

The energy sector accounted for 7% of gross domestic product (GDP) in 2008 and directly employed 363,000 people, or 2% of the labour force. High energy prices early in 2008 fuelled Canada's export revenues. According to National Energy Board figures, energy exports reached the highest value ever, \$133 billion, and a record 28% of all merchandise trade. Just a year earlier, energy exports totalled \$93 billion, or 21% of all exports.

In the first half of 2008, energy prices climbed to record highs amid rising demand. Oil reached US\$147 per barrel in July, and natural gas prices rose to around US\$13 per million British thermal units (MMBtu). The second half brought the financial and credit crisis, decreased demand for energy, significantly lower energy prices and a recession. Oil prices ended the year at US\$45 per barrel, and

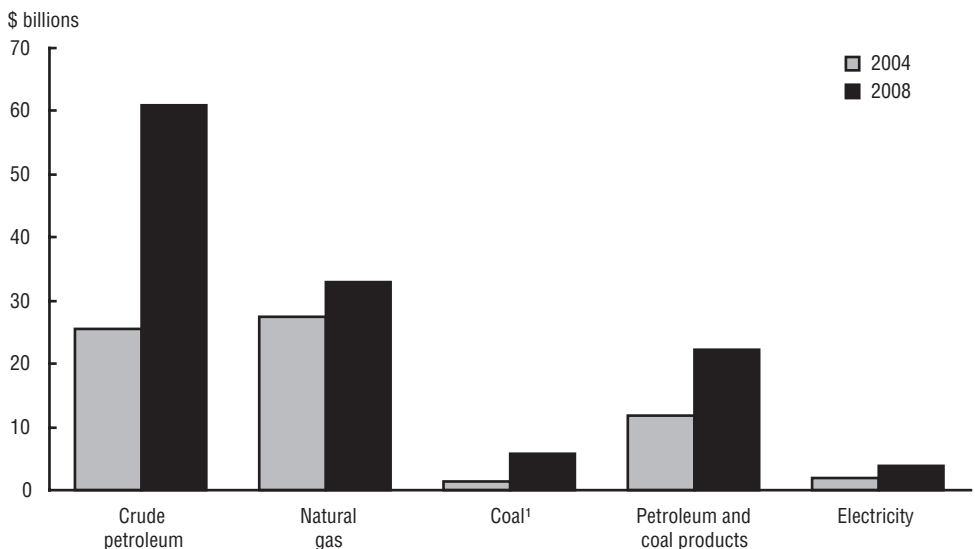
natural gas prices dropped to less than US\$6 per MMBtu.

Higher export revenues

The climbing oil prices early in 2008 also affected net energy export revenue—the value of energy exports minus the value of energy imports—lifting it to \$73 billion, an increase of almost 45% over 2007. Historically, net export revenue from natural gas has been greater than net export revenue from crude oil (and its products). However, in 2008, the value of crude oil net exports surpassed the value of natural gas net exports by almost \$15 billion.

Net export revenue from electricity also exceeded 2007 levels, as water conditions were favourable in the main hydro-generating provinces and electricity exports grew in Ontario. And in 2008,

Chart 11.1
Energy exports



Note: On a balance of payments basis.

¹ Includes coal and other crude bituminous substances.

Source: Statistics Canada, CANSIM table 228-0001.

for the first time ever, Canada became a net exporter of coal, in the amount of \$360 million.

Both natural gas and oil production declined in 2008, contributing to a 2.1% drop in total Canadian energy production. Hydroelectricity production increased 10% from 2004 to 2008, whereas energy production from other sources (mainly wood) declined slightly.

Notably, investment in wind projects increased the energy produced from wind by 265% from 2004 to 2008. However, wind energy represents about 0.1% of the energy produced in Canada.

Largest consumers of energy

The United States and Canada are the largest consumers of energy in the world, consuming almost 200 gigajoules per capita—the equivalent of each Canadian and U.S. resident using 5,000 litres (32 barrels) of crude oil per year, or approximately twice the per capita energy consumed in other OECD countries. In non-OECD countries, energy consumption

Table 11.a
Energy production by fuel type, 2002 and 2007

	2002	2007
	terajoules	
Coal	1,429,897	1,482,232
Crude oil	5,359,627	6,153,625
Natural gas	7,249,883	7,012,006
Natural gas liquids from gas plants	626,218	685,788
Primary electricity, hydro and nuclear	1,505,333	1,631,049
Refined petroleum products	4,592,022	4,795,930

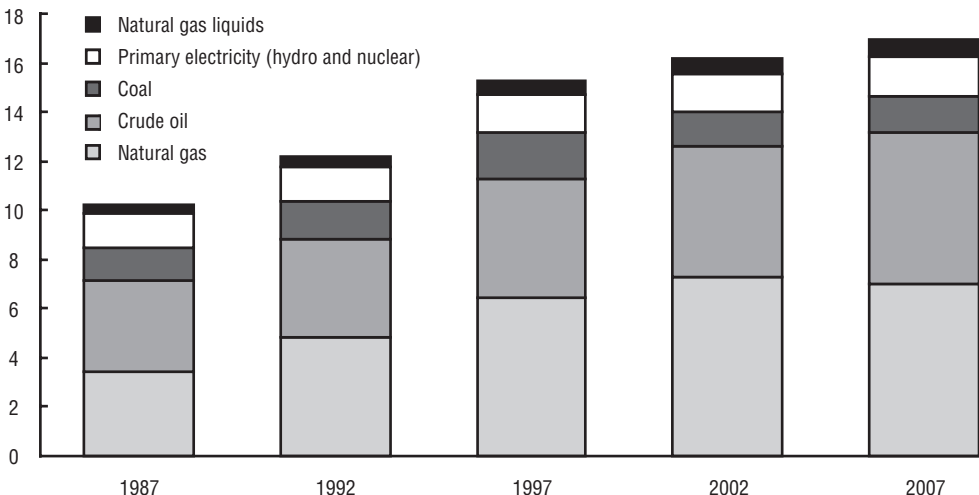
Source: Statistics Canada, CANSIM table 128-0009.

per capita is, on average, 23% of that consumed in the OECD countries.

From 2004 to 2008, energy consumption remained relatively stable in Canada, with transportation showing the largest increases, 5.7%. However, the population grew over this period, so per capita use of energy has fallen 1.4%. About 25% of all energy consumed by Canadians is generated using natural gas.

Chart 11.2
Energy production, by primary energy source

billions of gigajoules



Source: Statistics Canada, CANSIM tables 128-0002 and 128-0009.

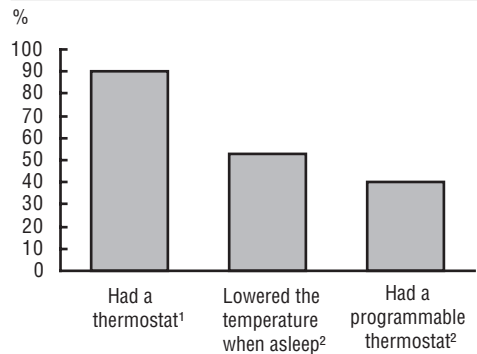
Turning down the heat

Canadian households spend a significant portion of their income on energy just to heat their homes. For some, the heating season can last up to 10 months. Adjusting the thermostat reduces heating expenses and conserves energy. Seniors are the most likely to turn down the heat.

In 2006, 90% of households were able to control their home's temperature using a thermostat. Just over half of households with a thermostat (53%) reduce the temperature while they sleep. About 7 in 10 households that programmed their thermostat lowered the temperature when they went to bed. However, less than half (46%) of households with an unprogrammed or non-programmable thermostat did so.

In the heating season, most households set the temperature between 20°C and 22°C when they are at home and awake and between 16°C and 18°C when they are sleeping.

Chart 11.3
Households with thermostats, 2006



1. As a percentage of all households.

2. As a percentage of all households that had a thermostat.

Source: Statistics Canada, Catalogue no. 16-001-X.

Six out of 10 households used a forced air furnace as their primary heating system in 2006. One in four used electric baseboards, 5% had hot water radiators, and the rest used wood stoves, fireplaces, heat pumps or other equipment.

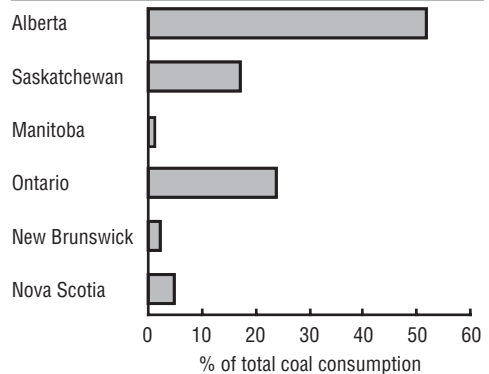
Comparing sources of electricity

The market shares of the various fuels used for generating electricity vary significantly between Canada and the United States. In Canada, hydro accounts for most of the installed power plant capacity and electricity generated, whereas coal and natural gas are the two main sources of electricity in the United States.

Coal is of particular concern because of environmental issues. In the United States, coal represents 31.9% of the country's installed generating capacity, but accounts for 49.0% of the electricity produced.

In Canada, coal-fired plants represent 13.1% of installed capacity. In 2006, 16.5% of the electric energy produced in Canada came from coal. Coal-fired plants

Chart 11.4
Electricity produced from coal, 2007



Source: Statistics Canada, Catalogue no. 57-202-X.

are mainly found in Alberta, Saskatchewan, Ontario, New Brunswick and Nova Scotia, provinces with relatively less hydro power.

Table 11.1 Energy supply and demand, 1993 to 2007

	1993	1994	1995	1996	1997	1998
	petajoules					
Primary energy supply¹						
Availability	9,314.1	9,564.3	9,695.2	10,097.2	10,200.1	10,194.9
Production	13,077.8	13,913.3	14,489.2	14,800.3	15,284.4	15,368.7
Exports	5,653.8	6,348.6	6,878.6	6,950.2	7,496.4	7,818.3
Imports	1,644.9	1,749.7	1,682.5	1,977.2	2,231.8	2,385.3
Primary and secondary energy supply						
Net supply ²	8,165.2	8,412.4	8,583.6	8,899.6	8,927.6	8,841.3
Producer consumption	988.3	1,017.2	1,039.8	1,059.1	999.2	1,073.3
Non-energy use	729.5	740.6	758.8	800.0	833.0	811.8
Primary and secondary energy demand³	6,447.4	6,654.7	6,785.0	7,040.4	7,095.5	6,956.2
Industrial	1,973.2	2,053.4	2,105.6	2,180.5	2,196.9	2,149.0
Transportation	1,918.2	2,021.3	2,065.1	2,124.7	2,182.9	2,256.6
Agriculture	198.8	195.8	209.2	222.9	230.0	224.7
Residential	1,256.7	1,286.7	1,259.1	1,358.2	1,295.1	1,183.5
Public administration	132.1	143.1	143.3	134.1	135.9	130.3
Commercial and other institutional	968.6	954.4	1,002.6	1,020.4	1,054.8	1,012.3

1. Primary energy sources are coal, crude oil, natural gas, natural gas liquids, hydro and nuclear electricity.

2. Primary and secondary sources. Secondary sources are fuels, such as coal, natural gas, coke, coke oven gas, refined petroleum products, wood waste and spent pulping liquor, that are transformed to create another form of energy—for example, burning fossil fuels to create steam that turns electricity-generating turbines.

3. Final demand.

Source: Statistics Canada, CANSIM tables 128-0002 and 128-0009.

Table 11.2 Consumer Price Index, energy, 1994 to 2008

	1994	1995	1996	1997	1998	1999
	2002=100					
Electricity	87.7	87.3	88.3	89.3	90.1	90.8
Natural gas	66.7	62.6	61.9	66.5	70.6	77.5
Fuel oil and other fuel	76.2	75.1	80.3	85.2	76.5	76.8
Gasoline	76.5	80.1	83.6	85.2	77.9	84.9

Source: Statistics Canada, CANSIM table 326-0021.

1999	2000	2001	2002	2003	2004	2005	2006	2007
petajoules								
10,518.3	10,831.0	10,950.4	11,163.5	11,478.5	11,527.5	11,307.1	11,176.9	11,654.8
15,358.2	15,768.4	15,894.9	16,171.0	16,170.9	16,553.7	16,489.9	16,815.5	16,964.7
7,824.0	8,328.4	8,443.8	8,561.9	8,499.0	8,822.7	8,662.2	8,898.6	9,269.8
2,518.5	2,852.2	3,013.4	2,923.6	3,459.8	3,107.6	3,139.2	2,977.4	3,141.0
9,190.7	9,423.7	9,303.5	9,623.1	9,829.9	10,014.0	9,946.1	9,879.6	10,354.1
1,229.3	1,257.4	1,264.9	1,344.1	1,340.0	1,303.2	1,274.0	1,282.3	1,347.9
828.9	790.3	863.2	894.3	903.4	1,029.3	983.7	1,044.9	1,048.7
7,132.5	7,376.0	7,175.4	7,384.7	7,586.5	7,681.6	7,688.5	7,552.4	7,957.5
2,177.3	2,268.6	2,166.3	2,229.5	2,318.6	2,343.2	2,312.8	2,314.0	2,465.6
2,307.3	2,279.8	2,240.4	2,250.1	2,266.3	2,347.3	2,388.8	2,372.3	2,493.1
229.9	231.9	218.1	206.8	211.8	208.9	208.5	211.4	215.0
1,232.3	1,287.8	1,240.0	1,286.7	1,338.2	1,313.0	1,296.6	1,243.4	1,344.4
124.5	131.3	126.8	125.2	128.1	131.9	136.1	127.6	123.0
1,061.4	1,176.4	1,184.1	1,286.7	1,323.8	1,337.5	1,346.1	1,283.8	1,327.6

2000	2001	2002	2003	2004	2005	2006	2007	2008
2002=100								
91.3	92.9	100.0	98.0	102.0	104.9	110.8	112.9	113.2
94.2	122.1	100.0	130.1	127.4	136.3	140.5	131.3	146.8
108.7	108.8	100.0	114.9	126.5	158.7	165.9	172.5	225.4
103.5	100.8	100.0	106.4	117.6	132.6	139.8	146.1	164.7

Table 11.3 Gasoline prices, selected urban centres, 1994 to 2008

	1994	1995	1996	1997	1998	1999
	cents per litre					
St. John's	58.6	62.8	61.4	67.7	64.4	66.2
Charlottetown and Summerside	55.0	59.3	59.2	60.6	53.6	52.9
Halifax	52.0	54.3	54.8	60.6	57.1	60.8
Saint John	53.6	56.0	55.1	60.2	55.4	59.2
Québec	56.7	58.2	60.6	61.3	55.2	61.5
Montréal	55.2	56.8	60.6	61.9	56.3	63.0
Ottawa	52.5	53.8	55.1	56.0	51.3	56.2
Toronto	49.8	52.4	56.1	56.1	51.6	57.5
Thunder Bay	56.2	56.6	61.2	62.6	54.0	58.0
Winnipeg	52.3	54.6	56.9	57.4	53.3	57.3
Regina	55.6	57.5	59.3	60.0	55.6	60.5
Saskatoon	55.3	57.8	60.8	60.6	56.7	59.8
Edmonton	45.4	47.6	49.6	52.1	47.0	51.4
Calgary	47.4	50.0	51.7	53.2	48.9	52.6
Vancouver	55.6	58.4	59.2	58.8	50.6	54.3
Victoria	51.8	54.8	57.9	59.0	52.7	59.2
Whitehorse	58.1	63.4	67.0	67.9	66.9	67.3
Yellowknife	65.7	70.2	73.2	73.9	72.1	73.6

Note: Average annual price of regular unleaded gasoline at self-service filling stations.

Source: Statistics Canada, CANSIM table 326-0009.

Table 11.4 Household heating fuel prices, selected urban centres, 1994 to 2008

	1994	1995	1996	1997	1998	1999
	cents per litre					
St. John's	36.3	36.5	39.8	44.3	35.1	38.6
Charlottetown and Summerside	34.4	36.1	37.5	39.2	32.4	32.8
Halifax	33.8	34.0	38.5	42.8	36.9	38.9
Saint John	36.2	35.2	41.7	46.4	41.5	40.9
Québec	39.6	39.0	41.8	40.9	37.0	38.2
Montréal	36.5	33.4	34.6	36.7	32.8	33.6
Ottawa	37.3	37.3	39.6	42.8	39.2	39.3
Toronto	38.3	38.3	40.6	43.4	41.2	39.1
Thunder Bay	40.2	42.0	45.2	43.8	37.7	39.1
Winnipeg	41.8	41.9	44.4	47.8	47.0	45.6
Regina	35.6	36.9	39.7	42.7	40.9	41.4
Saskatoon	39.3	40.9	41.9	44.1	42.1	41.7
Vancouver	41.5	41.5	42.5	43.9	41.4	42.2
Victoria	39.6	39.6	40.5	44.2	40.7	42.9
Whitehorse	42.5	41.9	43.3	46.0	42.4	41.6
Yellowknife	38.7	37.9	39.6	38.9	35.0	37.1

Note: Average annual price.

Source: Statistics Canada, CANSIM table 326-0009.

2000	2001	2002	2003	2004	2005	2006	2007	2008
cents per litre								
83.0	79.1	77.0	82.8	91.7	102.1	107.6	111.0	123.6
70.1	71.9	68.2	74.0	84.1	96.4	103.0	104.2	114.5
76.1	72.8	73.4	78.0	87.5	97.9	103.7	106.8	118.4
73.3	70.0	72.5	78.8	88.0	97.9	102.2	101.4	113.7
71.9	74.0	72.1	77.8	87.0	97.5	102.4	106.4	120.1
77.2	73.8	71.4	76.7	85.8	96.4	100.8	104.3	118.8
69.0	66.0	65.9	70.2	77.2	88.5	92.2	98.1	108.7
70.8	67.8	67.3	70.9	76.6	89.0	93.4	97.4	110.2
72.6	72.5	71.0	76.9	82.8	94.0	98.5	106.2	118.6
66.7	65.0	63.2	67.6	76.7	90.0	96.6	102.2	115.8
71.7	72.2	72.7	76.0	82.5	92.7	99.6	104.7	117.3
71.7	72.2	73.0	75.9	82.8	93.5	99.8	104.5	117.3
63.5	61.3	63.4	67.4	75.9	85.1	91.0	96.7	109.2
64.0	64.5	64.6	66.3	74.8	85.8	92.3	98.5	111.1
69.1	68.9	70.4	76.8	86.0	97.1	103.8	108.1	121.3
73.5	73.9	73.9	81.1	89.9	99.2	105.4	108.3	122.5
81.4	81.7	80.8	83.6	93.9	105.5	107.6	111.2	124.6
85.4	88.2	88.5	92.2	96.8	105.0	109.5	118.0	131.1

2000	2001	2002	2003	2004	2005	2006	2007	2008
cents per litre								
56.1	54.5	50.1	54.8	62.4	78.6	84.8	87.6	109.4
48.8	51.3	46.5	53.4	56.8	73.8	77.6	79.3	102.3
56.1	54.7	53.3	61.4	68.5	83.6	87.9	84.0	106.3
59.4	58.7	54.9	62.4	66.0	83.2	84.7	89.7	115.1
50.2	49.1	48.8	56.3	61.3	77.2	79.0	83.3	112.6
51.3	49.9	46.3	54.3	58.6	75.0	78.6	82.0	112.2
53.4	56.8	49.2	57.2	62.9	77.4	81.6	86.8	113.0
54.3	55.9	50.8	57.9	64.0	78.0	82.2	87.6	112.7
54.3	54.6	47.9	57.1	62.9	81.4	85.5	91.0	118.0
56.1	60.2	53.0	60.8	64.4	81.6	84.0	91.5	115.8
53.3	55.2	51.8	55.7	62.4	82.0	82.6	91.8	115.3
54.0	56.5	54.6	59.3	65.3	80.0	85.5	91.5	113.4
57.1	58.1	54.2	59.2	69.4	88.1	89.0	93.5	115.6
57.9	58.0	53.6	62.9	72.3	90.8	94.1	99.9	126.3
57.0	63.1	57.5	64.5	72.3	88.4	94.1	102.3	125.6
52.3	51.9	49.0	56.5	62.0	81.3	84.8	96.4	122.6

Table 11.5 Established crude oil reserves, closing stock, 1992 to 2006

	1992	1993	1994	1995	1996	1997
	millions of cubic metres					
Canada	590.4	582.2	544.5	553.0	526.7	532.2
Newfoundland and Labrador	..	..	..	..	..	..
Ontario	1.2	1.2	2.0	1.9	1.9	1.8
Manitoba	6.7	6.5	6.3	5.6	5.1	4.7
Saskatchewan	122.6	130.2	141.9	150.1	156.8	176.6
Alberta	442.0	426.8	374.8	374.1	342.0	326.8
British Columbia	17.9	17.5	19.4	21.3	20.9	22.3

Source: Statistics Canada, CANSIM table 153-0013.

Table 11.6 Established natural gas reserves, closing stock, 1992 to 2006

	1992	1993	1994	1995	1996	1997	1998
	billions of cubic metres						
Canada	1,929.1	1,859.9	1,832.7	1,840.9	1,725.9	1,620.4	1,562.2
Nova Scotia	..	..	..	..	..	..	..
Ontario	16.9	17.2	13.4	12.0	12.5	12.5	12.2
Saskatchewan	78.4	84.7	86.7	86.6	81.8	76.5	71.5
Alberta	1,594.7	1,534.9	1,490.3	1,488.8	1,378.1	1,284.0	1,239.9
British Columbia	239.2	223.1	242.2	253.5	253.5	247.4	238.6

Source: Statistics Canada, CANSIM table 153-0014.

Table 11.7 Established reserves of natural gas liquids, closing stock, 1992 to 2006

	1992	1993	1994	1995	1996	1997	1998
	thousands of cubic metres						
Canada	636,588	621,645	593,278	599,569	546,580	502,751	487,525
Manitoba	61	56	52	46	91	0	..
Saskatchewan	1,724	2,035	2,207	2,155	2,086	1,632	1,482
Alberta	623,700	603,200	574,300	580,600	527,500	483,400	468,900
Propane	121,100	118,100	111,600	109,400	103,000	91,400	88,600
Ethane	312,000	305,000	290,000	300,000	264,000	245,000	238,000
Butane	70,600	67,100	63,900	62,900	58,500	51,900	51,100
Pentanes plus	120,000	113,000	108,800	108,300	102,000	95,100	91,200
British Columbia	11,103	16,354	16,719	16,768	16,903	17,719	17,143

Source: Statistics Canada, CANSIM table 153-0015.

1998	1999	2000	2001	2002	2003	2004	2005	2006
millions of cubic metres								
673.5	642.5	667.3	644.7	606.1	590.0	603.8	752.3	712.6
144.3	138.0	159.6	151.0	134.4	121.3	138.7	272.9	255.2
1.9	1.9	2.0	1.9	1.8	1.9	1.9	1.6	1.7
4.2	4.3	4.5	4.0	3.4	4.6	3.9	3.9	7.1
180.9	169.1	182.1	184.9	183.9	184.7	187.9	197.7	179.9
315.2	301.6	291.4	278.3	260.3	253.9	249.2	254.8	250.1
26.9	27.7	27.6	24.7	22.3	23.6	22.2	21.5	18.7

1999	2000	2001	2002	2003	2004	2005	2006
billions of cubic metres							
1,526.8	1,614.5	1,547.8	1,529.6	1,469.5	1,497.5	1,553.7	1,577.7
..	67.1	61.7	56.2	23.2	19.3	15.2	11.6
12.0	11.6	11.5	11.3	11.5	11.5	13.0	20.0
68.6	75.6	81.7	76.2	87.4	85.0	91.6	98.8
1,207.2	1,210.7	1,141.4	1,131.3	1,087.6	1,092.3	1,086.0	1,079.6
239.0	249.5	251.5	254.7	259.9	289.4	347.8	367.7

1999	2000	2001	2002	2003	2004	2005	2006
thousands of cubic metres							
487,339	492,734	403,970	377,110	316,820	314,285	310,666	322,746
..
1,306	1,290	1,246	1,295	1,324	1,150	1,098	1,049
469,700	473,900	463,600	359,100	298,500	295,000	289,500	296,100
82,600	85,500	84,100	79,300	69,400	71,300	69,400	72,000
256,000	252,000	252,100	165,100	124,000	122,900	120,700	125,100
48,600	50,400	49,900	46,900	41,900	41,500	40,100	40,900
82,500	86,000	77,500	67,800	63,200	59,300	59,300	58,100
16,333	17,544	17,524	16,715	16,996	18,135	20,068	25,597

Table 11.8 Energy fuel consumption, by manufacturing industry, 2002 to 2007

	2002	2003	2004	2005	2006	2007
	terajoules					
All manufacturing	2,511,322	2,521,077	2,614,696	2,502,600	2,405,951	2,387,251
Food	88,765	89,041	90,928	95,774	96,137	99,604
Beverage and tobacco products	12,896	12,237	12,266	12,475	11,046	11,419
Textile mills	8,238	8,050	8,058	7,745	7,364	6,689
Textile product mills	4,303	3,554	3,545	3,550	3,032	3,044
Clothing	4,985	4,978	3,997	2,154	1,772	1,630
Leather and allied products	966	768	568	309	228	275
Wood products	122,595	120,183	124,853	129,219	141,786	139,559
Paper	830,779	835,318	850,894	776,211	678,627	658,243
Printing and related support activities	8,548	8,765	8,521	8,878	8,608	8,969
Petroleum and coal products	366,241	368,429	405,491	358,993	367,958	381,669
Chemicals	252,056	254,575	278,149	272,915	267,188	258,289
Plastic and rubber products	32,592	35,045	37,011	37,846	35,810	40,351
Non-metallic mineral products	118,845	117,924	126,049	126,257	123,723	125,021
Primary metals	519,559	521,073	521,069	524,651	528,351	506,714
Fabricated metal products	41,361	39,784	41,647	40,979	38,701	42,401
Machinery	13,819	15,223	16,042	18,039	16,760	18,715
Computer and electronic products	3,931	4,563	5,100	5,621	5,388	6,193
Electrical equipment, appliances and components	6,011	6,708	7,107	7,282	6,883	7,243
Transportation equipment	57,134	56,725	56,267	55,896	51,485	54,618
Furniture and related products	11,308	11,521	10,908	11,645	10,175	10,995
Miscellaneous manufacturing	6,391	6,610	6,226	6,161	4,929	5,609

Note: North American Industry Classification System (NAICS), 2002.

Source: Statistics Canada, CANSIM table 128-0006.

Table 11.9 Energy fuel consumption of the manufacturing industry, by fuel type, 2002 to 2007

	2002	2003	2004	2005	2006	2007
	terajoules					
Energy consumed	2,511,322	2,521,077	2,614,696	2,502,600	2,405,951	2,387,251
Coal	46,775	50,841	55,381	51,734	53,112	56,263
Coal coke	93,299	92,236	93,389	92,869	101,622	80,886
Coke oven gas	26,824	28,019	28,333	29,530	29,339	24,749
Electricity	696,960	705,419	700,993	724,656	707,711	705,333
Heavy fuel oil	114,653	138,696	150,234	126,431	99,977	95,061
Middle distillates	19,838	18,166	19,896	19,713	17,666	17,814
Natural gas	726,312	672,564	694,866	662,426	618,186	628,920
Petroleum coke and coke from catalytic cracking catalyst	84,085	88,419	94,986	82,019	84,784	84,356
Propane	12,640	11,634	9,448	7,404	9,487 ^E	8,927
Refinery fuel gas	175,149	178,996	207,558	186,407	197,698	213,258
Spent pulping liquor	290,859	292,635	299,806	258,505	216,616	223,607
Steam	41,336	47,956	48,029	50,076	60,139	60,371
Wood	182,594	195,495	211,777	210,828	209,615	187,707

Note: North American Industry Classification System (NAICS), 2002.

Source: Statistics Canada, CANSIM table 128-0006.