.0
Steam	0.0	0.0	0.0	0.0
Other [1]	1.0	2.5	2.2	2.2
GHG Emissions by End-Use (Mt of CO_2e) [b,d]				
Space Heating	25.5	27.9	31.4	29.9
Water Heating	3.6	3.9	4.9	5.0
Auxiliary Equipment	4.7	5.0	8.4	9.0
Auxiliary Motors	5.1	5.0	6.0	6.3
Lighting	6.4	6.2	7.6	7.8
Space Cooling	1.7	2.0	2.9	3.9
Street Lighting [c]	0.5	0.4	0.5	0.5
GHG Emissions by Activity Type [2] (Mt of CO_2e) [b,d]				
Wholesale Trade	3.2	3.2	3.8	3.8
Retail Trade	7.7	8.1	9.9	10.0
Transportation and Warehousing	2.8	2.7	3.0	2.9
Information and Cultural Industries	1.0	1.1	1.4	1.4
Offices [3]	15.0	16.4	20.7	21.0
Educational Services	6.5	7.0	8.5	8.6
Health Care and Social Assistance	4.8	5.1	6.2	6.2
Arts, Entertainment and Recreation	1.3	1.5	1.9	1.9
Accommodation and Food Services	3.6	3.9	4.6	4.7
Other Services	1.0	1.0	1.2	1.2
GHG Intensity (tonne/TJ) [a,d]	**54.7**	**52.4**	**57.5**	**58.8**

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; and public administration.

Sources:
a) Statistics Canada, *Report on Energy Supply-Demand in Canada 1990–2007*, Ottawa, February 2009.
b) Natural Resources Canada, Commercial/Institutional End-Use Model, Ottawa, August 2009.
c) Statistics Canada, *Electric Power Generation, Transmission and Distribution 2007*, Ottawa, April 2009 (Cat. No. 57-202).
d) Environment Canada, *Canada's Greenhouse Gas Inventory 1990–2007*, Ottawa, April 2009.

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
65.0	**68.8**	**67.8**	**65.2**	**61.3**	**64.5**	**36.1%**
29.7	31.1	30.1	28.3	27.8	29.4	35.6%
25.8	26.2	25.6	25.1	23.3	24.1	23.5%
5.2	5.6	6.4	5.9	5.3	5.6	27.4%
2.0	4.0	3.6	4.1	3.1	3.5	306.2%
0.0	0.0	0.0	0.0	0.0	0.0	–
2.2	2.0	2.1	1.9	1.7	1.9	96.9%
32.3	33.9	34.1	32.6	29.1	31.2	22.1%
5.0	5.5	5.7	5.5	5.4	5.2	42.2%
9.1	10.3	10.5	10.0	10.4	11.3	142.5%
5.9	6.2	5.9	5.1	5.2	5.4	6.0%
7.4	7.8	7.5	6.3	6.4	6.6	3.3%
4.7	4.6	3.7	5.2	4.4	4.4	164.5%
0.5	0.5	0.5	0.5	0.5	0.5	1.0%
3.9	4.1	4.1	3.8	3.6	3.7	16.5%
10.4	11.0	11.1	10.7	10.1	10.7	38.2%
2.9	3.0	2.9	2.7	2.4	2.5	-8.5%
1.5	1.6	1.6	1.5	1.4	1.5	54.6%
22.0	23.3	22.9	22.7	21.3	22.4	48.9%
9.0	9.6	9.4	8.9	8.3	8.7	33.4%
6.5	6.8	6.7	6.4	6.0	6.3	33.1%
2.0	2.1	2.1	2.0	1.9	2.0	57.7%
5.0	5.3	5.3	5.0	4.7	5.0	37.4%
1.3	1.3	1.3	1.2	1.1	1.1	10.4%
57.4	**59.0**	**57.8**	**56.1**	**56.2**	**56.5**	**3.3%**

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

	1990	1995	2000	2001
Total GHG Emissions Excluding Electricity (Mt of CO_2e) [a,d]	**25.7**	**28.9**	**33.1**	**33.1**
GHG Emissions by End-Use (Mt of CO_2e) [b,d]				
Space Heating	22.1	24.9	28.0	27.7
Water Heating	3.2	3.5	4.3	4.6
Auxiliary Equipment	0.4	0.4	0.6	0.6
Auxiliary Motors	0.0	0.0	0.0	0.0
Lighting	0.0	0.0	0.0	0.0
Space Cooling	0.1	0.1	0.1	0.2
Street Lighting [c]	0.0	0.0	0.0	0.0
GHG Emissions by Activity Type [2] (Mt of CO_2e) [b,d]				
Wholesale Trade	1.7	1.8	2.0	2.0
Retail Trade	4.3	4.7	5.3	5.3
Transportation and Warehousing	1.6	1.7	1.8	1.7
Information and Cultural Industries	0.5	0.6	0.8	0.8
Offices [2]	8.2	9.4	11.1	11.1
Educational Services	3.5	4.0	4.6	4.6
Health Care and Social Assistance	2.6	2.9	3.3	3.3
Arts, Entertainment and Recreation	0.7	0.8	1.0	1.0
Accommodation and Food Services	2.0	2.3	2.6	2.6
Other Services	0.5	0.6	0.6	0.7
GHG Intensity (tonne/TJ) [a,d]	**29.6**	**30.0**	**30.9**	**31.2**

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

Sources:
a) Statistics Canada, *Report on Energy Supply-Demand in Canada 1990–2007*, Ottawa, February 2009.
b) Natural Resources Canada, Commercial/Institutional End-Use Model, Ottawa, August 2009.
c) Statistics Canada, *Electric Power Generation, Transmission and Distribution 2007*, Ottawa, April 2009 (Cat. No. 57-202).
d) Environment Canada, *Canada's Greenhouse Gas Inventory 1990–2007*, Ottawa, April 2009.

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
35.2	**37.8**	**37.7**	**37.0**	**33.5**	**35.1**	**36.4%**
29.7	31.7	31.6	30.6	27.3	29.0	31.3%
4.6	5.1	5.2	5.3	5.1	5.0	55.5%
0.7	0.7	0.8	0.8	0.8	0.9	139.2%
0.0	0.0	0.0	0.0	0.0	0.0	–
0.0	0.0	0.0	0.0	0.0	0.0	–
0.2	0.2	0.2	0.3	0.2	0.2	325.5%
0.0	0.0	0.0	0.0	0.0	0.0	–
2.1	2.2	2.2	2.1	1.9	2.0	16.2%
5.7	6.1	6.2	6.0	5.5	5.8	35.4%
1.8	1.9	1.8	1.7	1.5	1.6	-3.3%
0.8	0.9	0.9	0.8	0.8	0.8	53.5%
11.9	12.7	12.7	13.0	11.7	12.2	49.4%
4.9	5.3	5.2	5.0	4.5	4.7	32.9%
3.6	3.8	3.8	3.7	3.4	3.5	34.6%
1.1	1.2	1.1	1.1	1.0	1.1	58.5%
2.8	3.0	3.0	2.9	2.7	2.8	37.8%
0.7	0.7	0.7	0.7	0.6	0.6	12.0%
31.2	**32.4**	**32.2**	**31.8**	**30.7**	**30.7**	**3.6%**

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

	1990	1995	2000	2001
Total Energy Use for Wholesale Trade (PJ) [a]	**58.6**	**61.7**	**66.8**	**65.5**
Energy Use by Energy Source (PJ) [a]				
Electricity	26.4	27.3	28.1	27.4
Natural Gas	27.0	28.2	33.0	32.0
Light Fuel Oil and Kerosene	3.3	3.2	2.4	2.7
Heavy Fuel Oil	0.6	0.5	1.1	1.2
Steam	0.0	0.0	0.0	0.0
Other [1]	1.1	2.5	2.1	2.1
Activity				
Floor Space (million m^2) [b]	38.61	39.95	41.05	41.27
Energy Intensity (GJ/m^2) [a,b]	**1.52**	**1.54**	**1.63**	**1.59**
Total Energy Use for Retail Trade (PJ) [a]	**142.9**	**155.5**	**173.7**	**171.9**
Energy Use by Energy Source (PJ) [a]				
Electricity	62.4	66.2	72.0	71.1
Natural Gas	68.5	73.4	86.8	84.4
Light Fuel Oil and Kerosene	7.9	7.6	6.1	6.9
Heavy Fuel Oil	1.5	1.2	2.8	3.2
Steam	0.0	0.1	0.1	0.1
Other [1]	2.6	7.1	6.0	6.1
Activity				
Floor Space (million m^2) [b]	80.84	86.04	92.95	94.59
Energy Intensity (GJ/m^2) [a,b]	**1.77**	**1.81**	**1.87**	**1.82**

1) "Other" includes coal and propane.

Sources:
a) Natural Resources Canada, Commercial/Institutional End-Use Model, Ottawa, August 2009.
b) Informetrica Limited, *TI Model and Database*, Ottawa, December 2008.

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
68.7	**70.7**	**70.8**	**68.3**	**63.6**	**66.1**	**12.8%**
29.2	28.9	29.3	29.4	28.0	28.9	9.4%
32.6	33.2	32.6	30.6	28.2	29.2	7.8%
3.4	3.7	4.2	3.7	3.4	3.5	5.4%
1.5	2.9	2.7	3.0	2.2	2.5	294.1%
0.0	0.0	0.0	0.2	0.1	0.2	1,812.5%
2.0	1.9	2.0	1.5	1.6	1.8	65.6%
41.45	41.87	42.40	42.78	43.38	43.96	13.8%
1.66	**1.69**	**1.67**	**1.60**	**1.47**	**1.50**	**-0.9%**
183.6	**189.4**	**193.7**	**191.9**	**181.2**	**191.1**	**33.7%**
76.0	75.6	78.7	80.9	78.4	82.6	32.3%
89.4	91.5	91.5	88.1	82.3	85.9	25.4%
8.5	9.4	10.7	10.0	9.3	9.7	22.9%
3.9	7.6	7.0	8.2	6.4	7.1	384.1%
0.0	0.1	0.1	0.4	0.4	0.6	1,331.4%
5.7	5.2	5.6	4.2	4.4	5.1	98.8%
96.19	98.39	101.62	104.12	106.89	110.01	36.1%
1.91	**1.92**	**1.91**	**1.84**	**1.70**	**1.74**	**-1.7%**

continued on next table ⇨

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

	1990	1995	2000	2001
Total Energy Use for Transportation and Warehousing (PJ) [a]	**50.7**	**52.1**	**51.9**	**49.5**
Energy Use by Energy Source (PJ) [a]				
Electricity	20.7	20.5	19.0	17.8
Natural Gas	24.6	25.3	26.7	25.2
Light Fuel Oil and Kerosene	3.8	3.5	3.3	3.3
Heavy Fuel Oil	0.6	0.4	1.1	1.5
Steam	0.0	0.0	0.0	0.0
Other [1]	0.9	2.3	1.8	1.8
Activity				
Floor Space (million m^2) [b]	33.92	34.22	33.72	33.58
Energy Intensity (GJ/m^2) [a,b]	**1.49**	**1.52**	**1.54**	**1.47**
Total Energy Use for Information and Cultural Industries (PJ) [a]	**17.4**	**20.7**	**24.4**	**24.3**
Energy Use by Energy Source (PJ) [a]				
Electricity	8.0	9.3	10.6	10.5
Natural Gas	7.3	8.6	10.5	10.3
Light Fuel Oil and Kerosene	1.5	1.7	2.1	2.1
Heavy Fuel Oil	0.3	0.2	0.4	0.7
Steam	0.0	0.0	0.0	0.0
Other [1]	0.3	0.9	0.8	0.8
Activity				
Floor Space (million m^2) [b]	8.97	10.49	11.83	12.07
Energy Intensity (GJ/m^2) [a,b]	**1.95**	**1.97**	**2.06**	**2.01**

1) "Other" includes coal and propane.

Sources:
a) Natural Resources Canada, Commercial/Institutional End-Use Model, Ottawa, August 2009.
b) Informetrica Limited, *TI Model and Database*, Ottawa, December 2008.

⇦ continued from previous table

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
51.6	**52.1**	**51.2**	**48.0**	**43.8**	**45.1**	**-11.0%**
18.5	17.8	17.6	17.0	16.0	16.3	-21.2%
26.4	26.4	25.2	23.4	21.2	21.6	-12.2%
3.5	3.8	4.4	3.8	3.3	3.5	-9.0%
1.5	2.8	2.5	2.7	2.1	2.3	251.1%
0.0	0.0	0.0	0.2	0.2	0.3	1,662.8%
1.6	1.4	1.4	1.0	1.0	1.2	33.9%
33.39	33.41	33.35	33.26	33.37	33.39	-1.6%
1.55	**1.56**	**1.53**	**1.44**	**1.31**	**1.35**	**-9.6%**
26.1	**27.2**	**27.2**	**26.5**	**24.7**	**25.9**	**48.6%**
11.4	11.3	11.5	11.7	11.2	11.6	45.8%
10.7	11.0	10.6	10.1	9.5	9.8	33.7%
2.5	2.7	3.1	2.7	2.4	2.6	66.0%
0.7	1.4	1.2	1.4	1.0	1.1	312.2%
0.0	0.0	0.0	0.0	0.0	0.1	2,048.1%
0.9	0.8	0.8	0.6	0.6	0.7	130.0%
12.34	12.55	12.71	12.93	13.19	13.46	50.2%
2.11	**2.16**	**2.14**	**2.05**	**1.87**	**1.92**	**-1.1%**

continued on next table ⇨

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

	1990	1995	2000	2001
Total Energy Use for Offices [2] (PJ) [a]	**275.0**	**312.5**	**360.2**	**357.9**
Energy Use by Energy Source (PJ) [a]				
Electricity	122.9	136.8	152.2	150.4
Natural Gas	123.4	139.0	169.2	164.6
Light Fuel Oil and Kerosene	19.8	20.1	20.4	21.7
Heavy Fuel Oil	3.7	2.8	6.3	8.9
Steam	0.1	0.1	0.1	0.1
Other [1]	5.1	13.6	12.0	12.2
Activity				
Floor Space (million m^2) [b]	193.95	219.73	243.07	247.63
Energy Intensity (GJ/m^2) [a,b]	**1.42**	**1.42**	**1.48**	**1.45**
Total Energy Use for Educational Services (PJ) [a]	**119.1**	**132.4**	**147.3**	**146.3**
Energy Use by Energy Source (PJ) [a]				
Electricity	53.8	58.3	62.4	61.4
Natural Gas	51.9	57.7	67.5	65.8
Light Fuel Oil and Kerosene	9.4	9.2	9.2	9.7
Heavy Fuel Oil	1.7	1.3	3.0	4.1
Steam	0.0	0.1	0.0	0.0
Other [1]	2.2	5.7	5.2	5.2
Activity				
Floor Space (million m^2) [b]	68.14	74.28	79.14	80.56
Energy Intensity (GJ/m^2) [a,b]	**1.75**	**1.78**	**1.86**	**1.82**

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; and public administration.

Sources:
a) Natural Resources Canada, Commercial/Institutional End-Use Model, Ottawa, August 2009.
b) Informetrica Limited, *TI Model and Database*, Ottawa, December 2008.

⇦ continued from previous table

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
383.3	**396.3**	**396.8**	**404.4**	**379.5**	**397.4**	**44.5%**
162.1	162.0	164.3	166.8	163.6	170.5	38.8%
177.0	180.3	176.5	178.5	166.6	172.8	40.0%
23.7	25.8	29.3	27.8	25.3	26.7	34.6%
8.6	17.3	15.3	18.2	13.7	15.2	314.4%
0.1	0.1	0.2	0.9	0.8	1.2	1,968.9%
11.7	10.8	11.3	12.2	9.5	10.9	113.5%
253.03	257.92	262.69	267.84	273.72	280.15	44.4%
1.51	**1.54**	**1.51**	**1.51**	**1.39**	**1.42**	**0.0%**
156.1	**161.7**	**162.3**	**158.0**	**146.8**	**153.9**	**29.2%**
65.8	65.9	67.0	66.3	64.5	67.4	25.3%
70.4	71.5	69.7	67.8	61.5	63.8	23.0%
10.7	11.7	13.4	11.8	10.5	11.0	16.7%
4.2	8.0	7.4	8.1	6.2	6.9	292.2%
0.0	0.0	0.0	0.4	0.4	0.6	1,569.8%
5.0	4.5	4.7	3.6	3.7	4.2	92.9%
82.0	83.4	84.6	86.1	87.1	89.0	30.6%
1.90	**1.94**	**1.92**	**1.84**	**1.69**	**1.73**	**-1.0%**

continued on next table ⇨

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

	1990	1995	2000	2001
Total Energy Use for Health Care and Social Assistance (PJ) [a]	**86.3**	**96.0**	**105.9**	**104.8**
Energy Use by Energy Source (PJ) [a]				
Electricity	38.9	42.1	44.7	44.0
Natural Gas	36.4	41.0	46.6	45.2
Light Fuel Oil and Kerosene	7.8	7.6	8.2	8.3
Heavy Fuel Oil	1.4	1.1	2.7	3.7
Steam	0.0	0.0	0.0	0.0
Other [1]	1.7	4.0	3.5	3.7
Activity				
Floor Space (million m^2) [b]	38.16	41.58	44.10	44.77
Energy Intensity (GJ/m^2) [a,b]	**2.26**	**2.31**	**2.40**	**2.34**
Total Energy Use for Arts, Entertainment and Recreation (PJ) [a]	**23.1**	**28.6**	**32.7**	**32.5**
Energy Use by Energy Source (PJ) [a]				
Electricity	10.6	12.9	14.1	13.8
Natural Gas	9.7	12.1	14.2	14.1
Light Fuel Oil and Kerosene	2.0	2.3	2.8	2.7
Heavy Fuel Oil	0.3	0.2	0.5	0.8
Steam	0.0	0.0	0.0	0.0
Other [1]	0.4	1.1	1.0	1.0
Activity				
Floor Space (million m^2) [b]	10.40	12.59	13.73	13.94
Energy Intensity (GJ/m^2) [a,b]	**2.22**	**2.27**	**2.38**	**2.33**

1) "Other" includes coal and propane.

Sources:
a) Natural Resources Canada, Commercial/Institutional End-Use Model, Ottawa, August 2009.
b) Informetrica Limited, *TI Model and Database*, Ottawa, December 2008.

⇦ continued from previous table

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
112.4	**114.7**	**115.3**	**112.9**	**106.4**	**111.2**	**28.9%**
47.0	46.2	46.9	46.3	45.7	47.9	22.9%
49.0	48.7	47.2	46.8	43.2	44.6	22.4%
9.2	9.8	11.4	10.0	9.1	9.4	21.2%
3.7	6.8	6.4	7.0	5.4	5.9	303.7%
0.0	0.0	0.0	0.4	0.4	0.6	3,306.0%
3.5	3.2	3.3	2.5	2.6	3.0	75.2%
45.63	45.90	46.48	47.42	48.53	49.74	30.3%
2.46	**2.50**	**2.48**	**2.38**	**2.19**	**2.24**	**-1.1%**
34.3	**35.5**	**35.2**	**34.8**	**32.8**	**34.9**	**51.0%**
14.8	14.8	14.9	14.9	14.7	15.6	46.6%
13.8	14.0	13.3	13.3	12.3	13.0	33.3%
3.7	3.9	4.4	4.0	3.5	3.8	87.6%
0.8	1.7	1.5	1.7	1.3	1.5	341.9%
0.0	0.0	0.0	0.1	0.1	0.1	2,767.0%
1.2	1.1	1.1	0.8	0.9	1.0	152.0%
14.08	14.30	14.47	14.92	15.25	15.79	51.8%
2.44	**2.48**	**2.44**	**2.33**	**2.15**	**2.21**	**-0.6%**

continued on next table ⇨

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

	1990	1995	2000	2001
Total Energy Use for Accommodation and Food Services (PJ) [a]	**66.5**	**74.1**	**81.1**	**79.9**
Energy Use by Energy Source (PJ) [a]				
Electricity	28.8	31.1	33.1	32.3
Natural Gas	30.7	33.9	39.3	37.9
Light Fuel Oil and Kerosene	4.6	4.5	4.2	4.7
Heavy Fuel Oil	0.8	0.6	1.3	2.0
Steam	0.0	0.0	0.0	0.0
Other [1]	1.7	3.9	3.1	3.0
Activity				
Floor Space (million m^2) [b]	24.40	26.76	28.26	28.51
Energy Intensity (GJ/m^2) [a,b]	**2.73**	**2.77**	**2.87**	**2.80**
Total Energy Use for Other Services (PJ) [a]	**18.5**	**19.6**	**21.0**	**20.6**
Energy Use by Energy Source (PJ) [a]				
Electricity	8.6	8.9	9.0	8.7
Natural Gas	7.5	8.2	9.2	9.0
Light Fuel Oil and Kerosene	1.7	1.6	1.6	1.6
Heavy Fuel Oil	0.3	0.2	0.5	0.7
Steam	0.0	0.0	0.0	0.0
Other [1]	0.4	0.8	0.7	0.7
Activity				
Floor Space (million m^2) [b]	12.54	13.07	13.25	13.33
Energy Intensity (GJ/m^2) [a,b]	**1.48**	**1.50**	**1.58**	**1.55**

1) "Other" includes coal and propane.

Sources:
a) Natural Resources Canada, Commercial/Institutional End-Use Model, Ottawa, August 2009.
b) Informetrica Limited, *TI Model and Database*, Ottawa, December 2008.

⇦ continued from previous table

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
86.0	**89.1**	**90.6**	**88.1**	**83.7**	**87.7**	**31.9%**
34.9	35.0	36.1	35.4	35.1	36.8	28.0%
38.5	39.1	38.6	37.7	35.1	36.4	18.6%
7.0	7.6	8.5	7.8	7.2	7.3	58.5%
1.9	3.8	3.8	4.2	3.3	3.7	351.2%
0.0	0.0	0.0	0.1	0.1	0.1	1,200.4%
3.7	3.5	3.6	2.8	2.9	3.4	103.1%
29.28	29.93	30.80	31.41	32.42	33.18	36.0%
2.94	**2.98**	**2.94**	**2.81**	**2.58**	**2.64**	**-3.0%**
21.6	**22.1**	**22.1**	**21.0**	**19.3**	**19.8**	**7.1%**
9.3	9.2	9.2	8.9	8.5	8.7	1.5%
9.3	9.4	9.0	8.7	7.8	8.0	6.0%
1.7	1.8	2.1	1.8	1.6	1.7	-5.0%
0.6	1.2	1.1	1.2	0.9	0.9	185.7%
0.0	0.0	0.0	0.0	0.0	0.1	1,326.0%
0.6	0.6	0.6	0.5	0.5	0.5	51.7%
13.45	13.45	13.47	13.47	13.49	13.54	8.0%
1.61	**1.65**	**1.64**	**1.56**	**1.43**	**1.47**	**-0.8%**

Commercial/Institutional Energy Prices and Background Indicators

	1990	1995	2000	2001
Energy Prices by Energy Source (incl. taxes)				
Natural Gas (cents/m^3) [a,d]	15.3	17.6	26.3	36.9
Light Fuel Oil (cents/litre) [e]	25.8	22.1	40.1	35.6
Heavy Fuel Oil (cents/litre) [e]	14.1	16.2	28.5	26.9
Electricity (40 kW/10,000 kWh) [1] (cents/kWh) [b,d]	7.7	9.6	8.7	8.8
Electricity (500 kW/100,000 kWh) [1] (cents/kWh) [b,d]	8.4	10.3	9.5	10.0
Background Indicators				
Commercial/Institutional Floor Space (million m^2) [c]	509.9	558.7	601.1	610.2
Commercial/Institutional Employees (thousands) [c]	9,337	9,828	10,942	11,166
Employees (per thousand m^2) [c]	18.3	17.6	18.2	18.3
Commercial/Institutional GDP (million $ 2002) [c]	472,440	522,376	629,442	652,376

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

Sources:

a) Statistics Canada, *Energy Statistics Handbook*, Ottawa, April 2008 (Cat. No. 57-601).
b) Hydro-Québec, *Comparison of Electricity Prices in Major North American Cities*, April 2007.
c) Informetrica Limited, *TI Model and Database*, Ottawa, December 2008.
d) Statistics Canada, *Report on Energy Supply-Demand in Canada 1990–2007*, Ottawa, February 2009.
e) Natural Resources Canada, Oil and Gas Policy and Regulatory Affairs Division, Ottawa, May 2008.

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
31.2	40.0	40.3	43.5	45.7	43.6	184.3%
34.7	38.7	46.5	62.0	64.2	68.9	167.5%
29.6	31.1	30.7	38.2	39.2	44.3	215.2%
9.2	9.4	9.7	10.1	10.4	10.7	40.2%
10.3	11.2	10.9	11.7	11.5	11.5	37.1%
620.8	631.2	642.6	654.2	667.3	682.2	33.8%
11,432	11,746	11,957	12,169	12,498	12,873	37.9%
18.4	18.6	18.6	18.6	18.7	18.9	3.1%
674,072	690,435	714,892	735,942	765,028	792,977	67.8%

Industrial Sector

chapter 4

The Data Situation

The aggregate energy use data presented for the industrial sector are taken from Statistics Canada's *Report on Energy Supply-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 is 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 to 1994 are from the Canadian Industrial Energy End-Use Data and Analysis Centre's (CIEEDAC) report *Energy Intensity Indicators for Canadian Industry 1990–2007*. OEE also updates its energy end-use database by including energy consumption data from the Annual Census of Mines and other industry associations.

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

In previous editions of the handbook, all detailed energy use data came from the CIEEDAC report. This means that industry categories in the current edition will not compare exactly to categories in previous editions.

For 1990 to 2007, Informetrica Limited has provided physical units, gross domestic product (GDP) and gross output (GO) data. Because GDP and GO data are now reported in 2002 dollars (they were previously reported in 1997 dollars), energy and greenhouse gas intensities cannot be directly compared to previous editions.

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

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

Industrial Secondary Energy Use and GHG Emissions by Energy Source

	1990	1995	2000	2001
Total Energy Use (PJ) [a,d]	**2,710.0**	**2,919.8**	**3,124.5**	**3,010.8**
Energy Use by Energy Source (PJ) [a,d]				
Electricity	658.4	738.4	810.8	809.2
Natural Gas	837.2	898.9	950.2	847.2
Diesel Fuel Oil, Light Fuel Oil and Kerosene	127.7	129.3	145.4	140.7
Heavy Fuel Oil	201.1	147.0	144.3	144.2
Still Gas and Petroleum Coke	309.9	352.6	341.4	378.8
LPG and Gas Plant NGL	26.0	32.3	39.4	41.2
Coal	49.4	46.6	55.3	57.5
Coke and Coke Oven Gas	131.3	135.0	136.5	128.6
Wood Waste and Pulping Liquor	341.0	407.0	464.4	425.2
Other [1]	27.9	32.8	36.8	38.4
Activity				
GDP (million $ 2002) [b]	221,113	238,232	297,784	295,030
GO (million $ 2002) [b]	572,566	622,947	794,437	793,554
Energy Intensity (MJ/$2002 – GDP) [a,b,d]	**12.3**	**12.3**	**10.5**	**10.2**
Energy Intensity (MJ/$2002 – GO) [a,b,d]	**4.7**	**4.7**	**3.9**	**3.8**

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

Sources:

a) Statistics Canada, *Report on Energy Supply-Demand in Canada 1990–2007*, Ottawa, February 2009.
b) Informetrica Limited, *TI Model and Database*, Ottawa, December 2008.
c) Environment Canada, *Canada's Greenhouse Gas Inventory 1990–2007*, Ottawa, April 2009.
d) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2007*, Simon Fraser University, March 2009.

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
3,168.1	**3,257.8**	**3,311.6**	**3,244.3**	**3,155.5**	**3,471.6**	**28.1%**
822.6	831.5	835.5	859.7	835.8	840.7	27.7%
929.3	968.9	980.6	923.6	952.9	1,111.1	32.7%
134.1	142.8	153.5	156.9	156.1	168.3	31.8%
125.6	154.0	147.8	159.6	110.5	104.0	-48.3%
443.1	437.2	415.9	402.4	438.0	491.7	58.6%
36.3	32.0	34.3	53.6	52.7	58.0	122.9%
53.2	57.3	62.1	49.4	55.4	60.3	22.0%
125.1	125.8	123.9	122.8	132.9	110.8	-15.6%
458.6	468.0	514.4	468.3	383.9	492.1	44.3%
40.2	40.4	43.5	48.1	37.3	34.7	24.1%
301,126	305,085	315,548	321,632	325,597	324,398	46.7%
817,837	817,114	844,674	861,702	873,228	875,843	53.0%
10.5	**10.7**	**10.5**	**10.1**	**9.7**	**10.7**	**-12.7%**
3.9	**4.0**	**3.9**	**3.8**	**3.6**	**4.0**	**-16.3%**

continued on next table ⇨

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

	1990	1995	2000	2001
Total GHG Emissions Including Electricity (Mt of CO_2e) [a,c,d]	**135.8**	**138.6**	**156.4**	**154.6**
GHG Emissions by Energy Source (Mt of CO_2e) [a,c,d]				
Electricity	36.6	37.7	51.1	53.2
Natural Gas	42.1	44.9	47.6	42.3
Diesel Fuel Oil, Light Fuel Oil and Kerosene	9.2	9.3	10.6	10.2
Heavy Fuel Oil	15.2	11.1	10.7	10.7
Still Gas and Petroleum Coke	15.1	17.4	17.1	19.2
LPG and Gas Plant NGL	1.6	2.0	2.4	2.5
Coal	4.3	4.1	4.8	5.0
Coke and Coke Oven Gas	11.3	11.7	11.7	11.0
Wood Waste and Pulping Liquor	0.2	0.2	0.2	0.2
Other [1]	0.1	0.3	0.3	0.2
GHG Intensity (tonne/TJ) [a,c,d]	**50.1**	**47.5**	**50.1**	**51.3**
Total GHG Emissions Excluding Electricity (Mt of CO_2e) [a,c,d]	**99.1**	**100.9**	**105.3**	**101.4**
GHG Intensity (tonne/TJ) [a,c,d]	**36.6**	**34.6**	**33.7**	**33.7**

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

Sources:

a) Statistics Canada, *Report on Energy Supply-Demand in Canada 1990–2007*, Ottawa, February 2009.
b) Informetrica Limited, *TI Model and Database*, Ottawa, December 2008.
c) Environment Canada, *Canada's Greenhouse Gas Inventory 1990–2007*, Ottawa, April 2009.
d) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2007*, Simon Fraser University, March 2009.

⇦ continued from previous table

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
157.2	**164.9**	**163.7**	**158.7**	**158.0**	**168.5**	**24.1%**
51.3	54.4	52.0	50.0	49.1	50.0	36.5%
46.4	48.2	48.8	45.9	47.5	55.1	30.8%
9.7	10.4	11.1	11.4	11.3	12.2	33.2%
9.3	11.4	11.0	11.8	8.2	7.7	-49.2%
22.3	22.1	22.0	21.0	22.1	24.6	62.3%
2.2	2.0	2.1	3.3	3.2	3.5	125.5%
4.7	5.0	5.4	4.3	4.8	5.2	20.9%
10.7	10.8	10.6	10.5	11.4	9.5	-16.2%
0.2	0.2	0.3	0.2	0.2	0.2	–
0.4	0.4	0.4	0.3	0.3	0.4	–
49.6	**50.6**	**49.4**	**48.9**	**50.1**	**48.5**	**-3.1%**
105.9	**110.4**	**111.7**	**108.7**	**108.9**	**118.5**	**19.6%**
33.4	**33.9**	**33.7**	**33.5**	**34.5**	**34.1**	**-6.7%**

Industrial Secondary Energy Use by Industry

	1990	1995	2000	2001
Total Energy Use (PJ) [a,c]	**2,710.0**	**2,919.8**	**3,124.5**	**3,010.8**
Energy Use by Industry (PJ) [a,c]				
Copper, Nickel, Lead and Zinc Mines	36.6	29.2	23.0	24.3
Iron Mines	39.6	37.4	33.8	28.4
Gold and Silver Mines	13.2	12.6	12.7	13.7
Other Metal Mines	9.1	5.6	5.0	8.3
Salt Mines	2.9	3.4	2.6	2.5
Potash Mines	27.4	31.8	29.7	28.5
Other Non-Metal Mines	8.0	6.3	7.8	7.4
Upstream Mining	211.1	323.1	406.4	417.9
Fruit and Vegetable Industries	9.1	9.8	12.1	13.1
Dairy Products Industry	11.7	10.5	12.1	11.7
Meat Products Industries	12.5	13.1	18.0	18.1
Bakery Products Industries	9.2	6.4	6.8	8.2
Beverage Industries (excluding breweries)	3.3	5.3	6.1	5.4
Breweries Industries	7.8	6.1	5.7	5.6
Tobacco Products Industries	1.3	1.0	1.0	1.0
Textile Mills	13.9	14.7	9.9	8.5
Textile Products Mills	6.8	6.9	4.0	4.1
Clothing Industries	6.0	5.3	5.1	5.1
Leather and Allied Products Industries	1.4	1.0	1.1	1.1
Wood Products Industries	44.3	46.8	62.0	48.7
Pulp Mills	297.9	353.3	369.7	329.7
Paper Mills (except newsprint)	99.3	104.4	113.3	95.9
Newsprint Mills	244.8	257.2	264.5	232.3
Paperboard Mills	62.0	64.4	70.3	66.1
Other Pulp and Paper Manufacturing	22.2	15.6	35.5	30.4
Converted Paper Products Industry	11.1	11.0	12.3	16.4
Printing and Related Support Activities	10.9	7.9	9.7	8.6

Sources:

a) Statistics Canada, *Report on Energy Supply-Demand in Canada 1990–2007*, Ottawa, February 2009.
b) Informetrica Limited, *TI Model and Database*, Ottawa, December 2008.
c) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2007*, Simon Fraser University, March 2009.

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
3,168.1	**3,257.8**	**3,311.6**	**3,244.3**	**3,155.5**	**3,471.6**	**28.1%**
22.0	21.0	21.2	24.1	22.5	23.5	-35.7%
28.3	34.1	27.9	29.5	23.2	21.8	-45.0%
14.4	14.0	13.6	13.0	12.6	12.6	-4.7%
10.4	7.5	6.3	6.6	6.7	6.9	-24.3%
2.4	2.5	2.3	2.5	2.4	2.3	-21.1%
28.3	29.9	31.7	28.6	34.0	35.5	29.6%
7.3	8.8	8.7	9.1	9.0	9.6	20.8%
438.9	534.8	524.2	567.4	600.1	754.8	257.6%
12.1	12.3	11.9	14.2	13.8	14.4	58.3%
11.8	11.4	11.4	10.7	10.1	9.8	-16.0%
16.6	16.2	17.6	18.4	18.9	19.4	54.8%
9.0	8.7	8.7	9.6	9.7	10.5	14.6%
5.9	5.8	6.1	6.4	6.1	6.4	92.5%
5.9	5.3	5.2	5.1	4.2	4.4	-44.1%
0.9	0.9	0.7	0.8	0.7	0.5	-58.7%
8.1	8.0	8.0	7.7	7.3	6.6	-52.4%
4.2	3.5	3.4	3.5	3.0	3.0	-55.9%
4.9	5.0	4.0	2.2	1.8	1.6	-73.1%
0.9	0.8	0.6	0.3	0.2	0.2	-87.1%
52.8	45.2	48.3	50.4	51.3	54.0	22.0%
336.0	351.8	356.5	332.3	302.1	292.0	-2.0%
97.2	110.9	114.9	114.2	82.8	80.4	-19.0%
240.0	236.9	231.9	206.4	183.7	178.6	-27.1%
67.1	66.2	68.8	63.8	54.5	46.2	-25.4%
37.1	37.9	54.2	66.5	26.5	71.5	222.3%
16.8	17.0	17.9	19.9	16.5	16.0	43.5%
8.4	8.7	8.5	8.9	8.5	8.9	-17.6%

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Industrial Secondary Energy Use by Industry (Continued)

	1990	1995	2000	2001
Energy Use by Industry (PJ) [a,c]				
Petroleum Refining	323.1	302.1	295.1	311.4
Petrochemical Industry	32.1	34.1	42.4	44.3
Industrial Gas Industry	5.9	5.8	8.6	8.9
Alkali and chlorine manufacturing	30.4	30.1	29.9	24.9
All other basic inorganic chemical manufacturing	28.6	30.8	33.0	34.1
Chemical fertilizer (except potash) manufacturing	31.9	55.9	63.5	62.1
Other Chemical Manufacturing	94.2	96.4	52.7	33.4
Resin and Synthetic Rubber Industries	48.1	30.6	39.7	36.8
Motor Vehicle Plastic Parts Manufacturing	2.8	2.7	4.4	5.2
Rubber Products Industries	9.5	9.9	11.3	10.9
Cement Industry	59.3	61.2	63.6	61.9
Iron and Steel	219.4	247.8	257.6	228.5
Primary Production of Alumina and Aluminum	109.8	140.7	155.5	164.5
Other Non-Ferrous Smelting and Refining	73.5	79.5	79.2	84.4
Fabricated Metal Products Industries	37.3	36.4	32.8	37.3
Machinery Industries	12.2	13.7	13.8	13.3
Computer and Electronic Products Industries	4.6	5.9	6.6	3.7
Electrical Equipment and Components Industries	8.5	7.7	7.0	6.3
Motor Vehicle Industry	18.5	24.6	27.7	23.7
Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	3.1	2.9	3.7	2.8
Motor Vehicle Electrical and Electronic Equipment Manufacturing	0.3	0.3	0.5	0.5
Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	2.1	2.1	2.2	1.6
Motor Vehicle Brake System Manufacturing	1.8	2.1	2.4	2.9
Motor Vehicle Transmission and Power Train Parts Manufacturing	3.0	2.0	2.7	2.7

Sources:

a) Statistics Canada, *Report on Energy Supply-Demand in Canada 1990–2007*, Ottawa, February 2009.
b) Informetrica Limited, *TI Model and Database*, Ottawa, December 2008.
c) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2007*, Simon Fraser University, March 2009.

⇦ continued from previous table

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
381.1	358.6	340.3	302.0	315.3	362.4	12.2%
46.7	52.8	58.5	61.9	60.0	62.4	94.3%
9.1	9.2	10.5	8.3	13.7	9.9	66.9%
17.8	16.6	17.5	16.2	14.6	9.6	-68.3%
29.9	33.6	36.0	37.4	33.9	32.0	11.8%
54.1	58.0	58.2	53.2	54.8	53.9	68.7%
42.7	20.9	33.2	30.4	31.4	37.0	-60.7%
33.6	28.8	27.8	24.8	33.2	34.8	-27.6%
4.2	4.2	5.8	4.7	4.5	4.5	61.5%
11.2	11.2	10.0	10.2	9.5	9.7	1.4%
66.4	63.4	65.5	63.0	70.5	69.7	17.4%
239.5	233.7	235.2	236.9	233.6	224.0	2.1%
174.7	186.8	173.6	196.5	197.3	201.5	83.5%
80.4	76.5	76.6	72.0	72.0	70.1	-4.7%
40.4	39.0	41.2	40.7	38.3	41.9	12.6%
13.7	15.1	16.0	18.0	16.7	18.7	52.9%
3.9	4.6	5.1	5.6	5.4	6.2	33.8%
6.0	6.7	7.1	7.3	6.8	7.2	-15.8%
23.5	24.4	22.7	22.6	21.0	21.5	16.4%
3.0	3.0	3.0	3.5	3.1	3.3	6.4%
0.7	0.6	0.6	0.6	0.3	0.5	92.0%
1.8	1.2	1.3	1.4	1.3	1.4	-36.0%
2.8	2.1	2.2	1.1	0.9	0.7	-60.9%
2.8	3.1	3.4	3.7	3.5	3.4	14.8%

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Industrial Secondary Energy Use by Industry (Continued)

	1990	1995	2000	2001
Energy Use by Industry (PJ) [a,c]				
Motor Vehicle Seating and Interior Trim Manufacturing	1.2	1.2	1.8	1.7
Motor Vehicle Metal Stamping	3.3	3.5	3.8	3.8
Other Motor Vehicle Parts Manufacturing	3.2	3.2	3.9	4.2
Furniture and Related Products Industries	6.7	6.7	9.9	10.6
Miscellaneous Manufacturing	4.7	4.1	5.0	5.5
Other Manufacturing n.e.c.	233.1	228.9	257.9	271.8
Construction	66.9	49.0	49.9	48.0
Forestry	7.7	7.9	16.2	18.3
Activity				
GDP (million $2002) [b]	221,113	238,232	297,784	295,030
GO (million $2002) [b]	572,566	622,947	794,437	793,554
Energy Intensity (MJ/$2002 – GDP) [a,b,c]	**12.3**	**12.3**	**10.5**	**10.2**
Energy Intensity (MJ/$2002 – GO) [a,b,c]	**4.7**	**4.7**	**3.9**	**3.8**

Sources:

a) Statistics Canada, *Report on Energy Supply-Demand in Canada 1990–2007*, Ottawa, February 2009.
b) Informetrica Limited, *TI Model and Database*, Ottawa, December 2008.
c) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2007*, Simon Fraser University, March 2009.

⇦ continued from previous table

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
2.0	1.9	2.0	1.9	1.8	1.7	40.5%
4.5	3.5	3.8	3.8	3.7	3.6	11.3%
5.9	5.1	5.3	5.0	4.4	4.6	42.1%
11.0	11.2	10.8	11.6	10.0	10.9	63.0%
6.3	6.6	6.2	6.1	4.8	5.3	12.9%
289.6	295.2	335.2	289.7	295.1	386.0	65.6%
54.2	56.7	59.9	60.5	60.7	62.4	-6.7%
17.2	18.8	22.7	21.6	21.5	19.6	153.2%
301,126	305,085	315,548	321,632	325,597	324,398	46.7%
817,837	817,114	844,674	861,702	873,228	875,843	53.0%
10.5	**10.7**	**10.5**	**10.1**	**9.7**	**10.7**	**-12.7%**
3.9	**4.0**	**3.9**	**3.8**	**3.6**	**4.0**	**-16.3%**

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

	1990	1995	2000	2001
Total GHG Emissions Including Electricity (Mt of CO_2e) [a,b,c]	**135.8**	**138.6**	**156.4**	**154.6**
GHG Emissions by Industry (Mt of CO_2e) [a,b,c]				
Copper, Nickel, Lead and Zinc Mines	2.2	1.7	1.5	1.6
Iron Mines	2.8	2.5	2.4	2.1
Gold and Silver Mines	0.8	0.7	0.8	0.9
Other Metal Mines	0.5	0.3	0.3	0.5
Salt Mines	0.2	0.2	0.2	0.2
Potash Mines	1.5	1.6	1.6	1.5
Other Non-Metal Mines	0.5	0.4	0.5	0.5
Upstream Mining	10.2	15.5	21.2	21.8
Fruit and Vegetable Industries	0.5	0.5	0.7	0.8
Dairy Products Industry	0.6	0.5	0.7	0.7
Meat Products Industries	0.7	0.7	1.0	1.0
Bakery Products Industries	0.5	0.3	0.4	0.5
Beverage Industries (excluding breweries)	0.2	0.3	0.3	0.3
Breweries Industries	0.4	0.3	0.3	0.3
Tobacco Products Industries	0.1	0.1	0.1	0.1
Textile Mills	0.7	0.8	0.5	0.5
Textile Products Mills	0.4	0.4	0.2	0.2
Clothing Industries	0.3	0.3	0.3	0.3
Leather and Allied Products Industries	0.1	0.1	0.1	0.1
Wood Products Industries	1.5	1.5	2.0	1.7
Pulp Mills	6.5	5.9	7.2	6.7
Paper Mills (except newsprint)	3.4	3.1	3.7	3.5
Newsprint Mills	11.1	10.5	11.3	11.1
Paperboard Mills	2.2	2.0	2.3	2.2
Other Pulp and Paper Manufacturing	1.2	0.9	0.8	0.4
Converted Paper Products Industry	0.6	0.6	0.7	0.9
Printing and Related Support Activities	0.6	0.4	0.5	0.5

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

Sources:

a) Statistics Canada, *Report on Energy Supply-Demand in Canada 1990–2007*, Ottawa, February 2009.
b) Environment Canada, *Canada's Greenhouse Gas Inventory 1990–2007*, Ottawa, April 2009.
c) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2007*, Simon Fraser University, March 2009.

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
157.2	**164.9**	**163.7**	**158.7**	**158.0**	**168.5**	**24.1%**
1.4	1.4	1.4	1.5	1.4	1.5	-31.7%
2.0	2.5	2.0	2.0	1.7	1.5	-46.3%
0.9	0.9	0.9	0.8	0.8	0.8	-2.5%
0.7	0.5	0.4	0.4	0.4	0.4	-17.0%
0.1	0.1	0.1	0.1	0.1	0.1	-18.8%
1.5	1.6	1.7	1.5	1.8	1.8	26.9%
0.5	0.6	0.6	0.6	0.6	0.7	34.0%
22.1	27.1	26.8	28.4	29.6	37.5	266.9%
0.7	0.7	0.7	0.8	0.8	0.8	64.0%
0.6	0.6	0.6	0.6	0.5	0.5	-18.8%
0.9	0.9	1.0	1.0	1.0	1.0	55.2%
0.5	0.5	0.5	0.5	0.5	0.6	19.1%
0.3	0.3	0.3	0.4	0.3	0.3	88.9%
0.3	0.3	0.3	0.3	0.2	0.2	-41.5%
0.1	0.1	0.0	0.0	0.0	0.0	-57.1%
0.5	0.5	0.5	0.4	0.4	0.4	-50.7%
0.2	0.2	0.2	0.2	0.2	0.2	-52.8%
0.3	0.3	0.2	0.1	0.1	0.1	-71.9%
0.1	0.0	0.0	0.0	0.0	0.0	-85.7%
2.0	1.7	1.8	1.8	1.8	1.8	21.9%
6.4	6.5	6.3	5.6	5.3	5.2	-19.5%
3.2	3.9	3.8	3.5	2.8	2.8	-17.9%
10.7	10.6	10.3	8.4	7.1	7.1	-36.2%
2.1	2.1	2.2	1.8	1.6	1.5	-31.7%
0.4	0.5	1.2	1.1	1.6	1.0	-12.9%
0.9	0.9	0.9	1.0	0.9	0.8	37.3%
0.5	0.5	0.5	0.5	0.5	0.5	-14.0%

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

	1990	1995	2000	2001
GHG Emissions by Industry (Mt of CO_2e) [a,b,c]				
Petroleum Refining	17.9	17.4	17.4	18.4
Petrochemical Industry	1.7	1.6	2.1	2.2
Industrial Gas Industry	0.3	0.3	0.5	0.6
Alkali and chlorine manufacturing	1.6	1.5	1.7	1.5
All other basic inorganic chemical manufacturing	1.6	1.4	1.9	2.1
Chemical fertilizer (except potash) manufacturing	1.6	2.8	3.3	3.2
Other Chemical Manufacturing	4.0	4.4	2.8	1.5
Resin and Synthetic Rubber Industries	2.5	1.4	2.0	1.8
Motor Vehicle Plastic Parts Manufacturing	0.2	0.1	0.2	0.3
Rubber Products Industries	0.5	0.5	0.7	0.6
Cement Industry	4.3	4.5	4.8	4.8
Iron and Steel	15.8	17.2	18.1	16.6
Primary Production of Alumina and Aluminum	6.2	7.2	9.7	10.7
Other Non-Ferrous Smelting and Refining	4.6	4.7	5.1	5.5
Fabricated Metal Products Industries	1.9	1.8	1.8	2.1
Machinery Industries	0.7	0.7	0.8	0.7
Computer and Electronic Products Industries	0.3	0.3	0.4	0.2
Electrical Equipment and Components Industries	0.5	0.4	0.4	0.4
Motor Vehicle Industry	1.0	1.3	1.5	1.3
Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	0.2	0.1	0.2	0.2
Motor Vehicle Electrical and Electronic Equipment Manufacturing	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
Motor Vehicle Brake System Manufacturing	0.1	0.1	0.1	0.2
Motor Vehicle Transmission and Power Train Parts Manufacturing	0.2	0.1	0.2	0.2

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

Sources:

a) Statistics Canada, *Report on Energy Supply-Demand in Canada 1990–2007*, Ottawa, February 2009.
b) Environment Canada, *Canada's Greenhouse Gas Inventory 1990–2007*, Ottawa, April 2009.
c) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2007*, Simon Fraser University, March 2009.

⇦ continued from previous table

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
21.8	21.0	20.6	18.5	18.5	20.9	17.1%
2.2	2.3	2.5	2.7	2.6	2.8	69.0%
0.6	0.6	0.6	0.5	0.8	0.6	78.8%
1.1	1.0	1.1	1.0	0.8	0.5	-72.0%
1.8	2.1	2.1	2.1	1.9	1.8	17.4%
2.8	3.0	3.0	2.7	2.8	2.7	66.9%
2.0	1.3	1.8	1.7	1.9	2.2	-45.1%
1.6	1.3	1.2	1.1	1.5	1.7	-32.9%
0.2	0.2	0.3	0.3	0.2	0.3	66.7%
0.6	0.7	0.6	0.6	0.6	0.6	3.7%
5.1	5.2	5.3	5.0	5.7	5.6	29.9%
16.9	16.6	16.6	16.5	16.7	15.5	-2.0%
10.8	12.1	10.8	11.5	11.6	12.0	95.4%
5.1	5.0	4.9	4.4	4.5	4.5	-3.1%
2.2	2.1	2.2	2.2	2.0	2.3	16.0%
0.8	0.9	0.9	1.0	0.9	1.0	56.9%
0.2	0.3	0.3	0.3	0.3	0.4	40.0%
0.3	0.4	0.4	0.4	0.4	0.4	-13.3%
1.3	1.3	1.2	1.2	1.1	1.2	16.2%
0.2	0.2	0.2	0.2	0.2	0.2	5.9%
0.0	0.0	0.0	0.0	0.0	0.0	200.0%
0.1	0.1	0.1	0.1	0.1	0.1	-36.4%
0.2	0.1	0.1	0.1	0.1	0.0	-55.6%
0.2	0.2	0.2	0.2	0.2	0.2	-9.5%

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

	1990	1995	2000	2001
GHG Emissions by Industry (Mt of CO_2e) [a,b,c]				
Motor Vehicle Seating and Interior Trim Manufacturing	0.1	0.1	0.1	0.1
Motor Vehicle Metal Stamping	0.2	0.2	0.2	0.2
Other Motor Vehicle Parts Manufacturing	0.2	0.2	0.2	0.3
Furniture and Related Products Industries	0.3	0.3	0.5	0.6
Miscellaneous Manufacturing	0.3	0.2	0.3	0.3
Other Manufacturing n.e.c.	12.3	11.9	13.5	13.1
Construction	4.3	3.2	3.3	3.2
Forestry	0.6	0.6	1.2	1.3
GHG Intensity (tonne/TJ) [a,b,c]	**50.1**	**47.5**	**50.1**	**51.3**

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

Sources:

a) Statistics Canada, *Report on Energy Supply-Demand in Canada 1990–2007*, Ottawa, February 2009.
b) Environment Canada, *Canada's Greenhouse Gas Inventory 1990–2007*, Ottawa, April 2009.
c) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2007*, Simon Fraser University, March 2009.

⇦ continued from previous table

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
0.1	0.1	0.1	0.1	0.1	0.1	50.0%
0.3	0.2	0.2	0.2	0.2	0.2	17.6%
0.3	0.3	0.3	0.3	0.2	0.3	44.4%
0.6	0.6	0.6	0.6	0.5	0.6	72.7%
0.3	0.4	0.3	0.3	0.3	0.3	16.0%
13.3	14.7	14.6	14.3	14.0	15.2	22.9%
3.5	3.7	3.9	3.9	4.0	4.1	-5.6%
1.3	1.4	1.7	1.6	1.6	1.4	155.4%
49.6	**50.6**	**49.4**	**48.9**	**50.1**	**48.5**	**-3.1%**

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

	1990	1995	2000	2001
Total GHG Emissions Excluding Electricity (Mt of CO_2e) [a,b,c]	**99.1**	**100.9**	**105.3**	**101.4**
GHG Emissions by Industry (Mt of CO_2e) [a,b,c]				
Copper, Nickel, Lead and Zinc Mines	1.0	0.8	0.7	0.7
Iron Mines	2.1	1.8	1.6	1.4
Gold and Silver Mines	0.4	0.4	0.4	0.4
Other Metal Mines	0.3	0.2	0.2	0.3
Salt Mines	0.1	0.2	0.1	0.1
Potash Mines	1.1	1.3	1.2	1.2
Other Non-Metal Mines	0.4	0.3	0.4	0.4
Upstream Mining	7.6	12.2	16.3	16.4
Fruit and Vegetable Industries	0.4	0.5	0.6	0.6
Dairy Products Industry	0.5	0.4	0.5	0.5
Meat Products Industries	0.5	0.5	0.7	0.7
Bakery Products Industries	0.4	0.3	0.3	0.3
Beverage Industries (excluding breweries)	0.1	0.2	0.3	0.2
Breweries Industries	0.3	0.3	0.2	0.2
Tobacco Products Industries	0.0	0.0	0.0	0.0
Textile Mills	0.5	0.5	0.4	0.3
Textile Products Mills	0.3	0.3	0.1	0.2
Clothing Industries	0.2	0.2	0.2	0.2
Leather and Allied Products Industries	0.0	0.0	0.0	0.0
Wood Products Industries	1.0	0.9	1.2	0.8
Pulp Mills	4.1	3.7	3.7	3.3
Paper Mills (except newsprint)	2.2	2.1	2.1	1.8
Newsprint Mills	5.4	4.5	3.6	3.2
Paperboard Mills	1.7	1.4	1.6	1.4
Other Pulp and Paper Manufacturing	1.2	0.4	0.5	0.4
Converted Paper Products Industry	0.4	0.4	0.4	0.5
Printing and Related Support Activities	0.3	0.2	0.3	0.3

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

Sources:
a) Statistics Canada, *Report on Energy Supply-Demand in Canada 1990–2007*, Ottawa, February 2009.
b) Environment Canada, *Canada's Greenhouse Gas Inventory 1990–2007*, Ottawa, April 2009.
c) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2007*, Simon Fraser University, March 2009.

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
105.9	**110.4**	**111.7**	**108.7**	**108.9**	**118.5**	**19.6%**
0.7	0.6	0.6	0.8	0.7	0.8	-19.4%
1.4	1.7	1.2	1.3	1.2	1.1	-49.5%
0.4	0.4	0.4	0.3	0.3	0.3	-16.7%
0.3	0.2	0.2	0.2	0.3	0.3	-13.3%
0.1	0.1	0.1	0.1	0.1	0.1	-28.6%
1.1	1.2	1.3	1.1	1.4	1.4	27.0%
0.4	0.5	0.5	0.6	0.6	0.6	56.4%
17.1	21.8	21.3	23.2	24.0	31.3	313.5%
0.6	0.6	0.5	0.6	0.6	0.6	38.1%
0.5	0.4	0.4	0.4	0.4	0.3	-26.1%
0.6	0.6	0.7	0.7	0.7	0.7	41.3%
0.3	0.3	0.3	0.3	0.3	0.3	-22.5%
0.3	0.2	0.3	0.3	0.3	0.3	116.7%
0.3	0.2	0.2	0.2	0.2	0.2	-47.1%
0.0	0.0	0.0	0.0	0.0	0.0	-50.0%
0.3	0.3	0.2	0.2	0.2	0.2	-61.2%
0.2	0.1	0.1	0.1	0.1	0.1	-64.0%
0.1	0.1	0.1	0.1	0.0	0.0	-78.9%
0.0	0.0	0.0	0.0	0.0	0.0	-100.0%
0.9	0.7	0.8	0.8	0.9	1.0	-7.8%
3.3	3.1	3.1	2.4	2.1	2.2	-45.2%
1.6	1.8	1.9	1.6	1.1	1.1	-49.5%
2.9	2.7	2.8	2.0	1.4	1.4	-73.8%
1.4	1.4	1.4	1.2	1.0	1.0	-42.2%
0.4	0.5	0.5	0.4	0.5	0.2	-81.0%
0.5	0.5	0.5	0.6	0.5	0.5	7.1%
0.3	0.3	0.2	0.2	0.2	0.2	-33.3%

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

	1990	1995	2000	2001
GHG Emissions by Industry (Mt of CO_2e) [a,b,c]				
Petroleum Refining	16.7	16.5	16.1	17.1
Petrochemical Industry	1.5	1.4	1.8	1.9
Industrial Gas Industry	0.0	0.0	0.1	0.1
Alkali and chlorine manufacturing	0.8	0.8	0.8	0.6
All other basic inorganic chemical manufacturing	0.4	0.3	0.4	0.4
Chemical fertilizer (except potash) manufacturing	1.4	2.6	2.9	2.8
Other Chemical Manufacturing	2.9	3.4	2.0	1.1
Resin and Synthetic Rubber Industries	2.0	0.9	1.3	1.1
Motor Vehicle Plastic Parts Manufacturing	0.1	0.1	0.1	0.2
Rubber Products Industries	0.3	0.4	0.4	0.4
Cement Industry	3.9	4.2	4.3	4.3
Iron and Steel	14.2	15.6	15.8	13.9
Primary Production of Alumina and Aluminum	0.5	0.6	0.8	0.9
Other Non-Ferrous Smelting and Refining	2.8	2.6	2.5	2.6
Fabricated Metal Products Industries	1.4	1.4	1.2	1.3
Machinery Industries	0.4	0.4	0.5	0.5
Computer and Electronic Products Industries	0.1	0.1	0.1	0.1
Electrical Equipment and Components Industries	0.3	0.3	0.2	0.2
Motor Vehicle Industry	0.7	1.0	1.0	0.9
Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	0.1	0.1	0.1	0.1
Motor Vehicle Electrical and Electronic Equipment Manufacturing	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
Motor Vehicle Brake System Manufacturing	0.1	0.1	0.1	0.1
Motor Vehicle Transmission and Power Train Parts Manufacturing	0.2	0.1	0.1	0.1

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

Sources:

a) Statistics Canada, *Report on Energy Supply-Demand in Canada 1990–2007*, Ottawa, February 2009.
b) Environment Canada, *Canada's Greenhouse Gas Inventory 1990–2007*, Ottawa, April 2009.
c) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2007*, Simon Fraser University, March 2009.

⇦ continued from previous table

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
20.5	19.7	19.2	17.1	17.0	19.2	14.6%
1.9	2.0	2.2	2.5	2.3	2.5	63.0%
0.1	0.0	0.0	0.0	0.0	0.0	-75.0%
0.4	0.3	0.4	0.3	0.3	0.1	-92.7%
0.3	0.4	0.4	0.4	0.3	0.3	-19.0%
2.4	2.6	2.6	2.3	2.4	2.4	70.0%
1.1	0.5	1.1	1.0	1.5	1.4	-52.9%
1.0	0.6	0.6	0.5	0.9	1.0	-52.0%
0.1	0.1	0.2	0.1	0.1	0.1	37.5%
0.4	0.4	0.3	0.3	0.3	0.3	-12.1%
4.7	4.7	4.9	4.6	5.2	5.2	31.3%
14.3	14.2	14.4	14.2	14.7	13.4	-5.6%
0.9	1.0	1.0	1.2	1.0	1.0	94.3%
2.4	2.2	2.3	2.2	2.3	2.4	-15.7%
1.5	1.4	1.5	1.4	1.3	1.3	-6.3%
0.4	0.5	0.5	0.5	0.5	0.5	38.9%
0.1	0.1	0.1	0.1	0.1	0.1	28.6%
0.2	0.2	0.2	0.2	0.2	0.2	-45.5%
0.9	0.9	0.9	0.8	0.8	0.8	6.9%
0.1	0.1	0.1	0.1	0.1	0.1	-16.7%
0.0	0.0	0.0	0.0	0.0	0.0	0.0%
0.1	0.0	0.0	0.0	0.0	0.0	-42.9%
0.1	0.1	0.1	0.0	0.0	0.0	-66.7%
0.1	0.1	0.1	0.1	0.1	0.1	-50.0%

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

	1990	1995	2000	2001
GHG Emissions by Industry (Mt of CO_2e) [a,b,c]				
Motor Vehicle Seating and Interior Trim Manufacturing	0.0	0.0	0.1	0.1
Motor Vehicle Metal Stamping	0.1	0.1	0.1	0.1
Other Motor Vehicle Parts Manufacturing	0.1	0.1	0.1	0.2
Furniture and Related Products Industries	0.2	0.2	0.3	0.4
Miscellaneous Manufacturing	0.2	0.1	0.2	0.2
Other Manufacturing n.e.c.	10.3	10.1	10.1	9.7
Construction	4.3	3.2	3.3	3.2
Forestry	0.6	0.6	1.2	1.3
GHG Intensity (tonne/TJ) [a,b,c]	**36.6**	**34.6**	**33.7**	**33.7**

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

Sources:
a) Statistics Canada, *Report on Energy Supply-Demand in Canada 1990–2007*, Ottawa, February 2009.
b) Environment Canada, *Canada's Greenhouse Gas Inventory 1990–2007*, Ottawa, April 2009.
c) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2007*, Simon Fraser University, March 2009.

⇦ continued from previous table

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
0.1	0.1	0.1	0.1	0.1	0.1	25.0%
0.1	0.1	0.1	0.1	0.1	0.1	-22.2%
0.3	0.2	0.2	0.2	0.1	0.1	8.3%
0.4	0.4	0.4	0.4	0.2	0.2	10.0%
0.2	0.2	0.2	0.2	0.1	0.1	-13.3%
10.7	12.1	12.5	12.7	12.6	14.2	37.9%
3.5	3.7	3.9	3.9	4.0	4.1	-5.6%
1.3	1.4	1.7	1.6	1.6	1.4	155.4%
33.4	**33.9**	**33.7**	**33.5**	**34.5**	**34.1**	**-6.7%**

Industrial Gross Domestic Product by Industry

	1990	1995	2000	2001
Total Gross Domestic Product (million $2002) [a]	**221,113**	**238,232**	**297,784**	**295,030**
Gross Domestic Product by Industry (million $2002) [a]				
Copper, Nickel, Lead and Zinc Mines	2,373	2,061	2,189	2,167
Iron Mines	778	668	742	498
Gold and Silver Mines	1,344	1,137	1,164	1,249
Other Metal Mines	276	208	389	343
Salt Mines	186	218	219	252
Potash Mines	862	1,054	1,184	1,110
Other Non-Metal Mines	201	229	426	649
Upstream Mining	32,840	43,365	44,340	44,967
Fruit and Vegetable Industries	1,204	1,544	2,033	2,334
Dairy Products Industry	2,594	2,340	2,300	2,427
Meat Products Industries	2,854	2,653	3,611	3,768
Bakery Products Industries	1,725	2,108	2,197	2,417
Beverage Industries (excluding breweries)	1,110	1,098	1,643	1,691
Breweries Industries	2,176	2,436	2,273	2,272
Tobacco Products Industries	2,383	2,454	2,222	1,893
Textile Mills	1,527	1,546	1,760	1,604
Textile Products Mills	845	813	1,175	1,151
Clothing Industries	3,283	3,216	3,999	3,840
Leather and Allied Products Industries	644	497	489	414
Wood Products Industries	4,867	5,105	6,688	6,017
Pulp Mills	1,202	1,393	1,945	1,750
Paper Mills (except newsprint)	1,846	1,869	2,194	1,878
Newsprint Mills	2,925	3,077	3,606	3,098
Paperboard Mills	995	1,000	1,085	1,004
Other Pulp and Paper Manufacturing	2,512	3,180	3,002	3,518
Converted Paper Products Industry	2,520	3,130	3,302	3,551
Printing and Related Support Activities	6,866	5,073	6,065	6,670

Source:
a) Informetrica Limited, *TI Model and Database*, Ottawa, December 2008.

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
301,126	**305,085**	**315,548**	**321,632**	**325,597**	**324,398**	**46.7%**
1,981	1,848	2,010	2,026	2,193	2,215	-6.7%
497	630	530	595	612	589	-24.3%
1,139	1,103	991	896	760	733	-45.5%
496	462	399	386	307	316	14.5%
230	261	252	245	243	234	25.8%
1,160	1,330	1,472	1,540	1,249	1,578	83.1%
839	1,321	1,390	1,319	1,346	1,620	706.0%
44,787	46,000	47,061	47,498	48,573	47,520	44.7%
2,380	2,270	2,135	2,106	2,352	2,459	104.2%
2,182	2,188	2,198	2,230	2,248	2,274	-12.3%
3,575	3,537	3,743	3,909	4,153	4,270	49.6%
2,400	2,207	2,346	2,319	2,581	2,889	67.5%
1,877	1,911	2,043	1,972	1,819	1,966	77.1%
2,144	2,113	2,301	2,423	2,334	2,306	6.0%
1,857	1,619	1,317	1,313	872	610	-74.4%
1,692	1,406	1,383	1,251	940	801	-47.5%
1,108	1,100	1,127	1,113	1,018	1,050	24.3%
3,563	3,455	2,931	2,592	2,442	2,130	-35.1%
400	318	272	213	186	197	-69.4%
6,673	6,555	6,786	6,717	6,510	5,726	17.6%
1,798	1,705	1,884	1,804	1,672	1,583	31.7%
2,014	2,577	2,735	2,639	2,430	2,365	28.1%
3,376	2,893	2,789	2,651	2,443	2,280	-22.1%
926	862	844	804	769	751	-24.5%
3,350	3,568	3,458	3,668	3,237	3,099	23.4%
3,751	3,853	3,778	3,675	3,278	3,202	27.1%
6,232	6,064	6,146	6,416	5,711	5,558	-19.1%

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Industrial Gross Domestic Product by Industry (Continued)

	1990	1995	2000	2001
Gross Domestic Product by Industry (million $2002) [a]				
Petroleum Refining	2,611	2,724	2,631	2,713
Petrochemical Industry	1,103	1,151	1,354	1,185
Industrial Gas Industry	229	244	269	291
Alkali and chlorine manufacturing	477	422	486	458
All other basic inorganic chemical manufacturing	451	435	539	629
Chemical fertilizer (except potash) manufacturing	608	702	1 058	813
Other Chemical Manufacturing	1,257	1,372	1,201	1,013
Resin and Synthetic Rubber Industries	1,116	1,803	2,670	2,345
Motor Vehicle Plastic Parts Manufacturing	514	790	1,314	1,465
Rubber Products Industries	1,147	1,823	2,089	2,058
Cement Industry	767	612	775	809
Iron and Steel	3,479	4,024	4,170	3,908
Primary Production of Alumina and Aluminum	1,146	1,522	2,619	2,700
Other Non-Ferrous Smelting and Refining	1,085	1,179	1,703	2,006
Fabricated Metal Products Industries	7,840	8,189	14,331	13,729
Machinery Industries	7,058	9,790	12,639	12,404
Computer and Electronic Products Industries	3,083	4,824	11,367	6,510
Electrical Equipment and Components Industries	3,482	2,946	4,600	4,539
Motor Vehicle Industry	8,093	11,566	15,641	13,570
Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	1,020	1,526	2,211	1,962
Motor Vehicle Electrical and Electronic Equipment Manufacturing	235	352	478	445
Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	288	431	449	511
Motor Vehicle Brake System Manufacturing	385	577	664	597
Motor Vehicle Transmission and Power Train Parts Manufacturing	645	964	1,421	926

Source:
a) Informetrica Limited, *TI Model and Database*, Ottawa, December 2008.

⇦ continued from previous table

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
2,770	2,876	2,790	2,670	2,608	2,639	1.1%
1,070	917	992	940	1,005	974	-11.7%
295	311	321	325	387	302	31.9%
415	425	411	382	437	283	-40.7%
690	788	759	840	993	895	98.4%
673	964	1,130	1,111	1,077	991	63.0%
1,184	1,135	967	1,080	868	1,038	-17.4%
2,716	2,605	3,148	3,182	3,197	3,281	194.0%
1,507	1,623	1,510	1,545	1,482	1,430	178.2%
2,149	2,115	2,182	2,202	2,159	1,967	71.5%
794	808	878	904	911	957	24.8%
4,162	4,145	4,192	4,192	4,164	4,175	20.0%
2,808	2,733	3,108	3,390	3,579	3,527	207.8%
1,832	1,720	1,913	1,842	1,829	1,793	65.3%
14,062	13,708	13,494	13,976	14,005	14,317	82.6%
12,158	11,796	12,562	13,662	13,985	14,356	103.4%
5,820	6,244	6,619	6,748	7,031	7,362	138.8%
3,859	3,051	3,121	3,078	3,103	3,096	-11.1%
14,021	13,754	14,935	15,044	14,430	13,862	71.3%
2,104	2,208	2,260	2,139	2,044	2,099	105.8%
334	419	421	414	361	358	52.3%
606	539	516	510	518	520	80.6%
549	594	657	557	569	539	40.0%
987	973	989	1,040	991	912	41.4%

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Industrial Gross Domestic Product by Industry (Continued)

	1990	1995	2000	2001
Gross Domestic Product by Industry (million $2002) [a]				
Motor Vehicle Seating and Interior Trim Manufacturing	489	732	1,117	756
Motor Vehicle Metal Stamping	686	1,027	1,438	1,348
Other Motor Vehicle Parts Manufacturing	831	1,243	1,788	2,375
Furniture and Related Products Industries	3,073	3,282	6,004	6,189
Miscellaneous Manufacturing	2,095	2,232	3,515	3,484
Other Manufacturing n.e.c.	25,604	27,701	36,717	39,638
Construction	50,645	41,300	51,585	55,367
Forestry	5,058	5,121	5,528	5,619

Source:
a) Informetrica Limited, *TI Model and Database*, Ottawa, December 2008.

⇦ continued from previous table

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
1,169	1,137	1,259	1,389	1,291	1,167	138.7%
1,288	1,458	1,597	1,774	1,605	1,671	143.6%
2,287	2,317	2,287	2,149	2,148	2,019	143.0%
6,097	5,577	5,561	5,419	5,224	5,355	74.3%
3,856	3,911	4,039	4,156	4,077	4,343	107.3%
44,342	46,044	47,415	48,556	51,149	50,246	96.2%
57,776	59,709	63,230	68,163	73,718	76,532	51.1%
5,893	5,764	6,204	6,178	5,924	5,304	4.9%

Industrial Energy Intensity by Industry

	Units	1990	1995	2000	2001
Aggregate Energy Intensity [a,b,c]	MJ/$2002 – GDP	12.3	12.3	10.5	10.2
Energy Intensity by Industry [a,b,c]					
Copper, Nickel, Lead and Zinc Mines	MJ/tonne	251.1	225.2	235.4	258.0
Iron Mines	MJ/tonne	434.6	401.1	360.2	378.3
Gold and Silver Mines	MJ/tonne	557.1	502.1	309.5	331.6
Other Metal Mines	MJ/tonne	409.5	380.4	414.2	596.5
Salt Mines	MJ/tonne	376.1	437.1	282.0	224.6
Potash Mines	MJ/tonne	3,923.7	3,507.6	3,224.7	3,480.6
Other Non-Metal Mines	MJ/$2002 – GO	8.3	5.6	6.5	5.8
Upstream Mining	MJ/$2002 – GDP	6.4	7.5	9.2	9.3
Fruit and Vegetable Industries	MJ/$2002 – GO	1.8	1.7	1.8	1.9
Dairy Products Industry	MJ/kilolitre	1,592.0	1,452.2	1,613.8	1,571.3
Meat Products Industries	MJ/tonne	4,628.9	4,320.5	4,593.2	4,465.6
Bakery Products Industries	MJ/$2002 – GO	1.9	1.2	1.2	1.4
Beverage Industries (excluding breweries)	MJ/$2002 – GO	0.8	1.2	1.2	1.1
Breweries Industries	MJ/$2002 – GDP	1.7	1.4	1.2	1.3
Tobacco Products Industries	MJ/$2002 – GO	0.3	0.3	0.3	0.3
Textile Mills	MJ/$2002 – GO	5.4	5.5	2.5	2.0
Textile Products Mills	MJ/$2002 – GO	3.4	3.5	1.5	1.4
Clothing Industries	MJ/$2002 – GO	0.8	0.8	0.7	0.6
Leather and Allied Products Industries	MJ/$2002 – GO	1.6	1.3	1.4	1.1
Wood Products Industries	MJ/$2002 – GO	3.0	2.7	3.3	2.7
Pulp Mills	MJ/tonne	41,666.6	34,942.3	33,236.5	34,416.6
Paper Mills (except newsprint)	MJ/$2002 – GO	21.0	20.2	19.5	16.8
Newsprint Mills	MJ/tonne	26,998.6	27,880.9	28,682.6	27,742.2
Paperboard Mills	MJ/tonne	21,906.1	18,689.1	17,348.3	16,684.6
Other Pulp and Paper Manufacturing	MJ/$2002 – GDP	8.8	4.9	11.8	8.6
Converted Paper Products Industry	MJ/$2002 – GO	1.5	1.3	1.2	1.6
Printing and Related Support Activities	MJ/$2002 – GO	1.3	0.8	0.8	0.7

Sources:

a) Statistics Canada, *Report on Energy Supply-Demand in Canada 1990–2007*, Ottawa, February 2009.
b) Informetrica Limited, *TI Model and Database*, Ottawa, December 2008.
c) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2007*, Simon Fraser University, March 2009.

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
10.5	10.7	10.5	10.1	9.7	10.7	-14.4%
251.0	253.0	242.8	238.0	238.3	260.2	-3.3%
378.8	396.0	354.7	341.2	253.2	258.4	-18.4%
345.4	327.9	324.4	319.9	306.2	325.8	-41.8%
619.7	375.5	328.1	339.3	342.9	346.5	-19.9%
227.4	214.7	204.2	221.6	202.4	228.9	-45.7%
3,319.6	3,290.8	3,138.5	2,699.3	4,063.4	3,187.5	-20.0%
5.3	4.1	3.9	4.3	4.1	3.7	-53.4%
9.8	11.6	11.1	11.9	12.4	15.9	73.3%
1.8	1.8	1.7	2.0	2.0	2.0	-6.5%
1,593.2	1,511.1	1,487.5	1,409.6	1,358.9	1,292.6	-6.6%
3,936.8	3,897.6	3,911.4	4,089.5	4,348.3	4,479.4	-15.5%
1.6	1.5	1.4	1.5	1.5	1.6	-23.8%
1.1	1.1	1.2	1.3	1.2	1.2	43.9%
1.4	1.3	1.2	1.1	0.9	0.9	-29.7%
0.3	0.3	0.2	0.3	0.2	0.2	-28.1%
1.9	1.9	2.1	2.1	2.0	1.9	-61.3%
1.4	1.2	1.1	1.2	1.0	1.0	-66.4%
0.6	0.6	0.6	0.3	0.2	0.2	-34.5%
0.9	0.8	0.8	0.6	0.4	0.4	-52.8%
2.9	2.4	2.4	2.5	2.6	3.1	-20.5%
33,647.4	33,841.0	33,836.5	30,748.4	29,386.1	28,229.5	-18.8%
16.4	18.9	19.5	19.8	14.2	13.6	-7.3%
28,350.5	27,941.0	28,351.3	26,566.1	25,787.5	26,892.4	5.0%
16,629.2	17,279.9	17,402.4	17,150.6	14,916.3	13,307.6	-20.6%
11.1	10.6	15.7	18.1	8.2	23.1	77.5%
1.6	1.6	1.7	1.9	1.6	1.5	19.3%
0.7	0.7	0.7	0.7	0.6	0.6	-48.8%

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Industrial Energy Intensity by Industry (Continued)

	Units	1990	1995	2000	2001
Energy Intensity by Industry [a,b,c]					
Petroleum Refining	MJ/$2002 – GO	13.4	11.3	9.4	9.7
Petrochemical Industry	MJ/tonne	4,597.7	4,080.9	4,282.6	4,725.5
Industrial Gas Industry	MJ/$2002 – GO	11.2	10.2	12.2	12.2
Alkali and chlorine manufacturing	MJ/$2002 – GO	20.0	10.2	12.2	12.2
All other basic inorganic chemical manufacturing	MJ/$2002 – GO	20.0	22.4	17.2	15.7
Chemical fertilizer (except potash) manufacturing	MJ/$2002 – GO	11.1	19.9	20.2	21.8
Other Chemical Manufacturing	MJ/$2002 – GDP	75.0	70.3	43.9	32.9
Resin and Synthetic Rubber Industries	MJ/tonne	27,008.4	13,200.3	12,897.6	11,032.5
Motor Vehicle Plastic Parts Manufacturing	MJ/$2002 – GO	1.4	1.1	1.1	1.5
Rubber Products Industries	MJ/tonne	2.5	2.2	1.9	1.8
Cement Industry	MJ/tonne	5,645.5	5,202.9	4,886.5	4,894.2
Iron and Steel	MJ/tonne	78.8	86.1	61.5	51.9
Primary Production of Alumina and Aluminum	MJ/tonne	70,041.4	64,796.9	65,514.1	63,670.7
Other Non-Ferrous Smelting and Refining	MJ/tonne	47,911.3	43,531.2	42,043.7	48,650.3
Fabricated Metal Products Industries	MJ/$2002 – GO	1.6	1.5	1.0	1.2
Machinery Industries	MJ/$2002 – GO	0.6	0.7	0.5	0.5
Computer and Electronic Products Industries	MJ/$2002 – GO	0.4	0.5	0.2	0.2
Electrical Equipment and Components Industries	MJ/$2002 – GO	1.2	1.1	0.7	0.6
Motor Vehicle Industry	MJ/$2002 – GDP	2.3	2.1	1.8	1.8
Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	MJ/$2002 – GDP	3.1	1.9	1.7	1.4
Motor Vehicle Electrical and Electronic Equipment Manufacturing	MJ/$2002 – GDP	1.1	0.7	1.0	1.1
Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	MJ/$2002 – GDP	7.4	4.9	4.9	3.0
Motor Vehicle Brake System Manufacturing	MJ/$2002 – GDP	4.7	3.6	3.6	4.9
Motor Vehicle Transmission and Power Train Parts Manufacturing	MJ/$2002 – GDP	4.6	2.0	1.9	2.9

Sources:

a) Statistics Canada, *Report on Energy Supply-Demand in Canada 1990–2007*, Ottawa, February 2009.
b) Informetrica Limited, *TI Model and Database*, Ottawa, December 2008.
c) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2007*, Simon Fraser University, March 2009.

⇦ continued from previous table

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
11.0	10.6	10.1	9.4	9.6	11.0	-24.6%
4,627.8	5,264.2	5,435.0	6,911.2	40,793.1	6,169.9	18.2%
12.2	12.7	14.7	11.3	18.8	13.7	31.1%
12.2	12.7	14.7	11.3	18.8	13.7	-26.8%
12.5	13.5	15.3	14.9	11.8	12.2	-23.5%
20.1	18.9	18.9	16.8	19.3	20.2	70.7%
36.1	18.4	34.3	28.2	36.1	35.7	-54.2%
9,225.0	8,466.4	7,145.9	6,800.3	8,585.5	8,972.0	-73.5%
1.1	1.2	1.5	1.2	1.2	1.3	10.8%
1.7	1.9	1.6	1.6	1.5	1.6	-34.3%
5,091.5	4,811.9	5,002.1	4,721.1	5,211.0	4,864.2	-11.4%
52.5	51.6	45.9	45.6	42.8	41.7	-41.8%
63,310.6	66,894.8	66,960.3	67,887.9	64,671.2	65,334.5	-4.4%
44,196.9	44,198.4	43,177.8	43,556.1	40,595.5	42,062.4	-9.9%
1.2	1.2	1.2	1.2	1.1	1.2	-23.0%
0.5	0.5	0.6	0.6	0.6	0.6	-12.7%
0.2	0.2	0.2	0.2	0.2	0.2	-53.7%
0.6	0.7	0.7	0.7	0.7	0.8	-39.3%
1.7	1.8	1.5	1.5	1.5	1.6	-33.3%
1.4	1.4	1.3	1.6	1.5	1.6	-56.4%
2.0	1.4	1.4	1.5	0.7	1.3	26.9%
3.0	2.2	2.5	2.7	2.5	2.6	-67.0%
5.1	3.6	3.3	2.1	1.6	1.3	-28.2%
2.8	3.2	3.5	3.6	3.6	3.8	-25.3%

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Industrial Energy Intensity by Industry (Continued)

	Units	1990	1995	2000	2001
Energy Intensity by Industry [a,b,c]					
Motor Vehicle Seating and Interior Trim Manufacturing	MJ/$2002 – GDP	2.5	1.7	1.7	2.3
Motor Vehicle Metal Stamping	MJ/$2002 – GDP	4.8	3.4	2.7	2.9
Other Motor Vehicle Parts Manufacturing	MJ/$2002 – GDP	3.9	2.6	2.2	1.8
Furniture and Related Products Industries	MJ/$2002 – GO	0.9	0.8	0.8	0.8
Miscellaneous Manufacturing	MJ/$2002 – GO	0.7	0.5	0.5	0.6
Other Manufacturing n.e.c.	MJ/$2002 – GDP	9.1	8.3	7.0	6.9
Construction	MJ/$2002 – GO	0.6	0.5	0.4	0.4
Forestry	MJ/$2002 – GO	0.8	0.7	1.3	1.6

Sources:

a) Statistics Canada, *Report on Energy Supply-Demand in Canada 1990–2007*, Ottawa, February 2009.
b) Informetrica Limited, *TI Model and Database*, Ottawa, December 2008.
c) Canadian Industrial Energy End-Use Data and Analysis Centre, *Development of Energy Intensity Indicators for Canadian Industry 1990 to 2007*, Simon Fraser University, March 2009.

⇦ continued from previous table

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
1.7	1.7	1.6	1.4	1.4	1.5	-37.5%
3.5	2.4	2.4	2.1	2.3	2.2	-50.1%
2.6	2.2	2.3	2.3	2.1	2.3	-40.1%
0.8	0.8	0.8	0.8	0.6	0.7	-20.2%
0.7	0.7	0.7	0.7	0.6	0.7	7.6%
6.5	6.4	7.1	6.0	5.8	7.7	-22.3%
0.4	0.4	0.4	0.4	0.3	0.3	-32.1%
1.4	1.5	1.7	1.7	1.7	1.6	111.0%

Industrial Energy Prices and Background Indicators

	1990	1995	2000	2001
Energy Prices by Energy Source (incl. taxes)				
Natural Gas (cents/m^3) [a,e]	10.5	10.7	18.0	24.2
Light Fuel Oil (cents/litre) [f]	25.8	22.1	40.1	35.6
Heavy Fuel Oil (cents/litre) [f]	14.1	16.2	28.5	26.9
Electricity (1,000 kW/400,000 kWh) [1] (cents/kWh) [b,e]	5.6	6.9	6.9	7.6
Electricity (5,000 kW/3,060,000 kWh) [1] (cents/kWh) [b,e]	4.0	4.9	5.3	6.1
Background Indicators				
Industrial GDP (million $ 2002) [d]	221,113	238,232	297,784	295,030
Industrial GO (million $ 2002) [d]	572,566	622,947	794,437	793,554
Capacity Utilization Rate (%) [c]				
Mining	87.5	85.5	90.6	88.0
Manufacturing	78.2	83.9	86.0	81.7
Pulp and Paper	83.7	92.0	92.1	88.6
Primary Metals [2]	85.1	88.3	90.9	86.2
Petroleum Refining	87.5	89.5	92.7	94.9
Chemicals	86.6	85.2	80.1	80.4
Forestry	82.2	81.3	84.5	81.6
Construction	91.1	75.8	87.9	90.5
Industrial Employees (thousands) [d]				
Mining	192	173	160	179
Manufacturing	2,050	1,904	2,249	2,229
Pulp and Paper	140	121	116	109
Primary Metals [2]	135	110	109	99
Petroleum Refining	25	18	19	17
Chemicals	106	99	118	119
Forestry	73	93	86	74
Construction	816	726	810	824

1) kW refers to power hook-up, whereas kWh refers to monthly electricity consumption.
2) "Primary Metals" includes iron and steel, smelting and refining, and other primary metal activity.

Sources:
a) Statistics Canada, *Energy Statistics Handbook*, Ottawa, April 2008 (Cat. No. 57-601-X).
b) Hydro-Québec, *Comparison of Electricity Prices in Major North American Cities*, April 2007.
c) Statistics Canada, *Canadian Economic Observer Historical Statistical Supplement, 2007/08*, Ottawa, July 2009 (Cat No. 11-210-X).
d) Informetrica Limited, *TI Model and Database*, Ottawa, December 2008.
e) Statistics Canada, *Report on Energy Supply-Demand in Canada 1990–2007*, Ottawa, February 2009.
f) Natural Resources Canada, Oil and Gas Policy and Regulatory Affairs Division, Ottawa, May 2008.

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
26.3	32.8	33.9	37.2	37.0	35.4	237.4%
34.7	38.7	46.5	61.9	64.2	68.9	167.5%
29.6	31.1	30.7	38.2	39.2	44.3	215.2%
7.5	7.9	7.7	8.1	8.1	8.3	47.2%
5.7	6.1	5.9	6.2	6.2	6.3	60.3%
301,126	305,085	315,548	321,632	325,597	324,398	46.7%
817,837	817,114	844,674	861,702	873,228	875,843	53.0%
85.9	90.2	90.3	88.0	82.0	81.1	
82.5	81.3	83.4	84.0	82.8	82.2	
90.6	91.1	91.1	90.1	88.3	88.3	
87.8	88.4	91.8	91.1	91.9	90.9	
96.5	95.4	93.9	91.9	83.2	84.6	
80.8	80.9	81.5	80.5	79.8	79.2	
84.6	85.5	92.8	88.6	83.8	81.2	
90.5	90.2	89.9	89.2	89.0	86.6	
170	178	188	211	241	255	32.6%
2,286	2,275	2,292	2,207	2,118	2,045	-0.3%
106	108	104	101	94	87	-37.8%
101	97	92	91	90	80	-40.8%
17	16	18	18	16	19	-26.5%
125	121	118	116	104	108	2.1%
74	77	72	70	63	61	-17.5%
865	906	952	1,020	1,070	1,134	38.9%

Transportation Sector

chapter 5

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 CANSIM updates. The *Climate Change Air Sub-Group Report* by Sypher: Mueller International Inc., July 1999, is also used in the allocation of air energy use to passenger and freight modes.

Data for vehicle stock in the TEUM were obtained mainly from R. L. Polk & Co. and DesRosiers Automotive Consultants Inc. Specifically, the data were extracted from two databases: *Canadian Vehicles in Operation Census* (CVIOC) and *Trucking Industry Profile* (TIP). Statistics Canada's *Road Motor Vehicles, Registrations* (Cat. No. 53-219-X), its *Canadian Vehicle Survey* (CVS) (Cat. No. 53-223-X) and the United States 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 is developed to match the previous data source. On-road fuel efficiency for buses is based on data from the PBS.

The *National Private Vehicle Use Survey – October 1994 to September 1996* and the CVS, conducted by Statistics Canada on behalf of NRCan, 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 seatbelt 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 ofTransportation data. Finally, bus occupancy rates are taken from the CVS and the PBS. In the non-road portion, passenger- kilometres are taken directly from *Rail in Canada* for rail and from the *Canadian Civil Aviation* report for air.

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

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

Minor differences in the 2007 edition of the data are the result of recent changes to the TEUM. While no major methodological changes were made, updates to the code and revisions to historical sources resulted in slight variations compared to previous editions.

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

Transportation Secondary Energy Use by Energy Source and Transportation Mode

	1990	1995	2000	2001
Total Energy Use (PJ) [a]	**1,877.9**	**2,004.9**	**2,282.1**	**2,277.4**
Passenger Transportation [b]	1,184.7	1,186.4	1,284.7	1,284.5
Freight Transportation [b]	639.8	756.4	916.3	902.4
Off-Road [b]	53.3	62.1	81.1	90.4
Energy Use by Energy Source (PJ) [a]				
Electricity	3.1	3.0	3.1	3.1
Natural Gas	1.7	2.4	2.4	2.0
Motor Gasoline	1,120.4	1,174.6	1,295.1	1,308.7
Diesel Fuel Oil	469.8	548.4	658.4	650.4
Light Fuel Oil and Kerosene	0.0	0.0	0.0	0.0
Heavy Fuel Oil	60.1	56.6	67.8	77.5
Aviation Gasoline	5.5	4.1	3.6	3.5
Aviation Turbo Fuel	181.9	183.2	235.9	215.1
Propane	35.4	32.8	15.9	17.0
Energy Use by Transportation Mode (PJ) [b]				
Small Cars	353.1	344.4	322.8	327.4
Large Cars	382.1	345.1	324.2	329.2
Passenger Light Trucks	208.0	261.1	352.5	366.5
Freight Light Trucks	96.2	115.2	143.3	149.6
Medium Trucks	134.0	165.4	177.6	159.3
Heavy Trucks	212.3	288.4	393.2	384.9
Motorcycles	2.5	2.3	2.6	2.8
School Buses	15.0	16.3	14.2	11.6
Urban Transit	28.6	26.1	27.0	25.8
Inter-City Buses	9.6	8.6	7.0	6.5
Passenger Air	180.9	180.1	231.5	211.9
Freight Air	6.5	7.3	8.0	6.7
Passenger Rail	5.1	2.5	2.9	2.9
Freight Rail	84.4	78.5	80.2	78.8
Marine	106.5	101.7	114.0	123.2
Off-Road [1]	53.3	62.1	81.1	90.4
Activity				
Total Passenger-kilometres [2] (millions) [b]	486,283	537,016	595,653	602,261
Total Tonne-kilometres (millions) [b]	542,818	614,557	736,652	732,384
Passenger Transportation Energy Intensity [2] (MJ/Pkm) [b]	**2.36**	**2.15**	**2.11**	**2.08**
Freight Transportation Energy Intensity (MJ/Tkm) [b]	**1.18**	**1.23**	**1.24**	**1.23**

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.

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
2,306.1	**2,361.3**	**2,465.1**	**2,501.3**	**2,492.2**	**2,595.2**	**38.2%**
1,318.0	1,326.9	1,363.3	1,370.6	1,358.6	1,412.5	19.2%
895.3	939.8	1,005.2	1,032.1	1,034.2	1,085.1	69.6%
92.8	94.6	96.6	98.7	99.4	97.6	83.0%
3.3	3.4	3.5	3.5	3.5	2.5	-19.3%
1.7	1.7	1.8	1.9	1.9	1.9	12.7%
1,333.4	1,354.5	1,384.3	1,377.5	1,379.5	1,438.1	28.4%
662.4	697.5	744.7	781.8	783.3	819.4	74.4%
0.0	0.0	0.0	0.0	0.0	0.0	–
64.8	66.8	69.1	67.5	56.9	69.4	15.4%
3.5	3.2	2.9	3.0	3.0	3.1	-43.9%
224.6	222.5	246.2	255.8	252.8	248.8	36.7%
12.4	11.7	12.7	10.3	11.3	12.1	-65.9%
330.8	329.4	328.2	321.1	316.9	329.5	-6.7%
332.0	333.6	334.1	329.9	327.1	338.5	-11.4%
381.1	390.7	405.9	413.9	413.5	442.4	112.7%
152.9	156.1	161.6	163.0	164.9	177.1	84.1%
148.1	162.4	178.4	156.0	167.0	159.8	19.3%
404.8	440.0	471.0	517.7	516.8	549.2	158.7%
3.1	3.3	3.6	3.6	3.8	4.1	67.0%
11.8	13.2	11.3	11.4	12.3	12.6	-15.9%
28.9	29.1	30.2	31.2	27.9	30.8	7.9%
7.1	6.3	5.7	6.1	5.9	6.4	-33.9%
220.5	218.7	241.7	250.9	248.6	245.6	35.7%
7.5	7.0	7.4	7.9	7.1	6.3	-3.9%
2.6	2.5	2.4	2.5	2.5	2.6	-49.4%
71.5	71.3	72.6	76.4	78.9	83.9	-0.6%
110.5	103.1	114.2	111.2	99.5	109.0	2.3%
92.8	94.6	96.6	98.7	99.4	97.6	83.0%
610,790	616,903	635,357	654,595	657,610	690,733	42.0%
763,026	783,689	845,965	883,638	881,472	887,960	63.6%
2.11	**2.11**	**2.10**	**2.04**	**2.02**	**2.00**	**-14.9%**
1.17	**1.20**	**1.19**	**1.17**	**1.17**	**1.22**	**3.7%**

Sources:

a) Statistics Canada, *Report on Energy Supply-Demand in Canada 1990–2007*, Ottawa, February 2009.

b) Natural Resources Canada, Transportation End-Use Model, Ottawa, August 2009.

Transportation GHG Emissions by Energy Source and Transportation Mode

	1990	1995	2000	2001
Total GHG Emissions (Mt of CO_2e) [a,b,c]	**131.6**	**141.3**	**159.1**	**158.7**
Passenger Transportation [b]	82.3	83.4	88.6	88.4
Freight Transportation [b]	45.6	53.7	65.0	64.2
Off-Road [b]	3.6	4.2	5.5	6.1
GHG Emissions by Energy Source (Mt of CO_2e) [a,b,c]				
Electricity	0.2	0.2	0.2	0.2
Natural Gas	0.1	0.1	0.1	0.1
Motor Gasoline	77.4	82.2	88.7	89.6
Diesel Fuel Oil	33.8	39.2	47.3	46.8
Light Fuel Oil and Kerosene	0.0	0.0	0.0	0.0
Heavy Fuel Oil	4.5	4.3	5.0	5.8
Aviation Gasoline	0.4	0.3	0.3	0.3
Aviation Turbo Fuel	13.0	13.1	16.4	15.0
Propane	2.1	2.0	1.0	1.0
GHG Emissions by Transportation Mode (Mt of CO_2e) [a,b,c]				
Small Cars	24.4	24.2	22.2	22.5
Large Cars	26.3	24.1	22.2	22.5
Passenger Light Trucks	14.4	18.4	24.2	25.2
Freight Light Trucks	6.5	7.9	9.8	10.2
Medium Trucks	9.1	11.3	12.1	10.9
Heavy Trucks	14.8	20.1	27.6	27.0
Motorcycles	0.2	0.2	0.2	0.2
School Buses	1.0	1.1	1.0	0.8
Urban Transit	1.9	1.8	1.9	1.8
Inter-City Buses	0.7	0.6	0.5	0.5
Passenger Air	13.0	12.9	16.1	14.8
Freight Air	0.5	0.5	0.6	0.5
Passenger Rail	0.4	0.2	0.2	0.2
Freight Rail	6.6	6.1	6.3	6.2
Marine	8.2	7.8	8.7	9.3
Off-Road [1]	3.6	4.2	5.5	6.1
GHG Intensity (tonne/TJ) [a,b,c]	**70.1**	**70.5**	**69.7**	**69.7**
GHG Emissions Related to Electricity (Mt of CO_2e) [a,c]	**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-Demand in Canada, 1990–2007*, Ottawa, February 2009.
b) Natural Resources Canada, Transportation End-Use Model, Ottawa, August 2009.
c) Environment Canada, *Canada's Greenhouse Gas Inventory 1990–2007*, Ottawa, April 2009.

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
160.4	**163.9**	**170.9**	**173.3**	**172.4**	**179.4**	**36.4%**
90.5	90.9	93.2	93.5	92.5	96.0	16.6%
63.6	66.6	71.2	73.2	73.2	76.8	68.4%
6.3	6.4	6.5	6.7	6.7	6.6	81.2%
0.2	0.2	0.2	0.2	0.2	0.1	-14.8%
0.1	0.1	0.1	0.1	0.1	0.1	11.2%
91.1	92.2	94.0	93.4	93.3	97.1	25.5%
47.5	49.9	53.3	56.0	56.1	58.6	73.4%
0.0	0.0	0.0	0.0	0.0	0.0	–
4.8	5.0	5.1	5.0	4.2	5.2	13.3%
0.3	0.2	0.2	0.2	0.2	0.2	-43.9%
15.7	15.5	17.2	17.8	17.6	17.3	33.0%
0.7	0.7	0.8	0.6	0.7	0.7	-65.6%
22.6	22.4	22.3	21.7	21.4	22.2	-9.2%
22.7	22.7	22.6	22.3	22.0	22.7	-13.6%
26.1	26.7	27.7	28.2	28.1	30.0	107.8%
10.4	10.6	11.0	11.1	11.2	12.0	83.2%
10.2	11.2	12.3	10.7	11.5	11.0	20.4%
28.4	30.9	33.1	36.4	36.3	38.6	161.3%
0.2	0.2	0.2	0.2	0.3	0.3	64.1%
0.8	0.9	0.8	0.8	0.9	0.9	-12.0%
2.0	2.0	2.1	2.1	1.9	2.1	9.2%
0.5	0.4	0.4	0.4	0.4	0.4	-33.1%
15.4	15.3	16.9	17.5	17.3	17.1	32.0%
0.5	0.5	0.5	0.5	0.5	0.4	-6.5%
0.2	0.2	0.2	0.2	0.2	0.2	-48.9%
5.6	5.6	5.7	6.0	6.2	6.6	0.4%
8.4	7.8	8.7	8.4	7.6	8.3	1.3%
6.3	6.4	6.5	6.7	6.7	6.6	81.2%
69.5	**69.4**	**69.3**	**69.3**	**69.2**	**69.1**	**-1.3%**
0.2	**0.2**	**0.2**	**0.2**	**0.2**	**0.1**	**-14.8%**

Transportation Energy Prices and Background Indicators

	1990	1995	2000	2001
Energy Prices by Energy Source (incl. taxes)				
Regular Unleaded Gasoline [1] (cents/litre) [a,d,e]	58.7	55.7	72.6	70.7
Diesel Fuel Oil [1] (cents/litre) [a,d,e]	51.4	51.1	67.9	68.4
Propane (cents/litre) [a,d]	26.6	29.3	43.0	45.0
Excise Tax (cents/litre) [b]				
Unleaded Gasoline	8.5	10.0	10.0	10.0
Leaded Gasoline	9.5	11.0	11.0	11.0
Diesel Fuel Oil	4.0	4.0	4.0	4.0
Background Indicators				
Consumer Price Index (2002 = 100) [c]				
Gasoline and Other Fuels [2]	82.7	80.0	103.5	100.8
Public Transportation	52.3	68.8	92.8	94.7
Inter-City Transportation	47.4	63.0	92.1	93.1
Local and Commuter	60.8	78.8	93.9	97.4
GDP at Factor Cost (million $ 2002) [c]				
Business Sector	615,284	678,056	860,280	872,752
Transportation	35,485	39,447	47,694	48,734
Real Personal Disposable Income per Household ($ 2002) [c]	56,324	52,997	56,315	56,822

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*, Ottawa, April 2008 (Cat. No. 57-601-X).
b) Canada Revenue Agency, *Current Rates of Excise Taxes*, Ottawa, April 2008; http://www.cra-arc.gc.ca/E/pub/et/currate/currate-e.html.
c) Informetrica Limited, *TI Model and Database*, Ottawa, December 2008.
d) Statistics Canada, *Report on Energy Supply-Demand in Canada 1990–2007*, Ottawa, February 2009.
e) Statistics Canada, *Total Population, Census Divisions and Census Metropolitan Areas*, Tables 051-0014 and 051-0034, Ottawa, 2008 (CANSIM).

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
70.5	75.0	82.9	93.4	98.6	103.1	75.6%
63.1	68.9	75.9	93.0	96.7	99.2	93.2%
37.3	50.2	51.4	57.5	62.0	62.2	133.7%
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	15.8%
4.0	4.0	4.0	4.0	4.0	4.0	0.0%
100.0	106.4	117.6	132.6	139.8	146.1	
100.0	102.9	105.3	108.6	113.6	114.6	
100.0	102.3	104.1	107.0	111.7	111.9	
100.0	103.9	107.5	111.4	116.7	119.4	
896,598	914,112	945,546	974,020	1,002,493	1,027,173	66.9%
48,528	49,053	50,812	53,015	54,629	55,505	56.4%
57,166	57,723	59,164	59,405	61,773	63,301	12.4%

Passenger Transportation Secondary Energy Use by Energy Source and Transportation Mode

	1990	1995	2000	2001
Passenger Transportation Energy Use (PJ) [a]	**1,184.7**	**1,186.4**	**1,284.7**	**1,284.5**
Energy Use by Energy Source (PJ) [a]				
Electricity	3.1	3.0	3.1	3.1
Natural Gas	0.8	1.2	1.4	1.1
Motor Gasoline	922.2	932.2	985.3	1,007.7
Diesel Fuel Oil	57.6	52.6	55.0	51.5
Aviation Gasoline	5.4	4.1	3.5	3.5
Aviation Turbo Fuel	175.5	176.0	227.9	208.4
Propane	20.2	17.4	8.3	9.1
Energy Use by Transportation Mode (PJ) [a]				
Small Cars	353.1	344.4	322.8	327.4
Large Cars	382.1	345.1	324.2	329.2
Light Trucks	208.0	261.1	352.5	366.5
Motorcycles	2.5	2.3	2.6	2.8
School Buses	15.0	16.3	14.2	11.6
Urban Transit	28.6	26.1	27.0	25.8
Inter-City Buses	9.6	8.6	7.0	6.5
Air	180.9	180.1	231.5	211.9
Rail	5.1	2.5	2.9	2.9
Activity				
Total Passenger-kilometres [1] (millions) [a,b,c]	486,283	537,016	595,653	602,261
Passenger-kilometres by Transportation Mode (millions)				
Small Cars [a]	168,266	180,710	175,960	179,743
Large Cars [a]	136,747	137,039	130,993	133,317
Light Trucks [a]	69,557	98,056	134,575	140,758
Motorcycles [a]	1,895	1,551	1,773	2,062
School Buses [a]	16,734	22,030	23,168	19,581
Urban Transit [a]	15,019	12,924	14,002	14,671
Inter-City Buses [a]	9,507	9,799	8,751	8,040
Air [1,b]	66,776	73,492	104,882	102,535
Rail [c]	1,782	1,415	1,549	1,553
Energy Intensity [1] (MJ/Pkm) [a,b,c]	**2.36**	**2.15**	**2.11**	**2.08**

1) Excludes non-commercial aviation.

Sources:

a) Natural Resources Canada, Transportation End-Use Model, Ottawa, August 2009.

b) Statistics Canada, *Canadian Civil Aviation, 1990–2000*, Ottawa, February 2003 (Cat. No. 51-206-X); and Statistics Canada, *Aviation: Service Bulletins* (Cat. No. 51-004-X), Ottawa: Vol. 36 no. 5 December 2004, Vol. 37 no. 6 December 2005, Vol. 38 no. 5 December 2006, Vol. 41, No. 3 June 2009.

c) Statistics Canada, *Rail in Canada 1990–2007*, Ottawa, June 2009 (Cat. No. 52-216-X).

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
1,318.0	**1,326.9**	**1,363.3**	**1,370.6**	**1,358.6**	**1,412.5**	**19.2%**
3.3	3.4	3.5	3.5	3.5	2.5	-19.3%
1.1	1.1	1.2	1.3	1.2	1.3	59.6%
1,032.3	1,043.2	1,058.1	1,055.6	1,049.5	1,102.8	19.6%
53.9	53.9	51.4	52.2	49.8	53.9	-6.3%
3.4	3.1	2.9	2.9	2.9	3.1	-43.7%
217.1	215.5	238.8	248.0	245.6	242.5	38.2%
6.8	6.5	7.4	6.9	6.0	6.3	-68.5%
330.8	329.4	328.2	321.1	316.9	329.5	-6.7%
332.0	333.6	334.1	329.9	327.1	338.5	-11.4%
381.1	390.7	405.9	413.9	413.5	442.4	112.7%
3.1	3.3	3.6	3.6	3.8	4.1	67.0%
11.8	13.2	11.3	11.4	12.3	12.6	-15.9%
28.9	29.1	30.2	31.2	27.9	30.8	7.9%
7.1	6.3	5.7	6.1	5.9	6.4	-33.9%
220.5	218.7	241.7	250.9	248.6	245.6	35.7%
2.6	2.5	2.4	2.5	2.5	2.6	-49.4%
610,790	616,903	635,357	654,595	657,610	690,733	42.0%
182,526	183,650	183,989	185,117	181,745	185,668	10.3%
135,104	136,159	136,380	137,783	135,858	139,612	2.1%
147,676	154,377	162,250	167,540	169,779	184,182	164.8%
2,429	2,566	2,792	3,002	3,217	3,565	88.1%
20,959	23,822	21,698	23,080	22,542	24,396	45.8%
16,248	16,389	17,310	18,393	16,302	17,095	13.8%
9,158	8,181	7,551	8,227	7,987	8,330	-12.4%
95,094	90,326	101,965	109,975	118,729	126,441	89.4%
1,597	1,434	1,421	1,478	1,450	1,445	-18.9%
2.11	**2.11**	**2.10**	**2.04**	**2.02**	**2.00**	**-14.9%**

Passenger Transportation GHG Emissions by Energy Source and Transportation Mode

	1990	1995	2000	2001
Passenger Transportation GHG Emissions (Mt of CO_2e) [b,c]	**82.3**	**83.4**	**88.6**	**88.4**
GHG Emissions by Energy Source (Mt of CO_2e) [b,c]				
Electricity	0.2	0.2	0.2	0.2
Natural Gas	0.0	0.1	0.1	0.1
Motor Gasoline	63.9	65.6	67.8	69.2
Diesel Fuel Oil	4.1	3.7	3.9	3.7
Aviation Gasoline	0.4	0.3	0.3	0.3
Aviation Turbo Fuel	12.6	12.6	15.9	14.5
Propane	1.2	1.0	0.5	0.6
GHG Emissions by Transportation Mode (Mt of CO_2e) [b,c]				
Small Cars	24.4	24.2	22.2	22.5
Large Cars	26.3	24.1	22.2	22.5
Light Trucks	14.4	18.4	24.2	25.2
Motorcycles	0.2	0.2	0.2	0.2
School Buses	1.0	1.1	1.0	0.8
Urban Transit	1.9	1.8	1.9	1.8
Inter-City Buses	0.7	0.6	0.5	0.5
Air	13.0	12.9	16.1	14.8
Rail	0.4	0.2	0.2	0.2
GHG Intensity (tonne/TJ) [b,c]	**69.5**	**70.3**	**69.0**	**68.9**
GHG Emissions Related to Electricity (Mt of CO_2e) [a,c]	**0.2**	**0.2**	**0.2**	**0.2**

Sources:

a) Statistics Canada, R*eport on Energy Supply-Demand in Canada, 1990–2007*, Ottawa, February 2009.
b) Natural Resources Canada, Transportation End-Use Model, Ottawa, August 2009.
c) Environment Canada, *Canada's Greenhouse Gas Inventory 1990–2007*, Ottawa, April 2009.

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
90.5	**90.9**	**93.2**	**93.5**	**92.5**	**96.0**	**16.6%**
0.2	0.2	0.2	0.2	0.2	0.1	-14.8%
0.1	0.1	0.1	0.1	0.1	0.1	57.4%
70.6	71.2	71.9	71.6	71.0	74.4	16.6%
3.8	3.8	3.6	3.7	3.5	3.8	-5.9%
0.3	0.2	0.2	0.2	0.2	0.2	-43.7%
15.1	15.0	16.6	17.3	17.1	16.9	34.4%
0.4	0.4	0.4	0.4	0.4	0.4	-68.2%
22.6	22.4	22.3	21.7	21.4	22.2	-9.2%
22.7	22.7	22.6	22.3	22.0	22.7	-13.6%
26.1	26.7	27.7	28.2	28.1	30.0	107.8%
0.2	0.2	0.2	0.2	0.3	0.3	64.1%
0.8	0.9	0.8	0.8	0.9	0.9	-12.0%
2.0	2.0	2.1	2.1	1.9	2.1	9.2%
0.5	0.4	0.4	0.4	0.4	0.4	-33.1%
15.4	15.3	16.9	17.5	17.3	17.1	32.0%
0.2	0.2	0.2	0.2	0.2	0.2	-48.9%
68.7	**68.5**	**68.3**	**68.2**	**68.1**	**67.9**	**-2.2%**
0.2	**0.2**	**0.2**	**0.2**	**0.2**	**0.1**	**-14.8%**

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

	1990	1995	2000	2001
Passenger Road Transportation Energy Use (PJ) [a]	**998.7**	**1,003.9**	**1,050.3**	**1,069.7**
Energy Use by Energy Source (PJ) [a]				
Electricity	3.1	3.0	3.1	3.1
Natural Gas	0.8	1.2	1.4	1.1
Motor Gasoline	922.2	932.2	985.3	1,007.7
Diesel Fuel Oil	52.5	50.1	52.1	48.7
Propane	20.2	17.4	8.3	9.1
Activity				
Passenger-kilometres (millions) [a]	417,725	462,109	489,222	498,173
Energy Intensity (MJ/Pkm) [a]	**2.39**	**2.17**	**2.15**	**2.15**
Passenger Road Transportation GHG Emissions (Mt of CO_2e) [a,b]	**68.9**	**70.3**	**72.2**	**73.4**
GHG Emissions by Energy Source (Mt of CO_2e) [a,b]				
Electricity	0.2	0.2	0.2	0.2
Natural Gas	0.0	0.1	0.1	0.1
Motor Gasoline	63.9	65.6	67.8	69.2
Diesel Fuel Oil	3.7	3.5	3.7	3.4
Propane	1.2	1.0	0.5	0.6
GHG Intensity (tonne/TJ) [a,b]	**69.0**	**70.1**	**68.8**	**68.6**

Sources:

a) Natural Resources Canada, Transportation End-Use Model, Ottawa, August 2009.

b) Environment Canada, *Canada's Greenhouse Gas Inventory 1990–2007*, Ottawa, April 2009.

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
1,094.9	**1,105.7**	**1,119.2**	**1,117.1**	**1,107.5**	**1,164.3**	**16.6%**
3.3	3.4	3.5	3.5	3.5	2.5	-19.3%
1.1	1.1	1.2	1.3	1.2	1.3	59.6%
1,032.3	1,043.2	1,058.1	1,055.6	1,049.5	1,102.8	19.6%
51.3	51.4	49.0	49.7	47.3	51.4	-2.1%
6.8	6.5	7.4	6.9	6.0	6.3	-68.5%
514,099	525,143	531,971	543,141	537,431	562,847	34.7%
2.13	**2.11**	**2.10**	**2.06**	**2.06**	**2.07**	**-13.5%**
74.9	**75.4**	**76.1**	**75.8**	**74.9**	**78.6**	**14.1%**
0.2	0.2	0.2	0.2	0.2	0.1	-14.8%
0.1	0.1	0.1	0.1	0.1	0.1	57.4%
70.6	71.2	71.9	71.6	71.0	74.4	16.6%
3.6	3.6	3.5	3.5	3.3	3.6	-1.2%
0.4	0.4	0.4	0.4	0.4	0.4	-68.2%
68.4	**68.2**	**68.0**	**67.8**	**67.7**	**67.5**	**-2.1%**

Passenger Transportation Explanatory Variables

	1990	1995	2000	2001
Light-Duty Vehicles				
Sales (thousands)				
Small Cars [a,d]	514	368	481	490
Large Cars [a,d]	358	272	367	376
Light Trucks [a,d]	295	344	499	500
Motorcycles	n.a.	n.a.	n.a.	n.a.
Stock (thousands)				
Small Cars [a,f]	6,090	5,760	5,837	5,760
Large Cars [a,f]	5,010	4,416	4,374	4,280
Light Trucks [a,f]	2,678	2,984	4,181	4,229
Motorcycles [a,c]	306	275	311	318
Average Distance Travelled per Year (km)				
Small Cars [a]	17,781	19,913	19,035	19,649
Large Cars [a]	17,565	19,696	18,910	19,615
Light Trucks [a]	17,285	20,366	19,559	20,145
Motorcycles [a]	4,961	5,045	5,133	5,310
On-Road Average Fuel Consumption (L/100 km)				
Small Cars [a,g]				
Motor Gasoline	9.4	8.7	8.3	8.3
Diesel Fuel Oil	7.1	6.5	6.0	5.9
Large Cars [a,g]				
Motor Gasoline	12.5	11.4	11.2	11.2
Diesel Fuel Oil	9.3	8.6	8.1	8.2
Light Trucks [a,g]				
Motor Gasoline	13.0	12.4	12.3	12.3
Diesel Fuel Oil	9.8	11.1	12.1	12.5
Motorcycles [a,e]				
Motor Gasoline	4.7	4.7	4.7	4.7

Sources:

a) Natural Resources Canada, Transportation End-Use Model, Ottawa, August 2009.
b) Statistics Canada, *Passenger Bus and Urban Transit Statistics 1990–2000*, Ottawa, July 2002 (Cat. No. 53-215-X); and *The Canadian Passenger Bus and Urban Transit Industries Survey 2001-2006*, Ottawa, June 2008 (Cat. No. 50-002-X); and tables 408-0008 et 408-0010, 2007 (CANSIM).
c) Statistics Canada, *Road Motor Vehicle Registrations*, Ottawa, November 1999 (Cat. No. 53-219-X); and Statistics Canada, *Motor Vehicle Registrations 2000–2007*, Table 405-0004, Ottawa, 2009 (CANSIM).
d) R.L. Polk & Co., *New Vehicle Registrations 1990–2007*, Southfield (Detroit), Michigan, December 2008.
e) U.S. Department of Transportation, *National Transportation Statistics*, Table VM-1, December 2008.
f) DesRosiers Automotive Consultants, *Canadian Vehicle in Operation Census 1990–2007*, Richmond Hill (Toronto), December 2008.
g) Transport Canada, *Vehicle Fuel Economy Information System 1979–2007*, Ottawa, 2008.

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
520	491	470	480	493	503	-2.1%
399	375	356	365	373	378	5.7%
547	528	515	527	551	599	103.5%
n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	–
5,732	5,994	6,026	5,976	6,038	6,186	1.6%
4,252	4,445	4,474	4,445	4,484	4,601	-8.2%
4,324	4,679	4,878	5,038	5,098	5,390	101.3%
350	373	409	444	485	522	70.9%
20,086	19,361	19,329	19,169	18,846	19,256	8.3%
20,043	19,359	19,297	19,181	18,973	19,464	10.8%
20,490	19,626	19,615	19,444	19,309	19,647	13.7%
5,463	5,370	5,377	5,328	5,224	5,373	8.3%
8.2	8.1	8.1	8.0	8.0	7.9	-15.9%
5.8	5.7	5.7	5.7	5.7	5.7	-20.1%
11.1	11.1	11.0	11.0	11.0	10.8	-13.7%
8.4	8.6	8.3	7.9	7.6	7.5	-19.1%
12.3	12.1	12.1	12.0	12.0	11.9	-8.4%
12.9	12.7	12.9	12.8	12.6	12.3	25.7%
4.7	4.7	4.7	4.3	4.3	4.2	-10.6%

continued on next table ⇨

Passenger Transportation Explanatory Variables (Continued)

	1990	1995	2000	2001
Lab-Tested New Vehicle Fuel Consumption [1] (L/100 km) [g]				
CAFC Standard Cars	8.6	8.6	8.6	8.6
CAFC Average Car Fleet	8.2	7.9	7.8	7.8
CAFC Standard Light Trucks	11.8	11.4	11.4	11.4
CAFC Average Light Truck Fleet	11.4	11.5	11.1	11.0
Buses				
Stock (thousands) [a]				
School Buses	44.7	48.8	47.0	43.0
Urban Transit	25.7	21.7	23.4	23.2
Inter-City Buses	6.6	6.8	6.9	7.8
Average Distance Travelled per Year (km) [a,b]				
School Buses	21,761	24,589	25,268	23,045
Urban Transit	55,660	55,527	53,416	55,968
Inter-City Buses	85,579	84,768	74,659	60,756

1) These series are representatives 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, August 2009.
b) Statistics Canada, *Passenger Bus and Urban Transit Statistics 1990–2000*, Ottawa, July 2002 (Cat. No. 53-215-X); and *The Canadian Passenger Bus and Urban Transit Industries Survey 2001-2006*, Ottawa, June 2008 (Cat. No. 50-002-X); and tables 408-0008 et 408-0010, 2007 (CANSIM).
c) Statistics Canada, *Road Motor Vehicle Registrations*, Ottawa, November 1999 (Cat. No. 53-219-X); and Statistics Canada, *Motor Vehicle Registrations 2000–2007*, Table 405-0004, Ottawa, 2009 (CANSIM).
d) R.L. Polk & Co., *New Vehicle Registrations 1990–2007*, Southfield (Detroit), Michigan, December 2008.
e) U.S. Department of Transportation, *National Transportation Statistics*, Table VM-1, December 2008.
f) DesRosiers Automotive Consultants, *Canadian Vehicle in Operation Census 1990–2007*, Richmond Hill (Toronto), December 2008.
g) Transport Canada, *Vehicle Fuel Economy Information System 1979–2007*, Ottawa, 2008.

⇦ continued from previous table

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
8.6	8.6	8.6	8.6	8.6	8.6	0.0%
7.7	7.6	7.5	7.4	7.4	7.1	-13.4%
11.4	11.4	11.4	11.2	10.9	10.6	-10.2%
11.0	10.8	10.9	10.6	10.4	10.1	-11.4%
46.3	47.5	46.9	46.9	49.2	48.8	9.2%
24.8	24.1	23.5	24.0	23.0	25.0	-2.6%
8.3	8.3	7.4	8.0	8.2	8.8	33.2%
22,667	24,790	22,641	23,796	21,916	23,666	8.8%
57,537	59,225	63,595	65,568	60,198	57,507	3.3%
65,442	58,477	60,089	60,807	57,431	56,283	-34.2%

Freight Transportation Secondary Energy Use by Energy Source and Transportation Mode

	1990	1995	2000	2001
Freight Transportation Energy Use (PJ) [a]	**639.8**	**756.4**	**916.3**	**902.4**
Energy Use by Energy Source (PJ) [a]				
Natural Gas	0.8	1.1	0.9	0.8
Motor Gasoline	144.9	180.2	228.6	210.6
Diesel Fuel Oil	412.2	495.8	603.4	598.9
Light Fuel Oil and Kerosene	0.0	0.0	0.0	0.0
Heavy Fuel Oil	60.1	56.6	67.8	77.5
Aviation Gasoline	0.1	0.1	0.0	0.0
Aviation Turbo Fuel	6.4	7.2	8.0	6.7
Propane	15.2	15.4	7.6	7.9
Energy Use by Transportation Mode (PJ) [a]				
Light Trucks	96.2	115.2	143.3	149.6
Medium Trucks	134.0	165.4	177.6	159.3
Heavy Trucks	212.3	288.4	393.2	384.9
Air	6.5	7.3	8.0	6.7
Rail	84.4	78.5	80.2	78.8
Marine	106.5	101.7	114.0	123.2
Activity				
Total Tonne-kilometres (millions) [a]	542,818	614,557	736,652	732,384
Tonne-kilometres by Transportation Mode (millions)				
Light Trucks [a]	10,267	13,488	17,181	18,294
Medium Trucks [a]	14,757	19,709	22,598	20,183
Heavy Trucks [b]	77,800	110,000	164,720	170,569
Air [c]	1,754	2,045	2,327	2,172
Rail [d]	248,371	280,426	319,769	321,233
Marine [e]	189,869	188,890	210,057	199,933
Energy Intensity (MJ/Tkm) [a]	**1.18**	**1.23**	**1.24**	**1.23**

Sources:

a) Natural Resources Canada, Transportation End-Use Model, Ottawa, August 2009.
b) Statistics Canada, *Trucking in Canada 1990–2005*, Ottawa, June 2007 (Cat. No. 53-222-X); and *Trucking Commodity Origin and Destination Survey 2006-2007*, Ottawa, June 2009.
c) Statistics Canada, *Canadian Civil Aviation, 1990–2000*, Ottawa, February 2003 (Cat. No. 51-206-X); and Statistics Canada, *Aviation: Service Bulletins* (Cat. No. 51-004-X), Ottawa: Vol. 41 no. 3 July 2009.
d) Statistics Canada, *Rail in Canada 1990–2007*, Ottawa, June 2009 (Cat. No. 52-216-X).
e) Transport Canada, *Surface and Marine Statistics and Forecasts Division*, Ottawa, February 2009.

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
895.3	**939.8**	**1,005.2**	**1,032.1**	**1,034.2**	**1,085.1**	**69.6%**
0.7	0.6	0.6	0.6	0.6	0.6	-32.7%
208.3	216.7	229.6	223.2	230.6	237.7	64.1%
608.5	643.5	693.3	729.6	733.5	765.5	85.7%
0.0	0.0	0.0	0.0	0.0	0.0	–
64.8	66.8	69.1	67.5	56.9	69.4	15.4%
0.0	0.0	0.0	0.0	0.0	0.0	-52.2%
7.5	6.9	7.4	7.8	7.1	6.2	-3.3%
5.5	5.2	5.3	3.3	5.4	5.7	-62.5%
152.9	156.1	161.6	163.0	164.9	177.1	84.1%
148.1	162.4	178.4	156.0	167.0	159.8	19.3%
404.8	440.0	471.0	517.7	516.8	549.2	158.7%
7.5	7.0	7.4	7.9	7.1	6.3	-3.9%
71.5	71.3	72.6	76.4	78.9	83.9	-0.6%
110.5	103.1	114.2	111.2	99.5	109.0	2.3%
763,026	783,689	845,965	883,638	881,472	887,960	63.6%
18,733	19,329	20,443	20,725	21,060	23,167	125.7%
18,926	21,008	23,333	20,654	24,638	24,004	62.7%
177,012	184,744	224,910	233,583	227,667	228,752	194.0%
2,151	1,855	2,013	2,236	2,227	2,033	15.9%
318,243	317,933	338,898	352,140	352,343	357,444	43.9%
227,961	238,820	236,368	254,301	253,537	252,560	33.0%
1.17	**1.20**	**1.19**	**1.17**	**1.17**	**1.22**	**3.7%**

Freight Transportation GHG Emissions by Energy Source and Transportation Mode

	1990	1995	2000	2001
Freight Transportation GHG Emissions (Mt of CO_2e) [a,b]	**45.6**	**53.7**	**65.0**	**64.2**
GHG Emissions by Energy Source (Mt of CO_2e) [a,b]				
Natural Gas	0.0	0.1	0.0	0.0
Motor Gasoline	9.9	12.4	15.5	14.3
Diesel Fuel Oil	29.8	35.5	43.4	43.1
Light Fuel Oil and Kerosene	0.0	0.0	0.0	0.0
Heavy Fuel Oil	4.5	4.3	5.0	5.8
Aviation Gasoline	0.0	0.0	0.0	0.0
Aviation Turbo Fuel	0.5	0.5	0.6	0.5
Propane	0.9	0.9	0.5	0.5
GHG Emissions by Transportation Mode (Mt of CO_2e) [a,b]				
Light Trucks	6.5	7.9	9.8	10.2
Medium Trucks	9.1	11.3	12.1	10.9
Heavy Trucks	14.8	20.1	27.6	27.0
Air	0.5	0.5	0.6	0.5
Rail	6.6	6.1	6.3	6.2
Marine	8.2	7.8	8.7	9.3
GHG Intensity (tonne/TJ) [a,b]	**71.3**	**71.0**	**71.0**	**71.1**

Sources:
a) Natural Resources Canada, Transportation End-Use Model, Ottawa, August 2009.
b) Environment Canada, Canada's Greenhouse Gas Inventory 1990–2007, Ottawa, April 2009.

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
63.6	**66.6**	**71.2**	**73.2**	**73.2**	**76.8**	**68.4%**
0.0	0.0	0.0	0.0	0.0	0.0	-33.6%
14.2	14.7	15.6	15.1	15.6	16.1	62.3%
43.7	46.1	49.7	52.3	52.5	54.8	84.2%
0.0	0.0	0.0	0.0	0.0	0.0	–
4.8	5.0	5.1	5.0	4.2	5.2	13.3%
0.0	0.0	0.0	0.0	0.0	0.0	-52.1%
0.5	0.5	0.5	0.5	0.5	0.4	-6.0%
0.3	0.3	0.3	0.2	0.3	0.3	-62.1%
10.4	10.6	11.0	11.1	11.2	12.0	83.2%
10.2	11.2	12.3	10.7	11.5	11.0	20.4%
28.4	30.9	33.1	36.4	36.3	38.6	161.3%
0.5	0.5	0.5	0.5	0.5	0.4	-6.5%
5.6	5.6	5.7	6.0	6.2	6.6	0.4%
8.4	7.8	8.7	8.4	7.6	8.3	1.3%
71.0	**70.9**	**70.9**	**70.9**	**70.8**	**70.8**	**-0.7%**

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

	1990	1995	2000	2001
Freight Road Transportation Energy Use (PJ) [a]	**442.4**	**568.9**	**714.1**	**693.7**
Energy Use by Energy Source (PJ) [a]				
Natural Gas	0.8	1.1	0.9	0.8
Motor Gasoline	144.9	180.2	228.6	210.6
Diesel Fuel Oil	281.5	372.2	476.9	474.4
Propane	15.2	15.4	7.6	7.9
Activity				
Tonne-kilometres (millions) [a]	102,824	143,196	204,499	209,046
Energy Intensity (MJ/Tkm) [a]	**4.30**	**3.97**	**3.49**	**3.32**
Freight Road Transportation GHG Emissions (Mt of CO_2e) [a,b]	**30.4**	**39.3**	**49.5**	**48.2**
GHG Emissions by Energy Source (Mt of CO_2e) [a,b]				
Natural Gas	0.0	0.1	0.0	0.0
Motor Gasoline	9.9	12.4	15.5	14.3
Diesel Fuel Oil	19.6	25.9	33.5	33.3
Propane	0.9	0.9	0.5	0.5
GHG Intensity (tonne/TJ) [a,b]	**68.8**	**69.0**	**69.4**	**69.4**

Sources:

a) Natural Resources Canada, Transportation End-Use Model, Ottawa, August 2009.

b) Environment Canada, *Canada's Greenhouse Gas Inventory 1990–2007*, Ottawa, April 2009.

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
705.8	**758.5**	**811.0**	**836.7**	**848.7**	**886.0**	**100.3%**
0.7	0.6	0.6	0.6	0.6	0.6	-32.7%
208.3	216.7	229.6	223.2	230.6	237.7	64.1%
491.3	536.0	575.5	609.5	612.0	642.0	128.1%
5.5	5.2	5.3	3.3	5.4	5.7	-62.5%
214,671	225,081	268,686	274,962	273,365	275,923	168.3%
3.29	**3.37**	**3.02**	**3.04**	**3.10**	**3.21**	**-25.4%**
49.0	**52.7**	**56.3**	**58.2**	**59.0**	**61.6**	**102.2%**
0.0	0.0	0.0	0.0	0.0	0.0	-33.6%
14.2	14.7	15.6	15.1	15.6	16.1	62.3%
34.5	37.7	40.4	42.8	43.0	45.1	130.4%
0.3	0.3	0.3	0.2	0.3	0.3	-62.1%
69.5	**69.5**	**69.5**	**69.5**	**69.5**	**69.5**	**1.0%**

Freight Transportation Explanatory Variables

	1990	1995	2000	2001
Trucks				
Sales (thousands)				
Light Trucks [a,b]	118	127	171	169
Medium Trucks [a,b]	29	34	44	44
Heavy Trucks [a,b]	16	26	29	22
Stock (thousands)				
Light Trucks [a,c]	1,077	1,102	1,434	1,429
Medium Trucks [a,d]	578	615	749	640
Heavy Trucks [a,d]	297	293	301	319
Average Distance Travelled per Year (km)				
Light Trucks [a]	19,057	23,532	22,606	23,700
Medium Trucks [a,e]	23,201	27,864	25,131	26,082
Heavy Trucks [a,e]	72,005	82,161	99,814	90,878
On-Road Average Fuel Consumption (L/100 km)				
Light Trucks [a,f]				
Motor Gasoline	13.5	12.6	12.5	12.5
Diesel Fuel Oil	10.0	11.2	12.2	12.6
Medium Trucks [a,e]				
Motor Gasoline	27.1	26.2	25.6	25.8
Diesel Fuel Oil	27.6	26.7	26.3	26.2
Heavy Trucks [a,e]				
Diesel Fuel Oil	42.5	40.0	37.8	37.2
Lab-Tested Light Truck Fuel Consumption [1] (L/100 km) [f]				
CAFC Standard Light Trucks	11.8	11.4	11.4	11.4
CAFC Average Light Truck Fleet	11.4	11.5	11.1	11

1) These series are representatives 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, August 2009.
b) R.L. Polk & Co., *New Vehicle Registrations 1990–2007*, Southfield (Detroit), Michigan, December 2008.
c) DesRosiers Automotive Consultants, *Canadian Vehicle in Operation Census 1990–2007*, Richmond Hill (Toronto), December 2008.
d) R.L. Polk & Co., *Truck Industry Profile 1994–2002*, Southfield (Detroit), Michigan, April 2004. Data for 2003 to 2007 estimated by Natural Resources Canada.
e) Statistics Canada, *Canadian Vehicle Survey 1999–2007*, Ottawa, July 2007 (Cat. No. 53-223-X).
f) Transport Canada, *Vehicle Fuel Economy Information System 1979–2007*, Ottawa, 2008.

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
183	176	171	174	181	198	66.9%
44	44	47	50	59	62	114.7%
25	24	30	34	38	29	79.5%
1,448	1,561	1,617	1,665	1,678	1,779	65.1%
667	685	693	703	712	721	24.7%
325	332	336	340	344	347	16.9%
23,959	22,934	22,990	22,634	22,820	23,256	22.0%
23,248	24,942	27,147	23,506	27,566	26,428	13.9%
84,755	81,368	90,879	89,422	84,743	92,660	28.7%
12.5	12.4	12.3	12.3	12.2	12.2	-9.7%
13.0	12.9	13.1	13.1	12.9	12.6	26.7%
25.7	25.5	25.4	25.2	22.9	21.8	-19.4%
26.2	26.1	26.1	26.0	23.3	23.6	-14.4%
36.5	35.9	35.3	34.7	34.7	34.9	-18.0%
11.4	11.4	11.4	11.2	10.9	10.6	-10.2%
11	10.8	10.9	10.6	10.4	10.1	-11.4%

Electricity Generation Sector

chapter 6

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 10.5, 3.6 and 11,564 megajoules per kilowatt-hour, respectively.

Gross domestic product data are provided by Informetrica Limited.

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

Electricity Generation Energy Use and Generation by Energy Source

	1990	1995	2000	2001
Total Energy Use (PJ) [a,b]	**3,077.1**	**3,622.3**	**3,865.2**	**3,841.3**
Energy Use by Energy Source (PJ) [a,b]				
Natural Gas	80.0	182.1	319.2	339.7
Diesel Fuel Oil, Light Fuel Oil and Kerosene	11.5	9.5	6.5	6.8
Heavy Fuel Oil	141.4	84.4	113.2	138.3
Coal	874.5	909.7	1,187.8	1,167.7
Hydro	1,058.3	1,197.7	1,277.3	1,187.6
Nuclear	869.8	1,180.2	875.5	915.0
Wood and Other [1]	37.2	53.0	66.9	66.0
Petroleum Coke, Still Gas, Coke and Coke Oven Gas	4.3	5.6	18.8	20.2
Total Electricity Generated (GWh) [a]	**474,048**	**552,492**	**592,848**	**575,000**
Electricity Generated by Energy Source (GWh) [a]				
Natural Gas	9,018	19,784	31,678	33,165
Diesel Fuel Oil, Light Fuel Oil and Kerosene	994	1,056	798	877
Heavy Fuel Oil	13,394	8,334	11,540	13,671
Coal	76,794	81,563	109,895	110,197
Hydro	293,985	332,705	354,812	329,881
Nuclear	75,212	102,060	75,709	79,124
Wood and Other [1]	3,546	5,049	6,372	6,288
Petroleum Coke, Still Gas, Coke and Coke Oven Gas	1,105	1,941	2,044	1,797
Activity				
GDP (million $ 2002) [c]	21,356	23,498	23,301	22,238
Production (GWh) [a]	474,048	552,492	592,848	575,000
Energy Intensity (GJ/$ 2002) [a,b,c]	**0.144**	**0.154**	**0.166**	**0.173**
Energy Intensity (GJ/GWh) [a,b]	**6 491**	**6 556**	**6 520**	**6 680**

1) "Wood and Other" includes wood waste and spent pulping liquor, manufactured gases, other petroleum products, other fuels and station service.

Sources:
a) Statistics Canada, *Report on Energy Supply-Demand in Canada 1990–2007*, Ottawa, February 2009.
b) Natural Resources Canada, Electricity Energy Use Model, Ottawa, August 2009.
c) Informetrica Limited, *TI Model and Database*, Ottawa, December 2008.

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
3,822.3	**3,842.9**	**3,774.4**	**3,827.8**	**3,848.2**	**3,949.9**	
310.7	337.4	314.0	329.3	315.5	356.3	
5.7	5.3	6.3	6.0	6.1	5.6	
110.6	134.0	131.8	118.3	52.4	56.9	
1,143.1	1,138.6	1,049.8	1,053.1	1,086.0	1,152.4	
1,248.9	1,204.4	1,215.4	1,296.1	1,267.0	1,313.6	
906.1	904.6	915.0	919.9	996.4	954.0	
75.9	72.5	76.6	75.2	70.6	67.3	
21.3	46.1	65.6	29.9	54.2	43.9	
588,198	**577,516**	**574,331**	**597,067**	**586,368**	**609,559**	
31,978	32,174	31,824	31,816	31,333	37,687	
862	792	832	787	916	834	
11,169	18,754	14,694	13,396	6,106	6,650	
109,681	104,698	100,910	102,436	100,828	108,091	
346,917	334,560	337,606	360,026	351,936	364,879	
78,359	78,224	79,126	79,548	86,165	82,501	
7,232	6,905	7,291	7,159	6,726	6,408	
2,000	1,409	2,048	1,899	2,358	2,509	
23,620	23,975	24,125	25,559	25,126	25,999	
588,198	577,516	574,331	597,067	586,368	609,559	
0.162	**0.160**	**0.156**	**0.150**	**0.153**	**0.152**	
6 498	**6 654**	**6 572**	**6 411**	**6 563**	**6 480**	

Electricity Generation GHG Emissions by Energy Source

	1990	1995	2000	2001
Total GHG Emissions (Mt of CO_2e) [a,b,c]	**94.0**	**98.6**	**130.2**	**132.0**
GHG Emissions by Energy Source (Mt of CO_2e) [a,b,c]				
Natural Gas	4.1	9.2	16.1	17.1
Diesel Fuel Oil, Light Fuel Oil and Kerosene	0.8	0.7	0.5	0.5
Heavy Fuel Oil	10.7	6.4	8.4	10.2
Coal	78.1	81.9	103.7	102.5
Hydro	0.0	0.0	0.0	0.0
Nuclear	0.0	0.0	0.0	0.0
Wood and Other [1]	0.0	0.0	0.0	0.0
Petroleum Coke, Still Gas, Coke and Coke Oven Gas	0.4	0.5	1.5	1.6
GHG Intensity [2] (tonne/TJ [electricity generated]) [a,b,c]	**55.1**	**49.6**	**61.0**	**63.8**
GHG Intensity [3] (tonne/TJ [energy used]) [a,b,c]	**30.5**	**27.2**	**33.7**	**34.4**

1) "Wood and Other" includes wood waste and spent pulping liquor, 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-Demand in Canada 1990–2007*, Ottawa, February 2009.
b) Natural Resources Canada, Electricity Energy Use Model, Ottawa, August 2009.
c) Environment Canada, *Canada's Greenhouse Gas Inventory 1990–2007*, Ottawa, April 2009.

2002	2003	2004	2005	2006	2007	Total Growth 1990-2007
126.9	**131.4**	**123.7**	**120.2**	**119.7**	**126.6**	
15.6	16.9	15.7	16.5	15.8	17.8	
0.4	0.4	0.5	0.4	0.4	0.4	
8.2	9.9	9.7	8.8	3.9	4.2	
100.9	100.4	92.3	92.1	95.1	100.5	
0.0	0.0	0.0	0.0	0.0	0.0	
0.0	0.0	0.0	0.0	0.0	0.0	
0.0	0.0	0.0	0.0	0.0	0.0	
1.8	3.8	5.4	2.5	4.5	3.6	
59.9	**63.2**	**59.8**	**55.9**	**56.7**	**57.7**	
33.2	**34.2**	**32.8**	**31.4**	**31.1**	**32.0**	

Reconciliation of Data on Energy Use Found in This Handbook with Data in Statistics Canada's *Report on Energy Supply-Demand in Canada* (RESD) – 2007 (petajoules)

	RESD Data	Residential Wood	Commercial & Public Admin. Diesel	Commercial & Public Admin. Aviation Fuels
Sector				
Residential	1,344	103		
Commercial/Institutional	1,451		(207)	(28)
Industrial	2,466			
Transportation	2,490		207	28
Agriculture	215			
Final Demand	**7,966**	**103**	**0**	**0**
Non-Energy	1,049			
Producer Consumption	1,348			
Net Supply	**10,362**	**103**	**0**	**0**
Fuel Conversion				
Electricity, Steam & Coal/Coke Input Fuels [1]	4,068			
Electricity, Steam & Coal/Coke Production [2]	(2,244)			
Total Primary	**12,186**	**103**	**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 Commerces and Other Institutional less (Table 4-1) Public Administration and Commerces 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 (Tables 8) wood waste and spent pulping liquor used for electricity generation multiplied by a conversion factor, plus (Table 4-1) Producer Consumption for refining and mining industries of still gas, diesel, heavy fuel oil, light fuel oil, kerosene, petroleum coke and refinery LPG columns, plus (Canadian Industrial Energy End-Use Data and Analysis Centre) waste fuels from the cement industry.

Transportation: Base data taken from RESD (Table 2-1) Total Transportation less Pipelines plus Public Administration and Commerces and Other Institutional motor gasoline, diesel, aviation gasoline and aviation turbo fuel columns.

Agriculture: Base data taken from RESD (Table 2-1) Agriculture.

1) "Electricity, Steam & 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 & 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.

Commercial & Public Admin. Motor Gasoline	Pipeline Fuels	Wood Waste & Pulping Liquor	Waste Fuels Used in Cement Industry	Re-allocation of Producer Consumption by Refineries and Mining Industries	Data Presented in This Handbook
					1,447
(74)					1,142
		492	5	509	3,472
74	(204)				2,595
					215
0	**(204)**	**492**	**5**	**509**	**8,871**
					1,049
	204			(509)	1,042
0	**0**	**492**	**5**	**0**	**10,962**
					4,068
					(2,244)
0	**0**	**492**	**5**	**0**	**12,786**

Reconciliation of Definitions

appendix B

Reconciliation of Definitions for Estimated Greenhouse Gas Emissions Found in this Handbook with Environment Canada's *Canada's Greenhouse Gas Inventory* 1990–2007 [2]

In this handbook, *Energy Use Data Handbook 1990 to 2007* (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 Greenhouse Gas Inventory 1990–2007* (CGGI-2007). Both Natural Resources Canada (NRCan) and EC use the energy demand data from Statistics Canada's *Report on Energy Supply-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 CGGI 2007 emissions estimates for the five sectors covered in this handbook.

[2] Canada's official greenhouse gas inventory is available on the Environment Canada Web site at www.ec.gc.ca/pdb/ghg/inventory_e.cfm.

Residential Sector

EUDH and CGGI-2007 differ in their definitions of residential emissions.

- EUDH residential emissions include end-use electricity-related emissions, which are reported under power generation in CGGI-2007.
- Wood energy use differs (EC's estimate is larger than NRCan's). Hence, the GHG emissions related to wood energy use presented here are lower than those in CGGI-2007.

Commercial/Institutional Sector

There is only one difference between EUDH and CGGI-2007 definitions of commercial/institutional emissions.

- EUDH commercial/institutional emissions include end-use electricity-related emissions, which CGGI-2007 includes under power generation.

Industrial Sector

There are many differences between EUDH and CGGI-2007 definitions of the industrial sector.

- CGGI-2007 re-allocates industrial diesel fuel use from the industrial sector to the transportation sector.
- This handbook re-allocates producers' consumption of petroleum products from the producers' consumption category to the petroleum refining and upstream mining industries. CGGI-2007 reports this as consumption of fossil fuels.

- CGGI-2007 re-allocates 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. CGGI-2007 reports them under power generation.
- CGGI-2007 includes producers' consumption of non-fossil fuels in the fossil fuel categories. EUDH does not report this consumption.
- CGGI-2007 also re-allocates estimates of emissions from upstream oil and gas flaring to fugitive emissions from the fossil fuel sector.

Transportation Sector

EUDH and CGGI-2007 differ in their definitions of transportation emissions.

- CGGI-2007 re-allocates industrial and agriculture diesel and agriculture motor gasoline to the transportation sector.
- CGGI-2007 includes pipeline-related emissions in the transportation sector.
- CGGI-2007 excludes emissions resulting from the use of energy in the foreign aviation and marine sub-sectors.
- EUDH transportation emissions include end-use electricity-related emissions, which are reported under power generation in CGGI-2007.

Electricity Generation Sector

There is only one difference between EUDH and CGGI-2007 for the electricity generation sector.

- CGGI-2007 reports emissions from electricity and steam generation at the aggregate level, while EUDH reports emissions for electricity generation only. Note that in its Annex 9 "Electricity Intensity Tables," CGGI-2007 reports detailed emissions from electricity generation that are similar to those found in this handbook.

Glossary of Terms

appendix C

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 ones such as televisions, video cassette recorders, digital video disc players, radios, computers and toasters.

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

Auxiliary Motors: Refers to devices used to transform electric power into mechanical energy in order to provide a service, 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. It can produce steam for industrial processes when burned in a boiler and/or produce electricity through thermal generation.

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).

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 (below) 1, the observed temperature is warmer (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, which varies from year to year because of population flow, was 196 CDDs in 2007.

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

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

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

Glossary of Terms

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 exterior walls of a building. In the residential sector, it excludes parking areas, basements or other floors below ground level; these areas are included in the commercial/institutional sector. It is measured in square metres.

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 2002 dollars.

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

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

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

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

Heating Degree-Day Index: A measure of how relatively cold (or hot) a year was when compared with the heating degree-day (HDD) average. When the HDD index is above (below) 1, the observed temperature is colder (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, which varies from year to year because of population flow, was 4,108 HDDs in 2007.

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

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

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

Kilowatt-hour (kWh): The commercial unit of electricity energy equivalent to 1,000 watt-hours. A kilowatt-hour can best be visualized as the amount of electricity consumed by ten 100-watt bulbs burning for an hour. One kilowatt-hour equals 3.6 million joules (see Watt).

Large Car: A car with a gross vehicle weight of 1,182 kg (2,601 lb.) or more. The gross vehicle weight is the weight of the empty vehicle plus the maximum anticipated load weight.

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.

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 sub-sector describing the transportation of one passenger over a distance of one kilometre.

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

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

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

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

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

Small Car: A car weighing up to 1,181 kg (2,600 lb.) of gross vehicle weight. The gross vehicle weight is the weight of the empty vehicle plus the maximum anticipated load weight.

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 sub-sector 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 name applied to any number of energy sources other than conventional fuels used in the cement industry. It includes materials such as tires, municipal waste and landfill off-gases.

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

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

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

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

List of Abbreviations

appendix D

$2002	Constant 2002 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
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-Demand in Canada*
REUM	Residential End-Use Model
SEER	Seasonal Energy Efficiency Ratio
SIC	Standard Industrial Classification
TJ	Terajoule = 1×10^{12} joules
Tkm	Tonne-kilometre
UEC	Unit Energy Consumption
W	Watt
Wh	Watt-hour

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Leading Canadians to Energy Efficiency at Home, at Work and on the Road

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