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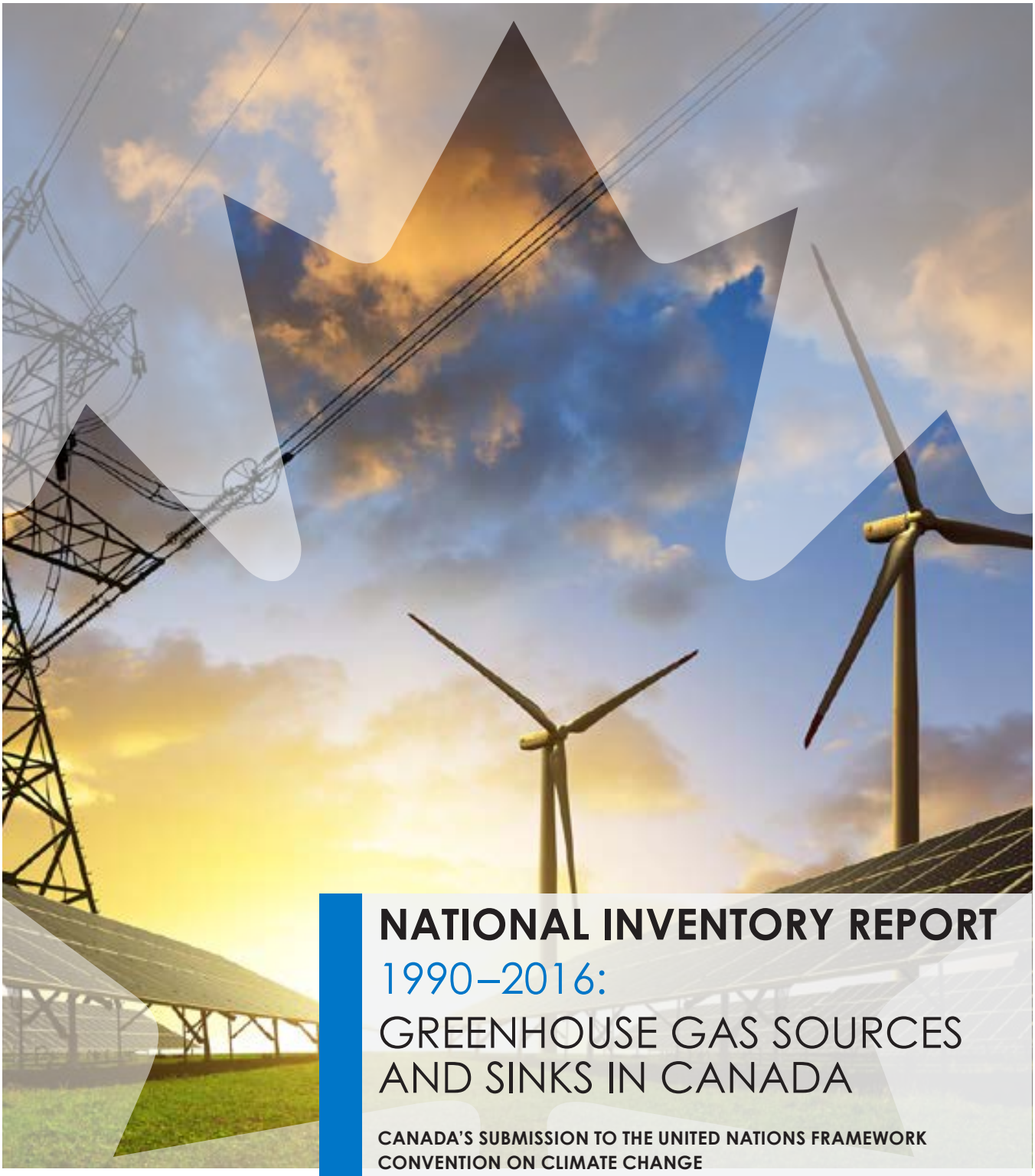

NATIONAL INVENTORY REPORT

1990–2016:

GREENHOUSE GAS SOURCES AND SINKS IN CANADA

CANADA'S SUBMISSION TO THE UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE

PART 3

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1. Greenhouse gases—Canada—Measurement—Periodicals
2. Methane—Environmental aspects—Canada—Periodicals
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4. Carbon dioxide—Environmental aspects—Canada—Periodicals
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Aussi disponible en français

List of Common Acronyms, Abbreviations and Units

Acronymns and Abbreviations

CAC	Criteria Air Contaminant
CANSIM	Statistics Canada's key socioeconomic database
CEPA 1999	*Canadian Environmental Protection Act, 1999*
CESI	Canadian Environmental Sustainability Indicators
CFC	chlorofluorocarbon
CFS	Canadian Forest Service
ECCC	Environment and Climate Change Canada
EF	emission factor
GDP	gross domestic product
GHG	greenhouse gas
GHGRP	Greenhouse Gas Reporting Program
HFC	hydrofluorocarbon
HWP	harvested wood products
IPCC	Intergovernmental Panel on Climate Change
IPPU	Industrial Proccesses and Product Use
LULUCF	Land Use, Land-use Change and Forestry
N/A	not available
MSW	municipal solid waste
NIR	National Inventory Report
NMVOC	non-methane volatile organic compound
NPRI	National Pollutant Release Inventory
ODS	ozone-depleting substance
OECD	Organisation for Economic Co-operation and Development
PFC	perfluorocarbon
POP	persistent organic pollutant
QA	quality assurance
QC	quality control
RESD	Report on Energy Supply and Demand in Canada
UNECE	United Nations Economic Commission for Europe
UNFCCC	United Nations Framework Convention on Climate Change

Chemical Formulas

Al	aluminium
Al_2O_3	alumina
CaC_2	calcium carbide
$CaCO_3$	calcium carbonate; limestone
$CaMg(CO_3)_2$	dolomite (also $CaCO_3 \cdot MgCO_3$)
CaO	lime; quicklime; calcined limestone
CF_4	carbon tetrafluoride
C_2F_6	carbon hexafluoride
CH_3OH	methanol
CH_4	methane
C_2H_6	ethane
C_3H_8	propane
C_4H_{10}	butane
C_2H_4	ethylene
C_6H_6	benzene
$CHCl_3$	chloroform
CO	carbon monoxide
CO_2	carbon dioxide
CO_2 eq	carbon dioxide equivalent
H_2	hydrogen
H_2O	water
H_2S	hydrogen sulphide
HCFC	hydrochlorofluorocarbon
HCl	hydrochloric acid
HF	hydrogen fluoride
HNO_3	nitric acid
K_2CO_3	potassium carbonate
Mg	magnesium
$MgCO_3$	magnesite; magnesium carbonate
MgO	magnesia; dolomitic lime
N	nitrogen
N_2	nitrogen gas
Na_2CO_3	sodium carbonate; soda ash
Na_3AlF_6	cryolite
NF_3	nitrogen trifluoride
NH_3	ammonia
NH_4+	ammonium
NH_4NO_3	ammonium nitrate
N_2O	nitrous oxide
N_2O-N	Nitrous oxide emissions represented in terms of nitrogen
NO	nitric oxide
NO_2	nitrogen dioxide
NO_3-	nitrate
NO_x	nitrogen oxides
O_2	oxygen
SF_6	sulphur hexafluoride
SiC	silicon carbide
SO_2	sulphur dioxide
SO_x	sulphur oxides

Notation Keys

IE	included elsewhere
NA	not applicable
NE	not estimated
NO	not occurring

Units

g	gram
Gg	gigagram
Gt	gigatonne
ha	hectare
kg	kilogram
kha	kilohectare
km	kilometre
kt	kilotonne
kWh	kilowatt-hour
m	metre
Mg	megagram
Mha	megahectare
mm	millimetre
Mt	megatonne
MW	megawatt
PJ	petajoule
t	tonne
TWh	terrawatt-hour

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IPCC SECTOR ROUNDING PROTOCOL

A rounding protocol has been developed for the emission and removal estimates presented by activity sectors defined by the Intergovernmental Panel on Climate Change (IPCC) (Annexes 9 & 11) in order to reflect their uncertainty levels. The accuracy of a value is reflected by presenting the emission and removal estimates rounded to an appropriate number of significant figures based on the uncertainty of the category in question. The number of significant figures to which each source and sink category has been rounded, using the rounding rules provided in this protocol, can be found in Table A8–1.

A large number of the uncertainty ranges that are used for the various categories were developed using Monte Carlo analysis, as performed by ICF Consulting (ICF Consulting 2004, 2005), using the 2001 inventory estimates submitted in the NIR 2003. Default uncertainty values published by the IPCC (IPCC/OECD/IEA 1997; IPCC 2001; IPCC 2006) and those resulting from expert elicitation were also utilized for some ranges. Since 2004-2005, many methodological changes, refinements and updates, including updates to the uncertainty parameters themselves, have been made. The uncertainty ranges have been calculated around the mean values established by these analyses.

For a more complete description of the analysis of uncertainty in Canada's emission estimates, please refer to Annex 2, which includes tables of current uncertainty values. Recent updates to uncertainty estimates are provided in the respective sectoral chapters.

The following uncertainty values have been used to establish the number of significant figures (up to a maximum of 2 decimal places) to which the estimates have been rounded:

- uncertainty greater than 50%: one significant figure;
- uncertainty between 10% and 50%: two significant figures: and
- uncertainty less than 10%: three significant figures.

This rounding protocol does not apply to estimates presented by Canadian Economic Sectors (Annexes 10 & 12) which have been rounded to the nearest 1 Mt and 0.1 Mt for National-level estimates (Annex 10) and provincial/territorial-level estimates (Annex 12), respectively.

All calculations, including the summing of emission totals, were made using unrounded data. The rounding protocol was applied only after the calculations had been completed. The reader should also note that formatting this report limits the maximum number of decimal places and, therefore, even though a zero entry is recorded, some emissions may exist in that category (zero emissions are identified with a dash "-"). As a result of these procedures, individual values in the emission tables may not add up to the subtotals and/or overall totals.

Table A8–1 Number of Significant Figures Applied to IPCC Sector GHG Summary Tables

Greenhouse Gas Categories	Number of Significant Figures							
	CO_2	CH_4	N_2O	HFCs	PFCs	SF_6	NF_3	TOTAL
TOTAL	**3**	**2**	**2**	**2**	**2**	**2**	**1**	**3**
ENERGY	**3**	**2**	**1**					**3**
a. Stationary Combustion Sources	**3**	**1**	**1**					**3**
Public Electricity and Heat Production	3	2	1					3
Petroleum Refining Industries	2	1	1					2
Mining and Upstream Oil and Gas Production	3	1	1					3
Manufacturing Industries	3	2	1					3
Iron and Steel	3	1	1					3
Non Ferrous Metals	3	2	1					3
Chemical	3	2	1					3
Pulp and Paper	3	1	1					3
Cement	3	1	1					3
Other Manufacturing	3	1	1					3
Construction	3	1	1					3
Commercial & Institutional	3	3	1					3
Residential	3	1	1					3
Agriculture & Forestry	3	1	1					3
b. Transport	**3**	**2**	**2**					**3**
Domestic Aviation	3	1	1					3
Road Transportation	3	1	2					3
Light-Duty Gasoline Vehicles	3	1	2					3
Light-Duty Gasoline Trucks	3	1	2					3
Heavy-Duty Gasoline Vehicles	3	1	2					3
Motorcycles	3	1	2					3
Light-Duty Diesel Vehicles	3	1	2					3
Light-Duty Diesel Trucks	3	1	2					3
Heavy-Duty Diesel Vehicles	3	1	2					3
Propane & Natural Gas Vehicles	3	1	2					3
Railways	3	1	1					3
Domestic Navigation	3	1	1					3
Other Transportation	3	2	1					3
Off-road Agriculture & Forestry	3	2	1					3
Off-road Commercial & Institutional	3	2	1					3
Off-road Manfacturing, Mining & Construction	3	2	1					3
Off-road Residential	3	2	1					3
Off-road Other Transportation	3	2	1					3
Pipeline Transport	3	2	1					3
c. Fugitive Sources	**2**	**2**	**2**					**2**
Coal Mining		1						1
Oil and Natural Gas	2	2	1					2
Oil	2	2	1					2
Natural Gas	2	2						2
Venting	2	2						2
Flaring	3	2	2					3
d. CO_2 Transport and Storage	**1**							**1**
INDUSTRIAL PROCESSES AND PRODUCT USE	**3**	**2**	**3**	**2**	**3**	**2**	**1**	**3**
a. Mineral Products	**2**							**2**
Cement Production	2							2
Lime Production	2							2
Mineral Product Use	2							2
b. Chemical Industry	**3**	**2**	**3**					**3**
Ammonia Production	3							3
Nitric Acid Production			3					3
Adipic Acid Production			2					2
Petrochemical and Carbon Black Production	3	2	3					3
c. Metal Production	**3**	**1**			**3**	**3**		**3**
Iron and Steel Production	3	1						3
Aluminium Production	3				3	3		3
SF_6 Used in Magnesium Smelters and Casters						3		3
d. Production and Consumption of Halocarbons, SF_6 and NF_3				**2**	**2**	**2**	**1**	**2**
e. Non-Energy Products from Fuels and Solvent Use	**2**							**2**
f. Other Product Manufacture and Use	**1**		**2**		**2**	**2**		**2**
AGRICULTURE	**1**	**2**	**2**		**2**	**2**		**2**
a. Enteric Fermentation		**2**						**2**
b. Manure Management		**2**	**1**					**2**
c. Agricultural Soils			**2**					**2**
Direct Sources			2					2
Indirect Sources			1					1
d. Field Burning of Agricultural Residues		**1**	**1**					**1**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**1**							**1**
WASTE	**1**	**2**	**1**					**2**
a. Solid Waste Disposal		**2**						**2**
b. Biological Treatment of Solid Waste		**1**	**1**					**1**
c. Wastewater Treatment and Discharge		**2**	**1**					**2**
d. Incineration and Open Burning of Waste	**1**	**1**	**1**					**1**
LAND USE, LAND-USE CHANGE AND FORESTRY	**2**	**2**	**2**					**2**
a. Forest Land	**2**	**2**	**2**					**2**
b. Cropland	**2**	**2**	**1**					**2**
c. Grassland		**1**	**1**					**1**
d. Wetlands	**2**	**2**	**2**					**2**
e. Settlements	**2**	**2**	**2**					**2**
f. Harvested Wood Products	**2**							**2**

Annex 9

CANADA'S GREENHOUSE GAS EMISSION TABLES BY IPCC SECTOR, 1990–2016

In this National Inventory Report, emission estimates are primarily presented for each of the activity sectors defined by the Intergovernmental Panel on Climate Change (IPCC): Energy, Industrial Processes and Product Use, Agriculture, Land Use, Land-use Change and Forestry, and Waste. This is consistent with the categorization outlined in the UNFCCC reporting guidelines on annual inventories for Parties included in Annex I to the Convention (Decision 24/CP.19).[1]

This annex contains summary tables (Table A9–1 to Table A9–3) illustrating national GHG emissions by year, by gas and by IPCC sector. National GHG emissions allocated to Canadian economic sectors are provided in Annex 10 of this report.

Canada's greenhouse gas emission tables are also available in electronic file format online at https://open.canada.ca.

1 Available online at http://unfccc.int/resource/docs/2013/cop19/eng/10a03.pdf.

Table A9–1 GHG Source/Sink Category Description

GHG Source/Sink Categories	
ENERGY	
a. Stationary Combustion Sources	
Public Electricity and Heat Production	Emissions from fuel consumed by utility electricity generation and steam production (for sale)
Petroleum Refining Industries	Emissions from fuel consumed by petroleum refining industries
Mining and Upstream Oil and Gas Production	Emissions from fuel consumed by:
	- Metal and non-metal mines, coal mines, stone quarries, and gravel pits
	- Oil and gas extraction industries
	- Mineral exploration and contract drilling operations
Manufacturing Industries	Emissions from fuel consumed by the following industries:
	- Iron and Steel (steel foundries, casting and rolling mills)
	- Non-ferrous metals (aluminium, magnesium and other production)
	- Chemical (fertilizer manufacturing, organic and inorganic chemical manufacturing)
	- Pulp and Paper (primarily pulp, paper, and paper product manufacturers)
	- Cement and other non-metallic mineral production
	- Other manufacturing industries not listed (such as automobile manufacturing, textiles, food and beverage industries)
Construction	Emissions from fuels consumed by the construction industry – buildings, highways etc.
Commercial & Institutional	Emissions from fuel consumed by:
	- Service industries related to mining, communication, wholesale and retail trade, finance and insurance, real estate, education, etc.)
	- Federal, provincial and municipal establishments
	- National Defence and Canadian Coast Guard
	- Train stations, airports and warehouses
Residential	Emissions from fuel consumed for personal residences (homes, apartment hotels, condominiums and farm houses)
Agriculture & Forestry	Emissions from fuel consumed by:
	- Forestry and logging service industry
	- Agricultural, hunting and trapping industry (excluding food processing, farm machinery manufacturing and repair)
b. Transportation	Emissions resulting from the:
Domestic Aviation	- Consumption of fossil fuels by aircrafts flying domestically with Canadian purchased fuel
Road Transportation	- Consumption of fossil fuels (including non-CO_2 emissions from ethanol and biodiesel) by vehicles licensed to operate on roads
Railways	- Consumption of fossil fuels (including non-CO_2 emissions from biodiesel) by Canadian railways
Domestic Navigation	- Consumption of fossil fuels (including non-CO_2 emissions from ethanol and biodiesel) by Canadian registered marine vessels fuelled domestically
Others – Off-road	- Consumption of fossil fuels (including non-CO_2 emissions from ethanol and biodiesel) by combustion devices not licensed to operate on roads
Others – Pipeline Transport	- Transportation and distribution of crude oil, natural gas and other products
c. Fugitive Sources	Intentional and unintentional releases of greenhouse gases from the following activities:
Coal Mining	- Underground and surface mining, abandoned underground coal mines
Oil and Natural Gas	- Conventional and unconventional oil and gas exploration, production, transportation and distribution
d. CO_2 Transport and Storage	Intentional and unintentional releases of greenhouse gases from the transport and storage of carbon dioxide
INDUSTRIAL PROCESSES AND PRODUCT USE	Emissions resulting from the following process activities:
a. Mineral Products	- Cement production, lime production, and mineral product use (which includes glass production, other uses of soda ash, magnesite use, and limestone and dolomite use)
b. Chemical Industry	- Production of ammonia, nitric acid, adipic acid, carbide and petrochemicals. Petrochemical production includes production of carbon black, ethylene dichloride, ethylene, methanol and styrene
c. Metal Production	- Aluminum production, iron and steel production, and magnesium production and casting
d. Production and Consumption of Halocarbons, SF_6 and NF_3	- By-product production of HFC-23; use of HFCs and/or PFCs in air conditioning units, refrigeration units, fire extinguishers, aerosol cans, solvents, foam blowing, semiconductor manufacturing and electronics industry, and use of SF_6 and NF_3 in semiconductor manufacturing
e. Non-Energy Products from Fuels and Solvent Use	- Non-energy use of fossil fuels (including solvents and lubricants) that are not accounted for elsewhere under the Industrial Processes and Product Use Sector
f. Other Product Manufacture and Use	- Use of N_2O as an anaesthetic and propellant; use of urea in selective catalytic reduction (SCR) equipped vehicles; use of SF_6 and PFCs in electrical equipment
AGRICULTURE	Emissions resulting from the:
a. Enteric Fermentation	- Eructation of CH_4 during the digestion of plant material by (mainly) ruminants
b. Manure Management	- Release of CH_4 and N_2O due to microbial activity during the storage of feces, urine and bedding materials from the cleaning of barns and pens
	- Indirect N_2O emissions from volatilization and leaching of nitrogen from animal manure during storage
c. Agricultural Soils	
Direct sources	- Direct N_2O emissions from Synthetic fertilizer, manure on cropland, pasture range and paddock, crop residue, tillage, summerfallow, irrigation and cultivation of organic soils
Indirect Sources	- Indirect N_2O emissions from volatilization and leaching of animal manure nitrogen, synthetic fertilizer nitrogen and crop residue nitrogen
d. Field Burning of Agricultural Residues	- CH_4 and N_2O emissions from crop residue burning
e. Liming, Urea Application and Other Carbon-containing Fertilizers	- Direct emissions of CO_2 from the application of lime, urea and other fertilizers containing carbon
WASTE	Emissions resulting from:
a. Solid Waste Disposal	- Municipal solid waste management sites (landfills) and dedicated wood waste landfills
b. Biological Treatment of Solid Waste	- Composting of municipal solid waste
c. Wastewater Treatment and Discharge	- Domestic and industrial wastewater treatment
d. Incineration and Open Burning of Waste	- Municipal solid, hazardous and clinical waste, and sewage sludge incineration
LAND USE, LAND-USE CHANGE AND FORESTRY	Emissions and removals resulting from:
a. Forest Land	- Managed forests and lands converted to forests; includes growth and anthropogenic disturbances related to forest management but excludes fire and most insect disturbances
b. Cropland	- Management practices on lands in annual crops, summerfallow and perennial crops (forage, specialty crops, orchards); immediate and residual emissions from lands converted to cropland
c. Grassland	- Managed agricultural grassland
d. Wetlands	- Peatlands disturbed for peat extraction, or land flooded from hydro reservoir development
e. Settlements	- Forest and grassland converted to built-up land (settlements, transport infrastructure, oil & gas infrastructure, mining, etc); urban tree growth
f. Harvested Wood Products	- Use and disposal of harvested wood products manufactured from wood coming from forest harvest and forest conversion activities in Canada

Table A9–2 2016 GHG Emission Summary for Canada

Greenhouse Gas Categories	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	kt CO_2 eq																										
TOTAL[1]	**603 000**	**596 000**	**613 000**	**614 000**	**635 000**	**652 000**	**673 000**	**688 000**	**696 000**	**709 000**	**732 000**	**721 000**	**725 000**	**742 000**	**744 000**	**732 000**	**723 000**	**745 000**	**724 000**	**682 000**	**694 000**	**700 000**	**707 000**	**716 000**	**716 000**	**714 000**	**704 000**
ENERGY	**481 000**	**471 000**	**489 000**	**489 000**	**507 000**	**521 000**	**538 000**	**554 000**	**564 000**	**579 000**	**601 000**	**593 000**	**595 000**	**608 000**	**604 000**	**595 000**	**586 000**	**610 000**	**591 000**	**559 000**	**570 000**	**573 000**	**574 000**	**584 000**	**588 000**	**585 000**	**572 000**
a. Stationary Combustion Sources	**285 000**	**280 000**	**290 000**	**284 000**	**290 000**	**297 000**	**306 000**	**313 000**	**318 000**	**331 000**	**352 000**	**348 000**	**351 000**	**361 000**	**353 000**	**342 000**	**334 000**	**354 000**	**338 000**	**316 000**	**319 000**	**320 000**	**319 000**	**322 000**	**325 000**	**322 000**	**317 000**
Public Electricity and Heat Production	94 300	95 700	102 000	92 900	95 200	98 500	98 100	110 000	123 000	120 000	132 000	133 000	128 000	133 000	126 000	125 000	119 000	124 000	116 000	99 900	102 000	94 200	91 000	87 200	84 300	87 000	83 800
Petroleum Refining Industries	17 000	16 000	17 000	17 000	16 000	16 000	19 000	19 000	18 000	17 000	17 000	18 000	19 000	20 000	22 000	20 000	20 000	20 000	19 000	19 000	19 000	18 000	19 000	18 000	18 000	17 000	17 000
Mining and Upstream Oil and Gas Production	40 800	38 300	40 400	42 700	44 500	46 000	45 500	44 000	47 300	59 300	63 300	65 700	68 700	72 100	70 300	68 000	71 900	80 300	76 700	78 800	81 300	82 800	89 300	93 400	96 400	96 000	99 900
Manufacturing Industries	56 200	54 000	53 000	50 800	54 300	56 100	57 700	57 800	54 800	55 900	56 000	51 700	51 400	49 300	51 000	48 100	46 300	47 200	44 600	39 900	41 200	44 200	43 700	44 800	44 900	44 000	42 200
Iron and Steel	4 950	4 960	5 290	5 390	6 020	5 780	6 150	6 160	6 230	6 330	6 210	5 010	5 860	5 530	5 830	5 550	5 550	6 000	5 770	4 290	4 980	5 290	5 500	5 580	6 030	5 640	5 500
Non Ferrous Metals	3 310	2 700	2 940	2 830	3 430	3 220	4 010	3 890	3 880	3 690	3 580	3 780	3 520	3 530	3 540	3 660	3 490	3 850	3 830	2 930	3 070	3 430	2 970	3 100	2 920	3 110	2 590
Chemical	8 260	8 650	8 600	8 530	10 000	10 300	9 920	10 200	10 800	11 200	10 700	9 470	9 020	8 150	8 970	8 330	8 890	8 720	8 800	8 880	9 920	11 100	11 000	11 600	12 400	12 400	11 300
Pulp and Paper	15 000	14 000	13 000	13 000	13 000	13 000	13 000	13 000	12 000	13 000	13 000	12 000	11 000	10 000	10 000	8 700	7 500	7 800	6 300	6 400	6 000	6 300	6 000	6 300	6 000	6 200	6 200
Cement	3 970	3 440	3 400	3 470	4 070	4 160	4 130	4 040	4 190	4 460	4 640	4 600	4 970	4 990	5 460	5 420	5 730	5 030	4 900	4 480	4 060	4 290	4 020	3 850	4 020	3 930	3 730
Other Manufacturing	21 200	20 100	19 700	17 600	17 800	19 700	20 000	20 200	17 500	17 600	18 200	17 200	17 000	16 700	16 900	16 400	15 000	15 800	15 000	12 900	13 200	13 800	14 200	14 400	13 500	12 700	12 900
Construction	1 880	1 630	1 760	1 390	1 400	1 180	1 270	1 250	1 120	1 170	1 080	1 030	1 270	1 350	1 420	1 450	1 400	1 400	1 380	1 230	1 520	1 370	1 390	1 290	1 300	1 300	1 280
Commercial and Institutional	25 800	26 500	27 100	28 100	27 500	29 000	29 600	30 100	27 500	29 100	33 000	32 400	33 900	35 100	33 800	32 300	29 400	30 500	30 000	29 800	28 400	30 300	28 400	29 300	31 300	29 800	29 700
Residential	46 500	45 000	45 900	48 100	49 000	47 500	52 200	48 600	43 700	45 300	47 400	44 200	46 700	48 300	46 600	45 600	43 500	47 800	47 200	45 100	42 700	45 800	42 300	43 800	45 600	43 100	39 300
Agriculture and Forestry	2 410	2 740	3 250	3 050	2 540	2 770	2 930	2 920	2 600	2 680	2 570	2 240	2 160	2 300	2 210	2 190	2 110	2 690	2 680	2 600	2 970	3 530	3 650	3 660	3 710	3 510	3 530
b. Transport[2]	**146 000**	**141 000**	**145 000**	**148 000**	**155 000**	**159 000**	**164 000**	**170 000**	**173 000**	**178 000**	**179 000**	**177 000**	**179 000**	**183 000**	**188 000**	**192 000**	**191 000**	**195 000**	**194 000**	**187 000**	**197 000**	**197 000**	**197 000**	**202 000**	**200 000**	**202 000**	**199 000**
Domestic Aviation	7 200	6 300	6 300	6 000	6 300	6 600	7 100	7 100	7 400	7 800	7 700	7 100	6 900	7 000	7 500	7 600	7 700	7 700	7 300	6 400	6 400	6 300	7 300	7 600	7 200	7 100	7 100
Road Transportation	81 800	78 000	78 500	79 900	83 700	84 700	88 500	94 500	101 000	106 000	109 000	115 000	117 000	121 000	124 000	129 000	129 000	132 000	132 000	131 000	137 000	139 000	140 000	144 000	141 000	142 000	143 000
Light-Duty Gasoline Vehicles	40 400	38 800	39 100	39 600	40 000	39 300	38 900	39 100	39 500	39 600	39 700	41 000	41 400	41 300	40 800	41 000	40 000	39 300	38 100	37 700	37 400	36 100	35 100	35 300	33 800	34 100	34 100
Light-Duty Gasoline Trucks	19 700	19 100	19 500	20 000	21 900	23 300	24 700	26 400	28 300	30 100	31 100	32 900	34 200	35 600	36 600	37 700	38 100	38 800	38 500	39 400	40 800	40 900	41 500	42 800	42 900	44 700	47 300
Heavy-Duty Gasoline Vehicles	6 120	6 170	6 480	6 950	7 140	6 970	7 720	8 580	9 610	10 000	10 300	11 400	11 500	11 900	12 400	11 600	11 800	11 900	12 000	12 100	12 400	12 000	12 700	13 300	12 200	12 100	12 800
Motorcycles	87	84	82	80	79	76	73	72	71	107	121	142	159	175	187	201	213	223	229	237	246	248	257	259	257	268	283
Light-Duty Diesel Vehicles	467	403	383	379	397	400	409	455	500	537	603	607	646	713	765	605	658	669	621	577	666	797	800	859	867	912	838
Light-Duty Diesel Trucks	153	138	134	138	150	156	182	222	259	294	321	334	346	388	418	321	306	311	343	355	404	464	455	514	633	807	885
Heavy-Duty Diesel Vehicles	13 600	12 200	11 800	12 100	13 100	13 600	15 700	18 900	21 900	24 700	26 500	27 900	27 800	30 200	32 000	37 000	38 100	40 700	42 500	40 800	44 900	48 400	49 400	50 700	50 100	48 800	46 300
Propane and Natural Gas Vehicles	1 200	1 100	1 100	720	910	900	800	760	790	640	520	580	470	430	430	380	300	200	130	63	40	41	31	18	10	8	9
Railways	6 900	6 400	6 700	6 700	6 900	6 300	6 100	6 200	6 000	6 300	6 500	6 500	6 000	6 000	6 200	6 600	6 900	7 400	7 800	5 100	6 500	7 500	7 600	7 300	7 500	7 100	6 500
Domestic Navigation	4 800	5 000	4 800	4 200	4 400	4 100	4 200	4 300	4 900	4 800	4 900	5 400	5 400	6 300	6 700	6 400	5 900	6 500	6 300	6 500	6 800	5 600	5 600	5 200	4 800	4 700	3 800
Other Transportation	46 000	46 000	49 000	51 000	54 000	58 000	58 000	57 000	54 000	53 000	50 000	43 000	44 000	43 000	44 000	43 000	41 000	41 000	40 000	38 000	40 000	39 000	36 000	38 000	40 000	41 000	40 000
Off-Road Agriculture & Forestry	9 000	9 100	9 200	10 000	11 000	12 000	13 000	13 000	12 000	12 000	12 000	11 000	10 000	11 000	11 000	11 000	11 000	11 000	11 000	10 000	11 000	11 000	11 000	11 000	11 000	11 000	9 700
Off-Road Commercial & Institutional	1 500	1 500	1 600	1 700	1 800	2 000	2 000	2 100	2 100	2 000	2 100	2 100	2 100	2 300	2 400	2 400	2 400	2 500	2 500	2 500	2 700	2 700	2 500	2 700	2 800	2 700	2 500
Off-Road Manufacturing, Mining & Construction	9 200	9 100	9 700	10 000	11 000	12 000	12 000	13 000	11 000	11 000	11 000	9 800	10 000	11 000	11 000	10 000	10 000	11 000	11 000	11 000	12 000	12 000	11 000	11 000	12 000	13 000	12 000
Off-Road Residential	240	240	250	280	320	380	450	520	610	690	760	910	1 000	1 100	1 200	1 200	1 200	1 200	1 200	1 200	1 200	1 300	1 200	1 200	1 200	1 200	1 200
Off-Road Other Transportation	19 000	18 000	18 000	18 000	18 000	18 000	18 000	17 000	16 000	15 000	13 000	9 700	9 300	8 700	9 100	7 400	7 200	7 300	7 200	7 200	7 400	5 500	5 300	5 300	5 600	6 000	6 100
Pipeline Transport	6 910	7 650	9 890	10 400	10 800	12 000	12 500	12 600	12 500	12 600	11 300	10 300	10 900	9 120	8 550	10 200	9 700	8 450	7 520	6 360	5 720	5 650	5 730	6 720	7 890	8 160	8 470
c. Fugitive Sources	**49 000**	**50 000**	**54 000**	**57 000**	**61 000**	**64 000**	**69 000**	**71 000**	**73 000**	**70 000**	**70 000**	**68 000**	**65 000**	**64 000**	**63 000**	**61 000**	**61 000**	**61 000**	**59 000**	**55 000**	**54 000**	**55 000**	**58 000**	**60 000**	**63 000**	**61 000**	**56 000**
Coal Mining	3 000	3 000	2 000	3 000	3 000	2 000	2 000	2 000	2 000	2 000	2 000	2 000	2 000	1 000	1 000	1 000	1 000	1 000	1 000	1 000	1 000	1 000	1 000	2 000	1 000	1 000	1 000
Oil and Natural Gas	46 000	47 000	52 000	54 000	58 000	62 000	66 000	69 000	71 000	69 000	68 000	66 000	64 000	62 000	62 000	59 000	60 000	59 000	58 000	54 000	53 000	54 000	57 000	59 000	62 000	60 000	55 000
Oil	5 000	5 100	5 500	5 600	5 700	6 100	6 300	6 600	6 400	6 400	6 500	6 800	6 500	6 700	6 800	6 400	6 400	6 400	6 000	5 900	6 000	6 200	6 800	7 200	7 500	7 600	7 500
Natural Gas	13 000	14 000	15 000	15 000	16 000	17 000	19 000	18 000	20 000	19 000	18 000	16 000	14 000	14 000	14 000	14 000	14 000	13 000	13 000	13 000	12 000	12 000	12 000	13 000	13 000	12 000	12 000
Venting	23 000	24 000	27 000	29 000	31 000	33 000	36 000	38 000	37 000	37 000	38 000	38 000	38 000	37 000	36 000	34 000	34 000	34 000	34 000	31 000	30 000	31 000	32 000	32 000	34 000	33 000	29 000
Flaring	4 600	4 400	4 500	4 800	5 100	5 300	5 600	5 800	7 400	5 600	5 700	5 200	5 700	5 300	5 400	5 300	5 700	5 300	4 800	4 300	4 400	4 900	5 500	6 300	7 000	6 700	5 900
d. CO_2 Transport and Storage	-	-	-	-	-	-	-	-	-	-	**0.09**	**0.09**	**0.09**	**0.09**	**0.09**	**0.09**	**0.09**	**0.09**	**0.09**	**0.09**	**0.09**	**0.09**	**0.09**	**0.09**	**0.10**	**0.20**	**0.30**
INDUSTRIAL PROCESSES AND PRODUCT USE	**56 700**	**58 100**	**55 800**	**55 100**	**57 000**	**57 800**	**59 700**	**59 600**	**56 000**	**53 700**	**53 200**	**50 800**	**53 200**	**54 900**	**59 100**	**55 300**	**55 700**	**54 400**	**53 600**	**46 700**	**49 500**	**53 000**	**54 400**	**51 900**	**51 400**	**53 400**
a. Mineral Products	**8 500**	**7 600**	**7 300**	**7 400**	**8 400**	**9 100**	**8 800**	**9 500**	**9 600**	**9 800**	**10 000**	**9 400**	**9 700**	**9 700**	**10 000**	**10 000**	**10 000**	**10 000**	**9 300**	**7 200**	**7 800**	**8 000**	**8 500**	**7 800**	**7 800**	**8 100**	**7 900**
Cement Production	5 800	4 700	4 800	4 800	5 700	6 500	6 100	6 600	6 800	7 000	7 200	7 000	7 100	7 200	7 500	7 600	7 700	7 700	7 000	5 400	6 000	6 100	6 600	6 000	5 900	6 300	6 200
Lime Production	1 790	1 820	1 830	1 830	1 880	1 890	1 830	1 900	1 880	1 960	1 910	1 680	1 710	1 690	1 820	1 740	1 660	1 620	1 570	1 210	1 400	1 460	1 480	1 390	1 500	1 400	1 360
Mineral Product Use	910	1 000	700	700	850	750	890	990	940	790	910	770	820	790	880	910	880	810	750	610	410	450	440	380	380	410	390
b. Chemical Industry	**17 300**	**16 600**	**16 400**	**16 100**	**18 300**	**18 000**	**18 500**	**17 100**	**12 400**	**9 200**	**7 990**	**7 520**	**8 250**	**8 130**	**10 400**	**9 470**	**8 070**	**7 520**	**8 420**	**5 870**	**5 470**	**6 090**	**6 410**	**6 400**	**5 990**	**6 510**	**6 560**
Ammonia Production	2 770	2 750	2 490	2 920	3 030	2 940	2 800	2 800	3 100	3 000	2 960	2 600	2 630	2 630	2 930	2 710	2 780	2 580	2 810	2 400	2 490	2 880	3 000	2 950	2 540	2 850	2 790
Nitric Acid Production	970	1 000	1 000	1 000	920	960	1 100	1 000	1 000	1 100	1 200	1 200	1 200	1 200	1 200	1 200	1 200	1 100	1 200	1 100	1 100	1 100	1 100	990	1 000	1 100	1 000
Adipic Acid Production	10 000	9 600	9 600	8 700	11 000	10 000	11 000	9 500	4 900	1 700	870	770	1 200	1 000	3 000	2 500	1 200	1 400	2 300	640	-	-	-	-	-	-	-
Petrochemical and Carbon Black Production	3 300	3 300	3 300	3 500	3 800	3 800	3 600	3 700	3 500	3 400	3 000	2 900	3 200	3 200	3 400	3 000	2 900	2 400	2 100	1 700	1 900	2 100	2 300	2 500	2 400	2 500	2 700
c. Metal Production	**23 800**	**26 800**	**25 600**	**25 400**	**23 900**	**23 500**	**23 200**	**23 000**	**24 000**	**23 200**	**23 400**	**21 400**	**21 300**	**21 000**	**20 500**	**20 200**	**20 700**	**19 300**	**19 000**	**15 900**	**16 200**	**17 100**	**16 900**	**14 800**	**15 000**	**14 000**	**15 600**
Iron and Steel Production	10 500	12 100	12 400	11 900	11 000	11 500	11 300	11 100	11 400	11 600	11 800	10 800	10 600	10 500	10 600	10 300	11 300	11 100	10 800	8 140	9 170	10 100	10 200	8 040	8 930	8 040	9 310
Aluminum Production	10 300	11 200	10 900	11 400	10 700	10 000	10 400	10 300	10 500	9 340	8 890	8 260	7 930	8 130	7 770	8 680	8 080	7 630	7 760	7 540	6 870	6 810	6 470	6 530	5 830	5 720	5 990
SF_6 Used in Magnesium Smelters and Casters	2 960	3 420	2 290	2 110	2 180	2 010	1 560	1 600	2 100	2 160	2 660	2 250	2 800	2 370	2 090	1 230	1 340	489	435	184	183	183	248	213	229	221	266
d. Production and Consumption of Halocarbons, SF_6 and NF_3[3]	**980**	**1 100**	**830**	**5**	**5**	**500**	**840**	**1 100**	**1 600**	**2 200**	**2 800**	**3 200**	**3 600**	**4 000**	**4 600**	**5 100**	**5 400**	**6 000**	**6 100**	**6 800**	**7 800**	**8 600**	**9 100**	**9 400**	**10 000**	**11 000**	**12 000**
e. Non-Energy Products from Fuels and Solvent Use	**5 800**	**5 600**	**5 300**	**5 900**	**6 000**	**6 300**	**7 900**	**8 500**	**7 800**	**8 700**	**8 400**	**8 600**	**9 900**	**12 000**	**13 000**	**9 700**	**11 000**	**11 000**	**10 000**	**10 000**	**12 000**	**13 000**	**16 000**	**15 000**	**13 000**	**11 000**	**11 000**
f. Other Product Manufacture and Use	**370**	**370**	**340**	**360**	**370**	**410**	**350**	**390**	**580**	**590**	**630**	**660**	**510**	**640**	**610**	**530**	**490**	**540**	**540**	**430**	**430**	**400**	**490**	**500**	**400**	**480**	**530**
AGRICULTURE	**47 000**	**47 000**	**49 000**	**50 000**	**52 000**	**54 000**	**56 000**	**56 000**	**56 000**	**57 000**	**57 000**	**57 000**	**56 000**	**58 000**	**60 000**	**60 000**	**59 000**	**59 000**	**59 000**	**57 000**	**56 000**	**55 000**	**57 000**	**59 000**	**58 000**	**59 000**	**60 000**
a. Enteric Fermentation	**22 000**	**23 000**	**24 000**	**24 000**	**25 000**	**27 000**	**27 000**	**27 000**	**27 000**	**27 000**	**28 000**	**29 000**	**29 000**	**29 000**	**30 000**	**31 000**	**30 000**	**29 000**	**28 000**	**26 000**	**25 000**	**25 000**	**25 000**	**25 000**	**25 000**	**24 000**	**25 000**
b. Manure Management	**6 600**	**6 700**	**7 000**	**7 100**	**7 300**	**7 700**	**7 800**	**7 900**	**8 100**	**8 200**	**8 500**	**8 800**	**8 900**	**9 000**	**9 200**	**9 300**	**9 200**	**8 800**	**8 600**	**8 300**	**8 200**	**8 100**	**8 100**	**8 200**	**8 200**	**8 300**	**8 400**
c. Agricultural Soils	**17 000**	**16 000**	**16 000**	**17 000**	**18 000**	**18 000**	**19 000**	**19 000**	**19 000**	**19 000**	**19 000**	**18 000**	**17 000**	**19 000**	**19 000**	**19 000**	**19 000**	**20 000**	**21 000**	**20 000**	**21 000**	**20 000**	**22 000**	**24 000**	**23 000**	**23 000**	**24 000**
Direct Sources	14 000	14 000	14 000	14 000	15 000	15 000	16 000	15 000	16 000	16 000	16 000	15 000	14 000	15 000	16 000	15 000	15 000	16 000	17 000	17 000	17 000	17 000	18 000	20 000	19 000	19 000	20 000
Indirect Sources	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	4 000	4 000	4 000	4 000	4 000	4 000	4 000	4 000	4 000	4 000
d. Field Burning of Agricultural Residues	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**100**	**100**	**100**	**100**	**100**	**40**	**50**	**50**	**40**	**50**	**50**	**30**	**30**	**40**	**50**	**50**	**50**	**50**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**1 000**	**1 000**	**1 000**	**1 000**	**1 000**	**2 000**	**1 000**	**2 000**	**2 000**	**2 000**	**2 000**	**1 000**	**2 000**	**2 000**	**1 000**	**1 000**	**1 000**	**2 000**	**2 000**	**2 000**	**2 000**	**2 000**	**2 000**	**3 000**	**2 000**	**3 000**	**3 000**
WASTE	**19 000**	**19 000**	**19 000**	**19 000**	**19 000**	**19 000**	**19 000**	**19 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**21 000**	**21 000**	**21 000**	**22 000**	**21 000**	**20 000**	**20 000**	**19 000**	**19 000**	**18 000**	**18 000**	**18 000**	**19 000**	**19 000**
a. Solid Waste Disposal	**17 000**	**17 000**	**17 000**	**17 000**	**17 000**	**17 000**	**17 000**	**18 000**	**18 000**	**18 000**	**18 000**	**18 000**	**18 000**	**19 000**	**19 000**	**19 000**	**19 000**	**19 000**	**18 000**	**17 000**	**17 000**	**17 000**	**16 000**	**16 000**	**16 000**	**16 000**	**16 000**
b. Biological Treatment of Solid Waste	**60**	**60**	**60**	**60**	**70**	**80**	**100**	**100**	**100**	**200**	**200**	**200**	**200**	**200**	**300**	**300**	**300**	**400**	**400**	**400**	**400**	**400**	**400**	**400**	**500**	**500**	**500**
c. Wastewater Treatment and Discharge	**940**	**960**	**980**	**990**	**1 000**	**1 000**	**1 000**	**1 000**	**1 000**	**1 000**	**1 000**	**1 000**	**1 000**	**1 000**	**1 100**	**1 100**	**1 100**	**1 100**	**1 100**	**1 100**	**1 100**	**1 100**	**1 100**	**1 100**	**1 100**	**1 100**	**1 100**
d. Incineration and Open Burning of Waste	**810**	**820**	**860**	**800**	**840**	**900**	**840**	**690**	**740**	**670**	**750**	**780**	**750**	**650**	**700**	**690**	**670**	**640**	**670**	**640**	**660**	**640**	**540**	**550**	**600**	**640**	**650**
LAND USE, LAND-USE CHANGE AND FORESTRY	**-68 000**	**-74 000**	**-66 000**	**-60 000**	**-61 000**	**-49 000**	**-57 000**	**-59 000**	**-66 000**	**-55 000**	**-41 000**	**-57 000**	**-43 000**	**-49 000**	**-26 000**	**-21 000**	**-28 000**	**-31 000**	**-37 000**	**-49 000**	**-32 000**	**-32 000**	**-34 000**	**-32 000**	**-33 000**	**-26 000**	**-28 000**
a. Forest Land	**-210 000**	**-220 000**	**-220 000**	**-210 000**	**-220 000**	**-200 000**	**-210 000**	**-210 000**	**-200 000**	**-200 000**	**-190 000**	**-190 000**	**-180 000**	**-170 000**	**-170 000**	**-160 000**	**-150 000**	**-150 000**	**-160 000**	**-160 000**	**-150 000**	**-160 000**	**-160 000**	**-160 000**	**-160 000**	**-150 000**	**-150 000**
b. Cropland	**8 300**	**7 200**	**5 700**	**4 600**	**3 100**	**1 600**	**750**	**-860**	**-2 100**	**-3 200**	**-4 700**	**-5 900**	**-7 300**	**-8 600**	**-9 700**	**-11 000**	**-12 000**	**-12 000**	**-12 000**	**-12 000**	**-12 000**	**-12 000**	**-12 000**	**-12 000**	**-12 000**	**-11 000**	**-11 000**
c. Grassland	**600**	**800**	**1 000**	**400**	**1 000**	**300**	**500**	**600**	**700**	**800**	**1 000**	**1 000**	**1 000**	**1 000**	**900**	**900**	**1 000**	**400**	**500**	**400**	**300**	**600**	**2 000**	**2 000**	**800**	**1 000**	**1 000**
d. Wetlands	**5 000**	**5 000**	**5 000**	**5 000**	**3 000**	**3 000**	**3 000**	**3 000**	**3 000**	**3 000**	**3 000**	**3 000**	**3 000**	**3 000**	**3 000**	**3 000**	**3 000**	**3 000**	**3 000**	**3 000**	**3 000**	**3 000**	**3 000**	**3 000**	**3 000**	**3 000**	**3 000**
e. Settlements	**4 000**	**4 000**	**4 000**	**3 000**	**3 000**	**3 000**	**3 000**	**3 000**	**3 000**	**3 000**	**3 000**	**4 000**	**4 000**	**4 000**	**4 000**	**4 000**	**4 000**	**4 000**	**4 000**	**4 000**	**4 000**	**4 000**	**4 000**	**4 000**	**4 000**	**4 000**	**4 000**
f. Harvested Wood Products	**130 000**	**130 000**	**140 000**	**140 000**	**140 000**	**150 000**	**140 000**	**140 000**	**130 000**	**140 000**	**150 000**	**130 000**	**140 000**	**120 000**	**140 000**	**140 000**	**130 000**	**120 000**	**120 000**	**120 000**	**130 000**	**130 000**	**130 000**	**130 000**	**130 000**	**130 000**	**130 000**

Notes:
1. National totals exclude all GHGs from the Land Use, Land-use Change and Forestry Sector.
2. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
3. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990–1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.

- Indicates no emissions

0.00 Indicates emissions truncated due to rounding

Estimates for the latest year (2016) are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

National GHG emissions allocated to Canadian economic sectors are provided in Annex 10 of this report.

Table A9–3 **2016 GHG Emission Summary for Canada**

Greenhouse Gas Categories	Greenhouse Gases									
	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[4]	PFCs[4]	SF_6	NF_3	TOTAL
Global Warming Potential			25		298			22 800	17 200	
Unit	kt	kt	kt CO_2 eq	kt	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq
TOTAL[1]	**558 000**	**3 800**	**96 000**	**120**	**37 000**	**12 000**	**760**	**460**	**0.20**	**704 000**
ENERGY	**516 000**	**2 000**	**50 000**	**20**	**6 000**	**-**	**-**	**-**	**-**	**572 000**
a. Stationary Combustion Sources	**309 000**	**200**	**6 000**	**9**	**3 000**	**-**	**-**	**-**	**-**	**317 000**
Public Electricity and Heat Production	83 000	5.80	150	1.80	520	-	-	-	-	83 800
Petroleum Refining Industries	17 000	0.30	9	0.10	40	-	-	-	-	17 000
Mining and Upstream Oil and Gas Production	96 700	100	2 600	2	600	-	-	-	-	99 900
Manufacturing Industries	41 700	2.20	56	1.70	510	-	-	-	-	42 200
Iron and Steel	5 460	0.13	3.10	0.10	30	-	-	-	-	5 500
Non Ferrous Metals	2 570	0.05	1.40	0.05	10	-	-	-	-	2 590
Chemical	11 200	0.22	5.50	0.20	60	-	-	-	-	11 300
Pulp and Paper	6 000	1	30	0.80	200	-	-	-	-	6 200
Cement	3 710	0.17	4.30	0.05	10	-	-	-	-	3 730
Other Manufacturing	12 700	0.62	15	0.50	100	-	-	-	-	12 900
Construction	1 270	0.02	0.57	0.03	10	-	-	-	-	1 280
Commercial and Institutional	29 500	0.56	14	0.70	200	-	-	-	-	29 700
Residential	35 400	100	3 000	2	700	-	-	-	-	39 300
Agriculture and Forestry	3 500	0.06	1.60	0.10	30	-	-	-	-	3 530
b. Transport[2]	**195 000**	**42**	**1 100**	**12**	**3 600**	**-**	**-**	**-**	**-**	**199 000**
Domestic Aviation	7 000	0.30	7	0.20	60	-	-	-	-	7 100
Road Transportation	140 000	9	200	8.20	2 400	-	-	-	-	143 000
Light-Duty Gasoline Vehicles	33 500	2.80	70	1.80	550	-	-	-	-	34 100
Light-Duty Gasoline Trucks	46 400	3.90	97	2.50	750	-	-	-	-	47 300
Heavy-Duty Gasoline Vehicles	12 400	0.45	11	1.10	330	-	-	-	-	12 800
Motorcycles	279	0.11	2.70	0.01	1.60	-	-	-	-	283
Light-Duty Diesel Vehicles	817	0.02	0.40	0.07	20	-	-	-	-	838
Light-Duty Diesel Trucks	863	0.02	0.60	0.07	20	-	-	-	-	885
Heavy-Duty Diesel Vehicles	45 500	2	50	3	800	-	-	-	-	46 300
Propane and Natural Gas Vehicles	9.04	0	0.10	0	0.05	-	-	-	-	9.20
Railways	5 850	0.30	8	2	700	-	-	-	-	6 500
Domestic Navigation	3 730	0.30	9	0.10	30	-	-	-	-	3 800
Other Transportation	38 300	30	800	1	400	-	-	-	-	40 000
Off-Road Agriculture & Forestry	9 590	0.40	10	0.30	100	-	-	-	-	9 700
Off-Road Commercial & Institutional	2 410	4	90	0.08	20	-	-	-	-	2 500
Off-Road Manufacturing, Mining & Construction	11 400	2	40	0.50	200	-	-	-	-	12 000
Off-Road Residential	1 090	2	60	0.03	9	-	-	-	-	1 200
Off-Road Other Transportation	5 640	20	400	0.10	40	-	-	-	-	6 100
Pipeline Transport	8 200	8.10	200	0.20	70	-	-	-	-	8 470
c. Fugitive Sources	**13 000**	**1 700**	**43 000**	**0.10**	**40**	**-**	**-**	**-**	**-**	**56 000**
Coal Mining	-	50	1 000	-	-	-	-	-	-	1 000
Oil and Natural Gas	13 000	1 700	41 000	0.10	40	-	-	-	-	55 000
Oil	220	290	7 200	0.10	30	-	-	-	-	7 500
Natural Gas	110	480	12 000	-	-	-	-	-	-	12 000
Venting	7 500	870	22 000	-	-	-	-	-	-	29 000
Flaring	5 300	21	520	0.02	5	-	-	-	-	5 900
d. CO_2 Transport and Storage	**0.30**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.30**
INDUSTRIAL PROCESSES AND PRODUCT USE	**38 800**	**3.10**	**77**	**4.54**	**1 350**	**12 000**	**760**	**460**	**-**	**53 400**
a. Mineral Products	**7 900**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**7 900**
Cement Production	6 200	-	-	-	-	-	-	-	-	6 200
Lime Production	1 360	-	-	-	-	-	-	-	-	1 360
Mineral Product Use	390	-	-	-	-	-	-	-	-	390
b. Chemical Industry	**5 430**	**3**	**75**	**3.50**	**1 100**	**-**	**-**	**-**	**-**	**6 560**
Ammonia Production	2 790	-	-	-	-	-	-	-	-	2 790
Nitric Acid Production	-	-	-	3.50	1 000	-	-	-	-	1 000
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
Petrochemical and Carbon Black Production	2 600	3	75	0.04	13	-	-	-	-	2 700
c. Metal Production	**14 500**	**0.08**	**2**	**-**	**-**	**-**	**750**	**271**	**-**	**15 600**
Iron and Steel Production	9 310	0.08	2	-	-	-	-	-	-	9 310
Aluminum Production	5 240	-	-	-	-	-	750	4.70	-	5 990
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	266	-	266
d. Production and Consumption of Halocarbons, SF_6 and NF_3[3]	**-**	**-**	**-**	**-**	**-**	**12 000**	**3.50**	**1.20**	**0.20**	**12 000**
e. Non-Energy Products from Fuels and Solvent Use	**11 000**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**11 000**
f. Other Product Manufacture and Use	**30**	**-**	**-**	**1**	**300**	**-**	**11**	**190**	**-**	**530**
AGRICULTURE	**3 000**	**1 100**	**29 000**	**96**	**29 000**	**-**	**-**	**-**	**-**	**60 000**
a. Enteric Fermentation	**-**	**990**	**25 000**	**-**	**-**	**-**	**-**	**-**	**-**	**25 000**
b. Manure Management	**-**	**160**	**3 900**	**10**	**4 000**	**-**	**-**	**-**	**-**	**8 400**
c. Agricultural Soils	**-**	**-**	**-**	**81**	**24 000**	**-**	**-**	**-**	**-**	**24 000**
Direct Sources	-	-	-	67	20 000	-	-	-	-	20 000
Indirect Sources	-	-	-	10	4 000	-	-	-	-	4 000
d. Field Burning of Agricultural Residues	**-**	**1**	**40**	**0.04**	**10**	**-**	**-**	**-**	**-**	**50**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**3 000**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3 000**
WASTE	**470**	**690**	**17 000**	**3.50**	**1 000**	**-**	**-**	**-**	**-**	**19 000**
a. Solid Waste Disposal	**-**	**660**	**16 000**	**-**	**-**	**-**	**-**	**-**	**-**	**16 000**
b. Biological Treatment of Solid Waste	**-**	**10**	**300**	**0.60**	**200**	**-**	**-**	**-**	**-**	**500**
c. Wastewater Treatment and Discharge	**-**	**18**	**450**	**2**	**700**	**-**	**-**	**-**	**-**	**1 100**
d. Incineration and Open Burning of Waste	**470**	**0.30**	**7**	**0.60**	**200**	**-**	**-**	**-**	**-**	**650**
LAND USE, LAND-USE CHANGE AND FORESTRY	**-30 000**	**63**	**1 600**	**2**	**610**	**-**	**-**	**-**	**-**	**-28 000**
a. Forest Land	**-150 000**	**16**	**410**	**0.68**	**200**	**-**	**-**	**-**	**-**	**-150 000**
b. Cropland	**-11 000**	**3**	**80**	**0.20**	**50**	**-**	**-**	**-**	**-**	**-11 000**
c. Grassland	**-**	**40**	**900**	**1**	**300**	**-**	**-**	**-**	**-**	**1 000**
d. Wetlands	**2 000**	**0.90**	**20**	**0.05**	**10**	**-**	**-**	**-**	**-**	**3 000**
e. Settlements	**3 000**	**5**	**100**	**0.20**	**50**	**-**	**-**	**-**	**-**	**4 000**
f. Harvested Wood Products	**130 000**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**130 000**

Notes:

1. National totals exclude all GHGs from the Land Use, Land-use Change and Forestry Sector.
2. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
3. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990–1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.
4. IPCC's Fourth Assessment Report provides global warming potentials (GWPs) for the various species of HFCs and PFCs. Chapter 1, Table 1-1 of this report provides a list of GWPs used.

\- Indicates no emissions

0.00 Indicates emissions truncated due to rounding

Estimates for the latest year (2016) are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

National GHG emissions allocated to Canadian economic sectors are provided in Annex 10 of this report.

Annex 10

CANADA'S GREENHOUSE GAS EMISSION TABLES BY CANADIAN ECONOMIC SECTOR, 1990–2016

This annex contains summary tables illustrating national GHG emissions for the period 1990–2016 by Canadian economic sector (Table A10–2), as well as the relationship (crosswalk) between the economic sectors and the Intergovernmental Panel on Climate Change (IPCC) sectors presented in Annex 9 of this report (Table A10–3). In addition, Table A10–1 provides a brief description of each economic sector.

Although not a mandatory reporting requirement, reallocating emissions from IPCC sectors to Canadian economic sectors is useful for the purpose of analyzing trends and policies, as most people associate GHG emissions with a particular economic activity (e.g. producing electricity, farming or driving a car). This re-allocation simply re-categorizes emissions under different headings, but does not change the overall magnitude of Canadian emission estimates. Estimates for each economic sector includes emissions from energy-related and nonenergyrelated processes.

Reallocation of Emissions from IPCC Sector to Canadian Economic Sector

In general, the reallocation of emissions from IPCC sector to economic sector involves aggregating emissions from stationary combustion, fugitive sources, transportation, industrial processes, agriculture and waste into the appropriate economic sector. In many cases, the stationary combustion emissions for a specific IPCC sector are the same as that for the corresponding economic sector with some notable exceptions.

First, unlike allocation for the IPCC sectors, all utility-owned cogeneration facilities that produce steam or electricity for on-site use are reallocated from Electricity to the relevant economic sector. The relevant economic sectors include Natural Gas Production & Processing, Oil Sands, Mining, Pulp and Paper, Chemicals and Fertilizers, Service Industry, and Light Manufacturing. This is generally accomplished by analyzing and reallocating data by sector from the *Electric Power Thermal Generating Station Fuel Consumption Survey* (Statistics Canada 2016).

Second, Lime and Gypsum is split out from the IPCC category Other Manufacturing and reported as an economic sector on its own, while all other industries included in the IPCC category are allocated to the economic sector Light Manufacturing. Constituent sectors include all other manufacturing industries not already accounted for in identified IPCC manufacturing categories (e.g. Iron and Steel, Chemicals, etc.). Examples include automobile manufacturing, textiles, food and beverage industries, etc.

Third, emissions resulting from the combustion of fuel used to transport oil and natural gas in pipelines accounted for in the IPCC category Pipeline Transport, is divided into the Oil and Natural Gas Transmission and Natural Gas Distribution economic sectors. This division is based on sector-specific fuel combustion data from an upstream oil and gas (UOG) study (Environment Canada 2014).

Fourth, combustion emissions from the Mining and Upstream Oil and Gas Production IPCC category are reallocated to many economic sectors including: Coal Production, Mining, Natural Gas Production and Processing, Conventional Light Oil Production, Conventional Heavy Oil Production, Frontier Oil Production and Oil Sands (Mining, In-situ, Upgrading). A variety of external data sources are used to estimate emissions for the appropriate sectors which are then re-proportioned to align with

Canada's energy balance. These external data sources include:

- **Mining** – Metal and non-metal mining fuel consumption data from the Canadian Industrial Energy End-Use Data and Analysis Centre (CIEEDAC) database on *Energy, Production and Intensity Indicators for Canadian Industry* (CIEEDAC 2016).
- **Coal Production** – Fuel consumption estimates for the coal mining industry are based on the *Compilation of a National Inventory of Greenhouse Gas and Fugitive VOC Emissions by the Canadian Coal Mining Industry* (Cheminfo/Clearstone 2014) and annual coal production data provided by Statistics Canada (see Annex 3.2 for further discussion on this activity data).
- **UOG sectors** – Fuel consumption data for the various UOG sectors, except Oil Sands, is estimated from the UOG study (Environment Canada 2014).
- **Oil Sands** – Fuel consumption data for the Oil Sands industry (including mining and extraction, in-situ and upgrading) is modelled by ECCC and adjusted so that the resultant emissions align with the facility level emissions data that is reported to ECCC through the Greenhouse Gas Emissions Reporting Program (GHGRP) (see Chapter 1 for more information on the GHGRP).

Fifth, emissions from road, rail, marine and air transport are separated into passenger and freight components. Emissions for Other Transportation (Off-road) are reallocated to their relevant economic sectors and to the Transportation category Other: Recreational, Commercial, and Residential.

Sixth, CO_2 captured from waste streams at large industrial facilities (e.g. electric utilities, oil sands upgraders) is presented separately in the economic sectors. It is displayed as a negative number to represent the removal of CO_2 from the specific sector while the source of the CO_2 emissions (e.g. stationary combustion) for the sector is displayed as a gross amount.

In terms of process and product use-related emissions, emissions from mineral products, chemical industry and metal production are reallocated to Heavy Industry and Light Manufacturing. Emissions from consumption of halocarbons, SF_6 and NF_3, which mainly consist of HFC emissions from refrigeration and air conditioning, are reallocated to Transportation and Buildings, where the majority of HFCs are used and emitted. Emissions from non-energy products from fuels and solvent use are reallocated to multiple relevant economic categories. Finally, emissions from other product manufacture and use are mainly distributed to Electricity and Service Industry.

Once all of these sector specific fuel consumption estimates are compiled the data are reconciled by province and by fuel with the fuel consumption data from the *Report on Energy Supply and Demand* (Statistics Canada, 2003–). This ensures that the economic sector estimates match the IPCC sector estimates.

Canada's greenhouse gas emission tables are also available in electronic file format online at https://open.canada.ca.

Table A10–1 **Canadian Economic Sector Descriptions**

Economic Sector	Description
OIL AND GAS	
Upstream Oil and Gas	Stationary combustion, onsite transportation, electricity and steam production, fugitive and process emissions from:
Natural Gas Production and Processing	- natural gas production and processing
Conventional Light Oil Production	- conventional light crude oil production
Conventional Heavy Oil Production	- conventinoal heavy crude oil production
Frontier Oil Production	- offshore and arctic production of crude oil
Oil Sands (Mining, In-situ, Upgrading)	Stationary combustion, onsite transportation, electricity and steam production, fugitive and process emissions from:
Mining and Extraction	- crude bitumen mining and extraction
In-situ	- in-situ extraction of crude bitumen including primary extraction, cyclic steam stimulation (CSS), steam-assisted gravity drainage (SAGD) and other experimental techniques.
Upgrading	- crude bitumen and heavy oil upgrading to synthetic crude oil
Oil and Natural Gas Transmission	Combustion and fugitive emissions from the transport and storage of crude oil and natural gas
Downstream Oil and Gas	Emissions resulting from:
Petroleum Refining	Stationary combustion, onsite transportation, electricity and steam production, fugitive and process emissions from petroleum refining industries
Natural Gas Distribution	Combustion and fugitive emissions from local distribution of natural gas
ELECTRICITY	Combustion and process emissions from utility electricity generation, steam production (for sale) and transmission. Excludes utility owned cogeneration at industrial sites.
TRANSPORTATION	Mobile related emissions including all fossil fuels and non-CO_2 emission from biofuels.
Passenger Transport	Mobile related combustion, process and refrigerant emissions from the vehicles that primarily move people around.
Cars, Light Trucks and Motorcycles	- Light duty cars and trucks up to 4 500 lb. GVWR and motorcycles.
Bus, Rail and Domestic Aviation	- All buses and the passenger component of rail and domestic aviation
Freight Transport	Mobile related combustion, process and refrigerant emissions from the vehicles that primarily move cargo or freight around.
Heavy Duty Trucks, Rail	- Vehicles above 4 500 lb. GVWR and the freight component of rail
Domestic Aviation and Marine	- Cargo/Freight component of domestic aviation and all domestic navigation
Other: Recreational, Commercial and Residential	Combustion emissions from the non-industrial use of off-road engines (e.g., ATVs, snowmobiles, personal watercraft), including portable engines (e.g., generators, lawn mowers, chain saws).
HEAVY INDUSTRY	Stationary combustion, onsite transportation, electricty and steam production, and process emissions from:
Mining	- metal and non-metal mines, stone quarries, and gravel pits
Smelting and Refining (Non Ferrous Metals)	- Non-ferrous Metals (aluminium, magnesium and other production)
Pulp and Paper	- Pulp and Paper (primarily pulp, paper, and paper product manufacturers)
Iron and Steel	- Iron and Steel (steel foundries, casting, rolling mills and iron making)
Cement	- Cement and other non-metallic mineral production
Lime & Gypsum	- Lime and Gypsum product manufacturing
Chemicals & Fertilizers	- Chemical (fertilizer manufacturing, organic and inorganic chemical manufacturing)
BUILDINGS	Stationary combustion and process (i.e. air conditioning) emissions from:
Service Industry	- Service industries related to mining, communication, wholesale and retail trade, finance and insurance, real estate, education, etc.; offices, health, arts, accommodation, food, information & cultural; Federal, provincial and municipal establishments; National Defence and Canadian Coast Guard; Train stations, airports and warehouses
Residential	- personal residences (homes, apartment hotels, condominiums and farm houses)
AGRICULTURE	Emissions resulting from:
On Farm Fuel Use	- Stationary combustion, onsite transportation and process emissions from the agricultural, hunting and trapping industry (excluding food processing, farm machinery manufacturing, and repair)
Crop Production	- Application of inorganic nitrogen fertilizers, decomposition of crop residues, loss of soil organic carbon, cultivation of organic soils, indirect emissions from leaching and volatilization, field burning of agricultural residues, liming, and urea application
Animal Production	- Animal housing, manure storage, manure deposited by grazing animals, and application of manure to managed soils
WASTE	Non-CO_2 Emissions from biomass resulting from:
Solid Waste	- Municipal solid waste management sites (landfills), dedicated wood waste landfills, and composting of municipal solid waste
Waste Water	- Domestic and industrial wastewater treatment
Waste Incineration	- Municipal solid, hazardous and clinical waste, and sewage sludge incineration
COAL PRODUCTION	Stationary combustion, onsite transportation and fugitive emissions from underground and surface coal mines
LIGHT MANUFACTURING, CONSTRUCTION & FOREST RESOURCES	Stationary combustion, onsite transportation, electricty and steam production, and process emissions from (excluding LULUCF):
Light Manufacturing	- all other manufacturing industries not included in the Heavy Industry category above
Construction	- construction of buildings, highways etc.
Forest Resources	- forestry and logging service industry

Table A10–2 Canada's GHG Emissions by Canadian Economic Sector, 1990–2016

Greenhouse Gas Categories	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	Mt CO_2 eq																										
NATIONAL GHG TOTAL	**603**	**596**	**613**	**614**	**635**	**652**	**673**	**688**	**696**	**709**	**732**	**721**	**725**	**742**	**744**	**732**	**723**	**745**	**724**	**682**	**694**	**700**	**707**	**716**	**716**	**714**	**704**
OIL AND GAS	**107**	**106**	**116**	**122**	**127**	**133**	**140**	**141**	**146**	**155**	**158**	**158**	**161**	**164**	**162**	**158**	**162**	**168**	**160**	**158**	**160**	**161**	**172**	**180**	**187**	**184**	**183**
Upstream Oil and Gas	**87**	**87**	**97**	**102**	**108**	**114**	**118**	**118**	**124**	**134**	**138**	**137**	**139**	**140**	**137**	**135**	**138**	**144**	**138**	**136**	**137**	**139**	**148**	**156**	**164**	**162**	**161**
Natural Gas Production and Processing	36	35	37	39	41	43	45	43	46	55	59	60	63	64	60	58	57	61	55	52	50	50	52	52	51	47	49
Conventional Oil Production	24	23	26	27	28	31	32	34	35	36	38	36	35	33	32	30	29	31	29	27	27	28	30	32	36	35	30
Conventional Light Oil Production	12	11	11	12	12	12	12	12	12	12	12	12	12	11	12	11	11	12	11	11	11	12	14	16	19	18	16
Conventional Heavy Oil Production	12	12	14	15	16	18	19	22	21	22	24	23	21	19	19	17	17	17	16	14	14	14	15	15	16	15	12
Frontier Oil Production	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2
Oil Sands (Mining, In-situ, Upgrading)	15	16	19	20	21	21	22	23	24	24	25	28	28	32	35	35	40	42	45	48	53	55	59	63	68	70	72
Mining and Extraction	4	5	5	5	5	5	5	5	6	6	6	7	7	9	10	9	11	12	12	13	14	14	14	15	17	17	17
In-situ	5	5	5	5	6	6	6	8	8	8	8	8	8	9	10	11	13	13	17	18	20	22	25	28	30	34	37
Upgrading	6	6	8	10	10	10	10	10	10	11	11	12	13	14	14	14	16	17	16	18	19	19	20	20	20	19	17
Oil and Natural Gas Transmission	12	13	16	16	17	18	19	19	19	19	15	14	13	11	10	12	11	10	9	8	7	7	8	9	10	10	10
Downstream Oil and Gas	**20**	**19**	**19**	**20**	**19**	**19**	**22**	**22**	**22**	**21**	**20**	**21**	**22**	**24**	**25**	**23**	**24**	**24**	**22**	**22**	**23**	**22**	**24**	**24**	**23**	**22**	**22**
Petroleum Refining	18	17	17	18	17	17	20	20	20	19	19	20	21	22	24	22	22	23	21	21	22	20	22	22	21	21	21
Natural Gas Distribution	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ELECTRICITY	**94**	**96**	**102**	**93**	**95**	**98**	**98**	**109**	**122**	**119**	**129**	**130**	**123**	**127**	**120**	**120**	**114**	**119**	**110**	**95**	**97**	**88**	**85**	**82**	**79**	**81**	**79**
TRANSPORTATION	**122**	**116**	**117**	**118**	**122**	**123**	**127**	**132**	**139**	**144**	**146**	**148**	**149**	**154**	**159**	**162**	**163**	**167**	**167**	**163**	**171**	**171**	**173**	**176**	**173**	**174**	**173**
Passenger Transport	**69**	**66**	**66**	**67**	**69**	**70**	**72**	**74**	**77**	**79**	**81**	**83**	**85**	**87**	**88**	**88**	**88**	**88**	**87**	**86**	**88**	**87**	**87**	**89**	**87**	**90**	**93**
Cars, Light Trucks and Motorcycles	62	60	61	61	64	64	66	68	70	72	73	77	78	80	80	81	81	81	79	80	81	80	80	81	80	83	85
Bus, Rail and Domestic Aviation	7	6	6	5	6	6	6	6	7	7	7	7	7	7	7	7	7	8	7	7	7	7	7	8	7	7	7
Freight Transport	**32**	**31**	**31**	**31**	**32**	**32**	**35**	**39**	**44**	**47**	**49**	**52**	**52**	**55**	**58**	**63**	**64**	**68**	**70**	**66**	**72**	**75**	**77**	**78**	**76**	**74**	**71**
Heavy Duty Trucks, Rail	26	24	25	25	27	26	29	33	37	41	43	46	45	48	50	55	57	60	63	58	64	68	70	72	70	69	66
Domestic Aviation and Marine	6	6	6	6	6	6	6	6	6	6	6	7	7	8	8	8	7	8	7	7	8	7	7	6	6	6	5
Other: Recreational, Commercial and Residential	**21**	**20**	**20**	**20**	**21**	**21**	**20**	**19**	**18**	**18**	**16**	**13**	**12**	**12**	**13**	**11**	**11**	**11**	**11**	**11**	**11**	**9**	**9**	**9**	**10**	**10**	**10**
HEAVY INDUSTRY	**97**	**97**	**94**	**93**	**99**	**100**	**102**	**102**	**96**	**94**	**93**	**87**	**89**	**88**	**92**	**86**	**86**	**85**	**84**	**71**	**73**	**80**	**79**	**77**	**77**	**76**	**75**
Mining	**7**	**6**	**6**	**7**	**8**	**8**	**8**	**9**	**8**	**7**	**8**	**7**	**7**	**7**	**7**	**7**	**7**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**7**
Smelting and Refining (Non Ferrous Metals)	**17**	**18**	**17**	**17**	**17**	**16**	**17**	**17**	**17**	**16**	**16**	**15**	**15**	**15**	**14**	**14**	**14**	**13**	**13**	**12**	**11**	**12**	**10**	**11**	**10**	**10**	**10**
Pulp and Paper	**15**	**15**	**14**	**14**	**14**	**13**	**14**	**14**	**13**	**13**	**13**	**12**	**11**	**11**	**11**	**9**	**8**	**8**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**
Iron and Steel	**16**	**18**	**18**	**18**	**18**	**18**	**18**	**18**	**18**	**19**	**19**	**17**	**17**	**17**	**17**	**16**	**17**	**18**	**17**	**13**	**14**	**17**	**17**	**15**	**16**	**14**	**15**
Cement	**10**	**8**	**8**	**9**	**10**	**11**	**10**	**11**	**11**	**12**	**12**	**12**	**12**	**12**	**13**	**13**	**14**	**13**	**12**	**10**	**10**	**10**	**11**	**10**	**10**	**10**	**10**
Lime & Gypsum	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**2**	**3**	**3**	**3**	**2**	**3**	**2**	**2**
Chemicals & Fertilizers	**29**	**28**	**28**	**27**	**30**	**31**	**32**	**31**	**27**	**24**	**23**	**22**	**23**	**22**	**26**	**23**	**23**	**23**	**23**	**20**	**21**	**23**	**24**	**24**	**24**	**25**	**23**
BUILDINGS	**74**	**73**	**74**	**78**	**79**	**79**	**85**	**83**	**75**	**79**	**85**	**82**	**87**	**92**	**90**	**86**	**81**	**86**	**86**	**84**	**82**	**87**	**85**	**86**	**88**	**85**	**81**
Service Industry	**27**	**28**	**28**	**30**	**30**	**32**	**33**	**34**	**31**	**34**	**38**	**38**	**40**	**43**	**43**	**40**	**37**	**38**	**39**	**39**	**38**	**41**	**42**	**41**	**42**	**41**	**40**
Residential	**47**	**45**	**46**	**48**	**49**	**48**	**52**	**49**	**44**	**45**	**47**	**44**	**47**	**48**	**47**	**46**	**44**	**48**	**47**	**46**	**43**	**46**	**43**	**45**	**47**	**45**	**41**
AGRICULTURE	**58**	**58**	**60**	**62**	**65**	**68**	**70**	**70**	**70**	**70**	**70**	**68**	**68**	**70**	**72**	**73**	**71**	**71**	**71**	**69**	**69**	**69**	**70**	**73**	**71**	**72**	**72**
On Farm Fuel Use	**11**	**11**	**11**	**12**	**13**	**14**	**14**	**15**	**14**	**13**	**13**	**11**	**11**	**12**	**12**	**12**	**12**	**12**	**12**	**12**	**13**	**14**	**13**	**13**	**13**	**13**	**12**
Crop Production	**15**	**14**	**14**	**15**	**16**	**16**	**17**	**17**	**17**	**17**	**17**	**15**	**15**	**16**	**17**	**16**	**16**	**18**	**19**	**19**	**19**	**19**	**21**	**23**	**22**	**22**	**23**
Animal Production	**32**	**33**	**34**	**35**	**36**	**38**	**39**	**39**	**39**	**39**	**40**	**41**	**42**	**42**	**43**	**44**	**43**	**42**	**40**	**38**	**37**	**36**	**36**	**36**	**36**	**36**	**37**
WASTE	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**20**	**20**	**20**	**20**	**20**	**21**	**21**	**21**	**22**	**21**	**20**	**20**	**19**	**19**	**18**	**18**	**18**	**19**	**19**
Solid Waste	**17**	**17**	**17**	**17**	**17**	**17**	**17**	**18**	**18**	**18**	**18**	**18**	**19**	**19**	**19**	**19**	**20**	**19**	**18**	**18**	**17**	**17**	**17**	**17**	**16**	**17**	**17**
Wastewater	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
Waste Incineration	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
COAL PRODUCTION	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**3**	**3**	**3**	**3**	**3**	**3**	**2**	**2**	**3**	**2**	**2**	**3**	**3**	**3**	**3**	**2**	**2**	**2**
LIGHT MANUFACTURING, CONSTRUCTION & FOREST RESOURCES	**28**	**27**	**26**	**24**	**25**	**27**	**27**	**28**	**24**	**25**	**26**	**24**	**24**	**24**	**25**	**24**	**23**	**24**	**23**	**20**	**22**	**23**	**22**	**22**	**21**	**21**	**20**
Light Manufacturing	**21**	**20**	**20**	**18**	**18**	**20**	**20**	**21**	**18**	**18**	**19**	**17**	**17**	**17**	**17**	**17**	**16**	**17**	**16**	**14**	**15**	**16**	**16**	**16**	**15**	**14**	**14**
Construction	**6**	**5**	**5**	**5**	**6**	**6**	**6**	**5**	**5**	**5**	**5**	**5**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**5**	**6**	**6**	**5**	**5**	**5**	**5**	**5**
Forest Resources	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**

Notes:
Totals may not add up due to rounding.
National GHG emissions allocated to IPCC sectors are provided in Annex 9 of this report.
Provincial/territorial GHG emissions allocated to IPCC sectors are provided in Annex 11 of this report.
Estimates presented here are under continual improvement. Historical emissions may be change in future publications as new data becomes available and methods and models are refined and improved.
Emission estimates for Solid Waste include emissions from municipal solid waste landfills, wood waste landfills and municipal solid waste composting.
0 indicates emissions of less than 0.5 Mt CO_2 eq; truncated due to rounding

Table A10–3 Relationship between Canada's Economic Sectors and IPCC Sectors, 2016

		Economic Category Total	National Inventory Category[a]																										
			Energy								Industrial Processes and Product Use							Agriculture				Waste					CO_2 Captured[j]	LULUCF[b]
			Energy: Fuel Combustion				Energy: Fugitive				Mineral Products[d]	Chemical Industry[e]	Metal Production[f]	Consumption of Halocarbons, SF_6 and NF_3	Non-Energy Products from Fuels and Solvent Use	Other Product Manufacture and Use	Total	Manure Management	Enteric Fermentation	Agriculture Soils	Total	Solid Waste Disposal	Biological Treatment of Solid Waste	Wastewater Treatment and Discharge	Incineration and Open Burning of Waste	Total		
			Stationary Combustion			Transport	Fugitive (Unintentional)	Flaring	Venting	Total																		
			Stationary	Industrial Cogeneration																								
				Electricity[c]	Steam for Sale																							
		Mt CO_2 equivalent																										
	National Inventory Total[a,b]	**704**	**296**	**22.1**	**0.8**	**199**	**20.7**	**5.9**	**29.3**	**574**	**7.9**	**6.6**	**15.6**	**12.0**	**10.8**	**0.5**	**53.4**	**8.4**	**24.7**	**26.6**	**59.7**	**16.4**	**0.5**	**1.1**	**0.6**	**18.7**	**-1.8**	
	OIL AND GAS	**183**	**102.0**	**14.1**		**11.0**	**19.5**	**5.9**	**29.3**	**181.7**					**2.1**		**2.1**										**-1.0**	
	Upstream Oil and Gas	**161**	**85.0**	**13.8**		**10.8**	**18.4**	**5.7**	**27.9**	**161.5**					**0.2**		**0.2**										**-1.0**	
	Natural Gas Production and Processing	49	18.8	8.2		0.2	9.8	1.1	10.4	48.6					0.0		0.0											
	Conventional Oil Production	30	7.9	1.7		0.1	2.7	3.5	13.9	29.9					0.0		0.0											
	Conventional Light Oil Production	16	2.8	1.5		0.1	1.7	2.1	7.7	16.0					0.0		0.0											
	Conventional Heavy Oil Production	12	4.2			0.0	1.0	0.8	6.3	12.3																		
	Frontier Oil Production	2	0.8	0.2		0.0	0.0	0.6	0.0	1.7																		
	Oil Sands (Mining, In-situ, Upgrading)[k]	72	58.3	3.8		2.2	4.6	1.1	2.6	72.6					0.2		0.2										-1.0	
	Mining and Extraction	17	9.6	1.0		2.2	4.3	0.4		17.4					0.1		0.1											
	In-situ	37	35.3	1.6			0.3	0.2	0.1	37.5																		
	Upgrading	17	13.4	1.1			0.1	0.5	2.6	17.7					0.1		0.1										-1.0	
	Oil and Natural Gas Transmission	10				8.4	1.2	0.0	0.9	10.4																		
	Downstream Oil and Gas	**22**	**17.0**	**0.4**		**0.1**	**1.1**	**0.2**	**1.4**	**20.2**					**1.9**		**1.9**											
	Petroleum Refining	21	17.0	0.4		0.0	0.1	0.2	1.4	19.0					1.9		1.9											
	Natural Gas Distribution	1				0.1	1.0	0.0	0.1	1.1																		
	ELECTRICITY	**79**	**78.7**		**0.4**					**79.2**						**0.2**	**0.2**										**-0.8**	
	TRANSPORTATION[g]	**173**				**169.6**				**169.6**				**3.7**	**0.1**	**0.0**	**3.8**											
	Passenger Transport	**93**				**90.4**				**90.4**				**2.1**	**0.0**	**0.0**	**2.1**											
	Cars, Light Trucks and Motorcycles	85				83.4				83.4				2.0	0.0	0.0	2.0											
	Bus, Rail and Domestic Aviation	7				7.0				7.0				0.2	0.0	0.0	0.2											
	Freight Transport	**71**				**69.5**				**69.5**				**1.6**	**0.0**	**0.0**	**1.6**											
	Heavy Duty Trucks, Rail	66				65.0				65.0				1.5	0.0	0.0	1.5											
	Domestic Aviation and Marine	5				4.6				4.6				0.1	0.0		0.1											
	Other: Recreational, Commercial and Residential	**10**				**9.7**				**9.7**																		
	HEAVY INDUSTRY	**75**	**30.0**	**6.8**	**0.3**	**3.2**				**40.3**	**7.8**	**6.6**	**15.6**	**0.6**	**3.9**		**34.4**											
	Mining	**7**	**3.1**	**1.3**		**2.7**				**7.1**				**0.0**	**0.1**		**0.1**											
	Smelting and Refining (Non Ferrous Metals)	**10**	**2.6**	**0.0**	**0.0**	**0.1**				**2.7**	**0.0**		**6.3**		**0.8**		**7.1**											
	Pulp and Paper	**7**	**4.8**	**1.7**	**0.1**	**0.1**				**6.7**	**0.0**				**0.0**		**0.0**											
	Iron and Steel	**15**	**5.4**	**0.1**	**0.0**	**0.2**				**5.7**			**9.3**		**0.1**		**9.4**											
	Cement	**10**	**3.7**			**0.0**				**3.8**	**6.2**				**0.0**		**6.2**											
	Lime & Gypsum	**2**	**1.0**			**0.0**				**1.0**	**1.4**				**0.0**		**1.4**											
	Chemicals & Fertilizers	**23**	**9.4**	**3.7**	**0.2**	**0.1**				**13.3**	**0.2**	**6.6**		**0.6**	**2.8**		**10.1**											
	BUILDINGS	**81**	**68.5**	**0.7**						**69.2**				**7.4**	**4.5**	**0.3**	**12.2**											
	Service Industry	**40**	**29.3**	**0.7**						**30.0**				**5.6**	**4.5**	**0.3**	**10.4**											
	Residential	**41**	**39.3**							**39.3**				**1.8**			**1.8**											
	AGRICULTURE	**72**	**3.4**			**8.8**				**12.3**					**0.0**		**0.0**	**8.4**	**24.7**	**26.6**	**59.7**							
	On Farm Fuel Use[h]	**12**	**3.4**			**8.8**				**12.3**					**0.0**		**0.0**											
	Crop Production	**23**																		**23.1**	**23.1**							
	Animal Production	**37**																**8.4**	**24.7**	**3.5**	**36.6**							
	WASTE	**19**																				**16.4**	**0.5**	**1.1**	**0.6**	**18.7**		
	Solid Waste[i]	**17**																				**16.4**	**0.5**			**16.9**		
	Wastewater	**1**																						**1.1**		**1.1**		
	Waste Incineration	**1**																							**0.6**	**0.6**		
	COAL PRODUCTION	**2**	**0.5**			**0.5**	**1.3**			**2.3**																		
	LIGHT MANUFACTURING, CONSTRUCTION & FOREST RESOURCES	**20**	**12.9**	**0.5**	**0.0**	**6.3**				**19.7**	**0.2**			**0.4**	**0.2**	**0.0**	**0.8**											
	Light Manufacturing	**14**	**11.5**	**0.5**	**0.0**	**1.4**				**13.4**	**0.2**			**0.4**	**0.2**	**0.0**	**0.7**											
	Construction	**5**	**1.3**			**4.0**				**5.3**					**0.0**		**0.0**											
	Forest Resources	**1**	**0.1**	**0.0**		**0.9**				**1.0**					**0.0**		**0.0**											
																												-27.8

ECONOMIC CATEGORY

Notes:
Totals may not add up due to rounding. Economic category totals rounded to nearest megatonne (Mt). The estimates for the economic categories may not add up to the National Inventory Totals due to rounding and statistical differences in the RESD for the IP category of Other & Undifferentiated Production.
Estimates presented here are under continual improvement. Historical emissions may be change in future publications as new data becomes available and methods and models are refined and improved.

a Categorization of emissions is consistent with the IPCC's sectors following the reporting requirement of the UNFCCC.
b National totals exclude all GHGs from the Land Use, Land Use Change and Forestry Sector.
c Industrial cogeneration includes emissions associated with the simultaneous production of heat and power. At some facilities, a portion of this power is generated by onsite utility-owned generators. As such, the cogeneration emissions for these specific facilities are included under the Public Electricity and Heat Generation category in the National Inventory (UNFCCC) format.
d Mineral products includes cement production, lime production and mineral product use.
e Chemical industry includes ammonia production, nitric acid production, petrochemical production, and adipic acid production.
f Metal production includes iron and steel production, aluminum production, and SF_6 used in magnesium smelters and casters.
g Emissions from the consumption of propane and natural gas in Transportation are allocated to Cars, Light Trucks and Buses
h On Farm Fuel Use includes emissions associated with the use of lube oils and greases.
i Emission estimates for Solid Waste include emissions from municipal solid waste landfills, wood waste landfills and municipal solid waste composting.
j Some facilities capture CO_2 emissions. This is displayed as a negative quantity, as it is computed as an emission reduction at the source. Though the CO_2 has been captured, this does not imply permanent storage; some portion may be subsequently re-emitted (for instance, as fugitive releases) in another activity – in such cases, the re-emissions are reported in the economic sectors where they occur.
0 Indicates emissions of less than 0.5 Mt CO_2 eq

Annex 11

PROVINCIAL/ TERRITORIAL GREENHOUSE GAS EMISSION TABLES BY IPCC SECTOR, 1990–2016

This annex contains summary tables (Table A11–1 to Table A11–28) illustrating GHG emissions by province/territory and year for each IPCC sector.

To account for the creation of Nunavut in 1999, separate time series–are provided from 1999 onwards for both the Northwest Territories and Nunavut (Table A11–24 and Table A11–26); emissions for the years 1990–1998 are presented as a combined region in Table A11–28.

Provincial/territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report.

Although the UNFCCC reporting guidelines only require reporting national-level information, provincial and territorial information is important, owing to differences in regional emission levels and trends. Note that provincial and territorial emission estimates may not necessarily sum to the national totals due to rounding.

Several Canadian provinces develop independent inventories of provincial GHG emissions, in some cases making use of alternate methodologies, data inputs and/or inclusions/omissions of GHG source categories. While Canada is developing a national emission inventory consistent with IPCC guidelines and international obligations, provincial governments may elect to develop an inventory structure in accordance with specific provincial needs. Environment and Climate Change Canada encourages collaboration with provinces and territories for quality assurance and continuous improvement of this annual National Inventory Report.

Provincial/territorial greenhouse gas emission tables are also available in electronic file format online at https://open.canada.ca.

Table A11–1 GHG Source/Sink Category Description

GHG Source/Sink Categories	
ENERGY	
a. Stationary Combustion Sources	
Public Electricity and Heat Production	Emissions from fuel consumed by utility electricity generation and steam production (for sale)
Petroleum Refining Industries	Emissions from fuel consumed by petroleum refining industries
Mining and Upstream Oil and Gas Production	Emissions from fuel consumed by:
	– Metal and non-metal mines, coal mines, stone quarries, and gravel pits
	– Oil and gas extraction industries
	– Mineral exploration and contract drilling operations
Manufacturing Industries	Emissions from fuel consumed by the following industries:
	– Iron and Steel (steel foundries, casting and rolling mills)
	– Non-ferrous metals (aluminium, magnesium and other production)
	– Chemical (fertilizer manufacturing, organic and inorganic chemical manufacturing)
	– Pulp and Paper (primarily pulp, paper, and paper product manufacturers)
	– Cement and other non-metallic mineral production
	– Other manufacturing industries not listed (such as automobile manufacturing, textiles, food and beverage industries)
Construction	Emissions from fuels consumed by the construction industry – buildings, highways etc.
Commercial & Institutional	Emissions from fuel consumed by:
	– Service industries related to mining, communication, wholesale and retail trade, finance and insurance, real estate, education, etc.)
	– Federal, provincial and municipal establishments
	– National Defence and Canadian Coast Guard
	– Train stations, airports and warehouses
Residential	Emissions from fuel consumed for personal residences (homes, apartment hotels, condominiums and farm houses)
Agriculture & Forestry	Emissions from fuel consumed by:
	– Forestry and logging service industry
	– Agricultural, hunting and trapping industry (excluding food processing, farm machinery manufacturing and repair)
b. Transportation	Emissions resulting from the:
Domestic Aviation	– Consumption of fossil fuels by aircrafts flying domestically with Canadian purchased fuel
Road Transportation	– Consumption of fossil fuels (including non-CO_2 emissions from ethanol and biodiesel) by vehicles licensed to operate on roads
Railways	– Consumption of fossil fuels (including non-CO_2 emissions from biodiesel) by Canadian railways
Domestic Navigation	– Consumption of fossil fuels (including non-CO_2 emissions from ethanol and biodiesel) by Canadian registered marine vessels fuelled domestically
Others – Off-road	– Consumption of fossil fuels (including non-CO_2 emissions from ethanol and biodiesel) by combustion devices not licensed to operate on roads
Others – Pipeline Transport	– Transportation and distribution of crude oil, natural gas and other products
c. Fugitive Sources	Intentional and unintentional releases of greenhouse gases from the following activities:
Coal Mining	– Underground and surface mining, abandoned underground coal mines
Oil and Natural Gas	– Conventional and unconventional oil and gas exploration, production, transportation and distribution
d. CO_2 Transport and Storage	Intentional and unintentional releases of greenhouse gases from the transport and storage of carbon dioxide
INDUSTRIAL PROCESSES AND PRODUCT USE	Emissions resulting from the following process activities:
a. Mineral Products	– Cement production, lime production, and mineral product use (which includes glass production, other uses of soda ash, magnesite use, and limestone and dolomite use)
b. Chemical Industry	– Production of ammonia, nitric acid, adipic acid, carbide and petrochemicals. Petrochemical production includes production of carbon black, ethylene dichloride, ethylene, methanol and styrene
c. Metal Production	– Aluminum production, iron and steel production, and magnesium production and casting
d. Production and Consumption of Halocarbons, SF_6 and NF_3	– By-product production of HFC-23; use of HFCs and/or PFCs in air conditioning units, refrigeration units, fire extinguishers, aerosol cans, solvents, foam blowing, semiconductor manufacturing and electronics industry, and use of SF_6 and NF_3 in semiconductor manufacturing
e. Non-Energy Products from Fuels and Solvent Use	– Non-energy use of fossil fuels (including solvents and lubricants) that are not accounted for elsewhere under the Industrial Processes and Product Use Sector
f. Other Product Manufacture and Use	– Use of N_2O as an anaesthetic and propellant; use of urea in selective catalytic reduction (SCR) equipped vehicles; use of SF_6 and PFCs in electrical equipment
AGRICULTURE	Emissions resulting from the:
a. Enteric Fermentation	– Eructation of CH_4 during the digestion of plant material by (mainly) ruminants
b. Manure Management	– Release of CH_4 and N_2O due to microbial activity during the storage of feces, urine and bedding materials from the cleaning of barns and pens
	– Indirect N_2O emissions from volatilization and leaching of nitrogen from animal manure during storage
c. Agricultural Soils	
Direct sources	– Direct N_2O emissions from Synthetic fertilizer, manure on cropland, pasture range and paddock, crop residue, tillage, summerfallow, irrigation and cultivation of organic soils
Indirect Sources	– Indirect N_2O emissions from volatilization and leaching of animal manure nitrogen, synthetic fertilizer nitrogen and crop residue nitrogen
d. Field Burning of Agricultural Residues	– CH_4 and N_2O emissions from crop residue burning
e. Liming, Urea Application and Other Carbon-containing Fertilizers	– Direct emissions of CO_2 from the application of lime, urea and other fertilizers containing carbon
WASTE	Emissions resulting from:
a. Solid Waste Disposal	– Municipal solid waste management sites (landfills) and dedicated wood waste landfills
b. Biological Treatment of Solid Waste	– Composting of municipal solid waste
c. Wastewater Treatment and Discharge	– Domestic and industrial wastewater treatment
d. Incineration and Open Burning of Waste	– Municipal solid, hazardous and clinical waste, and sewage sludge incineration
LAND USE, LAND-USE CHANGE AND FORESTRY	Emissions and removals resulting from:
a. Forest Land	– Managed forests and lands converted to forests; includes growth and anthropogenic disturbances related to forest management but excludes fire and most insect disturbances
b. Cropland	– Management practices on lands in annual crops, summerfallow and perennial crops (forage, specialty crops, orchards); immediate and residual emissions from lands converted to cropland
c. Grassland	– Managed agricultural grassland
d. Wetlands	– Peatlands disturbed for peat extraction, or land flooded from hydro reservoir development
e. Settlements	– Forest and grassland converted to built-up land (settlements, transport infrastructure, oil & gas infrastructure, mining, etc); urban tree growth
f. Harvested Wood Products	– Use and disposal of harvested wood products manufactured from wood coming from forest harvest and forest conversion activities in Canada

Table A11–2 GHG Emission Summary for Newfoundland and Labrador, Selected Years

Greenhouse Gas Categories	1990	2005	2011	2012	2013	2014	2015	2016
	kt CO_2 eq							
TOTAL	**9 320**	**9 890**	**9 960**	**9 410**	**9 380**	**10 400**	**10 600**	**10 800**
ENERGY	**8 600**	**9 050**	**9 020**	**8 470**	**8 460**	**9 470**	**9 660**	**9 820**
a. Stationary Combustion Sources	**5 550**	**4 780**	**4 490**	**4 190**	**4 600**	**5 130**	**5 030**	**5 050**
Public Electricity and Heat Production	1 640	819	790	769	867	1 210	1 340	1 520
Petroleum Refining Industries	1 000	950	830	1 000	960	910	910	1 000
Mining and Upstream Oil and Gas Production	1 160	1 900	1 860	1 620	1 760	1 870	1 730	1 420
Manufacturing Industries	506	276	146	79	72	40	49	52
Construction	33	24	15	9	6	7	18	5
Commercial and Institutional	320	358	263	203	544	630	599	572
Residential	828	443	573	470	390	453	378	445
Agriculture and Forestry	25	8	18	11	8	11	12	10
b. Transport[1]	**3 010**	**3 360**	**4 040**	**3 750**	**3 290**	**3 680**	**4 050**	**4 110**
Domestic Aviation	190	200	190	230	230	220	210	210
Road Transportation	1 520	2 100	2 710	2 710	2 470	2 820	3 030	3 040
Light-Duty Gasoline Vehicles	651	595	682	720	621	670	674	632
Light-Duty Gasoline Trucks	422	636	944	1 050	944	1 070	1 140	1 150
Heavy-Duty Gasoline Vehicles	82	101	162	206	192	205	220	229
Motorcycles	3	2	7	7	6	8	9	9
Light-Duty Diesel Vehicles	4	5	8	6	6	6	7	7
Light-Duty Diesel Trucks	2	6	6	4	4	5	8	10
Heavy-Duty Diesel Vehicles	358	756	902	718	695	846	971	1 000
Propane and Natural Gas Vehicles	0.05	0.03	0.00	0.00	0.00	0.00	0.00	0.00
Railways	-	-	-	-	-	-	-	-
Domestic Navigation	630	x	560	390	220	210	270	330
Other Transportation	670	x	590	430	370	440	550	540
Off-Road Agriculture & Forestry	25	34	29	20	17	19	25	22
Off-Road Commercial & Institutional	31	48	51	41	39	43	49	20
Off-Road Manufacturing, Mining & Construction	220	280	350	210	180	220	290	320
Off-Road Residential	7	25	x	x	x	27	29	29
Off-Road Other Transportation	380	150	130	130	110	130	150	150
Pipeline Transport	-	x	x	x	x	x	x	-
c. Fugitive Sources	**41**	**910**	**490**	**520**	**570**	**660**	**580**	**650**
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	41	910	490	520	570	660	580	650
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**98**	**168**	**262**	**216**	**234**	**210**	**220**	**248**
a. Mineral Products	**64**	**2**	**0.72**	**0.78**	**0.57**	**0.64**	**0.85**	**0.84**
Cement Production	60	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-
Mineral Products Use	4	2	0.72	0.78	0.57	0.64	0.85	0.84
b. Chemical Industry[2]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminum Production	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[3]	**-**	**81**	**140**	**150**	**150**	**160**	**180**	**200**
e. Non-Energy Products from Fuels and Solvent Use	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**
f. Other Product Manufacture and Use	**5**	**6**	**5**	**5**	**5**	**5**	**8**	**9**
AGRICULTURE	**55**	**66**	**110**	**140**	**100**	**98**	**92**	**88**
a. Enteric Fermentation	**23**	**31**	**32**	**31**	**32**	**32**	**32**	**30**
b. Manure Management	**17**	**20**	**25**	**25**	**26**	**26**	**26**	**26**
c. Agricultural Soils	**12**	**15**	**19**	**18**	**19**	**19**	**20**	**18**
Direct Sources	10	12	15	15	15	15	16	15
Indirect Sources	2	3	3	3	3	3	4	3
d. Field Burning of Agricultural Residues	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**3**	**-**	**40**	**70**	**30**	**20**	**10**	**10**
WASTE	**570**	**610**	**570**	**580**	**590**	**600**	**600**	**600**
a. Solid Waste Disposal	**520**	**570**	**540**	**550**	**560**	**560**	**570**	**570**
b. Biological Treatment of Solid Waste	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
c. Wastewater Treatment and Discharge	**42**	**38**	**31**	**31**	**31**	**31**	**31**	**31**
d. Incineration and Open Burning of Waste	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Notes:

1. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
2. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial/territorial tables.
3. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990–1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.

- Indicates no emissions

0.00 Indicates emissions truncated due to rounding

x Indicates data has been suppressed to respect confidentiality

Estimates for the latest year (2016) are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report

Table A11–3 2016 GHG Emission Summary for Newfoundland and Labrador

Greenhouse Gas Categories	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[4]	PFCs[4]	SF_6	NF_3	TOTAL
	Greenhouse Gases									
Global Warming Potential			25		298			22 800	17 200	
Unit	kt	kt	kt CO_2 eq	kt	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq
TOTAL	**9 500**	**36**	**910**	**0.47**	**140**	**200**	**0.03**	**4**	**-**	**10 800**
ENERGY	**9 440**	**11**	**280**	**0.30**	**90**	**-**	**-**	**-**	**-**	**9 820**
a. Stationary Combustion Sources	**4 830**	**7**	**200**	**0.10**	**40**	**-**	**-**	**-**	**-**	**5 050**
Public Electricity and Heat Production	1 500	0.03	0.65	0.03	9	-	-	-	-	1 520
Petroleum Refining Industries	1 000	0.03	0.80	0.02	5	-	-	-	-	1 000
Mining and Upstream Oil and Gas Production	1 350	2	59	0.04	10	-	-	-	-	1 420
Manufacturing Industries	51	0.00	0.03	0.00	0.35	-	-	-	-	52
Construction	5	0.00	0.00	0.00	0.02	-	-	-	-	5
Commercial and Institutional	568	0.01	0.15	0.01	3	-	-	-	-	572
Residential	317	4	100	0.05	20	-	-	-	-	445
Agriculture and Forestry	10	0.00	0.00	0.00	0.04	-	-	-	-	10
b. Transport[1]	**4 040**	**0.69**	**17**	**0.16**	**49**	**-**	**-**	**-**	**-**	**4 110**
Domestic Aviation	206	0.01	0.10	0.01	2	-	-	-	-	210
Road Transportation	2 990	0.20	5	0.13	39	-	-	-	-	3 040
Light-Duty Gasoline Vehicles	625	0.05	1	0.02	6	-	-	-	-	632
Light-Duty Gasoline Trucks	1 130	0.09	2	0.04	11	-	-	-	-	1 150
Heavy-Duty Gasoline Vehicles	224	0.01	0.18	0.02	6	-	-	-	-	229
Motorcycles	9	0.00	0.08	0.00	0.05	-	-	-	-	9
Light-Duty Diesel Vehicles	7	0.00	0.00	0.00	0.20	-	-	-	-	7
Light-Duty Diesel Trucks	9	0.00	0.01	0.00	0.20	-	-	-	-	10
Heavy-Duty Diesel Vehicles	984	0.04	1	0.05	20	-	-	-	-	1 000
Propane and Natural Gas Vehicles	0.00	0.00	0.00	0.00	0.00	-	-	-	-	0.00
Railways	-	-	-	-	-	-	-	-	-	-
Domestic Navigation	326	0.03	0.80	0.01	3	-	-	-	-	330
Other Transportation	518	0.50	10	0.02	5	-	-	-	-	540
Off-Road Agriculture & Forestry	21	0.00	0.03	0.00	0.30	-	-	-	-	22
Off-Road Commercial & Institutional	20	0.02	0.50	0.00	0.20	-	-	-	-	20
Off-Road Manufacturing, Mining & Construction	314	0.02	0.60	0.01	4	-	-	-	-	320
Off-Road Residential	27	0.05	1	0.00	0.20	-	-	-	-	29
Off-Road Other Transportation	136	0.40	9	0.00	0.90	-	-	-	-	150
Pipeline Transport	-	-	-	-	-	-	-	-	-	-
c. Fugitive Sources	**560**	**4**	**87**	**0.01**	**2**	**-**	**-**	**-**	**-**	**650**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	560	4	87	0.01	2	-	-	-	-	650
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**43**	**-**	**-**	**0.01**	**4**	**200**	**0.03**	**4**	**-**	**248**
a. Mineral Products	**0.84**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.84**
Cement Production	-	-	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-	-	-
Mineral Products Use	0.84	-	-	-	-	-	-	-	-	0.84
b. Chemical Industry[2]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
Aluminum Production	-	-	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[3]	**-**	**-**	**-**	**-**	**-**	**200**	**0.02**	**-**	**-**	**200**
e. Non-Energy Products from Fuels and Solvent Use	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**
f. Other Product Manufacture and Use	**0.60**	**-**	**-**	**0.02**	**4**	**-**	**0.01**	**4**	**-**	**9**
AGRICULTURE	**10**	**2**	**42**	**0.11**	**32**	**-**	**-**	**-**	**-**	**88**
a. Enteric Fermentation	**-**	**1**	**30**	**-**	**-**	**-**	**-**	**-**	**-**	**30**
b. Manure Management	**-**	**0.48**	**12**	**0.05**	**10**	**-**	**-**	**-**	**-**	**26**
c. Agricultural Soils	**-**	**-**	**-**	**0.06**	**18**	**-**	**-**	**-**	**-**	**18**
Direct Sources	-	-	-	0.05	15	-	-	-	-	15
Indirect Sources	-	-	-	0.01	3	-	-	-	-	3
d. Field Burning of Agricultural Residues	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**10**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**10**
WASTE	**-**	**24**	**590**	**0.03**	**10**	**-**	**-**	**-**	**-**	**600**
a. Solid Waste Disposal	**-**	**23**	**570**	**-**	**-**	**-**	**-**	**-**	**-**	**570**
b. Biological Treatment of Solid Waste	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
c. Wastewater Treatment and Discharge	**-**	**0.84**	**21**	**0.03**	**10**	**-**	**-**	**-**	**-**	**31**
d. Incineration and Open Burning of Waste	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Notes:

1. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
2. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial/territorial tables.
3. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990–1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.
4. IPCC's Fourth Assessment Report provides global warming potentials (GWPs) for the various species of HFCs and PFCs. Chapter 1, Table 1-1 of this report provides a list of GWPs used.

- Indicates no emissions

0.00 Indicates emissions truncated due to rounding

x Indicates data has been suppressed to respect confidentiality

Estimates for the latest year (2016) are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report

Table A11–4 GHG Emission Summary for Prince Edward Island, Selected Years

Greenhouse Gas Categories	1990	2005	2011	2012	2013	2014	2015	2016
	kt CO_2 eq							
TOTAL	**1 900**	**2 000**	**2 140**	**2 030**	**1 710**	**1 710**	**1 700**	**1 810**
ENERGY	**1 430**	**1 450**	**1 690**	**1 550**	**1 290**	**1 220**	**1 230**	**1 280**
a. Stationary Combustion Sources	**738**	**615**	**726**	**673**	**537**	**442**	**385**	**372**
Public Electricity and Heat Production	104	5	1	11	4	4	14	15
Petroleum Refining Industries	-	-	-	-	-	-	-	-
Mining and Upstream Oil and Gas Production	1	x	x	x	x	x	-	-
Manufacturing Industries	55	145	143	189	116	75	63	77
Construction	11	x	x	x	x	x	2	3
Commercial and Institutional	159	119	86	73	74	60	56	23
Residential	389	311	455	380	328	288	241	242
Agriculture and Forestry	19	24	30	17	13	12	10	11
b. Transport[1]	**692**	**835**	**960**	**881**	**749**	**779**	**846**	**911**
Domestic Aviation	18	14	17	19	20	19	19	20
Road Transportation	452	616	694	674	580	584	606	640
Light-Duty Gasoline Vehicles	225	240	237	232	199	192	193	203
Light-Duty Gasoline Trucks	122	224	252	255	219	215	219	243
Heavy-Duty Gasoline Vehicles	40	46	46	46	42	39	40	44
Motorcycles	1	1	2	2	1	1	1	2
Light-Duty Diesel Vehicles	1	2	3	3	2	2	3	3
Light-Duty Diesel Trucks	0.45	0.90	0.78	0.68	0.60	0.67	1	1
Heavy-Duty Diesel Vehicles	62	102	154	136	116	133	149	145
Propane and Natural Gas Vehicles	-	-	-	-	-	-	-	-
Railways	-	-	-	-	-	-	-	-
Domestic Navigation	80	89	130	x	63	85	120	140
Other Transportation	140	120	120	x	86	92	100	110
Off-Road Agriculture & Forestry	47	48	51	41	34	36	42	36
Off-Road Commercial & Institutional	5	9	11	9	9	9	9	8
Off-Road Manufacturing, Mining & Construction	14	15	18	15	13	14	17	26
Off-Road Residential	1	x	x	6	x	x	x	x
Off-Road Other Transportation	76	37	34	31	26	28	29	31
Pipeline Transport	-	x	x	x	x	x	x	x
c. Fugitive Sources	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**6**	**25**	**42**	**42**	**42**	**44**	**46**	**51**
a. Mineral Products	**0.34**	**0.91**	**0.58**	**0.66**	**0.63**	**0.75**	**0.75**	**0.74**
Cement Production	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-
Mineral Products Use	0.34	0.91	0.58	0.66	0.63	0.75	0.75	0.74
b. Chemical Industry[2]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminum Production	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[3]	**-**	**20**	**39**	**39**	**39**	**41**	**44**	**48**
e. Non-Energy Products from Fuels and Solvent Use	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**
f. Other Product Manufacture and Use	**1**	**2**	**1**	**1**	**1**	**1**	**1**	**1**
AGRICULTURE	**380**	**440**	**330**	**360**	**310**	**370**	**350**	**410**
a. Enteric Fermentation	**140**	**130**	**110**	**110**	**110**	**110**	**110**	**110**
b. Manure Management	**54**	**56**	**44**	**44**	**44**	**44**	**43**	**40**
c. Agricultural Soils	**180**	**240**	**180**	**200**	**150**	**210**	**200**	**260**
Direct Sources	150	200	150	170	130	180	170	220
Indirect Sources	30	40	30	30	20	30	30	40
d. Field Burning of Agricultural Residues	**0.09**	**0.20**	**0.10**	**0.20**	**0.20**	**0.20**	**0.20**	**0.20**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**5**	**5**	**3**	**2**	**2**	**2**	**3**	**3**
WASTE	**86**	**89**	**77**	**76**	**75**	**73**	**73**	**71**
a. Solid Waste Disposal	**68**	**66**	**56**	**54**	**53**	**52**	**51**	**50**
b. Biological Treatment of Solid Waste	**-**	**5**	**4**	**3**	**3**	**3**	**3**	**4**
c. Wastewater Treatment and Discharge	**7**	**9**	**9**	**9**	**9**	**9**	**9**	**9**
d. Incineration and Open Burning of Waste	**11**	**9**	**9**	**9**	**9**	**9**	**10**	**9**

Notes:

1. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
2. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial/territorial tables.
3. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990–1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.

- Indicates no emissions

0.00 Indicates emissions truncated due to rounding

x Indicates data has been suppressed to respect confidentiality

Estimates for the latest year (2016) are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report

Table A11–5 2016 GHG Emission Summary for Prince Edward Island

Greenhouse Gas Categories	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[4]	PFCs[4]	SF_6	NF_3	TOTAL
	Greenhouse Gases									
Global Warming Potential			25		298			22 800	17 200	
Unit	kt	kt	kt CO_2 eq	kt	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq
TOTAL	**1 240**	**9**	**220**	**1**	**300**	**48**	**0.01**	**-**	**-**	**1 810**
ENERGY	**1 230**	**2**	**39**	**0.06**	**20**	**-**	**-**	**-**	**-**	**1 280**
a. Stationary Combustion Sources	**331**	**1**	**30**	**0.02**	**6**	**-**	**-**	**-**	**-**	**372**
Public Electricity and Heat Production	15	0.00	0.01	0.00	0.08	-	-	-	-	15
Petroleum Refining Industries	-	-	-	-	-	-	-	-	-	-
Mining and Upstream Oil and Gas Production	-	-	-	-	-	-	-	-	-	-
Manufacturing Industries	77	0.00	0.04	0.00	0.44	-	-	-	-	77
Construction	3	0.00	0.00	0.00	0.01	-	-	-	-	3
Commercial and Institutional	23	0.00	0.01	0.00	0.20	-	-	-	-	23
Residential	202	1	30	0.02	5	-	-	-	-	242
Agriculture and Forestry	11	0.00	0.00	0.00	0.04	-	-	-	-	11
b. Transport[1]	**895**	**0.17**	**4**	**0.04**	**11**	**-**	**-**	**-**	**-**	**911**
Domestic Aviation	20	0.00	0.02	0.00	0.20	-	-	-	-	20
Road Transportation	630	0.05	1	0.03	9	-	-	-	-	640
Light-Duty Gasoline Vehicles	200	0.02	0.43	0.01	2	-	-	-	-	203
Light-Duty Gasoline Trucks	240	0.02	0.54	0.01	3	-	-	-	-	243
Heavy-Duty Gasoline Vehicles	43	0.00	0.04	0.00	1	-	-	-	-	44
Motorcycles	2	0.00	0.02	0.00	0.01	-	-	-	-	2
Light-Duty Diesel Vehicles	2	0.00	0.00	0.00	0.06	-	-	-	-	3
Light-Duty Diesel Trucks	1	0.00	0.00	0.00	0.03	-	-	-	-	1
Heavy-Duty Diesel Vehicles	143	0.01	0.20	0.01	2	-	-	-	-	145
Propane and Natural Gas Vehicles	-	-	-	-	-	-	-	-	-	-
Railways	-	-	-	-	-	-	-	-	-	-
Domestic Navigation	142	0.01	0.30	0.00	1	-	-	-	-	140
Other Transportation	103	0.10	3	0.00	0.90	-	-	-	-	110
Off-Road Agriculture & Forestry	36	0.00	0.04	0.00	0.30	-	-	-	-	36
Off-Road Commercial & Institutional	8	0.01	0.20	0.00	0.06	-	-	-	-	8
Off-Road Manufacturing, Mining & Construction	25	0.00	0.10	0.00	0.30	-	-	-	-	26
Off-Road Residential	x	x	x	x	x	x	x	x	x	x
Off-Road Other Transportation	29	0.09	2	0.00	0.20	-	-	-	-	31
Pipeline Transport	x	x	x	x	x	x	x	x	x	x
c. Fugitive Sources	**-**	**0.00**	**0.00**	**-**	**-**	**-**	**-**	**-**	**-**	**0.00**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	-	0.00	0.00	-	-	-	-	-	-	0.00
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**2**	**-**	**-**	**0.00**	**1**	**48**	**0.01**	**-**	**-**	**51**
a. Mineral Products	**0.74**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.74**
Cement Production	-	-	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-	-	-
Mineral Products Use	0.74	-	-	-	-	-	-	-	-	0.74
b. Chemical Industry[2]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
Aluminum Production	-	-	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[3]	**-**	**-**	**-**	**-**	**-**	**48**	**0.00**	**-**	**-**	**48**
e. Non-Energy Products from Fuels and Solvent Use	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**
f. Other Product Manufacture and Use	**0.09**	**-**	**-**	**0.00**	**1**	**-**	**0.00**	**-**	**-**	**1**
AGRICULTURE	**3**	**5**	**130**	**0.94**	**280**	**-**	**-**	**-**	**-**	**410**
a. Enteric Fermentation	**-**	**4**	**110**	**-**	**-**	**-**	**-**	**-**	**-**	**110**
b. Manure Management	**-**	**0.73**	**18**	**0.07**	**20**	**-**	**-**	**-**	**-**	**40**
c. Agricultural Soils	**-**	**-**	**-**	**0.86**	**260**	**-**	**-**	**-**	**-**	**260**
Direct Sources	-	-	-	0.73	220	-	-	-	-	220
Indirect Sources	-	-	-	0.10	40	-	-	-	-	40
d. Field Burning of Agricultural Residues	**-**	**0.01**	**0.10**	**0.00**	**0.04**	**-**	**-**	**-**	**-**	**0.20**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**
WASTE	**8**	**2**	**58**	**0.02**	**5**	**-**	**-**	**-**	**-**	**71**
a. Solid Waste Disposal	**-**	**2**	**50**	**-**	**-**	**-**	**-**	**-**	**-**	**50**
b. Biological Treatment of Solid Waste	**-**	**0.08**	**2**	**0.01**	**1**	**-**	**-**	**-**	**-**	**4**
c. Wastewater Treatment and Discharge	**-**	**0.25**	**6**	**0.01**	**3**	**-**	**-**	**-**	**-**	**9**
d. Incineration and Open Burning of Waste	**8**	**0.00**	**0.00**	**0.00**	**1**	**-**	**-**	**-**	**-**	**9**

Notes:

1. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
2. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial/territorial tables.
3. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990–1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.
4. IPCC's Fourth Assessment Report provides global warming potentials (GWPs) for the various species of HFCs and PFCs. Chapter 1, Table 1-1 of this report provides a list of GWPs used.

- Indicates no emissions

0.00 Indicates emissions truncated due to rounding

x Indicates data has been suppressed to respect confidentiality

Estimates for the latest year (2016) are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report

Table A11–6 GHG Emission Summary for Nova Scotia, Selected Years

Greenhouse Gas Categories	1990	2005	2011	2012	2013	2014	2015	2016
	kt CO_2 eq							
TOTAL	**19 600**	**23 200**	**20 900**	**19 200**	**18 200**	**16 400**	**16 600**	**15 600**
ENERGY	**18 100**	**21 700**	**19 400**	**17 700**	**16 700**	**15 000**	**15 200**	**14 200**
a. Stationary Combustion Sources	**11 600**	**15 500**	**13 500**	**12 200**	**11 600**	**10 400**	**10 100**	**9 190**
Public Electricity and Heat Production	6 900	10 700	8 450	7 620	7 530	7 200	6 970	6 580
Petroleum Refining Industries	620	1 100	760	930	820	x	x	x
Mining and Upstream Oil and Gas Production	85	340	644	542	542	734	570	420
Manufacturing Industries	776	555	541	528	416	415	399	369
Construction	50	49	24	21	10	x	x	x
Commercial and Institutional	797	1 250	913	648	616	545	651	548
Residential	2 230	1 410	2 030	1 790	1 590	1 460	1 480	1 250
Agriculture and Forestry	104	96	109	70	38	33	28	24
b. Transport[1]	**4 850**	**5 940**	**5 780**	**5 390**	**4 950**	**4 510**	**5 020**	**4 950**
Domestic Aviation	290	270	220	240	250	240	240	240
Road Transportation	2 990	4 060	4 250	4 090	3 750	3 370	3 860	3 850
Light-Duty Gasoline Vehicles	1 420	1 330	1 260	1 270	1 080	955	1 170	1 180
Light-Duty Gasoline Trucks	704	1 170	1 260	1 290	1 120	1 010	1 290	1 370
Heavy-Duty Gasoline Vehicles	158	233	268	281	251	220	267	283
Motorcycles	5	5	8	9	7	7	9	10
Light-Duty Diesel Vehicles	29	42	50	43	47	44	44	37
Light-Duty Diesel Trucks	6	9	9	7	8	8	12	12
Heavy-Duty Diesel Vehicles	664	1 260	1 390	1 190	1 240	1 120	1 070	961
Propane and Natural Gas Vehicles	4	3	0.02	0.02	0.01	0.00	0.00	0.00
Railways	66	110	170	130	100	x	x	x
Domestic Navigation	570	820	490	380	310	x	x	x
Other Transportation	920	680	650	550	530	530	600	580
Off-Road Agriculture & Forestry	86	90	82	63	65	60	63	50
Off-Road Commercial & Institutional	43	65	71	61	63	67	74	63
Off-Road Manufacturing, Mining & Construction	230	230	250	190	200	190	210	210
Off-Road Residential	9	38	39	37	32	31	37	x
Off-Road Other Transportation	560	220	200	190	170	170	210	220
Pipeline Transport	-	35	3	4	4	9	6	x
c. Fugitive Sources	**1 700**	**230**	**190**	**180**	**160**	**79**	**53**	**48**
Coal Mining	2 000	100	80	80	80	1	1	-
Oil and Natural Gas	51	130	110	95	78	79	52	48
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**331**	**492**	**572**	**572**	**634**	**492**	**525**	**546**
a. Mineral Products	**180**	**250**	**200**	**210**	**200**	**190**	**210**	**210**
Cement Production	180	250	190	210	190	190	200	200
Lime Production	-	-	-	-	-	-	-	-
Mineral Products Use	4	3	4	3	4	4	8	8
b. Chemical Industry[2]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminum Production	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[3]	**-**	**140**	**220**	**230**	**230**	**240**	**260**	**290**
e. Non-Energy Products from Fuels and Solvent Use	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**
f. Other Product Manufacture and Use	**29**	**40**	**40**	**29**	**46**	**40**	**40**	**37**
AGRICULTURE	**480**	**460**	**420**	**420**	**430**	**440**	**430**	**430**
a. Enteric Fermentation	**230**	**210**	**180**	**180**	**180**	**180**	**180**	**170**
b. Manure Management	**95**	**110**	**110**	**110**	**110**	**110**	**110**	**110**
c. Agricultural Soils	**120**	**130**	**120**	**120**	**110**	**120**	**120**	**130**
Direct Sources	97	100	96	100	93	100	99	110
Indirect Sources	20	20	20	20	20	20	20	20
d. Field Burning of Agricultural Residues	**0.03**	**0.10**	**0.06**	**0.04**	**0.04**	**0.02**	**0.02**	**0.02**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**40**	**10**	**10**	**20**	**20**	**20**	**10**	**20**
WASTE	**720**	**560**	**460**	**460**	**470**	**480**	**430**	**430**
a. Solid Waste Disposal	**640**	**460**	**370**	**370**	**380**	**390**	**340**	**340**
b. Biological Treatment of Solid Waste	**-**	**20**	**20**	**20**	**30**	**30**	**30**	**30**
c. Wastewater Treatment and Discharge	**57**	**60**	**46**	**46**	**46**	**45**	**45**	**46**
d. Incineration and Open Burning of Waste	**27**	**16**	**19**	**20**	**19**	**18**	**18**	**21**

Notes:

1. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
2. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial/territorial tables.
3. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990–1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.

- Indicates no emissions

0.00 Indicates emissions truncated due to rounding

x Indicates data has been suppressed to respect confidentiality

Estimates for the latest year (2016) are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report

Table A11–7 2016 GHG Emission Summary for Nova Scotia

Greenhouse Gas Categories	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[4]	PFCs[4]	SF_6	NF_3	TOTAL
	Greenhouse Gases									
Global Warming Potential			25		298			22 800	17 200	
Unit	kt	kt	kt CO_2 eq	kt	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq
TOTAL	**14 000**	**35**	**880**	**1**	**370**	**290**	**0.17**	**28**	**-**	**15 600**
ENERGY	**13 800**	**11**	**290**	**0.50**	**100**	**-**	**-**	**-**	**-**	**14 200**
a. Stationary Combustion Sources	**8 900**	**9**	**200**	**0.20**	**70**	**-**	**-**	**-**	**-**	**9 190**
Public Electricity and Heat Production	6 500	0.23	6	0.09	26	-	-	-	-	6 580
Petroleum Refining Industries	x	x	x	x	x	x	x	x	x	x
Mining and Upstream Oil and Gas Production	392	0.99	25	0.01	3	-	-	-	-	420
Manufacturing Industries	359	0.04	0.91	0.03	9	-	-	-	-	369
Construction	x	x	x	x	x	x	x	x	x	x
Commercial and Institutional	544	0.01	0.21	0.01	4	-	-	-	-	548
Residential	1 030	8	200	0.10	30	-	-	-	-	1 250
Agriculture and Forestry	24	0.00	0.01	0.00	0.10	-	-	-	-	24
b. Transport[1]	**4 850**	**1**	**28**	**0.23**	**70**	**-**	**-**	**-**	**-**	**4 950**
Domestic Aviation	235	0.01	0.10	0.01	2	-	-	-	-	240
Road Transportation	3 790	0.30	6	0.16	49	-	-	-	-	3 850
Light-Duty Gasoline Vehicles	1 160	0.09	2	0.04	11	-	-	-	-	1 180
Light-Duty Gasoline Trucks	1 350	0.11	3	0.05	14	-	-	-	-	1 370
Heavy-Duty Gasoline Vehicles	275	0.01	0.23	0.02	7	-	-	-	-	283
Motorcycles	10	0.00	0.09	0.00	0.05	-	-	-	-	10
Light-Duty Diesel Vehicles	36	0.00	0.02	0.00	0.90	-	-	-	-	37
Light-Duty Diesel Trucks	12	0.00	0.01	0.00	0.30	-	-	-	-	12
Heavy-Duty Diesel Vehicles	945	0.04	1	0.05	20	-	-	-	-	961
Propane and Natural Gas Vehicles	0.00	0.00	0.00	0.00	0.00	-	-	-	-	0.00
Railways	x	x	x	x	x	x	x	x	x	x
Domestic Navigation	x	x	x	x	x	x	x	x	x	x
Other Transportation	559	0.80	20	0.02	5	-	-	-	-	580
Off-Road Agriculture & Forestry	49	0.00	0.08	0.00	0.60	-	-	-	-	50
Off-Road Commercial & Institutional	60	0.10	3	0.00	0.50	-	-	-	-	63
Off-Road Manufacturing, Mining & Construction	203	0.03	0.70	0.01	2	-	-	-	-	210
Off-Road Residential	x	x	x	x	x	x	x	x	x	x
Off-Road Other Transportation	204	0.60	20	0.00	1	-	-	-	-	220
Pipeline Transport	x	x	x	x	x	x	x	x	x	x
c. Fugitive Sources	**15**	**1**	**33**	**0.00**	**0.01**	**-**	**-**	**-**	**-**	**48**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	15	1	33	0.00	0.01	-	-	-	-	48
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**223**	**-**	**-**	**0.03**	**8**	**290**	**0.17**	**28**	**-**	**546**
a. Mineral Products	**210**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**210**
Cement Production	200	-	-	-	-	-	-	-	-	200
Lime Production	-	-	-	-	-	-	-	-	-	-
Mineral Products Use	8	-	-	-	-	-	-	-	-	8
b. Chemical Industry[2]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
Aluminum Production	-	-	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[3]	**-**	**-**	**-**	**-**	**-**	**290**	**0.03**	**-**	**-**	**290**
e. Non-Energy Products from Fuels and Solvent Use	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**
f. Other Product Manufacture and Use	**0.60**	**-**	**-**	**0.03**	**8**	**-**	**0.14**	**28**	**-**	**37**
AGRICULTURE	**20**	**9**	**220**	**0.64**	**190**	**-**	**-**	**-**	**-**	**430**
a. Enteric Fermentation	**-**	**7**	**170**	**-**	**-**	**-**	**-**	**-**	**-**	**170**
b. Manure Management	**-**	**2**	**48**	**0.20**	**60**	**-**	**-**	**-**	**-**	**110**
c. Agricultural Soils	**-**	**-**	**-**	**0.44**	**130**	**-**	**-**	**-**	**-**	**130**
Direct Sources	-	-	-	0.36	110	-	-	-	-	110
Indirect Sources	-	-	-	0.07	20	-	-	-	-	20
d. Field Burning of Agricultural Residues	**-**	**0.00**	**0.01**	**0.00**	**0.00**	**-**	**-**	**-**	**-**	**0.02**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**20**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**20**
WASTE	**19**	**15**	**380**	**0.10**	**31**	**-**	**-**	**-**	**-**	**430**
a. Solid Waste Disposal	**-**	**13**	**340**	**-**	**-**	**-**	**-**	**-**	**-**	**340**
b. Biological Treatment of Solid Waste	**-**	**0.60**	**20**	**0.04**	**10**	**-**	**-**	**-**	**-**	**30**
c. Wastewater Treatment and Discharge	**-**	**1**	**28**	**0.06**	**20**	**-**	**-**	**-**	**-**	**46**
d. Incineration and Open Burning of Waste	**19**	**-**	**-**	**0.01**	**3**	**-**	**-**	**-**	**-**	**21**

Notes:

1. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
2. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial/territorial tables.
3. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990–1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.
4. IPCC's Fourth Assessment Report provides global warming potentials (GWPs) for the various species of HFCs and PFCs. Chapter 1, Table 1-1 of this report provides a list of GWPs used.

- Indicates no emissions

0.00 Indicates emissions truncated due to rounding

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Estimates for the latest year (2016) are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report

Table A11–8 GHG Emission Summary for New Brunswick, Selected Years

Greenhouse Gas Categories	1990	2005	2011	2012	2013	2014	2015	2016
	kt CO_2 eq							
TOTAL	**16 100**	**20 100**	**18 700**	**16 800**	**14 800**	**14 400**	**14 300**	**15 300**
ENERGY	**14 900**	**18 600**	**16 700**	**14 700**	**12 900**	**12 900**	**12 700**	**13 700**
a. Stationary Combustion Sources	**10 800**	**13 200**	**10 600**	**9 440**	**8 600**	**8 890**	**8 470**	**9 040**
Public Electricity and Heat Production	6 020	8 060	4 920	4 060	4 190	4 390	3 950	4 920
Petroleum Refining Industries	1 200	2 300	2 600	2 500	2 500	x	x	x
Mining and Upstream Oil and Gas Production	126	161	275	221	129	x	x	x
Manufacturing Industries	1 640	1 170	846	841	850	684	764	609
Construction	69	6	19	14	9	10	28	17
Commercial and Institutional	580	602	783	833	320	403	428	385
Residential	1 160	834	983	864	570	617	747	685
Agriculture and Forestry	53	33	117	86	57	60	25	31
b. Transport[1]	**4 060**	**5 210**	**5 930**	**5 050**	**4 110**	**3 820**	**4 090**	**4 440**
Domestic Aviation	140	130	88	100	110	110	110	100
Road Transportation	2 220	3 560	4 200	3 750	3 060	2 770	3 060	3 380
Light-Duty Gasoline Vehicles	904	1 020	1 040	998	817	705	838	929
Light-Duty Gasoline Trucks	517	972	1 210	1 200	997	881	1 080	1 270
Heavy-Duty Gasoline Vehicles	121	194	258	260	215	179	212	247
Motorcycles	3	6	8	9	7	7	8	10
Light-Duty Diesel Vehicles	15	22	27	20	16	16	16	15
Light-Duty Diesel Trucks	6	10	9	6	4	4	6	7
Heavy-Duty Diesel Vehicles	649	1 340	1 650	1 260	1 010	974	891	901
Propane and Natural Gas Vehicles	0.67	0.15	0.00	0.00	0.00	-	0.00	0.00
Railways	130	280	x	270	200	x	x	x
Domestic Navigation	240	380	490	330	240	250	210	190
Other Transportation	1 300	860	x	590	490	x	x	x
Off-Road Agriculture & Forestry	120	170	170	120	95	96	98	86
Off-Road Commercial & Institutional	30	54	66	52	47	45	47	47
Off-Road Manufacturing, Mining & Construction	150	190	230	160	130	130	140	160
Off-Road Residential	5	x	31	x	x	22	25	32
Off-Road Other Transportation	1 000	420	250	240	200	200	240	270
Pipeline Transport	-	x	x	x	x	-	-	x
c. Fugitive Sources	**60**	**220**	**200**	**200**	**190**	**160**	**180**	**190**
Coal Mining	1	0.30	-	-	-	-	-	-
Oil and Natural Gas	60	220	200	200	190	160	180	190
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**188**	**378**	**994**	**1 080**	**910**	**439**	**530**	**567**
a. Mineral Products	**91**	**97**	**56**	**57**	**54**	**58**	**55**	**53**
Cement Production	-	-	-	-	-	-	-	-
Lime Production	80	89	53	53	50	54	50	49
Mineral Products Use	11	8	3	3	4	4	4	4
b. Chemical Industry[2]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminum Production	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[3]	**-**	**120**	**210**	**220**	**210**	**210**	**230**	**250**
e. Non-Energy Products from Fuels and Solvent Use	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**
f. Other Product Manufacture and Use	**5**	**8**	**6**	**6**	**7**	**6**	**7**	**8**
AGRICULTURE	**490**	**540**	**450**	**490**	**480**	**510**	**470**	**510**
a. Enteric Fermentation	**200**	**180**	**160**	**160**	**160**	**160**	**160**	**150**
b. Manure Management	**65**	**79**	**68**	**68**	**69**	**68**	**67**	**62**
c. Agricultural Soils	**160**	**220**	**160**	**190**	**150**	**190**	**180**	**230**
Direct Sources	140	190	140	160	120	160	160	200
Indirect Sources	30	40	30	30	20	30	30	30
d. Field Burning of Agricultural Residues	**0.03**	**0.02**	**0.01**	**0.02**	**0.02**	**0.03**	**0.03**	**0.03**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**70**	**50**	**60**	**80**	**100**	**90**	**60**	**60**
WASTE	**540**	**610**	**530**	**550**	**560**	**540**	**540**	**540**
a. Solid Waste Disposal	**500**	**560**	**480**	**500**	**500**	**490**	**490**	**490**
b. Biological Treatment of Solid Waste	**6**	**20**	**20**	**20**	**20**	**20**	**20**	**20**
c. Wastewater Treatment and Discharge	**32**	**34**	**34**	**35**	**34**	**34**	**34**	**34**
d. Incineration and Open Burning of Waste	**-**	**0.59**	**1**	**1**	**1**	**1**	**0.20**	**-**

Notes:

1. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
2. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial/territorial tables.
3. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990–1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.

- Indicates no emissions

0.00 Indicates emissions truncated due to rounding

x Indicates data has been suppressed to respect confidentiality

Estimates for the latest year (2016) are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report

Table A11–9 2016 GHG Emission Summary for New Brunswick

Greenhouse Gas Categories	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[4]	PFCs[4]	SF_6	NF_3	TOTAL
	Greenhouse Gases									
Global Warming Potential			25		298			22 800	17 200	
Unit	kt	kt	kt CO_2 eq	kt	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq
TOTAL	**13 700**	**35**	**890**	**2**	**440**	**250**	**0.06**	**0.59**	-	**15 300**
ENERGY	**13 300**	**8**	**190**	**0.50**	**100**	-	-	-	-	**13 700**
a. Stationary Combustion Sources	**8 840**	**5**	**100**	**0.20**	**70**	-	-	-	-	**9 040**
Public Electricity and Heat Production	4 900	0.32	8	0.07	21	-	-	-	-	4 920
Petroleum Refining Industries	x	x	x	x	x	x	x	x	x	x
Mining and Upstream Oil and Gas Production	x	x	x	x	x	x	x	x	x	x
Manufacturing Industries	582	0.10	3	0.08	25	-	-	-	-	609
Construction	16	0	0	0	0.06	-	-	-	-	17
Commercial and Institutional	382	0.01	0.15	0.01	3	-	-	-	-	385
Residential	549	5	100	0.06	20	-	-	-	-	685
Agriculture and Forestry	31	0	0.01	0	0.10	-	-	-	-	31
b. Transport[1]	**4 340**	**1**	**29**	**0.24**	**72**	-	-	-	-	**4 440**
Domestic Aviation	102	0.01	0.20	0.00	1	-	-	-	-	100
Road Transportation	3 330	0.20	6	0.16	48	-	-	-	-	3 380
Light-Duty Gasoline Vehicles	916	0.08	2	0.04	11	-	-	-	-	929
Light-Duty Gasoline Trucks	1 250	0.11	3	0.05	15	-	-	-	-	1 270
Heavy-Duty Gasoline Vehicles	241	0.01	0.21	0.02	6	-	-	-	-	247
Motorcycles	10	0.00	0.09	0.00	0.05	-	-	-	-	10
Light-Duty Diesel Vehicles	15	0.00	0.01	0.00	0.40	-	-	-	-	15
Light-Duty Diesel Trucks	7	0.00	0.00	0.00	0.20	-	-	-	-	7
Heavy-Duty Diesel Vehicles	886	0.04	0.90	0.05	10	-	-	-	-	901
Propane and Natural Gas Vehicles	0.00	0.00	0.00	0.00	0.00	-	-	-	-	0.00
Railways	x	x	x	x	x	x	x	x	x	x
Domestic Navigation	190	0.02	0.40	0.01	2.00	-	-	-	-	190
Other Transportation	x	x	x	x	x	x	x	x	x	x
Off-Road Agriculture & Forestry	85	0.01	0.20	0.00	1	-	-	-	-	86
Off-Road Commercial & Institutional	45	0.06	1	0.00	0.40	-	-	-	-	47
Off-Road Manufacturing, Mining & Construction	153	0.02	0.60	0.01	2	-	-	-	-	160
Off-Road Residential	30	0.07	2	0.00	0.20	-	-	-	-	32
Off-Road Other Transportation	252	0.70	20	0.01	2	-	-	-	-	270
Pipeline Transport	x	x	x	x	x	x	x	x	x	x
c. Fugitive Sources	**160**	**1**	**28**	**0.01**	**4**	-	-	-	-	**190**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	160	1	28	0.01	4	-	-	-	-	190
d. CO_2 Transport and Storage	-	-	-	-	-	-	-	-	-	-
INDUSTRIAL PROCESSES AND PRODUCT USE	**305**	-	-	**0.02**	**6**	**250**	**0.06**	**0.59**	-	**567**
a. Mineral Products	**53**	-	-	-	-	-	-	-	-	**53**
Cement Production	-	-	-	-	-	-	-	-	-	-
Lime Production	49	-	-	-	-	-	-	-	-	49
Mineral Products Use	4	-	-	-	-	-	-	-	-	4
b. Chemical Industry[2]	-	-	-	-	-	-	-	-	-	-
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	-	-	-	-	-	-	-	-	-	-
Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
Aluminum Production	-	-	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[3]	-	-	-	-	-	**250**	**0.03**	-	-	**250**
e. Non-Energy Products from Fuels and Solvent Use	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**
f. Other Product Manufacture and Use	**0.50**	-	-	**0.02**	**6**	-	**0.04**	**0.59**	-	**8**
AGRICULTURE	**60**	**7**	**180**	**0.90**	**270**	-	-	-	-	**510**
a. Enteric Fermentation	-	**6**	**150**	-	-	-	-	-	-	**150**
b. Manure Management	-	**1**	**30**	**0.10**	**30**	-	-	-	-	**62**
c. Agricultural Soils	-	-	-	**0.79**	**230**	-	-	-	-	**230**
Direct Sources	-	-	-	0.67	200	-	-	-	-	200
Indirect Sources	-	-	-	0.10	30	-	-	-	-	30
d. Field Burning of Agricultural Residues	-	**0.00**	**0.02**	**0.00**	**0.01**	-	-	-	-	**0.03**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**60**	-	-	-	-	-	-	-	-	**60**
WASTE	-	**21**	**520**	**0.07**	**21**	-	-	-	-	**540**
a. Solid Waste Disposal	-	**20**	**490**	-	-	-	-	-	-	**490**
b. Biological Treatment of Solid Waste	-	**0.40**	**9**	**0.02**	**7**	-	-	-	-	**20**
c. Wastewater Treatment and Discharge	-	**0.79**	**20**	**0.05**	**10**	-	-	-	-	**34**
d. Incineration and Open Burning of Waste	-	-	-	-	-	-	-	-	-	-

Notes:

1. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
2. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial/territorial tables.
3. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990–1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.
4. IPCC's Fourth Assessment Report provides global warming potentials (GWPs) for the various species of HFCs and PFCs. Chapter 1, Table 1-1 of this report provides a list of GWPs used.

- Indicates no emissions

0.00 Indicates emissions truncated due to rounding

x Indicates data has been suppressed to respect confidentiality

Estimates for the latest year (2016) are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report

Table A11–10 GHG Emission Summary for Quebec, Selected Years

Greenhouse Gas Categories	1990	2005	2011	2012	2013	2014	2015	2016
	kt CO_2 eq							
TOTAL	**86 600**	**86 500**	**81 700**	**79 500**	**79 900**	**78 000**	**78 400**	**77 300**
ENERGY	**59 500**	**61 400**	**58 900**	**57 700**	**57 400**	**55 500**	**56 400**	**55 300**
a. Stationary Combustion Sources	**31 400**	**27 400**	**22 700**	**22 300**	**22 400**	**22 300**	**22 500**	**21 200**
Public Electricity and Heat Production	1 500	622	404	488	371	248	208	237
Petroleum Refining Industries	3 500	3 700	2 400	2 300	2 100	2 000	2 200	1 900
Mining and Upstream Oil and Gas Production	824	319	487	1 120	1 080	722	570	648
Manufacturing Industries	12 300	10 000	8 890	9 000	9 350	9 260	9 440	8 320
Construction	458	314	347	369	367	374	351	345
Commercial and Institutional	4 240	5 370	4 980	4 080	4 190	4 700	4 850	4 670
Residential	8 290	6 680	4 770	4 480	4 440	4 500	4 450	4 600
Agriculture and Forestry	291	367	462	477	480	469	484	495
b. Transport[1]	**27 700**	**33 600**	**35 800**	**35 100**	**34 700**	**32 900**	**33 500**	**33 800**
Domestic Aviation	820	750	630	740	730	680	670	700
Road Transportation	17 800	26 100	28 100	28 100	27 700	26 300	26 700	27 000
Light-Duty Gasoline Vehicles	10 400	10 700	10 100	9 680	9 540	9 040	9 100	9 050
Light-Duty Gasoline Trucks	3 490	6 850	7 490	7 390	7 400	7 210	7 470	7 830
Heavy-Duty Gasoline Vehicles	766	1 600	1 890	2 010	2 020	1 780	1 780	1 870
Motorcycles	16	71	72	72	71	65	67	70
Light-Duty Diesel Vehicles	210	151	205	188	191	196	204	190
Light-Duty Diesel Trucks	57	69	108	93	98	121	155	180
Heavy-Duty Diesel Vehicles	2 820	6 680	8 220	8 630	8 370	7 880	7 890	7 860
Propane and Natural Gas Vehicles	2	0.99	0.05	0.05	0.04	0.22	0.20	0.17
Railways	570	710	890	930	870	780	680	670
Domestic Navigation	1 400	1 300	950	800	900	740	720	740
Other Transportation	7 200	4 700	5 300	4 600	4 500	4 500	4 800	4 600
Off-Road Agriculture & Forestry	1 000	780	970	790	740	690	740	660
Off-Road Commercial & Institutional	360	450	600	520	550	570	580	680
Off-Road Manufacturing, Mining & Construction	2 000	1 600	2 300	1 800	1 800	1 700	1 900	1 800
Off-Road Residential	61	260	290	270	250	240	x	210
Off-Road Other Transportation	3 700	1 300	1 100	970	930	920	1 000	1 000
Pipeline Transport	26	338	152	201	268	360	x	189
c. Fugitive Sources	**430**	**390**	**290**	**280**	**270**	**270**	**290**	**310**
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	430	390	290	280	270	270	290	310
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**14 800**	**12 600**	**12 000**	**11 000**	**11 500**	**11 100**	**10 100**	**9 970**
a. Mineral Products	**1 900**	**2 100**	**1 800**	**1 900**	**1 700**	**1 800**	**1 800**	**1 800**
Cement Production	1 400	1 300	1 200	1 400	1 200	1 200	1 300	1 300
Lime Production	284	482	455	461	435	469	436	424
Mineral Products Use	210	260	87	88	71	71	75	70
b. Chemical Industry[2]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**10 900**	**7 560**	**6 010**	**5 630**	**5 830**	**5 330**	**5 290**	**5 180**
Iron and Steel Production	-	-	37	32	31	28	27	27
Aluminum Production	8 660	7 460	5 960	5 580	5 780	5 280	5 240	5 130
SF_6 Used in Magnesium Smelters and Casters	2 280	103	13	16	22	23	23	25
d. Production and Consumption of Halocarbons, SF_6 and NF_3[3]	**2**	**1 100**	**1 700**	**1 800**	**1 900**	**2 000**	**2 100**	**2 300**
e. Non-Energy Products from Fuels and Solvent Use	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**
f. Other Product Manufacture and Use	**80**	**120**	**92**	**130**	**130**	**81**	**140**	**150**
AGRICULTURE	**7 100**	**7 600**	**7 500**	**7 900**	**7 700**	**7 700**	**7 900**	**8 000**
a. Enteric Fermentation	**3 100**	**3 100**	**2 800**	**2 700**	**2 700**	**2 700**	**2 700**	**2 700**
b. Manure Management	**1 300**	**1 700**	**1 700**	**1 700**	**1 700**	**1 700**	**1 700**	**1 700**
c. Agricultural Soils	**2 500**	**2 600**	**2 800**	**3 200**	**3 000**	**3 100**	**3 300**	**3 400**
Direct Sources	2 100	2 200	2 400	2 700	2 600	2 600	2 800	2 900
Indirect Sources	400	400	400	500	400	400	500	500
d. Field Burning of Agricultural Residues	**0.40**	**0.30**	**0.20**	**0.20**	**0.20**	**0.20**	**0.20**	**0.20**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**200**	**200**	**200**	**300**	**300**	**300**	**200**	**200**
WASTE	**5 300**	**4 800**	**3 300**	**3 000**	**3 300**	**3 600**	**3 900**	**4 000**
a. Solid Waste Disposal	**4 600**	**4 300**	**2 700**	**2 500**	**2 800**	**3 100**	**3 500**	**3 500**
b. Biological Treatment of Solid Waste	**-**	**50**	**50**	**70**	**70**	**70**	**70**	**70**
c. Wastewater Treatment and Discharge	**300**	**260**	**280**	**280**	**280**	**280**	**280**	**280**
d. Incineration and Open Burning of Waste	**360**	**270**	**260**	**120**	**120**	**130**	**130**	**130**

Notes:

1. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
2. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial/territorial tables.
3. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990–1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.

- Indicates no emissions

0.00 Indicates emissions truncated due to rounding

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Estimates for the latest year (2016) are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report

Table A11–11 **2016 GHG Emission Summary for Quebec**

Greenhouse Gas Categories	Greenhouse Gases									
	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[4]	PFCs[4]	SF_6	NF_3	TOTAL
Global Warming Potential			25		298			22 800	17 200	
Unit	kt	kt	kt CO_2 eq	kt	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq
TOTAL	**59 900**	**370**	**9 300**	**17**	**5 100**	**2 300**	**590**	**110**	**0.20**	**77 300**
ENERGY	**52 700**	**70**	**1 800**	**3**	**900**	**-**	**-**	**-**	**-**	**55 300**
a. Stationary Combustion Sources	**19 300**	**60**	**2 000**	**1**	**400**	**-**	**-**	**-**	**-**	**21 200**
Public Electricity and Heat Production	230	0.01	0.16	0.02	5	-	-	-	-	237
Petroleum Refining Industries	1 900	0.04	1	0.02	5	-	-	-	-	1 900
Mining and Upstream Oil and Gas Production	644	0.02	0.58	0.01	4	-	-	-	-	648
Manufacturing Industries	8 200	0.54	14	0.37	110	-	-	-	-	8 320
Construction	342	0.01	0.16	0.01	2	-	-	-	-	345
Commercial and Institutional	4 640	0.09	2	0.10	30	-	-	-	-	4 670
Residential	2 870	60	1 000	0.80	200	-	-	-	-	4 600
Agriculture and Forestry	487	0.01	0.19	0.02	7	-	-	-	-	495
b. Transport[1]	**33 100**	**6**	**160**	**2**	**500**	**-**	**-**	**-**	**-**	**33 800**
Domestic Aviation	689	0.03	0.80	0.02	6	-	-	-	-	700
Road Transportation	26 600	2	50	1	370	-	-	-	-	27 000
Light-Duty Gasoline Vehicles	8 930	0.76	19	0.34	100	-	-	-	-	9 050
Light-Duty Gasoline Trucks	7 720	0.66	17	0.29	85	-	-	-	-	7 830
Heavy-Duty Gasoline Vehicles	1 820	0.06	2	0.16	48	-	-	-	-	1 870
Motorcycles	69	0.03	0.65	0.00	0.38	-	-	-	-	70
Light-Duty Diesel Vehicles	185	0.00	0.09	0.02	5	-	-	-	-	190
Light-Duty Diesel Trucks	175	0.01	0.10	0.01	4	-	-	-	-	180
Heavy-Duty Diesel Vehicles	7 720	0.30	8	0.40	100	-	-	-	-	7 860
Propane and Natural Gas Vehicles	0.17	0.00	0.00	0.00	0.00	-	-	-	-	0.17
Railways	602	0.03	0.90	0.20	70	-	-	-	-	670
Domestic Navigation	732	0.07	2	0.02	6	-	-	-	-	740
Other Transportation	4 460	4	100	0.20	50	-	-	-	-	4 600
Off-Road Agriculture & Forestry	655	0.03	0.80	0.02	7	-	-	-	-	660
Off-Road Commercial & Institutional	648	0.90	20	0.02	6	-	-	-	-	680
Off-Road Manufacturing, Mining & Construction	1 810	0.30	6	0.08	20	-	-	-	-	1 800
Off-Road Residential	202	0.40	10	0.01	2	-	-	-	-	210
Off-Road Other Transportation	961	2	60	0.02	7	-	-	-	-	1 000
Pipeline Transport	183	0.18	5	0.01	1	-	-	-	-	189
c. Fugitive Sources	**210**	**4**	**92**	**0.02**	**6**	**-**	**-**	**-**	**-**	**310**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	210	4	92	0.02	6	-	-	-	-	310
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**6 860**	**0.00**	**0.01**	**0.23**	**70**	**2 300**	**590**	**110**	**-**	**9 970**
a. Mineral Products	**1 800**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1 800**
Cement Production	1 300	-	-	-	-	-	-	-	-	1 300
Lime Production	424	-	-	-	-	-	-	-	-	424
Mineral Products Use	70	-	-	-	-	-	-	-	-	70
b. Chemical Industry[2]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**4 560**	**0.00**	**0.01**	**-**	**-**	**-**	**585**	**30.10**	**-**	**5 180**
Iron and Steel Production	27	0.00	0.01	-	-	-	-	-	-	27
Aluminum Production	4 540	-	-	-	-	-	585	5	-	5 130
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	25	-	25
d. Production and Consumption of Halocarbons, SF_6 and NF_3[3]	**-**	**-**	**-**	**-**	**-**	**2 300**	**1**	**0.64**	**0.20**	**2 300**
e. Non-Energy Products from Fuels and Solvent Use	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**
f. Other Product Manufacture and Use	**5**	**-**	**-**	**0.23**	**70**	**-**	**3**	**75**	**-**	**150**
AGRICULTURE	**200**	**150**	**3 900**	**13**	**3 900**	**-**	**-**	**-**	**-**	**8 000**
a. Enteric Fermentation	**-**	**110**	**2 700**	**-**	**-**	**-**	**-**	**-**	**-**	**2 700**
b. Manure Management	**-**	**48**	**1 200**	**2**	**500**	**-**	**-**	**-**	**-**	**1 700**
c. Agricultural Soils	**-**	**-**	**-**	**11**	**3 400**	**-**	**-**	**-**	**-**	**3 400**
Direct Sources	-	-	-	**10**	2 900	-	-	-	-	2 900
Indirect Sources	-	-	-	2	500	-	-	-	-	500
d. Field Burning of Agricultural Residues	**-**	**0.01**	**0.20**	**0.00**	**0.05**	**-**	**-**	**-**	**-**	**0.20**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**200**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**200**
WASTE	**98**	**150**	**3 700**	**0.70**	**210**	**-**	**-**	**-**	**-**	**4 000**
a. Solid Waste Disposal	**-**	**140**	**3 500**	**-**	**-**	**-**	**-**	**-**	**-**	**3 500**
b. Biological Treatment of Solid Waste	**-**	**2**	**40**	**0.10**	**30**	**-**	**-**	**-**	**-**	**70**
c. Wastewater Treatment and Discharge	**-**	**5**	**130**	**0.50**	**200**	**-**	**-**	**-**	**-**	**280**
d. Incineration and Open Burning of Waste	**98**	**0.30**	**6**	**0.08**	**20**	**-**	**-**	**-**	**-**	**130**

Notes:

1. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
2. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial/territorial tables.
3. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990–1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.
4. IPCC's Fourth Assessment Report provides global warming potentials (GWPs) for the various species of HFCs and PFCs. Chapter 1, Table 1-1 of this report provides a list of GWPs used.

- Indicates no emissions

0.00 Indicates emissions truncated due to rounding

x Indicates data has been suppressed to respect confidentiality

Estimates for the latest year (2016) are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report

Table A11–12 GHG Emission Summary for Ontario, Selected Years

Greenhouse Gas Categories	1990	2005	2011	2012	2013	2014	2015	2016
	kt CO_2 eq							
TOTAL	**179 000**	**205 000**	**172 000**	**169 000**	**168 000**	**165 000**	**163 000**	**161 000**
ENERGY	**133 000**	**163 000**	**134 000**	**129 000**	**130 000**	**127 000**	**125 000**	**121 000**
a. Stationary Combustion Sources	**83 300**	**96 900**	**72 300**	**69 400**	**67 300**	**66 100**	**63 200**	**58 900**
Public Electricity and Heat Production	25 800	35 400	14 400	14 300	10 300	6 030	6 250	5 500
Petroleum Refining Industries	6 200	6 900	6 500	6 800	6 100	6 000	5 500	5 200
Mining and Upstream Oil and Gas Production	593	614	820	929	634	645	532	630
Manufacturing Industries	22 000	18 800	16 100	15 900	16 200	16 500	15 800	15 500
Construction	571	637	416	436	361	380	350	341
Commercial and Institutional	9 140	12 800	11 800	10 900	11 900	13 200	12 600	12 200
Residential	18 200	20 700	20 500	18 300	20 200	21 800	20 700	18 100
Agriculture and Forestry	775	1 040	1 650	1 690	1 650	1 500	1 420	1 510
b. Transport[1]	**48 000**	**64 100**	**60 600**	**58 300**	**61 000**	**59 300**	**60 700**	**60 200**
Domestic Aviation	2 200	2 300	1 900	2 200	2 300	2 200	2 200	2 200
Road Transportation	28 600	47 400	47 000	45 000	47 100	45 100	46 000	46 100
Light-Duty Gasoline Vehicles	15 900	16 500	13 800	12 700	13 300	12 700	12 800	12 600
Light-Duty Gasoline Trucks	7 020	15 600	16 300	15 400	16 400	16 200	16 700	17 500
Heavy-Duty Gasoline Vehicles	1 440	3 120	3 390	3 280	3 520	3 270	3 280	3 370
Motorcycles	27	61	84	83	86	85	87	91
Light-Duty Diesel Vehicles	127	217	276	296	326	327	362	336
Light-Duty Diesel Trucks	34	72	145	156	192	241	328	375
Heavy-Duty Diesel Vehicles	3 970	11 800	12 900	13 100	13 200	12 300	12 400	11 800
Propane and Natural Gas Vehicles	68	55	4	4	1	1	1	1
Railways	1 800	1 600	1 300	1 200	1 300	1 400	1 400	1 500
Domestic Navigation	920	860	780	980	1 200	1 200	1 200	1 100
Other Transportation	14 000	12 000	9 600	8 900	9 100	9 300	9 900	9 300
Off-Road Agriculture & Forestry	1 300	1 400	1 300	1 200	1 200	1 100	1 200	1 000
Off-Road Commercial & Institutional	560	960	1 100	960	1 000	1 000	990	1 000
Off-Road Manufacturing, Mining & Construction	3 100	3 300	3 700	3 500	3 300	3 100	3 600	3 400
Off-Road Residential	88	490	520	470	470	480	470	450
Off-Road Other Transportation	7 000	2 800	2 100	1 900	2 000	2 100	2 100	2 200
Pipeline Transport	2 280	3 070	896	844	1 070	1 530	1 550	1 200
c. Fugitive Sources	**1 600**	**1 500**	**1 400**	**1 300**	**1 400**	**1 400**	**1 400**	**1 400**
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	1 600	1 500	1 400	1 300	1 400	1 400	1 400	1 400
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**30 600**	**25 000**	**22 000**	**24 000**	**22 400**	**22 900**	**22 200**	**24 300**
a. Mineral Products	**3 900**	**4 800**	**3 500**	**3 700**	**3 400**	**3 400**	**3 500**	**3 500**
Cement Production	2 400	3 700	2 700	2 900	2 700	2 700	2 800	2 800
Lime Production	1 090	800	599	607	572	616	573	558
Mineral Products Use	410	320	160	160	130	120	120	110
b. Chemical Industry[2]	**10 300**	**2 550**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	10 000	2 500	-	-	-	-	-	-
c. Metal Production	**11 200**	**11 400**	**10 200**	**10 400**	**8 200**	**9 110**	**8 210**	**9 530**
Iron and Steel Production	10 500	10 300	10 000	10 100	8 010	8 900	8 010	9 290
Aluminum Production	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	687	1 130	170	232	191	205	198	240
d. Production and Consumption of Halocarbons, SF_6 and NF_3[3]	**970**	**2 000**	**3 200**	**3 400**	**3 500**	**3 800**	**4 100**	**4 500**
e. Non-Energy Products from Fuels and Solvent Use	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**
f. Other Product Manufacture and Use	**140**	**190**	**140**	**170**	**170**	**150**	**170**	**190**
AGRICULTURE	**10 000**	**10 000**	**9 800**	**9 700**	**10 000**	**9 800**	**9 600**	**10 000**
a. Enteric Fermentation	**4 300**	**4 100**	**3 400**	**3 400**	**3 500**	**3 400**	**3 500**	**3 400**
b. Manure Management	**1 900**	**2 100**	**1 800**	**1 900**	**1 900**	**1 900**	**1 900**	**1 900**
c. Agricultural Soils	**3 900**	**3 700**	**4 300**	**4 200**	**4 600**	**4 300**	**4 100**	**4 400**
Direct Sources	3 300	3 100	3 700	3 600	4 000	3 700	3 600	3 800
Indirect Sources	600	500	600	600	600	600	600	600
d. Field Burning of Agricultural Residues	**4**	**0.60**	**0.30**	**0.40**	**0.30**	**0.30**	**0.30**	**0.30**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**300**	**200**	**200**	**200**	**200**	**200**	**100**	**200**
WASTE	**5 400**	**7 000**	**6 400**	**6 400**	**6 200**	**5 700**	**5 700**	**5 800**
a. Solid Waste Disposal	**4 800**	**6 300**	**5 600**	**5 600**	**5 400**	**4 800**	**4 800**	**4 800**
b. Biological Treatment of Solid Waste	**50**	**100**	**200**	**200**	**200**	**200**	**200**	**200**
c. Wastewater Treatment and Discharge	**240**	**320**	**320**	**330**	**330**	**330**	**330**	**330**
d. Incineration and Open Burning of Waste	**320**	**290**	**270**	**280**	**290**	**350**	**380**	**380**

Notes:

1. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
2. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial/territorial tables.
3. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990–1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.

- Indicates no emissions

0.00 Indicates emissions truncated due to rounding

x Indicates data has been suppressed to respect confidentiality

Estimates for the latest year (2016) are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report

Table A11–13 2016 GHG Emission Summary for Ontario

Greenhouse Gas Categories	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[4]	PFCs[4]	SF_6	NF_3	TOTAL
	Greenhouse Gases									
Global Warming Potential			25		298			22 800	17 200	
Unit	kt	kt	kt CO_2 eq	kt	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq
TOTAL	**136 000**	**470**	**12 000**	**26**	**7 700**	**4 500.00**	**7**	**300**	-	**161 000**
ENERGY	**117 000**	**93**	**2 300**	**5**	**2 000**	-	-	-	-	**121 000**
a. Stationary Combustion Sources	**57 600**	**30**	**800**	**2**	**500**	-	-	-	-	**58 900**
Public Electricity and Heat Production	5 400	1	35	0.17	49	-	-	-	-	5 500
Petroleum Refining Industries	5 200	0.09	2	0.03	8	-	-	-	-	5 200
Mining and Upstream Oil and Gas Production	621	0.01	0.27	0.03	9	-	-	-	-	630
Manufacturing Industries	15 300	0.46	12	0.38	110	-	-	-	-	15 500
Construction	338	0.01	0.14	0.01	3	-	-	-	-	341
Commercial and Institutional	12 100	0.23	6	0.30	80	-	-	-	-	12 200
Residential	17 100	30	800	0.70	200	-	-	-	-	18 100
Agriculture and Forestry	1 490	0.03	0.67	0.04	10	-	-	-	-	1 510
b. Transport[1]	**58 700**	**13**	**320**	**4**	**1 100**	**-**	**-**	**-**	**-**	**60 200**
Domestic Aviation	2 180	0.07	2	0.06	20	-	-	-	-	2 200
Road Transportation	45 200	3	70	3	870	-	-	-	-	46 100
Light-Duty Gasoline Vehicles	12 300	0.95	24	0.83	250	-	-	-	-	12 600
Light-Duty Gasoline Trucks	17 200	1	32	1	320	-	-	-	-	17 500
Heavy-Duty Gasoline Vehicles	3 280	0.11	3	0.30	89	-	-	-	-	3 370
Motorcycles	90	0.04	0.88	0.00	0.51	-	-	-	-	91
Light-Duty Diesel Vehicles	327	0.01	0.20	0.03	8	-	-	-	-	336
Light-Duty Diesel Trucks	365	0.01	0.20	0.03	9	-	-	-	-	375
Heavy-Duty Diesel Vehicles	11 600	0.50	10	0.70	200	-	-	-	-	11 800
Propane and Natural Gas Vehicles	0.73	0.00	0.01	0.00	0.00	-	-	-	-	0.74
Railways	1 300	0.07	2	0.50	200	-	-	-	-	1 500
Domestic Navigation	1 110	0.10	3	0.03	9	-	-	-	-	1 100
Other Transportation	8 970	10	200	0.30	90	-	-	-	-	9 300
Off-Road Agriculture & Forestry	1 020	0.04	1	0.03	10	-	-	-	-	1 000
Off-Road Commercial & Institutional	995	1	30	0.03	10	-	-	-	-	1 000
Off-Road Manufacturing, Mining & Construction	3 360	0.60	20	0.10	40	-	-	-	-	3 400
Off-Road Residential	420	0.90	20	0.01	4	-	-	-	-	450
Off-Road Other Transportation	2 010	6	100	0.05	20	-	-	-	-	2 200
Pipeline Transport	1 160	1	29	0.03	10	-	-	-	-	1 200
c. Fugitive Sources	**270**	**46**	**1 200**	**0.02**	**7**	**-**	**-**	**-**	**-**	**1 400**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	270	46	1 200	0.02	7	-	-	-	-	1 400
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**19 300**	**2**	**41**	**0.49**	**146**	**4 500.00**	**7**	**300**	-	**24 300**
a. Mineral Products	**3 500**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3 500**
Cement Production	2 800	-	-	-	-	-	-	-	-	2 800
Lime Production	558	-	-	-	-	-	-	-	-	558
Mineral Products Use	110	-	-	-	-	-	-	-	-	110
b. Chemical Industry[2]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**9 280**	**0.08**	**2**	**-**	**-**	**-**	**-**	**240**	**-**	**9 530**
Iron and Steel Production	9 280	0.08	2	-	-	-	-	-	-	9 290
Aluminum Production	-	-	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	240	-	240
d. Production and Consumption of Halocarbons, SF_6 and NF_3[3]	**-**	**-**	**-**	**-**	**-**	**4 500.00**	**2**	**0.48**	**-**	**4 500**
e. Non-Energy Products from Fuels and Solvent Use	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**
f. Other Product Manufacture and Use	**7**	**-**	**-**	**0.39**	**120**	**-**	**6**	**62**	**-**	**190**
AGRICULTURE	**200**	**180**	**4 400**	**18**	**5 400**	**-**	**-**	**-**	**-**	**10 000**
a. Enteric Fermentation	**-**	**140**	**3 400**	**-**	**-**	**-**	**-**	**-**	**-**	**3 400**
b. Manure Management	**-**	**39**	**960**	**3**	**1 000**	**-**	**-**	**-**	**-**	**1 900**
c. Agricultural Soils	**-**	**-**	**-**	**15**	**4 400**	**-**	**-**	**-**	**-**	**4 400**
Direct Sources	-	-	-	13	3 800	-	-	-	-	3 800
Indirect Sources	-	-	-	2	600	-	-	-	-	600
d. Field Burning of Agricultural Residues	**-**	**0.01**	**0.20**	**0.00**	**0.07**	**-**	**-**	**-**	**-**	**0.30**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**200**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**200**
WASTE	**270**	**200.00**	**5 000**	**2**	**450**	**-**	**-**	**-**	**-**	**5 800**
a. Solid Waste Disposal	**-**	**190**	**4 800**	**-**	**-**	**-**	**-**	**-**	**-**	**4 800**
b. Biological Treatment of Solid Waste	**-**	**5**	**100**	**0.30**	**80**	**-**	**-**	**-**	**-**	**200**
c. Wastewater Treatment and Discharge	**-**	**3**	**75**	**0.90**	**300**	**-**	**-**	**-**	**-**	**330**
d. Incineration and Open Burning of Waste	**270**	**0.02**	**0.40**	**0.40**	**100**	**-**	**-**	**-**	**-**	**380**

Notes:

1. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
2. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial/territorial tables.
3. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990–1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.
4. IPCC's Fourth Assessment Report provides global warming potentials (GWPs) for the various species of HFCs and PFCs. Chapter 1, Table 1-1 of this report provides a list of GWPs used.

- Indicates no emissions

0.00 Indicates emissions truncated due to rounding

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Provincial/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report

Table A11–14 GHG Emission Summary for Manitoba, Selected Years

Greenhouse Gas Categories	1990	2005	2011	2012	2013	2014	2015	2016
	kt CO_2 eq							
TOTAL	**18 300**	**20 200**	**19 000**	**20 200**	**20 900**	**20 900**	**20 800**	**20 900**
ENERGY	**12 500**	**12 300**	**11 400**	**12 600**	**12 700**	**13 100**	**12 700**	**12 700**
a. Stationary Combustion Sources	**4 980**	**4 590**	**3 880**	**3 880**	**4 250**	**4 250**	**4 130**	**4 120**
Public Electricity and Heat Production	518	358	123	112	120	127	124	70
Petroleum Refining Industries	-	-	-	-	-	-	-	-
Mining and Upstream Oil and Gas Production	80	97	91	96	107	92	78	59
Manufacturing Industries	1 180	1 470	1 210	1 280	1 220	1 190	1 450	1 540
Construction	63	86	113	108	123	111	104	122
Commercial and Institutional	1 400	1 420	1 220	1 180	1 390	1 450	1 300	1 260
Residential	1 690	1 130	1 080	1 070	1 240	1 250	1 040	1 040
Agriculture and Forestry	43	43	33	37	43	34	32	26
b. Transport[1]	**7 100**	**7 520**	**7 190**	**8 300**	**8 060**	**8 450**	**8 120**	**8 160**
Domestic Aviation	470	540	430	480	500	460	420	410
Road Transportation	3 210	4 160	4 530	5 530	5 410	5 530	5 210	5 410
Light-Duty Gasoline Vehicles	1 510	1 200	1 070	1 280	1 280	1 220	1 130	1 120
Light-Duty Gasoline Trucks	896	1 460	1 600	1 980	2 030	2 080	2 060	2 130
Heavy-Duty Gasoline Vehicles	311	440	431	529	540	496	483	493
Motorcycles	4	4	6	7	8	8	9	9
Light-Duty Diesel Vehicles	8	10	14	17	16	16	14	14
Light-Duty Diesel Trucks	6	15	10	11	10	11	11	12
Heavy-Duty Diesel Vehicles	443	1 020	1 410	1 710	1 540	1 690	1 500	1 620
Propane and Natural Gas Vehicles	30	7	0.16	0.21	0.20	0.09	0.07	0.05
Railways	600	300	x	620	570	660	700	660
Domestic Navigation	0.02	2	x	-	-	-	0.78	-
Other Transportation	2 800	2 500	1 500	1 700	1 600	1 800	1 800	1 700
Off-Road Agriculture & Forestry	1 100	1 300	1 000	1 100	940	970	890	860
Off-Road Commercial & Institutional	40	81	86	91	95	99	92	82
Off-Road Manufacturing, Mining & Construction	190	230	210	220	200	210	220	230
Off-Road Residential	6	44	44	49	46	51	50	50
Off-Road Other Transportation	660	250	170	190	190	210	220	220
Pipeline Transport	848	601	32	13	109	268	311	245
c. Fugitive Sources	**450**	**210**	**370**	**430**	**440**	**440**	**410**	**380**
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	450	210	370	430	440	440	410	380
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**484**	**689**	**964**	**837**	**872**	**818**	**895**	**906**
a. Mineral Products	**220**	**69**	**63**	**64**	**59**	**64**	**60**	**58**
Cement Production	150	-	-	-	-	-	-	-
Lime Production	61	59	56	57	54	58	54	52
Mineral Products Use	6	10	7	7	6	6	6	6
b. Chemical Industry[2]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminum Production	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[3]	**-**	**190**	**330**	**360**	**380**	**400**	**440**	**480**
e. Non-Energy Products from Fuels and Solvent Use	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**
f. Other Product Manufacture and Use	**11**	**17**	**15**	**12**	**11**	**11**	**11**	**15**
AGRICULTURE	**4 700**	**6 400**	**5 700**	**5 900**	**6 600**	**6 200**	**6 500**	**6 600**
a. Enteric Fermentation	**1 900**	**3 200**	**2 500**	**2 400**	**2 400**	**2 400**	**2 400**	**2 400**
b. Manure Management	**460**	**870**	**770**	**770**	**790**	**790**	**800**	**820**
c. Agricultural Soils	**2 100**	**2 100**	**2 300**	**2 500**	**3 000**	**2 700**	**3 000**	**3 100**
Direct Sources	1 700	1 600	1 800	2 000	2 400	2 200	2 400	2 500
Indirect Sources	400	400	500	500	600	500	600	600
d. Field Burning of Agricultural Residues	**200**	**10**	**10**	**20**	**20**	**20**	**20**	**20**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**100**	**200**	**200**	**200**	**300**	**200**	**300**	**300**
WASTE	**580**	**800**	**840**	**850**	**760**	**760**	**770**	**780**
a. Solid Waste Disposal	**540**	**750**	**790**	**800**	**710**	**700**	**710**	**720**
b. Biological Treatment of Solid Waste	**0.50**	**2**	**4**	**4**	**6**	**8**	**8**	**8**
c. Wastewater Treatment and Discharge	**39**	**44**	**46**	**46**	**47**	**48**	**48**	**49**
d. Incineration and Open Burning of Waste	**1**	**0.44**	**0.05**	**0.06**	**0.06**	**0.06**	**0.06**	**0.06**

Notes:

1. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
2. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial/territorial tables.
3. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990–1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.

- Indicates no emissions

0.00 Indicates emissions truncated due to rounding

x Indicates data has been suppressed to respect confidentiality

Estimates for the latest year (2016) are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report

Table A11–15 **2016 GHG Emission Summary for Manitoba**

Greenhouse Gas Categories	Greenhouse Gases									
	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[4]	PFCs[4]	SF_6	NF_3	TOTAL
Global Warming Potential			25		298			22 800	17 200	
Unit	kt	kt	kt CO_2 eq	kt	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq
TOTAL	**12 700**	**160**	**4 000**	**13**	**3 800**	**480**	**0.39**	**3**	**-**	**20 900**
ENERGY	**12 100**	**15**	**380**	**0.70**	**200**	**-**	**-**	**-**	**-**	**12 700**
a. Stationary Combustion Sources	**4 020**	**2**	**60**	**0.10**	**40**	**-**	**-**	**-**	**-**	**4 120**
Public Electricity and Heat Production	69	0.00	0.09	0.00	0.85	-	-	-	-	70
Petroleum Refining Industries	-	-	-	-	-	-	-	-	-	-
Mining and Upstream Oil and Gas Production	58	0.00	0.02	0.00	1	-	-	-	-	59
Manufacturing Industries	1 530	0.06	1	0.05	14	-	-	-	-	1 540
Construction	121	0.00	0.06	0.00	0.70	-	-	-	-	122
Commercial and Institutional	1 250	0.02	0.60	0.03	7	-	-	-	-	1 260
Residential	969	2	60	0.04	10	-	-	-	-	1 040
Agriculture and Forestry	26	0.00	0.01	0.00	0.50	-	-	-	-	26
b. Transport[1]	**7 950**	**2**	**40**	**0.57**	**170**	**-**	**-**	**-**	**-**	**8 160**
Domestic Aviation	410	0.02	0.40	0.01	4	-	-	-	-	410
Road Transportation	5 310	0.40	10	0.28	82	-	-	-	-	5 410
Light-Duty Gasoline Vehicles	1 110	0.11	3	0.05	15	-	-	-	-	1 120
Light-Duty Gasoline Trucks	2 100	0.21	5	0.09	27	-	-	-	-	2 130
Heavy-Duty Gasoline Vehicles	479	0.02	0.47	0.04	13	-	-	-	-	493
Motorcycles	9	0.00	0.09	0.00	0.05	-	-	-	-	9
Light-Duty Diesel Vehicles	14	0.00	0.01	0.00	0.40	-	-	-	-	14
Light-Duty Diesel Trucks	12	0.00	0.01	0.00	0.30	-	-	-	-	12
Heavy-Duty Diesel Vehicles	1 600	0.07	2	0.09	30	-	-	-	-	1 620
Propane and Natural Gas Vehicles	0.05	0.00	0.00	0.00	0.00	-	-	-	-	0.05
Railways	591	0.03	0.80	0.20	70	-	-	-	-	660
Domestic Navigation	-	-	-	-	-	-	-	-	-	-
Other Transportation	1 630	1	30	0.05	20	-	-	-	-	1 700
Off-Road Agriculture & Forestry	848	0.04	0.90	0.03	8	-	-	-	-	860
Off-Road Commercial & Institutional	78	0.10	3	0.00	0.70	-	-	-	-	82
Off-Road Manufacturing, Mining & Construction	223	0.05	1	0.01	3	-	-	-	-	230
Off-Road Residential	47	0.10	3	0.00	0.40	-	-	-	-	50
Off-Road Other Transportation	202	0.60	10	0.01	2	-	-	-	-	220
Pipeline Transport	237	0.24	6	0.01	2	-	-	-	-	245
c. Fugitive Sources	**96**	**11**	**280**	**0.00**	**0.09**	**-**	**-**	**-**	**-**	**380**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	96	11	280	0.00	0.09	-	-	-	-	380
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**371**	**-**	**-**	**0.19**	**56**	**480**	**0.39**	**2**	**-**	**906**
a. Mineral Products	**58**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**58**
Cement Production	-	-	-	-	-	-	-	-	-	-
Lime Production	52	-	-	-	-	-	-	-	-	52
Mineral Products Use	6	-	-	-	-	-	-	-	-	6
b. Chemical Industry[2]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
Aluminum Production	-	-	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[3]	**-**	**-**	**-**	**-**	**-**	**480**	**0.05**	**-**	**-**	**480**
e. Non-Energy Products from Fuels and Solvent Use	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**
f. Other Product Manufacture and Use	**1**	**-**	**-**	**0.04**	**11**	**-**	**0.34**	**2**	**-**	**15**
AGRICULTURE	**300**	**110**	**2 800**	**12**	**3 500**	**-**	**-**	**-**	**-**	**6 600**
a. Enteric Fermentation	**-**	**95**	**2 400**	**-**	**-**	**-**	**-**	**-**	**-**	**2 400**
b. Manure Management	**-**	**18**	**460**	**1**	**400**	**-**	**-**	**-**	**-**	**820**
c. Agricultural Soils	**-**	**-**	**-**	**10**	**3 100**	**-**	**-**	**-**	**-**	**3 100**
Direct Sources	-	-	-	9	2 500	-	-	-	-	2 500
Indirect Sources	-	-	-	2	600	-	-	-	-	600
d. Field Burning of Agricultural Residues	**-**	**0.50**	**10**	**0.01**	**4**	**-**	**-**	**-**	**-**	**20**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**300**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**300**
WASTE	**0.06**	**30**	**750**	**0.09**	**28**	**-**	**-**	**-**	**-**	**780**
a. Solid Waste Disposal	**-**	**29**	**720**	**-**	**-**	**-**	**-**	**-**	**-**	**720**
b. Biological Treatment of Solid Waste	**-**	**0.20**	**5**	**0.01**	**3**	**-**	**-**	**-**	**-**	**8**
c. Wastewater Treatment and Discharge	**-**	**0.97**	**24**	**0.08**	**20**	**-**	**-**	**-**	**-**	**49**
d. Incineration and Open Burning of Waste	**0.06**	**0.00**	**0.00**	**0.00**	**0.00**	**-**	**-**	**-**	**-**	**0.06**

Notes:

1. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
2. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial/territorial tables.
3. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990–1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.
4. IPCC's Fourth Assessment Report provides global warming potentials (GWPs) for the various species of HFCs and PFCs. Chapter 1, Table 1-1 of this report provides a list of GWPs used.

- Indicates no emissions

0.00 Indicates emissions truncated due to rounding

x Indicates data has been suppressed to respect confidentiality

Estimates for the latest year (2016) are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report

Table A11–16 GHG Emission Summary for Saskatchewan, Selected Years

Greenhouse Gas Categories	1990	2005	2011	2012	2013	2014	2015	2016
	kt CO_2 eq							
TOTAL	**44 700**	**68 900**	**69 000**	**71 300**	**74 000**	**77 400**	**79 500**	**76 300**
ENERGY	**35 900**	**54 700**	**55 900**	**57 300**	**58 800**	**63 300**	**65 000**	**61 400**
a. Stationary Combustion Sources	**20 100**	**27 500**	**29 400**	**29 500**	**29 000**	**30 900**	**32 000**	**30 900**
Public Electricity and Heat Production	11 100	15 200	15 500	16 100	15 000	15 200	16 000	16 000
Petroleum Refining Industries	630	780	1 000	1 200	1 200	1 200	1 300	1 400
Mining and Upstream Oil and Gas Production	4 130	7 590	8 450	7 910	8 260	9 610	10 000	9 010
Manufacturing Industries	792	533	704	808	751	969	851	677
Construction	70	42	56	37	36	39	67	39
Commercial and Institutional	985	1 510	1 280	1 110	1 120	1 130	1 110	1 300
Residential	2 140	1 630	1 800	1 760	1 870	1 870	1 710	1 680
Agriculture and Forestry	296	256	615	661	772	997	870	783
b. Transport[1]	**9 170**	**11 500**	**14 100**	**14 800**	**16 100**	**16 600**	**16 900**	**16 500**
Domestic Aviation	260	190	190	220	230	220	220	210
Road Transportation	3 680	5 120	6 860	7 870	8 620	8 580	8 980	9 050
Light-Duty Gasoline Vehicles	1 440	1 350	1 300	1 450	1 470	1 300	1 380	1 360
Light-Duty Gasoline Trucks	1 190	1 700	2 280	2 740	2 920	2 820	3 160	3 310
Heavy-Duty Gasoline Vehicles	610	767	874	1 050	1 130	885	958	991
Motorcycles	2	3	6	7	7	7	7	8
Light-Duty Diesel Vehicles	5	11	19	21	24	25	26	24
Light-Duty Diesel Trucks	8	39	31	29	31	33	37	36
Heavy-Duty Diesel Vehicles	386	1 250	2 350	2 570	3 030	3 510	3 420	3 330
Propane and Natural Gas Vehicles	37	5	0.38	0.62	0.28	0.16	0.14	0.27
Railways	580	410	720	560	700	720	800	780
Domestic Navigation	0.09	-	-	-	-	-	-	-
Other Transportation	4 600	5 800	6 300	6 200	6 600	7 100	6 900	6 400
Off-Road Agriculture & Forestry	2 100	3 200	3 500	3 300	3 700	3 800	3 900	3 800
Off-Road Commercial & Institutional	32	77	110	110	130	130	130	53
Off-Road Manufacturing, Mining & Construction	170	240	350	310	340	390	440	310
Off-Road Residential	4	34	42	46	48	49	51	58
Off-Road Other Transportation	720	290	280	310	330	350	370	380
Pipeline Transport	1 590	1 900	2 070	2 040	2 060	2 320	2 010	1 830
c. Fugitive Sources	**6 700**	**16 000**	**12 000**	**13 000**	**14 000**	**16 000**	**16 000**	**14 000**
Coal Mining	20	20	20	20	20	20	20	20
Oil and Natural Gas	6 700	16 000	12 000	13 000	14 000	16 000	16 000	14 000
d. CO_2 Transport and Storage	**-**	**0.09**	**0.09**	**0.09**	**0.09**	**0.10**	**0.20**	**0.20**
INDUSTRIAL PROCESSES AND PRODUCT USE	**354**	**823**	**1 050**	**1 000**	**1 170**	**842**	**871**	**906**
a. Mineral Products	**96**	**10**	**9**	**8**	**8**	**9**	**9**	**8**
Cement Production	87	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-
Mineral Products Use	8	10	9	8	8	9	9	8
b. Chemical Industry[2]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminum Production	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[3]	**-**	**180**	**330**	**350**	**360**	**390**	**420**	**470**
e. Non-Energy Products from Fuels and Solvent Use	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**
f. Other Product Manufacture and Use	**8**	**12**	**9**	**10**	**10**	**10**	**11**	**12**
AGRICULTURE	**7 800**	**13 000**	**11 000**	**12 000**	**13 000**	**12 000**	**13 000**	**13 000**
a. Enteric Fermentation	**3 300**	**6 100**	**4 800**	**4 800**	**4 800**	**4 800**	**4 700**	**4 700**
b. Manure Management	**740**	**1 400**	**1 100**	**1 100**	**1 100**	**1 100**	**1 100**	**1 100**
c. Agricultural Soils	**3 500**	**4 600**	**4 700**	**5 400**	**6 300**	**5 700**	**6 000**	**6 300**
Direct Sources	3 000	3 800	3 800	4 400	5 100	4 600	4 800	5 100
Indirect Sources	500	900	900	1 000	1 000	1 000	1 000	1 000
d. Field Burning of Agricultural Residues	**70**	**30**	**20**	**20**	**30**	**30**	**30**	**30**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**200**	**400**	**600**	**700**	**900**	**900**	**900**	**900**
WASTE	**590**	**730**	**810**	**820**	**830**	**800**	**800**	**810**
a. Solid Waste Disposal	**540**	**680**	**760**	**770**	**770**	**740**	**750**	**750**
b. Biological Treatment of Solid Waste	**0.02**	**0.60**	**4**	**5**	**5**	**5**	**5**	**5**
c. Wastewater Treatment and Discharge	**44**	**45**	**48**	**49**	**50**	**50**	**50**	**51**
d. Incineration and Open Burning of Waste	**1**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**

Notes:

1. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
2. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial/territorial tables.
3. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990–1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.

- Indicates no emissions

0.00 Indicates emissions truncated due to rounding

x Indicates data has been suppressed to respect confidentiality

Estimates for the latest year (2016) are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report

Table A11–17 2016 GHG Emission Summary for Saskatchewan

Greenhouse Gas Categories	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[4]	PFCs[4]	SF_6	NF_3	TOTAL
	Greenhouse Gases									
Global Warming Potential			25		298			22 800	17 200	
Unit	kt	kt	kt CO_2 eq	kt	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq
TOTAL	**50 500**	**700**	**18 000**	**26**	**7 600**	**470**	**0.23**	**0.38**	-	**76 300**
ENERGY	**49 200**	**470**	**12 000**	**2**	**500**	-	-	-	-	**61 400**
a. Stationary Combustion Sources	**30 300**	**20**	**400**	**0.70**	**200**	-	-	-	-	**30 900**
Public Electricity and Heat Production	16 000	1	30	0.38	110	-	-	-	-	16 000
Petroleum Refining Industries	1 400	0.03	0.80	0.02	4	-	-	-	-	1 400
Mining and Upstream Oil and Gas Production	8 620	13	330	0.20	60	-	-	-	-	9 010
Manufacturing Industries	670	0.03	0.73	0.02	7	-	-	-	-	677
Construction	38	0.00	0.02	0.00	0.30	-	-	-	-	39
Commercial and Institutional	1 290	0.03	0.65	0.03	8	-	-	-	-	1 300
Residential	1 630	1	30	0.05	10	-	-	-	-	1 680
Agriculture and Forestry	778	0.01	0.36	0.02	5	-	-	-	-	783
b. Transport[1]	**16 100**	**4**	**100**	**0.94**	**280**	-	-	-	-	**16 500**
Domestic Aviation	210	0.02	0.40	0.01	2	-	-	-	-	210
Road Transportation	8 890	0.70	20	0.47	140	-	-	-	-	9 050
Light-Duty Gasoline Vehicles	1 330	0.14	4	0.06	19	-	-	-	-	1 360
Light-Duty Gasoline Trucks	3 260	0.32	8	0.13	39	-	-	-	-	3 310
Heavy-Duty Gasoline Vehicles	964	0.04	0.95	0.09	26	-	-	-	-	991
Motorcycles	8	0.00	0.08	0.00	0.04	-	-	-	-	8
Light-Duty Diesel Vehicles	24	0.00	0.01	0.00	0.60	-	-	-	-	24
Light-Duty Diesel Trucks	35	0.00	0.02	0.00	0.90	-	-	-	-	36
Heavy-Duty Diesel Vehicles	3 270	0.10	3	0.20	50	-	-	-	-	3 330
Propane and Natural Gas Vehicles	0.27	0.00	0.00	0.00	0.00	-	-	-	-	0.27
Railways	699	0.04	1	0.30	80	-	-	-	-	780
Domestic Navigation	-	-	-	-	-	-	-	-	-	-
Other Transportation	6 270	3	80	0.20	60	-	-	-	-	6 400
Off-Road Agriculture & Forestry	3 740	0.20	4	0.10	40	-	-	-	-	3 800
Off-Road Commercial & Institutional	51	0.09	2	0.00	0.50	-	-	-	-	53
Off-Road Manufacturing, Mining & Construction	302	0.05	1	0.01	4	-	-	-	-	310
Off-Road Residential	55	0.10	3	0.00	0.50	-	-	-	-	58
Off-Road Other Transportation	350	1	30	0.01	2	-	-	-	-	380
Pipeline Transport	1 770	2	46	0.05	10	-	-	-	-	1 830
c. Fugitive Sources	**2 800**	**450**	**11 000**	**0.02**	**7**	-	-	-	-	**14 000**
Coal Mining	-	0.70	20	-	-	-	-	-	-	20
Oil and Natural Gas	2 800	450	11 000	0.02	7	-	-	-	-	14 000
d. CO_2 Transport and Storage	**0.20**	-	-	-	-	-	-	-	-	**0.20**
INDUSTRIAL PROCESSES AND PRODUCT USE	**416**	-	-	**0.08**	**24**	**470**	**0.23**	**0.38**	-	**906**
a. Mineral Products	**8**	-	-	-	-	-	-	-	-	**8**
Cement Production	-	-	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-	-	-
Mineral Products Use	8	-	-	-	-	-	-	-	-	8
b. Chemical Industry[2]	-	-	-	-	-	-	-	-	-	-
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	-	-	-	-	-	-	-	-	-	-
Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
Aluminum Production	-	-	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[3]	-	-	-	-	-	**470**	**0.04**	-	-	**470**
e. Non-Energy Products from Fuels and Solvent Use	x	x	x	x	x	x	x	x	x	x
f. Other Product Manufacture and Use	**2**	-	-	**0.03**	**10**	-	**0.18**	**0.38**	-	**12**
AGRICULTURE	**900**	**200**	**5 100**	**24**	**7100**	-	-	-	-	**13 000**
a. Enteric Fermentation	-	**190**	**4700**	-	-	-	-	-	-	**4 700**
b. Manure Management	-	**14**	**350**	**3**	**800**	-	-	-	-	**1 100**
c. Agricultural Soils	-	-	-	**21**	**6 300**	-	-	-	-	**6 300**
Direct Sources	-	-	-	17	5 100	-	-	-	-	5 100
Indirect Sources	-	-	-	4	1 000	-	-	-	-	1 000
d. Field Burning of Agricultural Residues	-	**0.90**	**20**	**0.02**	**7**	-	-	-	-	**30**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**900**	-	-	-	-	-	-	-	-	**900**
WASTE	**0.02**	**31**	**790**	**0.08**	**24**	-	-	-	-	**810**
a. Solid Waste Disposal	-	**30**	**750**	-	-	-	-	-	-	**750**
b. Biological Treatment of Solid Waste	-	**0.10**	**3**	**0.01**	**2**	-	-	-	-	**5**
c. Wastewater Treatment and Discharge	-	**1**	**30**	**0.07**	**20**	-	-	-	-	**51**
d. Incineration and Open Burning of Waste	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	-	-	-	-	**0.02**

Notes:

1. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
2. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial/territorial tables.
3. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990–1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.
4. IPCC's Fourth Assessment Report provides global warming potentials (GWPs) for the various species of HFCs and PFCs. Chapter 1, Table 1-1 of this report provides a list of GWPs used.

- Indicates no emissions

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Estimates for the latest year (2016) are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report

Table A11–18 GHG Emission Summary for Alberta, Selected Years

Greenhouse Gas Categories	1990	2005	2011	2012	2013	2014	2015	2016
	kt CO_2 eq							
TOTAL	**174 000**	**231 000**	**244 000**	**256 000**	**265 000**	**269 000**	**267 000**	**263 000**
ENERGY	**153 000**	**200 000**	**214 000**	**222 000**	**232 000**	**237 000**	**235 000**	**231 000**
a. Stationary Combustion Sources	**96 500**	**129 000**	**140 000**	**145 000**	**151 000**	**154 000**	**156 000**	**157 000**
Public Electricity and Heat Production	39 600	51 900	48 700	46 900	48 100	49 100	51 300	48 200
Petroleum Refining Industries	3 000	4 000	3 500	3 800	40	4 300	4 500	4 800
Mining and Upstream Oil and Gas Production	30 800	50 800	61 400	67 600	71 800	73 400	74 500	79 700
Manufacturing Industries	10 500	8 860	11 500	10 900	11 800	11 300	10 700	10 300
Construction	238	171	261	289	306	298	297	307
Commercial and Institutional	5 040	5 660	5 920	6 330	6 340	6 470	5 830	6 370
Residential	6 850	7 620	8 840	8 750	8 780	9 160	8 260	7 130
Agriculture and Forestry	477	240	214	207	211	213	221	237
b. Transport[1]	**22 300**	**34 000**	**38 700**	**40 200**	**42 800**	**44 000**	**41 800**	**39 800**
Domestic Aviation	1 100	1 300	1 200	1 400	1 500	1 500	1 500	1 400
Road Transportation	11 600	19 300	25 000	26 100	27 800	28 800	26 900	25 900
Light-Duty Gasoline Vehicles	4 030	3 630	3 010	3 110	3 290	3 330	3 000	3 020
Light-Duty Gasoline Trucks	3 260	5 070	5 500	6 010	6 480	6 940	6 820	7 140
Heavy-Duty Gasoline Vehicles	1 650	3 160	2 880	3 240	3 530	3 350	3 140	3 280
Motorcycles	13	28	34	38	41	44	43	45
Light-Duty Diesel Vehicles	21	52	93	92	102	104	94	81
Light-Duty Diesel Trucks	16	52	88	84	89	112	128	126
Heavy-Duty Diesel Vehicles	2 170	7 250	13 400	13 600	14 300	14 900	13 700	12 200
Propane and Natural Gas Vehicles	400	97	3	2	2	0.96	0.96	2
Railways	1 800	x	x	x	x	2 900	2 500	1 900
Domestic Navigation	0	x	x	x	x	-	7	4
Other Transportation	7 900	11 000	9 900	9 600	10 000	11 000	11 000	11 000
Off-Road Agriculture & Forestry	2 500	3 500	3 600	3 200	3 300	3 200	3 000	2 600
Off-Road Commercial & Institutional	160	290	320	310	350	400	370	240
Off-Road Manufacturing, Mining & Construction	1 500	2 500	3 500	3 400	3 800	3 900	3 900	3 200
Off-Road Residential	20	130	110	110	120	130	120	130
Off-Road Other Transportation	2 300	930	680	690	720	810	800	790
Pipeline Transport	1 300	3 210	1 680	1 820	2 190	2 360	2 660	3 540
c. Fugitive Sources	**34 000**	**36 000**	**35 000**	**37 000**	**38 000**	**39 000**	**37 000**	**34 000**
Coal Mining	400	300	300	300	300	200	300	300
Oil and Natural Gas	33 000	36 000	34 000	37 000	38 000	39 000	37 000	34 000
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**0.04**	**0.09**
INDUSTRIAL PROCESSES AND PRODUCT USE	**6 590**	**10 500**	**11 300**	**14 600**	**12 700**	**11 200**	**12 200**	**11 700**
a. Mineral Products	**1 100**	**1 500**	**1 200**	**1 300**	**1 200**	**1 200**	**1 200**	**1 200**
Cement Production	790	1 100	910	980	900	890	940	930
Lime Production	108	125	118	119	113	121	113	110
Mineral Products Use	200	250	160	150	140	140	160	160
b. Chemical Industry[2]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**0.69**	**0.34**
Iron and Steel Production	-	-	-	-	-	-	0.69	0.34
Aluminum Production	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[3]	**0**	**710**	**1 200**	**1 300**	**1 400**	**1 500**	**1 700**	**1 800**
e. Non-Energy Products from Fuels and Solvent Use	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**
f. Other Product Manufacture and Use	**17**	**38**	**31**	**37**	**36**	**38**	**40**	**47**
AGRICULTURE	**14 000**	**19 000**	**17 000**	**18 000**	**18 000**	**18 000**	**18 000**	**18 000**
a. Enteric Fermentation	**7 800**	**12 000**	**9 300**	**9 500**	**9 500**	**9 500**	**9 400**	**9 600**
b. Manure Management	**1 600**	**2 500**	**2 000**	**2 000**	**2 100**	**2 100**	**2 100**	**2 100**
c. Agricultural Soils	**4 100**	**4 600**	**5 300**	**5 600**	**5 900**	**5 900**	**5 800**	**5 700**
Direct Sources	3 400	3 700	4 300	4 500	4 800	4 700	4 700	4 600
Indirect Sources	700	900	1 000	1 000	1 000	1 000	1 000	1 000
d. Field Burning of Agricultural Residues	**4**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**300**	**400**	**600**	**700**	**800**	**800**	**900**	**700**
WASTE	**1 200**	**1 700**	**1 600**	**1 700**	**1 800**	**1 900**	**1 900**	**2 000**
a. Solid Waste Disposal	**1 100**	**1 500**	**1 400**	**1 500**	**1 600**	**1 700**	**1 700**	**1 700**
b. Biological Treatment of Solid Waste	**-**	**40**	**40**	**40**	**40**	**40**	**40**	**40**
c. Wastewater Treatment and Discharge	**73**	**100**	**120**	**120**	**120**	**120**	**120**	**120**
d. Incineration and Open Burning of Waste	**11**	**34**	**22**	**43**	**46**	**40**	**52**	**52**

Notes:

1. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
2. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial/territorial tables.
3. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990–1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.

- Indicates no emissions

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Estimates for the latest year (2016) are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report

Table A11–19 **2016 GHG Emission Summary for Alberta**

Greenhouse Gas Categories	Greenhouse Gases									
	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[4]	PFCs[4]	SF_6	NF_3	TOTAL
Global Warming Potential			25		298			22 800	17 200	
Unit	kt	kt	kt CO_2 eq	kt	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq
TOTAL	**210 000**	**1 700**	**41 000**	**33**	**9 900**	**1 800**	**1**	**3**	**-**	**263 000**
ENERGY	**200 000**	**1 200**	**29 000**	**6**	**2 000**	**-**	**-**	**-**	**-**	**231 000**
a. Stationary Combustion Sources	**154 000**	**80**	**2 000**	**3**	**900**	**-**	**-**	**-**	**-**	**157 000**
Public Electricity and Heat Production	48 000	2	61	0.93	280	-	-	-	-	48 200
Petroleum Refining Industries	4 800	0.08	2	0.02	7	-	-	-	-	4 800
Mining and Upstream Oil and Gas Production	77 400	71	1 800.00	1	400	-	-	-	-	79 700
Manufacturing Industries	10 200	0.31	8	0.27	81	-	-	-	-	10 300
Construction	304	0.01	0.14	0.01	3	-	-	-	-	307
Commercial and Institutional	6 320	0.12	3	0.10	40	-	-	-	-	6 370
Residential	6 930	6	100.00	0.20	60	-	-	-	-	7 130
Agriculture and Forestry	236	0.00	0.11	0.01	2	-	-	-	-	237
b. Transport[1]	**38 800**	**8**	**210**	**3**	**740**	**-**	**-**	**-**	**-**	**39 800**
Domestic Aviation	1 380	0.04	1	0.04	10	-	-	-	-	1 400
Road Transportation	25 500	2	40	1	410	-	-	-	-	25 900
Light-Duty Gasoline Vehicles	2 980	0.29	7	0.13	38	-	-	-	-	3 020
Light-Duty Gasoline Trucks	7 050	0.65	16	0.27	79	-	-	-	-	7 140
Heavy-Duty Gasoline Vehicles	3 190	0.11	3	0.28	84	-	-	-	-	3 280
Motorcycles	45	0.02	0.43	0.00	0.25	-	-	-	-	45
Light-Duty Diesel Vehicles	79	0.00	0.04	0.01	2	-	-	-	-	81
Light-Duty Diesel Trucks	123	0.00	0.08	0.01	3	-	-	-	-	126
Heavy-Duty Diesel Vehicles	12 000	0.50	10	0.70	200	-	-	-	-	12 200
Propane and Natural Gas Vehicles	1	0.00	0.02	0.00	0.01	-	-	-	-	2
Railways	1 690	0.10	2	0.70	200	-	-	-	-	1 900
Domestic Navigation	3	0.00	0.01	0.00	0.03	-	-	-	-	4
Other Transportation	10 200	7	200	0.40	100	-	-	-	-	11 000
Off-Road Agriculture & Forestry	2 600	0.10	3	0.09	30	-	-	-	-	2 600
Off-Road Commercial & Institutional	224	0.50	10	0.01	2	-	-	-	-	240
Off-Road Manufacturing, Mining & Construction	3 140	0.20	6	0.20	60	-	-	-	-	3 200
Off-Road Residential	118	0.30	6	0.00	1	-	-	-	-	130
Off-Road Other Transportation	734	2	60	0.02	5	-	-	-	-	790
Pipeline Transport	3 430	3	83	0.09	30	-	-	-	-	3 540
c. Fugitive Sources	**7 400**	**1 100**	**27 000**	**0.04**	**10**	**-**	**-**	**-**	**-**	**34 000**
Coal Mining	-	10	300	-	-	-	-	-	-	300
Oil and Natural Gas	7 400	1 100	27 000	0.04	10	-	-	-	-	34 000
d. CO_2 Transport and Storage	**0.09**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.09**
INDUSTRIAL PROCESSES AND PRODUCT USE	**8 860**	**2**	**37**	**3**	**998**	**1 800**	**1**	**3**	**-**	**11 700**
a. Mineral Products	**1 200**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1 200**
Cement Production	930	-	-	-	-	-	-	-	-	930
Lime Production	110	-	-	-	-	-	-	-	-	110
Mineral Products Use	160	-	-	-	-	-	-	-	-	160
b. Chemical Industry[2]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**0.34**	**0.00**	**0.00**	**-**	**-**	**-**	**-**	**-**	**-**	**0.34**
Iron and Steel Production	0.34	0.00	0.00	-	-	-	-	-	-	0.34
Aluminum Production	-	-	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[3]	**-**	**-**	**-**	**-**	**-**	**1 800**	**0.36**	**0.12**	**-**	**1 800**
e. Non-Energy Products from Fuels and Solvent Use	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**
f. Other Product Manufacture and Use	**8**	**-**	**-**	**0.12**	**36**	**-**	**0.90**	**3**	**-**	**47**
AGRICULTURE	**700**	**410**	**10 000**	**24**	**7 100**	**-**	**-**	**-**	**-**	**18 000**
a. Enteric Fermentation	**-**	**380**	**9 600**	**-**	**-**	**-**	**-**	**-**	**-**	**9 600**
b. Manure Management	**-**	**27**	**690**	**5**	**1 000**	**-**	**-**	**-**	**-**	**2 100**
c. Agricultural Soils	**-**	**-**	**-**	**19**	**5 700**	**-**	**-**	**-**	**-**	**5 700**
Direct Sources	-	-	-	16	4 600	-	-	-	-	4 600
Indirect Sources	-	-	-	4	1 000	-	-	-	-	1 000
d. Field Burning of Agricultural Residues	**-**	**0.02**	**0.60**	**0.00**	**0.20**	**-**	**-**	**-**	**-**	**0.70**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**700**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**700**
WASTE	**33**	**72**	**1 800**	**0.39**	**120**	**-**	**-**	**-**	**-**	**2 000**
a. Solid Waste Disposal	**-**	**69**	**1 700**	**-**	**-**	**-**	**-**	**-**	**-**	**1 700**
b. Biological Treatment of Solid Waste	**-**	**1**	**30**	**0.06**	**20**	**-**	**-**	**-**	**-**	**40**
c. Wastewater Treatment and Discharge	**-**	**2**	**46**	**0.30**	**80**	**-**	**-**	**-**	**-**	**120**
d. Incineration and Open Burning of Waste	**33**	**0.00**	**0.09**	**0.06**	**20**	**-**	**-**	**-**	**-**	**52**

Notes:

1. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
2. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial/territorial tables.
3. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990–1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.
4. IPCC's Fourth Assessment Report provides global warming potentials (GWPs) for the various species of HFCs and PFCs. Chapter 1, Table 1-1 of this report provides a list of GWPs used.

- Indicates no emissions

0.00 Indicates emissions truncated due to rounding

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Estimates for the latest year (2016) are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report

Table A11–20 GHG Emission Summary for British Columbia, Selected Years

Greenhouse Gas Categories	1990	2005	2011	2012	2013	2014	2015	2016
	kt CO_2 eq							
TOTAL	**51 100**	**63 300**	**59 300**	**60 300**	**60 900**	**60 400**	**59 400**	**60 100**
ENERGY	**42 000**	**51 700**	**49 300**	**50 400**	**51 100**	**50 800**	**49 800**	**49 800**
a. Stationary Combustion Sources	**19 300**	**21 800**	**21 600**	**21 700**	**21 300**	**21 400**	**19 800**	**20 500**
Public Electricity and Heat Production	807	1 340	781	510	596	578	504	656
Petroleum Refining Industries	1 200	500	570	610	520	570	590	670
Mining and Upstream Oil and Gas Production	2 670	5 780	8 330	8 820	8 750	8 800	7 530	7 550
Manufacturing Industries	6 520	6 210	4 030	4 120	4 120	4 410	4 410	4 800
Construction	307	114	103	100	68	66	71	96
Commercial and Institutional	2 850	3 060	2 870	2 850	2 620	2 550	2 300	2 330
Residential	4 590	4 680	4 640	4 320	4 270	4 090	3 950	3 990
Agriculture and Forestry	323	75	281	388	385	382	413	409
b. Transport[1]	**18 600**	**24 600**	**22 300**	**23 600**	**24 300**	**24 200**	**25 100**	**24 900**
Domestic Aviation	1 300	1 600	1 100	1 300	1 300	1 300	1 300	1 300
Road Transportation	9 410	15 400	14 500	15 200	16 200	16 200	16 700	17 300
Light-Duty Gasoline Vehicles	3 790	4 410	3 550	3 580	3 650	3 640	3 760	4 030
Light-Duty Gasoline Trucks	2 050	3 870	3 850	4 000	4 170	4 340	4 630	5 160
Heavy-Duty Gasoline Vehicles	924	1 840	1 690	1 740	1 780	1 730	1 720	1 920
Motorcycles	14	21	22	23	24	25	26	29
Light-Duty Diesel Vehicles	44	93	101	114	128	121	131	119
Light-Duty Diesel Trucks	17	45	55	60	76	86	107	111
Heavy-Duty Diesel Vehicles	1 940	4 900	5 190	5 700	6 390	6 270	6 300	5 930
Propane and Natural Gas Vehicles	620	210	32	23	14	7	6	6
Railways	1 400	430	670	690	530	660	660	x
Domestic Navigation	960	2 400	2 200	2 600	2 100	1 900	1 800	x
Other Transportation	5 500	4 800	3 800	3 700	4 100	4 100	4 600	4 500
Off-Road Agriculture & Forestry	710	870	580	570	620	590	660	540
Off-Road Commercial & Institutional	240	330	320	330	360	350	360	290
Off-Road Manufacturing, Mining & Construction	1 300	1 500	1 300	1 300	1 300	1 300	1 400	1 400
Off-Road Residential	35	180	160	160	150	160	170	140
Off-Road Other Transportation	2 300	980	600	610	610	670	730	750
Pipeline Transport	863	998	813	806	1 020	1 040	1 300	1 440
c. Fugitive Sources	**4 100**	**5 400**	**5 400**	**5 100**	**5 400**	**5 200**	**4 900**	**4 400**
Coal Mining	800	1 000	900	1 000	1 000	1 000	900	1 000
Oil and Natural Gas	3 300	4 400	4 500	4 100	4 300	4 100	4 100	3 500
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**3 310**	**4 600**	**3 830**	**3 900**	**3 860**	**3 770**	**3 640**	**4 200**
a. Mineral Products	**880**	**1 500**	**1 200**	**1 300**	**1 200**	**1 200**	**1 200**	**1 200**
Cement Production	650	1 300	990	1 100	980	970	1 000	1 000
Lime Production	169	188	177	180	169	182	170	165
Mineral Products Use	58	51	23	22	20	21	23	21
b. Chemical Industry[2]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**1 670**	**1 220**	**848**	**886**	**759**	**547**	**477**	**867**
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminum Production	1 670	1 220	847	885	758	546	476	867
SF_6 Used in Magnesium Smelters and Casters	-	1	0.52	0.53	0.54	0.58	0.56	0.57
d. Production and Consumption of Halocarbons, SF_6 and NF_3[3]	**-**	**610**	**1 100**	**1 200**	**1 200**	**1 300**	**1 400**	**1 600**
e. Non-Energy Products from Fuels and Solvent Use	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**
f. Other Product Manufacture and Use	**77**	**95**	**59**	**83**	**77**	**60**	**57**	**57**
AGRICULTURE	**2 200**	**2 700**	**2 100**	**2 100**	**2 200**	**2 200**	**2 200**	**2 300**
a. Enteric Fermentation	**1 400**	**1 800**	**1 300**	**1 300**	**1 300**	**1 300**	**1 300**	**1 400**
b. Manure Management	**320**	**440**	**380**	**380**	**380**	**390**	**390**	**400**
c. Agricultural Soils	**480**	**470**	**450**	**420**	**500**	**440**	**450**	**470**
Direct Sources	390	360	350	330	400	340	360	370
Indirect Sources	100	100	90	90	100	90	90	100
d. Field Burning of Agricultural Residues	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**30**	**20**	**30**	**20**	**30**	**20**	**20**	**30**
WASTE	**3 600**	**4 200**	**4 100**	**3 900**	**3 800**	**3 700**	**3 700**	**3 700**
a. Solid Waste Disposal	**3 400**	**4 000**	**3 800**	**3 600**	**3 500**	**3 400**	**3 500**	**3 400**
b. Biological Treatment of Solid Waste	**-**	**50**	**70**	**80**	**80**	**90**	**90**	**90**
c. Wastewater Treatment and Discharge	**100**	**140**	**150**	**150**	**150**	**150**	**150**	**150**
d. Incineration and Open Burning of Waste	**81**	**79**	**65**	**63**	**61**	**59**	**57**	**54**

Notes:

1. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
2. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial/territorial tables.
3. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990–1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.

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Provincial/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report

Table A11–21 2016 GHG Emission Summary for British Columbia

Greenhouse Gas Categories	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[4]	PFCs[4]	SF_6	NF_3	TOTAL
	Greenhouse Gases									
Global Warming Potential			25		298			22 800	17 200	
Unit	kt	kt	kt CO_2 eq	kt	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq
TOTAL	**47 800**	**350**	**8 800**	**6**	**1 700**	**1 600**	**170**	**14**	**-**	**60 100**
ENERGY	**45 300**	**150**	**3 600**	**3**	**800**	**-**	**-**	**-**	**-**	**49 800**
a. Stationary Combustion Sources	**19 500**	**30**	**700**	**1**	**300**	**-**	**-**	**-**	**-**	**20 500**
Public Electricity and Heat Production	640	0.19	5	0.05	13	-	-	-	-	656
Petroleum Refining Industries	670	0.01	0.30	0.01	3	-	-	-	-	670
Mining and Upstream Oil and Gas Production	7 100	16	400	0.20	50	-	-	-	-	7 550
Manufacturing Industries	4 630	0.68	17	0.50	150	-	-	-	-	4 800
Construction	95	0.00	0.05	0.00	0.60	-	-	-	-	96
Commercial and Institutional	2 310	0.05	1	0.05	10	-	-	-	-	2 330
Residential	3 680	10	300	0.20	60	-	-	-	-	3 990
Agriculture and Forestry	406	0.01	0.19	0.01	2	-	-	-	-	409
b. Transport[1]	**24 200**	**6**	**140**	**2**	**550**	**-**	**-**	**-**	**-**	**24 900**
Domestic Aviation	1 320	0.06	1	0.04	10	-	-	-	-	1 300
Road Transportation	16 900	1	30	1	400	-	-	-	-	17 300
Light-Duty Gasoline Vehicles	3 920	0.31	8	0.32	95	-	-	-	-	4 030
Light-Duty Gasoline Trucks	4 990	0.40	10	0.53	160	-	-	-	-	5 160
Heavy-Duty Gasoline Vehicles	1 870	0.08	2	0.16	47	-	-	-	-	1 920
Motorcycles	28	0.01	0.27	0.00	0.16	-	-	-	-	29
Light-Duty Diesel Vehicles	116	0.00	0.06	0.01	3	-	-	-	-	119
Light-Duty Diesel Trucks	108	0.00	0.07	0.01	3	-	-	-	-	111
Heavy-Duty Diesel Vehicles	5 820	0.30	6	0.30	100	-	-	-	-	5 930
Propane and Natural Gas Vehicles	6	0.00	0.07	0.00	0.03	-	-	-	-	6
Railways	x	x	x	x	x	x	x	x	x	x
Domestic Navigation	x	x	x	x	x	x	x	x	x	x
Other Transportation	4 380	4	100	0.10	40	-	-	-	-	4 500
Off-Road Agriculture & Forestry	530	0.05	1	0.02	7	-	-	-	-	540
Off-Road Commercial & Institutional	277	0.40	10	0.01	3	-	-	-	-	290
Off-Road Manufacturing, Mining & Construction	1 340	0.20	6	0.06	20	-	-	-	-	1 400
Off-Road Residential	133	0.30	7	0.00	1	-	-	-	-	140
Off-Road Other Transportation	701	2	50	0.02	5	-	-	-	-	750
Pipeline Transport	1 400	1	34	0.04	10	-	-	-	-	1 440
c. Fugitive Sources	**1 600**	**110**	**2 800**	**0.00**	**1**	**-**	**-**	**-**	**-**	**4 400**
Coal Mining	-	40	1 000	-	-	-	-	-	-	1 000
Oil and Natural Gas	1 600	75	1 900	0.00	1	-	-	-	-	3 500
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**2 400**	**-**	**-**	**0.13**	**40**	**1 600**	**170**	**14**	**-**	**4 200**
a. Mineral Products	**1 200**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1 200**
Cement Production	1 000	-	-	-	-	-	-	-	-	1 000
Lime Production	165	-	-	-	-	-	-	-	-	165
Mineral Products Use	21	-	-	-	-	-	-	-	-	21
b. Chemical Industry[2]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**702**	**-**	**-**	**-**	**-**	**-**	**165**	**0.57**	**-**	**867**
Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
Aluminum Production	702	-	-	-	-	-	165	-	-	867
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	0.57	-	0.57
d. Production and Consumption of Halocarbons, SF_6 and NF_3[3]	**-**	**-**	**-**	**-**	**-**	**1 600**	**0.18**	**-**	**-**	**1 600**
e. Non-Energy Products from Fuels and Solvent Use	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**
f. Other Product Manufacture and Use	**4**	**-**	**-**	**0.13**	**40**	**-**	**0.61**	**13**	**-**	**57**
AGRICULTURE	**30**	**63**	**1 600**	**2**	**700**	**-**	**-**	**-**	**-**	**2 300**
a. Enteric Fermentation	**-**	**56**	**1400**	**-**	**-**	**-**	**-**	**-**	**-**	**1 400**
b. Manure Management	**-**	**7**	**170**	**0.80**	**200**	**-**	**-**	**-**	**-**	**400**
c. Agricultural Soils	**-**	**-**	**-**	**2**	**470**	**-**	**-**	**-**	**-**	**470**
Direct Sources	-	-	-	1	370	-	-	-	-	370
Indirect Sources	-	-	-	0.30	100	-	-	-	-	100
d. Field Burning of Agricultural Residues	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**30**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**30**
WASTE	**47**	**140**	**3 600**	**0.44**	**130**	**-**	**-**	**-**	**-**	**3 700**
a. Solid Waste Disposal	**-**	**140**	**3 400**	**-**	**-**	**-**	**-**	**-**	**-**	**3 400**
b. Biological Treatment of Solid Waste	**-**	**2**	**50**	**0.10**	**40**	**-**	**-**	**-**	**-**	**90**
c. Wastewater Treatment and Discharge	**-**	**3**	**65**	**0.30**	**90**	**-**	**-**	**-**	**-**	**150**
d. Incineration and Open Burning of Waste	**47**	**-**	**-**	**0.02**	**7**	**-**	**-**	**-**	**-**	**54**

Notes:

1. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
2. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial/territorial tables.
3. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990–1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.
4. IPCC's Fourth Assessment Report provides global warming potentials (GWPs) for the various species of HFCs and PFCs. Chapter 1, Table 1-1 of this report provides a list of GWPs used.

- Indicates no emissions

0.00 Indicates emissions truncated due to rounding

x Indicates data has been suppressed to respect confidentiality

Estimates for the latest year (2016) are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report

Table A11–22 GHG Emission Summary for Yukon, Selected Years

Greenhouse Gas Categories	1990	2005	2011	2012	2013	2014	2015	2016
	kt CO_2 eq							
TOTAL	**533**	**523**	**660**	**652**	**574**	**447**	**488**	**426**
ENERGY	**528**	**510**	**636**	**626**	**548**	**419**	**459**	**396**
a. Stationary Combustion Sources	**222**	**194**	**153**	**145**	**119**	**68**	**68**	**66**
Public Electricity and Heat Production	94	23	28	19	18	17	19	20
Petroleum Refining Industries	-	-	-	-	-	-	-	-
Mining and Upstream Oil and Gas Production	9	75	18	20	5	4	4	4
Manufacturing Industries	6	-	15	15	15	14	14	15
Construction	4	2	2	2	2	1	0.62	1
Commercial and Institutional	77	41	61	64	57	25	25	22
Residential	31	45	30	26	23	7	5	5
Agriculture and Forestry	1	8	-	-	-	-	-	-
b. Transport[1]	**306**	**306**	**472**	**470**	**429**	**351**	**391**	**329**
Domestic Aviation	34	35	40	47	46	39	35	38
Road Transportation	217	252	407	401	364	260	277	242
Light-Duty Gasoline Vehicles	71	34	39	36	31	30	31	29
Light-Duty Gasoline Trucks	31	49	71	68	63	65	69	69
Heavy-Duty Gasoline Vehicles	14	43	50	50	46	22	22	21
Motorcycles	0.26	0.24	0.37	0.36	0.33	0.34	0.37	0.36
Light-Duty Diesel Vehicles	2	0	1	1	1	4	4	3
Light-Duty Diesel Trucks	0.28	0.51	0.94	0.87	0.78	4	6	5
Heavy-Duty Diesel Vehicles	96	121	244	244	222	135	145	114
Propane and Natural Gas Vehicles	1	3	0.94	0.30	0.18	0.10	0.09	0.25
Railways	-	x	x	x	x	x	x	-
Domestic Navigation	-	x	x	x	x	x	16	x
Other Transportation	55	x	x	x	x	x	x	x
Off-Road Agriculture & Forestry	0.48	0.19	0.21	0.18	0.15	0.63	0.81	3
Off-Road Commercial & Institutional	3	2	2	2	2	5	6	2
Off-Road Manufacturing, Mining & Construction	0.69	9	14	12	10	36	46	34
Off-Road Residential	1	x	x	x	x	x	x	x
Off-Road Other Transportation	24	7	7	6	5	8	9	9
Pipeline Transport	-	x	x	x	x	x	x	x
c. Fugitive Sources	**-**	**10**	**11**	**11**	**0.09**	**0.09**	**0.09**	**0.09**
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	-	10	11	11	0.09	0.09	0.09	0.09
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**2**	**10**	**18**	**20**	**20**	**21**	**22**	**24**
a. Mineral Products	**0.13**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Cement Production	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-
Mineral Products Use	0.13	-	-	-	-	-	-	-
b. Chemical Industry[2]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminum Production	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[3]	**-**	**9**	**16**	**18**	**19**	**20**	**22**	**23**
e. Non-Energy Products from Fuels and Solvent Use	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**
f. Other Product Manufacture and Use	**0.17**	**0.36**	**0.28**	**0.32**	**0.33**	**0.3**	**0.33**	**0.49**
AGRICULTURE	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
a. Enteric Fermentation	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
b. Manure Management	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
c. Agricultural Soils	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Direct Sources	-	-	-	-	-	-	-	-
Indirect Sources	-	-	-	-	-	-	-	-
d. Field Burning of Agricultural Residues	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
WASTE	**2**	**4**	**6**	**6**	**6**	**7**	**7**	**7**
a. Solid Waste Disposal	**0.94**	**2**	**4**	**4**	**4**	**4**	**4**	**4**
b. Biological Treatment of Solid Waste	**-**	**0.20**	**0.40**	**0.40**	**0.40**	**0.40**	**0.50**	**0.40**
c. Wastewater Treatment and Discharge	**1**	**2**	**2**	**2**	**2**	**2**	**2**	**2**
d. Incineration and Open Burning of Waste	**-**	**0.02**	**-**	**-**	**-**	**-**	**-**	**-**

Notes:

1. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
2. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial/territorial tables.
3. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990–1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.

- Indicates no emissions

0.00 Indicates emissions truncated due to rounding

x Indicates data has been suppressed to respect confidentiality

Estimates for the latest year (2016) are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report

Table A11–23 **2016 GHG Emission Summary for Yukon**

Greenhouse Gas Categories	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[4]	PFCs[4]	SF_6	NF_3	TOTAL
	Greenhouse Gases									
Global Warming Potential			25		298			22 800	17 200	
Unit	kt	kt	kt CO_2 eq	kt	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq
TOTAL	**388**	**0.31**	**8**	**0.02**	**7**	**23**	**0.00**	**0.11**	**-**	**426**
ENERGY	**388**	**0.07**	**2**	**0.02**	**6**	**-**	**-**	**-**	**-**	**396**
a. Stationary Combustion Sources	**64**	**0.03**	**0.60**	**0.00**	**1**	**-**	**-**	**-**	**-**	**66**
Public Electricity and Heat Production	19	0.00	0.03	0.00	0.79	-	-	-	-	20
Petroleum Refining Industries	-	-	-	-	-	-	-	-	-	-
Mining and Upstream Oil and Gas Production	4	0.00	0.00	0.00	0.08	-	-	-	-	4
Manufacturing Industries	15	0.00	0.00	0.00	0.05	-	-	-	-	15
Construction	0.99	0.00	0.00	0.00	0.01	-	-	-	-	1.00
Commercial and Institutional	21	0.00	0.01	0.00	0.20	-	-	-	-	22
Residential	4	0.02	0.60	0.00	0.20	-	-	-	-	5
Agriculture and Forestry	-	-	-	-	-	-	-	-	-	-
b. Transport[1]	**324**	**0.04**	**0.96**	**0.02**	**5**	**-**	**-**	**-**	**-**	**329**
Domestic Aviation	38	0.00	0.08	0.00	0.40	-	-	-	-	38
Road Transportation	238	0.01	0.40	0.01	4	-	-	-	-	242
Light-Duty Gasoline Vehicles	29	0.00	0.07	0.00	0.35	-	-	-	-	29
Light-Duty Gasoline Trucks	68	0.01	0.15	0.00	0.73	-	-	-	-	69
Heavy-Duty Gasoline Vehicles	20	0.00	0.02	0.00	0.51	-	-	-	-	21
Motorcycles	0.36	0.00	0.00	0.00	0.00	-	-	-	-	0.36
Light-Duty Diesel Vehicles	3	0.00	0.00	0.00	0.08	-	-	-	-	3
Light-Duty Diesel Trucks	5	0.00	0.00	0.00	0.10	-	-	-	-	5
Heavy-Duty Diesel Vehicles	112	0.01	0.10	0.01	2	-	-	-	-	114
Propane and Natural Gas Vehicles	0.25	0.00	0.00	0.00	0.00	-	-	-	-	0.25
Railways	-	-	-	-	-	-	-	-	-	-
Domestic Navigation	x	x	x	x	x	x	x	x	x	x
Other Transportation	x	x	x	x	x	x	x	x	x	x
Off-Road Agriculture & Forestry	3	0.00	0.00	0.00	0.03	-	-	-	-	3
Off-Road Commercial & Institutional	2	0.00	0.02	0.00	0.02	-	-	-	-	2
Off-Road Manufacturing, Mining & Construction	34	0.00	0.05	0.00	0.40	-	-	-	-	34
Off-Road Residential	x	x	x	x	x	x	x	x	x	x
Off-Road Other Transportation	8	0.02	0.40	0.00	0.07	-	-	-	-	9
Pipeline Transport	x	x	x	x	x	x	x	x	x	x
c. Fugitive Sources	**0.00**	**0.00**	**0.09**	**-**	**-**	**-**	**-**	**-**	**-**	**0.09**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	0.00	0.00	0.09	-	-	-	-	-	-	0.09
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**0.06**	**-**	**-**	**0.00**	**0.31**	**23**	**0.00**	**0.11**	**-**	**24**
a. Mineral Products	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Cement Production	-	-	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-	-	-
Mineral Products Use	-	-	-	-	-	-	-	-	-	-
b. Chemical Industry[2]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
Aluminum Production	-	-	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[3]	**-**	**-**	**-**	**-**	**-**	**23**	**0.00**	**-**	**-**	**23**
e. Non-Energy Products from Fuels and Solvent Use	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**
f. Other Product Manufacture and Use	**0.06**	**-**	**-**	**0.00**	**0.31**	**-**	**-**	**0.11**	**-**	**0.49**
AGRICULTURE	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
a. Enteric Fermentation	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
b. Manure Management	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
c. Agricultural Soils	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Direct Sources	-	-	-	-	-	-	-	-	-	-
Indirect Sources	-	-	-	-	-	-	-	-	-	-
d. Field Burning of Agricultural Residues	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
WASTE	**-**	**0.24**	**6**	**0.00**	**0.89**	**-**	**-**	**-**	**-**	**7**
a. Solid Waste Disposal	**-**	**0.18**	**4**	**-**	**-**	**-**	**-**	**-**	**-**	**4**
b. Biological Treatment of Solid Waste	**-**	**0.01**	**0.30**	**0.00**	**0.20**	**-**	**-**	**-**	**-**	**0.40**
c. Wastewater Treatment and Discharge	**-**	**0.05**	**1**	**0.00**	**0.70**	**-**	**-**	**-**	**-**	**2**
d. Incineration and Open Burning of Waste	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Notes:

1. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
2. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial/territorial tables.
3. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990–1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.
4. IPCC's Fourth Assessment Report provides global warming potentials (GWPs) for the various species of HFCs and PFCs. Chapter 1, Table 1-1 of this report provides a list of GWPs used.

- Indicates no emissions

0.00 Indicates emissions truncated due to rounding

x Indicates data has been suppressed to respect confidentiality

Estimates for the latest year (2016) are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report

Table A11–24 GHG Emission Summary for Northwest Territories, Selected Years

Greenhouse Gas Categories	1990	2005	2011	2012	2013	2014	2015	2016
	kt CO_2 eq							
TOTAL	**1 220**	**1 560**	**1 410**	**1 530**	**1 370**	**1 500**	**1 720**	**1 610**
ENERGY	**1 200**	**1 530**	**1 380**	**1 490**	**1 330**	**1 460**	**1 680**	**1 560**
a. Stationary Combustion Sources	**604**	**724**	**635**	**756**	**637**	**651**	**678**	**629**
Public Electricity and Heat Production	91	99	65	65	67	86	123	71
Petroleum Refining Industries	-	-	-	-	-	-	-	-
Mining and Upstream Oil and Gas Production	234	380	375	512	387	4	360	396
Manufacturing Industries	-	x	x	x	x	x	x	x
Construction	0.83	x	x	x	x	x	x	x
Commercial and Institutional	192	141	96	88	91	86	92	88
Residential	85	102	97	88	92	107	102	73
Agriculture and Forestry	0	2	-	-	-	-	-	-
b. Transport[1]	**580**	**790**	**729**	**715**	**674**	**792**	**987**	**921**
Domestic Aviation	130	170	120	140	130	110	110	110
Road Transportation	274	506	502	488	456	324	388	405
Light-Duty Gasoline Vehicles	39	9	11	12	9	9	11	12
Light-Duty Gasoline Trucks	25	33	48	53	41	39	52	54
Heavy-Duty Gasoline Vehicles	15	19	29	33	26	14	18	18
Motorcycles	0.15	0.11	0.22	0.28	0.20	0.19	0.27	0.29
Light-Duty Diesel Vehicles	3	1	1	1	1	4	5	6
Light-Duty Diesel Trucks	0.74	2	1	1	0.92	5	7	8
Heavy-Duty Diesel Vehicles	191	441	411	389	378	252	295	308
Propane and Natural Gas Vehicles	0.80	-	-	-	-	-	-	-
Railways	3	6	10	10	11	18	16	13
Domestic Navigation	4	-	0.27	-	1	3	1	4
Other Transportation	170	110	96	80	75	330	470	390
Off-Road Agriculture & Forestry	0.65	0.44	0.29	0.24	0.22	1	2	1
Off-Road Commercial & Institutional	11	7	6	5	5	17	24	4
Off-Road Manufacturing, Mining & Construction	130	87	77	62	59	290	410	350
Off-Road Residential	2	2	2	2	x	4	5	5
Off-Road Other Transportation	25	9	9	9	7	20	27	29
Pipeline Transport	5	3	2	3	x	1	0.79	0.28
c. Fugitive Sources	**14**	**18**	**14**	**24**	**20**	**19**	**14**	**14**
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	14	18	14	24	20	19	14	14
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**10**	**22**	**27**	**29**	**30**	**33**	**34**	**36**
a. Mineral Products	**0.01**	**0.16**	**-**	**-**	**-**	**-**	**-**	**-**
Cement Production	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-
Mineral Products Use	0.01	0.16	-	-	-	-	-	-
b. Chemical Industry[2]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminum Production	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[3]	**6**	**14**	**23**	**25**	**25**	**27**	**29**	**32**
e. Non-Energy Products from Fuels and Solvent Use	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**
f. Other Product Manufacture and Use	**0.53**	**0.49**	**0.37**	**0.42**	**0.42**	**0.39**	**0.45**	**0.54**
AGRICULTURE	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
a. Enteric Fermentation	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
b. Manure Management	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
c. Agricultural Soils	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Direct Sources	-	-	-	-	-	-	-	-
Indirect Sources	-	-	-	-	-	-	-	-
d. Field Burning of Agricultural Residues	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
WASTE	**8**	**9**	**9**	**10**	**10**	**10**	**10**	**10**
a. Solid Waste Disposal	**5**	**6**	**6**	**6**	**6**	**7**	**7**	**7**
b. Biological Treatment of Solid Waste	**-**	**-**	**0.06**	**0.03**	**0.02**	**0.03**	**0.06**	**0.08**
c. Wastewater Treatment and Discharge	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**
d. Incineration and Open Burning of Waste	**0.19**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Notes:

1. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
2. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial/territorial tables.
3. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990–1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.

- Indicates no emissions

0.00 Indicates emissions truncated due to rounding

x Indicates data has been suppressed to respect confidentiality

Estimates for the latest year (2016) are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report

Table A11–25 2016 GHG Emission Summary for Northwest Territories

Greenhouse Gas Categories	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[4]	PFCs[4]	SF_6	NF_3	TOTAL
	Greenhouse Gases									
Global Warming Potential			25		298			22 800	17 200	
Unit	kt	kt	kt CO_2 eq	kt	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq
TOTAL	**1 530**	**0.74**	**18**	**0.10**	**29**	**32**	**0.00**	**-**	**-**	**1 610**
ENERGY	**1 530**	**0.36**	**9**	**0.09**	**30**	**-**	**-**	**-**	**-**	**1 560**
a. Stationary Combustion Sources	**614**	**0.06**	**1**	**0.05**	**10**	**-**	**-**	**-**	**-**	**629**
Public Electricity and Heat Production	68	0.01	0.12	0.01	3	-	-	-	-	71
Petroleum Refining Industries	-	-	-	-	-	-	-	-	-	-
Mining and Upstream Oil and Gas Production	385	0.03	0.62	0.03	10	-	-	-	-	396
Manufacturing Industries	x	x	x	x	x	x	x	x	x	x
Construction	x	x	x	x	x	x	x	x	x	x
Commercial and Institutional	87	0.00	0.04	0.00	0.60	-	-	-	-	88
Residential	72	0.02	0.60	0.00	0.30	-	-	-	-	73
Agriculture and Forestry	-	-	-	-	-	-	-	-	-	-
b. Transport[1]	**906**	**0.06**	**2**	**0.05**	**14**	**-**	**-**	**-**	**-**	**921**
Domestic Aviation	107	0.01	0.20	0.00	1	-	-	-	-	110
Road Transportation	398	0.02	0.50	0.02	7	-	-	-	-	405
Light-Duty Gasoline Vehicles	11	0.00	0.03	0.00	0.12	-	-	-	-	12
Light-Duty Gasoline Trucks	54	0.00	0.11	0.00	0.55	-	-	-	-	54
Heavy-Duty Gasoline Vehicles	18	0.00	0.02	0.00	0.44	-	-	-	-	18
Motorcycles	0.29	0.00	0.00	0.00	0.00	-	-	-	-	0.29
Light-Duty Diesel Vehicles	6	0.00	0.00	0.00	0.10	-	-	-	-	6
Light-Duty Diesel Trucks	7	0.00	0.01	0.00	0.20	-	-	-	-	8
Heavy-Duty Diesel Vehicles	303	0.01	0.30	0.02	5	-	-	-	-	308
Propane and Natural Gas Vehicles	-	-	-	-	-	-	-	-	-	-
Railways	12	0.00	0.02	0.01	1	-	-	-	-	13
Domestic Navigation	4	0.00	0.01	0.00	0.03	-	-	-	-	4
Other Transportation	385	0.03	0.80	0.02	5	-	-	-	-	390
Off-Road Agriculture & Forestry	1	0.00	0.00	0.00	0.02	-	-	-	-	1
Off-Road Commercial & Institutional	4	0.00	0.02	0.00	0.04	-	-	-	-	4
Off-Road Manufacturing, Mining & Construction	346	0.01	0.30	0.01	4	-	-	-	-	350
Off-Road Residential	5	0.00	0.06	0.00	0.05	-	-	-	-	5
Off-Road Other Transportation	29	0.02	0.50	0.00	0.30	-	-	-	-	29
Pipeline Transport	0.27	0.00	0.00	0.00	0.01	-	-	-	-	0.28
c. Fugitive Sources	**8**	**0.24**	**6**	**0.00**	**0.00**	**-**	**-**	**-**	**-**	**14**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	8	0.24	6	0.00	0.00	-	-	-	-	14
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**4**	**-**	**-**	**0.00**	**0.37**	**32**	**0.00**	**-**	**-**	**36**
a. Mineral Products	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Cement Production	-	-	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-	-	-
Mineral Products Use	-	-	-	-	-	-	-	-	-	-
b. Chemical Industry[2]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
Aluminum Production	-	-	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[3]	**-**	**-**	**-**	**-**	**-**	**32**	**0.00**	**-**	**-**	**32**
e. Non-Energy Products from Fuels and Solvent Use	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**
f. Other Product Manufacture and Use	**0.20**	**-**	**-**	**0.00**	**0.37**	**-**	**-**	**-**	**-**	**0.54**
AGRICULTURE	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
a. Enteric Fermentation	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
b. Manure Management	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
c. Agricultural Soils	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Direct Sources	-	-	-	-	-	-	-	-	-	-
Indirect Sources	-	-	-	-	-	-	-	-	-	-
d. Field Burning of Agricultural Residues	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
WASTE	**0.00**	**0.38**	**10**	**0.00**	**0.86**	**-**	**-**	**-**	**-**	**10**
a. Solid Waste Disposal	**-**	**0.27**	**7**	**-**	**-**	**-**	**-**	**-**	**-**	**7**
b. Biological Treatment of Solid Waste	**-**	**0.00**	**0.05**	**0.00**	**0.03**	**-**	**-**	**-**	**-**	**0.08**
c. Wastewater Treatment and Discharge	**-**	**0.10**	**3**	**0.00**	**0.80**	**-**	**-**	**-**	**-**	**3**
d. Incineration and Open Burning of Waste	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**-**	**-**	**-**	**-**	**0.00**

Notes:

1. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
2. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial/territorial tables.
3. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990–1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.
4. IPCC's Fourth Assessment Report provides global warming potentials (GWPs) for the various species of HFCs and PFCs. Chapter 1, Table 1-1 of this report provides a list of GWPs used.

- Indicates no emissions

0.00 Indicates emissions truncated due to rounding

x Indicates data has been suppressed to respect confidentiality

Estimates for the latest year (2016) are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report

Table A11–26 GHG Emission Summary for Nunavut, Selected Years

Greenhouse Gas Categories	1990	2005	2011	2012	2013	2014	2015	2016
	kt CO_2 eq							
TOTAL	**262**	**443**	**509**	**550**	**694**	**688**	**612**	**700**
ENERGY	**254**	**428**	**487**	**527**	**669**	**662**	**583**	**670**
a. Stationary Combustion Sources	**108**	**133**	**76**	**76**	**72**	**123**	**118**	**129**
Public Electricity and Heat Production	18	x	x	x	x	x	x	129
Petroleum Refining Industries	-	-	-	-	-	-	-	-
Mining and Upstream Oil and Gas Production	90	0.26	-	-	-	-	-	-
Manufacturing Industries	-	x	x	x	-	-	-	-
Construction	-	x	x	x	x	x	x	x
Commercial and Institutional	-	8	-	-	-	-	-	-
Residential	-	-	-	-	-	-	-	-
Agriculture and Forestry	-	-	-	-	-	-	-	-
b. Transport[1]	**145**	**296**	**411**	**450**	**597**	**539**	**465**	**540**
Domestic Aviation	110	140	130	140	140	130	120	110
Road Transportation	17	102	205	235	255	113	89	128
Light-Duty Gasoline Vehicles	2	6	8	9	9	9	9	11
Light-Duty Gasoline Trucks	4	8	15	17	18	20	20	26
Heavy-Duty Gasoline Vehicles	2	8	10	12	12	6	6	8
Motorcycles	0.01	0.02	0.04	0.05	0.06	0.06	0.06	0.08
Light-Duty Diesel Vehicles	0.07	0.33	0.78	0.85	0.91	2	2	2
Light-Duty Diesel Trucks	-	0.35	0.72	0.74	0.79	2	2	4
Heavy-Duty Diesel Vehicles	8	79	171	196	214	73	50	77
Propane and Natural Gas Vehicles	0.86	-	-	-	-	-	-	-
Railways	-	x	x	x	x	x	x	x
Domestic Navigation	-	-	-	-	120	130	120	120
Other Transportation	17	x	x	x	x	x	x	x
Off-Road Agriculture & Forestry	-	-	-	-	-	-	-	-
Off-Road Commercial & Institutional	2	6	7	7	8	16	13	3
Off-Road Manufacturing, Mining & Construction	10	37	54	52	53	120	97	140
Off-Road Residential	0.59	x	x	x	x	x	x	x
Off-Road Other Transportation	5	9	14	15	15	25	22	31
Pipeline Transport	-	x	x	x	x	-	-	-
c. Fugitive Sources	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	-	-	-	-	-	-	-	-
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**3**	**8**	**15**	**16**	**17**	**18**	**20**	**22**
a. Mineral Products	**0.01**	**0.16**	**-**	**-**	**-**	**-**	**-**	**-**
Cement Production	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-
Mineral Products Use	0.01	0.16	-	-	-	-	-	-
b. Chemical Industry[2]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminum Production	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[3]	**3**	**8**	**14**	**16**	**17**	**18**	**20**	**22**
e. Non-Energy Products from Fuels and Solvent Use	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**
f. Other Product Manufacture and Use	**0.35**	**0.34**	**0.26**	**0.30**	**0.32**	**0.28**	**0.28**	**0.35**
AGRICULTURE	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
a. Enteric Fermentation	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
b. Manure Management	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
c. Agricultural Soils	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Direct Sources	-	-	-	-	-	-	-	-
Indirect Sources	-	-	-	-	-	-	-	-
d. Field Burning of Agricultural Residues	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
WASTE	**5**	**7**	**8**	**8**	**8**	**8**	**9**	**9**
a. Solid Waste Disposal	**3**	**4**	**5**	**5**	**5**	**5**	**6**	**6**
b. Biological Treatment of Solid Waste	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
c. Wastewater Treatment and Discharge	**2**	**2**	**3**	**3**	**3**	**3**	**3**	**3**
d. Incineration and Open Burning of Waste	**-**	**0.06**	**0.07**	**0.07**	**0.08**	**0.08**	**0.08**	**0.08**

Notes:

1. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
2. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial/territorial tables.
3. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990–1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.

- Indicates no emissions

0.00 Indicates emissions truncated due to rounding

x Indicates data has been suppressed to respect confidentiality

Estimates for the latest year (2016) are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report

Table A11–27 2016 GHG Emission Summary for Nunavut

Greenhouse Gas Categories	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[4]	PFCs[4]	SF_6	NF_3	TOTAL
	Greenhouse Gases									
Global Warming Potential			25		298			22 800	17 200	
Unit	kt	kt	kt CO_2 eq	kt	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq	kt CO_2 eq
TOTAL	**656**	**0.39**	**10**	**0.04**	**12**	**22**	**0.00**	**-**	**-**	**700**
ENERGY	**656**	**0.08**	**2**	**0.04**	**10**	**-**	**-**	**-**	**-**	**670**
a. Stationary Combustion Sources	**124**	**0.01**	**0.20**	**0.02**	**5**	**-**	**-**	**-**	**-**	**129**
Public Electricity and Heat Production	120	0.01	0.15	0.02	6	-	-	-	-	129
Petroleum Refining Industries	-	-	-	-	-	-	-	-	-	-
Mining and Upstream Oil and Gas Production	-	-	-	-	-	-	-	-	-	-
Manufacturing Industries	-	-	-	-	-	-	-	-	-	-
Construction	x	x	x	x	x	x	x	x	x	x
Commercial and Institutional	-	-	-	-	-	-	-	-	-	-
Residential	-	-	-	-	-	-	-	-	-	-
Agriculture and Forestry	-	-	-	-	-	-	-	-	-	-
b. Transport[1]	**533**	**0.07**	**2**	**0.02**	**6**	**-**	**-**	**-**	**-**	**540**
Domestic Aviation	113	0.00	0.05	0.00	0.90	-	-	-	-	110
Road Transportation	126	0.01	0.20	0.01	2	-	-	-	-	128
Light-Duty Gasoline Vehicles	11	0.00	0.02	0.00	0.12	-	-	-	-	11
Light-Duty Gasoline Trucks	26	0.00	0.05	0.00	0.26	-	-	-	-	26
Heavy-Duty Gasoline Vehicles	7	0.00	0.01	0.00	0.19	-	-	-	-	8
Motorcycles	0.08	0.00	0.00	0.00	0.00	-	-	-	-	0.08
Light-Duty Diesel Vehicles	2	0.00	0.00	0.00	0.06	-	-	-	-	2
Light-Duty Diesel Trucks	4	0.00	0.00	0.00	0.09	-	-	-	-	4
Heavy-Duty Diesel Vehicles	76	0.00	0.08	0.00	1	-	-	-	-	77
Propane and Natural Gas Vehicles	-	-	-	-	-	-	-	-	-	-
Railways	x	x	x	x	x	x	x	x	x	x
Domestic Navigation	116	0.01	0.30	0.00	1	-	-	-	-	120
Other Transportation	x	x	x	x	x	x	x	x	x	x
Off-Road Agriculture & Forestry	-	-	-	-	-	-	-	-	-	-
Off-Road Commercial & Institutional	3	0.00	0.04	0.00	0.03	-	-	-	-	3
Off-Road Manufacturing, Mining & Construction	141	0.01	0.10	0.01	2	-	-	-	-	140
Off-Road Residential	x	x	x	x	x	x	x	x	x	x
Off-Road Other Transportation	30	0.04	1	0.00	0.30	-	-	-	-	31
Pipeline Transport	-	-	-	-	-	-	-	-	-	-
c. Fugitive Sources	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	-	-	-	-	-	-	-	-	-	-
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**0.04**	**-**	**-**	**0.00**	**0.31**	**22**	**0.00**	**-**	**-**	**22**
a. Mineral Products	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Cement Production	-	-	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-	-	-
Mineral Products Use	-	-	-	-	-	-	-	-	-	-
b. Chemical Industry[2]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
Aluminum Production	-	-	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[3]	**-**	**-**	**-**	**-**	**-**	**22**	**0.00**	**-**	**-**	**22**
e. Non-Energy Products from Fuels and Solvent Use	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**
f. Other Product Manufacture and Use	**0.04**	**-**	**-**	**0.00**	**0.31**	**-**	**-**	**-**	**-**	**0.35**
AGRICULTURE	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
a. Enteric Fermentation	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
b. Manure Management	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
c. Agricultural Soils	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Direct Sources	-	-	-	-	-	-	-	-	-	-
Indirect Sources	-	-	-	-	-	-	-	-	-	-
d. Field Burning of Agricultural Residues	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
WASTE	**0.08**	**0.32**	**8**	**0.00**	**0.69**	**-**	**-**	**-**	**-**	**9**
a. Solid Waste Disposal	**-**	**0.23**	**6**	**-**	**-**	**-**	**-**	**-**	**-**	**6**
b. Biological Treatment of Solid Waste	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
c. Wastewater Treatment and Discharge	**-**	**0.09**	**2**	**0.00**	**0.70**	**-**	**-**	**-**	**-**	**3**
d. Incineration and Open Burning of Waste	**0.08**	**0.00**	**0.00**	**0.00**	**0.00**	**-**	**-**	**-**	**-**	**0.08**

Notes:

1. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
2. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial/territorial tables.
3. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990–1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.
4. IPCC's Fourth Assessment Report provides global warming potentials (GWPs) for the various species of HFCs and PFCs. Chapter 1, Table 1-1 of this report provides a list of GWPs used.

- Indicates no emissions

0.00 Indicates emissions truncated due to rounding

x Indicates data has been suppressed to respect confidentiality

Estimates for the latest year (2016) are based on preliminary energy data; these data, though the best available information at the time of publication, are subject to revision in the next submission year.

Provincial/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report

Table A11–28 GHG Emission Summary for Northwest Territories & Nunavut, Selected Years

Greenhouse Gas Categories	1990	1991	1992	1993	1994	1995	1996	1997	1998
	kt CO_2 eq								
TOTAL	**1 630**	**1 600**	**1 400**	**1 670**	**1 830**	**1 960**	**1 890**	**1 710**	**1 550**
ENERGY	**1 620**	**1 570**	**1 390**	**1 630**	**1 710**	**1 860**	**1 880**	**1 700**	**1 530**
a. Stationary Combustion Sources	**922**	**992**	**854**	**952**	**1 010**	**1 160**	**1 030**	**981**	**740**
Public Electricity and Heat Production	163	162	131	142	145	161	123	135	180
Petroleum Refining Industries	8	6	7	5	12	11	4	-	-
Mining and Upstream Oil and Gas Production	311	237	129	172	244	357	305	293	262
Manufacturing Industries	26	16	18	8	14	20	-	-	-
Construction	6	5	6	3	4	21	0.68	0.70	0.53
Commercial and Institutional	250	367	357	389	401	474	405	371	207
Residential	156	188	192	230	190	118	196	181	90
Agriculture and Forestry	2	9	12	2	2	0.01	-	0.01	0.02
b. Transport[1]	**601**	**479**	**445**	**588**	**638**	**631**	**782**	**703**	**779**
Domestic Aviation	240	220	220	240	240	220	230	230	230
Road Transportation	166	124	110	162	175	148	228	219	266
Light-Duty Gasoline Vehicles	45	40	40	55	55	46	53	54	43
Light-Duty Gasoline Trucks	21	19	19	26	27	23	29	31	25
Heavy-Duty Gasoline Vehicles	10	9	10	13	13	11	15	17	15
Motorcycles	0.16	0.13	0.12	0.15	0.14	0.11	0.12	0.12	0.08
Light-Duty Diesel Vehicles	2	1	1	1	1	1	2	2	3
Light-Duty Diesel Trucks	0.08	0.07	0.07	0.14	0.18	0.18	0.40	0.39	0.66
Heavy-Duty Diesel Vehicles	86	54	39	65	75	64	127	114	178
Propane and Natural Gas Vehicles	0.80	0.79	2	1	3	2	1	1	1
Railways	3	2	2	2	2	2	1	3	2
Domestic Navigation	0.14	0.21	0.53	0.46	0.10	63	-	-	-
Other Transportation	190	140	110	190	220	190	320	250	280
Off-Road Agriculture & Forestry	0.38	0.26	0.20	0.37	0.44	0.40	0.70	0.56	0.75
Off-Road Commercial & Institutional	12	9	7	12	15	13	23	18	23
Off-Road Manufacturing, Mining & Construction	130	90	69	130	150	140	230	180	210
Off-Road Residential	3	2	1	3	3	3	5	4	5
Off-Road Other Transportation	44	35	32	47	49	42	57	49	46
Pipeline Transport	-	-	-	-	2	0.14	0.09	0.04	-
c. Fugitive Sources	**97**	**100**	**89**	**94**	**65**	**65**	**60**	**12**	**10**
Coal Mining	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	97	100	89	94	65	65	60	12	10
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**5**	**13**	**4**	**26**	**106**	**88**	**4**	**5**	**7**
a. Mineral Products	**-**	**-**	**-**	**-**	**-**	**0.03**	**0.03**	**0.03**	**0.00**
Cement Production	-	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-	-
Mineral Products Use	-	-	-	-	-	0.03	0.03	0.03	0.00
b. Chemical Industry[2]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-	-
Aluminum Production	-	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[3]	**-**	**-**	**-**	**-**	**-**	**2**	**3**	**4**	**6**
e. Non-Energy Products from Fuels and Solvent Use	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**
f. Other Product Manufacture and Use	**0.37**	**0.36**	**0.3**	**0.34**	**0.38**	**0.46**	**0.47**	**0.50**	**0.86**
AGRICULTURE	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
a. Enteric Fermentation	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
b. Manure Management	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
c. Agricultural Soils	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Direct Sources	-	-	-	-	-	-	-	-	-
Indirect Sources	-	-	-	-	-	-	-	-	-
d. Field Burning of Agricultural Residues	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
WASTE	**10**	**10**	**11**	**11**	**11**	**12**	**12**	**13**	**13**
a. Solid Waste Disposal	**5**	**6**	**6**	**6**	**6**	**7**	**7**	**7**	**8**
b. Biological Treatment of Solid Waste	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
c. Wastewater Treatment and Discharge	**4**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
d. Incineration and Open Burning of Waste	**0.18**	**0.18**	**0.18**	**0.19**	**0.19**	**0.19**	**0.20**	**0.20**	**0.19**

Notes:

1. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
2. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production and Carbon Black categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial/territorial tables.
3. HFC and PFC consumption began in 1995; HFC emissions occurring as a by-product of HCFC production (HCFC-22 exclusively) only occurred in Canada from 1990–1992 and PFC emissions prior to 1995 are the result of by-product CF_4 emissions from the use of NF_3.

- Indicates no emissions

0.00 Indicates emissions truncated due to rounding

x Indicates data has been suppressed to respect confidentiality

Provincial/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report

Annex 12

PROVINCIAL/ TERRITORIAL GREENHOUSE GAS EMISSION TABLES BY CANADIAN ECONOMIC SECTOR, 1990–2016

This annex contains summary tables (Table A12–2 to Table A12–15) illustrating GHG emissions by province/territory, allocated to Canadian economic sectors, from 1990–2016. To account for the creation of Nunavut in 1999, a time series from 1999–2016 is provided for both Northwest Territories and Nunavut (Table A12–13 and Table A12–14), and the years 1990–1998 are presented as a combined region in Table A12–15. In addition, Table A12–1 provides a brief description of each economic sector.

Provincial/territorial GHG emissions allocated to IPCC sectors are provided in Annex 11 of this report.

Reallocating provincial/territorial emissions from IPCC sectors into Canadian economic sectors is useful for the purposes of analyzing trends and policies, as most people associate GHG emissions with a particular economic activity (e.g. producing electricity, farming, or driving a car). This re-allocation simply re-categorizes emissions under different headings but does not change the overall magnitude of the provincial/territorial emission estimates. Estimates for each economic sector include emissions from energy-related and non energy related processes.

Although the UNFCCC reporting guidelines require that only national-level detail be reported, provincial- and territorial-level detail is important, owing to the regional differences in emission levels and trends. Note that provincial and territorial emission estimates may not necessarily sum to the national totals due to rounding.

Provincial/territorial greenhouse gas emission tables are also available in electronic file format online at http://open.canada.ca.

Table A12–1 **Canadian Economic Sector Descriptions**

Economic Sector	Description
Oil and Gas	
Upstream Oil and Gas	Stationary combustion, onsite transportation, electricity and steam production, fugitive and process emissions from:
Natural Gas Production and Processing	- natural gas production and processing
Conventional Light Oil Production	- conventional light crude oil production
Conventional Heavy Oil Production	- conventinoal heavy crude oil production
Frontier Oil Production	- offshore and arctic production of crude oil
Oil Sands (Mining, In-situ, Upgrading)	Stationary combustion, onsite transportation, electricity and steam production, fugitive and process emissions from:
Mining and Extraction	- crude bitumen mining and extraction
In-situ	- in-situ extraction of crude bitumen including primary extraction, cyclic steam stimulation (CSS), steam-assisted gravity drainage (SAGD) and other experimental techniques.
Upgrading	- crude bitumen and heavy oil upgrading to synthetic crude oil
Oil and Natural Gas Transmission	Combustion and fugitive emissions from the transport and storage of crude oil and natural gas
Downstream Oil and Gas	Emissions resulting from:
Petroleum Refining	Stationary combustion, onsite transportation, electricity and steam production, fugitive and process emissions from petroleum refining industries
Natural Gas Distribution	Combustion and fugitive emissions from local distribution of natural gas
Electricity	Combustion and process emissions from utility electricity generation, steam production (for sale) and transmission. Excludes utility owned cogeneration at industrial sites.
Transportation	Mobile related emissions including all fossil fuels and non-CO_2 emission from biofuels.
Passenger Transport	Mobile related combustion, process and refrigerant emissions from the vehicles that primarily move people around.
Cars, Light Trucks and Motorcycles	- Light duty cars and trucks up to 4 500 lb. GVWR and motorcycles.
Bus, Rail and Domestic Aviation	- All buses and the passenger component of rail and domestic aviation
Freight Transport	Mobile related combustion, process and refrigerant emissions from the vehicles that primarily move cargo or freight around.
Heavy Duty Trucks, Rail	- Vehicles above 4 500 lb. GVWR and the freight component of rail
Domestic Aviation and Marine	- Cargo/Freight component of domestic aviation and all domestic navigation
Other: Recreational, Commercial and Residential	Combustion emissions from the non-industrial use of off-road engines (e.g., ATVs, snowmobiles, personal watercraft), including portable engines (e.g., generators, lawn mowers, chain saws).
Heavy Industry	Stationary combustion, onsite transportation, electricty and steam production, and process emissions from:
Mining	- metal and non-metal mines, stone quarries, and gravel pits
Smelting and Refining (Non Ferrous Metals)	- Non-ferrous Metals (aluminium, magnesium and other production)
Pulp and Paper	- Pulp and Paper (primarily pulp, paper, and paper product manufacturers)
Iron and Steel	- Iron and Steel (steel foundries, casting, rolling mills and iron making)
Cement	- Cement and other non-metallic mineral production
Lime & Gypsum	- Lime and Gypsum product manufacturing
Chemicals & Fertilizers	- Chemical (fertilizer manufacturing, organic and inorganic chemical manufacturing)
Buildings	Stationary combustion and process (i.e. air conditioning) emissions from:
Service Industry	- Service industries related to mining, communication, wholesale and retail trade, finance and insurance, real estate, education, etc.; offices, health, arts, accommodation, food, information & cultural; Federal, provincial and municipal establishments; National Defence and Canadian Coast Guard; Train stations, airports and warehouses
Residential	- personal residences (homes, apartment hotels, condominiums and farm houses)
Agriculture	Emissions resulting from:
On Farm Fuel Use	- Stationary combustion, onsite transportation and process emissions from the agricultural, hunting and trapping industry (excluding food processing, farm machinery manufacturing, and repair)
Crop Production	- Application of inorganic nitrogen fertilizers, decomposition of crop residues, loss of soil organic carbon, cultivation of organic soils, indirect emissions from leaching and volatilization, field burning of agricultural residues, liming, and urea application
Animal Production	- Animal housing, manure storage, manure deposited by grazing animals, and application of manure to managed soils
Waste	Non-CO_2 Emissions from biomass resulting from:
Solid Waste	- Municipal solid waste management sites (landfills), dedicated wood waste landfills, and composting of municipal solid waste
Waste Water	- Domestic and industrial wastewater treatment
Waste Incineration	- Municipal solid, hazardous and clinical waste, and sewage sludge incineration
Coal Production	Stationary combustion, onsite transportation and fugitive emissions from underground and surface coal mines
Light Manufacturing, Construction & Forest Resources	Stationary combustion, onsite transportation, electricty and steam production, and process emissions from (excluding LULUCF):
Light Manufacturing	- all other manufacturing industries not included in the Heavy Industry category above
Construction	- construction of buildings, highways etc.
Forest Resources	- forestry and logging service industry

Table A12–2 **GHG Emissions for Newfoundland and Labrador by Canadian Economic Sector, Selected Years**

	1990	2005	2011	2012	2013	2014	2015	2016
	Mt CO_2 eq							
NATIONAL GHG TOTAL	9.3	9.9	10.0	9.4	9.4	10.4	10.6	10.8
Oil and Gas	**1.1**	**2.6**	**2.4**	**2.4**	**2.6**	**2.7**	**2.5**	**2.7**
Upstream Oil and Gas	-	1.6	1.5	1.3	1.6	1.7	1.6	1.7
Natural Gas Production and Processing	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Conventional Oil Production	-	1.6	1.5	1.3	1.6	1.7	1.6	1.6
Conventional Light Oil Production	-	-	0.0	-	-	0.0	-	-
Conventional Heavy Oil Production	-	-	-	-	-	-	-	-
Frontier Oil Production	-	1.6	1.5	1.3	1.6	1.7	1.6	1.6
Oil Sands (Mining, In-situ, Upgrading)	-	-	-	-	-	-	-	-
Mining and Extraction	-	-	-	-	-	-	-	-
In-situ	-	-	-	-	-	-	-	-
Upgrading	-	-	-	-	-	-	-	-
Oil and Natural Gas Transmission	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Downstream Oil and Gas	1.1	1.0	0.9	1.1	1.0	1.0	1.0	1.1
Petroleum Refining	1.1	1.0	0.9	1.1	1.0	1.0	1.0	1.1
Natural Gas Distribution	-	-	-	-	-	-	-	-
Electricity	**1.6**	**0.8**	**0.8**	**0.8**	**0.9**	**1.2**	**1.3**	**1.5**
Transportation	**2.8**	**3.1**	**3.7**	**3.6**	**3.1**	**3.5**	**3.8**	**3.8**
Passenger Transport	1.3	1.4	1.8	2.0	1.8	2.0	2.1	2.0
Cars, Light Trucks and Motorcycles	1.1	1.3	1.7	1.8	1.6	1.8	1.9	1.8
Bus, Rail and Domestic Aviation	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Freight Transport	1.1	1.4	1.7	1.4	1.2	1.3	1.5	1.6
Heavy Duty Trucks, Rail	0.4	0.9	1.1	0.9	0.9	1.1	1.2	1.3
Domestic Aviation and Marine	0.7	0.6	0.6	0.4	0.3	0.2	0.3	0.4
Other: Recreational, Commercial and Residential	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Heavy Industry	**1.8**	**1.6**	**1.0**	**0.8**	**0.8**	**0.8**	**0.8**	**0.5**
Mining	1.3	1.3	0.9	0.8	0.8	0.8	0.7	0.4
Smelting and Refining (Non Ferrous Metals)	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Pulp and Paper	0.4	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Iron and Steel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cement	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lime & Gypsum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chemicals & Fertilizers	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Buildings	**1.2**	**0.9**	**1.0**	**0.8**	**1.1**	**1.2**	**1.1**	**1.1**
Service Industry	0.3	0.4	0.4	0.3	0.7	0.7	0.7	0.7
Residential	0.8	0.4	0.6	0.5	0.4	0.5	0.4	0.5
Agriculture	**0.1**	**0.1**	**0.1**	**0.2**	**0.1**	**0.1**	**0.1**	**0.1**
On Farm Fuel Use	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Crop Production	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Animal Production	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Waste	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
Solid Waste	0.5	0.6	0.5	0.6	0.6	0.6	0.6	0.6
Wastewater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Waste Incineration	-	-	-	-	-	-	-	-
Coal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Light Manufacturing, Construction & Forest Resources	**0.2**	**0.2**	**0.3**	**0.3**	**0.2**	**0.2**	**0.3**	**0.3**
Light Manufacturing	0.1	0.0	0.2	0.1	0.1	0.1	0.1	0.1
Construction	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2
Forest Resources	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Notes:

Totals may not add up due to rounding.

National GHG emissions allocated to IPCC sectors are provided in Annex 9 of this report.

Provincial/territorial GHG emissions allocated to IPCC sectors are provided in Annex 11 of this report.

Estimates presented here are under continual improvement. Historical emissions may be change in future publications as new data becomes available and methods and models are refined and improved.

Emission estimates for Solid Waste include emissions from municipal solid waste landfills, wood waste landfills and municipal solid waste composting.

- Indicates no emissions.

0 indicates emissions of less than 0.5 Mt CO_2 eq; truncated due to rounding

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Table A12–3 GHG Emissions for Nova Scotia by Canadian Economic Sector, Selected Years

	1990	2005	2011	2012	2013	2014	2015	2016
	Mt CO_2 eq							
NATIONAL GHG TOTAL	19.6	23.2	20.9	19.2	18.2	16.4	16.6	15.6
Oil and Gas	**0.7**	**1.5**	**1.5**	**1.6**	**1.4**	**0.8**	**0.6**	**0.5**
Upstream Oil and Gas	0.0	0.4	0.7	0.6	0.6	0.8	0.6	0.5
Natural Gas Production and Processing	0.0	0.4	0.7	0.6	0.6	0.8	0.6	0.5
Conventional Oil Production	-	-	-	-	-	-	-	-
Conventional Light Oil Production	-	-	-	-	-	-	-	-
Conventional Heavy Oil Production	-	-	-	-	-	-	-	-
Frontier Oil Production	-	-	-	-	-	-	-	-
Oil Sands (Mining, In-situ, Upgrading)	-	-	-	-	-	-	-	-
Mining and Extraction	-	-	-	-	-	-	-	-
In-situ	-	-	-	-	-	-	-	-
Upgrading	-	-	-	-	-	-	-	-
Oil and Natural Gas Transmission	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Downstream Oil and Gas	0.7	1.1	0.9	1.0	0.9	0.0	0.0	0.0
Petroleum Refining	0.7	1.1	0.9	1.0	0.8	0.0	0.0	0.0
Natural Gas Distribution	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Electricity	**6.9**	**10.8**	**8.5**	**7.6**	**7.6**	**7.2**	**7.0**	**6.6**
Transportation	**4.6**	**5.6**	**5.5**	**5.2**	**4.8**	**4.3**	**4.8**	**4.8**
Passenger Transport	2.4	2.8	2.8	2.9	2.5	2.3	2.8	2.9
Cars, Light Trucks and Motorcycles	2.2	2.6	2.6	2.7	2.3	2.1	2.6	2.7
Bus, Rail and Domestic Aviation	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Freight Transport	1.5	2.5	2.4	2.0	2.0	1.8	1.7	1.6
Heavy Duty Trucks, Rail	0.9	1.6	1.8	1.6	1.6	1.5	1.5	1.4
Domestic Aviation and Marine	0.6	0.9	0.5	0.4	0.3	0.3	0.2	0.2
Other: Recreational, Commercial and Residential	0.6	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Heavy Industry	**1.0**	**0.8**	**0.6**	**0.6**	**0.5**	**0.4**	**0.5**	**0.5**
Mining	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1
Smelting and Refining (Non Ferrous Metals)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pulp and Paper	0.4	0.3	0.2	0.1	0.1	0.1	0.1	0.1
Iron and Steel	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cement	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3
Lime & Gypsum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chemicals & Fertilizers	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Buildings	**3.0**	**2.8**	**3.1**	**2.6**	**2.5**	**2.2**	**2.3**	**2.0**
Service Industry	0.8	1.3	1.1	0.8	0.9	0.7	0.8	0.7
Residential	2.2	1.4	2.0	1.8	1.6	1.5	1.5	1.3
Agriculture	**0.6**	**0.6**	**0.6**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**
On Farm Fuel Use	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1
Crop Production	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Animal Production	0.4	0.4	0.3	0.3	0.4	0.4	0.4	0.3
Waste	**0.7**	**0.6**	**0.5**	**0.5**	**0.5**	**0.5**	**0.4**	**0.4**
Solid Waste	0.6	0.5	0.4	0.4	0.4	0.4	0.4	0.4
Wastewater	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Waste Incineration	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Coal Production	**1.6**	**0.1**	**0.1**	**0.1**	**0.1**	**0.0**	**0.0**	**0.0**
Light Manufacturing, Construction & Forest Resources	**0.4**	**0.4**	**0.5**	**0.4**	**0.4**	**0.4**	**0.3**	**0.3**
Light Manufacturing	0.2	0.2	0.3	0.3	0.3	0.3	0.2	0.2
Construction	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Forest Resources	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Notes:

Totals may not add up due to rounding.

National GHG emissions allocated to IPCC sectors are provided in Annex 9 of this report.

Provincial/territorial GHG emissions allocated to IPCC sectors are provided in Annex 11 of this report.

Estimates presented here are under continual improvement. Historical emissions may be change in future publications as new data becomes available and methods and models are refined and improved.

Emission estimates for Solid Waste include emissions from municipal solid waste landfills, wood waste landfills and municipal solid waste composting.

- Indicates no emissions.

0 indicates emissions of less than 0.5 Mt CO_2 eq; truncated due to rounding

Table A12–4 GHG Emissions for Prince Edward Island by Canadian Economic Sector, Selected Years

	1990	2005	2011	2012	2013	2014	2015	2016
	Mt CO_2 eq							
NATIONAL GHG TOTAL	1.9	2.0	2.1	2.0	1.7	1.7	1.7	1.8
Oil and Gas	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Upstream Oil and Gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Natural Gas Production and Processing	-	-	-	-	-	-	-	-
Conventional Oil Production	-	-	-	-	-	-	-	-
Conventional Light Oil Production	-	-	-	-	-	-	-	-
Conventional Heavy Oil Production	-	-	-	-	-	-	-	-
Frontier Oil Production	-	-	-	-	-	-	-	-
Oil Sands (Mining, In-situ, Upgrading)	-	-	-	-	-	-	-	-
Mining and Extraction	-	-	-	-	-	-	-	-
In-situ	-	-	-	-	-	-	-	-
Upgrading	-	-	-	-	-	-	-	-
Oil and Natural Gas Transmission	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Downstream Oil and Gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Petroleum Refining	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Natural Gas Distribution	-	-	-	-	-	-	-	-
Electricity	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**x**	**x**	**x**
Transportation	**0.6**	**0.8**	**0.9**	**0.8**	**0.7**	**0.7**	**0.8**	**0.9**
Passenger Transport	0.4	0.5	0.5	0.5	0.4	0.4	0.4	0.5
Cars, Light Trucks and Motorcycles	0.4	0.5	0.5	0.5	0.4	0.4	0.4	0.5
Bus, Rail and Domestic Aviation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Freight Transport	0.2	0.2	0.3	0.3	0.2	0.3	0.3	0.3
Heavy Duty Trucks, Rail	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Domestic Aviation and Marine	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Other: Recreational, Commercial and Residential	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Heavy Industry	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Mining	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Smelting and Refining (Non Ferrous Metals)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pulp and Paper	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Iron and Steel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cement	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lime & Gypsum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chemicals & Fertilizers	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Buildings	**0.6**	**0.4**	**0.6**	**0.5**	**0.4**	**0.4**	**0.3**	**0.3**
Service Industry	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0
Residential	0.4	0.3	0.5	0.4	0.3	0.3	0.2	0.3
Agriculture	**0.4**	**0.5**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.5**
On Farm Fuel Use	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
Crop Production	0.1	0.2	0.2	0.2	0.1	0.2	0.2	0.2
Animal Production	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Waste	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Solid Waste	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Wastewater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Waste Incineration	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Coal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Light Manufacturing, Construction & Forest Resources	**0.1**	**0.2**	**0.2**	**0.2**	**0.1**	**0.1**	**0.1**	**0.1**
Light Manufacturing	0.1	0.1	0.1	0.2	0.1	x	x	x
Construction	0.0	0.0	0.0	0.0	0.0	x	x	x
Forest Resources	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Notes:

Totals may not add up due to rounding.

National GHG emissions allocated to IPCC sectors are provided in Annex 9 of this report.

Provincial/territorial GHG emissions allocated to IPCC sectors are provided in Annex 11 of this report.

Estimates presented here are under continual improvement. Historical emissions may be change in future publications as new data becomes available and methods and models are refined and improved.

Emission estimates for Solid Waste include emissions from municipal solid waste landfills, wood waste landfills and municipal solid waste composting.

- Indicates no emissions.

0 indicates emissions of less than 0.5 Mt CO_2 eq; truncated due to rounding

Table A12–5 GHG Emissions for New Brunswick by Canadian Economic Sector, Selected Years

	1990	2005	2011	2012	2013	2014	2015	2016
	Mt CO_2 eq							
NATIONAL GHG TOTAL	16.1	20.1	18.7	16.8	14.8	14.4	14.3	15.3
Oil and Gas	**1.2**	**2.5**	**3.3**	**3.3**	**3.2**	**2.9**	**2.7**	**2.6**
Upstream Oil and Gas	-	0.0	0.0	0.0	0.1	0.1	0.1	0.1
Natural Gas Production and Processing	-	0.0	0.0	0.0	0.1	0.1	0.1	0.0
Conventional Oil Production	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Conventional Light Oil Production	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Conventional Heavy Oil Production	-	-	-	-	-	-	-	-
Frontier Oil Production	-	-	-	-	-	-	-	-
Oil Sands (Mining, In-situ, Upgrading)	-	-	-	-	-	-	-	-
Mining and Extraction	-	-	-	-	-	-	-	-
In-situ	-	-	-	-	-	-	-	-
Upgrading	-	-	-	-	-	-	-	-
Oil and Natural Gas Transmission	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Downstream Oil and Gas	1.2	2.5	3.3	3.3	3.1	2.8	2.6	2.5
Petroleum Refining	1.2	2.5	3.3	3.2	3.1	2.8	2.6	2.5
Natural Gas Distribution	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Electricity	**6.0**	**8.1**	**4.9**	**4.1**	**4.2**	**4.4**	**4.0**	**4.9**
Transportation	**3.8**	**4.9**	**5.6**	**4.9**	**4.0**	**3.7**	**3.9**	**4.3**
Passenger Transport	1.6	2.2	2.4	2.4	2.0	1.8	2.1	2.4
Cars, Light Trucks and Motorcycles	1.5	2.1	2.3	2.3	1.9	1.6	2.0	2.3
Bus, Rail and Domestic Aviation	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Freight Transport	1.2	2.2	2.8	2.2	1.7	1.6	1.5	1.5
Heavy Duty Trucks, Rail	0.9	1.8	2.3	1.8	1.4	1.4	1.3	1.3
Domestic Aviation and Marine	0.3	0.4	0.5	0.3	0.3	0.3	0.2	0.2
Other: Recreational, Commercial and Residential	1.1	0.5	0.3	0.3	0.3	0.3	0.3	0.3
Heavy Industry	**1.8**	**1.3**	**1.3**	**1.2**	**0.9**	**0.8**	**1.0**	**0.9**
Mining	0.2	0.3	0.4	0.3	0.1	0.1	0.1	0.1
Smelting and Refining (Non Ferrous Metals)	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.1
Pulp and Paper	1.3	0.7	0.5	0.5	0.5	0.4	0.5	0.4
Iron and Steel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cement	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lime & Gypsum	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Chemicals & Fertilizers	0.0	0.1	0.1	0.1	0.0	0.0	0.1	0.2
Buildings	**1.8**	**1.5**	**1.9**	**1.9**	**1.1**	**1.2**	**1.3**	**1.2**
Service Industry	0.6	0.7	0.9	1.0	0.5	0.5	0.5	0.5
Residential	1.2	0.8	1.0	0.9	0.6	0.6	0.8	0.7
Agriculture	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**	**0.5**	**0.6**
On Farm Fuel Use	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1
Crop Production	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3
Animal Production	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Waste	**0.5**	**0.6**	**0.5**	**0.6**	**0.6**	**0.5**	**0.5**	**0.5**
Solid Waste	0.5	0.6	0.5	0.5	0.5	0.5	0.5	0.5
Wastewater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Waste Incineration	-	0.0	0.0	0.0	0.0	0.0	0.0	-
Coal Production	**0.0**	**0.0**	**-**	**-**	**-**	**-**	**-**	**-**
Light Manufacturing, Construction & Forest Resources	**0.4**	**0.5**	**0.5**	**0.4**	**0.4**	**0.3**	**0.3**	**0.3**
Light Manufacturing	0.2	0.4	0.3	0.2	0.3	0.2	0.2	0.2
Construction	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Forest Resources	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

Notes:

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Provincial/territorial GHG emissions allocated to IPCC sectors are provided in Annex 11 of this report.

Estimates presented here are under continual improvement. Historical emissions may be change in future publications as new data becomes available and methods and models are refined and improved.

Emission estimates for Solid Waste include emissions from municipal solid waste landfills, wood waste landfills and municipal solid waste composting.

- Indicates no emissions.

0 indicates emissions of less than 0.5 Mt CO_2 eq; truncated due to rounding

Table A12–6 **GHG Emissions for Quebec by Canadian Economic Sector, Selected Years**

	1990	2005	2011	2012	2013	2014	2015	2016
	Mt CO_2 eq							
NATIONAL GHG TOTAL	86.6	86.5	81.7	79.5	79.9	78.0	78.4	77.3
Oil and Gas	**3.9**	**4.4**	**2.8**	**2.8**	**2.7**	**2.7**	**2.8**	**2.4**
Upstream Oil and Gas	0.2	0.3	0.2	0.2	0.3	0.3	0.3	0.2
Natural Gas Production and Processing	-	-	0.0	-	-	-	-	-
Conventional Oil Production	-	-	-	-	-	-	-	-
Conventional Light Oil Production	-	-	-	-	-	-	-	-
Conventional Heavy Oil Production	-	-	-	-	-	-	-	-
Frontier Oil Production	-	-	-	-	-	-	-	-
Oil Sands (Mining, In-situ, Upgrading)	-	-	-	-	-	-	-	-
Mining and Extraction	-	-	-	-	-	-	-	-
In-situ	-	-	-	-	-	-	-	-
Upgrading	-	-	-	-	-	-	-	-
Oil and Natural Gas Transmission	0.2	0.3	0.1	0.2	0.3	0.3	0.3	0.2
Downstream Oil and Gas	3.7	4.1	2.7	2.6	2.4	2.3	2.5	2.2
Petroleum Refining	3.6	4.0	2.6	2.5	2.4	2.2	2.4	2.2
Natural Gas Distribution	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Electricity	**1.5**	**0.7**	**0.4**	**0.5**	**0.4**	**0.3**	**0.3**	**0.3**
Transportation	**24.8**	**31.3**	**33.0**	**32.9**	**32.5**	**30.7**	**31.1**	**31.7**
Passenger Transport	15.0	18.9	19.1	18.7	18.5	17.7	18.1	18.5
Cars, Light Trucks and Motorcycles	14.2	18.1	18.3	17.8	17.6	16.9	17.3	17.7
Bus, Rail and Domestic Aviation	0.8	0.8	0.8	0.9	0.9	0.8	0.8	0.8
Freight Transport	5.6	10.4	12.0	12.5	12.3	11.3	11.2	11.3
Heavy Duty Trucks, Rail	4.0	9.0	10.9	11.5	11.2	10.4	10.4	10.4
Domestic Aviation and Marine	1.6	1.4	1.0	0.9	1.0	0.8	0.8	0.8
Other: Recreational, Commercial and Residential	4.1	2.0	1.9	1.7	1.7	1.7	1.8	1.9
Heavy Industry	**24.9**	**19.5**	**17.4**	**17.0**	**17.4**	**17.2**	**16.6**	**14.8**
Mining	2.1	1.5	1.4	1.9	1.9	1.7	1.6	1.6
Smelting and Refining (Non Ferrous Metals)	12.9	9.8	8.1	7.6	7.8	7.3	7.4	7.0
Pulp and Paper	4.5	2.8	1.5	1.4	1.6	1.2	1.4	1.4
Iron and Steel	1.2	0.9	1.9	1.5	2.1	2.2	1.2	1.1
Cement	2.5	2.5	2.3	2.5	2.2	2.2	2.3	2.0
Lime & Gypsum	0.5	0.9	0.9	0.9	0.7	0.8	0.8	0.7
Chemicals & Fertilizers	1.2	1.1	1.4	1.2	1.1	1.8	1.8	0.9
Buildings	**12.7**	**13.1**	**11.2**	**9.9**	**10.0**	**10.7**	**10.9**	**10.9**
Service Industry	4.5	6.4	6.3	5.3	5.4	6.0	6.1	5.9
Residential	8.3	6.8	4.9	4.6	4.6	4.8	4.8	5.0
Agriculture	**8.2**	**8.5**	**8.7**	**8.8**	**8.7**	**8.7**	**8.9**	**8.9**
On Farm Fuel Use	1.1	0.9	1.1	1.0	1.0	0.9	1.0	0.9
Crop Production	1.9	1.8	2.1	2.5	2.4	2.4	2.6	2.7
Animal Production	5.2	5.8	5.4	5.3	5.3	5.3	5.3	5.3
Waste	**5.3**	**4.8**	**3.3**	**3.0**	**3.3**	**3.6**	**3.9**	**4.0**
Solid Waste	4.6	4.3	2.8	2.6	2.9	3.2	3.5	3.5
Wastewater	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Waste Incineration	0.4	0.3	0.3	0.1	0.1	0.1	0.1	0.1
Coal Production	-	-	-	-	-	-	-	-
Light Manufacturing, Construction & Forest Resources	**5.3**	**4.1**	**4.8**	**4.7**	**4.9**	**4.1**	**3.8**	**4.2**
Light Manufacturing	3.7	2.9	3.0	3.2	3.6	2.9	2.5	2.9
Construction	1.4	1.0	1.4	1.2	1.1	1.0	1.0	1.1
Forest Resources	0.2	0.2	0.3	0.3	0.3	0.2	0.3	0.2

Notes:

Totals may not add up due to rounding.

National GHG emissions allocated to IPCC sectors are provided in Annex 9 of this report.

Provincial/territorial GHG emissions allocated to IPCC sectors are provided in Annex 11 of this report.

Estimates presented here are under continual improvement. Historical emissions may be change in future publications as new data becomes available and methods and models are refined and improved.

Emission estimates for Solid Waste include emissions from municipal solid waste landfills, wood waste landfills and municipal solid waste composting.

- Indicates no emissions.

0 indicates emissions of less than 0.5 Mt CO_2 eq; truncated due to rounding

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Table A12–7 GHG Emissions for Ontario by Canadian Economic Sector, Selected Years

	1990	2005	2011	2012	2013	2014	2015	2016
	Mt CO_2 eq							
NATIONAL GHG TOTAL	179.2	204.7	172.5	169.1	168.4	165.4	162.9	160.6
Oil and Gas	**10.3**	**11.8**	**9.1**	**10.2**	**10.3**	**10.7**	**10.1**	**9.4**
Upstream Oil and Gas	3.3	3.9	1.7	1.7	1.7	2.3	2.3	1.9
Natural Gas Production and Processing	0.3	0.4	0.3	0.4	0.2	0.2	0.2	0.2
Conventional Oil Production	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Conventional Light Oil Production	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Conventional Heavy Oil Production	-	-	-	-	-	-	-	-
Frontier Oil Production	-	-	-	-	-	-	-	-
Oil Sands (Mining, In-situ, Upgrading)	-	-	-	-	-	-	-	-
Mining and Extraction	-	-	-	-	-	-	-	-
In-situ	-	-	-	-	-	-	-	-
Upgrading	-	-	-	-	-	-	-	-
Oil and Natural Gas Transmission	3.0	3.6	1.4	1.3	1.5	2.1	2.1	1.7
Downstream Oil and Gas	7.0	7.9	7.4	8.5	8.5	8.5	7.9	7.5
Petroleum Refining	6.6	7.3	6.9	8.0	8.0	7.9	7.3	7.0
Natural Gas Distribution	0.4	0.6	0.5	0.5	0.5	0.5	0.5	0.5
Electricity	**25.9**	**33.9**	**12.9**	**12.8**	**9.2**	**4.9**	**5.0**	**4.5**
Transportation	**41.6**	**57.1**	**55.8**	**53.8**	**56.4**	**54.5**	**55.5**	**55.8**
Passenger Transport	25.5	35.1	33.3	31.5	33.3	32.4	33.2	33.9
Cars, Light Trucks and Motorcycles	23.5	33.0	31.3	29.2	31.0	30.2	31.0	31.7
Bus, Rail and Domestic Aviation	2.0	2.1	2.0	2.3	2.3	2.2	2.2	2.2
Freight Transport	8.4	17.7	18.8	19.0	19.6	18.6	18.8	18.3
Heavy Duty Trucks, Rail	7.0	16.5	17.7	17.7	18.1	17.0	17.3	16.9
Domestic Aviation and Marine	1.4	1.2	1.1	1.3	1.5	1.5	1.5	1.4
Other: Recreational, Commercial and Residential	7.7	4.2	3.7	3.4	3.5	3.5	3.6	3.6
Heavy Industry	**43.1**	**35.2**	**30.5**	**31.2**	**28.8**	**29.9**	**28.6**	**30.0**
Mining	1.0	0.9	1.2	1.3	1.3	1.3	1.2	1.3
Smelting and Refining (Non Ferrous Metals)	1.5	1.9	1.0	1.0	0.9	0.7	0.7	0.7
Pulp and Paper	3.2	2.1	2.2	1.9	2.0	1.8	1.7	1.9
Iron and Steel	15.0	15.1	14.6	14.8	12.4	13.7	12.4	13.7
Cement	4.5	6.4	4.5	4.8	4.4	4.4	4.2	4.2
Lime & Gypsum	1.7	1.7	1.2	1.2	1.1	1.1	1.1	1.1
Chemicals & Fertilizers	16.2	7.1	5.8	6.4	6.7	6.9	7.3	7.2
Buildings	**27.9**	**36.2**	**35.5**	**32.8**	**35.8**	**38.9**	**37.1**	**34.5**
Service Industry	9.7	15.4	14.7	14.3	15.2	16.6	15.9	15.6
Residential	18.2	20.8	20.8	18.5	20.5	22.3	21.3	18.8
Agriculture	**12.5**	**12.4**	**12.7**	**12.6**	**12.9**	**12.4**	**12.1**	**12.5**
On Farm Fuel Use	2.1	2.3	2.9	2.8	2.7	2.5	2.5	2.5
Crop Production	3.1	2.7	3.6	3.4	3.8	3.6	3.3	3.7
Animal Production	7.3	7.4	6.3	6.3	6.3	6.3	6.3	6.4
Waste	**5.4**	**7.0**	**6.4**	**6.4**	**6.2**	**5.7**	**5.7**	**5.8**
Solid Waste	4.9	6.4	5.8	5.8	5.6	5.0	5.0	5.0
Wastewater	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Waste Incineration	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4
Coal Production	-	-	-	-	-	-	-	-
Light Manufacturing, Construction & Forest Resources	**12.5**	**11.1**	**9.7**	**9.3**	**8.9**	**8.4**	**8.7**	**8.1**
Light Manufacturing	9.9	8.0	6.9	6.8	6.5	6.1	6.1	5.8
Construction	2.5	2.9	2.7	2.4	2.3	2.2	2.5	2.2
Forest Resources	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1

Notes:

Totals may not add up due to rounding.

National GHG emissions allocated to IPCC sectors are provided in Annex 9 of this report.

Provincial/territorial GHG emissions allocated to IPCC sectors are provided in Annex 11 of this report.

Estimates presented here are under continual improvement. Historical emissions may be change in future publications as new data becomes available and methods and models are refined and improved.

Emission estimates for Solid Waste include emissions from municipal solid waste landfills, wood waste landfills and municipal solid waste composting.

- Indicates no emissions.

0 indicates emissions of less than 0.5 Mt CO_2 eq; truncated due to rounding

Table A12–8 **GHG Emissions for Manitoba by Canadian Economic Sector, Selected Years**

	1990	2005	2011	2012	2013	2014	2015	2016
	Mt CO_2 eq							
NATIONAL GHG TOTAL	18.3	20.2	19.0	20.2	20.9	20.9	20.8	20.9
Oil and Gas	**1.3**	**0.8**	**0.4**	**0.5**	**0.6**	**0.7**	**0.7**	**0.6**
Upstream Oil and Gas	1.3	0.8	0.4	0.4	0.5	0.7	0.7	0.6
Natural Gas Production and Processing	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Conventional Oil Production	0.1	0.1	0.3	0.3	0.3	0.3	0.3	0.3
Conventional Light Oil Production	0.1	0.1	0.3	0.3	0.3	0.3	0.3	0.3
Conventional Heavy Oil Production	-	-	-	-	-	-	-	-
Frontier Oil Production	-	-	-	-	-	-	-	-
Oil Sands (Mining, In-situ, Upgrading)	-	-	-	-	-	-	-	-
Mining and Extraction	-	-	-	-	-	-	-	-
In-situ	-	-	-	-	-	-	-	-
Upgrading	-	-	-	-	-	-	-	-
Oil and Natural Gas Transmission	1.2	0.6	0.1	0.0	0.1	0.3	0.3	0.3
Downstream Oil and Gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Petroleum Refining	0.0	-	-	0.0	0.0	-	-	-
Natural Gas Distribution	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Electricity	**0.5**	**0.4**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Transportation	**5.0**	**5.5**	**6.1**	**7.1**	**6.9**	**7.1**	**6.9**	**7.0**
Passenger Transport	2.9	3.2	3.2	3.8	3.9	3.9	3.7	3.8
Cars, Light Trucks and Motorcycles	2.5	2.7	2.8	3.4	3.4	3.4	3.3	3.4
Bus, Rail and Domestic Aviation	0.4	0.5	0.4	0.5	0.5	0.4	0.4	0.4
Freight Transport	1.4	1.9	2.6	2.9	2.7	2.9	2.8	2.9
Heavy Duty Trucks, Rail	1.3	1.8	2.6	2.9	2.7	2.9	2.7	2.8
Domestic Aviation and Marine	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0
Other: Recreational, Commercial and Residential	0.7	0.4	0.3	0.3	0.3	0.4	0.4	0.3
Heavy Industry	**1.3**	**1.5**	**1.3**	**1.2**	**1.4**	**1.2**	**1.3**	**1.3**
Mining	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Smelting and Refining (Non Ferrous Metals)	0.3	0.2	0.1	0.1	0.1	0.1	0.0	0.0
Pulp and Paper	0.2	0.2	0.1	0.0	0.0	0.1	0.1	0.1
Iron and Steel	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
Cement	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lime & Gypsum	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Chemicals & Fertilizers	0.3	0.9	0.9	0.8	0.9	0.8	0.9	0.9
Buildings	**3.1**	**2.7**	**2.7**	**2.5**	**2.9**	**3.0**	**2.6**	**2.6**
Service Industry	1.4	1.6	1.6	1.4	1.6	1.7	1.5	1.5
Residential	1.7	1.1	1.1	1.1	1.3	1.3	1.1	1.1
Agriculture	**5.8**	**7.8**	**6.8**	**7.1**	**7.5**	**7.2**	**7.4**	**7.5**
On Farm Fuel Use	1.1	1.4	1.0	1.1	1.0	1.0	0.9	0.9
Crop Production	2.2	2.0	2.2	2.5	3.1	2.7	3.0	3.1
Animal Production	2.5	4.4	3.5	3.4	3.5	3.5	3.5	3.5
Waste	**0.6**	**0.8**	**0.8**	**0.9**	**0.8**	**0.8**	**0.8**	**0.8**
Solid Waste	0.5	0.8	0.8	0.8	0.7	0.7	0.7	0.7
Wastewater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Waste Incineration	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Coal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Light Manufacturing, Construction & Forest Resources	**0.6**	**0.8**	**0.8**	**1.0**	**0.8**	**0.8**	**1.0**	**1.1**
Light Manufacturing	0.4	0.5	0.6	0.7	0.5	0.6	0.8	0.8
Construction	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.3
Forest Resources	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Notes:

Totals may not add up due to rounding.

National GHG emissions allocated to IPCC sectors are provided in Annex 9 of this report.

Provincial/territorial GHG emissions allocated to IPCC sectors are provided in Annex 11 of this report.

Estimates presented here are under continual improvement. Historical emissions may be change in future publications as new data becomes available and methods and models are refined and improved.

Emission estimates for Solid Waste include emissions from municipal solid waste landfills, wood waste landfills and municipal solid waste composting.

- Indicates no emissions.

0 indicates emissions of less than 0.5 Mt CO_2 eq; truncated due to rounding

Table A12–9 **GHG Emissions for Saskatchewan by Canadian Economic Sector, Selected Years**

	1990	2005	2011	2012	2013	2014	2015	2016
	Mt CO_2 eq							
NATIONAL GHG TOTAL	44.7	68.9	69.0	71.3	74.0	77.4	79.5	76.3
Oil and Gas	**12.1**	**25.1**	**22.1**	**22.5**	**23.7**	**27.4**	**27.9**	**25.0**
Upstream Oil and Gas	10.9	23.5	20.4	20.6	21.8	25.4	25.9	22.8
Natural Gas Production and Processing	2.1	4.1	3.6	3.4	3.4	3.5	3.5	3.4
Conventional Oil Production	6.3	14.9	12.2	12.3	13.6	16.7	17.6	14.8
Conventional Light Oil Production	1.7	2.7	4.3	4.7	6.0	7.9	8.3	7.1
Conventional Heavy Oil Production	4.6	12.2	7.9	7.6	7.6	8.9	9.3	7.7
Frontier Oil Production	-	-	-	-	-	-	-	-
Oil Sands (Mining, In-situ, Upgrading)	0.0	2.1	2.2	2.4	2.3	2.4	2.3	2.4
Mining and Extraction	-	-	-	-	-	-	-	-
In-situ	-	-	-	-	-	-	-	-
Upgrading	0.0	2.1	2.2	2.4	2.3	2.4	2.3	2.4
Oil and Natural Gas Transmission	2.4	2.3	2.4	2.5	2.5	2.8	2.5	2.3
Downstream Oil and Gas	1.2	1.6	1.7	1.9	1.9	2.0	2.1	2.2
Petroleum Refining	0.7	1.4	1.5	1.7	1.7	1.7	1.8	2.0
Natural Gas Distribution	0.5	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Electricity	**11.1**	**14.8**	**14.2**	**14.7**	**14.0**	**14.2**	**15.1**	**15.0**
Transportation	**5.3**	**6.2**	**8.3**	**9.3**	**10.2**	**10.2**	**10.7**	**10.7**
Passenger Transport	2.9	3.3	3.9	4.6	4.8	4.5	4.9	5.1
Cars, Light Trucks and Motorcycles	2.7	3.1	3.7	4.3	4.5	4.3	4.7	4.8
Bus, Rail and Domestic Aviation	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Freight Transport	1.6	2.5	4.0	4.3	4.9	5.2	5.3	5.2
Heavy Duty Trucks, Rail	1.6	2.4	4.0	4.2	4.9	5.2	5.2	5.2
Domestic Aviation and Marine	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other: Recreational, Commercial and Residential	0.8	0.4	0.4	0.5	0.5	0.5	0.5	0.5
Heavy Industry	**1.6**	**2.2**	**4.2**	**4.0**	**3.6**	**3.3**	**3.4**	**3.1**
Mining	1.0	1.3	3.3	3.0	2.6	2.6	2.6	2.5
Smelting and Refining (Non Ferrous Metals)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pulp and Paper	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1
Iron and Steel	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Cement	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lime & Gypsum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chemicals & Fertilizers	0.2	0.6	0.7	0.7	0.8	0.5	0.6	0.5
Buildings	**3.2**	**3.3**	**3.3**	**3.1**	**3.3**	**3.3**	**3.1**	**3.3**
Service Industry	1.0	1.6	1.5	1.3	1.4	1.4	1.3	1.5
Residential	2.1	1.6	1.8	1.8	1.9	1.9	1.8	1.7
Agriculture	**10.2**	**16.1**	**15.3**	**16.2**	**17.6**	**17.3**	**17.6**	**17.7**
On Farm Fuel Use	2.4	3.5	4.1	4.0	4.5	4.8	4.7	4.6
Crop Production	3.5	4.7	5.0	5.9	6.9	6.3	6.7	6.9
Animal Production	4.3	7.9	6.2	6.3	6.3	6.2	6.2	6.2
Waste	**0.6**	**0.7**	**0.8**	**0.8**	**0.8**	**0.8**	**0.8**	**0.8**
Solid Waste	0.5	0.7	0.8	0.8	0.8	0.7	0.8	0.8
Wastewater	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
Waste Incineration	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Coal Production	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Light Manufacturing, Construction & Forest Resources	**0.6**	**0.4**	**0.7**	**0.7**	**0.7**	**0.9**	**0.8**	**0.6**
Light Manufacturing	0.5	0.2	0.5	0.5	0.4	0.6	0.5	0.4
Construction	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.2
Forest Resources	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Notes:

Totals may not add up due to rounding.

National GHG emissions allocated to IPCC sectors are provided in Annex 9 of this report.

Provincial/territorial GHG emissions allocated to IPCC sectors are provided in Annex 11 of this report.

Estimates presented here are under continual improvement. Historical emissions may be change in future publications as new data becomes available and methods and models are refined and improved.

Emission estimates for Solid Waste include emissions from municipal solid waste landfills, wood waste landfills and municipal solid waste composting.

- Indicates no emissions.

0 indicates emissions of less than 0.5 Mt CO_2 eq; truncated due to rounding

Table A12–10 GHG Emissions for Alberta by Canadian Economic Sector, Selected Years

	1990	2005	2011	2012	2013	2014	2015	2016
	Mt CO_2 eq							
NATIONAL GHG TOTAL	174.1	231.0	243.8	256.1	264.9	268.6	266.9	262.9
Oil and Gas	**68.9**	**97.0**	**104.8**	**114.3**	**120.7**	**124.1**	**123.2**	**126.0**
Upstream Oil and Gas	65.2	92.4	100.8	109.9	115.8	118.8	117.7	120.4
Natural Gas Production and Processing	29.2	43.4	32.8	35.1	35.8	33.8	31.5	34.1
Conventional Oil Production	16.8	12.6	12.9	15.2	15.6	16.8	14.7	12.6
Conventional Light Oil Production	9.4	7.9	6.9	7.9	8.6	9.8	8.9	8.0
Conventional Heavy Oil Production	7.4	4.7	6.1	7.2	7.0	7.0	5.8	4.6
Frontier Oil Production	-	-	-	-	-	-	-	-
Oil Sands (Mining, In-situ, Upgrading)	15.3	32.4	52.7	57.1	61.2	65.2	68.2	69.3
Mining and Extraction	4.5	9.5	14.1	14.3	15.5	16.8	17.4	17.5
In-situ	4.8	11.3	21.7	25.2	27.8	30.3	33.9	37.5
Upgrading	6.1	11.7	16.9	17.6	17.9	18.0	16.9	14.3
Oil and Natural Gas Transmission	3.9	4.0	2.3	2.5	3.2	3.1	3.4	4.3
Downstream Oil and Gas	3.6	4.6	4.0	4.4	5.0	5.3	5.4	5.6
Petroleum Refining	3.2	4.3	3.8	4.2	4.8	5.1	5.3	5.5
Natural Gas Distribution	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2
Electricity	**39.6**	**48.8**	**46.2**	**43.5**	**44.7**	**45.8**	**47.8**	**45.2**
Transportation	**17.0**	**25.1**	**30.4**	**32.3**	**34.1**	**35.1**	**32.9**	**31.1**
Passenger Transport	8.8	10.3	10.2	11.0	11.7	12.2	11.8	12.1
Cars, Light Trucks and Motorcycles	7.7	9.0	8.9	9.5	10.2	10.7	10.3	10.7
Bus, Rail and Domestic Aviation	1.0	1.3	1.3	1.5	1.6	1.5	1.5	1.4
Freight Transport	5.7	13.4	19.1	20.3	21.2	21.6	19.8	17.9
Heavy Duty Trucks, Rail	5.5	13.2	19.0	20.1	21.0	21.4	19.6	17.7
Domestic Aviation and Marine	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Other: Recreational, Commercial and Residential	2.5	1.4	1.1	1.1	1.2	1.3	1.3	1.2
Heavy Industry	**12.4**	**16.7**	**17.3**	**17.1**	**17.9**	**17.2**	**17.6**	**16.6**
Mining	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.2
Smelting and Refining (Non Ferrous Metals)	0.4	0.6	0.8	0.0	0.8	0.7	0.7	0.6
Pulp and Paper	0.5	0.8	0.7	0.8	0.8	0.9	0.9	1.0
Iron and Steel	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Cement	1.2	1.8	1.7	1.6	1.5	1.4	1.5	1.3
Lime & Gypsum	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2
Chemicals & Fertilizers	9.8	12.8	13.4	14.1	14.1	13.6	13.8	13.3
Buildings	**12.1**	**16.2**	**19.1**	**22.9**	**20.4**	**19.4**	**18.8**	**17.7**
Service Industry	5.3	8.5	10.2	14.1	11.6	10.2	10.3	10.4
Residential	6.9	7.7	8.9	8.8	8.9	9.3	8.4	7.3
Agriculture	**16.7**	**22.8**	**20.9**	**21.1**	**21.6**	**21.4**	**21.3**	**20.9**
On Farm Fuel Use	2.9	3.6	3.6	3.3	3.3	3.2	3.1	2.7
Crop Production	3.7	4.0	5.2	5.6	6.0	5.9	6.0	5.7
Animal Production	10.0	15.2	12.1	12.2	12.3	12.2	12.1	12.4
Waste	**1.2**	**1.7**	**1.6**	**1.7**	**1.8**	**1.9**	**1.9**	**2.0**
Solid Waste	1.1	1.6	1.5	1.6	1.6	1.7	1.7	1.8
Wastewater	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Waste Incineration	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Coal Production	**0.6**	**0.5**	**0.6**	**0.5**	**0.6**	**0.4**	**0.6**	**0.5**
Light Manufacturing, Construction & Forest Resources	**5.6**	**2.2**	**2.9**	**2.7**	**3.1**	**3.2**	**2.9**	**2.9**
Light Manufacturing	4.8	1.3	2.2	2.1	2.4	2.4	2.2	2.2
Construction	0.7	0.7	0.5	0.5	0.5	0.6	0.6	0.6
Forest Resources	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.1

Notes:

Totals may not add up due to rounding.

National GHG emissions allocated to IPCC sectors are provided in Annex 9 of this report.

Provincial/territorial GHG emissions allocated to IPCC sectors are provided in Annex 11 of this report.

Estimates presented here are under continual improvement. Historical emissions may be change in future publications as new data becomes available and methods and models are refined and improved.

Emission estimates for Solid Waste include emissions from municipal solid waste landfills, wood waste landfills and municipal solid waste composting.

- Indicates no emissions.

0 indicates emissions of less than 0.5 Mt CO_2 eq; truncated due to rounding

Table A12–11 GHG Emissions for British Columbia by Canadian Economic Sector, Selected Years

	1990	2005	2011	2012	2013	2014	2015	2016
	Mt CO_2 eq							
NATIONAL GHG TOTAL	51.1	63.3	59.3	60.3	60.9	60.4	59.4	60.1
Oil and Gas	**7.5**	**11.9**	**14.4**	**14.2**	**14.5**	**14.5**	**13.5**	**13.3**
Upstream Oil and Gas	6.1	11.3	13.6	13.4	13.8	13.8	12.7	12.4
Natural Gas Production and Processing	3.9	9.2	11.9	11.7	11.8	11.9	10.6	10.2
Conventional Oil Production	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6
Conventional Light Oil Production	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6
Conventional Heavy Oil Production	-	-	-	-	-	-	-	-
Frontier Oil Production	-	-	-	-	-	-	-	-
Oil Sands (Mining, In-situ, Upgrading)	-	-	-	-	-	-	-	-
Mining and Extraction	-	-	-	-	-	-	-	-
In-situ	-	-	-	-	-	-	-	-
Upgrading	-	-	-	-	-	-	-	-
Oil and Natural Gas Transmission	1.5	1.4	1.1	1.0	1.4	1.2	1.5	1.7
Downstream Oil and Gas	1.5	0.6	0.7	0.8	0.7	0.7	0.8	0.8
Petroleum Refining	1.3	0.5	0.6	0.7	0.6	0.6	0.7	0.7
Natural Gas Distribution	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Electricity	**0.9**	**1.0**	**0.3**	**0.3**	**0.4**	**0.3**	**0.3**	**0.2**
Transportation	**15.8**	**21.5**	**19.9**	**21.3**	**21.7**	**21.6**	**22.1**	**22.0**
Passenger Transport	7.7	10.2	8.9	9.2	9.5	9.6	10.1	11.0
Cars, Light Trucks and Motorcycles	6.5	8.7	7.8	7.9	8.2	8.4	8.8	9.7
Bus, Rail and Domestic Aviation	1.2	1.5	1.1	1.2	1.3	1.3	1.3	1.3
Freight Transport	5.5	9.9	10.0	11.0	11.1	10.8	10.8	9.9
Heavy Duty Trucks, Rail	4.2	7.2	7.6	8.2	8.8	8.7	8.8	8.7
Domestic Aviation and Marine	1.2	2.7	2.4	2.8	2.3	2.1	2.0	1.1
Other: Recreational, Commercial and Residential	2.5	1.5	1.1	1.1	1.1	1.2	1.2	1.2
Heavy Industry	**8.7**	**7.1**	**5.8**	**5.7**	**5.4**	**5.7**	**5.7**	**6.3**
Mining	0.5	0.3	0.2	0.2	0.3	0.3	0.4	0.3
Smelting and Refining (Non Ferrous Metals)	2.0	1.7	1.4	1.4	1.3	1.0	0.9	1.3
Pulp and Paper	4.1	1.9	1.8	1.9	1.8	2.0	1.9	1.9
Iron and Steel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cement	1.0	2.0	1.6	1.5	1.5	1.8	2.0	2.1
Lime & Gypsum	0.2	0.3	0.3	0.2	0.2	0.3	0.2	0.2
Chemicals & Fertilizers	0.9	0.9	0.4	0.3	0.3	0.3	0.3	0.4
Buildings	**7.6**	**8.4**	**8.3**	**8.0**	**7.9**	**7.8**	**7.3**	**7.6**
Service Industry	3.0	3.7	3.6	3.6	3.5	3.6	3.2	3.3
Residential	4.6	4.7	4.7	4.4	4.4	4.2	4.2	4.2
Agriculture	**2.8**	**3.0**	**2.6**	**2.7**	**2.8**	**2.7**	**2.8**	**2.9**
On Farm Fuel Use	0.6	0.3	0.5	0.6	0.6	0.6	0.6	0.6
Crop Production	0.4	0.3	0.3	0.3	0.4	0.3	0.3	0.3
Animal Production	1.8	2.4	1.8	1.8	1.8	1.9	1.9	2.0
Waste	**3.6**	**4.2**	**4.1**	**3.9**	**3.8**	**3.7**	**3.7**	**3.7**
Solid Waste	3.4	4.0	3.9	3.7	3.5	3.5	3.5	3.5
Wastewater	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2
Waste Incineration	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Coal Production	**1.8**	**1.7**	**1.8**	**2.0**	**2.0**	**1.8**	**1.6**	**1.8**
Light Manufacturing, Construction & Forest Resources	**2.6**	**4.3**	**2.2**	**2.3**	**2.5**	**2.2**	**2.3**	**2.4**
Light Manufacturing	1.5	3.1	1.3	1.5	1.6	1.4	1.4	1.5
Construction	0.6	0.5	0.4	0.4	0.4	0.3	0.4	0.5
Forest Resources	0.5	0.7	0.4	0.4	0.5	0.4	0.5	0.4

Notes:

Totals may not add up due to rounding.

National GHG emissions allocated to IPCC sectors are provided in Annex 9 of this report.

Provincial/territorial GHG emissions allocated to IPCC sectors are provided in Annex 11 of this report.

Estimates presented here are under continual improvement. Historical emissions may be change in future publications as new data becomes available and methods and models are refined and improved.

Emission estimates for Solid Waste include emissions from municipal solid waste landfills, wood waste landfills and municipal solid waste composting.

- Indicates no emissions.

0 indicates emissions of less than 0.5 Mt CO_2 eq; truncated due to rounding

Table A12–12 **GHG Emissions for Yukon by Canadian Economic Sector, Selected Years**

	1990	2005	2011	2012	2013	2014	2015	2016
	Mt CO_2 eq							
NATIONAL GHG TOTAL	0.5	0.5	0.7	0.7	0.6	0.4	0.5	0.4
Oil and Gas	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Upstream Oil and Gas	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Natural Gas Production and Processing	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Conventional Oil Production	-	-	-	-	-	-	-	-
Conventional Light Oil Production	-	-	-	-	-	-	-	-
Conventional Heavy Oil Production	-	-	-	-	-	-	-	-
Frontier Oil Production	-	-	-	-	-	-	-	-
Oil Sands (Mining, In-situ, Upgrading)	-	-	-	-	-	-	-	-
Mining and Extraction	-	-	-	-	-	-	-	-
In-situ	-	-	-	-	-	-	-	-
Upgrading	-	-	-	-	-	-	-	-
Oil and Natural Gas Transmission	-	-	-	-	-	-	-	-
Downstream Oil and Gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Petroleum Refining	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Natural Gas Distribution	-	-	-	-	-	-	-	-
Electricity	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Transportation	**0.3**	**0.3**	**0.5**	**0.5**	**0.4**	**0.3**	**0.3**	**0.3**
Passenger Transport	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Cars, Light Trucks and Motorcycles	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Bus, Rail and Domestic Aviation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Freight Transport	0.1	0.2	0.3	0.3	0.3	0.2	0.2	0.1
Heavy Duty Trucks, Rail	0.1	0.2	0.3	0.3	0.3	0.2	0.2	0.1
Domestic Aviation and Marine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other: Recreational, Commercial and Residential	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Heavy Industry	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Mining	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Smelting and Refining (Non Ferrous Metals)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pulp and Paper	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Iron and Steel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cement	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lime & Gypsum	0.0	-	0.0	0.0	-	0.0	0.0	-
Chemicals & Fertilizers	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Buildings	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.0**	**0.0**	**0.0**
Service Industry	0.1	0.0	0.1	0.1	0.1	0.0	0.0	0.0
Residential	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Agriculture	**0.0**	**0.0**	**-**	**-**	**-**	**-**	**-**	**0.0**
On Farm Fuel Use	0.0	0.0	-	-	-	-	-	0.0
Crop Production	-	-	-	-	-	-	-	-
Animal Production	-	-	-	-	-	-	-	-
Waste	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Solid Waste	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wastewater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Waste Incineration	-	0.0	-	-	-	-	-	-
Coal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Light Manufacturing, Construction & Forest Resources	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Light Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Construction	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Forest Resources	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Notes:

Totals may not add up due to rounding.

National GHG emissions allocated to IPCC sectors are provided in Annex 9 of this report.

Provincial/territorial GHG emissions allocated to IPCC sectors are provided in Annex 11 of this report.

Estimates presented here are under continual improvement. Historical emissions may be change in future publications as new data becomes available and methods and models are refined and improved.

Emission estimates for Solid Waste include emissions from municipal solid waste landfills, wood waste landfills and municipal solid waste composting.

- Indicates no emissions.

0 indicates emissions of less than 0.5 Mt CO_2 eq; truncated due to rounding

Table A12–13 **GHG Emissions for Northwest Territories by Canadian Economic Sector, Selected Years**

	1990	2005	2011	2012	2013	2014	2015	2016
	Mt CO_2 eq							
NATIONAL GHG TOTAL	1.2	1.6	1.4	1.5	1.4	1.5	1.7	1.6
Oil and Gas	**0.2**	**0.2**	**0.2**	**0.3**	**0.2**	**0.2**	**0.2**	**0.2**
Upstream Oil and Gas	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2
Natural Gas Production and Processing	0.0	0.1	0.1	0.2	0.1	0.1	0.1	0.1
Conventional Oil Production	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0
Conventional Light Oil Production	-	-	-	-	-	-	-	-
Conventional Heavy Oil Production	-	-	-	-	-	-	-	-
Frontier Oil Production	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0
Oil Sands (Mining, In-situ, Upgrading)	-	-	-	-	-	-	-	-
Mining and Extraction	-	-	-	-	-	-	-	-
In-situ	-	-	-	-	-	-	-	-
Upgrading	-	-	-	-	-	-	-	-
Oil and Natural Gas Transmission	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Downstream Oil and Gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Petroleum Refining	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0
Natural Gas Distribution	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Electricity	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**x**	**x**	**x**
Transportation	**0.4**	**0.7**	**0.7**	**0.7**	**0.6**	**0.5**	**0.6**	**0.6**
Passenger Transport	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Cars, Light Trucks and Motorcycles	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Bus, Rail and Domestic Aviation	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Freight Transport	0.2	0.5	0.5	0.5	0.4	0.3	0.3	0.4
Heavy Duty Trucks, Rail	0.2	0.5	0.5	0.4	0.4	0.3	0.3	0.3
Domestic Aviation and Marine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other: Recreational, Commercial and Residential	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Heavy Industry	**0.2**	**0.2**	**0.3**	**0.3**	**0.3**	**0.5**	**0.6**	**0.5**
Mining	0.2	0.2	0.3	0.3	0.3	0.5	0.6	0.5
Smelting and Refining (Non Ferrous Metals)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pulp and Paper	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Iron and Steel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cement	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lime & Gypsum	-	0.0	-	-	-	0.0	0.0	-
Chemicals & Fertilizers	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Buildings	**0.3**	**0.3**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**
Service Industry	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Residential	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Agriculture	**0.0**	**0.0**	**-**	**-**	**-**	**-**	**-**	**-**
On Farm Fuel Use	0.0	0.0	-	-	-	-	-	-
Crop Production	-	-	-	-	-	-	-	-
Animal Production	-	-	-	-	-	-	-	-
Waste	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Solid Waste	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wastewater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Waste Incineration	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Coal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Light Manufacturing, Construction & Forest Resources	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**x**	**x**	**x**
Light Manufacturing	0.0	0.0	0.0	0.0	0.0	x	x	x
Construction	0.0	0.0	0.0	0.0	0.0	x	x	x
Forest Resources	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Notes:

Totals may not add up due to rounding.

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Estimates presented here are under continual improvement. Historical emissions may be change in future publications as new data becomes available and methods and models are refined and improved.

Emission estimates for Solid Waste include emissions from municipal solid waste landfills, wood waste landfills and municipal solid waste composting.

- Indicates no emissions.

0 indicates emissions of less than 0.5 Mt CO_2 eq; truncated due to rounding

Table A12–14 **GHG Emissions for Nunavut by Canadian Economic Sector, Selected Years**

	1990	2005	2011	2012	2013	2014	2015	2016
	Mt CO_2 eq							
NATIONAL GHG TOTAL	0.3	0.4	0.5	0.6	0.7	0.7	0.6	0.7
Oil and Gas	**0.0**	**x**	**x**	**x**	**0.0**	**0.0**	**0.0**	**0.0**
Upstream Oil and Gas	-	-	-	-	-	-	-	-
Natural Gas Production and Processing	-	-	-	-	-	-	-	-
Conventional Oil Production	-	-	-	-	-	-	-	-
Conventional Light Oil Production	-	-	-	-	-	-	-	-
Conventional Heavy Oil Production	-	-	-	-	-	-	-	-
Frontier Oil Production	-	-	-	-	-	-	-	-
Oil Sands (Mining, In-situ, Upgrading)	-	-	-	-	-	-	-	-
Mining and Extraction	-	-	-	-	-	-	-	-
In-situ	-	-	-	-	-	-	-	-
Upgrading	-	-	-	-	-	-	-	-
Oil and Natural Gas Transmission	-	x	x	x	-	-	-	-
Downstream Oil and Gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Petroleum Refining	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Natural Gas Distribution	-	-	-	-	-	-	-	-
Electricity	**0.0**	**0.1**	**x**	**x**	**0.1**	**x**	**x**	**x**
Transportation	**0.1**	**0.3**	**0.4**	**0.4**	**0.5**	**0.4**	**0.4**	**0.4**
Passenger Transport	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.2
Cars, Light Trucks and Motorcycles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bus, Rail and Domestic Aviation	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Freight Transport	0.0	0.1	0.2	0.2	0.4	0.2	0.2	0.2
Heavy Duty Trucks, Rail	0.0	0.1	0.2	0.2	0.2	0.1	0.1	0.1
Domestic Aviation and Marine	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
Other: Recreational, Commercial and Residential	0.0	0.0	x	0.0	0.0	0.0	0.0	0.0
Heavy Industry	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.1**	**0.1**
Mining	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1
Smelting and Refining (Non Ferrous Metals)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pulp and Paper	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Iron and Steel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cement	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lime & Gypsum	-	-	-	-	-	-	-	-
Chemicals & Fertilizers	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Buildings	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Service Industry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Residential	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Agriculture	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
On Farm Fuel Use	-	-	-	-	-	-	-	-
Crop Production	-	-	-	-	-	-	-	-
Animal Production	-	-	-	-	-	-	-	-
Waste	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Solid Waste	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wastewater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Waste Incineration	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Coal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Light Manufacturing, Construction & Forest Resources	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**x**	**x**	**x**
Light Manufacturing	0.0	0.0	0.0	0.0	0.0	x	x	x
Construction	0.0	0.0	0.0	0.0	0.0	x	x	x
Forest Resources	-	-	-	-	-	-	-	-

Notes:

Totals may not add up due to rounding.

National GHG emissions allocated to IPCC sectors are provided in Annex 9 of this report.

Provincial/territorial GHG emissions allocated to IPCC sectors are provided in Annex 11 of this report.

Estimates presented here are under continual improvement. Historical emissions may be change in future publications as new data becomes available and methods and models are refined and improved.

Emission estimates for Solid Waste include emissions from municipal solid waste landfills, wood waste landfills and municipal solid waste composting.

- Indicates no emissions.

0 indicates emissions of less than 0.5 Mt CO_2 eq; truncated due to rounding

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Table A12–15 GHG Emissions for Northwest Territories & Nunavut by Canadian Economic Sector, 1990–1998

	1990	1991	1992	1993	1994	1995	1996	1997	1998
	Mt CO_2 eq								
NATIONAL GHG TOTAL	1.6	1.6	1.4	1.7	1.8	1.9	1.9	1.7	1.5
Oil and Gas	**0.4**	**0.3**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.1**	**0.1**
Upstream Oil and Gas	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.1
Natural Gas Production and Processing	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Conventional Oil Production	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1
Conventional Light Oil Production	-	-	-	-	-	-	-	-	-
Conventional Heavy Oil Production	-	-	-	-	-	-	-	-	-
Frontier Oil Production	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1
Oil Sands (Mining, In-situ, Upgrading)	-	-	-	-	-	-	-	-	-
Mining and Extraction	-	-	-	-	-	-	-	-	-
In-situ	-	-	-	-	-	-	-	-	-
Upgrading	-	-	-	-	-	-	-	-	-
Oil and Natural Gas Transmission	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Downstream Oil and Gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Petroleum Refining	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Natural Gas Distribution	-	-	-	-	-	-	-	-	-
Electricity	**0.2**	**0.2**	**0.1**	**0.1**	**0.1**	**0.2**	**0.1**	**0.1**	**0.2**
Transportation	**0.5**	**0.4**	**0.4**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.6**
Passenger Transport	0.3	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3
Cars, Light Trucks and Motorcycles	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Bus, Rail and Domestic Aviation	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Freight Transport	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2
Heavy Duty Trucks, Rail	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.2
Domestic Aviation and Marine	0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0
Other: Recreational, Commercial and Residential	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Heavy Industry	**0.1**	**0.1**	**0.1**	**0.1**	**0.3**	**0.3**	**0.4**	**0.3**	**0.3**
Mining	0.1	0.1	0.1	0.1	0.2	0.3	0.4	0.3	0.3
Smelting and Refining (Non Ferrous Metals)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pulp and Paper	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Iron and Steel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cement	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lime & Gypsum	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-
Chemicals & Fertilizers	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Buildings	**0.4**	**0.6**	**0.6**	**0.6**	**0.7**	**0.7**	**0.6**	**0.6**	**0.3**
Service Industry	0.3	0.4	0.4	0.4	0.5	0.6	0.4	0.4	0.2
Residential	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.1
Agriculture	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**-**	**0.0**	**0.0**
On Farm Fuel Use	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Crop Production	-	-	-	-	-	-	-	-	-
Animal Production	-	-	-	-	-	-	-	-	-
Waste	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Solid Waste	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wastewater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Waste Incineration	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Coal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Light Manufacturing, Construction & Forest Resources	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Light Manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Construction	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Forest Resources	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Notes:

Totals may not add up due to rounding.

National GHG emissions allocated to IPCC sectors are provided in Annex 9 of this report.

Provincial/territorial GHG emissions allocated to IPCC sectors are provided in Annex 11 of this report.

Estimates presented here are under continual improvement. Historical emissions may be change in future publications as new data becomes available and methods and models are refined and improved.

Emission estimates for Solid Waste include emissions from municipal solid waste landfills, wood waste landfills and municipal solid waste composting.

- Indicates no emissions.

0 indicates emissions of less than 0.5 Mt CO_2 eq; truncated due to rounding

Annex 13

ELECTRICITY IN CANADA: SUMMARY AND INTENSITY TABLES

This annex presents detailed greenhouse gas (GHG) information related to the generation of electricity by the Public Electricity and Heat Production category (IPCC Category 1.A.1.a), on a national and provincial level.

The Canadian electricity generation industry produces electricity by transforming the energy in falling water, coal, natural gas, refined petroleum products (RPPs), other miscellaneous fuels, biomass, nuclear, wind and solar resources. The process of supplying electricity to the public involves not only power generation at the plant, but also distribution through the electricity grid. The efficiency of the transmission system has an impact on the amount of electricity available to consumers. GHG emission estimates and electricity generation values are therefore based on activities that occur at the generating plant, and efforts have been made to include the impact of the transmission and distribution infrastructure (including sulphur hexafluoride (SF_6) emissions associated with switchgear and other electrical equipment, which is accounted for in the Industrial Processes and Product Use Sector).

The electricity generation industry in Canada is composed of entities whose main activity is the production of electricity (main activity producers) and those who generate either partially or wholly for their own use (autoproducers). Main activity producers sell their electricity to the grid, and can be either public or private generators. Autoproducers are generally private companies that are generating electricity either to feed their operations or as a by-product of their operation. They may sell some or all of their electricity to the grid.

The analysis in this section only includes main activity producers. This analysis relies on a variety of data sources; fuel consumption and electricity production data are published by Statistics Canada in the *Report on Energy Supply and Demand in Canada* (RESD) (Statistics Canada 57-003-X), in the publication *Electric Power Generation, Transmission and Distribution* (EPGTD) (Statistics Canada 57-202-X) and online via CANSIM (Tables 127-0006,127-0007 and 127-0008).

A "generation intensity" indicator is derived to reflect the GHG emissions intensity of electricity as it is delivered to the electricity grid. Electricity generation intensity values were derived for each fuel type using GHG emission estimates and electricity generation data. The methodology used to develop the GHG emissions is discussed in Chapter 3 and Annex 3.1 of this report. GHG emissions are based on the total fuel consumed by the public utility sector, as provided in the RESD,[1] while generation data are from CANSIM (2005–2016) and the EPGTD publication (1990–2004).

A "consumption intensity" indicator was also derived to reflect the GHG emissions intensity of electricity as it is delivered to the consumer. Accordingly, electric energy losses in transmission and distribution are subtracted from overall total electricity generation, while SF_6 emissions associated with equipment used in electricity transmission and distribution are added to overall total GHG emissions. The electric energy losses in transmission and distribution are taken to be the utility sector's share of "unallocated energy," as presented in Table A13–1 to Table A13–14 and calculated from data provided by CANSIM 127-0008. Likewise, the SF_6 emission values are based on the electric utility sector's share of total SF_6 emissions from equipment used in electricity transmission and distribution.

Electricity intensity values for Canada, the provinces and the territories are provided in Table A13–1 to Table A13–14.

1 Occasionally, Statistics Canada revises some of its historic data, which can affect the values provided in Table A13–1 to Table A13–14.

Table A13–1 Electricity Generation and GHG Emission Details for Canada[1]

	1990	2000	2005	2011	2012	2013	2014	2015	2016[2]
Greenhouse Gas Emissions[3]									
	kt CO_2 equivalent								
Combustion	**94 300**	**132 000**	**125 000**	**94 200**	**91 000**	**87 200**	**84 300**	**87 300**	**84 500**
Coal	80 200	109 000	97 900	68 400	63 100	63 600	60 800	62 700	60 000
Natural Gas	2 720	13 800	15 400	21 700	23 900	19 300	18 600	19 300	19 000
Other Fuels[4]	11 300	9 400	11 300	4 050	3 980	4 280	4 930	5 370	5 600
Other Emissions[5]	**–**	**27.2**	**52**	**61**	**82**	**63**	**73**	**87**	**80**
Overall Total[6,7]	**94 300**	**132 000**	**125 000**	**94 200**	**91 000**	**87 200**	**84 400**	**87 400**	**84 600**
Electricity Generation[8,9]									
	GWh								
Combustion[10]	**101 000**	**146 000**	**140 000**	**119 000**	**107 000**	**104 000**	**110 000**	**111 000**	**108 000**
Coal	82 200	106 000	93 900	70 200	60 200	60 900	61 600	60 900	58 000
Natural Gas	4 140	26 600	29 800	41 000	39 100	35 600	40 000	41 000	41 400
Other Fuels	14 800	13 400	16 700	7 670	7 460	7 900	8 640	8 630	8 670
Refined Petroleum Products	14 700	10 600	10 800	2 310	2 320	2 160	3 170	3 560	3 440
Biomass	14.4	1 830	1 780	2 150	1 990	2 050	2 030	1 980	2 220
Other	91	960	4 100	3 200	3 100	3 700	3 400	3 100	3 000
Nuclear	**68 800**	**68 700**	**86 800**	**88 300**	**89 500**	**97 600**	**101 200**	**96 000**	**95 400**
Hydro	**263 000**	**323 000**	**327 000**	**342 000**	**345 000**	**357 000**	**348 000**	**345 000**	**353 000**
Other Renewables[11]	**26.2**	**264**	**1 580**	**10 370**	**11 500**	**11 400**	**12 900**	**27 500**	**31 100**
Other Generation[12,13]	**–**	**–**	**–**	**9 000**	**10 260**	**9 550**	**2 240**	**140**	**130**
Overall Total[7]	**433 000**	**539 000**	**556 000**	**575 000**	**570 000**	**587 000**	**575 000**	**580 000**	**588 000**
Greenhouse Gas Intensity[14]									
	g GHG / kWh electricity generated								
CO_2 intensity (g CO_2 / kWh)	220	240	220	160	160	150	150	150	140
CH_4 intensity (g CH_4 / kWh)	0.004	0.009	0.01	0.01	0.01	0.01	0.01	0.01	0.01
N_2O intensity (g N_2O / kWh)	0.004	0.005	0.004	0.003	0.003	0.003	0.003	0.003	0.003
Generation Intensity (g CO_2 eq / kWh)[7]	**220**	**240**	**220**	**170**	**160**	**150**	**150**	**150**	**140**
Unallocated Energy (GWh)[17,18]	31 000	42 000	37 000	57 000	46 000	41 000	29 000	19 000*	8 000
SF_6 Emissions (kt CO_2 eq)[17]	200	200	160	140	190	220	130	190	190
Consumption Intensity (g CO_2 eq / kWh)[18]	**240**	**270**	**240**	**180**	**180**	**160**	**150**	**160**	**150**

Notes:

1. Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111 – Electric Power Generation.
2. Preliminary data.
3. Emissions based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.
4. Includes GHG emissions from the combustion of refined petroleum products (light fuel oil, heavy fuel oil, and diesel), petroleum coke, still gas and other fuels not easily categorized.
5. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
6. GHG emissions from the flooding of land for hydro dams are not included.
7. Totals may not add up to overall total due to rounding.
8. Taken from CANSIM Tables 127-0006 and 127-0007 (for 2005–2016).
9. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).
10. From 2014 onward, this includes the electricity generated from the by-product steam associated with the fuel combustion. Prior to 2014, it was not possible to break this data into the original fuel source, so it was included in Other Generation.
11. Other Renewables - includes electricity generation by wind, tidal and solar.
12. NAICS category 221119, Other Electric Power Generation.
13. Prior to 2014, this includes electricity generation from steam from waste heat. From 2014 onward, electricity generation from steam from waste heat is reported as part of its original fuel source.
14. Intensity values have been rounded so as to present the estimated level of accuracy.
15. Adapted from Statistics Canada CANSIM Table 127-0008 (2005-2016) or Cat. No. 57-202-XIB (1990–2004).
16. Includes transmission line losses, metering differences and other losses.
17. The electric utility sector's share of emissions from electrical equipment from CRF Category 2.F.viii (Production and Consumption of Halocarbons and SF_6).
18. Consumption intensity values are impacted by unallocated energy and SF_6 transmission emissions.

– Indicates no emissions or no electricity generation

0 Indicates emissions or electricity generation value less than 0.1

* For years where unallocated energy data was not available, values were interpolated

Table A13–2 Electricity Generation and GHG Emission Details for Newfoundland and Labrador[1]

	1990	2000	2005	2011	2012	2013	2014	2015	2016[2]
Greenhouse Gas Emissions[3]									
	kt CO_2 equivalent								
Combustion	**1 640**	**823**	**819**	**790**	**769**	**867**	**1 206**	**1 340**	**1 523**
Coal	–	–	–	–	–	–	–	–	–
Natural Gas	–	–	–	–	–	–	–	–	–
Other Fuels[4]	1 640	823	819	790	769	867	1 206	1 340	1 523
Other Emissions[5]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[6,7]	**1 640**	**823**	**819**	**790**	**769**	**867**	**1 206**	**1 340**	**1 523**
Electricity Generation[8,9]									
	GWh								
Combustion[10]	**2 090**	**1 020**	**1 360**	**1 009**	**970**	**1 090**	**1 470**	**1 560**	**1 800**
Coal	–	–	–	–	–	–	–	–	–
Natural Gas	–	–	–	–	–	–	–	–	–
Other Fuels	2 090	1 020	1 360	1 009	970	1 090	1 470	1 560	1 800
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**34 300**	**41 800**	**38 900**	**39 100**	**41 300**	**40 500**	**38 200**	**38 800**	**38 600**
Other Renewables[11]	**0**	**–**	**–**	**198**	**195**	**192**	**177**	**172**	**190**
Other Generation[12,13]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[7]	**36 400**	**42 800**	**40 300**	**40 300**	**42 500**	**41 800**	**39 800**	**40 500**	**40 600**
Greenhouse Gas Intensity[14]									
	g GHG / kWh electricity generated								
CO_2 intensity (g CO_2 / kWh)	45	19	20	19	18	21	30	33	37
CH_4 intensity (g CH_4 / kWh)	0.0006	0.0002	0.0002	0.0003	0.0003	0.0003	0.0004	0.0005	0.0006
N_2O intensity (g N_2O / kWh)	0.001	0.0005	0.0	0.0	0.0	0.0	0.001	0.001	0.001
Generation Intensity (g CO_2 eq / kWh)[7]	**45**	**19**	**20**	**20**	**18**	**21**	**30**	**33**	**37**
Unallocated Energy (GWh)[17,18]	990	1 300	810	1 300	1 300	1 400	1 200	900	2 400
SF_6 Emissions (kt CO_2 eq)[17]	0.94	0.92	0.50	0.83	1.0	1.0	1.3	3.4	3.4
Consumption Intensity (g CO_2 eq / kWh)[18]	**46**	**20**	**21**	**20**	**19**	**21**	**31**	**34**	**40**

Notes:

1. Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111 – Electric Power Generation.
2. Preliminary data.
3. Emissions based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.
4. Includes GHG emissions from the combustion of refined petroleum products (light fuel oil, heavy fuel oil, and diesel), petroleum coke, still gas and other fuels not easily categorized.
5. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
6. GHG emissions from the flooding of land for hydro dams are not included.
7. Totals may not add up to overall total due to rounding.
8. Taken from CANSIM Tables 127-0006 and 127-0007 (for 2005–2016).
9. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).
10. From 2014 onward, this includes the electricity generated from the by-product steam associated with the fuel combustion. Prior to 2014, it was not possible to break this data into the original fuel source, so it was included in Other Generation.
11. Other Renewables – includes electricity generation by wind, tidal and solar.
12. NAICS category 221119, Other Electric Power Generation.
13. Prior to 2014, this includes electricity generation from steam from waste heat. From 2014 onward, electricity generation from steam from waste heat is reported as part of its original fuel source.
14. Intensity values have been rounded so as to present the estimated level of accuracy.
15. Adapted from Statistics Canada CANSIM Table 127-0008 (2005–2016) or Cat. No. 57-202-XIB (1990–2004).
16. Includes transmission line losses, metering differences and other losses.
17. The electric utility sector's share of emissions from electrical equipment from CRF Category 2.F.viii (Production and Consumption of Halocarbons and SF_6).
18. Consumption intensity values are impacted by unallocated energy and SF_6 transmission emissions.

– Indicates no emissions or no electricity generation

0 Indicates emissions or electricity generation value less than 0.1

Table A13–3 Electricity Generation and GHG Emission Details for Prince Edward Island[1]

	1990	2000	2005	2011	2012	2013	2014	2015	2016[2]
Greenhouse Gas Emissions[3]									
	kt CO_2 equivalent								
Combustion	**104**	**53.0**	**4.76**	**1.23**	**10.8**	**3.9**	**4.3**	**13.9**	**14.6**
Coal	–	–	–	–	–	–	–	–	–
Natural Gas	–	–	–	–	–	–	–	–	–
Other Fuels[4]	104	53.0	4.76	1.23	10.8	3.9	4.3	13.9	14.6
Other Emissions[5]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[6,7]	**104**	**53.0**	**4.76**	**1.23**	**10.8**	**3.9**	**4.3**	**13.9**	**14.6**
Electricity Generation[8,9]									
	GWh								
Combustion[10]	**81.1**	**48.1**	**6.31**	**4.81**	**14.5**	**8.2**	**8.3**	**9.8**	**9.9**
Coal	–	–	–	–	–	–	–	–	–
Natural Gas	–	–	–	–	–	–	–	–	–
Other Fuels	81.1	48.1	6.31	4.81	14.5	8.2	8.3	9.8	9.9
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Other Renewables[11]	**–**	**–**	**40.1**	**488**	**468**	**499**	**611**	**606**	**565**
Other Generation[12,13]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[7]	**81.1**	**48.1**	**46.4**	**492**	**482**	**507**	**620**	**616**	**575**
Greenhouse Gas Intensity[14]									
	g GHG / kWh electricity generated								
CO_2 intensity (g CO_2 / kWh)	1 300	1 100	100	2.5	22	8	7	22	25
CH_4 intensity (g CH_4 / kWh)	0.02	0.01	0.001	0.00006	0.0005	0.0002	0.0001	0.0007	0.0005
N_2O intensity (g N_2O / kWh)	0.03	0.02	0.002	0.0001	0.0004	0.0001	0.0001	0.0004	0.0005
Generation Intensity (g CO_2 eq / kWh)[7]	**1 300**	**1 100**	**100**	**2.5**	**22**	**8**	**7**	**23**	**25**
Unallocated Energy (GWh)[17,18]	unk	unk	unk	21	20	20	33	9.4*	8.9*
SF_6 Emissions (kt CO_2 eq)[17]	0	0	–	0	0	0	0	0	0
Consumption Intensity (g CO_2 eq / kWh)[18]	**	**	**	**	**	**	**	**	**

Notes:

1. Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111 – Electric Power Generation.
2. Preliminary data.
3. Emissions based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.
4. Includes GHG emissions from the combustion of refined petroleum products (light fuel oil, heavy fuel oil, and diesel), petroleum coke, still gas and other fuels not easily categorized.
5. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
6. GHG emissions from the flooding of land for hydro dams are not included.
7. Totals may not add up to overall total due to rounding.
8. Taken from CANSIM Tables 127-0006 and 127-0007 (for 2005–2016).
9. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).
10. From 2014 onward, this includes the electricity generated from the by-product steam associated with the fuel combustion. Prior to 2014, it was not possible to break this data into the original fuel source, so it was included in Other Generation.
11. Other Renewables – includes electricity generation by wind, tidal and solar.
12. NAICS category 221119, Other Electric Power Generation.
13. Prior to 2014, this includes electricity generation from steam from waste heat. From 2014 onward, electricity generation from steam from waste heat is reported as part of its original fuel source.
14. Intensity values have been rounded so as to present the estimated level of accuracy.
15. Adapted from Statistics Canada CANSIM Table 127-0008 (2005-2016) or Cat. No. 57-202-XIB (1990–2004).
16. Includes transmission line losses, metering differences and other losses.
17. The electric utility sector's share of emissions from electrical equipment from CRF Category 2.F.viii (Production and Consumption of Halocarbons and SF_6).
18. Consumption intensity values are impacted by unallocated energy and SF_6 transmission emissions.

– Indicates no emissions or no electricity generation

0 Indicates emissions or electricity generation value less than 0.1

unk Indicates unknown as appropriate data were unavailable

* For years where unallocated energy data was not available, values were interpolated

** Due to the high level of imports from New Brunswick, values for New Brunswick are more indicative of GHG consumption intensity.

Table A13–4 Electricity Generation and GHG Emission Details for Nova Scotia[1]

	1990	2000	2005	2011	2012	2013	2014	2015	2016[2]
Greenhouse Gas Emissions[3]									
	kt CO_2 equivalent								
Combustion	**6 900**	**9 430**	**10 700**	**8 450**	**7 620**	**7 530**	**7 200**	**6 970**	**6 580**
Coal	x	8 150	5 460	6 090	5 110	5 100	4 800	4 400	4 350
Natural Gas	–	–	x	x	x	x	760	690	550
Other Fuels[4]	x	1 280	x	x	x	x	1 640	1 890	1 680
Other Emissions[5]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[6,7]	**6 900**	**9 430**	**10 700**	**8 450**	**7 620**	**7 530**	**7 200**	**6 970**	**6 580**
Electricity Generation[8,9]									
	GWh								
Combustion[10]	**8 440**	**10 500**	**11 100**	**9 500**	**9 210**	**8 770**	**8 560**	**8 220**	**7 820**
Coal	6 020	8 850	6 770	6 020	5 390	5 500	5 250	4 870	4 810
Natural Gas	–	–	181	2 430	2 260	1 370	1 470	1 300	1 240
Other Fuels	2 430	1 610	4 110	1 050	1 560	1 890	1 840	2 050	1 770
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**1 120**	**887**	**1 040**	**1 070**	**806**	**964**	**1 096**	**1 009**	**862**
Other Renewables[11]	**26.1**	**0**	**113**	**809**	**827**	**780**	**764**	**821**	**1 045**
Other Generation[12,13]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[7]	**9 590**	**11 300**	**12 200**	**11 400**	**10 800**	**10 500**	**10 400**	**10 000**	**9 700**
Greenhouse Gas Intensity[14]									
	g GHG / kWh electricity generated								
CO_2 intensity (g CO_2 / kWh)	720	830	880	740	700	710	690	690	670
CH_4 intensity (g CH_4 / kWh)	0.007	0.009	0.02	0.04	0.04	0.03	0.03	0.03	0.02
N_2O intensity (g N_2O / kWh)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Generation Intensity (g CO_2 eq / kWh)[7]	**720**	**830**	**880**	**740**	**700**	**720**	**690**	**690**	**680**
Unallocated Energy (GWh)[17,18]	580	830	770	640	1 200	600	400*	200	200*
SF_6 Emissions (kt CO_2 eq)[17]	23	23	29	33	22	39	33	33	33
Consumption Intensity (g CO_2 eq / kWh)[18]	**770**	**900**	**940**	**790**	**790**	**760**	**720**	**710**	**690**

Notes:

1. Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111– Electric Power Generation.
2. Preliminary data.
3. Emissions based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.
4. Includes GHG emissions from the combustion of refined petroleum products (light fuel oil, heavy fuel oil, and diesel), petroleum coke, still gas and other fuels not easily categorized.
5. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
6. GHG emissions from the flooding of land for hydro dams are not included.
7. Totals may not add up to overall total due to rounding.
8. Taken from CANSIM Tables 127-0006 and 127-0007 (for 2005–2016).
9. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).
10. From 2014 onward, this includes the electricity generated from the by-product steam associated with the fuel combustion. Prior to 2014, it was not possible to break this data into the original fuel source, so it was included in Other Generation.
11. Other Renewables – includes electricity generation by wind, tidal and solar.
12. NAICS category 221119, Other Electric Power Generation.
13. Prior to 2014, this includes electricity generation from steam from waste heat. From 2014 onward, electricity generation from steam from waste heat is reported as part of its original fuel source.
14. Intensity values have been rounded so as to present the estimated level of accuracy.
15. Adapted from Statistics Canada CANSIM Table 127-0008 (2005-2016) or Cat. No. 57-202-XIB (1990–2004).
16. Includes transmission line losses, metering differences and other losses.
17. The electric utility sector's share of emissions from electrical equipment from CRF Category 2.F.viii (Production and Consumption of Halocarbons and SF_6).
18. Consumption intensity values are impacted by unallocated energy and SF_6 transmission emissions.

– Indicates no emissions or no electricity generation

0 Indicates emissions or electricity generation value less than 0.1

x Indicates data not shown due to statistical limitations

* For years where unallocated energy data was not available, values were interpolated

Table A13–5 Electricity Generation and GHG Emission Details for New Brunswick[1]

	1990	2000	2005	2011	2012	2013	2014	2015	2016[2]
Greenhouse Gas Emissions[3]									
	kt CO_2 equivalent								
Combustion	**6 020**	**8 970**	**8 060**	**4 920**	**4 060**	**4 190**	**4 390**	**3 950**	**4 920**
Coal	1 180	3 130	2 910	x	x	x	1 930	1 410	2 180
Natural Gas	–	–	x	x	x	x	1 040	1 040	1 000
Other Fuels[4]	4 840	5 840	x	1 620	1 330	1 150	1 410	1 500	1 740
Other Emissions[5]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[6,7]	**6 020**	**8 970**	**8 060**	**4 920**	**4 060**	**4 190**	**4 390**	**3 950**	**4 920**
Electricity Generation[8,9]									
	GWh								
Combustion[10]	**7 630**	**11 000**	**12 100**	**6 040**	**5 160**	**5 310**	**6 980**	**5 630**	**6 100**
Coal	1 270	3 820	2 920	2 340	1 900	2 250	2 560	1 660	2 160
Natural Gas	–	–	1 970	1 960	1 780	1 770	2 570	2 320	2 360
Other Fuels	6 360	7 210	7 210	1 740	1 490	1 290	1 850	1 650	1 580
Nuclear	**5 340**	**3 960**	**4 380**	**–**	**414**	**4 481**	**5 012**	**4 277**	**4 545**
Hydro	**3 460**	**3 220**	**3 820**	**3 840**	**2 860**	**3 400**	**2 960**	**2 620**	**3 130**
Other Renewables[11]	**–**	**–**	**–**	**693**	**733**	**737**	**786**	**792**	**856**
Other Generation[12,13]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[7]	**16 400**	**18 200**	**20 300**	**11 900**	**10 300**	**15 100**	**15 700**	**13 300**	**14 600**
Greenhouse Gas Intensity[14]									
	g GHG / kWh electricity generated								
CO_2 intensity (g CO_2 / kWh)	360	490	390	440	420	290	280	290	330
CH_4 intensity (g CH_4 / kWh)	0.004	0.005	0.01	0.03	0.03	0.02	0.02	0.02	0.02
N_2O intensity (g N_2O / kWh)	0.007	0.009	0.007	0.007	0.007	0.004	0.004	0.005	0.005
Generation Intensity (g CO_2 eq / kWh)[7]	**370**	**490**	**400**	**440**	**420**	**290**	**280**	**300**	**340**
Unallocated Energy (GWh)[17,18]	990	1 300	1 100	160	160*	349*	445*	352	432
SF_6 Emissions (kt CO_2 eq)[17]	0.71	0.70	–	0.61	0.53	0.82	0.58	0.83	0.83
Consumption Intensity (g CO_2 eq / kWh)[18]	**390**	**530**	**420**	**440**	**430**	**300**	**290**	**300**	**350**

Notes:

1. Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111 – Electric Power Generation.
2. Preliminary data.
3. Emissions based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.
4. Includes GHG emissions from the combustion of refined petroleum products (light fuel oil, heavy fuel oil, and diesel), petroleum coke, still gas and other fuels not easily categorized.
5. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
6. GHG emissions from the flooding of land for hydro dams are not included.
7. Totals may not add up to overall total due to rounding.
8. Taken from CANSIM Tables 127-0006 and 127-0007 (for 2005–2016).
9. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).
10. From 2014 onward, this includes the electricity generated from the by-product steam associated with the fuel combustion. Prior to 2014, it was not possible to break this data into the original fuel source, so it was included in Other Generation.
11. Other Renewables – includes electricity generation by wind, tidal and solar.
12. NAICS category 221119, Other Electric Power Generation.
13. Prior to 2014, this includes electricity generation from steam from waste heat. From 2014 onward, electricity generation from steam from waste heat is reported as part of its original fuel source.
14. Intensity values have been rounded so as to present the estimated level of accuracy.
15. Adapted from Statistics Canada CANSIM Table 127-0008 (2005–2016) or Cat. No. 57-202-XIB (1990–2004).
16. Includes transmission line losses, metering differences and other losses.
17. The electric utility sector's share of emissions from electrical equipment from CRF Category 2.F.viii (Production and Consumption of Halocarbons and SF_6).
18. Consumption intensity values are impacted by unallocated energy and SF_6 transmission emissions.

– Indicates no emissions or no electricity generation

0 Indicates emissions or electricity generation value less than 0.1

x Indicates data not shown due to statistical limitations

unk Indicates unknown as appropriate data were unavailable

* For years where unallocated energy data was not available, values were interpolated

Table A13–6 Electricity Generation and GHG Emission Details for Quebec[1]

	1990	2000	2005	2011	2012	2013	2014	2015	2016[2]
Greenhouse Gas Emissions[3]									
	kt CO_2 equivalent								
Combustion	**1 500**	**569**	**617**	**404**	**488**	**371**	**248**	**208**	**237**
Coal	–	–	–	–	–	–	–	–	–
Natural Gas	x	x	x	x	x	x	x	x	x
Other Fuels[4]	x	x	x	x	x	x	x	x	x
Other Emissions[5]	**–**	**2.5**	**4.6**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[6,7]	**1 500**	**571**	**622**	**404**	**488**	**371**	**248**	**208**	**237**
Electricity Generation[8,9]									
	GWh								
Combustion[10]	**1 980**	**1 150**	**1 390**	**1 360**	**1 260**	**1 140**	**1 010**	**960**	**1 370**
Coal	–	–	–	–	–	–	–	–	–
Natural Gas	–	191	212	198	191	14	14	0	0
Other Fuels	1 980	961	1 170	1 170	1 070	1 130	1 000	960	1 370
Nuclear	**4 070**	**4 890**	**4 480**	**3 530**	**4 210**	**0**	**0**	**0**	**0**
Hydro	**112 000**	**153 000**	**155 000**	**170 000**	**171 000**	**182 000**	**177 000**	**175 000**	**177 000**
Other Renewables[11]	**–**	**173**	**416**	**1 000**	**1 011**	**1 031**	**1 010**	**6 422**	**6 999**
Other Generation[12,13]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[7]	**118 000**	**160 000**	**161 000**	**176 000**	**178 000**	**184 000**	**179 000**	**182 000**	**185 000**
Greenhouse Gas Intensity[14]									
	g GHG / kWh electricity generated								
CO_2 intensity (g CO_2 / kWh)	13	3.5	3.7	2.3	2.7	2.0	1.4	1.1	1.2
CH_4 intensity (g CH_4 / kWh)	0.0004	0.0005	0.0009	0.0002	0.0004	0.0002	0.0001	0.0	0.0
N_2O intensity (g N_2O / kWh)	0.0003	0.0002	0.0005	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Generation Intensity (g CO_2 eq / kWh)[7]	**13**	**3.6**	**3.9**	**2.3**	**2.7**	**2.0**	**1.4**	**1.1**	**1.3**
Unallocated Energy (GWh)[17,18]	7 300	13 000	9 100	11 000	12 000	12 000	13 000	9 000*	4 000
SF_6 Emissions (kt CO_2 eq)[17]	37	36	30	30	54	67	17	74	74
Consumption Intensity (g CO_2 eq / kWh)[18]	**14**	**4.1**	**4.3**	**2.6**	**3.3**	**2.5**	**1.6**	**1.6**	**1.7**

Notes:

1. Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111 – Electric Power Generation.
2. Preliminary data.
3. Emissions based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.
4. Includes GHG emissions from the combustion of refined petroleum products (light fuel oil, heavy fuel oil, and diesel), petroleum coke, still gas and other fuels not easily categorized.
5. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
6. GHG emissions from the flooding of land for hydro dams are not included.
7. Totals may not add up to overall total due to rounding.
8. Taken from CANSIM Tables 127-0006 and 127-0007 (for 2005–2016).
9. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).
10. From 2014 onward, this includes the electricity generated from the by-product steam associated with the fuel combustion. Prior to 2014, it was not possible to break this data into the original fuel source, so it was included in Other Generation.
11. Other Renewables – includes electricity generation by wind, tidal and solar.
12. NAICS category 221119, Other Electric Power Generation.
13. Prior to 2014, this includes electricity generation from steam from waste heat. From 2014 onward, electricity generation from steam from waste heat is reported as part of its original fuel source.
14. Intensity values have been rounded so as to present the estimated level of accuracy.
15. Adapted from Statistics Canada CANSIM Table 127-0008 (2005-2016) or Cat. No. 57-202-XIB (1990–2004).
16. Includes transmission line losses, metering differences and other losses.
17. The electric utility sector's share of emissions from electrical equipment from CRF Category 2.F.viii (Production and Consumption of Halocarbons and SF_6).
18. Consumption intensity values are impacted by unallocated energy and SF_6 transmission emissions.

– Indicates no emissions or no electricity generation

0 Indicates emissions or electricity generation value less than 0.1

x Indicates data not shown due to statistical limitations

* For years where unallocated energy data was not available, values were interpolated

Table A13–7 Electricity Generation and GHG Emission Details for Ontario[1]

	1990	2000	2005	2011	2012	2013	2014	2015	2016[2]
Greenhouse Gas Emissions[3]									
	kt CO_2 equivalent								
Combustion	**25 800**	**44 200**	**35 400**	**14 400**	**14 300**	**10 300**	**6 030**	**6 250**	**5 500**
Coal	24 700	38 800	29 000	4 400	4 390	3 150	100	0	0
Natural Gas	x	x	x	x	x	7 040	5 810	6 170	5 370
Other Fuels[4]	x	x	x	x	x	60	130	80	120
Other Emissions[5]	**–**	**0.77**	**1.4**	**0.23**	**–**	**–**	**–**	**–**	**–**
Overall Total[6,7]	**25 800**	**44 200**	**35 400**	**14 400**	**14 300**	**10 300**	**6 000**	**6 300**	**5 500**
Electricity Generation[8,9]									
	GWh								
Combustion[10]	**29 200**	**52 200**	**40 900**	**23 100**	**22 400**	**17 500**	**15 600**	**16 000**	**13 600**
Coal	27 800	40 800	29 400	3 900	4 100	2 850	80	0	0
Natural Gas	3.18	10 200	10 000	18 500	17 600	13 900	14 700	15 300	12 700
Other Fuels	1 430	1 140	1 440	782	703	722	778	699	871
Nuclear	**59 400**	**59 800**	**78 000**	**84 800**	**84 900**	**93 100**	**96 200**	**91 800**	**90 900**
Hydro	**38 700**	**36 600**	**34 600**	**34 600**	**33 000**	**36 900**	**38 200**	**34 800**	**34 800**
Other Renewables[11]	**–**	**1.22**	**26.0**	**3 420**	**4 320**	**4 240**	**3 660**	**12 240**	**13 380**
Other Generation[12,13]	**–**	**–**	**–**	**3 501**	**4 256**	**3 337**	**–**	**–**	**–**
Overall Total[7]	**127 000**	**149 000**	**153 000**	**153 000**	**153 000**	**158 000**	**154 000**	**155 000**	**153 000**
Greenhouse Gas Intensity[14]									
	g GHG / kWh electricity generated								
CO_2 intensity (g CO_2 / kWh)	200	300	230	95	95	65	39	40	35
CH_4 intensity (g CH_4 / kWh)	0.002	0.01	0.01	0.02	0.02	0.01	0.01	0.01	0.01
N_2O intensity (g N_2O / kWh)	0.003	0.005	0.004	0.002	0.002	0.002	0.001	0.001	0.001
Generation Intensity (g CO_2 eq / kWh)[7]	**200**	**300**	**230**	**96**	**96**	**66**	**39**	**40**	**36**
Unallocated Energy (GWh)[17,18]	10 000	12 000	12 000	16 000	15 000	22 000	9 000	9 000*	9 000*
SF_6 Emissions (kt CO_2 eq)[17]	76	75	50	38	56	64	43	56	56
Consumption Intensity (g CO_2 eq / kWh)[18]	**220**	**320**	**250**	**110**	**110**	**80**	**40**	**40**	**40**

Notes:

1. Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111 – Electric Power Generation.
2. Preliminary data.
3. Emissions based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.
4. Includes GHG emissions from the combustion of refined petroleum products (light fuel oil, heavy fuel oil, and diesel), petroleum coke, still gas and other fuels not easily categorized.
5. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
6. GHG emissions from the flooding of land for hydro dams are not included.
7. Totals may not add up to overall total due to rounding.
8. Taken from CANSIM Tables 127-0006 and 127-0007 (for 2005–2016).
9. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).
10. From 2014 onward, this includes the electricity generated from the by-product steam associated with the fuel combustion. Prior to 2014, it was not possible to break this data into the original fuel source, so it was included in Other Generation.
11. Other Renewables – includes electricity generation by wind, tidal and solar.
12. NAICS category 221119, Other Electric Power Generation.
13. Prior to 2014, this includes electricity generation from steam from waste heat. From 2014 onward, electricity generation from steam from waste heat is reported as part of its original fuel source.
14. Intensity values have been rounded so as to present the estimated level of accuracy.
15. Adapted from Statistics Canada CANSIM Table 127-0008 (2005-2016) or Cat. No. 57-202-XIB (1990–2004).
16. Includes transmission line losses, metering differences and other losses.
17. The electric utility sector's share of emissions from electrical equipment from CRF Category 2.F.viii (Production and Consumption of Halocarbons and SF_6).
18. Consumption intensity values are impacted by unallocated energy and SF_6 transmission emissions.

– Indicates no emissions or no electricity generation

0 Indicates emissions or electricity generation value less than 0.1

x Indicates data not shown due to statistical limitations

* For years where unallocated energy data was not available, values were interpolated

Table A13–8 Electricity Generation and GHG Emission Details for Manitoba[1]

	1990	2000	2005	2011	2012	2013	2014	2015	2016[2]
Greenhouse Gas Emissions[3]									
	kt CO_2 equivalent								
Combustion	**518**	**1 067**	**349**	**110**	**91.9**	**104.4**	**110.1**	**103.0**	**54.6**
Coal	x	x	x	x	x	x	x	x	x
Natural Gas	x	x	x	x	x	x	x	x	x
Other Fuels[4]	50.7	12.1	15.7	12.9	12.9	1.7	1.7	.0	13.7
Other Emissions[5]	**–**	**4.8**	**8.8**	**12**	**21**	**16**	**16**	**21**	**15**
Overall Total[6,7]	**518**	**1 072**	**358**	**123**	**112**	**120**	**127**	**124**	**70**
Electricity Generation[8,9]									
	GWh								
Combustion[10]	**399**	**881**	**447**	**106**	**94**	**91**	**96**	**107**	**56**
Coal	375	869	421	49.7	51.5	65.4	68.9	63.4	28.5
Natural Gas	0.904	–	10.6	41.1	27.4	24.0	25.2	29.4	11.7
Other Fuels	22.4	12.4	15.1	15.3	15.2	1.5	1.6	14.4	15.5
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**19 800**	**31 500**	**36 400**	**34 200**	**32 200**	**35 300**	**34 500**	**34 800**	**35 600**
Other Renewables[11]	**–**	**–**	**53.4**	**747**	**877**	**868**	**911**	**903**	**863**
Other Generation[12,13]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[7]	**20 200**	**32 400**	**36 900**	**35 100**	**33 200**	**36 300**	**35 500**	**35 800**	**36 500**
Greenhouse Gas Intensity[14]									
	g GHG / kWh electricity generated								
CO_2 intensity (g CO_2 / kWh)	25	33	9.6	3.5	3.4	3.3	3.5	3.4	1.9
CH_4 intensity (g CH_4 / kWh)	0.0005	0.0004	0.0002	0.0004	0.0002	0.0003	0.0003	0.0003	0.0001
N_2O intensity (g N_2O / kWh)	0.001	0.001	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Generation Intensity (g CO_2 eq / kWh)[7]	**26**	**33**	**9.7**	**3.5**	**3.4**	**3.3**	**3.6**	**3.5**	**1.9**
Unallocated Energy (GWh)[17,18]	2 100	3 750	1 900	4 600	3 600	3 800	3 900	3 800	4 000
SF_6 Emissions (kt CO_2 eq)[17]	4.3	4.2	4.0	6.0	1.3	1.2	.9	1.0	1.0
Consumption Intensity (g CO_2 eq / kWh)[18]	**29**	**38**	**10.3**	**4.2**	**3.9**	**3.7**	**4.0**	**3.9**	**2.2**

Notes:

1. Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111 – Electric Power Generation.
2. Preliminary data.
3. Emissions based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.
4. Includes GHG emissions from the combustion of refined petroleum products (light fuel oil, heavy fuel oil, and diesel), petroleum coke, still gas and other fuels not easily categorized.
5. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
6. GHG emissions from the flooding of land for hydro dams are not included.
7. Totals may not add up to overall total due to rounding.
8. Taken from CANSIM Tables 127-0006 and 127-0007 (for 2005–2016).
9. Taken from the Electric Power Generation, Transmission and Distribution (EPGTD) publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).
10. From 2014 onward, this includes the electricity generated from the by-product steam associated with the fuel combustion. Prior to 2014, it was not possible to break this data into the original fuel source, so it was included in Other Generation.
11. Other Renewables – includes electricity generation by wind, tidal and solar.
12. NAICS category 221119, Other Electric Power Generation.
13. Prior to 2014, this includes electricity generation from steam from waste heat. From 2014 onward, electricity generation from steam from waste heat is reported as part of its original fuel source.
14. Intensity values have been rounded so as to present the estimated level of accuracy.
15. Adapted from Statistics Canada CANSIM Table 127-0008 (2005-2016) or Cat. No. 57-202-XIB (1990–2004).
16. Includes transmission line losses, metering differences and other losses.
17. The electric utility sector's share of emissions from electrical equipment from CRF Category 2.F.viii (Production and Consumption of Halocarbons and SF_6).
18. Consumption intensity values are impacted by unallocated energy and SF_6 transmission emissions.

– Indicates no emissions or no electricity generation

0 Indicates emissions or electricity generation value less than 0.1

x Indicates data not shown due to statistical limitations

Table A13–9 Electricity Generation and GHG Emission Details for Saskatchewan[1]

	1990	2000	2005	2011	2012	2013	2014	2015	2016[2]
Greenhouse Gas Emissions[3]									
	kt CO_2 equivalent								
Combustion	**11 100**	**14 400**	**15 200**	**15 500**	**16 100**	**15 000**	**15 200**	**16 400**	**16 700**
Coal	x	x	x	x	x	x	x	x	x
Natural Gas	x	x	x	x	x	x	x	x	x
Other Fuels[4]	6.74	10.8	4.48	7.20	6.64	0.28	6.37	9.13	9.41
Other Emissions[5]	**–**	**10**	**18**	**30**	**31**	**35**	**35**	**39**	**42**
Overall Total[6,7]	**11 100**	**14 400**	**15 200**	**15 500**	**16 100**	**15 000**	**15 300**	**16 500**	**16 700**
Electricity Generation[8,9]									
	GWh								
Combustion[10]	**9 660**	**14 100**	**14 800**	**13 600**	**13 900**	**15 300**	**14 800**	**19 100**	**20 300**
Coal	9 340	11 400	12 200	11 600	11 400	11 800	10 200	12 100	12 000
Natural Gas	308	2 660	2 610	2 000	2 490	3 510	4 530	6 990	8 220
Other Fuels	8.78	12.5	12.0	10.0	9.30	12.42	9.40	13.44	.41
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**4 210**	**3 050**	**4 570**	**4 640**	**4 240**	**4 450**	**4 710**	**3 430**	**3 280**
Other Renewables[11]	**–**	**–**	**91.9**	**608**	**655**	**640**	**615**	**620**	**730**
Other Generation[12,13]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[7]	**13 900**	**17 100**	**19 500**	**19 600**	**19 800**	**22 100**	**20 100**	**23 100**	**24 300**
Greenhouse Gas Intensity[14]									
	g GHG / kWh electricity generated								
CO_2 intensity (g CO_2 / kWh)	790	840	770	800	830	700	750	690	650
CH_4 intensity (g CH_4 / kWh)	0.02	0.03	0.03	0.04	0.05	0.04	0.04	0.05	0.05
N_2O intensity (g N_2O / kWh)	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Generation Intensity (g CO_2 eq / kWh)[7]	**800**	**840**	**780**	**810**	**830**	**710**	**750**	**690**	**660**
Unallocated Energy (GWh)[17,18]	1 300	1 700	1 400	1 000	1 100	1 900	3 200	1 600	2 400
SF_6 Emissions (kt CO_2 eq)[17]	1.8	1.7	1.3	1.2	0.75	0.91	0.42	0.73	0.73
Consumption Intensity (g CO_2 eq / kWh)[18]	**880**	**940**	**840**	**850**	**880**	**780**	**900**	**750**	**730**

Notes:

1. Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111 – Electric Power Generation.
2. Preliminary data.
3. Emissions based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.
4. Includes GHG emissions from the combustion of refined petroleum products (light fuel oil, heavy fuel oil, and diesel), petroleum coke, still gas and other fuels not easily categorized.
5. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
6. GHG emissions from the flooding of land for hydro dams are not included.
7. Totals may not add up to overall total due to rounding.
8. Taken from CANSIM Tables 127-0006 and 127-0007 (for 2005–2016).
9. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).
10. From 2014 onward, this includes the electricity generated from the by-product steam associated with the fuel combustion. Prior to 2014, it was not possible to break this data into the original fuel source, so it was included in Other Generation.
11. Other Renewables – includes electricity generation by wind, tidal and solar.
12. NAICS category 221119, Other Electric Power Generation.
13. Prior to 2014, this includes electricity generation from steam from waste heat. From 2014 onward, electricity generation from steam from waste heat is reported as part of its original fuel source.
14. Intensity values have been rounded so as to present the estimated level of accuracy.
15. Adapted from Statistics Canada CANSIM Table 127-0008 (2005–2016) or Cat. No. 57-202-XIB (1990–2004).
16. Includes transmission line losses, metering differences and other losses.
17. The electric utility sector's share of emissions from electrical equipment from CRF Category 2.F.viii (Production and Consumption of Halocarbons and SF_6).
18. Consumption intensity values are impacted by unallocated energy and SF_6 transmission emissions.

– Indicates no emissions or no electricity generation

0 Indicates emissions or electricity generation value less than 0.1

x Indicates data not shown due to statistical limitations

Table A13–10 Electricity Generation and GHG Emission Details for Alberta[1]

	1990	2000	2005	2011	2012	2013	2014	2015	2016[2]
Greenhouse Gas Emissions[3]									
	kt CO_2 equivalent								
Combustion	**39 600**	**50 100**	**51 900**	**48 700**	**46 900**	**48 100**	**49 100**	**51 300**	**48 100**
Coal	x	x	x	x	x	x	x	x	x
Natural Gas	x	x	x	x	x	x	x	x	x
Other Fuels[4]	11.8	301	68.4	20.8	18.7	18.4	17.0	17.5	1.5
Other Emissions[5]	**–**	**5.7**	**10**	**13**	**23**	**6**	**14**	**19**	**17**
Overall Total[6,7]	**39 600**	**50 100**	**51 900**	**48 700**	**46 900**	**48 100**	**49 100**	**51 300**	**48 200**
Electricity Generation[8,9]									
	GWh								
Combustion[10]	**39 900**	**51 300**	**54 200**	**62 100**	**52 000**	**53 200**	**59 700**	**57 100**	**55 200**
Coal	37 300	40 700	42 200	46 300	37 300	38 500	43 400	42 200	39 000
Natural Gas	2 510	10 200	11 600	15 200	14 100	14 100	15 700	14 300	15 800
Other Fuels	21.6	443	424	542	630	630	550	517	448
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**2 060**	**1 760**	**2 240**	**1 970**	**2 570**	**1 990**	**1 820**	**1 980**	**2 280**
Other Renewables[11]	**–**	**88.9**	**837**	**2 220**	**2 290**	**2 260**	**3 520**	**4 090**	**5 390**
Other Generation[12,13]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[7]	**41 900**	**53 200**	**57 300**	**70 100**	**61 300**	**61 900**	**65 300**	**63 400**	**63 200**
Greenhouse Gas Intensity[14]									
	g GHG / kWh electricity generated								
CO_2 intensity (g CO_2 / kWh)	940	940	900	710	790	800	750	800	760
CH_4 intensity (g CH_4 / kWh)	0.02	0.04	0.03	0.03	0.04	0.04	0.04	0.04	0.04
N_2O intensity (g N_2O / kWh)	0.02	0.02	0.02	0.01	0.02	0.02	0.01	0.02	0.01
Generation Intensity (g CO_2 eq / kWh)[7]	**950**	**940**	**910**	**710**	**790**	**810**	**750**	**810**	**760**
Unallocated Energy (GWh)[17,18]	3 400	4 100	4 900	17 400	8 400	8 800*	9 800*	9 900*	9 900*
SF_6 Emissions (kt CO_2 eq)[17]	1.6	1.6	0.43	1.16	3.1	2.4	3.1	3.2	3.2
Consumption Intensity (g CO_2 eq / kWh)[18]	**1 000**	**1 000**	**990**	**1 000**	**930**	**950**	**890**	**960**	**900**

Notes:

1. Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111 – Electric Power Generation.
2. Preliminary data.
3. Emissions based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.
4. Includes GHG emissions from the combustion of refined petroleum products (light fuel oil, heavy fuel oil, and diesel), petroleum coke, still gas and other fuels not easily categorized.
5. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
6. GHG emissions from the flooding of land for hydro dams are not included.
7. Totals may not add up to overall total due to rounding.
8. Taken from CANSIM Tables 127-0006 and 127-0007 (for 2005–2016).
9. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).
10. From 2014 onward, this includes the electricity generated from the by-product steam associated with the fuel combustion. Prior to 2014, it was not possible to break this data into the original fuel source, so it was included in Other Generation.
11. Other Renewables – includes electricity generation by wind, tidal and solar.
12. NAICS category 221119, Other Electric Power Generation.
13. Prior to 2014, this includes electricity generation from steam from waste heat. From 2014 onward, electricity generation from steam from waste heat is reported as part of its original fuel source.
14. Intensity values have been rounded so as to present the estimated level of accuracy.
15. Adapted from Statistics Canada CANSIM Table 127-0008 (2005-2016) or Cat. No. 57-202-XIB (1990–2004).
16. Includes transmission line losses, metering differences and other losses.
17. The electric utility sector's share of emissions from electrical equipment from CRF Category 2.F.viii (Production and Consumption of Halocarbons and SF_6).
18. Consumption intensity values are impacted by unallocated energy and SF_6 transmission emissions.

– Indicates no emissions or no electricity generation

0 Indicates emissions or electricity generation value less than 0.1

x Indicates data not shown due to statistical limitations

* For years where unallocated energy data was not available, values were interpolated

Table A13–11 Electricity Generation and GHG Emission Details for British Columbia[1]

	1990	2000	2005	2011	2012	2013	2014	2015	2016[2]
Greenhouse Gas Emissions[3]									
	kt CO_2 equivalent								
Combustion	**807**	**1 940**	**1 330**	**775**	**503**	**590**	**571**	**496**	**650**
Coal	–	–	–	–	–	–	–	–	–
Natural Gas	x	x	x	x	x	539	517	447	606
Other Fuels[4]	x	x	x	x	x	51	54	50	44
Other Emissions[5]	**–**	**2.4**	**4.6**	**6.5**	**7.2**	**6.7**	**7.4**	**7.2**	**6.5**
Overall Total[6,7]	**807**	**1 940**	**1 340**	**780**	**510**	**596**	**578**	**504**	**656**
Electricity Generation[8,9]									
	GWh								
Combustion[10]	**1 390**	**3 930**	**3 820**	**1 760**	**1 510**	**1 820**	**1 780**	**1 610**	**1 560**
Coal	–	–	–	–	–	–	–	–	–
Natural Gas	1 310	3 350	3 140	610	712	892	936	788	1 037
Other Fuels	79.4	585	689	1 150	798	926	846	818	522
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**46 400**	**50 800**	**50 300**	**51 700**	**55 800**	**50 500**	**49 000**	**52 400**	**56 400**
Other Renewables[11]	**–**	**–**	**–**	**187**	**158**	**152**	**849**	**868**	**1 056**
Other Generation[12,13]	**–**	**–**	**–**	**2 590**	**2 750**	**2 520**	**2 240**	**0**	**0**
Overall Total[7]	**47 800**	**54 700**	**54 100**	**56 400**	**60 300**	**55 000**	**53 900**	**54 900**	**59 000**
Greenhouse Gas Intensity[14]									
	g GHG / kWh electricity generated								
CO_2 intensity (g CO_2 / kWh)	17	35	24	13	8.2	10.5	10.4	8.9	10.8
CH_4 intensity (g CH_4 / kWh)	0.004	0.009	0.007	0.004	0.003	0.003	0.003	0.003	0.003
N_2O intensity (g N_2O / kWh)	0.0006	0.001	0.0015	0.0011	0.0007	0.0009	0.0008	0.0008	0.0008
Generation Intensity (g CO_2 eq / kWh)[7]	**17**	**35**	**25**	**14**	**8.5**	**10.9**	**10.7**	**9.2**	**11.1**
Unallocated Energy (GWh)[17,18]	2 200	2 300	2 100	810	900	2 400*	3 900	2 900*	1 300
SF_6 Emissions (kt CO_2 eq)[17]	57	56	48	26	47	42	26	20	20
Consumption Intensity (g CO_2 eq / kWh)[18]	**19**	**38**	**27**	**15**	**9.4**	**12.1**	**12.1**	**10.1**	**11.7**

Notes:

1. Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111 – Electric Power Generation.
2. Preliminary data.
3. Emissions based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.
4. Includes GHG emissions from the combustion of refined petroleum products (light fuel oil, heavy fuel oil, and diesel), petroleum coke, still gas and other fuels not easily categorized.
5. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
6. GHG emissions from the flooding of land for hydro dams are not included.
7. Totals may not add up to overall total due to rounding.
8. Taken from CANSIM Tables 127-0006 and 127-0007 (for 2005–2016).
9. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).
10. From 2014 onward, this includes the electricity generated from the by-product steam associated with the fuel combustion. Prior to 2014, it was not possible to break this data into the original fuel source, so it was included in Other Generation.
11. Other Renewables – includes electricity generation by wind, tidal and solar.
12. NAICS category 221119, Other Electric Power Generation.
13. Prior to 2014, this includes electricity generation from steam from waste heat. From 2014 onward, electricity generation from steam from waste heat is reported as part of its original fuel source.
14. Intensity values have been rounded so as to present the estimated level of accuracy.
15. Adapted from Statistics Canada CANSIM Table 127-0008 (2005–2016) or Cat. No. 57-202-XIB (1990–2004).
16. Includes transmission line losses, metering differences and other losses.
17. The electric utility sector's share of emissions from electrical equipment from CRF Category 2.F.viii (Production and Consumption of Halocarbons and SF_6).
18. Consumption intensity values are impacted by unallocated energy and SF_6 transmission emissions.

– Indicates no emissions or no electricity generation

0 Indicates emissions or electricity generation value less than 0.1

x Indicates data not shown due to statistical limitations

* For years where unallocated energy data was not available, values were interpolated

Table A13–12 Electricity Generation and GHG Emission Details for Yukon[1]

	1990	2000	2005	2011	2012	2013	2014	2015	2016[2]
Greenhouse Gas Emissions[3]									
	kt CO_2 equivalent								
Combustion	**94.0**	**22.2**	**23.0**	**27.7**	**18.5**	**17.7**	**17.1**	**19.0**	**20.0**
Coal	–	–	–	–	–	–	–	–	–
Natural Gas	–	–	–	–	–	–	–	–	–
Other Fuels[4]	94.0	22.2	23.0	27.7	18.5	17.7	17.1	18.2	18.2
Other Emissions[5]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[6,7]	**94.0**	**22.2**	**23.0**	**27.7**	**18.5**	**17.7**	**17.1**	**19.0**	**20.0**
Electricity Generation[8,9]									
	GWh								
Combustion[10]	**62.1**	**36.7**	**22.4**	**36.9**	**24.4**	**23.3**	**22.7**	**25.5**	**27.0**
Coal	–	–	–	–	–	–	–	–	–
Natural Gas	–	–	–	–	–	–	–	–	–
Other Fuels	62.1	36.7	22.4	36.9	24.4	23.3	22.7	24.2	23.8
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**423**	**261**	**320**	**388**	**430**	**425**	**411**	**422**	**419**
Other Renewables[11]	**–**	**0.388**	**0.890**	**0.402**	**0.445**	**0.277**	**0.334**	**0.650**	**0.509**
Other Generation[12,13]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[7]	**485**	**298**	**344**	**425**	**455**	**449**	**434**	**448**	**447**
Greenhouse Gas Intensity[14]									
	g GHG / kWh electricity generated								
CO_2 intensity (g CO_2 / kWh)	190	71	64	62	39	38	38	41	43
CH_4 intensity (g CH_4 / kWh)	0.009	0.004	0.003	0.003	0.002	0.002	0.002	0.002	0.003
N_2O intensity (g N_2O / kWh)	0.03	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Generation Intensity (g CO_2 eq / kWh)[7]	**190**	**75**	**67**	**65**	**41**	**39**	**39**	**42**	**45**
Unallocated Energy (GWh)[17,18]	47	24	45	51	58	55	17	54	48
SF_6 Emissions (kt CO_2 eq)[17]	–	–	–	–	–	–	–	–	–
Consumption Intensity (g CO_2 eq / kWh)[18]	**210**	**81**	**77**	**74**	**47**	**45**	**41**	**48**	**50**

Notes:

1. Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111 – Electric Power Generation.
2. Preliminary data.
3. Emissions based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.
4. Includes GHG emissions from the combustion of refined petroleum products (light fuel oil, heavy fuel oil, and diesel), petroleum coke, still gas and other fuels not easily categorized.
5. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
6. GHG emissions from the flooding of land for hydro dams are not included.
7. Totals may not add up to overall total due to rounding.
8. Taken from CANSIM Tables 127-0006 and 127-0007 (for 2005–2016).
9. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).
10. From 2014 onward, this includes the electricity generated from the by-product steam associated with the fuel combustion. Prior to 2014, it was not possible to break this data into the original fuel source, so it was included in Other Generation.
11. Other Renewables – includes electricity generation by wind, tidal and solar.
12. NAICS category 221119, Other Electric Power Generation.
13. Prior to 2014, this includes electricity generation from steam from waste heat. From 2014 onward, electricity generation from steam from waste heat is reported as part of its original fuel source.
14. Intensity values have been rounded so as to present the estimated level of accuracy.
15. Adapted from Statistics Canada CANSIM Table 127-0008 (2005-2016) or Cat. No. 57-202-XIB (1990–2004).
16. Includes transmission line losses, metering differences and other losses.
17. The electric utility sector's share of emissions from electrical equipment from CRF Category 2.F.viii (Production and Consumption of Halocarbons and SF_6).
18. Consumption intensity values are impacted by unallocated energy and SF_6 transmission emissions.

– Indicates no emissions or no electricity generation

0 Indicates emissions or electricity generation value less than 0.1

Table A13–13 Electricity Generation and GHG Emission Details for the Northwest Territories[1]

	1990	2000	2005	2011	2012	2013	2014	2015	2016[2]
Greenhouse Gas Emissions[3]									
	kt CO_2 equivalent								
Combustion	**163**	**109**	**94**	**65**	**65**	**67**	**86**	**123**	**71**
Coal	x	x	x	x	x	–	–	–	–
Natural Gas	x	x	x	x	x	3.66	4.82	6.17	7.71
Other Fuels[4]	x	x	x	x	x	63	82	117	63
Other Emissions[5]	**x**	**x**	**x**	**x**	**x**	**–**	**–**	**–**	**–**
Overall Total[6,7]	**163**	**110**	**98**	**65**	**65**	**67**	**86**	**123**	**71**
Electricity Generation[8,9]									
	GWh								
Combustion[10]	**227**	**195**	**78**	**83**	**83**	**84**	**109**	**161**	**96**
Coal	–	–	–	–	–	–	–	–	–
Natural Gas	–	15.8	23.3	23.7	5.63	5.77	7.53	10.70	14.21
Other Fuels	227	179	54	59	77	79	102	150	82
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**226**	**247**	**259**	**260**	**253**	**263**	**234**	**164**	**255**
Other Renewables[11]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Other Generation[12,13]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[7]	**453**	**442**	**337**	**343**	**336**	**347**	**343**	**325**	**351**
Greenhouse Gas Intensity[14]									
	g GHG / kWh electricity generated								
CO_2 intensity (g CO_2 / kWh)	340	240	280	180	190	180	240	360	190
CH_4 intensity (g CH_4 / kWh)	0.02	0.01	0.03	0.02	0.01	0.01	0.01	0.02	0.01
N_2O intensity (g N_2O / kWh)	0.05	0.03	0.03	0.02	0.03	0.03	0.03	0.05	0.03
Generation Intensity (g CO_2 eq / kWh)[7]	**360**	**250**	**290**	**190**	**190**	**190**	**250**	**380**	**200**
Unallocated Energy (GWh)[17,18]	21	21	19	23	10	17	58	6	27
SF_6 Emissions (kt CO_2 eq)[17]	–	–	–	–	–	–	–	–	–
Consumption Intensity (g CO_2 eq / kWh)[18]	**380**	**260**	**310**	**200**	**200**	**200**	**300**	**390**	**220**

Notes:

1. Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111 – Electric Power Generation.
2. Preliminary data.
3. Emissions based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.
4. Includes GHG emissions from the combustion of refined petroleum products (light fuel oil, heavy fuel oil, and diesel), petroleum coke, still gas and other fuels not easily categorized.
5. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
6. GHG emissions from the flooding of land for hydro dams are not included.
7. Totals may not add up to overall total due to rounding.
8. Taken from CANSIM Tables 127-0006 and 127-0007 (for 2005–2016).
9. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).
10. From 2014 onward, this includes the electricity generated from the by-product steam associated with the fuel combustion. Prior to 2014, it was not possible to break this data into the original fuel source, so it was included in Other Generation.
11. Other Renewables – includes electricity generation by wind, tidal and solar.
12. NAICS category 221119, Other Electric Power Generation.
13. Prior to 2014, this includes electricity generation from steam from waste heat. From 2014 onward, electricity generation from steam from waste heat is reported as part of its original fuel source.
14. Intensity values have been rounded so as to present the estimated level of accuracy.
15. Adapted from Statistics Canada CANSIM Table 127-0008 (2005–2016) or Cat. No. 57-202-XIB (1990–2004).
16. Includes transmission line losses, metering differences and other losses.
17. The electric utility sector's share of emissions from electrical equipment from CRF Category 2.F.viii (Production and Consumption of Halocarbons and SF_6).
18. Consumption intensity values are impacted by unallocated energy and SF_6 transmission emissions.

– Indicates no emissions or no electricity generation

0 Indicates emissions or electricity generation value less than 0.1

Table A13–14 Electricity Generation and GHG Emission Details for the Nunavut[1]

	1990	2000	2005	2011	2012	2013	2014	2015	2016[2]
Greenhouse Gas Emissions[3]									
	kt CO_2 equivalent								
Combustion	**	**	**x**	**x**	**x**	**71**	**123**	**118**	**129**
Coal	**	**	x	x	x	–	–	–	–
Natural Gas	**	**	x	x	x	–	–	–	–
Other Fuels[4]	**	**	x	x	x	71	123	118	129
Other Emissions[5]	**	**	**x**	**x**	**x**	**–**	**–**	**–**	**–**
Overall Total[6,7]	**	**	**x**	**x**	**x**	**71**	**123**	**118**	**129**
Electricity Generation[8,9]									
	GWh								
Combustion[10]	**	**	**142**	**98**	**98**	**98**	**158**	**157**	**173**
Coal	**	**	–	–	–	–	–	–	–
Natural Gas	**	**	–	–	–	–	–	–	–
Other Fuels	**	**	142	98	98	98	158	157	173
Nuclear	**	**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**	**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Other Renewables[11]	**	**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Other Generation[12,13]	**	**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[7]	**	**	**142**	**98**	**98**	**98**	**158**	**157**	**173**
Greenhouse Gas Intensity[14]									
	g GHG / kWh electricity generated								
CO_2 intensity (g CO_2 / kWh)	**	**	x	x	x	700	740	720	710
CH_4 intensity (g CH_4 / kWh)	**	**	x	x	x	0.0	0.0	0.0	0.0
N_2O intensity (g N_2O / kWh)	**	**	x	x	x	0.0	0.0	0.0	0.0
Generation Intensity (g CO_2 eq / kWh)[7]	**	**	**x**	**x**	**x**	**730**	**780**	**750**	**750**
Unallocated Energy (GWh)[17,18]	**	**	7	2	2	2	3*	3*	3*
SF_6 Emissions (kt CO_2 eq)[17]	**	**	–	–	–	–	–	–	–
Consumption Intensity (g CO_2 eq / kWh)[18]	**	**	**920**	**790**	**790**	**740**	**790**	**770**	**760**

Notes:

1. Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111 – Electric Power Generation.
2. Preliminary data.
3. Emissions based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.
4. Includes GHG emissions from the combustion of refined petroleum products (light fuel oil, heavy fuel oil, and diesel), petroleum coke, still gas and other fuels not easily categorized.
5. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
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18. Consumption intensity values are impacted by unallocated energy and SF_6 transmission emissions.

– Indicates no emissions or no electricity generation

0 Indicates emissions or electricity generation value less than 0.1

* For years where unallocated energy data was not available, values were interpolated

** Data is only available aggregated with Northwest Territories. Please refer to Table A13–13 for values.

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