NATIONAL INVENTORY REPORT 1990–2018: GREENHOUSE GAS SOURCES AND SINKS IN CANADA

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

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Aussi disponible en français

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LIST OF COMMON ABBREVIATIONS AND UNITS

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

MSW ..... municipal solid waste

N/A ..... not available

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

$Al2O_3$ ..... 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

$Na3AlF_6$ ..... 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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ANNEX 8

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
Oil and Gas Extraction	3	1	1					3
Mining	3	1	1					3
Manufacturing Industries	3	2	2					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	2	2					3
Commercial & Institutional	3	2	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	2	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	1					2
Venting	2	2	1					2
Flaring	2	2	1					2
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	**2**		**2**		**2**	**2**		**2**
AGRICULTURE	**2**	**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	**2**							**2**
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**
e. Industrial Wood Waste Landfills	**1**	**1**	**1**					**1**
LAND USE, LAND-USE CHANGE AND FORESTRY	**2**	**2**	**2**					**2**
a. Forest Land	**2**	**1**	**1**					**2**
b. Cropland	**2**	**2**	**2**					**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, 1990–2018

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 category descriptions and 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 Descriptions**

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
Oil and Gas Extraction	Emissions from fuel consumed by oil and gas extraction industries
Mining	Emissions from fuel consumed by:
	– Metal and non-metal mines, coal mines, stone quarries, and gravel pits
	– 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. Transport	Emissions resulting from the:
Domestic Aviation	– Consumption of fossil fuels by aircrafts flying domestically with Canadian purchased fuel
Road Transportation	– Consumption of fuels (excluding the biogenic CO_2 emissions from Ethanol and biodiesel) by vehicles licensed to operate on roads
Railways	– Consumption of fuels (excluding the biogenic CO_2 emissions from Ethanol and biodiesel) by Canadian railways
Domestic Navigation	– Consumption of fuels (excluding the biogenic CO_2 emissions from Ethanol and biodiesel) by marine vessels navigating between Canadian ports (inclusive of international fishing and military opertations)
Others—Off-road	– Consumption of fuels (excluding the biogenic CO_2 emissions from Ethanol and biodiesel) by mobile 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, other uses of urea and petrochemicals. Petrochemical production includes production of carbon black, ethylene, ethylene dichloride, ethylene oxide, 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 in electrical equipment; and PFCs in electronics industry
AGRICULTURE	Emissions resulting from:
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 inorganic nitrogen fertilizers, manure and biosolids applied 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 and biosolid nitrogen, inorganic nitrogen fertilizer 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)
b. Biological Treatment of Solid Waste	– Composting of municipal solid waste
c. Wastewater Treatment and Discharge	– Municipal and industrial wastewater treatment
d. Incineration and Open Burning of Waste	– Municipal solid, hazardous and clinical waste, and sewage sludge incineration
e. Industrial Wood Waste Landfills	– Private, dedicated wood waste landfills
LAND USE, LAND-USE CHANGE AND FORESTRY	Emissions and removals resulting from:
a. Forest Land	– Managed forests and lands converted to forests; reports emissions and removals from forest growth and anthropogenic disturbances related to forest management but tracks separately emissions and removals from 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 Canada's 1990–2018 GHG Emissions by IPCC Sector

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	2017	2018
	kt CO_2 eq																												
TOTAL[a]	**603 000**	**595 000**	**612 000**	**615 000**	**636 000**	**653 000**	**675 000**	**686 000**	**693 000**	**707 000**	**731 000**	**720 000**	**724 000**	**740 000**	**742 000**	**730 000**	**721 000**	**742 000**	**723 000**	**680 000**	**691 000**	**702 000**	**710 000**	**721 000**	**721 000**	**720 000**	**706 000**	**714 000**	**729 000**
ENERGY	**479 000**	**469 000**	**487 000**	**488 000**	**505 000**	**520 000**	**538 000**	**553 000**	**563 000**	**578 000**	**600 000**	**592 000**	**594 000**	**607 000**	**602 000**	**593 000**	**585 000**	**609 000**	**590 000**	**558 000**	**567 000**	**575 000**	**577 000**	**587 000**	**591 000**	**590 000**	**574 000**	**584 000**	**596 000**
a. Stationary Combustion Sources	**284 000**	**278 000**	**288 000**	**283 000**	**290 000**	**297 000**	**306 000**	**313 000**	**318 000**	**330 000**	**352 000**	**349 000**	**352 000**	**362 000**	**353 000**	**342 000**	**333 000**	**354 000**	**338 000**	**316 000**	**318 000**	**324 000**	**322 000**	**326 000**	**329 000**	**328 000**	**318 000**	**321 000**	**324 000**
Public Electricity and Heat Production	94 500	95 900	102 000	93 200	95 400	98 800	98 400	110 000	123 000	120 000	132 000	133 000	128 000	133 000	126 000	125 000	119 000	124 000	116 000	100 000	102 000	94 500	91 300	87 500	83 900	87 100	80 500	78 500	69 900
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	21 000	19 000	19 000	19 000	18 000	19 000	18 000	18 000	18 000	18 000	16 000	16 000
Oil and Gas Extraction	34 700	31 700	34 300	37 300	38 900	39 900	40 000	38 200	41 900	54 000	57 800	60 800	64 200	67 200	65 500	62 700	66 000	73 900	69 900	72 000	73 100	79 700	85 700	91 100	95 500	97 300	98 500	102 000	106 000
Mining	4 600	4 300	3 660	3 990	4 530	4 940	5 000	5 200	4 660	4 440	4 850	4 870	4 500	4 910	4 750	4 300	5 090	5 700	5 990	5 630	5 720	5 620	5 960	5 360	5 070	4 570	4 330	4 710	4 880
Manufacturing Industries	56 200	53 900	53 000	50 800	54 200	56 000	57 600	57 700	54 700	55 800	55 900	51 600	51 300	49 200	50 900	48 000	46 200	47 200	44 600	39 900	41 200	44 200	43 700	44 800	45 000	43 600	41 800	42 100	43 700
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	5 700	5 560	5 940	6 380
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	3 420	2 970	3 100	2 920	3 110	3 190	3 220	2 780
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	9 030	8 150	8 970	8 330	8 890	8 720	8 800	8 880	9 920	11 100	11 000	11 600	12 400	12 000	10 700	9 640	10 900
Pulp and Paper	14 500	14 000	13 000	13 000	12 900	12 800	13 400	13 200	12 100	12 500	12 600	11 600	10 900	10 400	10 200	8 650	7 490	7 740	6 270	6 390	5 970	6 220	5 990	6 230	6 090	6 040	5 950	6 320	6 900
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	5 430	5 740	5 040	4 900	4 480	4 070	4 310	4 030	3 860	4 030	3 940	3 770	4 170	3 960
Other Manufacturing	21 200	20 200	19 800	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	15 100	15 800	15 000	12 900	13 200	13 800	14 200	14 400	13 600	12 800	12 600	12 800	12 700
Construction	1 880	1 630	1 760	1 390	1 400	1 180	1 270	1 260	1 120	1 170	1 080	1 030	1 270	1 350	1 420	1 450	1 410	1 410	1 390	1 230	1 520	1 370	1 390	1 290	1 300	1 300	1 280	1 290	1 390
Commercial and Institutional	26 300	26 900	27 600	28 500	27 800	29 400	30 000	30 400	27 900	29 400	33 400	32 800	34 300	35 400	34 100	32 700	29 700	30 800	30 400	30 200	28 800	30 700	28 700	29 700	31 300	30 100	30 100	31 700	32 800
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	45 200	42 700	45 800	42 300	43 800	45 600	43 100	39 200	41 100	45 200
Agriculture and Forestry	2 410	2 740	3 250	3 050	2 550	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	2 750	2 760	3 110	3 680	3 780	3 790	3 840	3 630	3 810	3 710	3 790
b. Transport[b]	**145 000**	**140 000**	**144 000**	**148 000**	**155 000**	**159 000**	**163 000**	**169 000**	**172 000**	**177 000**	**178 000**	**176 000**	**178 000**	**182 000**	**186 000**	**191 000**	**190 000**	**193 000**	**193 000**	**187 000**	**195 000**	**196 000**	**196 000**	**201 000**	**199 000**	**201 000**	**201 000**	**207 000**	**217 000**
Domestic Aviation	7 180	6 310	6 320	5 980	6 260	6 630	7 100	7 150	7 440	7 810	7 720	7 090	6 910	7 000	7 490	7 620	7 690	7 750	7 320	6 420	6 440	6 330	7 300	7 570	7 220	7 140	7 080	7 430	7 990
Road Transportation	83 800	79 900	80 400	81 900	85 600	86 600	90 400	96 400	103 000	108 000	111 000	116 000	118 000	122 000	125 000	130 000	130 000	133 000	133 000	132 000	137 000	139 000	140 000	144 000	142 000	143 000	145 000	148 000	154 000
Light-Duty Gasoline Vehicles	41 600	39 900	40 200	40 700	41 100	40 400	40 000	40 100	40 400	40 500	40 400	41 500	41 900	41 800	41 200	41 400	40 400	39 700	38 500	38 100	37 800	36 500	35 400	35 600	34 200	34 500	34 600	33 700	33 900
Light-Duty Gasoline Trucks	20 300	19 700	20 100	20 600	22 500	23 900	25 300	27 100	28 900	30 800	31 800	33 400	34 700	36 000	37 100	38 100	38 600	39 300	39 000	39 900	41 300	41 400	41 900	43 300	43 400	45 300	48 100	49 200	52 000
Heavy-Duty Gasoline Vehicles	6 320	6 360	6 680	7 170	7 350	7 170	7 940	8 810	9 850	10 300	10 500	11 600	11 700	12 000	12 600	11 700	11 900	12 000	12 100	12 200	12 500	12 100	12 800	13 400	12 400	12 300	13 000	13 300	13 600
Motorcycles	90	87	85	83	81	78	75	74	72	110	123	144	161	176	189	203	216	225	231	239	248	251	260	262	260	271	287	296	304
Light-Duty Diesel Vehicles	467	403	383	379	397	400	409	455	500	537	600	603	643	710	762	605	658	669	619	574	663	793	798	856	857	901	842	841	811
Light-Duty Diesel Trucks	153	138	134	138	150	156	182	222	259	294	338	363	370	408	442	344	329	347	366	368	421	482	473	531	641	813	903	1 080	1 180
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	30 300	32 100	36 900	38 100	40 500	42 000	40 300	44 200	47 600	48 700	50 000	49 800	48 600	46 900	49 300	51 800
Propane and Natural Gas Vehicles	1 160	1 140	1 070	724	913	903	797	762	795	643	522	574	465	429	430	381	293	199	126	62	38	40	30	18	9	8	9	10	10
Railways	6 920	6 410	6 700	6 680	6 910	6 260	6 120	6 210	5 980	6 330	6 530	6 470	5 950	6 010	6 180	6 580	6 890	7 380	7 800	6 670	6 540	7 390	7 560	7 290	7 470	7 120	6 540	7 490	7 650
Domestic Navigation	3 760	3 800	3 840	3 880	3 920	3 950	4 010	4 070	4 120	4 320	4 370	4 450	4 530	4 610	4 690	4 770	4 800	4 830	4 860	4 890	4 920	4 710	4 500	4 290	4 080	3 870	3 920	3 980	4 030
Other Transportation	43 600	43 500	46 600	49 300	52 100	55 600	55 600	55 400	52 100	51 000	48 800	42 200	42 500	42 400	42 900	41 900	40 500	40 600	39 800	37 600	39 500	38 400	36 100	37 700	39 000	40 500	38 900	40 400	43 600
Off-Road Agriculture & Forestry	9 040	9 090	9 180	10 200	11 500	12 400	12 600	12 900	12 400	11 700	11 600	10 500	10 300	11 200	11 400	11 400	10 700	11 000	10 600	10 200	11 100	11 000	10 400	10 500	10 400	10 400	9 660	10 300	11 200
Off-Road Commercial & Institutional	1 520	1 490	1 570	1 690	1 830	1 990	2 010	2 090	2 070	2 020	2 080	2 130	2 060	2 290	2 430	2 400	2 390	2 540	2 550	2 460	2 680	2 730	2 520	2 720	2 760	2 720	2 550	2 820	2 930
Off-Road Manufacturing, Mining & Construction	9 160	9 100	9 720	10 400	11 300	12 500	12 500	12 600	10 800	10 700	11 300	9 910	10 100	11 000	11 200	10 400	10 200	11 100	11 700	11 200	12 600	13 200	12 000	12 300	12 200	13 100	12 200	13 500	14 500
Off-Road Residential	241	238	248	284	327	380	451	531	615	705	775	913	1 030	1 150	1 250	1 250	1 230	1 240	1 200	1 160	1 170	1 300	1 220	1 180	1 210	1 220	1 170	1 190	1 250
Off-Road Other Transportation	16 700	16 000	16 000	16 300	16 400	16 300	15 600	14 700	13 700	13 300	11 700	8 440	8 110	7 600	7 990	6 390	6 260	6 320	6 220	6 150	6 300	4 450	4 310	4 300	4 540	4 830	4 920	5 120	5 350
Pipeline Transport	6 900	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	9 690	8 440	7 520	6 360	5 710	5 650	5 730	6 720	7 890	8 160	8 420	7 420	8 340
c. Fugitive Sources	**49 000**	**51 000**	**55 000**	**57 000**	**61 000**	**64 000**	**68 000**	**70 000**	**73 000**	**70 000**	**69 000**	**67 000**	**65 000**	**63 000**	**63 000**	**61 000**	**61 000**	**61 000**	**59 000**	**55 000**	**55 000**	**55 000**	**59 000**	**61 000**	**63 000**	**60 000**	**55 000**	**55 000**	**55 000**
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	1 000	1 000
Oil and Natural Gas	46 000	48 000	52 000	55 000	58 000	61 000	66 000	68 000	71 000	68 000	68 000	66 000	63 000	62 000	61 000	60 000	60 000	59 000	58 000	54 000	53 000	54 000	57 000	59 000	62 000	59 000	54 000	54 000	54 000
Oil	5 000	5 200	5 600	5 600	5 700	6 100	6 300	6 600	6 500	6 400	6 500	6 800	6 500	6 300	6 300	5 900	5 900	5 700	5 400	5 100	5 100	4 900	5 700	5 700	5 600	5 400	5 200	5 200	5 500
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	12 000	12 000
Venting	23 000	24 000	27 000	29 000	31 000	33 000	35 000	37 000	37 000	37 000	38 000	38 000	37 000	37 000	36 000	35 000	35 000	35 000	35 000	32 000	31 000	32 000	33 000	34 000	36 000	35 000	30 000	30 000	30 000
Flaring	4 700	5 000	5 200	5 000	5 400	5 400	5 700	5 700	7 500	5 700	5 800	5 200	5 800	5 000	5 200	5 300	5 700	5 400	4 900	4 300	4 700	5 000	5 800	7 000	7 200	6 900	5 900	6 500	6 500
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	0.30	0.30
INDUSTRIAL PROCESSES AND PRODUCT USE	**56 900**	**58 400**	**56 100**	**55 800**	**57 700**	**58 300**	**60 600**	**60 100**	**56 900**	**54 500**	**54 000**	**52 000**	**54 000**	**56 100**	**60 200**	**56 600**	**57 000**	**55 600**	**55 200**	**48 200**	**51 400**	**55 100**	**59 300**	**56 800**	**54 700**	**54 300**	**55 200**	**54 000**	**56 300**
a. Mineral Products	**8 400**	**7 500**	**7 300**	**7 300**	**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**	**8 500**	**8 900**
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	6 800	7 200
Lime Production	1 800	1 800	1 800	1 800	1 900	1 900	1 800	1 900	1 900	2 000	1 900	1 700	1 700	1 700	1 800	1 700	1 700	1 600	1 600	1 200	1 400	1 500	1 500	1 400	1 500	1 400	1 400	1 400	1 400
Mineral Product Use	860	980	670	660	820	750	890	990	940	790	910	770	820	790	880	910	880	810	750	610	410	450	440	380	380	410	390	330	320
b. Chemical Industry	**17 600**	**17 000**	**16 700**	**16 800**	**19 000**	**18 500**	**19 500**	**17 600**	**13 400**	**9 970**	**8 780**	**8 710**	**8 960**	**9 250**	**11 500**	**10 400**	**8 980**	**8 260**	**9 520**	**6 560**	**6 400**	**7 110**	**7 460**	**7 330**	**7 210**	**7 600**	**7 710**	**6 940**	**7 660**
Ammonia Production	2 770	2 750	2 530	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	2 560	2 440
Nitric Acid Production	973	1 020	1 040	1 010	919	965	1 060	1 020	995	1 120	1 180	1 230	1 210	1 220	1 180	1 200	1 190	1 090	1 230	1 110	1 060	1 120	1 070	988	1 020	1 120	1 040	935	1 100
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	3 520	3 570	3 600	4 180	4 530	4 310	4 560	4 230	4 470	4 170	3 780	4 100	3 920	4 360	4 370	3 960	3 840	3 160	3 170	2 420	2 850	3 110	3 390	3 400	3 650	3 630	3 880	3 450	4 120
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**	**14 500**	**15 400**	**15 100**	**15 000**
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	8 520	9 270	8 980	9 330
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	6 010	5 510
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	185	184	248	212	249	226	133	129	134
d. Production and Consumption of Halocarbons, SF_6 and NF_3[c]	**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**	**6 100**	**6 100**	**6 900**	**7 700**	**8 600**	**9 100**	**10 000**	**11 000**	**11 000**	**11 000**	**12 000**	**13 000**
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**	**8 800**	**8 500**	**8 700**	**9 900**	**12 000**	**13 000**	**10 000**	**11 000**	**11 000**	**11 000**	**11 000**	**13 000**	**14 000**	**17 000**	**16 000**	**13 000**	**13 000**	**12 000**	**11 000**	**12 000**
f. Other Product Manufacture and Use	**370**	**370**	**350**	**350**	**360**	**390**	**350**	**390**	**500**	**580**	**610**	**680**	**520**	**610**	**630**	**540**	**520**	**540**	**530**	**470**	**430**	**400**	**500**	**560**	**480**	**570**	**630**	**660**	**740**
AGRICULTURE	**47 000**	**47 000**	**48 000**	**50 000**	**52 000**	**54 000**	**55 000**	**55 000**	**56 000**	**56 000**	**57 000**	**56 000**	**56 000**	**58 000**	**59 000**	**60 000**	**59 000**	**58 000**	**59 000**	**56 000**	**55 000**	**55 000**	**57 000**	**59 000**	**58 000**	**58 000**	**59 000**	**58 000**	**59 000**
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**	**24 000**	**24 000**	**24 000**	**24 000**	**24 000**
b. Manure Management	**6 100**	**6 200**	**6 500**	**6 600**	**6 900**	**7 200**	**7 400**	**7 400**	**7 600**	**7 800**	**8 000**	**8 300**	**8 400**	**8 500**	**8 700**	**8 800**	**8 700**	**8 400**	**8 100**	**7 900**	**7 700**	**7 700**	**7 700**	**7 800**	**7 700**	**7 800**	**7 900**	**7 900**	**7 900**
c. Agricultural Soils	**17 000**	**16 000**	**17 000**	**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**	**19 000**	**21 000**	**20 000**	**20 000**	**21 000**	**22 000**	**24 000**	**23 000**	**24 000**	**25 000**	**24 000**	**25 000**
Direct Sources	14 000	14 000	14 000	14 000	15 000	15 000	16 000	16 000	16 000	16 000	16 000	15 000	14 000	15 000	16 000	15 000	15 000	16 000	17 000	16 000	17 000	17 000	18 000	20 000	19 000	20 000	20 000	20 000	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	4 000	4 000
d. Field Burning of Agricultural Residues	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**100**	**100**	**100**	**100**	**100**	**30**	**40**	**50**	**40**	**50**	**50**	**30**	**30**	**40**	**50**	**50**	**60**	**50**	**50**	**50**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**1 200**	**1 100**	**1 200**	**1 200**	**1 400**	**1 500**	**1 500**	**1 600**	**1 700**	**1 500**	**1 600**	**1 400**	**1 500**	**1 600**	**1 500**	**1 400**	**1 500**	**1 700**	**1 700**	**1 800**	**1 800**	**2 000**	**2 300**	**2 700**	**2 500**	**2 600**	**2 500**	**2 500**	**2 600**
WASTE	**21 000**	**21 000**	**21 000**	**21 000**	**21 000**	**21 000**	**21 000**	**18 000**	**18 000**	**19 000**	**20 000**	**19 000**	**20 000**	**19 000**	**20 000**	**20 000**	**20 000**	**20 000**	**19 000**	**18 000**	**17 000**	**17 000**	**17 000**	**17 000**	**17 000**	**18 000**	**18 000**	**18 000**	**18 000**
a. Solid Waste Disposal	**15 000**	**15 000**	**15 000**	**15 000**	**15 000**	**15 000**	**15 000**	**12 000**	**11 000**	**13 000**	**13 000**	**13 000**	**13 000**	**13 000**	**14 000**	**14 000**	**14 000**	**14 000**	**13 000**	**12 000**	**11 000**	**11 000**	**11 000**	**12 000**	**12 000**	**12 000**	**12 000**	**12 000**	**12 000**
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**	**400**	**400**	**400**
c. Wastewater Treatment and Discharge	**920**	**910**	**910**	**920**	**930**	**950**	**950**	**950**	**960**	**960**	**970**	**990**	**990**	**1 000**	**1 000**	**1 000**	**1 000**	**1 000**	**1 000**	**1 100**	**1 100**	**1 200**	**1 200**	**1 100**	**1 200**	**1 200**	**1 100**	**1 100**	**1 100**
d. Incineration and Open Burning of Waste	**500**	**500**	**500**	**600**	**600**	**600**	**600**	**600**	**600**	**600**	**600**	**700**	**700**	**600**	**600**	**600**	**500**	**500**	**500**	**500**	**400**	**400**	**300**	**300**	**400**	**400**	**400**	**400**	**400**
e. Industrial Wood Waste Landfills	**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**	**4 000**	**4 000**	**4 000**	**4 000**	**4 000**	**4 000**	**4 000**	**4 000**	**4 000**	**4 000**	**4 000**	**3 000**	**3 000**
LAND USE, LAND-USE CHANGE AND FORESTRY	**-60 000**	**-65 000**	**-58 000**	**-51 000**	**-53 000**	**-40 000**	**-48 000**	**-49 000**	**-56 000**	**-45 000**	**-32 000**	**-48 000**	**-34 000**	**-40 000**	**-17 000**	**-13 000**	**-22 000**	**-25 000**	**-30 000**	**-42 000**	**-25 000**	**-25 000**	**-28 000**	**-25 000**	**-25 000**	**-18 000**	**-19 000**	**-16 000**	**-13 000**
a. Forest Land	**-200 000**	**-210 000**	**-210 000**	**-200 000**	**-200 000**	**-190 000**	**-200 000**	**-200 000**	**-190 000**	**-190 000**	**-180 000**	**-180 000**	**-170 000**	**-160 000**	**-150 000**	**-150 000**	**-140 000**	**-140 000**	**-150 000**	**-150 000**	**-150 000**	**-150 000**	**-150 000**	**-150 000**	**-150 000**	**-140 000**	**-140 000**	**-140 000**	**-140 000**
b. Cropland	**8 100**	**7 000**	**5 600**	**4 300**	**2 800**	**1 400**	**540**	**- 940**	**-2 200**	**-3 400**	**-4 800**	**-5 900**	**-7 400**	**-8 600**	**-9 800**	**-11 000**	**-12 000**	**-12 000**	**-12 000**	**-12 000**	**-12 000**	**-12 000**	**-11 000**	**-10 000**	**-9 500**	**-8 600**	**-7 700**	**-6 800**	**-6 200**
c. Grassland	**0.60**	**0.80**	**1**	**0.40**	**1**	**0.30**	**0.50**	**0.60**	**0.70**	**0.80**	**1**	**1**	**1**	**1**	**0.90**	**0.90**	**1**	**0.40**	**0.50**	**0.40**	**0.30**	**0.60**	**2**	**2**	**0.80**	**1**	**1**	**1**	**1**
d. Wetlands	**5 300**	**5 200**	**5 000**	**5 400**	**3 200**	**3 100**	**3 000**	**3 100**	**3 400**	**3 700**	**3 200**	**3 100**	**3 200**	**3 000**	**3 200**	**3 100**	**3 200**	**3 200**	**3 300**	**3 100**	**3 100**	**3 000**	**3 000**	**3 100**	**3 100**	**2 900**	**2 900**	**3 000**	**2 600**
e. Settlements	**2 100**	**2 000**	**1 900**	**1 800**	**1 600**	**1 500**	**1 500**	**1 500**	**1 500**	**1 600**	**1 600**	**1 500**	**1 800**	**1 800**	**2 000**	**2 100**	**2 300**	**2 300**	**2 300**	**2 100**	**2 000**	**2 100**	**2 000**	**2 300**	**2 300**	**2 300**	**2 200**	**2 100**	**1 900**	**1 800**
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**	**130 000**	**130 000**

Notes:
- Indicates no emissions
0.00 Indicates emissions truncated due to rounding
Estimates for the latest year (2018) 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.

a. National totals exclude all GHGs from the Land Use, Land-use Change and Forestry Sector.
b. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
c. 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.

Table A9–3 **2018 GHG Emission Summary for Canada**

Greenhouse Gas Categories	Greenhouse Gases									
	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[d]	PFCs[d]	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[a, b]	**587 000**	**3 700**	**91 000**	**130**	**38 000**	**13 000**	**620**	**310**	**0.10**	**729 000**
ENERGY	**543 000**	**1 900**	**47 000**	**20**	**7 000**	**-**	**-**	**-**	**-**	**596 000**
a. Stationary Combustion Sources	**315 000**	**200**	**6 000**	**9**	**3 000**	**-**	**-**	**-**	**-**	**324 000**
Public Electricity and Heat Production	69 300	6	150	1	400	-	-	-	-	69 900
Petroleum Refining Industries	16 000	0.30	8	0.10	30	-	-	-	-	16 000
Oil and Gas Extraction	103 000	100	3 000	2	600	-	-	-	-	106 000
Mining	4 840	0.10	3	0.10	30	-	-	-	-	4 880
Manufacturing Industries	43 100	3	66	2	490	-	-	-	-	43 700
Iron and Steel	6 340	0.10	4	0.10	40	-	-	-	-	6 380
Non Ferrous Metals	2 770	0.06	2	0.05	20	-	-	-	-	2 780
Chemical	10 900	0.21	5	0.20	60	-	-	-	-	10 900
Pulp and Paper	6 670	1	30	0.70	200	-	-	-	-	6 900
Cement	3 940	0.20	4	0.05	20	-	-	-	-	3 960
Other Manufacturing	12 500	0.70	20	0.60	200	-	-	-	-	12 700
Construction	1 380	0.03	0.63	0.04	11	-	-	-	-	1 390
Commercial and Institutional	32 600	0.82	20	0.70	200	-	-	-	-	32 800
Residential	41 300	100	3 000	2	700	-	-	-	-	45 200
Agriculture and Forestry	3 760	0.07	2	0.10	30	-	-	-	-	3 790
b. Transport	**212 000**	**40**	**1 000**	**14**	**4 100**	**-**	**-**	**-**	**-**	**217 000**
Domestic Aviation	7 920	0.20	6	0.20	70	-	-	-	-	7 990
Road Transportation	151 000	10	200	9	2 600	-	-	-	-	154 000
Light-Duty Gasoline Vehicles	33 300	3	70	2	540	-	-	-	-	33 900
Light-Duty Gasoline Trucks	51 100	4	100	3	820	-	-	-	-	52 000
Heavy-Duty Gasoline Vehicles	13 300	0.50	10	1	350	-	-	-	-	13 600
Motorcycles	299	0.10	3	0.01	2	-	-	-	-	304
Light-Duty Diesel Vehicles	791	0.02	0.40	0.07	20	-	-	-	-	811
Light-Duty Diesel Trucks	1 150	0.03	0.80	0.10	29	-	-	-	-	1 180
Heavy-Duty Diesel Vehicles	50 900	2	50	3	860	-	-	-	-	51 800
Propane and Natural Gas Vehicles	10	0.00	0.10	0.00	0.05	-	-	-	-	10
Railways	6 840	0.40	10	3	800	-	-	-	-	7 650
Domestic Navigation	3 990	0.38	10	0.10	30	-	-	-	-	4 030
Other Transportation	42 300	29	730	2	500	-	-	-	-	43 600
Off-Road Agriculture & Forestry	11 000	0.51	13	0.50	100	-	-	-	-	11 200
Off-Road Commercial & Institutional	2 810	4	100	0.09	30	-	-	-	-	2 930
Off-Road Manufacturing, Mining & Construction	14 200	2	43	0.80	300	-	-	-	-	14 500
Off-Road Residential	1 180	3	65	0.03	10	-	-	-	-	1 250
Off-Road Other Transportation	5 000	12	310	0.10	40	-	-	-	-	5 350
Pipeline Transport	8 080	8	200	0.20	60	-	-	-	-	8 340
c. Fugitive Sources	**16 000**	**1 600**	**40 000**	**0.38**	**110**	**-**	**-**	**-**	**-**	**55 000**
Coal Mining	-	50	1 000	-	-	-	-	-	-	1 000
Oil and Natural Gas	16 000	1 500	38 000	0.40	100	-	-	-	-	54 000
Oil	560	190	4 800	0.40	100	-	-	-	-	5 500
Natural Gas	110	490	12 000	0.00	0.04	-	-	-	-	12 000
Venting	9 000	830	21 000	-	-	-	-	-	-	30 000
Flaring	5 900	22	560	0.03	8	-	-	-	-	6 500
d. CO_2 Transport and Storage	**0.30**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.30**
INDUSTRIAL PROCESSES AND PRODUCT USE	**41 100**	**6**	**150**	**5**	**1 630**	**13 000**	**621**	**310**	**0.10**	**56 300**
a. Mineral Products	**8 900**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**8 900**
Cement Production	7 200	-	-	-	-	-	-	-	-	7 200
Lime Production	1 400	-	-	-	-	-	-	-	-	1 400
Mineral Product Use	320	-	-	-	-	-	-	-	-	320
b. Chemical Industry	**6 400**	**6**	**150**	**4**	**1 110**	**-**	**-**	**-**	**-**	**7 660**
Ammonia Production	2 440	-	-	-	-	-	-	-	-	2 440
Nitric Acid Production	-	-	-	4	1 100	-	-	-	-	1 100
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
Petrochemical and Carbon Black Production	3 960	6	150	0.04	13	-	-	-	-	4 120
c. Metal Production	**14 200**	**0.09**	**2**	**-**	**-**	**-**	**591**	**147**	**-**	**15 000**
Iron and Steel Production	9 330	0.09	2	-	-	-	-	-	-	9 330
Aluminum Production	4 900	-	-	-	-	-	591	13	-	5 510
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	134	-	134
d. Production and Consumption of Halocarbons, SF_6 and NF_3[c]	**-**	**-**	**-**	**-**	**-**	**13 000**	**4**	**2**	**0.10**	**13 000**
e. Non-Energy Products from Fuels and Solvent Use	**12 000**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**12 000**
f. Other Product Manufacture and Use	**32**	**-**	**-**	**2**	**520**	**-**	**26**	**160**	**-**	**740**
AGRICULTURE	**2 600**	**1 100**	**28 000**	**96**	**29 000**	**-**	**-**	**-**	**-**	**59 000**
a. Enteric Fermentation	**-**	**970**	**24 000**	**-**	**-**	**-**	**-**	**-**	**-**	**24 000**
b. Manure Management	**-**	**150**	**3 800**	**10**	**4 000**	**-**	**-**	**-**	**-**	**7 900**
c. Agricultural Soils	**-**	**-**	**-**	**83**	**25 000**	**-**	**-**	**-**	**-**	**25 000**
Direct Sources	-	-	-	69	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	**2 600**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2 600**
WASTE	**200**	**660**	**17 000**	**3**	**900**	**-**	**-**	**-**	**-**	**18 000**
a. Solid Waste Disposal	**-**	**490**	**12 000**	**-**	**-**	**-**	**-**	**-**	**-**	**12 000**
b. Biological Treatment of Solid Waste	**-**	**10**	**300**	**0.60**	**200**	**-**	**-**	**-**	**-**	**400**
c. Wastewater Treatment and Discharge	**-**	**26**	**660**	**2**	**500**	**-**	**-**	**-**	**-**	**1 100**
d. Incineration and Open Burning of Waste	**200**	**0.05**	**1**	**0.60**	**200**	**-**	**-**	**-**	**-**	**400**
e. Industrial Wood Waste Landfills	**-**	**100**	**3 000**	**-**	**-**	**-**	**-**	**-**	**-**	**3 000**
LAND USE, LAND-USE CHANGE AND FORESTRY	**-14 000**	**23**	**580**	**1**	**320**	**-**	**-**	**-**	**-**	**-13 000**
a. Forest Land	**-140 000**	**20**	**400**	**0.70**	**200**	**-**	**-**	**-**	**-**	**-140 000**
b. Cropland	**-6 300**	**3**	**79**	**0.20**	**59**	**-**	**-**	**-**	**-**	**-6 200**
c. Grassland	**-**	**0.04**	**0.90**	**0.00**	**0.30**	**-**	**-**	**-**	**-**	**1**
d. Wetlands	**2 600**	**0.60**	**15**	**0.01**	**4**	**-**	**-**	**-**	**-**	**2 600**
e. Settlements	**1 700**	**4**	**100**	**0.16**	**49**	**-**	**-**	**-**	**-**	**1 800**
f. Harvested Wood Products	**130 000**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**130 000**

Notes:
- Indicates no emissions
0.00 Indicates emissions truncated due to rounding
Estimates for the latest year (2018) 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.

a. National totals exclude all GHGs from the Land Use, Land-use Change and Forestry Sector.
b. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
c. 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.
d. 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.

ANNEX 10

CANADA'S GREENHOUSE GAS EMISSION TABLES BY CANADIAN ECONOMIC SECTOR, 1990–2018

This annex contains summary tables illustrating national GHG emissions for the period 1990–2018 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 non energy related 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 2019).

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:

1. Mining—Metal and non-metal mining fuel consumption data from the Canadian Industrial Energy End-Use Data and Analysis Centre (CEEDC) database on *Energy, Production and Intensity Indicators for Canadian Industry* (CEEDC 2019).

2. 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).
3. UOG sectors—Fuel consumption data for the various UOG sectors, except Oil Sands, is estimated from the UOG study (Environment Canada 2014).
4. 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 http://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 Oil Production	Emissions resulting from:
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, Natural Gas and CO_2 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 8 500 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 8 500 lb. GVWR and the freight component of rail
Domestic Aviation and Marine	- Cargo 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 biosolids and 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	- Municipal 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, 1990–2018**

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	2017	2018
	Mt CO_2 eq																												
NATIONAL GHG TOTAL	**603**	**595**	**612**	**615**	**636**	**653**	**675**	**686**	**693**	**707**	**731**	**720**	**724**	**740**	**742**	**730**	**721**	**742**	**723**	**680**	**691**	**702**	**710**	**721**	**721**	**720**	**706**	**714**	**729**
OIL AND GAS	**106**	**104**	**114**	**121**	**126**	**132**	**139**	**140**	**145**	**154**	**157**	**158**	**161**	**163**	**162**	**158**	**162**	**168**	**161**	**158**	**159**	**165**	**176**	**185**	**191**	**191**	**187**	**188**	**193**
Upstream Oil and Gas	**86**	**86**	**95**	**101**	**107**	**113**	**117**	**118**	**124**	**134**	**137**	**137**	**139**	**140**	**137**	**134**	**138**	**144**	**138**	**135**	**136**	**143**	**152**	**161**	**169**	**168**	**164**	**167**	**173**
Natural Gas Production and Processing	36	34	36	39	41	43	45	43	47	54	57	59	61	64	58	55	54	58	54	51	48	51	51	52	53	50	49	49	50
Conventional Oil Production	23	23	25	26	28	30	32	33	35	35	37	36	35	33	31	30	29	31	29	27	27	28	31	32	35	34	29	29	29
Conventional Light Oil Production	11	11	11	11	12	12	12	12	12	11	12	12	12	11	11	11	11	12	11	11	11	12	14	15	17	17	15	15	16
Conventional Heavy Oil Production	12	12	14	15	16	18	19	22	21	22	24	23	21	19	18	17	17	17	16	14	14	14	15	15	16	16	13	12	11
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	2	2
Oil Sands (Mining, In-situ, Upgrading)	15	16	18	20	21	21	22	23	23	26	27	29	30	33	37	37	43	45	46	50	54	56	63	68	71	74	75	80	84
Mining and Extraction	4	5	5	5	5	5	5	5	6	7	7	8	8	9	10	9	11	12	11	12	12	12	14	15	16	17	17	18	18
In-situ	4	4	5	5	5	6	6	7	8	8	8	8	8	9	10	11	13	14	16	17	20	21	25	27	29	33	35	38	41
Upgrading	6	6	8	10	10	10	10	10	10	12	13	13	14	15	17	17	19	20	19	21	22	23	25	26	25	24	22	23	24
Oil, Natural Gas and CO_2 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	11	10	11
Downstream Oil and Gas	**20**	**19**	**19**	**20**	**19**	**19**	**22**	**22**	**21**	**20**	**20**	**21**	**22**	**23**	**24**	**23**	**23**	**24**	**22**	**22**	**23**	**22**	**24**	**24**	**23**	**22**	**23**	**21**	**21**
Petroleum Refining	18	17	17	18	17	17	20	20	19	18	19	19	21	22	23	22	22	23	21	21	22	21	23	23	21	21	22	20	19
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	1	1
ELECTRICITY	**95**	**96**	**103**	**93**	**95**	**98**	**98**	**109**	**122**	**119**	**130**	**130**	**124**	**127**	**120**	**119**	**114**	**119**	**110**	**95**	**96**	**88**	**84**	**81**	**77**	**81**	**75**	**73**	**64**
TRANSPORTATION	**121**	**115**	**116**	**117**	**122**	**123**	**126**	**132**	**138**	**144**	**146**	**147**	**148**	**152**	**157**	**161**	**162**	**166**	**166**	**162**	**168**	**169**	**171**	**174**	**172**	**172**	**174**	**179**	**186**
Passenger Transport	**71**	**68**	**68**	**69**	**71**	**72**	**74**	**76**	**79**	**81**	**82**	**85**	**86**	**88**	**89**	**90**	**90**	**90**	**89**	**88**	**89**	**89**	**89**	**91**	**89**	**91**	**94**	**95**	**99**
Cars, Light Trucks and Motorcycles	64	62	62	63	65	66	67	69	72	74	75	77	79	81	81	82	82	82	80	81	82	81	80	82	81	83	86	86	90
Bus, Rail and Domestic Aviation	7	6	6	6	6	6	7	7	7	8	8	7	7	7	8	8	8	9	8	8	8	8	9	9	8	8	8	9	9
Freight Transport	**31**	**29**	**30**	**30**	**32**	**32**	**35**	**39**	**43**	**47**	**49**	**51**	**51**	**54**	**56**	**60**	**62**	**65**	**67**	**64**	**69**	**72**	**74**	**75**	**74**	**72**	**71**	**75**	**78**
Heavy Duty Trucks, Rail	26	24	25	25	27	26	29	33	37	41	43	45	45	48	50	54	56	59	61	59	63	66	69	70	69	67	66	69	73
Domestic Aviation and Marine	5	5	5	5	5	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	5	5	5	5	5
Other: Recreational, Commercial and Residential	**18**	**18**	**18**	**18**	**19**	**19**	**18**	**17**	**16**	**16**	**15**	**11**	**11**	**11**	**12**	**10**	10	10	10	10	10	8	8	8	8	9	9	9	9
HEAVY INDUSTRY	**97**	**97**	**94**	**94**	**99**	**100**	**103**	**102**	**97**	**95**	**94**	**88**	**89**	**89**	**93**	**87**	**87**	**86**	**85**	**72**	**75**	**82**	**81**	**79**	**80**	**79**	**77**	**76**	**78**
Mining	**7**	**6**	**6**	**7**	**8**	**8**	**8**	**9**	**8**	**7**	**8**	**7**	**7**	**7**	**7**	**7**	**7**	**8**	**8**	**8**	**8**	**8**	**9**	**8**	**8**	**8**	**7**	**7**	**8**
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**	**11**	**11**	**10**
Pulp and Paper	**15**	**15**	**14**	**14**	**13**	**13**	**14**	**14**	**13**	**13**	**13**	**12**	**11**	**11**	**11**	**9**	**8**	**8**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**6**	**7**	**7**	**8**
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**	**15**	**15**	**15**	**16**
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**	**11**	**11**
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**	**3**	**2**
Chemicals & Fertilizers	**29**	**29**	**28**	**27**	**31**	**31**	**33**	**32**	**28**	**25**	**23**	**23**	**24**	**24**	**27**	**25**	**24**	**24**	**25**	**21**	**23**	**25**	**26**	**26**	**27**	**27**	**25**	**22**	**24**
BUILDINGS	**74**	**73**	**75**	**79**	**79**	**80**	**86**	**83**	**76**	**79**	**86**	**82**	**87**	**92**	**90**	**86**	**81**	**87**	**86**	**85**	**82**	**87**	**85**	**86**	**89**	**86**	**82**	**85**	**92**
Service Industry	**28**	**28**	**29**	**31**	**30**	**32**	**34**	**34**	**32**	**34**	**38**	**38**	**40**	**43**	**43**	**40**	**37**	**39**	**39**	**39**	**38**	**41**	**42**	**42**	**42**	**41**	**41**	**43**	**46**
Residential	**47**	**45**	**46**	**48**	**49**	**48**	**52**	**49**	**44**	**45**	**47**	**44**	**47**	**48**	**47**	**46**	**44**	**48**	**47**	**46**	**43**	**47**	**43**	**45**	**47**	**44**	**40**	**42**	**47**
AGRICULTURE	**57**	**58**	**60**	**62**	**65**	**68**	**70**	**70**	**70**	**70**	**70**	**68**	**67**	**70**	**72**	**72**	**70**	**71**	**71**	**68**	**68**	**68**	**70**	**73**	**71**	**71**	**72**	**71**	**73**
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**	**13**	**13**	**14**
Crop Production	**15**	**14**	**15**	**15**	**16**	**16**	**17**	**17**	**17**	**17**	**17**	**15**	**15**	**16**	**17**	**16**	**16**	**17**	**19**	**18**	**18**	**19**	**21**	**23**	**22**	**23**	**24**	**23**	**24**
Animal Production	**32**	**32**	**34**	**34**	**36**	**38**	**38**	**38**	**39**	**39**	**40**	**41**	**41**	**42**	**43**	**44**	**43**	**41**	**40**	**38**	**37**	**36**	**36**	**36**	**36**	**35**	**36**	**36**	**36**
WASTE	**21**	**21**	**21**	**21**	**21**	**21**	**21**	**18**	**18**	**19**	**20**	**19**	**20**	**19**	**20**	**20**	**20**	**20**	**19**	**18**	**17**	**17**	**17**	**17**	**17**	**18**	**18**	**18**	**18**
Solid Waste	**19**	**19**	**19**	**20**	**20**	**20**	**20**	**16**	**16**	**18**	**18**	**17**	**18**	**18**	**18**	**18**	**18**	**18**	**17**	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**16**	**16**
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**	**1**	**1**
Waste Incineration	**0**	**0**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
COAL PRODUCTION	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**3**	**3**	**3**	**3**	**3**	**3**	**2**	**2**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**2**	**2**	**2**	**3**
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**	**21**	**21**	**22**
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**	**15**	**14**	**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**	**6**	**6**
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**	**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
- Indicates no emissions

Table A10–3 Relationship between Canadian Economic Sectors and IPCC Sectors, 2018

ECONOMIC CATEGORY	Economic Category Total	NATIONAL INVENTORY CATEGORY[a]																										LULUCF[b]
		Energy								Industrial Processes and Product Use							Agriculture				Waste							
		Energy: Fuel Combustion				Energy: Fugitive			Total	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	Industrial Wood Waste Landfills	Total	CO_2 Captured[j]	
		Stationary Combustion			Transport	Fugitive (Unintentional)	Flaring	Venting																				
		Stationary	Industrial Cogeneration: Electricity[c]	Industrial Cogeneration: Steam for Sale																								
		Mt CO_2 equivalent																										
	National Inventory Total[a,b]	**729**	**302**	**21.5**	**0.7**	**217**	**19.2**	**6.5**	**30.8**	**598**	**8.9**	**7.0**	**15.0**	**12.6**	**12.2**	**0.7**	**56.3**	**7.9**	**24.1**	**27.3**	**59.4**	**12.3**	**0.4**	**1.1**	**0.4**	**3.4**	**17.7**	**-1.7**	
	OIL AND GAS	**193**	**111.7**	**12.9**	**0.0**	**12.6**	**17.9**	**6.5**	**30.8**	**192.5**					**1.8**		**1.8**												**-1.1**	
	Upstream Oil and Gas	**173**	**96.2**	**11.9**		**12.6**	**16.7**	**6.3**	**29.8**	**173.6**					**0.1**		**0.1**												**-1.1**	
	Natural Gas Production and Processing	50	27.1	0.8		0.3	9.9	1.2	10.3	49.5					0.0		0.0												
	Conventional Oil Production	29	8.5	0.4		0.3	3.2	3.5	13.1	28.9					0.0		0.0												
	Conventional Light Oil Production	16	3.0			0.2	2.1	2.2	8.3	15.9					0.0		0.0												
	Conventional Heavy Oil Production	11	4.6			0.1	1.0	0.6	4.7	10.9																			
	Frontier Oil Production	2	0.9	0.4		0.0	0.0	0.7	0.0	2.1																			
	Oil Sands (Mining, In-situ, Upgrading)[c]	84	60.7	10.7		3.7	2.3	1.7	5.5	84.5					0.1		0.1											-1.1	
	Mining and Extraction	18	9.6	3.0		3.7	1.9	0.2	0.0	18.4					0.1		0.1												
	In-situ	41	34.0	6.1			0.3	0.2	0.1	40.7																			
	Upgrading	24	17.1	1.5			0.1	1.3	5.4	25.5					0.0		0.0											-1.1	
	Oil, Natural Gas and CO_2 Transmission	11				8.3	1.4	0.0	0.9	10.6																			
	Downstream Oil and Gas	**21**	**15.5**	**1.0**	**0.0**	**0.1**	**1.1**	**0.2**	**1.0**	**18.9**					**1.7**		**1.7**												
	Petroleum Refining	19	15.5	1.0	0.0		0.1	0.2	0.9	17.7					1.7		1.7												
	Natural Gas Distribution	1				0.1	1.0	0.0	0.1	1.2																			
	ELECTRICITY	**64**	**64.1**		**0.6**					**64.7**						**0.2**	**0.2**											**-0.6**	
	TRANSPORTATION[g]	**186**				**182.9**				**182.9**				**2.7**	**0.2**	**0.0**	**3.0**												
	Passenger Transport	**99**				**97.2**				**97.2**				**1.3**	**0.2**	**0.0**	**1.5**												
	Cars, Light Trucks and Motorcycles	90				88.2				88.2				1.2	0.2	0.0	1.4												
	Bus, Rail and Domestic Aviation	9				9.0				9.0				0.1	0.0	0.0	0.1												
	Freight Transport	**78**				**76.3**				**76.3**				**1.4**	**0.1**	**0.0**	**1.5**												
	Heavy Duty Trucks, Rail	73				71.2				71.2				1.2	0.1	0.0	1.4												
	Domestic Aviation and Marine	5				5.1				5.1				0.2	0.0		0.2												
	Other: Recreational, Commercial and Residential	**9**				**9.5**				**9.5**																			
	HEAVY INDUSTRY	**78**	**31.8**	**7.4**	**0.1**	**3.1**				**42.4**	**8.7**	**7.0**	**15.0**	**0.3**	**4.8**		**35.8**												
	Mining	**8**	**3.5**	**1.4**		**2.5**				**7.4**				**0.0**	**0.2**		**0.3**												
	Smelting and Refining (Non Ferrous Metals)	**10**	**2.8**		**0.0**	**0.2**				**3.0**	**0.0**		**5.6**		**1.2**		**6.8**												
	Pulp and Paper	**8**	**5.2**	**2.2**	**0.0**	**0.1**				**7.5**	**0.0**				**0.0**		**0.1**												
	Iron and Steel	**16**	**6.3**	**0.1**	**0.0**	**0.2**				**6.6**			**9.3**		**0.2**		**9.5**												
	Cement	**11**	**4.0**			**0.0**				**4.0**	**7.2**				**0.0**		**7.2**												
	Lime & Gypsum	**2**	**0.9**			**0.0**				**0.9**	**1.4**				**0.0**		**1.4**												
	Chemicals & Fertilizers	**24**	**9.2**	**3.7**	**0.1**	**0.1**				**13.0**	**0.1**	**7.0**		**0.3**	**3.1**		**10.6**												
	BUILDINGS	**92**	**77.4**	**0.7**						**78.1**				**9.0**	**4.8**	**0.5**	**14.4**												
	Service Industry	**46**	**32.2**	**0.7**						**32.9**				**7.3**	**4.8**	**0.5**	**12.6**												
	Residential	**47**	**45.2**							**45.2**				**1.7**			**1.7**												
	AGRICULTURE	**73**	**3.7**	**0.0**		**10.0**				**13.7**					**0.1**		**0.1**	**7.9**	**24.1**	**27.3**	**59.4**								
	On Farm Fuel Use[h]	**14**	**3.7**	**0.0**		**10.0**				**13.7**					**0.1**		**0.1**												
	Crop Production	**24**																		**23.7**	**23.7**								
	Animal Production	**36**																**7.9**	**24.1**	**3.6**	**35.7**								
	WASTE	**18**												**0.0**			**0.0**					**12.3**	**0.4**	**1.1**	**0.4**	**3.4**	**17.7**		
	Solid Waste[i]	**16**												**0.0**			**0.0**					**12.3**	**0.4**			**3.4**	**16.1**		
	Wastewater	**1**																		**1.1**						**1.1**			
	Waste Incineration	**0**																							**0.4**		**0.4**		
	COAL PRODUCTION	**3**	**0.5**			**0.7**	**1.3**			**2.5**																			
	LIGHT MANUFACTURING, CONSTRUCTION & FOREST RESOURCES	**22**	**12.8**	**0.4**	**0.0**	**7.6**				**20.9**	**0.2**			**0.4**	**0.5**	**0.0**	**1.1**												
	Light Manufacturing	**14**	**11.4**	**0.4**	**0.0**	**1.5**				**13.3**	**0.2**			**0.4**	**0.4**	**0.0**	**1.0**												
	Construction	**6**	**1.4**	**0.0**		**4.9**				**6.3**					**0.0**		**0.0**												
	Forest Resources	**1**	**0.1**			**1.2**				**1.3**					**0.0**		**0.0**												
																												-12.9	

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.
0 Indicates emissions of less than 0.5 Mt CO_2 eq

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.

ANNEX 11

PROVINCIAL/ TERRITORIAL GREENHOUSE GAS EMISSION TABLES BY IPCC SECTOR, 1990–2018

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.

GHG Emissions by IPCC Sector:

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
Oil and Gas Extraction	Emissions from fuel consumed by oil and gas extraction industries
Mining	Emissions from fuel consumed by:
	– Metal and non-metal mines, coal mines, stone quarries, and gravel pits
	– 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 fuels (excluding the biogenic CO_2 emissions from Ethanol and biodiesel) by vehicles licensed to operate on roads
Railways	– Consumption of fuels (excluding the biogenic CO_2 emissions from Ethanol and biodiesel) by Canadian railways
Domestic Navigation	– Consumption of fuels (excluding the biogenic CO_2 emissions from Ethanol and biodiesel) by marine vessels navigating between Canadian ports (inclusive of international fishing and military opertations)
Others—Off-road	– Consumption of fuels (excluding the biogenic CO_2 emissions from Ethanol and biodiesel) by mobile 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, other uses of urea and petrochemicals. Petrochemical production includes production of carbon black, ethylene, ethylene dichloride, ethylene oxide, 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 in electrical equipment; and PFCs in electronics industry
AGRICULTURE	Emissions resulting from:
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 inorganic nitrogen fertilizers, manure and biosolids applied 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 and biosolid nitrogen, inorganic nitrogen fertilizer 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)
b. **Biological Treatment of Solid Waste**	– Composting of municipal solid waste
c. **Wastewater Treatment and Discharge**	– Municipal and industrial wastewater treatment
d. **Incineration and Open Burning of Waste**	– Municipal solid, hazardous and clinical waste, and sewage sludge incineration
e. **Industrial Wood Waste Landfills**	-Private, dedicated wood waste landfills
LAND USE, LAND-USE CHANGE AND FORESTRY	Emissions and removals resulting from:
a. **Forest Land**	– Managed forests and lands converted to forests; reports emissions and removals from forest growth and anthropogenic disturbances related to forest management but tracks separately emissions and removals from 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	2013	2014	2015	2016	2017	2018
	kt CO_2 eq							
TOTAL	**9 780**	**10 500**	**9 960**	**10 900**	**10 900**	**11 100**	**11 000**	**11 000**
ENERGY	**8 940**	**9 640**	**9 120**	**10 100**	**10 100**	**10 300**	**10 100**	**10 100**
a. Stationary Combustion Sources	**5 550**	**4 770**	**4 600**	**5 140**	**5 150**	**5 330**	**5 180**	**4 880**
Public Electricity and Heat Production	1 640	819	867	1 210	1 340	1 520	1 530	1 130
Petroleum Refining Industries	1 000	950	960	920	1 000	1 200	980	930
Oil and Gas Extraction	-	764	1 060	1 130	1 030	1 170	1 170	1 320
Mining	1 160	1 130	700	742	692	373	390	557
Manufacturing Industries	506	276	72	40	35	40	82	96
Construction	33	24	6	7	18	5	6	7
Commercial and Institutional	320	358	544	630	599	572	488	316
Residential	828	443	390	453	378	445	527	508
Agriculture and Forestry	25	8	8	11	12	10	9	7
b. Transport[a]	**3 350**	**3 960**	**3 960**	**4 260**	**4 400**	**4 400**	**4 300**	**4 390**
Domestic Aviation	191	199	234	219	208	204	197	205
Road Transportation	1 570	2 120	2 590	2 940	3 100	3 120	3 030	3 060
Light-Duty Gasoline Vehicles	678	604	629	679	684	640	627	589
Light-Duty Gasoline Trucks	440	646	956	1 090	1 160	1 160	1 220	1 210
Heavy-Duty Gasoline Vehicles	86	102	194	208	223	232	253	255
Motorcycles	3	2	6	8	9	9	10	10
Light-Duty Diesel Vehicles	4	5	6	7	8	8	6	6
Light-Duty Diesel Trucks	2	6	4	6	8	10	10	11
Heavy-Duty Diesel Vehicles	358	756	790	943	1 020	1 060	903	981
Propane and Natural Gas Vehicles	0.05	0.03	0.00	0.00	0.00	0.00	0.00	0.00
Railways	-	-	-	-	-	-	-	-
Domestic Navigation	974	1 120	763	659	554	553	552	551
Other Transportation	614	513	372	442	530	522	521	576
Off-Road Agriculture & Forestry	25	34	19	21	26	23	22	26
Off-Road Commercial & Institutional	31	48	41	46	50	21	11	12
Off-Road Manufacturing, Mining & Construction	223	282	201	242	307	335	341	393
Off-Road Residential	7	25	x	28	30	29	29	29
Off-Road Other Transportation	328	124	86	105	117	114	117	116
Pipeline Transport	-	-	x	-	-	-	-	-
c. Fugitive Sources	**41**	**910**	**560**	**660**	**560**	**560**	**660**	**840**
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	41	910	560	660	560	560	660	840
Oil	6	49	38	36	30	35	37	38
Natural Gas	0.00	1	2	2	2	2	2	2
Venting	25	52	50	39	46	45	59	56
Flaring	11	810	470	580	490	480	560	740
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**98**	**148**	**211**	**192**	**189**	**202**	**241**	**255**
a. Mineral Products	**64**	**2**	**0.56**	**0.59**	**0.76**	**0.84**	**1**	**1**
Cement Production	60	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-
Mineral Products Use	4	2	0.56	0.59	0.76	0.84	1	1
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
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[c]	**-**	**71**	**140**	**160**	**160**	**160**	**170**	**190**
e. Non-Energy Products from Fuels and Solvent Use	**29**	**68**	**66**	**28**	**19**	**27**	**57**	**56**
f. Other Product Manufacture and Use	**5**	**7**	**6**	**6**	**9**	**10**	**9**	**10**
AGRICULTURE	**54**	**65**	**100**	**96**	**89**	**90**	**90**	**88**
a. Enteric Fermentation	**23**	**31**	**32**	**32**	**31**	**31**	**31**	**33**
b. Manure Management	**16**	**20**	**25**	**25**	**25**	**25**	**25**	**25**
c. Agricultural Soils	**12**	**14**	**17**	**18**	**19**	**18**	**18**	**19**
Direct Sources	10	12	14	14	15	15	14	15
Indirect Sources	2	3	3	3	3	3	3	3
d. Field Burning of Agricultural Residues	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**3**	**-**	**25**	**21**	**14**	**17**	**17**	**12**
WASTE	**690**	**600**	**530**	**540**	**540**	**560**	**560**	**560**
a. Solid Waste Disposal	**470**	**440**	**450**	**470**	**470**	**490**	**490**	**490**
b. Biological Treatment of Solid Waste	**-**	**-**	**-**	**-**	**-**	**0.07**	**0.07**	**0.07**
c. Wastewater Treatment and Discharge	**23**	**21**	**22**	**22**	**22**	**24**	**26**	**26**
d. Incineration and Open Burning of Waste	**100**	**80**	**4**	**1**	**1**	**0.70**	**0.70**	**0.70**
e. Industrial Wood Waste Landfills	**60**	**60**	**50**	**50**	**50**	**50**	**40**	**40**

Notes:

a. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

b. 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.

c. 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 (2018) 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 **2018 GHG Emission Summary for Newfoundland and Labrador**

Greenhouse Gas Categories	Greenhouse Gases									
	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[d]	PFCs[d]	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	**9 780**	**36**	**900**	**0.47**	**140**	**190**	**0.05**	**2**	**-**	**11 000**
ENERGY	**9 710**	**12**	**310**	**0.30**	**90**	**-**	**-**	**-**	**-**	**10 100**
a. Stationary Combustion Sources	**4 650**	**7**	**200**	**0.10**	**40**	**-**	**-**	**-**	**-**	**4 880**
Public Electricity and Heat Production	1 120	0.02	0.46	0.02	6	-	-	-	-	1 130
Petroleum Refining Industries	930	0.02	0.60	0.01	3	-	-	-	-	930
Oil and Gas Extraction	1 240	3	80	0.03	9	-	-	-	-	1 320
Mining	554	0.01	0.40	0.01	3	-	-	-	-	557
Manufacturing Industries	96	0.00	0.08	0.00	0.59	-	-	-	-	96
Construction	7	0.00	0.00	0.00	0.03	-	-	-	-	7
Commercial and Institutional	314	0.00	0.09	0.01	2	-	-	-	-	316
Residential	384	4	100	0.05	20	-	-	-	-	508
Agriculture and Forestry	7	0.00	0.00	0.00	0.03	-	-	-	-	7
b. Transport[a]	**4 330**	**0.60**	**15**	**0.18**	**53**	**-**	**-**	**-**	**-**	**4 390**
Domestic Aviation	203	0.01	0.20	0.01	2	-	-	-	-	205
Road Transportation	3 020	0.20	5	0.13	39	-	-	-	-	3 060
Light-Duty Gasoline Vehicles	582	0.04	1	0.02	6	-	-	-	-	589
Light-Duty Gasoline Trucks	1 200	0.09	2	0.04	11	-	-	-	-	1 210
Heavy-Duty Gasoline Vehicles	248	0.01	0.20	0.02	6	-	-	-	-	255
Motorcycles	10	0.00	0.09	0.00	0.05	-	-	-	-	10
Light-Duty Diesel Vehicles	6	0.00	0.00	0.00	0.15	-	-	-	-	6
Light-Duty Diesel Trucks	11	0.00	0.01	0.00	0.27	-	-	-	-	11
Heavy-Duty Diesel Vehicles	964	0.04	1	0.05	16	-	-	-	-	981
Propane and Natural Gas Vehicles	0.00	0.00	0.00	0.00	0.00	-	-	-	-	0.00
Railways	-	-	-	-	-	-	-	-	-	-
Domestic Navigation	546	0.05	1	0.01	4	-	-	-	-	551
Other Transportation	560	0.35	9	0.03	8	-	-	-	-	576
Off-Road Agriculture & Forestry	25	0.00	0.04	0.00	0.50	-	-	-	-	26
Off-Road Commercial & Institutional	11	0.01	0.36	0.00	0.10	-	-	-	-	12
Off-Road Manufacturing, Mining & Construction	387	0.03	0.68	0.02	6	-	-	-	-	393
Off-Road Residential	28	0.05	1	0.00	0.20	-	-	-	-	29
Off-Road Other Transportation	109	0.25	6	0.00	0.90	-	-	-	-	116
Pipeline Transport	-	-	-	-	-	-	-	-	-	-
c. Fugitive Sources	**730**	**4**	**110**	**0.01**	**2**	**-**	**-**	**-**	**-**	**840**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	730	4	110	0.01	2	-	-	-	-	840
Oil	0.16	1	36	0.01	2	-	-	-	-	38
Natural Gas	0.02	0.08	2	-	-	-	-	-	-	2
Venting	55	0.02	0.43	-	-	-	-	-	-	56
Flaring	670	3	67	0.00	0.40	-	-	-	-	740
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**58**	**-**	**-**	**0.02**	**7**	**190**	**0.04**	**2**	**-**	**255**
a. Mineral Products	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**
Cement Production	-	-	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-	-	-
Mineral Products Use	1	-	-	-	-	-	-	-	-	1
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
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[c]	**-**	**-**	**-**	**-**	**-**	**190**	**0.03**	**-**	**-**	**190**
e. Non-Energy Products from Fuels and Solvent Use	**56**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**56**
f. Other Product Manufacture and Use	**0.57**	**-**	**-**	**0.03**	**7**	**-**	**0.02**	**2**	**-**	**10**
AGRICULTURE	**12**	**2**	**45**	**0.11**	**31**	**-**	**-**	**-**	**-**	**88**
a. Enteric Fermentation	**-**	**1**	**33**	**-**	**-**	**-**	**-**	**-**	**-**	**33**
b. Manure Management	**-**	**0.49**	**12**	**0.04**	**10**	**-**	**-**	**-**	**-**	**25**
c. Agricultural Soils	**-**	**-**	**-**	**0.06**	**19**	**-**	**-**	**-**	**-**	**19**
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	**12**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**12**
WASTE	**0.09**	**22**	**550**	**0.02**	**7**	**-**	**-**	**-**	**-**	**560**
a. Solid Waste Disposal	**-**	**20**	**490**	**-**	**-**	**-**	**-**	**-**	**-**	**490**
b. Biological Treatment of Solid Waste	**-**	**0.00**	**0.04**	**0.00**	**0.03**	**-**	**-**	**-**	**-**	**0.07**
c. Wastewater Treatment and Discharge	**-**	**0.78**	**19**	**0.02**	**7**	**-**	**-**	**-**	**-**	**26**
d. Incineration and Open Burning of Waste	**0.09**	**0.02**	**0.60**	**0.00**	**0.01**	**-**	**-**	**-**	**-**	**0.70**
e. Industrial Wood Waste Landfills	**-**	**2**	**40**	**-**	**-**	**-**	**-**	**-**	**-**	**40**

Notes:
a. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
b. 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.
c. 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.
d. 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 (2018) 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	2013	2014	2015	2016	2017	2018
	kt CO_2 eq							
TOTAL	**1 970**	**2 080**	**1 750**	**1 700**	**1 630**	**1 700**	**1 700**	**1 680**
ENERGY	**1 520**	**1 530**	**1 330**	**1 230**	**1 190**	**1 200**	**1 210**	**1 160**
a. Stationary Combustion Sources	**781**	**647**	**565**	**475**	**426**	**395**	**399**	**366**
Public Electricity and Heat Production	104	5	4	4	14	4	9	3
Petroleum Refining Industries	-	-	-	-	-	-	-	-
Oil and Gas Extraction	-	-	-	-	-	-	-	-
Mining	0.89	x	x	x	x	x	x	x
Manufacturing Industries	55	145	116	75	63	67	74	55
Construction	11	x	x	x	x	x	x	x
Commercial and Institutional	202	152	102	93	96	67	57	61
Residential	389	311	328	288	241	243	246	233
Agriculture and Forestry	19	24	13	12	10	11	11	12
b. Transport[a]	**736**	**882**	**764**	**752**	**764**	**802**	**815**	**792**
Domestic Aviation	18	14	20	19	19	20	21	22
Road Transportation	467	624	586	590	612	648	657	632
Light-Duty Gasoline Vehicles	234	243	201	195	196	206	207	187
Light-Duty Gasoline Trucks	127	228	222	218	222	247	263	254
Heavy-Duty Gasoline Vehicles	41	47	42	40	40	44	47	44
Motorcycles	0.58	0.98	1	1	1	2	2	2
Light-Duty Diesel Vehicles	1	2	2	2	3	3	2	2
Light-Duty Diesel Trucks	0.45	0.90	0.60	0.67	1	1	1	2
Heavy-Duty Diesel Vehicles	62	102	116	133	149	146	133	142
Propane and Natural Gas Vehicles	-	-	-	-	-	-	-	-
Railways	-	-	-	-	-	-	-	-
Domestic Navigation	124	137	79	58	37	35	34	32
Other Transportation	126	107	79	85	96	99	103	106
Off-Road Agriculture & Forestry	47	48	34	36	42	37	31	34
Off-Road Commercial & Institutional	5	9	9	9	9	8	8	7
Off-Road Manufacturing, Mining & Construction	15	15	13	14	17	26	35	38
Off-Road Residential	0.86	7	5	5	5	6	6	6
Off-Road Other Transportation	60	28	19	21	22	23	24	21
Pipeline Transport	-	-	-	-	-	-	-	-
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
Oil	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Natural Gas	-	-	-	-	-	-	-	-
Venting	-	-	-	-	-	-	-	-
Flaring	-	-	-	-	-	-	-	-
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**6**	**30**	**51**	**54**	**53**	**55**	**57**	**64**
a. Mineral Products	**0.34**	**0.91**	**0.63**	**0.61**	**0.66**	**0.57**	**0.36**	**0.34**
Cement Production	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-
Mineral Products Use	0.34	0.91	0.63	0.61	0.66	0.57	0.36	0.34
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
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[c]	**-**	**25**	**47**	**51**	**50**	**51**	**54**	**58**
e. Non-Energy Products from Fuels and Solvent Use	**5**	**2**	**2**	**1**	**0.86**	**0.89**	**0.66**	**3**
f. Other Product Manufacture and Use	**0.83**	**2**	**1**	**1**	**2**	**2**	**2**	**2**
AGRICULTURE	**370**	**440**	**310**	**350**	**320**	**380**	**370**	**400**
a. Enteric Fermentation	**140**	**130**	**110**	**110**	**110**	**110**	**110**	**110**
b. Manure Management	**47**	**51**	**41**	**40**	**39**	**37**	**38**	**38**
c. Agricultural Soils	**180**	**250**	**150**	**200**	**170**	**230**	**220**	**240**
Direct Sources	150	210	130	170	140	200	190	210
Indirect Sources	30	40	30	30	30	40	40	40
d. Field Burning of Agricultural Residues	**0.10**	**0.20**	**0.20**	**0.10**	**0.20**	**0.20**	**0.20**	**0.20**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**5**	**5**	**2**	**2**	**3**	**3**	**2**	**2**
WASTE	**76**	**79**	**66**	**65**	**64**	**63**	**62**	**61**
a. Solid Waste Disposal	**67**	**64**	**51**	**50**	**49**	**48**	**47**	**47**
b. Biological Treatment of Solid Waste	**-**	**5**	**3**	**3**	**3**	**4**	**3**	**4**
c. Wastewater Treatment and Discharge	**8**	**9**	**11**	**11**	**11**	**10**	**10**	**10**
d. Incineration and Open Burning of Waste	**0.02**	**0.09**	**0.10**	**0.10**	**0.10**	**0.10**	**0.10**	**0.10**
e. Industrial Wood Waste Landfills	**0.80**	**0.70**	**0.60**	**0.60**	**0.50**	**0.50**	**0.50**	**0.50**

Notes:

a. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

b. 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.

c. 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 (2018) 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 **2018 GHG Emission Summary for Prince Edward Island**

Greenhouse Gas Categories	Greenhouse Gases									
	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[d]	PFCs[d]	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	**1 110**	**9**	**230**	**0.96**	**290**	**58**	**0.02**	**-**	**-**	**1 680**
ENERGY	**1 100**	**2**	**39**	**0.05**	**20**	**-**	**-**	**-**	**-**	**1 160**
a. Stationary Combustion Sources	**324**	**1**	**40**	**0.02**	**6**	**-**	**-**	**-**	**-**	**366**
Public Electricity and Heat Production	3	0.00	0.00	0.00	0.01	-	-	-	-	3
Petroleum Refining Industries	-	-	-	-	-	-	-	-	-	-
Oil and Gas Extraction	-	-	-	-	-	-	-	-	-	-
Mining	x	x	x	x	x	x	x	x	x	x
Manufacturing Industries	55	0.00	0.02	0.00	0.31	-	-	-	-	55
Construction	x	x	x	x	x	x	x	x	x	x
Commercial and Institutional	60	0.01	0.22	0.00	0.60	-	-	-	-	61
Residential	193	1	40	0.02	5	-	-	-	-	233
Agriculture and Forestry	12	0.00	0.00	0.00	0.05	-	-	-	-	12
b. Transport[a]	**778**	**0.13**	**3**	**0.03**	**10**	**-**	**-**	**-**	**-**	**792**
Domestic Aviation	22	0.00	0.01	0.00	0.20	-	-	-	-	22
Road Transportation	622	0.05	1	0.03	9	-	-	-	-	632
Light-Duty Gasoline Vehicles	184	0.02	0.40	0.01	2	-	-	-	-	187
Light-Duty Gasoline Trucks	250	0.02	0.60	0.01	3	-	-	-	-	254
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	0.05	-	-	-	-	2
Light-Duty Diesel Trucks	1	0.00	0.00	0.00	0.04	-	-	-	-	2
Heavy-Duty Diesel Vehicles	140	0.01	0.10	0.01	2	-	-	-	-	142
Propane and Natural Gas Vehicles	-	-	-	-	-	-	-	-	-	-
Railways	-	-	-	-	-	-	-	-	-	-
Domestic Navigation	31	0.00	0.07	0.00	0.30	-	-	-	-	32
Other Transportation	103	0.08	2	0.00	1	-	-	-	-	106
Off-Road Agriculture & Forestry	34	0.00	0.03	0.00	0.40	-	-	-	-	34
Off-Road Commercial & Institutional	7	0.01	0.22	0.00	0.06	-	-	-	-	7
Off-Road Manufacturing, Mining & Construction	37	0.01	0.13	0.00	0.50	-	-	-	-	38
Off-Road Residential	5	0.01	0.27	0.00	0.04	-	-	-	-	6
Off-Road Other Transportation	20	0.05	1	0.00	0.10	-	-	-	-	21
Pipeline Transport	-	-	-	-	-	-	-	-	-	-
c. Fugitive Sources	**-**	**0.00**	**0.00**	**-**	**-**	**-**	**-**	**-**	**-**	**0.00**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	-	0.00	0.00	-	-	-	-	-	-	0.00
Oil	-	0.00	0.00	-	-	-	-	-	-	0.00
Natural Gas	-	-	-	-	-	-	-	-	-	-
Venting	-	-	-	-	-	-	-	-	-	-
Flaring	-	-	-	-	-	-	-	-	-	-
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**3**	**-**	**-**	**0.01**	**2**	**58**	**0.02**	**-**	**-**	**64**
a. Mineral Products	**0.34**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.34**
Cement Production	-	-	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-	-	-
Mineral Products Use	0.34	-	-	-	-	-	-	-	-	0.34
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
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[c]	**-**	**-**	**-**	**-**	**-**	**58**	**0.01**	**-**	**-**	**58**
e. Non-Energy Products from Fuels and Solvent Use	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**
f. Other Product Manufacture and Use	**0.09**	**-**	**-**	**0.01**	**2**	**-**	**0.01**	**-**	**-**	**2**
AGRICULTURE	**2**	**5**	**130**	**0.89**	**270**	**-**	**-**	**-**	**-**	**400**
a. Enteric Fermentation	**-**	**4**	**110**	**-**	**-**	**-**	**-**	**-**	**-**	**110**
b. Manure Management	**-**	**0.70**	**17**	**0.07**	**20**	**-**	**-**	**-**	**-**	**38**
c. Agricultural Soils	**-**	**-**	**-**	**0.82**	**240**	**-**	**-**	**-**	**-**	**240**
Direct Sources	-	-	-	0.69	210	-	-	-	-	210
Indirect Sources	-	-	-	0.10	40	-	-	-	-	40
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	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**
WASTE	**0.10**	**2**	**58**	**0.01**	**3**	**-**	**-**	**-**	**-**	**61**
a. Solid Waste Disposal	**-**	**2**	**47**	**-**	**-**	**-**	**-**	**-**	**-**	**47**
b. Biological Treatment of Solid Waste	**-**	**0.08**	**2**	**0.01**	**1**	**-**	**-**	**-**	**-**	**4**
c. Wastewater Treatment and Discharge	**-**	**0.33**	**8**	**0.01**	**2**	**-**	**-**	**-**	**-**	**10**
d. Incineration and Open Burning of Waste	**0.10**	**0.00**	**0.00**	**0.00**	**0.00**	**-**	**-**	**-**	**-**	**0.10**
e. Industrial Wood Waste Landfills	**-**	**0.02**	**0.50**	**-**	**-**	**-**	**-**	**-**	**-**	**0.50**

Notes:
a. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
b. 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.
c. 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.
d. 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 (2018) 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	2013	2014	2015	2016	2017	2018
	kt CO_2 eq							
TOTAL	**19 600**	**23 100**	**18 400**	**16 600**	**16 700**	**15 600**	**16 200**	**17 000**
ENERGY	**18 100**	**21 600**	**16 900**	**15 200**	**15 400**	**14 200**	**14 800**	**15 500**
a. Stationary Combustion Sources	**11 600**	**15 600**	**11 600**	**10 400**	**10 200**	**9 000**	**9 240**	**9 570**
Public Electricity and Heat Production	6 900	10 800	7 600	7 250	7 020	6 400	6 690	7 010
Petroleum Refining Industries	620	1 100	820	x	x	x	x	x
Oil and Gas Extraction	46	302	536	727	565	415	284	184
Mining	39	39	6	5	4	4	4	4
Manufacturing Industries	775	556	418	417	398	366	370	357
Construction	50	x	10	x	x	x	x	x
Commercial and Institutional	820	x	616	538	651	539	571	564
Residential	2 230	1 410	1 590	1 460	1 480	1 240	1 280	1 410
Agriculture and Forestry	104	96	38	33	28	24	32	34
b. Transport[a]	**4 870**	**5 820**	**5 110**	**4 650**	**5 160**	**5 160**	**5 430**	**5 810**
Domestic Aviation	293	267	254	241	241	237	245	265
Road Transportation	3 100	4 100	3 790	3 410	3 910	3 930	4 080	4 360
Light-Duty Gasoline Vehicles	1 490	1 350	1 100	971	1 190	1 200	1 190	1 240
Light-Duty Gasoline Trucks	735	1 190	1 130	1 030	1 310	1 390	1 470	1 620
Heavy-Duty Gasoline Vehicles	165	237	255	224	272	288	302	328
Motorcycles	6	5	8	7	9	10	11	12
Light-Duty Diesel Vehicles	29	42	47	44	44	38	37	27
Light-Duty Diesel Trucks	6	9	8	8	12	12	15	16
Heavy-Duty Diesel Vehicles	664	1 260	1 240	1 120	1 070	991	1 050	1 110
Propane and Natural Gas Vehicles	4	2	0.01	0.00	0.00	0.00	0.00	0.00
Railways	66	115	104	x	x	x	151	163
Domestic Navigation	601	693	478	x	x	x	339	341
Other Transportation	815	638	487	486	550	537	620	682
Off-Road Agriculture & Forestry	86	90	65	60	63	51	57	62
Off-Road Commercial & Institutional	43	66	63	68	74	65	68	74
Off-Road Manufacturing, Mining & Construction	225	235	197	188	208	211	273	296
Off-Road Residential	9	38	32	32	38	x	x	x
Off-Road Other Transportation	452	175	127	129	161	164	177	199
Pipeline Transport	-	35	4	9	6	x	x	x
c. Fugitive Sources	**1 700**	**230**	**160**	**79**	**53**	**49**	**110**	**120**
Coal Mining	2 000	100	80	0.70	0.60	0.70	70	100
Oil and Natural Gas	51	130	78	79	52	48	38	27
Oil	7	5	3	0.00	0.00	0.00	0.00	0.00
Natural Gas	-	13	9	14	14	14	13	13
Venting	30	80	43	33	20	18	13	7
Flaring	13	32	22	32	19	17	12	7
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**331**	**497**	**652**	**527**	**530**	**537**	**572**	**631**
a. Mineral Products	**180**	**250**	**200**	**190**	**200**	**200**	**210**	**220**
Cement Production	180	250	190	190	200	200	210	220
Lime Production	-	-	-	-	-	-	-	-
Mineral Products Use	4	3	3	2	2	1	1	1
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
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[c]	**-**	**140**	**240**	**260**	**260**	**270**	**280**	**310**
e. Non-Energy Products from Fuels and Solvent Use	**120**	**71**	**170**	**35**	**24**	**30**	**21**	**60**
f. Other Product Manufacture and Use	**29**	**40**	**47**	**42**	**42**	**39**	**53**	**40**
AGRICULTURE	**470**	**440**	**410**	**410**	**390**	**390**	**390**	**380**
a. Enteric Fermentation	**230**	**210**	**170**	**170**	**170**	**170**	**170**	**170**
b. Manure Management	**80**	**100**	**100**	**100**	**99**	**91**	**92**	**89**
c. Agricultural Soils	**120**	**120**	**110**	**110**	**110**	**110**	**110**	**110**
Direct Sources	95	99	88	93	88	93	92	94
Indirect Sources	20	20	20	20	20	20	20	20
d. Field Burning of Agricultural Residues	**0.06**	**0.10**	**0.04**	**0.05**	**0.05**	**0.07**	**0.08**	**0.06**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**38**	**13**	**24**	**20**	**15**	**17**	**17**	**12**
WASTE	**690**	**540**	**470**	**480**	**450**	**490**	**490**	**500**
a. Solid Waste Disposal	**580**	**400**	**340**	**350**	**320**	**360**	**370**	**380**
b. Biological Treatment of Solid Waste	**-**	**20**	**30**	**30**	**30**	**30**	**30**	**30**
c. Wastewater Treatment and Discharge	**53**	**54**	**48**	**51**	**55**	**52**	**49**	**50**
d. Incineration and Open Burning of Waste	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Industrial Wood Waste Landfills	**60**	**60**	**50**	**50**	**50**	**50**	**50**	**50**

Notes:

a. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

b. 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.

c. 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 (2018) 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 **2018 GHG Emission Summary for Nova Scotia**

Greenhouse Gas Categories	Greenhouse Gases									
	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[d]	PFCs[d]	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	**15 300**	**42**	**1 000**	**1**	**360**	**310**	**0.49**	**25**	**-**	**17 000**
ENERGY	**15 000**	**14**	**360**	**0.50**	**200**	**-**	**-**	**-**	**-**	**15 500**
a. Stationary Combustion Sources	**9 280**	**9**	**200**	**0.30**	**80**	**-**	**-**	**-**	**-**	**9 570**
Public Electricity and Heat Production	6 970	0.30	8	0.10	30	-	-	-	-	7 010
Petroleum Refining Industries	x	x	x	x	x	x	x	x	x	x
Oil and Gas Extraction	171	0.40	10	0.00	1	-	-	-	-	184
Mining	4	0.00	0.00	0.00	0.04	-	-	-	-	4
Manufacturing Industries	349	0.05	1	0.03	8	-	-	-	-	357
Construction	x	x	x	x	x	x	x	x	x	x
Commercial and Institutional	560	0.01	0.23	0.01	4	-	-	-	-	564
Residential	1 190	8	200	0.10	30	-	-	-	-	1 410
Agriculture and Forestry	33	0.00	0.01	0.00	0.20	-	-	-	-	34
b. Transport[a]	**5 690**	**1**	**28**	**0.29**	**85**	**-**	**-**	**-**	**-**	**5 810**
Domestic Aviation	262	0.01	0.10	0.01	2	-	-	-	-	265
Road Transportation	4 290	0.30	7	0.19	56	-	-	-	-	4 360
Light-Duty Gasoline Vehicles	1 230	0.10	2	0.04	12	-	-	-	-	1 240
Light-Duty Gasoline Trucks	1 600	0.10	3	0.06	16	-	-	-	-	1 620
Heavy-Duty Gasoline Vehicles	320	0.01	0.30	0.03	8	-	-	-	-	328
Motorcycles	11	0.00	0.10	0.00	0.06	-	-	-	-	12
Light-Duty Diesel Vehicles	26	0.00	0.01	0.00	0.64	-	-	-	-	27
Light-Duty Diesel Trucks	16	0.00	0.01	0.00	0.39	-	-	-	-	16
Heavy-Duty Diesel Vehicles	1 090	0.05	1	0.06	18	-	-	-	-	1 110
Propane and Natural Gas Vehicles	0.00	0.00	0.00	0.00	0.00	-	-	-	-	0.00
Railways	146	0.01	0.20	0.06	20	-	-	-	-	163
Domestic Navigation	337	0.03	0.80	0.01	3	-	-	-	-	341
Other Transportation	655	0.77	19	0.03	8	-	-	-	-	682
Off-Road Agriculture & Forestry	61	0.00	0.09	0.00	1	-	-	-	-	62
Off-Road Commercial & Institutional	70	0.14	4	0.00	0.60	-	-	-	-	74
Off-Road Manufacturing, Mining & Construction	290	0.04	0.97	0.01	4	-	-	-	-	296
Off-Road Residential	x	x	x	x	x	x	x	x	x	x
Off-Road Other Transportation	186	0.49	12	0.01	1	-	-	-	-	199
Pipeline Transport	x	x	x	x	x	x	x	x	x	x
c. Fugitive Sources	**6**	**5**	**120**	**0.00**	**0.00**	**-**	**-**	**-**	**-**	**120**
Coal Mining	-	4	100	-	-	-	-	-	-	100
Oil and Natural Gas	6	0.86	21	0.00	0.00	-	-	-	-	27
Oil	-	0.00	0.00	-	-	-	-	-	-	0.00
Natural Gas	0.01	0.53	13	-	-	-	-	-	-	13
Venting	0.01	0.29	7	-	-	-	-	-	-	7
Flaring	6	0.04	0.94	0.00	0.00	-	-	-	-	7
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**283**	**-**	**-**	**0.05**	**13**	**310**	**0.49**	**25**	**-**	**631**
a. Mineral Products	**220**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**220**
Cement Production	220	-	-	-	-	-	-	-	-	220
Lime Production	-	-	-	-	-	-	-	-	-	-
Mineral Products Use	1	-	-	-	-	-	-	-	-	1
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
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[c]	**-**	**-**	**-**	**-**	**-**	**310**	**0.05**	**-**	**-**	**310**
e. Non-Energy Products from Fuels and Solvent Use	**60**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**60**
f. Other Product Manufacture and Use	**0.66**	**-**	**-**	**0.05**	**13**	**-**	**0.43**	**25**	**-**	**40**
AGRICULTURE	**12**	**8**	**210**	**0.53**	**160**	**-**	**-**	**-**	**-**	**380**
a. Enteric Fermentation	**-**	**7**	**170**	**-**	**-**	**-**	**-**	**-**	**-**	**170**
b. Manure Management	**-**	**2**	**43**	**0.20**	**50**	**-**	**-**	**-**	**-**	**89**
c. Agricultural Soils	**-**	**-**	**-**	**0.38**	**110**	**-**	**-**	**-**	**-**	**110**
Direct Sources	-	-	-	0.32	94	-	-	-	-	94
Indirect Sources	-	-	-	0.07	20	-	-	-	-	20
d. Field Burning of Agricultural Residues	**-**	**0.00**	**0.04**	**0.00**	**0.01**	**-**	**-**	**-**	**-**	**0.06**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**12**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**12**
WASTE	**-**	**19**	**480**	**0.08**	**20**	**-**	**-**	**-**	**-**	**500**
a. Solid Waste Disposal	**-**	**15**	**380**	**-**	**-**	**-**	**-**	**-**	**-**	**380**
b. Biological Treatment of Solid Waste	**-**	**0.60**	**20**	**0.04**	**10**	**-**	**-**	**-**	**-**	**30**
c. Wastewater Treatment and Discharge	**-**	**2**	**37**	**0.04**	**10**	**-**	**-**	**-**	**-**	**50**
d. Incineration and Open Burning of Waste	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Industrial Wood Waste Landfills	**-**	**2**	**50**	**-**	**-**	**-**	**-**	**-**	**-**	**50**

Notes:
a. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
b. 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.
c. 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.
d. 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 (2018) 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	2013	2014	2015	2016	2017	2018
	kt CO_2 eq							
TOTAL	**16 200**	**20 000**	**14 700**	**13 600**	**13 900**	**14 500**	**13 500**	**13 200**
ENERGY	**14 900**	**18 500**	**12 800**	**12 100**	**12 500**	**13 000**	**12 000**	**11 700**
a. Stationary Combustion Sources	**10 800**	**13 100**	**8 570**	**8 240**	**8 290**	**8 480**	**7 890**	**7 660**
Public Electricity and Heat Production	6 020	8 060	4 190	3 780	3 800	4 010	3 350	3 710
Petroleum Refining Industries	1 200	2 300	2 500	x	x	x	x	x
Oil and Gas Extraction	-	-	41	35	29	26	26	34
Mining	126	161	60	x	x	x	x	x
Manufacturing Industries	1 630	1 170	848	680	759	615	621	667
Construction	69	6	9	10	28	17	10	10
Commercial and Institutional	580	602	320	403	428	380	271	309
Residential	1 160	834	570	617	747	685	672	664
Agriculture and Forestry	53	33	57	60	25	31	36	34
b. Transport[a]	**4 090**	**5 140**	**4 050**	**3 730**	**3 990**	**4 360**	**3 920**	**3 880**
Domestic Aviation	142	125	113	109	106	103	102	107
Road Transportation	2 260	3 590	3 090	2 790	3 090	3 420	3 010	2 980
Light-Duty Gasoline Vehicles	931	1 030	827	716	851	943	810	770
Light-Duty Gasoline Trucks	533	985	1 010	894	1 100	1 290	1 180	1 190
Heavy-Duty Gasoline Vehicles	125	197	218	182	216	251	227	222
Motorcycles	3	6	7	7	9	10	9	9
Light-Duty Diesel Vehicles	15	22	16	16	16	15	12	9
Light-Duty Diesel Trucks	6	10	4	4	6	7	7	7
Heavy-Duty Diesel Vehicles	649	1 340	1 010	975	891	902	768	772
Propane and Natural Gas Vehicles	0.67	0.15	0.00	-	0.00	0.00	0.00	0.00
Railways	129	284	198	x	x	x	157	160
Domestic Navigation	278	310	192	152	113	118	122	127
Other Transportation	1 280	829	461	x	x	x	534	508
Off-Road Agriculture & Forestry	123	167	95	96	98	87	81	77
Off-Road Commercial & Institutional	30	55	47	46	48	48	44	42
Off-Road Manufacturing, Mining & Construction	151	194	128	130	138	155	157	151
Off-Road Residential	5	x	x	x	x	x	30	28
Off-Road Other Transportation	971	386	169	172	205	229	211	200
Pipeline Transport	-	x	x	-	-	13	10	11
c. Fugitive Sources	**61**	**220**	**180**	**160**	**180**	**190**	**220**	**170**
Coal Mining	1	0.30	-	-	-	-	-	-
Oil and Natural Gas	60	220	180	160	180	190	220	170
Oil	8	18	17	15	17	17	16	13
Natural Gas	0.07	20	14	16	16	19	19	19
Venting	36	150	130	100	120	130	150	110
Flaring	15	31	26	21	25	27	31	23
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**188**	**268**	**934**	**456**	**446**	**452**	**521**	**546**
a. Mineral Products	**90**	**97**	**54**	**57**	**54**	**55**	**58**	**56**
Cement Production	-	-	-	-	-	-	-	-
Lime Production	80	89	50	54	50	51	54	53
Mineral Products Use	10	8	4	3	4	3	3	3
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
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[c]	**-**	**130**	**230**	**240**	**240**	**240**	**250**	**270**
e. Non-Energy Products from Fuels and Solvent Use	**92**	**37**	**650**	**150**	**140**	**150**	**200**	**210**
f. Other Product Manufacture and Use	**5**	**9**	**8**	**8**	**9**	**9**	**12**	**13**
AGRICULTURE	**490**	**540**	**480**	**480**	**430**	**480**	**470**	**470**
a. Enteric Fermentation	**200**	**180**	**160**	**150**	**150**	**150**	**150**	**150**
b. Manure Management	**60**	**74**	**64**	**61**	**60**	**58**	**59**	**60**
c. Agricultural Soils	**160**	**230**	**150**	**180**	**160**	**200**	**190**	**200**
Direct Sources	140	190	120	150	130	170	160	170
Indirect Sources	30	40	20	30	20	30	30	30
d. Field Burning of Agricultural Residues	**0.02**	**0.02**	**0.02**	**0.03**	**0.03**	**0.03**	**0.03**	**0.02**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**68**	**55**	**110**	**92**	**62**	**73**	**72**	**51**
WASTE	**550**	**640**	**510**	**520**	**520**	**500**	**510**	**520**
a. Solid Waste Disposal	**460**	**520**	**390**	**410**	**410**	**390**	**410**	**420**
b. Biological Treatment of Solid Waste	**6**	**20**	**20**	**20**	**20**	**20**	**20**	**20**
c. Wastewater Treatment and Discharge	**47**	**48**	**50**	**50**	**51**	**49**	**46**	**46**
d. Incineration and Open Burning of Waste	**-**	**0.04**	**1**	**1**	**1**	**0.20**	**-**	**-**
e. Industrial Wood Waste Landfills	**40**	**60**	**40**	**40**	**40**	**40**	**40**	**40**

Notes:

a. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

b. 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.

c. 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 (2018) 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 **2018 GHG Emission Summary for New Brunswick**

Greenhouse Gas Categories	Greenhouse Gases									
	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[d]	PFCs[d]	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	**11 700**	**35**	**870**	**1**	**400**	**270**	**0.05**	**1**	**-**	**13 200**
ENERGY	**11 400**	**7**	**180**	**0.50**	**100**	**-**	**-**	**-**	**-**	**11 700**
a. Stationary Combustion Sources	**7 460**	**5**	**100**	**0.20**	**70**	**-**	**-**	**-**	**-**	**7 660**
Public Electricity and Heat Production	3 690	0.23	6	0.06	20	-	-	-	-	3 710
Petroleum Refining Industries	x	x	x	x	x	x	x	x	x	x
Oil and Gas Extraction	34	0.00	0.01	0.00	0.70	-	-	-	-	34
Mining	x	x	x	x	x	x	x	x	x	x
Manufacturing Industries	635	0.16	4	0.10	28	-	-	-	-	667
Construction	10	0.00	0.00	0.00	0.04	-	-	-	-	10
Commercial and Institutional	306	0.00	0.12	0.01	2	-	-	-	-	309
Residential	528	5	100	0.06	20	-	-	-	-	664
Agriculture and Forestry	34	0.00	0.01	0.00	0.10	-	-	-	-	34
b. Transport[a]	**3 790**	**0.87**	**22**	**0.22**	**66**	**-**	**-**	**-**	**-**	**3 880**
Domestic Aviation	106	0.01	0.20	0.00	1	-	-	-	-	107
Road Transportation	2 930	0.20	5	0.14	42	-	-	-	-	2 980
Light-Duty Gasoline Vehicles	759	0.07	2	0.03	9	-	-	-	-	770
Light-Duty Gasoline Trucks	1 170	0.10	3	0.05	14	-	-	-	-	1 190
Heavy-Duty Gasoline Vehicles	217	0.01	0.20	0.02	6	-	-	-	-	222
Motorcycles	9	0.00	0.08	0.00	0.05	-	-	-	-	9
Light-Duty Diesel Vehicles	9	0.00	0.00	0.00	0.22	-	-	-	-	9
Light-Duty Diesel Trucks	7	0.00	0.01	0.00	0.17	-	-	-	-	7
Heavy-Duty Diesel Vehicles	758	0.03	0.80	0.04	12	-	-	-	-	772
Propane and Natural Gas Vehicles	0.00	0.00	0.00	0.00	0.00	-	-	-	-	0.00
Railways	143	0.01	0.20	0.06	20	-	-	-	-	160
Domestic Navigation	126	0.01	0.30	0.00	1	-	-	-	-	127
Other Transportation	487	0.63	16	0.02	6	-	-	-	-	508
Off-Road Agriculture & Forestry	76	0.01	0.15	0.00	1	-	-	-	-	77
Off-Road Commercial & Institutional	40	0.05	1	0.00	0.40	-	-	-	-	42
Off-Road Manufacturing, Mining & Construction	148	0.02	0.57	0.01	2	-	-	-	-	151
Off-Road Residential	27	0.06	2	0.00	0.20	-	-	-	-	28
Off-Road Other Transportation	186	0.48	12	0.01	1	-	-	-	-	200
Pipeline Transport	10	0.01	0.26	0.00	0.08	-	-	-	-	11
c. Fugitive Sources	**140**	**1**	**29**	**0.01**	**4**	**-**	**-**	**-**	**-**	**170**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	140	1	29	0.01	4	-	-	-	-	170
Oil	0.09	0.37	9	0.01	4	-	-	-	-	13
Natural Gas	0.01	0.76	19	-	-	-	-	-	-	19
Venting	110	0.01	0.20	-	-	-	-	-	-	110
Flaring	23	0.00	0.05	0.00	0.01	-	-	-	-	23
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**265**	**-**	**-**	**0.04**	**11**	**270**	**0.05**	**1**	**-**	**546**
a. Mineral Products	**56**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**56**
Cement Production	-	-	-	-	-	-	-	-	-	-
Lime Production	53	-	-	-	-	-	-	-	-	53
Mineral Products Use	3	-	-	-	-	-	-	-	-	3
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
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[c]	**-**	**-**	**-**	**-**	**-**	**270**	**0.05**	**-**	**-**	**270**
e. Non-Energy Products from Fuels and Solvent Use	**210**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**210**
f. Other Product Manufacture and Use	**0.46**	**-**	**-**	**0.04**	**11**	**-**	**0.01**	**1**	**-**	**13**
AGRICULTURE	**51**	**7**	**180**	**0.77**	**230**	**-**	**-**	**-**	**-**	**470**
a. Enteric Fermentation	**-**	**6**	**150**	**-**	**-**	**-**	**-**	**-**	**-**	**150**
b. Manure Management	**-**	**1**	**30**	**0.10**	**30**	**-**	**-**	**-**	**-**	**60**
c. Agricultural Soils	**-**	**-**	**-**	**0.67**	**200**	**-**	**-**	**-**	**-**	**200**
Direct Sources	-	-	-	0.57	170	-	-	-	-	170
Indirect Sources	-	-	-	0.10	30	-	-	-	-	30
d. Field Burning of Agricultural Residues	**-**	**0.00**	**0.01**	**0.00**	**0.01**	**-**	**-**	**-**	**-**	**0.02**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**51**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**51**
WASTE	**-**	**20**	**510**	**0.06**	**20**	**-**	**-**	**-**	**-**	**520**
a. Solid Waste Disposal	**-**	**17**	**420**	**-**	**-**	**-**	**-**	**-**	**-**	**420**
b. Biological Treatment of Solid Waste	**-**	**0.40**	**10**	**0.02**	**7**	**-**	**-**	**-**	**-**	**20**
c. Wastewater Treatment and Discharge	**-**	**1**	**36**	**0.03**	**10**	**-**	**-**	**-**	**-**	**46**
d. Incineration and Open Burning of Waste	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Industrial Wood Waste Landfills	**-**	**2**	**40**	**-**	**-**	**-**	**-**	**-**	**-**	**40**

Notes:
a. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
b. 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.
c. 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.
d. 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 (2018) 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	2013	2014	2015	2016	2017	2018
	kt CO_2 eq							
TOTAL	**86 700**	**86 100**	**80 300**	**78 300**	**78 600**	**78 500**	**80 400**	**82 600**
ENERGY	**59 000**	**61 200**	**57 500**	**55 500**	**56 400**	**55 800**	**57 800**	**59 500**
a. Stationary Combustion Sources	**31 500**	**27 400**	**22 500**	**22 200**	**22 500**	**21 400**	**21 700**	**21 600**
Public Electricity and Heat Production	1 490	621	367	245	205	233	239	255
Petroleum Refining Industries	3 500	3 700	2 100	2 000	2 200	1 900	1 700	2 100
Oil and Gas Extraction	-	-	-	-	-	-	-	-
Mining	824	319	1 080	722	570	648	826	879
Manufacturing Industries	12 300	10 000	9 340	9 250	9 450	8 370	8 760	8 390
Construction	458	314	367	374	351	345	363	393
Commercial and Institutional	4 440	5 450	4 380	4 610	4 800	4 770	5 140	4 830
Residential	8 290	6 680	4 440	4 500	4 450	4 600	4 200	4 260
Agriculture and Forestry	291	367	480	469	484	496	467	479
b. Transport[a]	**27 100**	**33 300**	**34 700**	**33 100**	**33 600**	**34 100**	**35 800**	**37 500**
Domestic Aviation	820	747	733	677	675	697	756	839
Road Transportation	18 100	26 300	27 800	26 400	26 800	27 400	28 600	30 100
Light-Duty Gasoline Vehicles	10 600	10 800	9 610	9 110	9 170	9 120	9 210	9 660
Light-Duty Gasoline Trucks	3 580	6 900	7 460	7 270	7 530	7 880	8 390	9 340
Heavy-Duty Gasoline Vehicles	785	1 620	2 040	1 790	1 800	1 880	2 010	2 150
Motorcycles	17	71	72	65	68	70	74	78
Light-Duty Diesel Vehicles	210	151	191	196	204	194	191	176
Light-Duty Diesel Trucks	57	69	98	122	156	184	225	230
Heavy-Duty Diesel Vehicles	2 820	6 680	8 370	7 880	7 890	8 040	8 470	8 440
Propane and Natural Gas Vehicles	2	0.99	0.04	0.22	0.20	0.17	0.11	0.11
Railways	567	706	869	776	682	673	621	696
Domestic Navigation	768	1 020	900	862	824	856	887	919
Other Transportation	6 800	4 580	4 340	4 300	4 630	4 490	4 970	5 010
Off-Road Agriculture & Forestry	999	780	743	691	739	678	713	680
Off-Road Commercial & Institutional	359	456	548	575	585	687	877	889
Off-Road Manufacturing, Mining & Construction	2 030	1 620	1 750	1 660	1 890	1 870	2 130	2 050
Off-Road Residential	61	264	252	244	251	216	225	251
Off-Road Other Transportation	3 330	1 120	773	765	829	854	939	1 040
Pipeline Transport	26	338	268	359	326	189	80	96
c. Fugitive Sources	**430**	**380**	**270**	**270**	**290**	**310**	**330**	**310**
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	430	380	270	270	290	310	330	310
Oil	22	28	20	22	22	23	20	20
Natural Gas	260	74	50	48	49	52	53	53
Venting	99	240	170	170	190	200	220	200
Flaring	40	47	31	29	32	35	39	35
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**14 800**	**12 700**	**11 700**	**11 500**	**10 300**	**10 000**	**10 500**	**10 500**
a. Mineral Products	**1 900**	**2 100**	**1 700**	**1 800**	**1 800**	**1 800**	**2 100**	**2 300**
Cement Production	1 400	1 300	1 200	1 200	1 300	1 300	1 600	1 800
Lime Production	280	480	430	470	440	440	470	460
Mineral Products Use	200	260	69	70	72	68	52	51
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**10 900**	**7 560**	**5 830**	**5 320**	**5 280**	**5 160**	**5 250**	**4 770**
Iron and Steel Production	-	-	31	28	29	29	19	21
Aluminum Production	8 660	7 460	5 780	5 280	5 240	5 130	5 220	4 740
SF_6 Used in Magnesium Smelters and Casters	2 280	103	20	11	11	8	11	11
d. Production and Consumption of Halocarbons, SF_6 and NF_3[c]	**2**	**1 100**	**2 000**	**2 200**	**2 200**	**2 300**	**2 300**	**2 500**
e. Non-Energy Products from Fuels and Solvent Use	**1 900**	**1 900**	**2 000**	**2 200**	**830**	**630**	**720**	**780**
f. Other Product Manufacture and Use	**80**	**120**	**150**	**98**	**160**	**180**	**140**	**190**
AGRICULTURE	**7 000**	**7 600**	**7 700**	**7 700**	**7 900**	**8 000**	**7 600**	**8 200**
a. Enteric Fermentation	**3 100**	**3 100**	**2 700**	**2 700**	**2 600**	**2 600**	**2 600**	**2 700**
b. Manure Management	**1 100**	**1 600**	**1 600**	**1 600**	**1 600**	**1 700**	**1 700**	**1 700**
c. Agricultural Soils	**2 500**	**2 700**	**3 100**	**3 200**	**3 400**	**3 500**	**3 100**	**3 600**
Direct Sources	2 100	2 300	2 700	2 700	2 900	3 000	2 700	3 100
Indirect Sources	400	400	500	500	500	500	500	500
d. Field Burning of Agricultural Residues	**0.30**	**0.30**	**0.20**	**0.20**	**0.20**	**0.20**	**0.10**	**0.20**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**220**	**160**	**300**	**270**	**220**	**260**	**230**	**250**
WASTE	**5 900**	**4 600**	**3 400**	**3 600**	**4 100**	**4 600**	**4 500**	**4 400**
a. Solid Waste Disposal	**5 000**	**3 500**	**2 500**	**2 700**	**3 200**	**3 800**	**3 700**	**3 600**
b. Biological Treatment of Solid Waste	**-**	**50**	**70**	**70**	**60**	**50**	**50**	**50**
c. Wastewater Treatment and Discharge	**210**	**210**	**260**	**260**	**260**	**250**	**240**	**240**
d. Incineration and Open Burning of Waste	**200**	**200**	**40**	**40**	**40**	**40**	**50**	**50**
e. Industrial Wood Waste Landfills	**500**	**600**	**500**	**500**	**500**	**500**	**500**	**500**

Notes:

a. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

b. 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.

c. 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 (2018) 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 **2018 GHG Emission Summary for Quebec**

Greenhouse Gas Categories	Greenhouse Gases									
	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[d]	PFCs[d]	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	**64 200**	**400**	**9 900**	**18**	**5 300**	**2 500**	**580**	**83**	**0.10**	**82 600**
ENERGY	**56 700**	**72**	**1 800**	**3**	**1 000**	**-**	**-**	**-**	**-**	**59 500**
a. Stationary Combustion Sources	**19 700**	**60**	**2 000**	**1**	**400**	**-**	**-**	**-**	**-**	**21 600**
Public Electricity and Heat Production	254	0.01	0.13	0.00	1	-	-	-	-	255
Petroleum Refining Industries	2 100	0.04	1	0.02	7	-	-	-	-	2 100
Oil and Gas Extraction	-	-	-	-	-	-	-	-	-	-
Mining	874	0.03	0.80	0.02	5	-	-	-	-	879
Manufacturing Industries	8 270	0.57	14	0.35	100	-	-	-	-	8 390
Construction	390	0.01	0.18	0.01	2	-	-	-	-	393
Commercial and Institutional	4 790	0.18	5	0.10	40	-	-	-	-	4 830
Residential	2 500	60	2 000	0.80	200	-	-	-	-	4 260
Agriculture and Forestry	471	0.01	0.20	0.02	7	-	-	-	-	479
b. Transport[a]	**36 800**	**7**	**170**	**2**	**560**	**-**	**-**	**-**	**-**	**37 500**
Domestic Aviation	831	0.03	0.70	0.02	7	-	-	-	-	839
Road Transportation	29 600	2	50	1	410	-	-	-	-	30 100
Light-Duty Gasoline Vehicles	9 540	0.80	20	0.36	110	-	-	-	-	9 660
Light-Duty Gasoline Trucks	9 220	0.80	20	0.34	100	-	-	-	-	9 340
Heavy-Duty Gasoline Vehicles	2 100	0.07	2	0.18	55	-	-	-	-	2 150
Motorcycles	76	0.03	0.70	0.00	0.42	-	-	-	-	78
Light-Duty Diesel Vehicles	171	0.00	0.08	0.01	4	-	-	-	-	176
Light-Duty Diesel Trucks	225	0.01	0.10	0.02	6	-	-	-	-	230
Heavy-Duty Diesel Vehicles	8 290	0.40	9	0.47	140	-	-	-	-	8 440
Propane and Natural Gas Vehicles	0.11	0.00	0.00	0.00	0.00	-	-	-	-	0.11
Railways	623	0.04	0.90	0.20	70	-	-	-	-	696
Domestic Navigation	909	0.09	2	0.02	7	-	-	-	-	919
Other Transportation	4 840	4	110	0.20	60	-	-	-	-	5 010
Off-Road Agriculture & Forestry	669	0.04	0.87	0.03	10	-	-	-	-	680
Off-Road Commercial & Institutional	852	1	29	0.03	8	-	-	-	-	889
Off-Road Manufacturing, Mining & Construction	2 010	0.33	8	0.10	30	-	-	-	-	2 050
Off-Road Residential	236	0.52	13	0.01	2	-	-	-	-	251
Off-Road Other Transportation	977	2	57	0.03	8	-	-	-	-	1 040
Pipeline Transport	93	0.09	2	0.00	0.70	-	-	-	-	96
c. Fugitive Sources	**210**	**4**	**93**	**0.02**	**5**	**-**	**-**	**-**	**-**	**310**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	210	4	93	0.02	5	-	-	-	-	310
Oil	0.13	0.56	14	0.02	5	-	-	-	-	20
Natural Gas	0.04	2	53	-	-	-	-	-	-	53
Venting	170	1	26	-	-	-	-	-	-	200
Flaring	35	0.00	0.02	0.00	0.01	-	-	-	-	35
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**7 260**	**0.00**	**0.01**	**0.39**	**117**	**2 500**	**583**	**83**	**0.10**	**10 500**
a. Mineral Products	**2 300**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2 300**
Cement Production	1 800	-	-	-	-	-	-	-	-	1 800
Lime Production	460	-	-	-	-	-	-	-	-	460
Mineral Products Use	51	-	-	-	-	-	-	-	-	51
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**4 170**	**0.00**	**0.01**	**-**	**-**	**-**	**573**	**24**	**-**	**4 770**
Iron and Steel Production	21	0.00	0.01	-	-	-	-	-	-	21
Aluminum Production	4 150	-	-	-	-	-	573	13	-	4 740
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	11	-	11
d. Production and Consumption of Halocarbons, SF_6 and NF_3[c]	**-**	**-**	**-**	**-**	**-**	**2 500**	**2**	**1**	**0.10**	**2 500**
e. Non-Energy Products from Fuels and Solvent Use	**780**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**780**
f. Other Product Manufacture and Use	**5**	**-**	**-**	**0.39**	**120**	**-**	**9**	**58**	**-**	**190**
AGRICULTURE	**250**	**150**	**3 800**	**14**	**4 100**	**-**	**-**	**-**	**-**	**8 200**
a. Enteric Fermentation	**-**	**110**	**2 700**	**-**	**-**	**-**	**-**	**-**	**-**	**2 700**
b. Manure Management	**-**	**48**	**1 200**	**2**	**500**	**-**	**-**	**-**	**-**	**1 700**
c. Agricultural Soils	**-**	**-**	**-**	**12**	**3 600**	**-**	**-**	**-**	**-**	**3 600**
Direct Sources	-	-	-	10	3 100	-	-	-	-	3 100
Indirect Sources	-	-	-	2	500	-	-	-	-	500
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	**250**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**250**
WASTE	**8**	**170**	**4 200**	**0.60**	**200**	**-**	**-**	**-**	**-**	**4 400**
a. Solid Waste Disposal	**-**	**140**	**3 600**	**-**	**-**	**-**	**-**	**-**	**-**	**3 600**
b. Biological Treatment of Solid Waste	**-**	**1**	**30**	**0.06**	**20**	**-**	**-**	**-**	**-**	**50**
c. Wastewater Treatment and Discharge	**-**	**5**	**130**	**0.40**	**100**	**-**	**-**	**-**	**-**	**240**
d. Incineration and Open Burning of Waste	**8**	**0.00**	**0.03**	**0.10**	**40**	**-**	**-**	**-**	**-**	**50**
e. Industrial Wood Waste Landfills	**-**	**20**	**500**	**-**	**-**	**-**	**-**	**-**	**-**	**500**

Notes:
a. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
b. 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.
c. 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.
d. 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 (2018) 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	2013	2014	2015	2016	2017	2018
	kt CO_2 eq							
TOTAL	**179 000**	**203 000**	**167 000**	**165 000**	**163 000**	**160 000**	**155 000**	**165 000**
ENERGY	**132 000**	**162 000**	**129 000**	**126 000**	**125 000**	**120 000**	**117 000**	**126 000**
a. Stationary Combustion Sources	**83 400**	**97 000**	**67 400**	**66 300**	**63 500**	**59 500**	**55 700**	**62 500**
Public Electricity and Heat Production	25 900	35 400	10 300	6 030	6 250	5 540	2 560	4 450
Petroleum Refining Industries	6 200	6 900	6 100	6 000	5 600	5 400	3 800	4 200
Oil and Gas Extraction	100	169	99	61	72	76	31	59
Mining	493	420	530	569	436	529	553	446
Manufacturing Industries	22 000	18 800	16 100	16 600	16 000	15 700	16 400	16 500
Construction	571	637	361	380	350	341	305	314
Commercial and Institutional	9 190	12 800	12 000	13 300	12 700	12 200	12 600	13 300
Residential	18 200	20 700	20 200	21 800	20 700	18 100	18 100	21 800
Agriculture and Forestry	775	1 040	1 650	1 500	1 420	1 510	1 360	1 410
b. Transport[a]	**47 200**	**63 500**	**59 900**	**58 200**	**59 600**	**59 400**	**60 000**	**62 400**
Domestic Aviation	2 240	2 250	2 290	2 190	2 190	2 200	2 300	2 420
Road Transportation	29 300	47 800	47 400	45 500	46 300	46 600	46 800	48 400
Light-Duty Gasoline Vehicles	16 400	16 600	13 500	12 800	12 900	12 700	12 100	12 000
Light-Duty Gasoline Trucks	7 210	15 800	16 600	16 400	16 900	17 700	18 000	19 000
Heavy-Duty Gasoline Vehicles	1 480	3 150	3 550	3 310	3 310	3 420	3 410	3 430
Motorcycles	27	61	87	86	88	93	95	95
Light-Duty Diesel Vehicles	127	217	326	327	363	337	339	338
Light-Duty Diesel Trucks	34	72	192	241	328	376	467	525
Heavy-Duty Diesel Vehicles	3 970	11 800	13 200	12 300	12 400	11 900	12 300	13 000
Propane and Natural Gas Vehicles	68	55	1	0.91	0.65	0.74	0.53	0.53
Railways	1 780	1 550	1 320	1 410	1 430	1 450	1 450	1 540
Domestic Navigation	156	210	197	201	204	210	215	220
Other Transportation	13 700	11 700	8 730	8 970	9 500	8 930	9 250	9 830
Off-Road Agriculture & Forestry	1 340	1 410	1 200	1 110	1 170	1 040	1 040	1 120
Off-Road Commercial & Institutional	561	960	1 050	1 020	993	1 040	1 200	1 250
Off-Road Manufacturing, Mining & Construction	3 130	3 310	3 310	3 130	3 540	3 420	3 790	3 950
Off-Road Residential	89	491	471	480	475	452	460	471
Off-Road Other Transportation	6 340	2 460	1 630	1 700	1 770	1 780	1 850	1 890
Pipeline Transport	2 280	3 070	1 070	1 530	1 550	1 200	914	1 150
c. Fugitive Sources	**1 600**	**1 600**	**1 400**	**1 500**	**1 500**	**1 500**	**1 500**	**1 500**
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	1 600	1 600	1 400	1 500	1 500	1 500	1 500	1 500
Oil	64	42	36	36	34	33	27	28
Natural Gas	1 000	960	830	920	920	940	960	960
Venting	340	460	440	440	440	450	450	450
Flaring	160	100	73	65	67	60	61	62
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**30 500**	**25 100**	**23 000**	**23 800**	**23 200**	**24 600**	**23 300**	**24 100**
a. Mineral Products	**3 900**	**4 800**	**3 400**	**3 400**	**3 500**	**3 500**	**3 700**	**3 800**
Cement Production	2 400	3 700	2 700	2 700	2 800	2 800	3 000	3 100
Lime Production	1 100	800	570	620	570	580	620	600
Mineral Products Use	380	320	130	120	130	120	88	86
b. Chemical Industry[b]	**10 300**	**2 550**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	10 000	2 500	-	-	-	-	-	-
c. Metal Production	**11 200**	**11 400**	**8 200**	**9 140**	**8 710**	**9 370**	**9 080**	**9 430**
Iron and Steel Production	10 500	10 300	8 010	8 900	8 490	9 240	8 960	9 310
Aluminum Production	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	687	1 130	192	238	215	124	117	122
d. Production and Consumption of Halocarbons, SF_6 and NF_3[c]	**970**	**2 000**	**3 900**	**4 200**	**4 200**	**4 300**	**4 400**	**4 700**
e. Non-Energy Products from Fuels and Solvent Use	**4 100**	**4 100**	**7 300**	**6 900**	**6 600**	**7 200**	**5 900**	**5 800**
f. Other Product Manufacture and Use	**140**	**200**	**190**	**180**	**200**	**220**	**250**	**280**
AGRICULTURE	**10 000**	**10 000**	**10 000**	**9 700**	**9 500**	**10 000**	**10 000**	**9 900**
a. Enteric Fermentation	**4 300**	**4 100**	**3 400**	**3 300**	**3 300**	**3 300**	**3 300**	**3 300**
b. Manure Management	**1 800**	**2 000**	**1 800**	**1 800**	**1 800**	**1 800**	**1 800**	**1 900**
c. Agricultural Soils	**3 900**	**3 800**	**4 700**	**4 400**	**4 200**	**4 600**	**4 600**	**4 500**
Direct Sources	3 300	3 200	4 000	3 800	3 600	4 000	4 000	3 900
Indirect Sources	600	600	700	600	600	600	600	600
d. Field Burning of Agricultural Residues	**3**	**0.60**	**0.30**	**0.30**	**0.30**	**0.30**	**0.20**	**0.20**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**250**	**160**	**230**	**190**	**150**	**200**	**210**	**200**
WASTE	**6 300**	**6 000**	**5 500**	**5 200**	**5 200**	**4 800**	**4 800**	**4 600**
a. Solid Waste Disposal	**5 500**	**5 000**	**4 400**	**4 000**	**4 100**	**3 600**	**3 700**	**3 400**
b. Biological Treatment of Solid Waste	**50**	**100**	**200**	**200**	**200**	**200**	**200**	**200**
c. Wastewater Treatment and Discharge	**290**	**340**	**380**	**390**	**390**	**390**	**390**	**400**
d. Incineration and Open Burning of Waste	**100**	**200**	**200**	**300**	**300**	**300**	**300**	**300**
e. Industrial Wood Waste Landfills	**300**	**400**	**300**	**300**	**300**	**300**	**300**	**300**

Notes:

a. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

b. 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.

c. 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 (2018) 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 **2018 GHG Emission Summary for Ontario**

Greenhouse Gas Categories	Greenhouse Gases									
	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[d]	PFCs[d]	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	**142 000**	**430**	**11 000**	**26**	**7 800**	**4 700**	**12**	**180**	**-**	**165 000**
ENERGY	**122 000**	**92**	**2 300**	**6**	**2 000**	**-**	**-**	**-**	**-**	**126 000**
a. Stationary Combustion Sources	**61 200**	**30**	**800**	**2**	**500**	**-**	**-**	**-**	**-**	**62 500**
Public Electricity and Heat Production	4 380	1	28	0.10	40	-	-	-	-	4 450
Petroleum Refining Industries	4 200	0.08	2	0.03	8	-	-	-	-	4 200
Oil and Gas Extraction	59	0.00	0.03	0.00	0.30	-	-	-	-	59
Mining	439	0.01	0.20	0.02	7	-	-	-	-	446
Manufacturing Industries	16 400	0.54	14	0.40	120	-	-	-	-	16 500
Construction	311	0.01	0.14	0.01	3	-	-	-	-	314
Commercial and Institutional	13 200	0.35	9	0.30	90	-	-	-	-	13 300
Residential	20 800	30	700	0.70	200	-	-	-	-	21 800
Agriculture and Forestry	1 390	0.03	0.60	0.03	10	-	-	-	-	1 410
b. Transport[a]	**60 900**	**12**	**290**	**4**	**1 200**	**-**	**-**	**-**	**-**	**62 400**
Domestic Aviation	2 400	0.08	2	0.07	20	-	-	-	-	2 420
Road Transportation	47 400	3	80	3	910	-	-	-	-	48 400
Light-Duty Gasoline Vehicles	11 700	0.90	20	0.79	240	-	-	-	-	12 000
Light-Duty Gasoline Trucks	18 600	1	30	1	340	-	-	-	-	19 000
Heavy-Duty Gasoline Vehicles	3 340	0.10	3	0.30	90	-	-	-	-	3 430
Motorcycles	94	0.04	0.90	0.00	0.54	-	-	-	-	95
Light-Duty Diesel Vehicles	330	0.01	0.20	0.03	8	-	-	-	-	338
Light-Duty Diesel Trucks	512	0.01	0.30	0.04	13	-	-	-	-	525
Heavy-Duty Diesel Vehicles	12 800	0.50	10	0.74	220	-	-	-	-	13 000
Propane and Natural Gas Vehicles	0.52	0.00	0.01	0.00	0.00	-	-	-	-	0.53
Railways	1 380	0.08	2	0.50	200	-	-	-	-	1 540
Domestic Navigation	218	0.02	0.50	0.01	2	-	-	-	-	220
Other Transportation	9 500	9	210	0.40	100	-	-	-	-	9 830
Off-Road Agriculture & Forestry	1 110	0.05	1	0.05	10	-	-	-	-	1 120
Off-Road Commercial & Institutional	1 200	2	37	0.04	10	-	-	-	-	1 250
Off-Road Manufacturing, Mining & Construction	3 870	0.63	16	0.20	60	-	-	-	-	3 950
Off-Road Residential	443	0.98	25	0.01	4	-	-	-	-	471
Off-Road Other Transportation	1 770	4	110	0.05	20	-	-	-	-	1 890
Pipeline Transport	1 110	1	27	0.03	9	-	-	-	-	1 150
c. Fugitive Sources	**260**	**49**	**1 200**	**0.02**	**6**	**-**	**-**	**-**	**-**	**1 500**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	260	49	1 200	0.02	6	-	-	-	-	1 500
Oil	0.16	0.85	21	0.02	6	-	-	-	-	28
Natural Gas	2	38	960	-	-	-	-	-	-	960
Venting	200	10	250	-	-	-	-	-	-	450
Flaring	59	0.11	3	0.00	0.03	-	-	-	-	62
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**18 900**	**2**	**45**	**0.76**	**226**	**4 700**	**12**	**180**	**-**	**24 100**
a. Mineral Products	**3 800**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3 800**
Cement Production	3 100	-	-	-	-	-	-	-	-	3 100
Lime Production	600	-	-	-	-	-	-	-	-	600
Mineral Products Use	86	-	-	-	-	-	-	-	-	86
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**9 310**	**0.09**	**2**	**-**	**-**	**-**	**-**	**122**	**-**	**9 430**
Iron and Steel Production	9 310	0.09	2	-	-	-	-	-	-	9 310
Aluminum Production	-	-	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	122	-	122
d. Production and Consumption of Halocarbons, SF_6 and NF_3[c]	**-**	**-**	**-**	**-**	**-**	**4 700**	**2**	**0.65**	**-**	**4 700**
e. Non-Energy Products from Fuels and Solvent Use	**5 800**	**-**	**-**	**0.10**	**-**	**-**	**-**	**-**	**-**	**5 800**
f. Other Product Manufacture and Use	**9**	**-**	**-**	**0.67**	**200**	**-**	**11**	**57**	**-**	**280**
AGRICULTURE	**200**	**170**	**4 300**	**18**	**5 400**	**-**	**-**	**-**	**-**	**9 900**
a. Enteric Fermentation	**-**	**130**	**3 300**	**-**	**-**	**-**	**-**	**-**	**-**	**3 300**
b. Manure Management	**-**	**39**	**970**	**3**	**900**	**-**	**-**	**-**	**-**	**1 900**
c. Agricultural Soils	**-**	**-**	**-**	**15**	**4 500**	**-**	**-**	**-**	**-**	**4 500**
Direct Sources	-	-	-	13	3 900	-	-	-	-	3 900
Indirect Sources	-	-	-	2	600	-	-	-	-	600
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	**200**	**160**	**4 000**	**1**	**400**	**-**	**-**	**-**	**-**	**4 600**
a. Solid Waste Disposal	**-**	**140**	**3 400**	**-**	**-**	**-**	**-**	**-**	**-**	**3 400**
b. Biological Treatment of Solid Waste	**-**	**5**	**100**	**0.30**	**80**	**-**	**-**	**-**	**-**	**200**
c. Wastewater Treatment and Discharge	**-**	**8**	**210**	**0.60**	**200**	**-**	**-**	**-**	**-**	**400**
d. Incineration and Open Burning of Waste	**200**	**0.02**	**0.50**	**0.40**	**100**	**-**	**-**	**-**	**-**	**300**
e. Industrial Wood Waste Landfills	**-**	**10**	**300**	**-**	**-**	**-**	**-**	**-**	**-**	**300**

Notes:
a. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
b. 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.
c. 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.
d. 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 (2018) 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 A11–14 GHG Emission Summary for Manitoba, Selected Years

Greenhouse Gas Categories	1990	2005	2013	2014	2015	2016	2017	2018
	kt CO_2 eq							
TOTAL	**18 300**	**20 100**	**20 900**	**20 900**	**20 600**	**20 900**	**20 800**	**21 800**
ENERGY	**12 500**	**12 300**	**12 800**	**13 100**	**12 600**	**12 800**	**12 500**	**13 400**
a. Stationary Combustion Sources	**4 980**	**4 590**	**4 250**	**4 250**	**4 080**	**4 070**	**3 560**	**3 710**
Public Electricity and Heat Production	519	358	120	127	124	69	69	41
Petroleum Refining Industries	-	-	-	-	-	-	-	-
Oil and Gas Extraction	1	0.46	0.46	0.31	0.00	-	-	-
Mining	79	96	107	91	78	59	97	120
Manufacturing Industries	1 180	1 470	1 220	1 190	1 400	1 500	1 490	1 520
Construction	63	86	123	111	104	122	113	125
Commercial and Institutional	1 400	1 420	1 390	1 450	1 300	1 260	607	632
Residential	1 690	1 130	1 240	1 250	1 040	1 040	1 140	1 220
Agriculture and Forestry	43	43	43	34	32	26	40	49
b. Transport[a]	**7 090**	**7 520**	**8 060**	**8 460**	**8 120**	**8 320**	**8 610**	**9 280**
Domestic Aviation	471	543	496	458	421	415	451	481
Road Transportation	3 260	4 180	5 440	5 560	5 250	5 540	5 660	6 010
Light-Duty Gasoline Vehicles	1 540	1 210	1 290	1 230	1 140	1 130	1 080	1 110
Light-Duty Gasoline Trucks	915	1 470	2 040	2 100	2 080	2 150	2 130	2 330
Heavy-Duty Gasoline Vehicles	318	443	544	500	487	497	487	520
Motorcycles	4	4	8	8	9	9	9	10
Light-Duty Diesel Vehicles	8	10	16	16	14	15	17	14
Light-Duty Diesel Trucks	6	15	10	11	11	13	15	15
Heavy-Duty Diesel Vehicles	443	1 020	1 540	1 690	1 500	1 720	1 930	2 010
Propane and Natural Gas Vehicles	31	7	0.20	0.09	0.07	0.05	0.08	0.09
Railways	605	299	570	656	704	660	803	881
Domestic Navigation	0.93	2	8	4	0.93	1	2	2
Other Transportation	2 750	2 490	1 550	1 780	1 740	1 710	1 690	1 900
Off-Road Agriculture & Forestry	1 060	1 310	939	971	890	908	919	938
Off-Road Commercial & Institutional	41	81	96	100	92	84	88	96
Off-Road Manufacturing, Mining & Construction	193	229	200	213	215	238	297	305
Off-Road Residential	6	45	46	51	51	51	51	57
Off-Road Other Transportation	604	222	156	177	185	182	182	205
Pipeline Transport	848	601	109	268	311	245	155	304
c. Fugitive Sources	**450**	**210**	**440**	**440**	**410**	**400**	**370**	**380**
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	450	210	440	440	410	400	370	380
Oil	6	65	120	120	110	100	91	98
Natural Gas	380	72	110	130	120	120	120	110
Venting	41	40	74	72	67	64	58	62
Flaring	29	31	130	130	120	110	99	110
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**484**	**700**	**914**	**864**	**918**	**909**	**918**	**1 020**
a. Mineral Products	**220**	**69**	**59**	**63**	**60**	**60**	**62**	**61**
Cement Production	150	-	-	-	-	-	-	-
Lime Production	61	59	54	58	54	54	58	57
Mineral Products Use	6	10	6	6	6	6	4	4
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
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[c]	**-**	**190**	**400**	**430**	**430**	**450**	**450**	**490**
e. Non-Energy Products from Fuels and Solvent Use	**250**	**420**	**450**	**360**	**410**	**390**	**390**	**440**
f. Other Product Manufacture and Use	**11**	**18**	**13**	**13**	**14**	**18**	**20**	**23**
AGRICULTURE	**4 700**	**6 300**	**6 500**	**6 100**	**6 300**	**6 500**	**6 600**	**6 700**
a. Enteric Fermentation	**1 900**	**3 200**	**2 400**	**2 400**	**2 300**	**2 300**	**2 400**	**2 400**
b. Manure Management	**410**	**780**	**690**	**690**	**710**	**720**	**740**	**740**
c. Agricultural Soils	**2 100**	**2 100**	**3 100**	**2 800**	**3 000**	**3 100**	**3 200**	**3 200**
Direct Sources	1 700	1 600	2 500	2 300	2 500	2 500	2 600	2 600
Indirect Sources	400	400	600	500	600	600	600	600
d. Field Burning of Agricultural Residues	**100**	**10**	**20**	**20**	**20**	**20**	**20**	**20**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**130**	**190**	**280**	**240**	**260**	**280**	**310**	**310**
WASTE	**610**	**810**	**790**	**760**	**770**	**700**	**710**	**720**
a. Solid Waste Disposal	**550**	**730**	**710**	**670**	**690**	**620**	**630**	**640**
b. Biological Treatment of Solid Waste	**0.50**	**2**	**6**	**8**	**9**	**9**	**9**	**9**
c. Wastewater Treatment and Discharge	**39**	**42**	**51**	**51**	**47**	**49**	**49**	**48**
d. Incineration and Open Burning of Waste	**0.40**	**0.40**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**
e. Industrial Wood Waste Landfills	**30**	**30**	**30**	**20**	**20**	**20**	**20**	**20**

Notes:

a. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

b. 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.

c. 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 (2018) 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 **2018 GHG Emission Summary for Manitoba**

Greenhouse Gas Categories	Greenhouse Gases									
	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[d]	PFCs[d]	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	**13 500**	**160**	**3 900**	**13**	**3 900**	**490**	**0.94**	**2**	**-**	**21 800**
ENERGY	**12 800**	**15**	**380**	**0.80**	**200**	**-**	**-**	**-**	**-**	**13 400**
a. Stationary Combustion Sources	**3 620**	**2**	**50**	**0.10**	**30**	**-**	**-**	**-**	**-**	**3 710**
Public Electricity and Heat Production	41	0.00	0.07	0.00	0.20	-	-	-	-	41
Petroleum Refining Industries	-	-	-	-	-	-	-	-	-	-
Oil and Gas Extraction	-	-	-	-	-	-	-	-	-	-
Mining	118	0.00	0.05	0.01	2	-	-	-	-	120
Manufacturing Industries	1 510	0.05	1	0.04	12	-	-	-	-	1 520
Construction	124	0.00	0.06	0.00	0.71	-	-	-	-	125
Commercial and Institutional	627	0.01	0.30	0.02	5	-	-	-	-	632
Residential	1 160	2	50	0.05	10	-	-	-	-	1 220
Agriculture and Forestry	48	0.00	0.02	0.00	0.90	-	-	-	-	49
b. Transport[a]	**9 030**	**2**	**42**	**0.70**	**210**	**-**	**-**	**-**	**-**	**9 280**
Domestic Aviation	477	0.01	0.40	0.01	4	-	-	-	-	481
Road Transportation	5 910	0.40	10	0.31	92	-	-	-	-	6 010
Light-Duty Gasoline Vehicles	1 100	0.10	3	0.05	15	-	-	-	-	1 110
Light-Duty Gasoline Trucks	2 300	0.20	6	0.10	29	-	-	-	-	2 330
Heavy-Duty Gasoline Vehicles	506	0.02	0.50	0.05	14	-	-	-	-	520
Motorcycles	9	0.00	0.09	0.00	0.06	-	-	-	-	10
Light-Duty Diesel Vehicles	14	0.00	0.01	0.00	0.35	-	-	-	-	14
Light-Duty Diesel Trucks	15	0.00	0.01	0.00	0.37	-	-	-	-	15
Heavy-Duty Diesel Vehicles	1 970	0.08	2	0.11	33	-	-	-	-	2 010
Propane and Natural Gas Vehicles	0.09	0.00	0.00	0.00	0.00	-	-	-	-	0.09
Railways	788	0.04	1	0.30	90	-	-	-	-	881
Domestic Navigation	2	0.00	0.00	0.00	0.02	-	-	-	-	2
Other Transportation	1 850	1	29	0.07	20	-	-	-	-	1 900
Off-Road Agriculture & Forestry	926	0.04	1	0.04	10	-	-	-	-	938
Off-Road Commercial & Institutional	92	0.14	4	0.00	0.90	-	-	-	-	96
Off-Road Manufacturing, Mining & Construction	299	0.06	2	0.02	5	-	-	-	-	305
Off-Road Residential	53	0.13	3	0.00	0.40	-	-	-	-	57
Off-Road Other Transportation	191	0.49	12	0.01	2	-	-	-	-	205
Pipeline Transport	294	0.30	7	0.01	2	-	-	-	-	304
c. Fugitive Sources	**99**	**11**	**280**	**0.00**	**0.10**	**-**	**-**	**-**	**-**	**380**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	99	11	280	0.00	0.10	-	-	-	-	380
Oil	0.24	4	98	-	-	-	-	-	-	98
Natural Gas	6	4	110	0.00	0.04	-	-	-	-	110
Venting	0.44	3	62	-	-	-	-	-	-	62
Flaring	93	0.59	15	0.00	0.05	-	-	-	-	110
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**452**	**-**	**-**	**0.24**	**71**	**490**	**0.94**	**2**	**-**	**1 020**
a. Mineral Products	**61**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**61**
Cement Production	-	-	-	-	-	-	-	-	-	-
Lime Production	57	-	-	-	-	-	-	-	-	57
Mineral Products Use	4	-	-	-	-	-	-	-	-	4
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
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[c]	**-**	**-**	**-**	**-**	**-**	**490**	**0.08**	**-**	**-**	**490**
e. Non-Energy Products from Fuels and Solvent Use	**x**	**-**	**-**	**x**	**x**	**-**	**-**	**-**	**-**	**440**
f. Other Product Manufacture and Use	**x**	**-**	**-**	**x**	**x**	**-**	**0.86**	**2**	**-**	**23**
AGRICULTURE	**310**	**110**	**2 800**	**12**	**3 500**	**-**	**-**	**-**	**-**	**6 700**
a. Enteric Fermentation	**-**	**95**	**2 400**	**-**	**-**	**-**	**-**	**-**	**-**	**2 400**
b. Manure Management	**-**	**18**	**450**	**1**	**300**	**-**	**-**	**-**	**-**	**740**
c. Agricultural Soils	**-**	**-**	**-**	**11**	**3 200**	**-**	**-**	**-**	**-**	**3 200**
Direct Sources	-	-	-	9	2 600	-	-	-	-	2 600
Indirect Sources	-	-	-	2	600	-	-	-	-	600
d. Field Burning of Agricultural Residues	**-**	**0.60**	**10**	**0.01**	**4**	**-**	**-**	**-**	**-**	**20**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**310**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**310**
WASTE	**0.05**	**28**	**690**	**0.07**	**20**	**-**	**-**	**-**	**-**	**720**
a. Solid Waste Disposal	**-**	**25**	**640**	**-**	**-**	**-**	**-**	**-**	**-**	**640**
b. Biological Treatment of Solid Waste	**-**	**0.20**	**5**	**0.01**	**4**	**-**	**-**	**-**	**-**	**9**
c. Wastewater Treatment and Discharge	**-**	**1**	**31**	**0.06**	**20**	**-**	**-**	**-**	**-**	**48**
d. Incineration and Open Burning of Waste	**0.05**	**0.00**	**0.00**	**0.00**	**0.00**	**-**	**-**	**-**	**-**	**0.05**
e. Industrial Wood Waste Landfills	**-**	**0.90**	**20**	**-**	**-**	**-**	**-**	**-**	**-**	**20**

Notes:
a. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
b. 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.
c. 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.
d. 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 (2018) 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	2013	2014	2015	2016	2017	2018
	kt CO_2 eq							
TOTAL	**44 500**	**68 100**	**72 200**	**75 000**	**77 200**	**74 500**	**76 700**	**76 400**
ENERGY	**35 800**	**54 000**	**57 200**	**61 000**	**62 900**	**59 900**	**62 000**	**61 700**
a. Stationary Combustion Sources	**20 000**	**27 400**	**27 800**	**29 400**	**30 500**	**29 700**	**30 700**	**30 400**
Public Electricity and Heat Production	11 100	15 300	15 100	15 200	16 100	16 000	16 600	16 100
Petroleum Refining Industries	630	780	1 200	1 200	1 300	1 300	1 300	1 200
Oil and Gas Extraction	2 950	6 080	5 140	6 040	6 520	5 940	5 840	5 880
Mining	974	1 280	1 800	1 930	1 920	1 810	2 000	1 980
Manufacturing Industries	790	534	752	970	851	804	864	792
Construction	70	42	36	39	67	39	45	43
Commercial and Institutional	985	1 510	1 120	1 130	1 110	1 300	1 470	1 620
Residential	2 140	1 630	1 870	1 870	1 720	1 680	1 820	1 970
Agriculture and Forestry	296	256	772	997	870	783	815	785
b. Transport[a]	**9 160**	**11 500**	**16 100**	**16 600**	**16 900**	**16 400**	**16 600**	**17 400**
Domestic Aviation	259	193	234	223	218	213	210	216
Road Transportation	3 780	5 170	8 680	8 660	9 060	9 110	9 320	9 400
Light-Duty Gasoline Vehicles	1 480	1 370	1 480	1 320	1 400	1 380	1 300	1 220
Light-Duty Gasoline Trucks	1 230	1 720	2 960	2 860	3 200	3 350	3 380	3 350
Heavy-Duty Gasoline Vehicles	628	777	1 150	898	971	1 000	1 000	976
Motorcycles	2	3	7	7	7	8	8	8
Light-Duty Diesel Vehicles	5	11	24	25	26	24	25	24
Light-Duty Diesel Trucks	8	39	31	33	37	36	39	40
Heavy-Duty Diesel Vehicles	386	1 250	3 030	3 520	3 420	3 310	3 580	3 790
Propane and Natural Gas Vehicles	37	5	0.28	0.16	0.14	0.27	0.50	0.51
Railways	584	410	695	718	802	781	1 120	1 280
Domestic Navigation	-	-	-	-	-	-	-	-
Other Transportation	4 540	5 730	6 530	6 990	6 790	6 300	5 960	6 490
Off-Road Agriculture & Forestry	2 130	3 240	3 690	3 830	3 870	3 770	4 070	4 450
Off-Road Commercial & Institutional	32	77	133	131	128	54	32	32
Off-Road Manufacturing, Mining & Construction	166	238	342	392	438	304	283	308
Off-Road Residential	4	35	48	50	51	59	62	60
Off-Road Other Transportation	612	243	253	268	292	294	300	289
Pipeline Transport	1 590	1 900	2 060	2 320	2 010	1 830	1 210	1 350
c. Fugitive Sources	**6 700**	**15 000**	**13 000**	**15 000**	**16 000**	**14 000**	**15 000**	**14 000**
Coal Mining	20	20	20	20	20	20	20	20
Oil and Natural Gas	6 700	15 000	13 000	15 000	16 000	14 000	15 000	14 000
Oil	660	1 300	1 000	1 100	1 000	980	1 000	1 000
Natural Gas	2 100	2 000	2 500	2 400	2 300	2 600	2 600	2 600
Venting	3 500	10 000	7 500	9 000	9 500	7 900	8 400	8 000
Flaring	390	1 500	2 200	2 500	2 700	2 400	2 700	2 100
d. CO_2 Transport and Storage	**-**	**0.09**	**0.09**	**0.10**	**0.20**	**0.20**	**0.20**	**0.20**
INDUSTRIAL PROCESSES AND PRODUCT USE	**354**	**846**	**1 190**	**876**	**870**	**854**	**802**	**795**
a. Mineral Products	**95**	**10**	**8**	**8**	**8**	**7**	**6**	**6**
Cement Production	87	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-
Mineral Products Use	8	10	8	8	8	7	6	6
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
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[c]	**-**	**180**	**370**	**400**	**410**	**410**	**430**	**470**
e. Non-Energy Products from Fuels and Solvent Use	**250**	**650**	**810**	**450**	**440**	**420**	**350**	**300**
f. Other Product Manufacture and Use	**8**	**13**	**12**	**12**	**13**	**15**	**18**	**19**
AGRICULTURE	**7 700**	**12 000**	**13 000**	**12 000**	**13 000**	**13 000**	**13 000**	**13 000**
a. Enteric Fermentation	**3 300**	**6 100**	**4 800**	**4 600**	**4 600**	**4 600**	**4 700**	**4 600**
b. Manure Management	**710**	**1 300**	**1 100**	**1 000**	**1 000**	**1 100**	**1 100**	**1 000**
c. Agricultural Soils	**3 500**	**4 500**	**6 400**	**5 800**	**6 100**	**6 400**	**6 400**	**6 600**
Direct Sources	3 000	3 700	5 200	4 700	5 000	5 200	5 200	5 300
Indirect Sources	500	900	1 000	1 000	1 000	1 000	1 000	1 000
d. Field Burning of Agricultural Residues	**70**	**30**	**30**	**30**	**40**	**30**	**30**	**30**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**190**	**450**	**910**	**850**	**950**	**940**	**1 000**	**1 000**
WASTE	**580**	**730**	**710**	**710**	**700**	**700**	**720**	**730**
a. Solid Waste Disposal	**440**	**580**	**550**	**550**	**560**	**560**	**580**	**590**
b. Biological Treatment of Solid Waste	**0.02**	**0.60**	**5**	**5**	**5**	**5**	**5**	**5**
c. Wastewater Treatment and Discharge	**39**	**39**	**44**	**43**	**37**	**34**	**33**	**33**
d. Incineration and Open Burning of Waste	**0.00**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**
e. Industrial Wood Waste Landfills	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Notes:

a. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

b. 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.

c. 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 (2018) 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 **2018 GHG Emission Summary for Saskatchewan**

Greenhouse Gas Categories	Greenhouse Gases									
	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[d]	PFCs[d]	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	**50 600**	**690**	**17 000**	**27**	**8 000**	**470**	**0.40**	**0.27**	**-**	**76 400**
ENERGY	**49 300**	**470**	**12 000**	**2**	**600**	**-**	**-**	**-**	**-**	**61 700**
a. Stationary Combustion Sources	**29 900**	**10**	**300**	**0.70**	**200**	**-**	**-**	**-**	**-**	**30 400**
Public Electricity and Heat Production	16 000	1	34	0.40	100	-	-	-	-	16 100
Petroleum Refining Industries	1 200	0.03	0.60	0.01	4	-	-	-	-	1 200
Oil and Gas Extraction	5 590	10	300	0.10	40	-	-	-	-	5 880
Mining	1 970	0.04	1	0.04	10	-	-	-	-	1 980
Manufacturing Industries	784	0.03	0.73	0.02	7	-	-	-	-	792
Construction	42	0.00	0.02	0.00	0.31	-	-	-	-	43
Commercial and Institutional	1 610	0.03	0.81	0.03	10	-	-	-	-	1 620
Residential	1 920	1	30	0.05	10	-	-	-	-	1 970
Agriculture and Forestry	780	0.01	0.40	0.02	5	-	-	-	-	785
b. Transport[a]	**17 000**	**3**	**81**	**1**	**350**	**-**	**-**	**-**	**-**	**17 400**
Domestic Aviation	214	0.02	0.40	0.01	2	-	-	-	-	216
Road Transportation	9 240	0.70	20	0.49	150	-	-	-	-	9 400
Light-Duty Gasoline Vehicles	1 200	0.10	3	0.06	17	-	-	-	-	1 220
Light-Duty Gasoline Trucks	3 300	0.30	8	0.13	40	-	-	-	-	3 350
Heavy-Duty Gasoline Vehicles	950	0.04	0.90	0.08	25	-	-	-	-	976
Motorcycles	8	0.00	0.08	0.00	0.05	-	-	-	-	8
Light-Duty Diesel Vehicles	23	0.00	0.01	0.00	0.57	-	-	-	-	24
Light-Duty Diesel Trucks	39	0.00	0.03	0.00	0.96	-	-	-	-	40
Heavy-Duty Diesel Vehicles	3 720	0.20	4	0.21	62	-	-	-	-	3 790
Propane and Natural Gas Vehicles	0.50	0.00	0.01	0.00	0.00	-	-	-	-	0.51
Railways	1 150	0.06	2	0.40	100	-	-	-	-	1 280
Domestic Navigation	-	-	-	-	-	-	-	-	-	-
Other Transportation	6 360	3	63	0.20	70	-	-	-	-	6 490
Off-Road Agriculture & Forestry	4 400	0.18	5	0.20	50	-	-	-	-	4 450
Off-Road Commercial & Institutional	31	0.06	2	0.00	0.30	-	-	-	-	32
Off-Road Manufacturing, Mining & Construction	302	0.04	0.93	0.02	5	-	-	-	-	308
Off-Road Residential	56	0.13	3	0.00	0.50	-	-	-	-	60
Off-Road Other Transportation	268	0.74	19	0.01	2	-	-	-	-	289
Pipeline Transport	1 310	1	34	0.04	10	-	-	-	-	1 350
c. Fugitive Sources	**2 400**	**450**	**11 000**	**0.26**	**77**	**-**	**-**	**-**	**-**	**14 000**
Coal Mining	-	0.70	20	-	-	-	-	-	-	20
Oil and Natural Gas	2 400	450	11 000	0.30	80	-	-	-	-	14 000
Oil	4	38	960	0.30	80	-	-	-	-	1 000
Natural Gas	50	100	2 600	-	-	-	-	-	-	2 600
Venting	430	300	7 600	-	-	-	-	-	-	8 000
Flaring	2 000	7	170	0.01	2	-	-	-	-	2 100
d. CO_2 Transport and Storage	**0.20**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.20**
INDUSTRIAL PROCESSES AND PRODUCT USE	**296**	**-**	**-**	**0.09**	**28**	**470**	**0.40**	**0.27**	**-**	**795**
a. Mineral Products	**6**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**6**
Cement Production	-	-	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-	-	-
Mineral Products Use	6	-	-	-	-	-	-	-	-	6
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
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[c]	**-**	**-**	**-**	**-**	**-**	**470**	**0.07**	**-**	**-**	**470**
e. Non-Energy Products from Fuels and Solvent Use	**x**	**-**	**-**	**x**	**x**	**-**	**-**	**-**	**-**	**300**
f. Other Product Manufacture and Use	**x**	**-**	**-**	**x**	**x**	**-**	**0.33**	**0.27**	**-**	**19**
AGRICULTURE	**1 000**	**200**	**4 900**	**25**	**7 300**	**-**	**-**	**-**	**-**	**13 000**
a. Enteric Fermentation	**-**	**180**	**4 600**	**-**	**-**	**-**	**-**	**-**	**-**	**4 600**
b. Manure Management	**-**	**12**	**310**	**2**	**700**	**-**	**-**	**-**	**-**	**1 000**
c. Agricultural Soils	**-**	**-**	**-**	**22**	**6 600**	**-**	**-**	**-**	**-**	**6 600**
Direct Sources	-	-	-	18	5 300	-	-	-	-	5 300
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	**1 000**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1 000**
WASTE	**0.02**	**28**	**710**	**0.06**	**20**	**-**	**-**	**-**	**-**	**730**
a. Solid Waste Disposal	**-**	**23**	**590**	**-**	**-**	**-**	**-**	**-**	**-**	**590**
b. Biological Treatment of Solid Waste	**-**	**0.10**	**3**	**0.01**	**2**	**-**	**-**	**-**	**-**	**5**
c. Wastewater Treatment and Discharge	**-**	**0.72**	**18**	**0.05**	**20**	**-**	**-**	**-**	**-**	**33**
d. Incineration and Open Burning of Waste	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**-**	**-**	**-**	**-**	**0.02**
e. Industrial Wood Waste Landfills	**-**	**4**	**100**	**-**	**-**	**-**	**-**	**-**	**-**	**100**

Notes:
a. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
b. 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.
c. 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.
d. 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 (2018) 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	2013	2014	2015	2016	2017	2018
	kt CO_2 eq							
TOTAL	**173 000**	**232 000**	**272 000**	**277 000**	**276 000**	**265 000**	**272 000**	**273 000**
ENERGY	**151 000**	**199 000**	**238 000**	**244 000**	**242 000**	**232 000**	**240 000**	**239 000**
a. Stationary Combustion Sources	**95 300**	**129 000**	**156 000**	**161 000**	**163 000**	**158 000**	**164 000**	**160 000**
Public Electricity and Heat Production	39 800	52 000	48 200	49 200	51 500	45 800	46 700	36 200
Petroleum Refining Industries	3 000	4 000	4 200	4 500	4 700	4 900	4 900	4 800
Oil and Gas Extraction	29 200	49 700	76 100	79 300	82 000	83 400	86 900	90 200
Mining	249	294	257	199	151	142	139	150
Manufacturing Industries	10 500	8 850	11 800	11 400	10 200	9 570	8 640	10 300
Construction	238	171	306	298	297	307	343	382
Commercial and Institutional	5 040	5 660	6 210	6 340	5 770	6 300	7 580	8 350
Residential	6 850	7 620	8 780	9 160	8 260	7 130	8 600	8 970
Agriculture and Forestry	477	240	339	347	346	358	390	385
b. Transport[a]	**22 300**	**34 000**	**42 800**	**44 000**	**41 800**	**40 000**	**42 500**	**45 000**
Domestic Aviation	1 130	1 350	1 550	1 510	1 480	1 400	1 430	1 570
Road Transportation	11 900	19 400	27 300	28 300	26 400	25 800	27 200	28 500
Light-Duty Gasoline Vehicles	4 200	3 680	3 320	3 370	3 040	3 120	3 090	3 080
Light-Duty Gasoline Trucks	3 400	5 140	6 550	7 020	6 910	7 380	7 610	7 950
Heavy-Duty Gasoline Vehicles	1 720	3 200	3 570	3 390	3 180	3 390	3 490	3 580
Motorcycles	13	28	41	44	44	47	48	50
Light-Duty Diesel Vehicles	21	51	97	100	90	77	82	82
Light-Duty Diesel Trucks	16	52	85	107	122	119	144	157
Heavy-Duty Diesel Vehicles	2 180	7 200	13 600	14 200	13 000	11 600	12 800	13 600
Propane and Natural Gas Vehicles	395	97	2	0.97	0.96	1	2	2
Railways	1 760	2 780	2 990	2 910	2 530	1 890	2 070	1 910
Domestic Navigation	-	-	-	-	-	-	-	-
Other Transportation	7 460	10 400	11 000	11 300	11 300	11 000	11 700	13 000
Off-Road Agriculture & Forestry	2 520	3 430	3 090	3 030	2 870	2 490	2 710	3 010
Off-Road Commercial & Institutional	165	295	349	392	363	237	204	215
Off-Road Manufacturing, Mining & Construction	1 520	2 610	4 690	4 750	4 710	4 010	4 390	4 870
Off-Road Residential	20	128	116	126	119	128	136	144
Off-Road Other Transportation	1 940	751	544	611	607	609	636	670
Pipeline Transport	1 300	3 210	2 190	2 360	2 660	3 500	3 640	4 120
c. Fugitive Sources	**34 000**	**37 000**	**39 000**	**40 000**	**37 000**	**34 000**	**33 000**	**34 000**
Coal Mining	400	300	300	200	300	300	200	200
Oil and Natural Gas	33 000	37 000	39 000	39 000	37 000	33 000	33 000	34 000
Oil	4 000	4 300	4 400	4 300	4 100	3 900	3 900	4 200
Natural Gas	8 500	9 700	8 500	8 500	8 000	7 900	7 800	7 800
Venting	17 000	21 000	22 000	23 000	22 000	19 000	19 000	19 000
Flaring	3 600	2 000	3 400	3 200	2 900	2 200	2 400	2 800
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**0.04**	**0.09**	**0.09**	**0.09**
INDUSTRIAL PROCESSES AND PRODUCT USE	**6 790**	**11 600**	**14 100**	**12 500**	**14 100**	**13 500**	**13 100**	**14 200**
a. Mineral Products	**1 100**	**1 500**	**1 200**	**1 200**	**1 200**	**1 200**	**1 300**	**1 300**
Cement Production	790	1 100	900	890	940	930	1 000	1 000
Lime Production	110	120	110	120	110	110	120	120
Mineral Products Use	190	250	140	140	160	160	150	150
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**1**	**0.68**	**0.65**	**-**
Iron and Steel Production	-	-	-	-	1	0.68	0.65	-
Aluminum Production	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[c]	**0.27**	**710**	**1 400**	**1 600**	**1 600**	**1 600**	**1 700**	**1 800**
e. Non-Energy Products from Fuels and Solvent Use	**5 700**	**9 400**	**11 000**	**9 700**	**11 000**	**11 000**	**10 000**	**11 000**
f. Other Product Manufacture and Use	**17**	**40**	**43**	**47**	**51**	**56**	**65**	**73**
AGRICULTURE	**14 000**	**19 000**	**18 000**	**18 000**	**18 000**	**18 000**	**17 000**	**18 000**
a. Enteric Fermentation	**7 800**	**12 000**	**9 500**	**9 400**	**9 400**	**9 500**	**9 400**	**9 300**
b. Manure Management	**1 500**	**2 400**	**2 000**	**2 000**	**2 000**	**2 000**	**2 000**	**2 000**
c. Agricultural Soils	**4 100**	**4 600**	**6 000**	**6 000**	**6 000**	**5 900**	**5 300**	**5 600**
Direct Sources	3 400	3 600	4 900	4 900	4 900	4 800	4 300	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**	**0.70**	**1**	**1**	**1**	**0.80**	**0.80**	**0.80**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**260**	**370**	**770**	**790**	**870**	**730**	**610**	**720**
WASTE	**1 200**	**1 700**	**1 800**	**1 900**	**1 900**	**1 900**	**1 900**	**2 000**
a. Solid Waste Disposal	**560**	**920**	**1 000**	**1 100**	**1 100**	**1 200**	**1 200**	**1 300**
b. Biological Treatment of Solid Waste	**-**	**40**	**40**	**40**	**40**	**40**	**40**	**40**
c. Wastewater Treatment and Discharge	**90**	**100**	**130**	**130**	**130**	**120**	**120**	**120**
d. Incineration and Open Burning of Waste	**10**	**30**	**50**	**40**	**50**	**50**	**40**	**40**
e. Industrial Wood Waste Landfills	**500**	**600**	**600**	**600**	**500**	**500**	**500**	**500**

Notes:

a. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

b. 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.

c. 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 (2018) 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 **2018 GHG Emission Summary for Alberta**

Greenhouse Gas Categories	Greenhouse Gases									
	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[d]	PFCs[d]	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	**223 000**	**1 500**	**38 000**	**33**	**9 900**	**1 800**	**3**	**3**	**-**	**273 000**
ENERGY	**211 000**	**1 000**	**26 000**	**6**	**2 000**	**-**	**-**	**-**	**-**	**239 000**
a. Stationary Combustion Sources	**157 000**	**80**	**2 000**	**3**	**900**	**-**	**-**	**-**	**-**	**160 000**
Public Electricity and Heat Production	35 900	3	72	0.70	200	-	-	-	-	36 200
Petroleum Refining Industries	4 800	0.09	2	0.02	5	-	-	-	-	4 800
Oil and Gas Extraction	88 000	70	2 000	2	500	-	-	-	-	90 200
Mining	149	0.00	0.08	0.00	0.80	-	-	-	-	150
Manufacturing Industries	10 200	0.44	11	0.30	90	-	-	-	-	10 300
Construction	378	0.01	0.17	0.01	4	-	-	-	-	382
Commercial and Institutional	8 290	0.16	4	0.20	50	-	-	-	-	8 350
Residential	8 770	5	100	0.20	70	-	-	-	-	8 970
Agriculture and Forestry	382	0.01	0.20	0.01	2	-	-	-	-	385
b. Transport[a]	**43 900**	**9**	**220**	**3**	**840**	**-**	**-**	**-**	**-**	**45 000**
Domestic Aviation	1 560	0.03	0.70	0.04	10	-	-	-	-	1 570
Road Transportation	28 000	2	40	2	450	-	-	-	-	28 500
Light-Duty Gasoline Vehicles	3 030	0.30	7	0.13	39	-	-	-	-	3 080
Light-Duty Gasoline Trucks	7 850	0.70	20	0.30	88	-	-	-	-	7 950
Heavy-Duty Gasoline Vehicles	3 480	0.10	3	0.31	92	-	-	-	-	3 580
Motorcycles	50	0.02	0.50	0.00	0.28	-	-	-	-	50
Light-Duty Diesel Vehicles	80	0.00	0.04	0.01	2	-	-	-	-	82
Light-Duty Diesel Trucks	153	0.00	0.10	0.01	4	-	-	-	-	157
Heavy-Duty Diesel Vehicles	13 300	0.60	10	0.76	230	-	-	-	-	13 600
Propane and Natural Gas Vehicles	2	0.00	0.02	0.00	0.01	-	-	-	-	2
Railways	1 710	0.10	2	0.70	200	-	-	-	-	1 910
Domestic Navigation	-	-	-	-	-	-	-	-	-	-
Other Transportation	12 700	7	170	0.60	200	-	-	-	-	13 000
Off-Road Agriculture & Forestry	2 970	0.14	4	0.10	40	-	-	-	-	3 010
Off-Road Commercial & Institutional	201	0.51	13	0.01	2	-	-	-	-	215
Off-Road Manufacturing, Mining & Construction	4 760	0.28	7	0.30	100	-	-	-	-	4 870
Off-Road Residential	136	0.28	7	0.00	1	-	-	-	-	144
Off-Road Other Transportation	624	2	41	0.02	5	-	-	-	-	670
Pipeline Transport	3 990	4	98	0.10	30	-	-	-	-	4 120
c. Fugitive Sources	**10 000**	**940**	**24 000**	**0.05**	**16**	**-**	**-**	**-**	**-**	**34 000**
Coal Mining	-	9	200	-	-	-	-	-	-	200
Oil and Natural Gas	10 000	930	23 000	0.05	20	-	-	-	-	34 000
Oil	560	140	3 600	0.04	10	-	-	-	-	4 200
Natural Gas	43	310	7 700	-	-	-	-	-	-	7 800
Venting	7 200	470	12 000	-	-	-	-	-	-	19 000
Flaring	2 600	9	230	0.02	5	-	-	-	-	2 800
d. CO_2 Transport and Storage	**0.09**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.09**
INDUSTRIAL PROCESSES AND PRODUCT USE	**11 200**	**4**	**100**	**4**	**1 080**	**1 800**	**3**	**3**	**-**	**14 200**
a. Mineral Products	**1 300**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1 300**
Cement Production	1 000	-	-	-	-	-	-	-	-	1 000
Lime Production	120	-	-	-	-	-	-	-	-	120
Mineral Products Use	150	-	-	-	-	-	-	-	-	150
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
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[c]	**-**	**-**	**-**	**-**	**-**	**1 800**	**0.47**	**0.13**	**-**	**1 800**
e. Non-Energy Products from Fuels and Solvent Use	**9 900**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**11 000**
f. Other Product Manufacture and Use	**8**	**-**	**-**	**0.20**	**60**	**-**	**3**	**2**	**-**	**73**
AGRICULTURE	**720**	**400**	**9 900**	**23**	**6 900**	**-**	**-**	**-**	**-**	**18 000**
a. Enteric Fermentation	**-**	**370**	**9 300**	**-**	**-**	**-**	**-**	**-**	**-**	**9 300**
b. Manure Management	**-**	**26**	**650**	**5**	**1 000**	**-**	**-**	**-**	**-**	**2 000**
c. Agricultural Soils	**-**	**-**	**-**	**19**	**5 600**	**-**	**-**	**-**	**-**	**5 600**
Direct Sources	-	-	-	15	4 600	-	-	-	-	4 600
Indirect Sources	-	-	-	3	1 000	-	-	-	-	1 000
d. Field Burning of Agricultural Residues	**-**	**0.02**	**0.60**	**0.00**	**0.20**	**-**	**-**	**-**	**-**	**0.80**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**720**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**720**
WASTE	**30**	**76**	**1 900**	**0.30**	**90**	**-**	**-**	**-**	**-**	**2 000**
a. Solid Waste Disposal	**-**	**52**	**1 300**	**-**	**-**	**-**	**-**	**-**	**-**	**1 300**
b. Biological Treatment of Solid Waste	**-**	**1**	**20**	**0.06**	**20**	**-**	**-**	**-**	**-**	**40**
c. Wastewater Treatment and Discharge	**-**	**3**	**61**	**0.20**	**60**	**-**	**-**	**-**	**-**	**120**
d. Incineration and Open Burning of Waste	**30**	**0.00**	**0.07**	**0.05**	**20**	**-**	**-**	**-**	**-**	**40**
e. Industrial Wood Waste Landfills	**-**	**20**	**500**	**-**	**-**	**-**	**-**	**-**	**-**	**500**

Notes:
a. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
b. 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.
c. 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.
d. 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 (2018) 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	2013	2014	2015	2016	2017	2018
	kt CO_2 eq							
TOTAL	**51 600**	**62 000**	**60 300**	**60 200**	**59 300**	**61 800**	**63 300**	**65 500**
ENERGY	**42 000**	**50 500**	**50 400**	**50 500**	**49 600**	**51 800**	**53 400**	**55 400**
a. Stationary Combustion Sources	**19 500**	**21 900**	**21 400**	**21 500**	**19 900**	**21 100**	**21 900**	**22 400**
Public Electricity and Heat Production	804	1 340	596	578	503	677	574	689
Petroleum Refining Industries	1 200	500	520	570	590	690	550	410
Oil and Gas Extraction	2 140	5 390	8 160	8 230	7 070	7 440	7 610	8 270
Mining	616	386	588	561	456	490	486	521
Manufacturing Industries	6 490	6 190	4 100	4 400	4 420	4 670	4 850	4 900
Construction	307	114	68	66	71	95	95	104
Commercial and Institutional	2 960	3 180	2 740	2 650	2 420	2 450	2 820	2 720
Residential	4 590	4 680	4 270	4 090	3 950	3 990	4 410	4 140
Agriculture and Forestry	323	75	385	382	413	563	560	602
b. Transport[a]	**18 500**	**23 300**	**23 600**	**23 800**	**24 900**	**26 300**	**27 200**	**28 700**
Domestic Aviation	1 340	1 580	1 340	1 300	1 310	1 330	1 430	1 550
Road Transportation	9 600	15 500	16 300	16 300	16 800	18 000	18 200	19 200
Light-Duty Gasoline Vehicles	3 900	4 450	3 690	3 680	3 800	4 110	4 030	3 970
Light-Duty Gasoline Trucks	2 110	3 910	4 200	4 380	4 680	5 260	5 370	5 540
Heavy-Duty Gasoline Vehicles	950	1 860	1 800	1 750	1 740	1 960	1 990	2 050
Motorcycles	15	21	24	25	27	30	30	30
Light-Duty Diesel Vehicles	44	93	128	121	131	128	127	131
Light-Duty Diesel Trucks	17	45	76	86	107	119	135	157
Heavy-Duty Diesel Vehicles	1 940	4 890	6 390	6 270	6 300	6 350	6 520	7 270
Propane and Natural Gas Vehicles	624	214	14	7	6	6	7	7
Railways	1 430	430	534	664	665	789	1 100	1 000
Domestic Navigation	838	1 100	1 420	1 540	1 660	1 670	1 680	1 700
Other Transportation	5 240	4 710	3 990	3 960	4 500	4 540	4 800	5 290
Off-Road Agriculture & Forestry	707	873	618	588	656	576	660	791
Off-Road Commercial & Institutional	243	330	361	356	359	301	284	316
Off-Road Manufacturing, Mining & Construction	1 350	1 460	1 330	1 260	1 410	1 440	1 650	2 040
Off-Road Residential	35	183	154	165	169	145	140	147
Off-Road Other Transportation	2 050	867	514	561	608	634	647	682
Pipeline Transport	862	998	1 020	1 040	1 300	1 440	1 410	1 320
c. Fugitive Sources	**4 100**	**5 400**	**5 300**	**5 100**	**4 800**	**4 400**	**4 300**	**4 300**
Coal Mining	800	1 000	1 000	1 000	900	1 000	900	1 000
Oil and Natural Gas	3 300	4 400	4 200	4 100	4 000	3 500	3 400	3 300
Oil	190	85	42	46	45	50	46	45
Natural Gas	870	880	820	760	770	770	780	820
Venting	1 900	2 700	2 800	2 600	2 600	2 100	2 000	1 900
Flaring	360	690	540	670	590	510	570	570
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**3 310**	**4 630**	**3 920**	**3 880**	**3 660**	**4 080**	**3 940**	**4 160**
a. Mineral Products	**870**	**1 500**	**1 200**	**1 200**	**1 200**	**1 200**	**1 100**	**1 100**
Cement Production	650	1 300	980	970	1 000	1 000	1 000	1 000
Lime Production	170	190	170	180	170	120	67	65
Mineral Products Use	53	51	20	23	25	23	21	20
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**1 670**	**1 220**	**759**	**547**	**477**	**867**	**794**	**772**
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminum Production	1 670	1 220	758	546	476	867	793	771
SF_6 Used in Magnesium Smelters and Casters	-	1	0.54	0.63	0.60	0.73	0.76	0.74
d. Production and Consumption of Halocarbons, SF_6 and NF_3[c]	**-**	**620**	**1 200**	**1 400**	**1 400**	**1 500**	**1 500**	**1 600**
e. Non-Energy Products from Fuels and Solvent Use	**690**	**1 200**	**670**	**710**	**470**	**540**	**460**	**530**
f. Other Product Manufacture and Use	**77**	**97**	**85**	**72**	**70**	**71**	**88**	**88**
AGRICULTURE	**2 200**	**2 700**	**2 300**	**2 200**	**2 300**	**2 400**	**2 400**	**2 500**
a. Enteric Fermentation	**1 400**	**1 800**	**1 300**	**1 300**	**1 400**	**1 400**	**1 400**	**1 500**
b. Manure Management	**310**	**440**	**390**	**390**	**400**	**400**	**410**	**420**
c. Agricultural Soils	**510**	**500**	**540**	**470**	**490**	**520**	**510**	**550**
Direct Sources	410	380	430	380	390	410	400	440
Indirect Sources	100	100	100	100	100	100	100	100
d. Field Burning of Agricultural Residues	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**25**	**24**	**26**	**21**	**23**	**26**	**28**	**33**
WASTE	**4 100**	**4 200**	**3 700**	**3 700**	**3 700**	**3 600**	**3 600**	**3 500**
a. Solid Waste Disposal	**1 800**	**1 600**	**1 400**	**1 400**	**1 400**	**1 300**	**1 400**	**1 300**
b. Biological Treatment of Solid Waste	**-**	**50**	**80**	**90**	**90**	**100**	**100**	**100**
c. Wastewater Treatment and Discharge	**110**	**140**	**140**	**150**	**150**	**150**	**160**	**160**
d. Incineration and Open Burning of Waste	**20**	**-**	**-**	**-**	**-**	**0.50**	**2**	**2**
e. Industrial Wood Waste Landfills	**2 000**	**2 000**	**2 000**	**2 000**	**2 000**	**2 000**	**2 000**	**2 000**

Notes:

a. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

b. 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.

c. 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 (2018) 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 A11–21 **2018 GHG Emission Summary for British Columbia**

Greenhouse Gas Categories	Greenhouse Gases									
	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[d]	PFCs[d]	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	**53 100**	**350**	**8 800**	**6**	**1 900**	**1 600**	**21**	**12**	**-**	**65 500**
ENERGY	**50 700**	**150**	**3 800**	**3**	**900**	**-**	**-**	**-**	**-**	**55 400**
a. Stationary Combustion Sources	**21 400**	**30**	**700**	**0.90**	**300**	**-**	**-**	**-**	**-**	**22 400**
Public Electricity and Heat Production	673	0.19	5	0.04	10	-	-	-	-	689
Petroleum Refining Industries	410	0.01	0.20	0.00	0.70	-	-	-	-	410
Oil and Gas Extraction	7 760	20	400	0.20	60	-	-	-	-	8 270
Mining	517	0.01	0.20	0.01	3	-	-	-	-	521
Manufacturing Industries	4 760	0.77	19	0.41	120	-	-	-	-	4 900
Construction	103	0.00	0.05	0.00	0.65	-	-	-	-	104
Commercial and Institutional	2 700	0.05	1	0.07	20	-	-	-	-	2 720
Residential	3 840	10	200	0.20	60	-	-	-	-	4 140
Agriculture and Forestry	598	0.01	0.30	0.01	3	-	-	-	-	602
b. Transport[a]	**27 900**	**5**	**130**	**2**	**640**	**-**	**-**	**-**	**-**	**28 700**
Domestic Aviation	1 530	0.05	1	0.04	10	-	-	-	-	1 550
Road Transportation	18 700	1	30	2	440	-	-	-	-	19 200
Light-Duty Gasoline Vehicles	3 870	0.30	8	0.31	94	-	-	-	-	3 970
Light-Duty Gasoline Trucks	5 360	0.40	10	0.57	170	-	-	-	-	5 540
Heavy-Duty Gasoline Vehicles	2 000	0.09	2	0.17	50	-	-	-	-	2 050
Motorcycles	30	0.01	0.30	0.00	0.17	-	-	-	-	30
Light-Duty Diesel Vehicles	127	0.00	0.06	0.01	3	-	-	-	-	131
Light-Duty Diesel Trucks	153	0.00	0.10	0.01	4	-	-	-	-	157
Heavy-Duty Diesel Vehicles	7 140	0.30	8	0.41	120	-	-	-	-	7 270
Propane and Natural Gas Vehicles	7	0.00	0.07	0.00	0.04	-	-	-	-	7
Railways	897	0.05	1	0.40	100	-	-	-	-	1 000
Domestic Navigation	1 680	0.16	4	0.05	10	-	-	-	-	1 700
Other Transportation	5 130	4	96	0.20	70	-	-	-	-	5 290
Off-Road Agriculture & Forestry	776	0.05	1	0.05	10	-	-	-	-	791
Off-Road Commercial & Institutional	302	0.46	12	0.01	3	-	-	-	-	316
Off-Road Manufacturing, Mining & Construction	2 000	0.29	7	0.10	30	-	-	-	-	2 040
Off-Road Residential	138	0.30	8	0.00	1	-	-	-	-	147
Off-Road Other Transportation	639	2	37	0.02	6	-	-	-	-	682
Pipeline Transport	1 280	1	31	0.03	10	-	-	-	-	1 320
c. Fugitive Sources	**1 400**	**120**	**2 900**	**0.00**	**1**	**-**	**-**	**-**	**-**	**4 300**
Coal Mining	-	40	1 000	-	-	-	-	-	-	1 000
Oil and Natural Gas	1 400	77	1 900	0.00	1	-	-	-	-	3 300
Oil	0.21	2	43	0.00	0.90	-	-	-	-	45
Natural Gas	6	32	810	-	-	-	-	-	-	820
Venting	890	40	1 000	-	-	-	-	-	-	1 900
Flaring	500	3	70	0.00	0.30	-	-	-	-	570
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**2 410**	**-**	**-**	**0.23**	**70**	**1 600**	**21**	**12**	**-**	**4 160**
a. Mineral Products	**1 100**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1 100**
Cement Production	1 000	-	-	-	-	-	-	-	-	1 000
Lime Production	65	-	-	-	-	-	-	-	-	65
Mineral Products Use	20	-	-	-	-	-	-	-	-	20
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**753**	**-**	**-**	**-**	**-**	**-**	**18**	**0.74**	**-**	**772**
Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
Aluminum Production	753	-	-	-	-	-	18	-	-	771
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	0.74	-	0.74
d. Production and Consumption of Halocarbons, SF_6 and NF_3[c]	**-**	**-**	**-**	**-**	**-**	**1 600**	**0.28**	**-**	**-**	**1 600**
e. Non-Energy Products from Fuels and Solvent Use	**530**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**530**
f. Other Product Manufacture and Use	**5**	**-**	**-**	**0.23**	**70**	**-**	**2**	**12**	**-**	**88**
AGRICULTURE	**33**	**66**	**1 700**	**3**	**790**	**-**	**-**	**-**	**-**	**2 500**
a. Enteric Fermentation	**-**	**59**	**1 500**	**-**	**-**	**-**	**-**	**-**	**-**	**1 500**
b. Manure Management	**-**	**7**	**180**	**0.80**	**200**	**-**	**-**	**-**	**-**	**420**
c. Agricultural Soils	**-**	**-**	**-**	**2**	**550**	**-**	**-**	**-**	**-**	**550**
Direct Sources	-	-	-	2	440	-	-	-	-	440
Indirect Sources	-	-	-	0.40	100	-	-	-	-	100
d. Field Burning of Agricultural Residues	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**33**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**33**
WASTE	**-**	**140**	**3 400**	**0.40**	**100**	**-**	**-**	**-**	**-**	**3 500**
a. Solid Waste Disposal	**-**	**54**	**1 300**	**-**	**-**	**-**	**-**	**-**	**-**	**1 300**
b. Biological Treatment of Solid Waste	**-**	**2**	**60**	**0.10**	**40**	**-**	**-**	**-**	**-**	**100**
c. Wastewater Treatment and Discharge	**-**	**4**	**93**	**0.20**	**70**	**-**	**-**	**-**	**-**	**160**
d. Incineration and Open Burning of Waste	**-**	**0.00**	**0.00**	**0.01**	**2**	**-**	**-**	**-**	**-**	**2**
e. Industrial Wood Waste Landfills	**-**	**80**	**2 000**	**-**	**-**	**-**	**-**	**-**	**-**	**2 000**

Notes:
a. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
b. 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.
c. 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.
d. 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 (2018) 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	2013	2014	2015	2016	2017	2018
	kt CO_2 eq							
TOTAL	**534**	**545**	**579**	**474**	**500**	**502**	**539**	**619**
ENERGY	**527**	**531**	**555**	**449**	**475**	**476**	**510**	**587**
a. Stationary Combustion Sources	**218**	**193**	**118**	**67**	**68**	**66**	**68**	**85**
Public Electricity and Heat Production	90	22	17	16	18	19	24	33
Petroleum Refining Industries	-	-	-	-	-	-	-	-
Oil and Gas Extraction	0.31	67	-	-	-	-	-	-
Mining	8	8	5	4	4	4	x	x
Manufacturing Industries	6	-	15	14	14	15	16	16
Construction	4	2	2	1	0.62	1.00	x	x
Commercial and Institutional	77	41	57	25	25	22	17	23
Residential	31	45	23	7	5	5	6	6
Agriculture and Forestry	1	8	-	-	-	-	-	0.83
b. Transport[a]	**309**	**328**	**437**	**382**	**407**	**410**	**442**	**502**
Domestic Aviation	34	35	46	39	35	38	42	46
Road Transportation	220	256	357	314	343	346	375	424
Light-Duty Gasoline Vehicles	73	36	31	30	31	35	34	38
Light-Duty Gasoline Trucks	32	80	77	78	81	91	92	103
Heavy-Duty Gasoline Vehicles	15	25	32	33	37	43	45	54
Motorcycles	0.26	0.24	0.40	0.42	0.41	0.42	0.38	0.40
Light-Duty Diesel Vehicles	2	0.92	1	1	1	0.99	1	1
Light-Duty Diesel Trucks	0.28	7	8	6	6	5	6	6
Heavy-Duty Diesel Vehicles	96	107	208	165	186	171	197	222
Propane and Natural Gas Vehicles	1	-	-	-	-	-	-	-
Railways	-	-	-	-	-	-	-	-
Domestic Navigation	3	6	9	6	3	3	3	3
Other Transportation	52	31	26	23	26	23	23	28
Off-Road Agriculture & Forestry	0.48	0.31	0.25	0.20	0.25	1	0.28	0.34
Off-Road Commercial & Institutional	3	3	3	3	3	1	0.70	0.87
Off-Road Manufacturing, Mining & Construction	28	18	16	13	15	13	13	16
Off-Road Residential	0.69	x	x	x	x	x	x	x
Off-Road Other Transportation	20	8	5	6	7	7	7	9
Pipeline Transport	-	x	x	x	x	x	x	x
c. Fugitive Sources	**0.02**	**10**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	0.02	10	0.03	0.03	0.03	0.03	0.03	0.03
Oil	-	-	-	-	-	-	-	-
Natural Gas	0.02	2	0.03	0.03	0.03	0.03	0.03	0.03
Venting	-	6	-	-	-	-	-	-
Flaring	-	1	-	-	-	-	-	-
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**2**	**8**	**15**	**16**	**16**	**17**	**19**	**22**
a. Mineral Products	**0.11**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Cement Production	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-
Mineral Products Use	0.11	-	-	-	-	-	-	-
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
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[c]	**-**	**7**	**14**	**14**	**15**	**16**	**18**	**20**
e. Non-Energy Products from Fuels and Solvent Use	**2**	**0.48**	**0.72**	**0.99**	**0.28**	**0.06**	**0.06**	**0.09**
f. Other Product Manufacture and Use	**0.17**	**0.37**	**0.39**	**0.41**	**0.46**	**0.64**	**1**	**1**
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**	**6**	**9**	**9**	**9**	**10**	**10**	**10**
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**	**0.50**	**0.50**	**0.40**	**0.40**
c. Wastewater Treatment and Discharge	**4**	**4**	**5**	**5**	**5**	**5**	**5**	**5**
d. Incineration and Open Burning of Waste	**-**	**0.02**	**-**	**-**	**-**	**-**	**-**	**-**
e. Industrial Wood Waste Landfills	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Notes:

a. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

b. 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.

c. 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 (2018) 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 **2018 GHG Emission Summary for Yukon**

Greenhouse Gas Categories	Greenhouse Gases									
	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[d]	PFCs[d]	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	**578**	**0.43**	**11**	**0.03**	**9**	**20**	**0.00**	**0.68**	**-**	**619**
ENERGY	**577**	**0.06**	**1**	**0.03**	**8**	**-**	**-**	**-**	**-**	**587**
a. Stationary Combustion Sources	**84**	**0.00**	**0.10**	**0.00**	**0.70**	**-**	**-**	**-**	**-**	**85**
Public Electricity and Heat Production	33	0.00	0.09	0.00	0.10	-	-	-	-	33
Petroleum Refining Industries	-	-	-	-	-	-	-	-	-	-
Oil and Gas Extraction	-	-	-	-	-	-	-	-	-	-
Mining	x	x	x	x	x	x	x	x	x	x
Manufacturing Industries	16	0.00	0.00	0.00	0.06	-	-	-	-	16
Construction	x	x	x	x	x	x	x	x	x	x
Commercial and Institutional	23	0.00	0.01	0.00	0.30	-	-	-	-	23
Residential	6	0.00	0.00	0.00	0.10	-	-	-	-	6
Agriculture and Forestry	0.83	0.00	0.00	0.00	0.00	-	-	-	-	0.83
b. Transport[a]	**493**	**0.05**	**1**	**0.02**	**7**	**-**	**-**	**-**	**-**	**502**
Domestic Aviation	46	0.00	0.07	0.00	0.40	-	-	-	-	46
Road Transportation	417	0.02	0.50	0.02	6	-	-	-	-	424
Light-Duty Gasoline Vehicles	37	0.00	0.07	0.00	0.36	-	-	-	-	38
Light-Duty Gasoline Trucks	102	0.01	0.20	0.00	0.96	-	-	-	-	103
Heavy-Duty Gasoline Vehicles	52	0.00	0.04	0.00	1	-	-	-	-	54
Motorcycles	0.39	0.00	0.00	0.00	0.00	-	-	-	-	0.40
Light-Duty Diesel Vehicles	1	0.00	0.00	0.00	0.03	-	-	-	-	1
Light-Duty Diesel Trucks	6	0.00	0.00	0.00	0.14	-	-	-	-	6
Heavy-Duty Diesel Vehicles	218	0.01	0.20	0.01	4	-	-	-	-	222
Propane and Natural Gas Vehicles	-	-	-	-	-	-	-	-	-	-
Railways	-	-	-	-	-	-	-	-	-	-
Domestic Navigation	3	0.00	0.01	0.00	0.02	-	-	-	-	3
Other Transportation	27	0.03	0.70	0.00	0.30	-	-	-	-	28
Off-Road Agriculture & Forestry	0.33	0.00	0.00	0.00	0.01	-	-	-	-	0.34
Off-Road Commercial & Institutional	0.83	0.00	0.03	0.00	0.01	-	-	-	-	0.87
Off-Road Manufacturing, Mining & Construction	16	0.00	0.05	0.00	0.20	-	-	-	-	16
Off-Road Residential	x	x	x	x	x	x	x	x	x	x
Off-Road Other Transportation	9	0.02	0.52	0.00	0.07	-	-	-	-	9
Pipeline Transport	x	x	x	x	x	x	x	x	x	x
c. Fugitive Sources	**-**	**0.00**	**0.03**	**-**	**-**	**-**	**-**	**-**	**-**	**0.03**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	-	0.00	0.03	-	-	-	-	-	-	0.03
Oil	-	-	-	-	-	-	-	-	-	-
Natural Gas	-	0.00	0.03	-	-	-	-	-	-	0.03
Venting	-	-	-	-	-	-	-	-	-	-
Flaring	-	-	-	-	-	-	-	-	-	-
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**0.23**	**-**	**-**	**0.00**	**0.57**	**20**	**0.00**	**0.68**	**-**	**22**
a. Mineral Products	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Cement Production	-	-	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-	-	-
Mineral Products Use	-	-	-	-	-	-	-	-	-	-
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
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[c]	**-**	**-**	**-**	**-**	**-**	**20**	**0.00**	**-**	**-**	**20**
e. Non-Energy Products from Fuels and Solvent Use	**0.09**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.09**
f. Other Product Manufacture and Use	**0.13**	**-**	**-**	**0.00**	**0.57**	**-**	**-**	**0.68**	**-**	**1**
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	**-**	**0.37**	**9**	**0.00**	**0.70**	**-**	**-**	**-**	**-**	**10**
a. Solid Waste Disposal	**-**	**0.17**	**4**	**-**	**-**	**-**	**-**	**-**	**-**	**4**
b. Biological Treatment of Solid Waste	**-**	**0.01**	**0.20**	**0.00**	**0.20**	**-**	**-**	**-**	**-**	**0.40**
c. Wastewater Treatment and Discharge	**-**	**0.19**	**5**	**0.00**	**0.50**	**-**	**-**	**-**	**-**	**5**
d. Incineration and Open Burning of Waste	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Industrial Wood Waste Landfills	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Notes:
a. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
b. 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.
c. 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.
d. 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 (2018) 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	1999	2005	2013	2014	2015	2016	2017	2018
	kt CO_2 eq							
TOTAL	**1 220**	**1 590**	**1 330**	**1 500**	**1 690**	**1 590**	**1 280**	**1 230**
ENERGY	**1 210**	**1 560**	**1 300**	**1 460**	**1 660**	**1 550**	**1 240**	**1 190**
a. Stationary Combustion Sources	**598**	**720**	**561**	**580**	**612**	**563**	**385**	**451**
Public Electricity and Heat Production	88	x	x	x	x	x	x	x
Petroleum Refining Industries	-	-	-	-	-	-	-	-
Oil and Gas Extraction	128	214	2	2	1	5	13	11
Mining	104	164	219	210	205	220	198	201
Manufacturing Industries	-	x	x	x	x	x	x	x
Construction	0.83	1	x	x	x	x	x	x
Commercial and Institutional	192	141	187	181	190	200	62	115
Residential	85	102	89	104	97	67	49	57
Agriculture and Forestry	0.02	2	-	-	-	-	-	-
b. Transport[a]	**594**	**819**	**716**	**864**	**1 030**	**971**	**853**	**734**
Domestic Aviation	125	170	131	112	114	108	109	122
Road Transportation	277	473	422	551	670	672	586	499
Light-Duty Gasoline Vehicles	41	12	11	15	14	16	15	15
Light-Duty Gasoline Trucks	26	41	52	68	69	77	74	78
Heavy-Duty Gasoline Vehicles	16	9	14	18	20	24	24	25
Motorcycles	0.16	0.12	0.23	0.30	0.29	0.30	0.26	0.26
Light-Duty Diesel Vehicles	3	2	2	2	2	3	2	2
Light-Duty Diesel Trucks	0.74	19	10	13	16	16	13	11
Heavy-Duty Diesel Vehicles	191	390	333	435	548	538	457	369
Propane and Natural Gas Vehicles	0.80	-	-	-	-	-	-	-
Railways	3	6	11	18	16	14	14	14
Domestic Navigation	19	29	44	32	20	20	20	21
Other Transportation	170	141	108	150	210	157	125	80
Off-Road Agriculture & Forestry	0.65	0.58	0.34	0.44	0.64	0.57	0.61	0.37
Off-Road Commercial & Institutional	11	9	7	9	12	2	0.76	0.61
Off-Road Manufacturing, Mining & Construction	130	116	89	126	180	137	107	65
Off-Road Residential	2	2	x	3	3	3	2	2
Off-Road Other Transportation	21	10	8	12	14	15	14	11
Pipeline Transport	4	3	x	1	0.77	0.27	0.27	0.27
c. Fugitive Sources	**15**	**18**	**20**	**19**	**15**	**16**	**5**	**6**
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	15	18	20	19	15	16	5	6
Oil	4	4	2	2	2	2	0.27	0.54
Natural Gas	5	5	5	5	4	5	3	4
Venting	2	2	0.90	0.86	0.74	0.69	0.03	0.13
Flaring	4	7	12	12	8	8	0.83	1
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**9**	**20**	**24**	**28**	**27**	**27**	**27**	**29**
a. Mineral Products	**0.01**	**0.16**	**0.04**	**0.05**	**0.05**	**0.04**	**0.02**	**0.02**
Cement Production	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-
Mineral Products Use	0.01	0.16	0.04	0.05	0.05	0.04	0.02	0.02
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
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[c]	**5**	**12**	**19**	**21**	**21**	**21**	**23**	**26**
e. Non-Energy Products from Fuels and Solvent Use	**4**	**7**	**5**	**7**	**5**	**4**	**2**	**1**
f. Other Product Manufacture and Use	**0.52**	**0.51**	**0.49**	**0.58**	**0.71**	**0.81**	**0.86**	**0.84**
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**	**10**	**10**	**10**	**10**	**11**	**11**
a. Solid Waste Disposal	**6**	**7**	**7**	**8**	**8**	**8**	**8**	**8**
b. Biological Treatment of Solid Waste	**-**	**-**	**0.02**	**0.03**	**0.06**	**0.08**	**0.10**	**0.10**
c. Wastewater Treatment and Discharge	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**
d. Incineration and Open Burning of Waste	**0.20**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**
e. Industrial Wood Waste Landfills	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Notes:

a. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

b. 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.

c. 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 (2018) 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 **2018 GHG Emission Summary for Northwest Territories**

Greenhouse Gas Categories	Greenhouse Gases									
	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[d]	PFCs[d]	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	**1 170**	**0.67**	**17**	**0.05**	**15**	**26**	**0.01**	**-**	**-**	**1 230**
ENERGY	**1 170**	**0.26**	**7**	**0.05**	**10**	**-**	**-**	**-**	**-**	**1 190**
a. Stationary Combustion Sources	**448**	**0.04**	**0.90**	**0.01**	**2**	**-**	**-**	**-**	**-**	**451**
Public Electricity and Heat Production	x	x	x	x	x	x	x	x	x	x
Petroleum Refining Industries	-	-	-	-	-	-	-	-	-	-
Oil and Gas Extraction	10	0.03	0.60	0.00	0.07	-	-	-	-	11
Mining	200	0.01	0.10	0.00	0.80	-	-	-	-	201
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	114	0.00	0.05	0.00	0.80	-	-	-	-	115
Residential	57	0.00	0.02	0.00	0.30	-	-	-	-	57
Agriculture and Forestry	-	-	-	-	-	-	-	-	-	-
b. Transport[a]	**721**	**0.06**	**1**	**0.04**	**12**	**-**	**-**	**-**	**-**	**734**
Domestic Aviation	121	0.01	0.20	0.00	1	-	-	-	-	122
Road Transportation	491	0.02	0.60	0.03	8	-	-	-	-	499
Light-Duty Gasoline Vehicles	14	0.00	0.03	0.00	0.14	-	-	-	-	15
Light-Duty Gasoline Trucks	77	0.01	0.20	0.00	0.72	-	-	-	-	78
Heavy-Duty Gasoline Vehicles	25	0.00	0.02	0.00	0.63	-	-	-	-	25
Motorcycles	0.25	0.00	0.00	0.00	0.00	-	-	-	-	0.26
Light-Duty Diesel Vehicles	2	0.00	0.00	0.00	0.05	-	-	-	-	2
Light-Duty Diesel Trucks	11	0.00	0.01	0.00	0.26	-	-	-	-	11
Heavy-Duty Diesel Vehicles	362	0.01	0.40	0.02	6	-	-	-	-	369
Propane and Natural Gas Vehicles	-	-	-	-	-	-	-	-	-	-
Railways	12	0.00	0.02	0.01	1	-	-	-	-	14
Domestic Navigation	20	0.00	0.05	0.00	0.20	-	-	-	-	21
Other Transportation	78	0.02	0.59	0.00	1	-	-	-	-	80
Off-Road Agriculture & Forestry	0.36	0.00	0.00	0.00	0.01	-	-	-	-	0.37
Off-Road Commercial & Institutional	0.58	0.00	0.02	0.00	0.01	-	-	-	-	0.61
Off-Road Manufacturing, Mining & Construction	64	0.00	0.08	0.00	1	-	-	-	-	65
Off-Road Residential	2	0.00	0.07	0.00	0.02	-	-	-	-	2
Off-Road Other Transportation	11	0.02	0.42	0.00	0.10	-	-	-	-	11
Pipeline Transport	0.27	0.00	0.00	0.00	0.00	-	-	-	-	0.27
c. Fugitive Sources	**1**	**0.17**	**4**	**0.00**	**0.00**	**-**	**-**	**-**	**-**	**6**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	1	0.17	4	0.00	0.00	-	-	-	-	6
Oil	0.00	0.02	0.54	-	-	-	-	-	-	0.54
Natural Gas	0.00	0.14	4	-	-	-	-	-	-	4
Venting	0.00	0.01	0.13	-	-	-	-	-	-	0.13
Flaring	1	0.00	0.06	0.00	0.00	-	-	-	-	1
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**2**	**-**	**-**	**0.00**	**0.62**	**26**	**0.01**	**-**	**-**	**29**
a. Mineral Products	**0.02**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.02**
Cement Production	-	-	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-	-	-
Mineral Products Use	0.02	-	-	-	-	-	-	-	-	0.02
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
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[c]	**-**	**-**	**-**	**-**	**-**	**26**	**0.01**	**-**	**-**	**26**
e. Non-Energy Products from Fuels and Solvent Use	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**
f. Other Product Manufacture and Use	**0.22**	**-**	**-**	**0.00**	**0.62**	**-**	**-**	**-**	**-**	**0.84**
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	**0.01**	**0.41**	**10**	**0.00**	**0.60**	**-**	**-**	**-**	**-**	**11**
a. Solid Waste Disposal	**-**	**0.33**	**8**	**-**	**-**	**-**	**-**	**-**	**-**	**8**
b. Biological Treatment of Solid Waste	**-**	**0.00**	**0.07**	**0.00**	**0.05**	**-**	**-**	**-**	**-**	**0.10**
c. Wastewater Treatment and Discharge	**-**	**0.07**	**2**	**0.00**	**0.60**	**-**	**-**	**-**	**-**	**2**
d. Incineration and Open Burning of Waste	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**-**	**-**	**-**	**-**	**0.01**
e. Industrial Wood Waste Landfills	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Notes:
a. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
b. 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.
c. 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.
d. 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 (2018) 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	1999	2005	2013	2014	2015	2016	2017	2018
	kt CO_2 eq							
TOTAL	**393**	**566**	**762**	**705**	**596**	**695**	**704**	**702**
ENERGY	**386**	**554**	**744**	**686**	**576**	**674**	**681**	**675**
a. Stationary Combustion Sources	**104**	**128**	**69**	**118**	**113**	**135**	**137**	**164**
Public Electricity and Heat Production	17	x	x	x	x	x	x	x
Petroleum Refining Industries	-	-	-	-	-	-	-	-
Oil and Gas Extraction	-	-	-	-	-	-	-	-
Mining	87	0.26	-	-	-	-	-	-
Manufacturing Industries	-	x	x	x	x	x	x	x
Construction	-	-	-	-	-	-	-	-
Commercial and Institutional	-	x	-	-	-	-	-	-
Residential	-	-	-	-	-	-	-	-
Agriculture and Forestry	-	-	-	-	-	-	-	-
b. Transport[a]	**283**	**426**	**676**	**568**	**463**	**539**	**544**	**512**
Domestic Aviation	111	140	141	128	121	113	129	151
Road Transportation	19	94	231	202	163	236	243	207
Light-Duty Gasoline Vehicles	3	2	2	2	2	2	2	2
Light-Duty Gasoline Trucks	5	18	30	29	28	36	36	31
Heavy-Duty Gasoline Vehicles	3	4	8	8	8	11	12	11
Motorcycles	0.01	0.02	0.06	0.05	0.04	0.05	0.05	0.04
Light-Duty Diesel Vehicles	0.07	0.03	0.39	0.16	0.10	0.14	0.13	0.09
Light-Duty Diesel Trucks	-	1	4	4	3	4	4	3
Heavy-Duty Diesel Vehicles	8	69	185	159	122	183	190	160
Propane and Natural Gas Vehicles	0.86	-	-	-	-	-	-	-
Railways	-	-	-	-	-	-	-	-
Domestic Navigation	137	131	201	158	115	116	117	118
Other Transportation	16	62	103	80	64	74	55	35
Off-Road Agriculture & Forestry	-	-	-	-	-	-	-	-
Off-Road Commercial & Institutional	2	7	11	8	7	1	0.89	0.61
Off-Road Manufacturing, Mining & Construction	10	45	72	54	42	54	36	22
Off-Road Residential	0.62	3	5	4	4	3	2	2
Off-Road Other Transportation	4	8	15	13	12	15	16	11
Pipeline Transport	-	-	-	-	-	-	-	-
c. Fugitive Sources	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	-	-	-	-	-	-	-	-
Oil	-	-	-	-	-	-	-	-
Natural Gas	-	-	-	-	-	-	-	-
Venting	-	-	-	-	-	-	-	-
Flaring	-	-	-	-	-	-	-	-
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**3**	**7**	**12**	**14**	**14**	**15**	**17**	**20**
a. Mineral Products	**0.01**	**0.16**	**0.04**	**0.05**	**0.05**	**0.04**	**0.02**	**0.02**
Cement Production	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-
Mineral Products Use	0.01	0.16	0.04	0.05	0.05	0.04	0.02	0.02
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
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[c]	**2**	**6**	**12**	**13**	**14**	**14**	**16**	**19**
e. Non-Energy Products from Fuels and Solvent Use	**0.04**	**0.13**	**0.07**	**0.15**	**0.09**	**0.11**	**0.13**	**0.23**
f. Other Product Manufacture and Use	**0.34**	**0.36**	**0.37**	**0.39**	**0.41**	**0.51**	**0.61**	**0.64**
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	**4**	**5**	**6**	**6**	**6**	**6**	**6**	**7**
a. Solid Waste Disposal	**3**	**4**	**4**	**5**	**5**	**5**	**5**	**5**
b. Biological Treatment of Solid Waste	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
c. Wastewater Treatment and Discharge	**1**	**2**	**1**	**1**	**1**	**1**	**1**	**1**
d. Incineration and Open Burning of Waste	**-**	**0.06**	**0.08**	**0.08**	**0.08**	**0.08**	**0.08**	**0.08**
e. Industrial Wood Waste Landfills	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Notes:

a. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

b. 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.

c. 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 (2018) 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 **2018 GHG Emission Summary for Nunavut**

Greenhouse Gas Categories	Greenhouse Gases									
	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[d]	PFCs[d]	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	**668**	**0.29**	**7**	**0.03**	**7**	**19**	**0.00**	**-**	**-**	**702**
ENERGY	**668**	**0.05**	**1**	**0.02**	**6**	**-**	**-**	**-**	**-**	**675**
a. Stationary Combustion Sources	**163**	**0.01**	**0.10**	**0.00**	**0.40**	**-**	**-**	**-**	**-**	**164**
Public Electricity and Heat Production	x	x	x	x	x	x	x	x	x	x
Petroleum Refining Industries	-	-	-	-	-	-	-	-	-	-
Oil and Gas Extraction	-	-	-	-	-	-	-	-	-	-
Mining	-	-	-	-	-	-	-	-	-	-
Manufacturing Industries	x	x	x	x	x	x	x	x	x	x
Construction	-	-	-	-	-	-	-	-	-	-
Commercial and Institutional	-	-	-	-	-	-	-	-	-	-
Residential	-	-	-	-	-	-	-	-	-	-
Agriculture and Forestry	-	-	-	-	-	-	-	-	-	-
b. Transport[a]	**505**	**0.05**	**1**	**0.02**	**6**	**-**	**-**	**-**	**-**	**512**
Domestic Aviation	150	0.00	0.06	0.00	1	-	-	-	-	151
Road Transportation	204	0.01	0.20	0.01	3	-	-	-	-	207
Light-Duty Gasoline Vehicles	2	0.00	0.00	0.00	0.02	-	-	-	-	2
Light-Duty Gasoline Trucks	31	0.00	0.06	0.00	0.29	-	-	-	-	31
Heavy-Duty Gasoline Vehicles	11	0.00	0.01	0.00	0.27	-	-	-	-	11
Motorcycles	0.04	0.00	0.00	0.00	0.00	-	-	-	-	0.04
Light-Duty Diesel Vehicles	0.09	0.00	0.00	0.00	0.00	-	-	-	-	0.09
Light-Duty Diesel Trucks	3	0.00	0.00	0.00	0.07	-	-	-	-	3
Heavy-Duty Diesel Vehicles	158	0.01	0.20	0.01	3	-	-	-	-	160
Propane and Natural Gas Vehicles	-	-	-	-	-	-	-	-	-	-
Railways	-	-	-	-	-	-	-	-	-	-
Domestic Navigation	117	0.01	0.27	0.00	0.90	-	-	-	-	118
Other Transportation	34	0.02	0.58	0.00	0.50	-	-	-	-	35
Off-Road Agriculture & Forestry	-	-	-	-	-	-	-	-	-	-
Off-Road Commercial & Institutional	0.58	0.00	0.02	0.00	0.01	-	-	-	-	0.61
Off-Road Manufacturing, Mining & Construction	22	0.00	0.03	0.00	0.30	-	-	-	-	22
Off-Road Residential	2	0.00	0.07	0.00	0.01	-	-	-	-	2
Off-Road Other Transportation	10	0.02	0.46	0.00	0.10	-	-	-	-	11
Pipeline Transport	-	-	-	-	-	-	-	-	-	-
c. Fugitive Sources	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	-	-	-	-	-	-	-	-	-	-
Oil	-	-	-	-	-	-	-	-	-	-
Natural Gas	-	-	-	-	-	-	-	-	-	-
Venting	-	-	-	-	-	-	-	-	-	-
Flaring	-	-	-	-	-	-	-	-	-	-
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**0.35**	**-**	**-**	**0.00**	**0.54**	**19**	**0.00**	**-**	**-**	**20**
a. Mineral Products	**0.02**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.02**
Cement Production	-	-	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-	-	-
Mineral Products Use	0.02	-	-	-	-	-	-	-	-	0.02
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
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[c]	**-**	**-**	**-**	**-**	**-**	**19**	**0.00**	**-**	**-**	**19**
e. Non-Energy Products from Fuels and Solvent Use	**0.23**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.23**
f. Other Product Manufacture and Use	**0.10**	**-**	**-**	**0.00**	**0.54**	**-**	**-**	**-**	**-**	**0.64**
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**	**0.23**	**6**	**0.00**	**0.50**	**-**	**-**	**-**	**-**	**7**
a. Solid Waste Disposal	**-**	**0.21**	**5**	**-**	**-**	**-**	**-**	**-**	**-**	**5**
b. Biological Treatment of Solid Waste	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
c. Wastewater Treatment and Discharge	**-**	**0.03**	**0.69**	**0.00**	**0.50**	**-**	**-**	**-**	**-**	**1**
d. Incineration and Open Burning of Waste	**0.08**	**0.00**	**0.00**	**0.00**	**0.00**	**-**	**-**	**-**	**-**	**0.08**
e. Industrial Wood Waste Landfills	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Notes:
a. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
b. 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.
c. 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.
d. 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 (2018) 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, 1990–1998

Greenhouse Gas Categories	1990	1991	1992	1993	1994	1995	1996	1997	1998
	kt CO_2 eq								
TOTAL	**1 640**	**1 610**	**1 410**	**1 680**	**1 840**	**1 890**	**1 890**	**1 720**	**1 550**
ENERGY	**1 630**	**1 580**	**1 400**	**1 640**	**1 720**	**1 800**	**1 880**	**1 700**	**1 530**
a. Stationary Combustion Sources	**915**	**986**	**848**	**946**	**1 010**	**1 150**	**1 020**	**970**	**728**
Public Electricity and Heat Production	156	156	126	137	139	155	118	129	173
Petroleum Refining Industries	8	6	7	5	12	11	4	-	-
Oil and Gas Extraction	276	195	111	136	135	139	149	130	125
Mining	36	42	18	36	109	212	150	158	133
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[a]	**618**	**496**	**461**	**603**	**652**	**581**	**796**	**718**	**796**
Domestic Aviation	245	218	223	236	240	224	234	229	229
Road Transportation	173	130	116	170	183	155	236	227	273
Light-Duty Gasoline Vehicles	49	43	44	60	60	50	58	59	46
Light-Duty Gasoline Trucks	23	20	21	28	29	26	31	33	27
Heavy-Duty Gasoline Vehicles	11	10	10	14	15	12	16	18	16
Motorcycles	0.18	0.14	0.13	0.16	0.16	0.12	0.14	0.13	0.09
Light-Duty Diesel Vehicles	2	1	0.79	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	1	2	1	3	2
Domestic Navigation	18	17	16	16	15	14	15	16	18
Other Transportation	180	129	104	179	211	186	309	243	274
Off-Road Agriculture & Forestry	0.38	0.26	0.20	0.37	0.45	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	128	90	69	126	151	135	234	180	207
Off-Road Residential	3	2	1	3	3	3	5	4	5
Off-Road Other Transportation	37	28	26	38	40	34	47	40	39
Pipeline Transport	-	-	-	-	2	0.13	0.09	0.04	-
c. Fugitive Sources	**97**	**100**	**89**	**94**	**65**	**65**	**61**	**12**	**10**
Coal Mining	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	97	100	89	94	65	65	61	12	10
Oil	5	5	5	5	5	5	4	4	4
Natural Gas	0.92	0.98	0.97	1	0.90	0.92	0.87	0.85	0.82
Venting	2	2	2	2	3	3	2	2	2
Flaring	89	95	81	86	57	57	53	6	4
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**5**	**13**	**4**	**26**	**106**	**88**	**3**	**4**	**6**
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[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
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[c]	**-**	**-**	**-**	**-**	**-**	**1**	**2**	**3**	**5**
e. Non-Energy Products from Fuels and Solvent Use	**5**	**13**	**3**	**26**	**110**	**86**	**0.49**	**0.43**	**0.11**
f. Other Product Manufacture and Use	**0.37**	**0.36**	**0.33**	**0.32**	**0.36**	**0.42**	**0.47**	**0.48**	**0.68**
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	**9**	**9**	**9**	**10**	**10**	**10**	**11**	**11**	**12**
a. Solid Waste Disposal	**5**	**6**	**6**	**6**	**6**	**7**	**7**	**8**	**8**
b. Biological Treatment of Solid Waste	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
c. Wastewater Treatment and Discharge	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**4**	**4**
d. Incineration and Open Burning of Waste	**0.20**	**0.20**	**0.20**	**0.20**	**0.20**	**0.20**	**0.20**	**0.20**	**0.20**
e. Industrial Wood Waste Landfills	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Notes:

a. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.

b. 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.

c. 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, 1990–2018

This annex contains summary tables (Table A12–2 to Table A12–15) illustrating GHG emissions by province/ territory, allocated to Canadian economic sectors, from 1990–2018. To account for the creation of Nunavut in 1999, a time series from 1999–2018 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: https://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 Oil Production	Emissions resulting from:
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, Natural Gas and CO_2 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 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 biosolids and 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
Wastewater	– Municipal 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	2013	2014	2015	2016	2017	2018
	Mt CO_2 eq							
GHG TOTAL	**9.8**	**10.5**	**10.0**	**10.9**	**10.9**	**11.1**	**11.0**	**11.0**
OIL AND GAS	**1.1**	**2.6**	**2.6**	**2.7**	**2.6**	**2.9**	**2.9**	**3.1**
Upstream Oil and Gas	**0.0**	**1.6**	**1.6**	**1.7**	**1.5**	**1.7**	**1.8**	**2.1**
Natural Gas Production and Processing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Conventional Oil Production	0.0	1.6	1.6	1.7	1.5	1.7	1.8	2.1
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	0.0	1.6	1.6	1.7	1.5	1.7	1.8	2.1
Oil Sands (Mining, In-situ, Upgrading)	-	-	-	-	-	-	-	-
Mining and Extraction	-	-	-	-	-	-	-	-
In-situ	-	-	-	-	-	-	-	-
Upgrading	-	-	-	-	-	-	-	-
Oil, Natural Gas and CO_2 Transmission	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Downstream Oil and Gas	**1.1**	**1.0**	**1.0**	**1.0**	**1.1**	**1.3**	**1.1**	**1.0**
Petroleum Refining	1.1	1.0	1.0	1.0	1.1	1.3	1.1	1.0
Natural Gas Distribution	-	-	-	-	-	-	-	-
ELECTRICITY	**1.6**	**0.8**	**0.9**	**1.2**	**1.3**	**1.5**	**1.5**	**1.1**
TRANSPORTATION	**3.1**	**3.7**	**3.8**	**4.1**	**4.1**	**4.1**	**4.0**	**4.0**
Passenger Transport	**1.3**	**1.5**	**1.9**	**2.1**	**2.1**	**2.1**	**2.1**	**2.1**
Cars, Light Trucks and Motorcycles	1.1	1.3	1.6	1.8	1.9	1.9	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	**1.4**	**2.0**	**1.8**	**1.8**	**1.8**	**1.8**	**1.7**	**1.8**
Heavy Duty Trucks, Rail	0.4	0.8	1.0	1.1	1.2	1.3	1.1	1.2
Domestic Aviation and Marine	1.0	1.2	0.8	0.7	0.6	0.6	0.6	0.6
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**	**0.8**	**0.9**	**0.8**	**0.5**	**0.6**	**0.8**
Mining	**1.3**	**1.3**	**0.8**	**0.8**	**0.8**	**0.4**	**0.5**	**0.6**
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**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.1**
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**	**1.1**	**1.2**	**1.1**	**1.1**	**1.1**	**1.0**
Service Industry	**0.3**	**0.4**	**0.7**	**0.7**	**0.7**	**0.7**	**0.6**	**0.4**
Residential	**0.8**	**0.4**	**0.4**	**0.5**	**0.4**	**0.5**	**0.5**	**0.5**
AGRICULTURE	**0.1**	**0.1**	**0.1**	**0.1**	**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**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Animal Production	**0.0**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
WASTE	**0.7**	**0.6**	**0.5**	**0.5**	**0.5**	**0.6**	**0.6**	**0.6**
Solid Waste	**0.5**	**0.5**	**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	**0.1**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
COAL PRODUCTION	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
LIGHT MANUFACTURING, CONSTRUCTION & FOREST RESOURCES	**0.2**	**0.2**	**0.2**	**0.2**	**0.3**	**0.3**	**0.3**	**0.3**
Light Manufacturing	**0.1**	**0.0**	**0.1**	**0.1**	**0.1**	**0.1**	**0.0**	**0.0**
Construction	**0.1**	**0.1**	**0.1**	**0.1**	**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.

0 indicates emissions of less than 0.5 Mt CO_2 eq; truncated due to rounding
- indicates no emissions

Table A12–3 **GHG Emissions for Prince Edward Island by Canadian Economic Sector, Selected Years**

	1990	2005	2013	2014	2015	2016	2017	2018
	Mt CO_2 eq							
NATIONAL GHG TOTAL	**2.0**	**2.1**	**1.8**	**1.7**	**1.6**	**1.7**	**1.7**	**1.7**
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, Natural Gas and CO_2 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**	**-**	**-**
Petroleum Refining	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	**0.7**	**0.8**	**0.7**	**0.7**	**0.7**	**0.8**	**0.8**	**0.7**
Passenger Transport	**0.4**	**0.5**	**0.5**	**0.4**	**0.4**	**0.5**	**0.5**	**0.5**
Cars, Light Trucks and Motorcycles	0.4	0.5	0.4	0.4	0.4	0.5	0.5	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**	**0.3**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**
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	0.0	0.0	0.0	0.0
Other: Recreational, Commercial and Residential	**0.1**	**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**	**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**	**0.5**	**0.5**	**0.4**	**0.4**	**0.3**	**0.3**	**0.3**
Service Industry	**0.2**	**0.2**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Residential	**0.4**	**0.3**	**0.3**	**0.3**	**0.2**	**0.2**	**0.3**	**0.2**
AGRICULTURE	**0.4**	**0.5**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**
On Farm Fuel Use	**0.1**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Crop Production	**0.2**	**0.2**	**0.1**	**0.2**	**0.2**	**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**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Light Manufacturing	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**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.

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

- indicates no emissions

Table A12–4 **GHG Emissions for Nova Scotia by Canadian Economic Sector, Selected Years**

	1990	2005	2013	2014	2015	2016	2017	2018
	Mt CO_2 eq							
NATIONAL GHG TOTAL	**19.6**	**23.1**	**18.4**	**16.6**	**16.7**	**15.6**	**16.2**	**17.0**
OIL AND GAS	**0.7**	**1.5**	**1.4**	**0.8**	**0.6**	**0.5**	**0.3**	**0.2**
Upstream Oil and Gas	**0.0**	**0.4**	**0.6**	**0.8**	**0.6**	**0.5**	**0.3**	**0.2**
Natural Gas Production and Processing	0.0	0.4	0.6	0.8	0.6	0.5	0.3	0.2
Conventional Oil Production	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Conventional Light Oil Production	-	-	-	-	-	-	-	-
Conventional Heavy Oil Production	-	-	-	-	-	-	-	-
Frontier Oil Production	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oil Sands (Mining, In-situ, Upgrading)	-	-	-	-	-	-	-	-
Mining and Extraction	-	-	-	-	-	-	-	-
In-situ	-	-	-	-	-	-	-	-
Upgrading	-	-	-	-	-	-	-	-
Oil, Natural Gas and CO_2 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**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Petroleum Refining	0.7	1.1	0.8	-	0.0	0.0	-	-
Natural Gas Distribution	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ELECTRICITY	**6.9**	**10.8**	**7.6**	**7.3**	**7.1**	**6.4**	**6.7**	**7.0**
TRANSPORTATION	**4.6**	**5.5**	**4.9**	**4.5**	**4.9**	**5.0**	**5.2**	**5.5**
Passenger Transport	**2.5**	**2.9**	**2.6**	**2.4**	**2.9**	**2.9**	**3.0**	**3.2**
Cars, Light Trucks and Motorcycles	2.3	2.6	2.3	2.1	2.6	2.7	2.8	3.0
Bus, Rail and Domestic Aviation	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Freight Transport	**1.5**	**2.3**	**2.1**	**1.9**	**1.8**	**1.7**	**1.8**	**1.9**
Heavy Duty Trucks, Rail	0.9	1.6	1.6	1.4	1.4	1.4	1.5	1.6
Domestic Aviation and Marine	0.7	0.7	0.5	0.4	0.4	0.4	0.4	0.4
Other: Recreational, Commercial and Residential	**0.5**	**0.3**	**0.2**	**0.2**	**0.3**	**0.3**	**0.3**	**0.3**
HEAVY INDUSTRY	**1.0**	**0.8**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**
Mining	**0.1**	**0.2**	**0.1**	**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**	**0.1**	**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**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
BUILDINGS	**3.1**	**2.8**	**2.5**	**2.2**	**2.3**	**2.0**	**2.1**	**2.3**
Service Industry	**0.8**	**1.4**	**0.9**	**0.7**	**0.8**	**0.7**	**0.8**	**0.8**
Residential	**2.2**	**1.4**	**1.6**	**1.5**	**1.5**	**1.3**	**1.3**	**1.5**
AGRICULTURE	**0.6**	**0.6**	**0.5**	**0.5**	**0.5**	**0.4**	**0.4**	**0.4**
On Farm Fuel Use	**0.2**	**0.2**	**0.1**	**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**	**0.3**	**0.3**	**0.3**	**0.3**
WASTE	**0.7**	**0.5**	**0.5**	**0.5**	**0.4**	**0.5**	**0.5**	**0.5**
Solid Waste	**0.6**	**0.5**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.5**
Wastewater	**0.1**	**0.1**	**0.0**	**0.1**	**0.1**	**0.1**	**0.0**	**0.0**
Waste Incineration	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
COAL PRODUCTION	**1.6**	**0.1**	**0.1**	**0.0**	**0.0**	**0.0**	**0.1**	**0.1**
LIGHT MANUFACTURING, CONSTRUCTION & FOREST RESOURCES	**0.4**	**0.4**	**0.4**	**0.4**	**0.3**	**0.3**	**0.4**	**0.4**
Light Manufacturing	**0.2**	**0.2**	**0.3**	**0.3**	**0.2**	**0.2**	**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.

0 indicates emissions of less than 0.5 Mt CO_2 eq; truncated due to rounding
- indicates no emissions

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

	1990	2005	2013	2014	2015	2016	2017	2018
	Mt CO_2 eq							
NATIONAL GHG TOTAL	**16.2**	**20.0**	**14.7**	**13.6**	**13.9**	**14.5**	**13.5**	**13.2**
OIL AND GAS	**1.2**	**2.8**	**3.6**	**3.2**	**3.0**	**3.3**	**3.5**	**3.0**
Upstream Oil and Gas	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.1**
Natural Gas Production and Processing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Conventional Oil Production	0.0	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	0.0
Conventional Heavy Oil Production	-	-	-	-	-	-	-	-
Frontier Oil Production	-	-	-	-	-	-	-	-
Oil Sands (Mining, In-situ, Upgrading)	-	-	-	-	-	-	-	-
Mining and Extraction	-	-	-	-	-	-	-	-
In-situ	-	-	-	-	-	-	-	-
Upgrading	-	-	-	-	-	-	-	-
Oil, Natural Gas and CO_2 Transmission	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Downstream Oil and Gas	**1.2**	**2.7**	**3.5**	**3.1**	**3.0**	**3.2**	**3.5**	**2.9**
Petroleum Refining	1.2	2.7	3.5	3.1	3.0	3.2	3.4	2.9
Natural Gas Distribution	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ELECTRICITY	**6.0**	**7.8**	**3.8**	**3.4**	**3.5**	**3.7**	**3.0**	**3.2**
TRANSPORTATION	**3.8**	**4.8**	**3.9**	**3.6**	**3.8**	**4.2**	**3.7**	**3.7**
Passenger Transport	**1.6**	**2.3**	**2.0**	**1.8**	**2.1**	**2.4**	**2.2**	**2.1**
Cars, Light Trucks and Motorcycles	1.5	2.1	1.9	1.7	2.0	2.3	2.0	2.0
Bus, Rail and Domestic Aviation	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
Freight Transport	**1.2**	**2.1**	**1.6**	**1.5**	**1.4**	**1.4**	**1.3**	**1.3**
Heavy Duty Trucks, Rail	0.9	1.8	1.4	1.4	1.3	1.3	1.1	1.1
Domestic Aviation and Marine	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.1
Other: Recreational, Commercial and Residential	**1.0**	**0.5**	**0.2**	**0.2**	**0.3**	**0.3**	**0.3**	**0.3**
HEAVY INDUSTRY	**1.8**	**1.2**	**0.9**	**0.8**	**0.9**	**0.8**	**0.8**	**0.8**
Mining	**0.2**	**0.3**	**0.1**	**0.1**	**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**	**0.2**
Pulp and Paper	**1.3**	**0.7**	**0.5**	**0.4**	**0.5**	**0.4**	**0.3**	**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**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
BUILDINGS	**1.8**	**1.5**	**1.1**	**1.2**	**1.3**	**1.2**	**1.1**	**1.2**
Service Industry	**0.6**	**0.7**	**0.5**	**0.6**	**0.6**	**0.5**	**0.4**	**0.5**
Residential	**1.2**	**0.8**	**0.6**	**0.6**	**0.8**	**0.7**	**0.7**	**0.7**
AGRICULTURE	**0.6**	**0.6**	**0.6**	**0.6**	**0.5**	**0.5**	**0.5**	**0.5**
On Farm Fuel Use	**0.1**	**0.1**	**0.1**	**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**	**0.2**
Animal Production	**0.3**	**0.3**	**0.3**	**0.3**	**0.2**	**0.2**	**0.2**	**0.3**
WASTE	**0.6**	**0.6**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**
Solid Waste	**0.5**	**0.6**	**0.5**	**0.5**	**0.5**	**0.4**	**0.5**	**0.5**
Wastewater	**0.0**	**0.0**	**0.1**	**0.1**	**0.1**	**0.0**	**0.0**	**0.0**
Waste Incineration	**-**	**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**	**0.4**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**
Light Manufacturing	**0.2**	**0.4**	**0.3**	**0.2**	**0.2**	**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:

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

- indicates no emissions

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

	1990	2005	2013	2014	2015	2016	2017	2018
	Mt CO_2 eq							
NATIONAL GHG TOTAL	**86.7**	**86.1**	**80.3**	**78.3**	**78.6**	**78.5**	**80.4**	**82.6**
OIL AND GAS	**3.9**	**4.4**	**2.7**	**2.6**	**2.8**	**2.4**	**2.1**	**2.5**
Upstream Oil and Gas	**0.2**	**0.3**	**0.3**	**0.3**	**0.3**	**0.2**	**0.1**	**0.1**
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, Natural Gas and CO_2 Transmission	0.2	0.3	0.3	0.3	0.3	0.2	0.1	0.1
Downstream Oil and Gas	**3.7**	**4.1**	**2.4**	**2.3**	**2.5**	**2.2**	**2.0**	**2.4**
Petroleum Refining	3.6	4.0	2.3	2.2	2.4	2.1	1.9	2.4
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**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**
TRANSPORTATION	**24.1**	**31.0**	**32.5**	**30.8**	**31.1**	**31.8**	**33.3**	**35.2**
Passenger Transport	**15.5**	**19.3**	**18.9**	**18.1**	**18.5**	**18.8**	**19.5**	**21.0**
Cars, Light Trucks and Motorcycles	14.6	18.2	17.7	17.0	17.4	17.7	18.3	19.7
Bus, Rail and Domestic Aviation	0.9	1.0	1.2	1.1	1.1	1.1	1.2	1.3
Freight Transport	**4.9**	**9.9**	**12.0**	**11.1**	**11.0**	**11.3**	**11.8**	**12.0**
Heavy Duty Trucks, Rail	4.0	8.7	11.0	10.2	10.1	10.3	10.8	11.0
Domestic Aviation and Marine	0.9	1.2	1.0	1.0	0.9	1.0	1.0	1.1
Other: Recreational, Commercial and Residential	**3.7**	**1.8**	**1.6**	**1.6**	**1.7**	**1.8**	**2.0**	**2.2**
HEAVY INDUSTRY	**24.9**	**19.6**	**17.5**	**17.4**	**16.7**	**15.3**	**16.4**	**15.9**
Mining	**2.1**	**1.5**	**1.9**	**1.7**	**1.6**	**1.6**	**1.7**	**1.8**
Smelting and Refining (Non Ferrous Metals)	**12.9**	**9.8**	**7.8**	**7.3**	**7.4**	**7.3**	**7.4**	**6.6**
Pulp and Paper	**4.5**	**2.8**	**1.6**	**1.2**	**1.3**	**1.4**	**1.5**	**1.6**
Iron and Steel	**1.2**	**0.9**	**2.1**	**2.2**	**1.2**	**1.1**	**1.2**	**1.3**
Cement	**2.5**	**2.5**	**2.2**	**2.2**	**2.3**	**2.1**	**2.6**	**2.6**
Lime & Gypsum	**0.5**	**0.9**	**0.7**	**0.8**	**0.8**	**0.8**	**0.8**	**0.7**
Chemicals & Fertilizers	**1.2**	**1.2**	**1.2**	**2.0**	**2.0**	**1.1**	**1.2**	**1.2**
BUILDINGS	**13.0**	**13.2**	**10.3**	**10.8**	**10.9**	**11.1**	**11.2**	**11.1**
Service Industry	**4.7**	**6.5**	**5.7**	**6.0**	**6.2**	**6.2**	**6.7**	**6.5**
Residential	**8.3**	**6.8**	**4.6**	**4.7**	**4.7**	**4.8**	**4.5**	**4.7**
AGRICULTURE	**8.1**	**8.5**	**8.7**	**8.6**	**8.8**	**9.0**	**8.5**	**9.0**
On Farm Fuel Use	**1.1**	**0.9**	**1.0**	**0.9**	**1.0**	**0.9**	**0.9**	**0.9**
Crop Production	**1.8**	**1.9**	**2.5**	**2.5**	**2.7**	**2.8**	**2.4**	**2.9**
Animal Production	**5.1**	**5.7**	**5.3**	**5.2**	**5.2**	**5.3**	**5.3**	**5.3**
WASTE	**5.9**	**4.6**	**3.4**	**3.6**	**4.1**	**4.6**	**4.5**	**4.4**
Solid Waste	**5.5**	**4.2**	**3.1**	**3.3**	**3.8**	**4.3**	**4.2**	**4.1**
Wastewater	**0.2**	**0.2**	**0.3**	**0.3**	**0.3**	**0.3**	**0.2**	**0.2**
Waste Incineration	**0.2**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
COAL PRODUCTION	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
LIGHT MANUFACTURING, CONSTRUCTION & FOREST RESOURCES	**5.3**	**4.1**	**5.0**	**4.2**	**3.9**	**4.0**	**4.1**	**4.1**
Light Manufacturing	**3.7**	**2.9**	**3.7**	**3.0**	**2.6**	**2.6**	**2.6**	**2.6**
Construction	**1.4**	**1.0**	**1.1**	**1.0**	**1.0**	**1.1**	**1.3**	**1.2**
Forest Resources	**0.2**	**0.2**	**0.3**	**0.2**	**0.3**	**0.3**	**0.3**	**0.3**

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
- indicates no emissions

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

	1990	2005	2013	2014	2015	2016	2017	2018
	Mt CO_2 eq							
NATIONAL GHG TOTAL	**179.3**	**203.2**	**167.2**	**164.7**	**162.6**	**159.6**	**155.4**	**165.0**
OIL AND GAS	**10.3**	**11.8**	**10.3**	**10.8**	**10.2**	**9.7**	**7.7**	**8.1**
Upstream Oil and Gas	**3.3**	**3.9**	**1.8**	**2.3**	**2.3**	**1.9**	**1.6**	**1.9**
Natural Gas Production and Processing	0.3	0.4	0.2	0.2	0.2	0.2	0.1	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, Natural Gas and CO_2 Transmission	3.0	3.6	1.5	2.1	2.1	1.7	1.5	1.7
Downstream Oil and Gas	**7.0**	**7.9**	**8.5**	**8.5**	**7.9**	**7.7**	**6.1**	**6.2**
Petroleum Refining	6.6	7.3	8.0	8.0	7.4	7.2	5.6	5.7
Natural Gas Distribution	0.4	0.6	0.5	0.5	0.5	0.6	0.5	0.6
ELECTRICITY	**26.0**	**33.9**	**9.2**	**5.0**	**5.2**	**4.8**	**2.2**	**3.8**
TRANSPORTATION	**40.8**	**56.5**	**55.3**	**53.4**	**54.3**	**54.6**	**55.3**	**57.4**
Passenger Transport	**26.2**	**35.8**	**33.9**	**33.0**	**33.7**	**34.3**	**34.2**	**35.4**
Cars, Light Trucks and Motorcycles	24.1	33.3	31.2	30.4	31.1	31.7	31.6	32.6
Bus, Rail and Domestic Aviation	2.1	2.5	2.7	2.6	2.6	2.6	2.6	2.8
Freight Transport	**7.6**	**16.8**	**18.3**	**17.3**	**17.4**	**17.1**	**17.6**	**18.4**
Heavy Duty Trucks, Rail	7.0	16.2	17.8	16.7	16.9	16.5	17.0	17.8
Domestic Aviation and Marine	0.6	0.6	0.5	0.5	0.5	0.5	0.6	0.6
Other: Recreational, Commercial and Residential	**7.0**	**3.9**	**3.1**	**3.2**	**3.2**	**3.3**	**3.5**	**3.6**
HEAVY INDUSTRY	**43.2**	**35.3**	**29.2**	**30.4**	**29.4**	**30.5**	**28.9**	**29.5**
Mining	**1.0**	**0.9**	**1.3**	**1.3**	**1.2**	**1.3**	**1.3**	**1.2**
Smelting and Refining (Non Ferrous Metals)	**1.5**	**1.9**	**0.9**	**0.8**	**0.7**	**0.9**	**1.0**	**0.9**
Pulp and Paper	**3.2**	**2.1**	**2.0**	**1.8**	**1.7**	**1.5**	**1.5**	**1.6**
Iron and Steel	**15.0**	**15.1**	**12.4**	**13.7**	**13.0**	**13.7**	**13.8**	**14.5**
Cement	**4.5**	**6.4**	**4.4**	**4.4**	**4.2**	**4.2**	**4.4**	**4.4**
Lime & Gypsum	**1.8**	**1.7**	**1.0**	**1.1**	**1.1**	**1.1**	**1.2**	**1.0**
Chemicals & Fertilizers	**16.2**	**7.2**	**7.1**	**7.4**	**7.7**	**7.8**	**5.7**	**5.9**
BUILDINGS	**28.0**	**36.3**	**35.9**	**39.1**	**37.3**	**34.4**	**35.2**	**40.0**
Service Industry	**9.8**	**15.4**	**15.4**	**16.8**	**16.1**	**15.9**	**16.5**	**17.6**
Residential	**18.2**	**20.8**	**20.5**	**22.2**	**21.2**	**18.5**	**18.6**	**22.4**
AGRICULTURE	**12.4**	**12.4**	**12.8**	**12.2**	**12.0**	**12.4**	**12.3**	**12.4**
On Farm Fuel Use	**2.1**	**2.3**	**2.8**	**2.5**	**2.5**	**2.5**	**2.3**	**2.4**
Crop Production	**3.1**	**2.8**	**3.9**	**3.6**	**3.3**	**3.8**	**3.8**	**3.7**
Animal Production	**7.2**	**7.3**	**6.2**	**6.1**	**6.2**	**6.2**	**6.2**	**6.2**
WASTE	**6.3**	**6.0**	**5.5**	**5.2**	**5.2**	**4.8**	**4.8**	**4.6**
Solid Waste	**5.9**	**5.4**	**4.9**	**4.5**	**4.6**	**4.1**	**4.1**	**3.9**
Wastewater	**0.3**	**0.3**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**
Waste Incineration	**0.1**	**0.2**	**0.2**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**
COAL PRODUCTION	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
LIGHT MANUFACTURING, CONSTRUCTION & FOREST RESOURCES	**12.4**	**11.1**	**9.0**	**8.6**	**8.9**	**8.4**	**8.9**	**9.2**
Light Manufacturing	**9.8**	**8.0**	**6.7**	**6.4**	**6.4**	**6.1**	**6.3**	**6.3**
Construction	**2.5**	**2.9**	**2.3**	**2.2**	**2.5**	**2.2**	**2.5**	**2.8**
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.

0 indicates emissions of less than 0.5 Mt CO_2 eq; truncated due to rounding
- indicates no emissions

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

	1990	2005	2013	2014	2015	2016	2017	2018
	Mt CO_2 eq							
NATIONAL GHG TOTAL	**18.3**	**20.1**	**20.9**	**20.9**	**20.6**	**20.9**	**20.8**	**21.8**
OIL AND GAS	**1.3**	**0.8**	**0.6**	**0.7**	**0.7**	**0.6**	**0.5**	**0.7**
Upstream Oil and Gas	**1.3**	**0.8**	**0.5**	**0.7**	**0.7**	**0.6**	**0.5**	**0.7**
Natural Gas Production and Processing	-	-	-	-	-	-	-	-
Conventional Oil Production	0.1	0.2	0.4	0.4	0.4	0.4	0.3	0.3
Conventional Light Oil Production	0.1	0.2	0.4	0.4	0.4	0.4	0.3	0.3
Conventional Heavy Oil Production	-	-	-	-	-	-	-	-
Frontier Oil Production	-	-	-	-	-	-	-	-
Oil Sands (Mining, In-situ, Upgrading)	-	-	-	-	-	-	-	-
Mining and Extraction	-	-	-	-	-	-	-	-
In-situ	-	-	-	-	-	-	-	-
Upgrading	-	-	-	-	-	-	-	-
Oil, Natural Gas and CO_2 Transmission	1.2	0.6	0.1	0.3	0.3	0.3	0.2	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	-	-	-	-	-
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**	**0.0**
TRANSPORTATION	**5.0**	**5.5**	**6.9**	**7.1**	**6.8**	**7.1**	**7.4**	**7.9**
Passenger Transport	**2.9**	**3.3**	**3.9**	**3.9**	**3.8**	**3.8**	**3.8**	**4.1**
Cars, Light Trucks and Motorcycles	2.5	2.8	3.4	3.4	3.3	3.4	3.3	3.5
Bus, Rail and Domestic Aviation	0.4	0.5	0.5	0.5	0.4	0.4	0.5	0.5
Freight Transport	**1.4**	**1.8**	**2.7**	**2.9**	**2.7**	**2.9**	**3.3**	**3.5**
Heavy Duty Trucks, Rail	1.3	1.7	2.6	2.8	2.7	2.9	3.2	3.4
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	**0.6**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.4**
HEAVY INDUSTRY	**1.3**	**1.6**	**1.4**	**1.2**	**1.3**	**1.3**	**1.2**	**1.3**
Mining	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.2**
Smelting and Refining (Non Ferrous Metals)	**0.3**	**0.2**	**0.1**	**0.1**	**0.0**	**0.0**	**0.1**	**0.0**
Pulp and Paper	**0.2**	**0.2**	**0.0**	**0.1**	**0.0**	**0.1**	**0.0**	**0.0**
Iron and Steel	**0.0**	**0.0**	**0.1**	**0.1**	**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**	**1.0**	**0.8**	**0.9**	**1.0**	**0.8**	**0.9**
BUILDINGS	**3.1**	**2.7**	**2.9**	**3.0**	**2.6**	**2.6**	**2.1**	**2.2**
Service Industry	**1.4**	**1.6**	**1.6**	**1.7**	**1.6**	**1.5**	**0.9**	**1.0**
Residential	**1.7**	**1.1**	**1.3**	**1.3**	**1.1**	**1.1**	**1.2**	**1.3**
AGRICULTURE	**5.8**	**7.7**	**7.5**	**7.1**	**7.3**	**7.4**	**7.6**	**7.7**
On Farm Fuel Use	**1.1**	**1.4**	**1.0**	**1.0**	**0.9**	**0.9**	**1.0**	**1.0**
Crop Production	**2.2**	**2.0**	**3.1**	**2.8**	**3.0**	**3.2**	**3.2**	**3.3**
Animal Production	**2.5**	**4.3**	**3.4**	**3.3**	**3.3**	**3.3**	**3.4**	**3.4**
WASTE	**0.6**	**0.8**	**0.8**	**0.8**	**0.8**	**0.7**	**0.7**	**0.7**
Solid Waste	**0.6**	**0.8**	**0.7**	**0.7**	**0.7**	**0.6**	**0.7**	**0.7**
Wastewater	**0.0**	**0.0**	**0.1**	**0.1**	**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**	**0.8**	**1.0**	**1.1**	**1.2**	**1.2**
Light Manufacturing	**0.4**	**0.5**	**0.5**	**0.6**	**0.8**	**0.8**	**0.9**	**0.9**
Construction	**0.2**	**0.3**	**0.2**	**0.2**	**0.2**	**0.3**	**0.3**	**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.

0 indicates emissions of less than 0.5 Mt CO_2 eq; truncated due to rounding
- indicates no emissions

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

	1990	2005	2013	2014	2015	2016	2017	2018
	Mt CO_2 eq							
NATIONAL GHG TOTAL	**44.5**	**68.1**	**72.2**	**75.0**	**77.2**	**74.5**	**76.7**	**76.4**
OIL AND GAS	**11.9**	**24.3**	**22.1**	**25.1**	**25.8**	**23.4**	**23.5**	**22.7**
Upstream Oil and Gas	**10.7**	**23.3**	**20.6**	**23.6**	**24.2**	**21.8**	**21.9**	**21.2**
Natural Gas Production and Processing	2.1	3.8	3.2	3.3	3.2	3.4	3.4	3.4
Conventional Oil Production	6.2	14.8	12.4	15.1	16.1	13.5	14.4	13.4
Conventional Light Oil Production	1.6	2.6	5.1	6.7	7.3	6.3	7.1	7.2
Conventional Heavy Oil Production	4.6	12.2	7.3	8.5	8.8	7.2	7.3	6.2
Frontier Oil Production	-	-	-	-	-	-	-	-
Oil Sands (Mining, In-situ, Upgrading)	0.0	2.4	2.6	2.4	2.5	2.6	2.4	2.5
Mining and Extraction	-	-	-	-	-	-	-	-
In-situ	-	-	-	-	-	-	-	-
Upgrading	0.0	2.4	2.6	2.4	2.5	2.6	2.4	2.5
Oil, Natural Gas and CO_2 Transmission	2.4	2.3	2.5	2.8	2.5	2.3	1.7	1.8
Downstream Oil and Gas	**1.2**	**1.1**	**1.4**	**1.5**	**1.6**	**1.6**	**1.6**	**1.5**
Petroleum Refining	0.7	0.8	1.2	1.3	1.4	1.4	1.4	1.3
Natural Gas Distribution	0.5	0.2	0.2	0.2	0.2	0.2	0.2	0.2
ELECTRICITY	**11.1**	**14.9**	**14.1**	**14.3**	**15.2**	**15.0**	**15.6**	**15.3**
TRANSPORTATION	**5.3**	**6.2**	**10.2**	**10.2**	**10.7**	**10.7**	**11.2**	**11.4**
Passenger Transport	**3.0**	**3.4**	**4.9**	**4.6**	**5.0**	**5.2**	**5.1**	**5.0**
Cars, Light Trucks and Motorcycles	2.8	3.2	4.6	4.3	4.7	4.9	4.8	4.7
Bus, Rail and Domestic Aviation	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.3
Freight Transport	**1.6**	**2.5**	**4.9**	**5.2**	**5.2**	**5.1**	**5.7**	**6.0**
Heavy Duty Trucks, Rail	1.6	2.4	4.9	5.1	5.2	5.1	5.7	6.0
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	**0.6**	**0.4**	**0.4**	**0.4**	**0.5**	**0.4**	**0.4**	**0.4**
HEAVY INDUSTRY	**1.6**	**2.2**	**3.5**	**3.3**	**3.4**	**3.2**	**3.4**	**3.2**
Mining	**1.0**	**1.3**	**2.5**	**2.6**	**2.6**	**2.5**	**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**	**0.2**	**0.2**
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**	**0.8**	**0.5**	**0.6**	**0.6**	**0.5**	**0.4**
BUILDINGS	**3.2**	**3.3**	**3.3**	**3.3**	**3.1**	**3.3**	**3.6**	**3.9**
Service Industry	**1.0**	**1.7**	**1.4**	**1.4**	**1.4**	**1.5**	**1.7**	**1.9**
Residential	**2.1**	**1.6**	**1.9**	**1.9**	**1.8**	**1.7**	**1.9**	**2.0**
AGRICULTURE	**10.2**	**16.0**	**17.6**	**17.2**	**17.5**	**17.6**	**18.1**	**18.5**
On Farm Fuel Use	**2.4**	**3.5**	**4.5**	**4.8**	**4.7**	**4.5**	**4.9**	**5.2**
Crop Production	**3.5**	**4.6**	**7.0**	**6.4**	**6.8**	**7.0**	**7.1**	**7.3**
Animal Production	**4.3**	**7.9**	**6.2**	**6.0**	**5.9**	**6.0**	**6.0**	**6.0**
WASTE	**0.6**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**
Solid Waste	**0.5**	**0.7**	**0.7**	**0.7**	**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	**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**	**0.9**	**0.8**	**0.7**	**0.6**	**0.6**
Light Manufacturing	**0.5**	**0.2**	**0.4**	**0.6**	**0.5**	**0.4**	**0.5**	**0.5**
Construction	**0.1**	**0.2**	**0.2**	**0.2**	**0.3**	**0.2**	**0.2**	**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.

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

- indicates no emissions

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

	1990	2005	2013	2014	2015	2016	2017	2018
	Mt CO_2 eq							
NATIONAL GHG TOTAL	**173.1**	**232.0**	**272.3**	**276.8**	**276.2**	**265.2**	**272.2**	**272.6**
OIL AND GAS	**67.6**	**97.1**	**127.2**	**131.0**	**131.4**	**130.1**	**133.8**	**138.9**
Upstream Oil and Gas	**63.9**	**92.4**	**122.0**	**125.5**	**125.8**	**124.3**	**127.8**	**133.1**
Natural Gas Production and Processing	29.1	41.1	35.7	36.9	35.3	34.7	34.1	34.6
Conventional Oil Production	16.0	12.4	17.1	17.4	15.2	13.0	12.0	12.5
Conventional Light Oil Production	8.8	7.7	9.4	9.5	8.4	7.6	7.2	7.7
Conventional Heavy Oil Production	7.2	4.7	7.8	7.9	6.8	5.4	4.8	4.7
Frontier Oil Production	-	-	-	-	-	-	-	-
Oil Sands (Mining, In-situ, Upgrading)	15.0	35.0	65.9	68.1	71.9	72.2	77.2	81.0
Mining and Extraction	4.5	9.5	15.3	15.6	17.1	17.5	18.4	18.5
In-situ	4.4	11.2	27.3	29.5	32.9	35.0	38.5	40.7
Upgrading	6.1	14.3	23.3	23.0	22.0	19.7	20.3	21.9
Oil, Natural Gas and CO_2 Transmission	3.9	4.0	3.2	3.1	3.4	4.4	4.6	5.1
Downstream Oil and Gas	**3.6**	**4.7**	**5.2**	**5.5**	**5.6**	**5.8**	**5.9**	**5.8**
Petroleum Refining	3.2	4.4	5.1	5.3	5.4	5.6	5.8	5.6
Natural Gas Distribution	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2
ELECTRICITY	**39.8**	**48.8**	**44.6**	**45.1**	**47.4**	**42.6**	**43.5**	**32.8**
TRANSPORTATION	**17.0**	**25.1**	**33.3**	**34.4**	**32.1**	**30.5**	**32.2**	**33.5**
Passenger Transport	**9.1**	**10.6**	**12.0**	**12.5**	**12.0**	**12.4**	**12.7**	**13.2**
Cars, Light Trucks and Motorcycles	8.0	9.1	10.3	10.8	10.4	10.9	11.1	11.5
Bus, Rail and Domestic Aviation	1.1	1.4	1.7	1.7	1.6	1.5	1.6	1.7
Freight Transport	**5.8**	**13.3**	**20.4**	**20.8**	**19.0**	**17.1**	**18.6**	**19.3**
Heavy Duty Trucks, Rail	5.5	13.1	20.2	20.6	18.8	17.0	18.4	19.1
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	**2.1**	**1.2**	**1.0**	**1.1**	**1.1**	**1.0**	**1.0**	**1.0**
HEAVY INDUSTRY	**12.6**	**17.7**	**19.5**	**19.8**	**19.7**	**17.8**	**17.3**	**19.4**
Mining	**0.2**	**0.3**	**0.6**	**0.7**	**0.6**	**0.4**	**0.3**	**0.3**
Smelting and Refining (Non Ferrous Metals)	**0.4**	**0.6**	**0.8**	**0.7**	**1.1**	**0.8**	**0.8**	**0.8**
Pulp and Paper	**0.5**	**0.8**	**0.8**	**1.0**	**0.9**	**1.0**	**1.2**	**1.7**
Iron and Steel	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Cement	**1.2**	**1.8**	**1.5**	**1.4**	**1.5**	**1.3**	**1.5**	**1.6**
Lime & Gypsum	**0.2**	**0.3**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**
Chemicals & Fertilizers	**10.0**	**13.8**	**15.5**	**15.6**	**15.3**	**14.0**	**13.3**	**14.7**
BUILDINGS	**12.1**	**16.2**	**20.3**	**19.4**	**18.8**	**17.7**	**20.0**	**21.9**
Service Industry	**5.3**	**8.5**	**11.5**	**10.1**	**10.4**	**10.4**	**11.2**	**12.7**
Residential	**6.9**	**7.7**	**8.9**	**9.3**	**8.4**	**7.3**	**8.8**	**9.2**
AGRICULTURE	**16.6**	**22.7**	**21.6**	**21.5**	**21.3**	**20.8**	**20.2**	**20.8**
On Farm Fuel Use	**2.9**	**3.5**	**3.3**	**3.2**	**3.1**	**2.7**	**2.9**	**3.2**
Crop Production	**3.7**	**4.0**	**6.1**	**6.1**	**6.2**	**5.9**	**5.2**	**5.6**
Animal Production	**9.9**	**15.2**	**12.2**	**12.1**	**12.1**	**12.2**	**12.1**	**12.0**
WASTE	**1.2**	**1.7**	**1.8**	**1.9**	**1.9**	**1.9**	**1.9**	**2.0**
Solid Waste	**1.1**	**1.6**	**1.6**	**1.7**	**1.7**	**1.8**	**1.8**	**1.9**
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**	**0.1**	**0.0**	**0.0**	**0.0**
COAL PRODUCTION	**0.6**	**0.5**	**0.9**	**0.6**	**0.6**	**0.6**	**0.4**	**0.4**
LIGHT MANUFACTURING, CONSTRUCTION & FOREST RESOURCES	**5.6**	**2.2**	**3.1**	**3.1**	**3.0**	**3.1**	**2.8**	**2.8**
Light Manufacturing	**4.8**	**1.4**	**2.4**	**2.5**	**2.3**	**2.3**	**2.0**	**2.0**
Construction	**0.7**	**0.7**	**0.5**	**0.6**	**0.5**	**0.6**	**0.7**	**0.7**
Forest Resources	**0.1**	**0.2**	**0.1**	**0.1**	**0.2**	**0.1**	**0.2**	**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.

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

- indicates no emissions

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

	1990	2005	2013	2014	2015	2016	2017	2018
	Mt CO_2 eq							
NATIONAL GHG TOTAL	**51.6**	**62.0**	**60.3**	**60.2**	**59.3**	**61.8**	**63.3**	**65.5**
OIL AND GAS	**7.6**	**11.9**	**14.4**	**14.5**	**13.4**	**13.6**	**13.7**	**13.9**
Upstream Oil and Gas	**6.2**	**11.3**	**13.7**	**13.7**	**12.6**	**12.8**	**12.9**	**13.2**
Natural Gas Production and Processing	3.9	9.2	11.7	11.9	10.6	10.5	10.7	11.1
Conventional Oil Production	0.8	0.7	0.6	0.6	0.6	0.6	0.6	0.6
Conventional Light Oil Production	0.8	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, Natural Gas and CO_2 Transmission	1.5	1.4	1.4	1.2	1.5	1.6	1.6	1.5
Downstream Oil and Gas	**1.5**	**0.6**	**0.7**	**0.7**	**0.8**	**0.9**	**0.8**	**0.6**
Petroleum Refining	1.3	0.5	0.6	0.6	0.7	0.8	0.6	0.5
Natural Gas Distribution	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
ELECTRICITY	**0.9**	**1.0**	**0.4**	**0.3**	**0.3**	**0.2**	**0.2**	**0.4**
TRANSPORTATION	**15.6**	**20.2**	**21.0**	**21.3**	**21.9**	**23.2**	**23.8**	**24.9**
Passenger Transport	**7.9**	**10.3**	**9.6**	**9.7**	**10.2**	**11.1**	**11.3**	**11.5**
Cars, Light Trucks and Motorcycles	6.7	8.8	8.3	8.4	8.9	9.8	9.8	10.0
Bus, Rail and Domestic Aviation	1.2	1.5	1.3	1.3	1.3	1.4	1.4	1.6
Freight Transport	**5.4**	**8.6**	**10.4**	**10.4**	**10.6**	**11.0**	**11.5**	**12.3**
Heavy Duty Trucks, Rail	4.3	7.2	8.7	8.7	8.7	9.1	9.6	10.3
Domestic Aviation and Marine	1.1	1.4	1.6	1.7	1.9	1.9	1.9	1.9
Other: Recreational, Commercial and Residential	**2.3**	**1.4**	**1.0**	**1.1**	**1.1**	**1.1**	**1.1**	**1.1**
HEAVY INDUSTRY	**8.7**	**7.1**	**5.4**	**5.6**	**5.7**	**6.2**	**6.4**	**6.5**
Mining	**0.5**	**0.3**	**0.2**	**0.3**	**0.3**	**0.3**	**0.4**	**0.5**
Smelting and Refining (Non Ferrous Metals)	**2.0**	**1.7**	**1.3**	**1.0**	**0.9**	**1.3**	**1.2**	**1.1**
Pulp and Paper	**4.0**	**1.8**	**1.8**	**1.9**	**1.9**	**2.0**	**2.1**	**2.1**
Iron and Steel	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Cement	**1.0**	**2.0**	**1.5**	**1.8**	**2.0**	**2.1**	**2.2**	**2.3**
Lime & Gypsum	**0.2**	**0.3**	**0.2**	**0.3**	**0.2**	**0.2**	**0.1**	**0.1**
Chemicals & Fertilizers	**0.9**	**0.9**	**0.4**	**0.3**	**0.3**	**0.4**	**0.4**	**0.3**
BUILDINGS	**7.7**	**8.5**	**8.0**	**8.0**	**7.5**	**7.7**	**8.5**	**8.3**
Service Industry	**3.1**	**3.8**	**3.7**	**3.8**	**3.4**	**3.5**	**3.9**	**3.9**
Residential	**4.6**	**4.7**	**4.4**	**4.2**	**4.1**	**4.1**	**4.6**	**4.4**
AGRICULTURE	**2.8**	**3.1**	**2.8**	**2.8**	**2.9**	**3.1**	**3.1**	**3.3**
On Farm Fuel Use	**0.6**	**0.3**	**0.6**	**0.6**	**0.6**	**0.7**	**0.7**	**0.8**
Crop Production	**0.4**	**0.3**	**0.4**	**0.3**	**0.3**	**0.4**	**0.4**	**0.4**
Animal Production	**1.8**	**2.4**	**1.9**	**1.9**	**2.0**	**2.0**	**2.0**	**2.1**
WASTE	**4.1**	**4.2**	**3.7**	**3.7**	**3.7**	**3.6**	**3.6**	**3.5**
Solid Waste	**4.0**	**4.0**	**3.6**	**3.5**	**3.5**	**3.4**	**3.4**	**3.4**
Wastewater	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.2**	**0.2**	**0.2**
Waste Incineration	**0.0**	-	-	-	-	**0.0**	**0.0**	**0.0**
COAL PRODUCTION	**1.8**	**1.7**	**2.0**	**1.9**	**1.6**	**1.8**	**1.7**	**2.0**
LIGHT MANUFACTURING, CONSTRUCTION & FOREST RESOURCES	**2.6**	**4.3**	**2.5**	**2.2**	**2.4**	**2.4**	**2.5**	**2.8**
Light Manufacturing	**1.4**	**3.1**	**1.6**	**1.4**	**1.5**	**1.4**	**1.3**	**1.5**
Construction	**0.6**	**0.5**	**0.4**	**0.3**	**0.4**	**0.6**	**0.6**	**0.7**
Forest Resources	**0.5**	**0.7**	**0.5**	**0.4**	**0.5**	**0.4**	**0.5**	**0.6**

Notes:

Totals may not add up due to rounding.

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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.

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

- indicates no emissions

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

	1990	2005	2013	2014	2015	2016	2017	2018
	Mt CO_2 eq							
NATIONAL GHG TOTAL	**0.5**	**0.5**	**0.6**	**0.5**	**0.5**	**0.5**	**0.5**	**0.6**
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, Natural Gas and CO_2 Transmission	-	-	-	-	-	-	-	-
Downstream Oil and Gas	**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	-	-
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**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.5**
Passenger Transport	**0.1**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**
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**	**0.1**	**0.3**	**0.2**	**0.2**	**0.2**	**0.2**	**0.3**
Heavy Duty Trucks, Rail	0.1	0.1	0.2	0.2	0.2	0.2	0.2	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	**0.0**	**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**	**-**	**-**	**-**
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**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Service Industry	**0.1**	**0.0**	**0.1**	**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	**0.0**	**0.0**	**-**	**-**	**-**	**0.0**	**-**	**0.0**
On Farm Fuel Use	**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**
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.

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

- indicates no emissions

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

	1999	2005	2013	2014	2015	2016	2017	2018
	Mt CO_2 eq							
NATIONAL GHG TOTAL	**1.2**	**1.6**	**1.3**	**1.5**	**1.7**	**1.6**	**1.3**	**1.2**
OIL AND GAS	**0.2**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Upstream Oil and Gas	**0.2**	**0.2**	**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	0.1	0.1	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	0.0
Conventional Heavy Oil Production	-	-	-	-	-	-	-	-
Frontier Oil Production	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Oil Sands (Mining, In-situ, Upgrading)	-	-	-	-	-	-	-	-
Mining and Extraction	-	-	-	-	-	-	-	-
In-situ	-	-	-	-	-	-	-	-
Upgrading	-	-	-	-	-	-	-	-
Oil, Natural Gas and CO_2 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	-	-	-	-	-	-	-	-
Natural Gas Distribution	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ELECTRICITY	**0.1**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
TRANSPORTATION	**0.5**	**0.7**	**0.6**	**0.7**	**0.9**	**0.8**	**0.8**	**0.7**
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	0.1	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**	**0.4**	**0.5**	**0.6**	**0.6**	**0.5**	**0.4**
Heavy Duty Trucks, Rail	0.2	0.4	0.4	0.5	0.6	0.6	0.5	0.4
Domestic Aviation and Marine	0.0	0.1	0.1	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**	**0.3**	**0.3**	**0.3**	**0.4**	**0.3**	**0.3**	**0.3**
Mining	**0.2**	**0.3**	**0.3**	**0.3**	**0.4**	**0.3**	**0.3**	**0.3**
Smelting and Refining (Non Ferrous Metals)	**-**	**0.0**	**-**	**0.0**	**0.0**	**-**	**-**	**-**
Pulp and Paper	**-**	**0.0**	**-**	**0.0**	**0.0**	**-**	**-**	**-**
Iron and Steel	**-**	**0.0**	**-**	**0.0**	**0.0**	**-**	**-**	**-**
Cement	**-**	**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**	**0.2**	**0.3**	**0.3**	**0.3**	**0.3**	**0.1**	**0.2**
Service Industry	**0.2**	**0.1**	**0.2**	**0.2**	**0.2**	**0.2**	**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**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
Light Manufacturing	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Construction	**0.0**	**x**	**x**	**x**	**x**	**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.

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

- indicates no emissions

x indicates data has been suppressed to respect confidentiality

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

	1999	2005	2013	2014	2015	2016	2017	2018
	Mt CO_2 eq							
NATIONAL GHG TOTAL	**0.4**	**0.6**	**0.8**	**0.7**	**0.6**	**0.7**	**0.7**	**0.7**
OIL AND GAS	**0.0**	**0.0**	**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, Natural Gas and CO_2 Transmission	-	-	-	-	-	-	-	-
Downstream Oil and Gas	**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	-	-
Natural Gas Distribution	-	-	-	-	-	-	-	-
ELECTRICITY	**0.0**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
TRANSPORTATION	**0.3**	**0.4**	**0.6**	**0.5**	**0.4**	**0.5**	**0.5**	**0.5**
Passenger Transport	**0.1**	**0.1**	**0.2**	**0.2**	**0.1**	**0.1**	**0.2**	**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	**0.2**	**0.2**	**0.4**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**
Heavy Duty Trucks, Rail	0.0	0.1	0.2	0.2	0.1	0.2	0.2	0.2
Domestic Aviation and Marine	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1
Other: Recreational, Commercial and Residential	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HEAVY INDUSTRY	**0.1**	**0.0**	**0.1**	**0.0**	**0.0**	**0.1**	**0.0**	**0.0**
MINING	**0.1**	**0.0**	**0.1**	**0.0**	**0.0**	**0.1**	**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	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
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**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
Light Manufacturing	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Construction	**0.0**	**x**	**x**	**x**	**x**	**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.

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

- indicates no emissions

x indicates data has been suppressed to respect confidentiality

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**	**1.6**
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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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, Natural Gas and CO_2 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**	**0.4**	**0.6**	**0.5**	**0.6**
Passenger Transport	**0.3**	**0.2**	**0.3**	**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	**0.2**	**0.1**	**0.1**	**0.1**	**0.2**	**0.1**	**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	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Other: Recreational, Commercial and Residential	**0.1**	**0.0**	**0.0**	**0.1**	**0.1**	**0.0**	**0.1**	**0.1**	**0.1**
HEAVY INDUSTRY	**0.1**	**0.1**	**0.1**	**0.1**	**0.2**	**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.

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

- indicates no emissions

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, can be either public or private generators and are reported under North American Industrial Classification System (NAICS) code 22111. 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. Any industry that generates electricity, but whose main business is something other than electric power generation, is reported under the NAICS code associated with their primary business activity. However, in some cases, a company may have divided their operations so that the electric power generation is a separate business entity (even if the operations are on the same site). In this case, the electric power generation is included under the Public Electricity and Heat Production category.

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 Statistics Canada (StatCan) Data Tables 25-10-0019-01, 25-10-0020-01 and 25-10-0021-01.

A “generation intensity” indicator is derived to reflect the GHG emissions intensity of electricity as it is delivered to the electricity grid. Electricity generation

Electricity Generation and GHG Emission Details for:

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 StatCan Data Tables (2005–2018) 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 (mainly) 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, distribution and anywhere else 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 StatCan Data Table 25-10-0021-01. 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**

	1990	2000	2005	2013	2014	2015	2016	2017	2018[a]
Greenhouse Gas Emissions[b]									
	kt CO_2 equivalent								
Combustion	**94 500**	**132 000**	**125 000**	**87 400**	**83 800**	**87 000**	**80 500**	**78 400**	**69 800**
Coal	80 500	109 000	98 200	63 800	60 300	62 300	57 100	57 200	44 100
Natural Gas	2 720	13 800	15 400	19 300	18 600	19 300	18 300	16 300	21 000
Other Fuels[c]	11 300	9 380	11 300	4 270	4 910	5 450	5 040	4 820	4 690
Other Emissions[d]	**0**	**27**	**52**	**63**	**73**	**87**	**80**	**80**	**78**
Overall Total[e, f, g]	**94 500**	**132 000**	**125 000**	**87 500**	**83 900**	**87 100**	**80 500**	**78 500**	**69 900**
Electricity Generation[h, i]									
	GWh								
Combustion[j]	**101 000**	**146 000**	**140 000**	**104 000**	**110 000**	**108 000**	**106 000**	**99 300**	**98 800**
Coal	82 200	106 000	93 900	60 900	61 600	57 800	57 900	55 900	47 000
Natural Gas	4 140	26 600	29 800	35 600	40 000	41 200	39 100	35 100	43 300
Other Fuels	14 800	13 400	16 700	7 900	8 640	8 560	9 120	8 290	8 440
Refined Petroleum Products	14 700	10 600	10 800	2 160	3 170	3 550	3 570	3 100	2 880
Biomass	14	1 830	1 780	2 050	2 030	1 980	2 250	2 170	1 950
Other	91	960	4 100	3 700	3 400	3 000	3 300	3 000	3 600
Nuclear	**68 800**	**68 700**	**86 800**	**97 600**	**101 200**	**96 000**	**95 700**	**95 600**	**95 000**
Hydro	**263 000**	**323 000**	**327 000**	**357 000**	**348 000**	**345 000**	**354 000**	**361 000**	**353 000**
Other Renewables[k]	**26**	**264**	**1 580**	**11 400**	**12 900**	**27 500**	**31 600**	**32 100**	**34 000**
Other Generation[l, m]	**0**	**0**	**32**	**9 550**	**2 240**	**140**	**180**	**200**	**210**
Overall Total[f]	**433 000**	**539 000**	**556 000**	**580 000**	**575 000**	**576 000**	**587 000**	**588 000**	**581 000**
Greenhouse Gas Intensity[n]									
	Generation Intensity (g GHG / kWh electricity generated)								
CO_2 intensity (g CO_2 / kWh)	220	240	220	150	140	150	140	130	120
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	0.004	0.004	0.003	0.003	0.003	0.003	0.003	0.003
Generation Intensity (g CO_2 eq / kWh)[f]	**220**	**250**	**220**	**150**	**150**	**150**	**140**	**130**	**120**
	Losses								
Unallocated Energy (GWh)[o, p]	31 000	42 000	37 000	41 000	29 000	13 000	3 000	17 000	25 000
SF_6 Emissions (kt CO_2 eq)[q]	200	200	160	220	130	190	190	140	160
	Consumption Intensity (g GHG / kWh electricity consumed)								
Consumption Intensity (g CO_2 eq / kWh)[r]	**240**	**270**	**240**	**160**	**150**	**160**	**140**	**140**	**130**

Notes:

Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111—Electric Power Generation.

– Indicates no emissions or no electricity generation

0 Indicates emissions or electricity generation value less than 0.1

a. Preliminary data.

b. Emissions based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.

c. 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.

d. GHG emissions from on-site combustion of fuel not directly related to electricity generation.

e. GHG emissions from the flooding of land for hydro dams are not included.

f. Totals may not add up to overall total due to rounding.

g. Any CO_2 captured for the purpose of long term storage is not included in the total

h. Taken from StatCan Data Tables 25-10-0019-01 and 25-10-0020-01 (2005-2018).

i. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).

j. 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.

k. Other Renewables—includes electricity generation by wind, tidal and solar.

l. NAICS category 221119, Other Electric Power Generation.

m. 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.

n. Intensity values have been rounded so as to present the estimated level of accuracy.

o. Adapted from StatCan Data Table 25--10-0021-001 (2005-2018) or Cat. No. 57-202-XIB (1990–2004).

p. Includes transmission line losses, metering differences and other losses.

q. 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).

r. Consumption intensity values are impacted by unallocated energy and SF_6 transmission emissions.

Table A13–2 **Electricity Generation and GHG Emission Details for Newfoundland and Labrador**

	1990	2000	2005	2013	2014	2015	2016	2017	2018[a]
Greenhouse Gas Emissions[b]									
	kt CO_2 equivalent								
Combustion	**1 640**	**822**	**819**	**867**	**1 210**	**1 340**	**1 520**	**1 530**	**1 130**
Coal	–	–	–	–	–	–	–	–	–
Natural Gas	–	–	–	–	–	–	–	–	–
Other Fuels[c]	1 640	822	819	867	1 210	1 340	1 520	1 530	1 130
Other Emissions[d]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[e, f, g]	**1 640**	**822**	**819**	**867**	**1 210**	**1 340**	**1 520**	**1 530**	**1 130**
Electricity Generation[h, i]									
	GWh								
Combustion[j]	**2 090**	**1 020**	**1 360**	**1 090**	**1 470**	**1 560**	**1 800**	**1 800**	**1 370**
Coal	–	–	–	–	–	–	–	–	–
Natural Gas	–	–	–	–	–	–	–	–	–
Other Fuels	2 090	1 020	1 360	1 090	1 470	1 560	1 800	1 800	1 370
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**34 300**	**41 800**	**38 900**	**40 500**	**38 200**	**38 800**	**39 500**	**36 500**	**41 800**
Other Renewables[k]	**0**	**–**	**–**	**192**	**177**	**172**	**190**	**186**	**206**
Other Generation[l, m]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[f]	**36 400**	**42 800**	**40 300**	**41 800**	**39 800**	**40 500**	**41 500**	**38 500**	**43 400**
Greenhouse Gas Intensity[n]									
	Generation Intensity (g GHG / kWh electricity generated)								
CO_2 intensity (g CO_2 / kWh)	45	19	20	21	30	33	36	39	26
CH_4 intensity (g CH_4 / kWh)	0.0005	0.0002	0.0002	0.0003	0.0004	0.0005	0.0006	0.0006	0.0004
N_2O intensity (g N_2O / kWh)	0.001	0.0004	0.0	0.0	0.001	0.001	0.001	0.001	0.0
Generation Intensity (g CO_2 eq / kWh)[f]	**45**	**19**	**20**	**21**	**30**	**33**	**37**	**40**	**26**
	Losses								
Unallocated Energy (GWh)[o, p]	990	1 300	810	1 400	1 200	1 100	780	673	941
SF_6 Emissions (kt CO_2 eq)[q]	0.94	0.92	0.50	1.0	1.3	3.4	3.8	1.7	2.2
	Consumption Intensity (g GHG / kWh electricity consumed)								
Consumption Intensity (g CO_2 eq / kWh)[r]	**46**	**20**	**21**	**21**	**31**	**34**	**38**	**40**	**27**

Notes:

Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111—Electric Power Generation.

– Indicates no emissions or no electricity generation

0 Indicates emissions or electricity generation value less than 0.1

a. Preliminary data.

b. Emissions based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.

c. 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.

d. GHG emissions from on-site combustion of fuel not directly related to electricity generation.

e. GHG emissions from the flooding of land for hydro dams are not included.

f. Totals may not add up to overall total due to rounding.

g. Any CO_2 captured for the purpose of long term storage is not included in the total

h. Taken from StatCan Data Tables 25-10-0019-01 and 25-10-0020-01 (2005-2018).

i. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).

j. 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.

k. Other Renewables—includes electricity generation by wind, tidal and solar.

l. NAICS category 221119, Other Electric Power Generation.

m. 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.

n. Intensity values have been rounded so as to present the estimated level of accuracy.

o. Adapted from StatCan Data Table 25--10-0021-001 (2005-2018) or Cat. No. 57-202-XIB (1990–2004).

p. Includes transmission line losses, metering differences and other losses.

q. 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).

r. Consumption intensity values are impacted by unallocated energy and SF_6 transmission emissions.

Table A13–3 **Electricity Generation and GHG Emission Details for Prince Edward Island**

	1990	2000	2005	2013	2014	2015	2016	2017	2018[a]
Greenhouse Gas Emissions[b]									
	kt CO_2 equivalent								
Combustion	**104**	**53.0**	**4.76**	**3.9**	**4.3**	**13.9**	**4.2**	**8.6**	**2.8**
Coal	–	–	–	–	–	–	–	–	–
Natural Gas	–	–	–	–	–	–	–	–	–
Other Fuels[c]	104	53.0	4.76	3.9	4.3	13.9	4.2	8.6	2.8
Other Emissions[d]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[e, f, g]	**104**	**53.0**	**4.76**	**3.9**	**4.3**	**13.9**	**4.2**	**8.6**	**2.8**
Electricity Generation[h, i]									
	GWh								
Combustion[j]	**81.1**	**48.1**	**6.31**	**8.2**	**8.3**	**9.8**	**9.8**	**5.6**	**3.0**
Coal	–	–	–	–	–	–	–	–	–
Natural Gas	–	–	–	–	–	–	–	–	–
Other Fuels	81.1	48.1	6.31	8.2	8.3	9.8	9.8	5.6	3.0
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Other Renewables[k]	**–**	**–**	**40.1**	**499**	**611**	**606**	**594**	**604**	**640**
Other Generation[l, m]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[f]	**81.1**	**48.1**	**46.4**	**507**	**620**	**616**	**603**	**610**	**643**
Greenhouse Gas Intensity[n]									
	Generation Intensity (g GHG / kWh electricity generated)								
CO_2 intensity (g CO_2 / kWh)	1 300	1 100	100	8	7	22	7	14	4
CH_4 intensity (g CH_4 / kWh)	0.01	0.01	0.001	0.0002	0.0001	0.0007	0.0002	0.0005	0.0003
N_2O intensity (g N_2O / kWh)	0.03	0.02	0.002	0.0001	0.0001	0.0004	0.0001	0.0002	0.0
Generation Intensity (g CO_2 eq / kWh)[f]	**1 300**	**1 100**	**100**	**8**	**7**	**23**	**7**	**14**	**4**
	Losses								
Unallocated Energy (GWh)[o, p]	unk	unk	unk	20	33	20	22	10	20
SF_6 Emissions (kt CO_2 eq)[q]	0	0	–	0	0	0	0	0	0
	Consumption Intensity (g GHG / kWh electricity consumed)								
Consumption Intensity (g CO_2 eq / kWh)[r]	**	**	**	**	**	**	**	**	**

Notes:

Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111—Electric Power Generation.

– 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.

a. Preliminary data.

b. Emissions based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.

c. 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.

d. GHG emissions from on-site combustion of fuel not directly related to electricity generation.

e. GHG emissions from the flooding of land for hydro dams are not included.

f. Totals may not add up to overall total due to rounding.

g. Any CO_2 captured for the purpose of long term storage is not included in the total

h. Taken from StatCan Data Tables 25-10-0019-01 and 25-10-0020-01 (2005-2018).

i. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).

j. 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.

k. Other Renewables—includes electricity generation by wind, tidal and solar.

l. NAICS category 221119, Other Electric Power Generation.

m. 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.

n. Intensity values have been rounded so as to present the estimated level of accuracy.

o. Adapted from StatCan Data Table 25--10-0021-001 (2005-2018) or Cat. No. 57-202-XIB (1990–2004).

p. Includes transmission line losses, metering differences and other losses.

q. 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).

r. Consumption intensity values are impacted by unallocated energy and SF_6 transmission emissions.

Table A13–4 **Electricity Generation and GHG Emission Details for Nova Scotia**

	1990	2000	2005	2013	2014	2015	2016	2017	2018[a]
Greenhouse Gas Emissions[b]									
	kt CO_2 equivalent								
Combustion	**6 900**	**9 600**	**10 800**	**7 600**	**7 250**	**7 020**	**6 400**	**6 690**	**7 010**
Coal	5 110	8 320	5 520	5 170	4 850	4 450	4 390	4 740	4 890
Natural Gas	–	–	x	x	760	690	640	730	780
Other Fuels[c]	1 790	1 280	x	x	1 640	1 890	1 370	1 220	1 330
Other Emissions[d]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[e, f, g]	**6 900**	**9 600**	**10 800**	**7 600**	**7 250**	**7 020**	**6 400**	**6 690**	**7 010**
Electricity Generation[h, i]									
	GWh								
Combustion[j]	**8 440**	**10 500**	**11 100**	**8 770**	**8 560**	**8 220**	**7 820**	**7 700**	**7 710**
Coal	6 020	8 850	6 770	5 500	5 250	4 870	4 830	4 840	4 970
Natural Gas	–	–	181	1 370	1 470	1 300	1 240	1 440	1 420
Other Fuels	2 430	1 610	4 110	1 890	1 840	2 050	1 750	1 410	1 310
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**1 120**	**887**	**1 040**	**964**	**1 100**	**1 010**	**803**	**850**	**923**
Other Renewables[k]	**26.1**	**0**	**113**	**780**	**764**	**821**	**979**	**1 270**	**1 090**
Other Generation[l, m]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[f]	**9 590**	**11 300**	**12 200**	**10 500**	**10 400**	**10 000**	**9 610**	**9 810**	**9 710**
Greenhouse Gas Intensity[n]									
	Generation Intensity (g GHG / kWh electricity generated)								
CO_2 intensity (g CO_2 / kWh)	720	840	880	720	690	700	660	680	720
CH_4 intensity (g CH_4 / kWh)	0.007	0.009	0.02	0.03	0.03	0.03	0.03	0.03	0.03
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)[f]	**720**	**850**	**880**	**720**	**700**	**700**	**670**	**680**	**720**
	Losses								
Unallocated Energy (GWh)[o, p]	580	830	770	570	680	570	630	640	410
SF_6 Emissions (kt CO_2 eq)[q]	23	23	29	39	33	33	28	40	25
	Consumption Intensity (g GHG / kWh electricity consumed)								
Consumption Intensity (g CO_2 eq / kWh)[r]	**770**	**920**	**950**	**770**	**750**	**740**	**720**	**730**	**760**

Notes:

Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111—Electric Power Generation.

– 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

a. Preliminary data.

b. Emissions based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.

c. 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.

d. GHG emissions from on-site combustion of fuel not directly related to electricity generation.

e. GHG emissions from the flooding of land for hydro dams are not included.

f. Totals may not add up to overall total due to rounding.

g. Any CO_2 captured for the purpose of long term storage is not included in the total

h. Taken from StatCan Data Tables 25-10-0019-01 and 25-10-0020-01 (2005-2018).

i. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).

j. 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.

k. Other Renewables—includes electricity generation by wind, tidal and solar.

l. NAICS category 221119, Other Electric Power Generation.

m. 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.

n. Intensity values have been rounded so as to present the estimated level of accuracy.

o. Adapted from StatCan Data Table 25--10-0021-001 (2005-2018) or Cat. No. 57-202-XIB (1990–2004).

p. Includes transmission line losses, metering differences and other losses.

q. 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).

r. Consumption intensity values are impacted by unallocated energy and SF_6 transmission emissions.

Table A13–5 **Electricity Generation and GHG Emission Details for New Brunswick**

	1990	2000	2005	2013	2014	2015	2016	2017	2018[a]
Greenhouse Gas Emissions[b]									
	kt CO_2 equivalent								
Combustion	**6 020**	**8 970**	**8 060**	**4 190**	**3 780**	**3 800**	**4 010**	**3 350**	**3 710**
Coal	1 180	3 130	2 910	x	1 330	1 160	1 490	1 370	1 530
Natural Gas	–	–	x	x	1 040	1 040	1 000	580	650
Other Fuels[c]	4 840	5 840	x	1 150	1 410	1 610	1 510	1 400	1 520
Other Emissions[d]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[e, f, g]	**6 020**	**8 970**	**8 060**	**4 190**	**3 780**	**3 800**	**4 010**	**3 350**	**3 710**
Electricity Generation[h, i]									
	GWh								
Combustion[j]	**7 630**	**11 000**	**12 100**	**5 310**	**6 980**	**5 630**	**6 100**	**4 390**	**4 780**
Coal	1 270	3 820	2 920	2 250	2 560	1 650	2 160	2 090	2 330
Natural Gas	–	–	1 970	1 770	2 570	2 320	2 360	1 300	980
Other Fuels	6 360	7 210	7 210	1 290	1 850	1 650	1 580	1 000	1 480
Nuclear	**5 340**	**3 960**	**4 380**	**4 480**	**5 010**	**4 280**	**4 540**	**5 120**	**4 870**
Hydro	**3 460**	**3 220**	**3 820**	**3 400**	**2 960**	**2 620**	**3 260**	**2 600**	**2 530**
Other Renewables[k]	**–**	**–**	**–**	**737**	**786**	**792**	**766**	**781**	**825**
Other Generation[l, m]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[f]	**16 400**	**18 200**	**20 300**	**14 500**	**15 700**	**13 300**	**14 700**	**12 900**	**13 000**
Greenhouse Gas Intensity[n]									
	Generation Intensity (g GHG / kWh electricity generated)								
CO_2 intensity (g CO_2 / kWh)	360	490	390	290	240	280	270	260	280
CH_4 intensity (g CH_4 / kWh)	0.004	0.005	0.01	0.02	0.02	0.02	0.02	0.02	0.02
N_2O intensity (g N_2O / kWh)	0.007	0.009	0.007	0.004	0.004	0.005	0.005	0.004	0.005
Generation Intensity (g CO_2 eq / kWh)[f]	**370**	**490**	**400**	**290**	**240**	**290**	**270**	**260**	**290**
	Losses								
Unallocated Energy (GWh)[o, p]	990	1 300	1 100	440	470	400	590	220	430
SF_6 Emissions (kt CO_2 eq)[q]	0.71	0.70	–	0.82	0.58	0.83	0.59	1.50	1.40
	Consumption Intensity (g GHG / kWh electricity consumed)								
Consumption Intensity (g CO_2 eq / kWh)[r]	**390**	**530**	**420**	**300**	**250**	**290**	**280**	**260**	**300**

Notes:

Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111—Electric Power Generation.

– 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

a. Preliminary data.

b. Emissions based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.

c. 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.

d. GHG emissions from on-site combustion of fuel not directly related to electricity generation.

e. GHG emissions from the flooding of land for hydro dams are not included.

f. Totals may not add up to overall total due to rounding.

g. Any CO_2 captured for the purpose of long term storage is not included in the total

h. Taken from StatCan Data Tables 25-10-0019-01 and 25-10-0020-01 (2005-2018).

i. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).

j. 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.

k. Other Renewables—includes electricity generation by wind, tidal and solar.

l. NAICS category 221119, Other Electric Power Generation.

m. 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.

n. Intensity values have been rounded so as to present the estimated level of accuracy.

o. Adapted from StatCan Data Table 25--10-0021-001 (2005-2018) or Cat. No. 57-202-XIB (1990–2004).

p. Includes transmission line losses, metering differences and other losses.

q. 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).

r. Consumption intensity values are impacted by unallocated energy and SF_6 transmission emissions.

Table A13–6 **Electricity Generation and GHG Emission Details for Quebec**

	1990	2000	2005	2013	2014	2015	2016	2017	2018[a]
Greenhouse Gas Emissions[b]									
	kt CO_2 equivalent								
Combustion	**1 490**	**567**	**616**	**367**	**245**	**205**	**233**	**239**	**255**
Coal	–	–	–	–	–	–	–	–	–
Natural Gas	114	194	269	144	13	0	1	1	2
Other Fuels[c]	1 380	373	347	223	231	205	232	238	253
Other Emissions[d]	**–**	**2.5**	**4.6**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[e, f, g]	**1 490**	**569**	**621**	**367**	**245**	**205**	**233**	**239**	**255**
Electricity Generation[h, i]									
	GWh								
Combustion[j]	**1 980**	**1 150**	**1 390**	**1 140**	**1 010**	**960**	**1 290**	**1 310**	**1 360**
Coal	–	–	–	–	–	–	–	–	–
Natural Gas	–	191	212	14	14	0	0	0	0
Other Fuels	1 980	961	1 170	1 130	1 000	960	1 290	1 310	1 360
Nuclear	**4 070**	**4 890**	**4 480**	**0**	**0**	**0**	**0**	**0**	**0**
Hydro	**112 000**	**153 000**	**155 000**	**182 000**	**177 000**	**175 000**	**177 000**	**182 000**	**180 000**
Other Renewables[k]	**–**	**173**	**416**	**1 030**	**1 010**	**6 420**	**9 420**	**9 530**	**10 200**
Other Generation[l, m]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[f]	**118 000**	**160 000**	**161 000**	**184 000**	**179 000**	**182 000**	**188 000**	**193 000**	**191 000**
Greenhouse Gas Intensity[n]									
	Generation Intensity (g GHG / kWh electricity generated)								
CO_2 intensity (g CO_2 / kWh)	13	3.5	3.7	2.0	1.4	1.1	1.2	1.2	1.3
CH_4 intensity (g CH_4 / kWh)	0.0004	0.0005	0.0010	0.0002	0.0	0.0	0.0	0.0	0.0
N_2O intensity (g N_2O / kWh)	0.0003	0.0002	0.0004	0.0	0.0	0.0	0.0	0.0	0.0
Generation Intensity (g CO_2 eq / kWh)[f]	**13**	**3.6**	**3.9**	**2.0**	**1.4**	**1.1**	**1.2**	**1.2**	**1.3**
	Losses								
Unallocated Energy (GWh)[o, p]	7 300	13 000	9 100	12 000	13 000	2 600	9 000	12 000	10 000
SF_6 Emissions (kt CO_2 eq)[q]	37	36	30	67	17	74	81	22	58
	Consumption Intensity (g GHG / kWh electricity consumed)								
Consumption Intensity (g CO_2 eq / kWh)[r]	**14**	**4.1**	**4.3**	**2.5**	**1.6**	**1.6**	**1.8**	**1.4**	**1.7**

Notes:

Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111—Electric Power Generation.

– Indicates no emissions or no electricity generation

0 Indicates emissions or electricity generation value less than 0.1

a. Preliminary data.

b. Emissions based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.

c. 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.

d. GHG emissions from on-site combustion of fuel not directly related to electricity generation.

e. GHG emissions from the flooding of land for hydro dams are not included.

f. Totals may not add up to overall total due to rounding.

g. Any CO_2 captured for the purpose of long term storage is not included in the total

h. Taken from StatCan Data Tables 25-10-0019-01 and 25-10-0020-01 (2005-2018).

i. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).

j. 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.

k. Other Renewables—includes electricity generation by wind, tidal and solar.

l. NAICS category 221119, Other Electric Power Generation.

m. 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.

n. Intensity values have been rounded so as to present the estimated level of accuracy.

o. Adapted from StatCan Data Table 25--10-0021-001 (2005-2018) or Cat. No. 57-202-XIB (1990–2004).

p. Includes transmission line losses, metering differences and other losses.

q. 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).

r. Consumption intensity values are impacted by unallocated energy and SF_6 transmission emissions.

Table A13–7 **Electricity Generation and GHG Emission Details for Ontario**

	1990	2000	2005	2013	2014	2015	2016	2017	2018[a]
Greenhouse Gas Emissions[b]									
	kt CO_2 equivalent								
Combustion	**25 900**	**44 200**	**35 400**	**10 300**	**6 030**	**6 250**	**5 540**	**2 560**	**4 450**
Coal	24 700	38 800	29 000	3 150	95	–	–	–	–
Natural Gas	8	4 930	6 210	7 040	5 810	6 170	5 420	2 420	4 320
Other Fuels[c]	1 160	477	185	60	120	80	120	140	130
Other Emissions[d]	**–**	**0.77**	**1.4**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[e, f, g]	**25 900**	**44 200**	**35 400**	**10 300**	**6 030**	**6 250**	**5 540**	**2 560**	**4 450**
Electricity Generation[h, i]									
	GWh								
Combustion[j]	**29 200**	**52 200**	**40 900**	**17 500**	**15 600**	**15 900**	**13 600**	**6 800**	**11 100**
Coal	27 800	40 800	29 400	2 900	100	0	0	0	0
Natural Gas	3	10215	10 000	13 900	14 700	15 300	12 700	5 900	10 200
Other Fuels	1 430	1 140	1 440	720	780	640	900	870	850
Nuclear	**59 400**	**59 800**	**78 000**	**93 100**	**96 200**	**91 800**	**91 100**	**90 400**	**90 200**
Hydro	**38 700**	**36 600**	**34 600**	**36 900**	**38 200**	**34 800**	**36 100**	**39 500**	**37 800**
Other Renewables[k]	**–**	**1**	**26**	**4 240**	**3 660**	**12 200**	**12 100**	**11 800**	**26**
Other Generation[l, m]	**–**	**–**	**–**	**3 340**	**–**	**–**	**–**	**–**	**–**
Overall Total[f]	**127 000**	**138 000**	**137 000**	**149 000**	**148 000**	**150 000**	**145 000**	**150 000**	**153 000**
Greenhouse Gas Intensity[n]									
	Generation Intensity (g GHG / kWh electricity generated)								
CO_2 intensity (g CO_2 / kWh)	200	200	200	300	280	270	280	220	29
CH_4 intensity (g CH_4 / kWh)	0.002	0.011	0.013	0.012	0.010	0.010	0.009	0.004	0.01
N_2O intensity (g N_2O / kWh)	0.003	0.005	0.004	0.002	0.001	0.001	0.001	0.001	0.001
Generation Intensity (g CO_2 eq / kWh)[f]	**200**	**300**	**230**	**70**	**40**	**40**	**40**	**20**	**29**
	Losses								
Unallocated Energy (GWh)[o, p]	10 000	12 000	12 000	22 000	9 000	5 000	13 000	13 000	13 000
SF_6 Emissions (kt CO_2 eq)[q]	76	75	50	64	43	56	62	56	57
	Consumption Intensity (g GHG / kWh electricity consumed)								
Consumption Intensity (g CO_2 eq / kWh)[r]	**220**	**320**	**250**	**80**	**40**	**40**	**40**	**20**	**30**

Notes:

Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111—Electric Power Generation.

– 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

a. Preliminary data.

b. Emissions based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.

c. 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.

d. GHG emissions from on-site combustion of fuel not directly related to electricity generation.

e. GHG emissions from the flooding of land for hydro dams are not included.

f. Totals may not add up to overall total due to rounding.

g. Any CO_2 captured for the purpose of long term storage is not included in the total

h. Taken from StatCan Data Tables 25-10-0019-01 and 25-10-0020-01 (2005-2018).

i. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).

j. 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.

k. Other Renewables—includes electricity generation by wind, tidal and solar.

l. NAICS category 221119, Other Electric Power Generation.

m. 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.

n. Intensity values have been rounded so as to present the estimated level of accuracy.

o. Adapted from StatCan Data Table 25--10-0021-001 (2005-2018) or Cat. No. 57-202-XIB (1990–2004).

p. Includes transmission line losses, metering differences and other losses.

q. 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).

r. Consumption intensity values are impacted by unallocated energy and SF_6 transmission emissions.

Table A13–8 **Electricity Generation and GHG Emission Details for Manitoba**

	1990	2000	2005	2013	2014	2015	2016	2017	2018[a]
Greenhouse Gas Emissions[b]									
	kt CO_2 equivalent								
Combustion	**519**	**1 067**	**349**	**104.4**	**110.1**	**103.0**	**54.0**	**53.9**	**25.1**
Coal	x	x	x	x	77.4	71.3	33.4	29.6	5.6
Natural Gas	x	x	x	x	31.0	31.8	7.5	11.7	7.1
Other Fuels[c]	48.6	11.8	15.1	1.7	1.7	–	13.2	12.6	12.4
Other Emissions[d]	**–**	**4.8**	**8.8**	**16**	**16**	**21**	**15**	**16**	**16**
Overall Total[e, f, g]	**519**	**1 072**	**358**	**120**	**127**	**124**	**69**	**69**	**41**
Electricity Generation[h, i]									
	GWh								
Combustion[j]	**399**	**881**	**447**	**91**	**96**	**107**	**56**	**62**	**30**
Coal	375	869	421	65.4	68.9	63.4	28.5	29.5	5.3
Natural Gas	0.904	–	10.6	24.0	25.2	29.4	11.7	17.0	9.7
Other Fuels	22.4	12.4	15.1	1.5	1.6	14.4	15.5	15.2	15.0
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**19 800**	**31 500**	**36 400**	**35 300**	**34 500**	**34 800**	**36 600**	**36 000**	**30 700**
Other Renewables[k]	**–**	**–**	**53.4**	**868**	**911**	**903**	**966**	**927**	**873**
Other Generation[l, m]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[f]	**20 200**	**32 400**	**36 900**	**36 300**	**35 500**	**35 800**	**37 600**	**37 000**	**31 600**
Greenhouse Gas Intensity[n]									
	Generation Intensity (g GHG / kWh electricity generated)								
CO_2 intensity (g CO_2 / kWh)	26	33	9.6	3.3	3.5	3.4	1.8	1.9	1.3
CH_4 intensity (g CH_4 / kWh)	0.0004	0.0004	0.0002	0.0003	0.0003	0.0003	0.0001	0.0001	0.0001
N_2O intensity (g N_2O / kWh)	0.001	0.001	0.0002	0.0001	0.0001	0.0001	0.0	0.0	0.0
Generation Intensity (g CO_2 eq / kWh)[f]	**26**	**33**	**9.7**	**3.3**	**3.6**	**3.5**	**1.8**	**1.9**	**1.3**
	Losses								
Unallocated Energy (GWh)[o, p]	2 100	3 750	1 900	3 800	3 900	3 700	2 800	450	390
SF_6 Emissions (kt CO_2 eq)[q]	4.3	4.2	4.0	1.2	0.9	1.0	2.4	1.1	2.4
	Consumption Intensity (g GHG / kWh electricity consumed)								
Consumption Intensity (g CO_2 eq / kWh)[r]	**29**	**38**	**10.3**	**3.7**	**4.0**	**3.9**	**2.1**	**1.9**	**1.4**

Notes:

Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111—Electric Power Generation.

– 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

a. Preliminary data.

b. Emissions based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.

c. 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.

d. GHG emissions from on-site combustion of fuel not directly related to electricity generation.

e. GHG emissions from the flooding of land for hydro dams are not included.

f. Totals may not add up to overall total due to rounding.

g. Any CO_2 captured for the purpose of long term storage is not included in the total

h. Taken from StatCan Data Tables 25-10-0019-01 and 25-10-0020-01 (2005-2018).

i. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).

j. 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.

k. Other Renewables—includes electricity generation by wind, tidal and solar.

l. NAICS category 221119, Other Electric Power Generation.

m. 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.

n. Intensity values have been rounded so as to present the estimated level of accuracy.

o. Adapted from StatCan Data Table 25--10-0021-001 (2005-2018) or Cat. No. 57-202-XIB (1990–2004).

p. Includes transmission line losses, metering differences and other losses.

q. 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).

r. Consumption intensity values are impacted by unallocated energy and SF_6 transmission emissions.

Table A13–9 **Electricity Generation and GHG Emission Details for Saskatchewan**

	1990	2000	2005	2013	2014	2015	2016	2017	2018[a]
Greenhouse Gas Emissions[b]									
	kt CO_2 equivalent								
Combustion	**11 100**	**14 500**	**15 200**	**15 100**	**15 200**	**16 100**	**16 000**	**16 500**	**16 100**
Coal	x	x	x	x	12 600	12 600	12 200	12 500	11 700
Natural Gas	x	x	x	x	2 580	3 520	3 780	4 030	4 400
Other Fuels[c]	6.47	10.4	4.30	0.27	6.36	9.12	9.40	9.40	9.40
Other Emissions[d]	**–**	**10**	**18**	**35**	**35**	**39**	**42**	**41**	**41**
Overall Total[e, f, g]	**11 100**	**14 500**	**15 300**	**15 100**	**15 200**	**16 100**	**16 000**	**16 600**	**16 100**
Electricity Generation[h, i]									
	GWh								
Combustion[j]	**9 660**	**14 070**	**14 800**	**15 280**	**14 760**	**19 080**	**20 270**	**20 650**	**19 370**
Coal	9 340	11 390	12 170	11 760	10 220	12 090	12 040	11 980	10 350
Natural Gas	310	2 660	2 610	3 510	4 530	6 990	8 220	8 660	9 020
Other Fuels	10	10	10	10	10	0	10	10	10
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**4 210**	**3 050**	**4 570**	**4 450**	**4 710**	**3 430**	**3 280**	**3 850**	**3 590**
Other Renewables[k]	**–**	**–**	**92**	**640**	**615**	**620**	**746**	**739**	**694**
Other Generation[l, m]	**–**	**–**	**–**	**878**	**–**	**–**	**–**	**–**	**–**
Overall Total[f]	**13 900**	**17 100**	**19 500**	**21 300**	**20 100**	**23 100**	**24 300**	**25 200**	**23 700**
Greenhouse Gas Intensity[n]									
	Generation Intensity (g GHG / kWh electricity generated)								
CO_2 intensity (g CO_2 / kWh)	800	840	780	710	750	690	650	650	680
CH_4 intensity (g CH_4 / kWh)	0.02	0.03	0.03	0.04	0.04	0.05	0.05	0.05	0.06
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)[f]	**800**	**850**	**780**	**710**	**760**	**700**	**660**	**660**	**680**
	Losses								
Unallocated Energy (GWh)[o, p]	1 300	1 700	1 400	1 900	3 200	1 400	1 200	2 200	1 000
SF_6 Emissions (kt CO_2 eq)[q]	1.8	1.7	1.3	0.91	0.42	0.73	0.38	0.80	0.27
	Consumption Intensity (g GHG / kWh electricity consumed)								
Consumption Intensity (g CO_2 eq / kWh)[r]	**890**	**940**	**840**	**780**	**900**	**740**	**690**	**720**	**710**

Notes:

Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111—Electric Power Generation.

– 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

a. Preliminary data.

b. Emissions based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.

c. 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.

d. GHG emissions from on-site combustion of fuel not directly related to electricity generation.

e. GHG emissions from the flooding of land for hydro dams are not included.

f. Totals may not add up to overall total due to rounding.

g. Any CO_2 captured for the purpose of long term storage is not included in the total

h. Taken from StatCan Data Tables 25-10-0019-01 and 25-10-0020-01 (2005-2018).

i. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).

j. 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.

k. Other Renewables—includes electricity generation by wind, tidal and solar.

l. NAICS category 221119, Other Electric Power Generation.

m. 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.

n. Intensity values have been rounded so as to present the estimated level of accuracy.

o. Adapted from StatCan Data Table 25--10-0021-001 (2005-2018) or Cat. No. 57-202-XIB (1990–2004).

p. Includes transmission line losses, metering differences and other losses.

q. 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).

r. Consumption intensity values are impacted by unallocated energy and SF_6 transmission emissions.

Table A13–10 **Electricity Generation and GHG Emission Details for Alberta**

	1990	2000	2005	2013	2014	2015	2016	2017	2018[a]
Greenhouse Gas Emissions[b]									
	kt CO_2 equivalent								
Combustion	**39 800**	**50 300**	**52 000**	**48 200**	**49 200**	**51 400**	**45 800**	**46 700**	**36 200**
Coal	38 000	44 200	46 800	40 700	41 400	44 100	39 000	38 600	26 000
Natural Gas	1 700	5 740	5 170	7 520	7 820	7 360	6 810	8 030	10 180
Other Fuels[c]	11.4	300	69.0	18.6	16.9	17.6	1.7	0	0
Other Emissions[d]	**–**	**5.7**	**10**	**6**	**14**	**19**	**17**	**16**	**15**
Overall Total[e, f, g]	**39 800**	**50 300**	**52 000**	**48 200**	**49 200**	**51 500**	**45 800**	**46 700**	**36 200**
Electricity Generation[h, i]									
	GWh								
Combustion[j]	**39 900**	**51 300**	**54 200**	**53 200**	**59 700**	**54 100**	**53 200**	**54 800**	**51 000**
Coal	37 300	40 700	42 200	38 500	43 400	39 100	38 900	37 000	29 400
Natural Gas	2 510	10 200	11 600	14 100	15 700	14 500	13 900	17 300	21 000
Other Fuels	21.6	443	424	630	550	517	448	576	662
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**2 060**	**1 760**	**2 240**	**1 990**	**1 820**	**1 980**	**1 970**	**2 060**	**1 990**
Other Renewables[k]	**–**	**88.9**	**837**	**2 260**	**3 520**	**4 090**	**4 590**	**4 630**	**4 140**
Other Generation[l, m]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[f]	**41 900**	**53 200**	**57 300**	**59 700**	**65 200**	**60 300**	**59 900**	**61 700**	**57 400**
Greenhouse Gas Intensity[n]									
	Generation Intensity (g GHG / kWh electricity generated)								
CO_2 intensity (g CO_2 / kWh)	940	940	900	800	750	850	760	750	620
CH_4 intensity (g CH_4 / kWh)	0.02	0.04	0.03	0.04	0.04	0.04	0.04	0.04	0.05
N_2O intensity (g N_2O / kWh)	0.02	0.02	0.02	0.02	0.01	0.02	0.01	0.01	0.01
Generation Intensity (g CO_2 eq / kWh)[f]	**950**	**950**	**910**	**810**	**760**	**850**	**760**	**750**	**630**
	Losses								
Unallocated Energy (GWh)[o, p]	3 400	4 100	4 900	4 600	5 000	2 300	4 700	3 100	4 500
SF_6 Emissions (kt CO_2 eq)[q]	1.6	1.6	0.43	2.4	3.1	3.2	2.7	1.4	2.4
	Consumption Intensity (g GHG / kWh electricity consumed)								
Consumption Intensity (g CO_2 eq / kWh)[r]	**1 000**	**1 000**	**990**	**880**	**820**	**890**	**830**	**790**	**680**

Notes:

Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111—Electric Power Generation.

– 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

a. Preliminary data.

b. Emissions based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.

c. 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.

d. GHG emissions from on-site combustion of fuel not directly related to electricity generation.

e. GHG emissions from the flooding of land for hydro dams are not included.

f. Totals may not add up to overall total due to rounding.

g. Any CO_2 captured for the purpose of long term storage is not included in the total

h. Taken from StatCan Data Tables 25-10-0019-01 and 25-10-0020-01 (2005-2018).

i. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).

j. 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.

k. Other Renewables—includes electricity generation by wind, tidal and solar.

l. NAICS category 221119, Other Electric Power Generation.

m. 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.

n. Intensity values have been rounded so as to present the estimated level of accuracy.

o. Adapted from StatCan Data Table 25--10-0021-001 (2005-2018) or Cat. No. 57-202-XIB (1990–2004).

p. Includes transmission line losses, metering differences and other losses.

q. 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).

r. Consumption intensity values are impacted by unallocated energy and SF_6 transmission emissions.

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

	1990	2000	2005	2013	2014	2015	2016	2017	2018[a]
Greenhouse Gas Emissions[b]									
	kt CO_2 equivalent								
Combustion	**804**	**1 930**	**1 340**	**590**	**571**	**496**	**671**	**567**	**682**
Coal	–	–	–	–	–	–	–	–	–
Natural Gas	x	x	x	x	517	447	628	516	631
Other Fuels[c]	x	x	x	x	53	49	43	51	51
Other Emissions[d]	**–**	**2.4**	**4.6**	**6.7**	**7.4**	**7.2**	**6.5**	**6.5**	**6.9**
Overall Total[e, f, g]	**804**	**1 940**	**1 340**	**596**	**578**	**503**	**677**	**574**	**689**
Electricity Generation[h, i]									
	GWh								
Combustion[j]	**1 390**	**3 930**	**3 820**	**1 820**	**1 780**	**1 610**	**1 560**	**1 410**	**1 600**
Coal	–	–	–	–	–	–	–	–	–
Natural Gas	1 310	3 350	3 140	892	936	788	603	457	543
Other Fuels	79.4	585	689	926	846	818	956	950	1 060
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**46 400**	**50 800**	**50 300**	**50 500**	**49 000**	**52 400**	**54 500**	**57 100**	**52 900**
Other Renewables[k]	**–**	**–**	**–**	**152**	**849**	**868**	**1 220**	**1 590**	**1 690**
Other Generation[l, m]	**–**	**–**	**–**	**2 520**	**2 240**	**0**	**0**	**0**	**0**
Overall Total[f]	**47 800**	**54 700**	**54 100**	**55 000**	**53 900**	**54 800**	**57 300**	**60 100**	**56 200**
Greenhouse Gas Intensity[n]									
	Generation Intensity (g GHG / kWh electricity generated)								
CO_2 intensity (g CO_2 / kWh)	17	35	24	10.5	10.4	8.9	11.5	9.3	12.0
CH_4 intensity (g CH_4 / kWh)	0.004	0.009	0.007	0.003	0.003	0.003	0.003	0.003	0.003
N_2O intensity (g N_2O / kWh)	0.0004	0.001	0.0016	0.0008	0.0008	0.0007	0.0008	0.0007	0.0007
Generation Intensity (g CO_2 eq / kWh)[f]	**17**	**35**	**25**	**11**	**11**	**9.2**	**12**	**9.5**	**12.3**
	Losses								
Unallocated Energy (GWh)[o, p]	2 200	2 300	2 100	–	3 900	2 100	2 200	2 300	1 500
SF_6 Emissions (kt CO_2 eq)[q]	57	56	48	42	26	20	14	19	12
	Consumption Intensity (g GHG / kWh electricity consumed)								
Consumption Intensity (g CO_2 eq / kWh)[r]	**19**	**38**	**27**	**12**	**12**	**9.9**	**13**	**10.2**	**12.8**

Notes:

Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111—Electric Power Generation.

– 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

a. Preliminary data.

b. Emissions based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.

c. 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.

d. GHG emissions from on-site combustion of fuel not directly related to electricity generation.

e. GHG emissions from the flooding of land for hydro dams are not included.

f. Totals may not add up to overall total due to rounding.

g. Any CO_2 captured for the purpose of long term storage is not included in the total

h. Taken from StatCan Data Tables 25-10-0019-01 and 25-10-0020-01 (2005-2018).

i. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).

j. 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.

k. Other Renewables—includes electricity generation by wind, tidal and solar.

l. NAICS category 221119, Other Electric Power Generation.

m. 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.

n. Intensity values have been rounded so as to present the estimated level of accuracy.

o. Adapted from StatCan Data Table 25--10-0021-001 (2005-2018) or Cat. No. 57-202-XIB (1990–2004).

p. Includes transmission line losses, metering differences and other losses.

q. 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).

r. Consumption intensity values are impacted by unallocated energy and SF_6 transmission emissions.

Table A13–12 **Electricity Generation and GHG Emission Details for Yukon**

	1990	2000	2005	2013	2014	2015	2016	2017	2018[a]
Greenhouse Gas Emissions[b]									
	kt CO_2 equivalent								
Combustion	**90.2**	**21.3**	**22.0**	**16.9**	**16.4**	**18.2**	**19.2**	**23.6**	**32.8**
Coal	–	–	–	–	–	–	–	–	–
Natural Gas	–	–	–	–	–	–	–	–	–
Other Fuels[c]	90.2	21.3	22.0	16.9	16.4	17.5	17.5	19.9	21.2
Other Emissions[d]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[e, f, g]	**90.2**	**21.3**	**22.0**	**16.9**	**16.4**	**18.2**	**19.2**	**23.6**	**32.8**
Electricity Generation[h, i]									
	GWh								
Combustion[j]	**62.1**	**36.7**	**22.4**	**23.3**	**22.7**	**25.5**	**27.0**	**36.6**	**59.3**
Coal	–	–	–	–	–	–	–	–	–
Natural Gas	–	–	–	–	–	–	–	–	–
Other Fuels	62.1	36.7	22.4	23.3	22.7	24.2	23.8	26.8	29.2
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**423**	**261**	**320**	**425**	**411**	**422**	**419**	**448**	**419**
Other Renewables[k]	**–**	**0.388**	**0.890**	**0.277**	**0.334**	**0.650**	**0.509**	**0.033**	**0.0**
Other Generation[l, m]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[f]	**485**	**298**	**344**	**449**	**434**	**448**	**447**	**485**	**478**
Greenhouse Gas Intensity[n]									
	Generation Intensity (g GHG / kWh electricity generated)								
CO_2 intensity (g CO_2 / kWh)	190	71	64	38	38	41	43	48	68
CH_4 intensity (g CH_4 / kWh)	0.005	0.002	0.002	0.001	0.001	0.002	0.002	0.003	0.007
N_2O intensity (g N_2O / kWh)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Generation Intensity (g CO_2 eq / kWh)[f]	**190**	**71**	**64**	**38**	**38**	**41**	**43**	**49**	**69**
	Losses								
Unallocated Energy (GWh)[o, p]	47	24	45	55	17	54	48	55	56
SF_6 Emissions (kt CO_2 eq)[q]	–	–	–	–	–	–	–	–	–
	Consumption Intensity (g GHG / kWh electricity consumed)								
Consumption Intensity (g CO_2 eq / kWh)[r]	**210**	**78**	**74**	**43**	**39**	**46**	**48**	**56**	**79**

Notes:

Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111—Electric Power Generation.

– Indicates no emissions or no electricity generation

0 Indicates emissions or electricity generation value less than 0.1

a. Preliminary data.

b. Emissions based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.

c. 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.

d. GHG emissions from on-site combustion of fuel not directly related to electricity generation.

e. GHG emissions from the flooding of land for hydro dams are not included.

f. Totals may not add up to overall total due to rounding.

g. Any CO_2 captured for the purpose of long term storage is not included in the total

h. Taken from StatCan Data Tables 25-10-0019-01 and 25-10-0020-01 (2005-2018).

i. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).

j. 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.

k. Other Renewables—includes electricity generation by wind, tidal and solar.

l. NAICS category 221119, Other Electric Power Generation.

m. 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.

n. Intensity values have been rounded so as to present the estimated level of accuracy.

o. Adapted from StatCan Data Table 25--10-0021-001 (2005-2018) or Cat. No. 57-202-XIB (1990–2004).

p. Includes transmission line losses, metering differences and other losses.

q. 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).

r. Consumption intensity values are impacted by unallocated energy and SF_6 transmission emissions.

Table A13–13 **Electricity Generation and GHG Emission Details for the Northwest Territories**

	1990	2000	2005	2013	2014	2015	2016	2017	2018[a]
Greenhouse Gas Emissions[b]									
	kt CO_2 equivalent								
Combustion	**156**	**105**	**91**	**64**	**83**	**118**	**68**	**62**	**67**
Coal	–	–	–	–	–	–	–	–	–
Natural Gas	x	x	x	x	4.82	6.17	7.71	7.71	3.86
Other Fuels[c]	x	x	x	x	78	112	61	54	63
Other Emissions[d]	**0**	**2**	**5**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[e, f, g]	**156**	**106**	**96**	**64**	**83**	**118**	**68**	**62**	**67**
Electricity Generation[h, i]									
	GWh								
Combustion[j]	**227**	**195**	**78**	**84**	**109**	**161**	**163**	**158**	**167**
Coal	–	–	–	–	–	–	–	–	–
Natural Gas	–	15.8	23.3	5.77	7.53	10.7	31.3	31.2	66.1
Other Fuels	227	179	54	79	102	150	131	127	100
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**226**	**247**	**259**	**263**	**234**	**164**	**243**	**249**	**253**
Other Renewables[k]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Other Generation[l, m]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[f]	**453**	**442**	**337**	**347**	**343**	**325**	**406**	**408**	**420**
Greenhouse Gas Intensity[n]									
	Generation Intensity (g GHG / kWh electricity generated)								
CO_2 intensity (g CO_2 / kWh)	340	240	280	180	240	360	170	150	160
CH_4 intensity (g CH_4 / kWh)	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01
N_2O intensity (g N_2O / kWh)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Generation Intensity (g CO_2 eq / kWh)[f]	**350**	**240**	**280**	**180**	**240**	**360**	**170**	**150**	**160**
	Losses								
Unallocated Energy (GWh)[o, p]	21	21	19	17	58	9	36	26	7
SF_6 Emissions (kt CO_2 eq)[q]	–	–	–	–	–	–	–	–	–
	Consumption Intensity (g GHG / kWh electricity consumed)								
Consumption Intensity (g CO_2 eq / kWh)[r]	**360**	**250**	**300**	**190**	**290**	**370**	**180**	**160**	**160**

Notes:

Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111—Electric Power Generation.

– Indicates no emissions or no electricity generation

0 Indicates emissions or electricity generation value less than 0.1

a. Preliminary data.

b. Emissions based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.

c. 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.

d. GHG emissions from on-site combustion of fuel not directly related to electricity generation.

e. GHG emissions from the flooding of land for hydro dams are not included.

f. Totals may not add up to overall total due to rounding.

g. Any CO_2 captured for the purpose of long term storage is not included in the total

h. Taken from StatCan Data Tables 25-10-0019-01 and 25-10-0020-01 (2005-2018).

i. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).

j. 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.

k. Other Renewables—includes electricity generation by wind, tidal and solar.

l. NAICS category 221119, Other Electric Power Generation.

m. 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.

n. Intensity values have been rounded so as to present the estimated level of accuracy.

o. Adapted from StatCan Data Table 25--10-0021-001 (2005-2018) or Cat. No. 57-202-XIB (1990–2004).

p. Includes transmission line losses, metering differences and other losses.

q. 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).

r. Consumption intensity values are impacted by unallocated energy and SF_6 transmission emissions.

Table A13–14 **Electricity Generation and GHG Emission Details for Nunavut**

	1990	2000	2005	2013	2014	2015	2016	2017	2018[a]
Greenhouse Gas Emissions[b]									
	kt CO_2 equivalent								
Combustion	**	**	**x**	**x**	**118**	**113**	**135**	**137**	**164**
Coal	**	**	–	–	–	–	–	–	–
Natural Gas	**	**	x	x	–	–	–	–	–
Other Fuels[c]	**	**	x	x	118	113	135	137	164
Other Emissions[d]	**	**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[e, f, g]	**	**	**x**	**x**	**118**	**113**	**135**	**137**	**164**
Electricity Generation[h, i]									
	GWh								
Combustion[j]	**	**	**142**	**98**	**158**	**157**	**189**	**190**	**194**
Coal	**	**	–	–	–	–	–	–	–
Natural Gas	**	**	–	–	–	–	–	–	–
Other Fuels	**	**	142	98	158	157	189	190	194
Nuclear	**	**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**	**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Other Renewables[k]	**	**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Other Generation[l, m]	**	**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[f]	**	**	**142**	**98**	**158**	**157**	**189**	**190**	**194**
Greenhouse Gas Intensity[n]									
	Generation Intensity (g GHG / kWh electricity generated)								
CO_2 intensity (g CO_2 / kWh)	**	**	x	700	740	720	710	720	840
CH_4 intensity (g CH_4 / kWh)	**	**	x	0.0	0.0	0.0	0.0	0.0	0.0
N_2O intensity (g N_2O / kWh)	**	**	x	0.0	0.0	0.0	0.0	0.0	0.0
Generation Intensity (g CO_2 eq / kWh)[f]	**	**	**x**	**700**	**750**	**720**	**710**	**720**	**840**
	Losses								
Unallocated Energy (GWh)[o, p]	**	**	7	2	5	5	6	9	10
SF_6 Emissions (kt CO_2 eq)[q]	**	**	–	–	–	–	–	–	–
	Consumption Intensity (g GHG / kWh electricity consumed)								
Consumption Intensity (g CO_2 eq / kWh)[r]	**	**	**880**	**710**	**770**	**750**	**740**	**760**	**890**

Notes:

Data presented include emissions, generation and intensity for facilities classified under NAICS code 22111—Electric Power Generation.

– 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.

a. Preliminary data.

b. Emissions based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.

c. 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.

d. GHG emissions from on-site combustion of fuel not directly related to electricity generation.

e. GHG emissions from the flooding of land for hydro dams are not included.

f. Totals may not add up to overall total due to rounding.

g. Any CO_2 captured for the purpose of long term storage is not included in the total

h. Taken from StatCan Data Tables 25-10-0019-01 and 25-10-0020-01 (2005-2018).

i. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).

j. 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.

k. Other Renewables—includes electricity generation by wind, tidal and solar.

l. NAICS category 221119, Other Electric Power Generation.

m. 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.

n. Intensity values have been rounded so as to present the estimated level of accuracy.

o. Adapted from StatCan Data Table 25--10-0021-001 (2005-2018) or Cat. No. 57-202-XIB (1990–2004).

p. Includes transmission line losses, metering differences and other losses.

q. 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).

r. Consumption intensity values are impacted by unallocated energy and SF_6 transmission emissions.

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