NATIONAL INVENTORY REPORT 1990–2019: GREENHOUSE GAS SOURCES AND SINKS IN CANADA

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

PART 3

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50e anniversaire d'Environnement et Changement climatique Canada

Meteorological Service of Canada's 150th anniversary
150e anniversaire du Service météorologique du Canada

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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

LTO ..... landing and takeoff

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

Al_2O_3 ..... alumina

CaC_2 ..... calcium carbide

$CaCO_3$ ..... calcium carbonate; limestone

$CaMg(CO_3)_2$ .... dolomite (also $CaCO_3 \cdot MgCO_3$)

CaO ..... lime; quicklime; calcined limestone

CF_4 ..... carbon tetrafluoride

C_2F_6 ..... carbon hexafluoride

CH_3OH ..... methanol

CH_4 ..... methane

C_2H_6 ..... ethane

C_3H_8 ..... propane

C_4H_{10} ..... butane

C_2H_4 ..... ethylene

C_6H_6 ..... benzene

$CHCl_3$ ..... chloroform

CO ..... carbon monoxide

CO_2 ..... carbon dioxide

CO_2 eq ..... carbon dioxide equivalent

H_2 ..... hydrogen

H_2O ..... water

H_2S ..... hydrogen sulphide

HCFC ..... hydrochlorofluorocarbon

HCl ..... hydrochloric acid

HF ..... hydrogen fluoride

HNO_3 ..... nitric acid

K_2CO_3 ..... potassium carbonate

Mg ..... magnesium

$MgCO_3$ ..... magnesite; magnesium carbonate

MgO ..... magnesia; dolomitic lime

N	nitrogen
N_2	nitrogen gas
Na_2CO_3	sodium carbonate; soda ash
Na_3AlF_6	cryolite
NF_3	nitrogen trifluoride
NH_3	ammonia
NH_4+	ammonium
NH_4NO_3	ammonium nitrate
N_2O	nitrous oxide
N_2O-N	nitrous oxide emissions represented in terms of nitrogen
NO	nitric oxide
NO_2	nitrogen dioxide
NO_3-	nitrate
NO_x	nitrogen oxides
O_2	oxygen
SF_6	sulphur hexafluoride
SiC	silicon carbide
SO_2	sulphur dioxide
SO_x	sulphur oxides

Notation Keys

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

Units

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

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INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE 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 and 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
- uncertainty less than 10%: three significant figures

Note that for Land Use, Land-Use Change and Forestry, the rounding rules mentioned above are generally followed, except in some cases where there is a requirement to explain specific details of estimates or trends that may be masked by rounding. In those cases, 2 significant figures are used in spite of some high uncertainty ranges that suggest to use only one significant figures (Refer to Chapter 6 for more details).

This rounding protocol does not apply to estimates presented by Canadian Economic Sectors (Annexes 10 and 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	3	1	1					3
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 and Institutional	3	2	1					3
Residential	3	1	1					3
Agriculture and Forestry	3	1	1					3
b. **Transport**	**3**	**2**	**2**					**3**
Aviation	3	1	2					3
Domestic Aviation (Civil)	3	1	1					3
Military	3	1	2					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 and Natural Gas Vehicles	3	1	2					3
Railways	3	1	1					3
Marine	3	2	1					3
Domestic Navigation	3	2	1					3
Fishing	3	1	1					3
Military Water-Borne Navigation	3	2	1					3
Other Transportation	3	2	1					3
Off-Road Agriculture and Forestry	3	2	1					3
Off-Road Commercial and Institutional	3	2	1					3
Off-Road Manufacturing, Mining and 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	3	3	1					3
Flaring	3	3	1					3
d. **CO_2 Transport and Storage**	**1**							**1**
INDUSTRIAL PROCESSES AND PRODUCT USE	**3**	**2**	**3**	**2**	**3**	**2**	**1**	**3**
a. **Mineral Products**	**2**							**2**
Cement Production	3							3
Lime Production	3							3
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**		**1**	**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 (Landfills)**		**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**	**2**	**1**	**1**					**2**
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, 1990–2019

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 and 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 and 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:
Aviation	– Consumption of fossil fuels by civilian aircrafts flying domestically and all military aircraft operations with Canadian purchased fuel
Domestic Aviation (Civil)	– Consumption of fossil fuels by civilian aircraft flying domestically with Canadian purchased fuel
Military	– Consumption of fossil fuels by military aircraft operations 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
Marine	– Consumption of fuels (excluding the biogenic CO_2 emissions from Ethanol and biodiesel) by marine vessels navigating between Canadian ports (inclusive of all fishing and military operations)
Domestic Navigation	– Consumption of fuels (excluding the biogenic CO_2 emissions from Ethanol and biodiesel) by marine vessels navigating between Canadian ports
Fishing	– Consumption of fuels (excluding the biogenic CO_2 emissions from Ethanol and biodiesel) by fishing vessels operating in Canadian waters
Military Water-Borne Navigation	– Consumption of fuels (excluding the biogenic CO_2 emissions from Ethanol and biodiesel) by military vessels operating in Canadian waters
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 other limestone and dolomite use)
b. Chemical Industry	– Production of ammonia, nitric acid, adipic acid, carbide and petrochemicals. Petrochemical production includes production of carbon black, ethylene, ethylene dichloride, ethylene oxide, methanol, styrene and other uses of urea.
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 (Landfills)	– Municipal solid waste management sites (landfills)
b. Biological Treatment of Solid Waste	– Composting and anaerobic digestion 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 1990–2019 GHG Emissions by IPCC Sector

Units: kt CO_2 eq

Greenhouse Gas Categories	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
TOTAL[a]	**602 000**	**596 000**	**614 000**	**617 000**	**638 000**	**656 000**	**679 000**	**691 000**	**697 000**	**710 000**
ENERGY	**472 000**	**463 000**	**481 000**	**482 000**	**498 000**	**513 000**	**531 000**	**547 000**	**555 000**	**569 000**
a. Stationary Combustion Sources	**278 000**	**273 000**	**283 000**	**278 000**	**283 000**	**291 000**	**300 000**	**308 000**	**310 000**	**322 000**
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
Petroleum Refining Industries	17 000	16 000	17 000	17 000	16 000	16 000	19 000	19 000	18 000	17 000
Oil and Gas Extraction	30 800	29 300	31 200	34 400	35 100	36 400	36 700	35 100	37 700	48 700
Mining	4 650	4 320	3 730	4 020	4 580	4 970	5 070	5 230	4 670	4 470
Manufacturing Industries	56 200	53 900	53 000	50 800	54 200	56 000	57 600	57 700	54 700	55 800
Iron and Steel	4 950	4 960	5 290	5 390	6 020	5 780	6 150	6 160	6 230	6 330
Non-Ferrous Metals	3 310	2 700	2 940	2 830	3 430	3 220	4 010	3 890	3 880	3 690
Chemical	8 260	8 650	8 600	8 530	10 000	10 300	9 920	10 200	10 800	11 200
Pulp and Paper	14 500	14 000	13 000	13 000	12 900	12 800	13 400	13 200	12 100	12 500
Cement	3 970	3 440	3 400	3 470	4 070	4 160	4 130	4 040	4 190	4 460
Other Manufacturing	21 200	20 200	19 800	17 600	17 800	19 700	20 000	20 200	17 500	17 600
Construction	1 880	1 630	1 760	1 390	1 400	1 180	1 270	1 260	1 120	1 170
Commercial and Institutional	26 200	26 900	27 500	28 500	27 800	29 400	30 000	30 400	27 800	29 400
Residential	43 800	42 300	43 600	45 500	46 200	44 900	49 700	46 300	40 700	42 400
Agriculture and Forestry	2 410	2 740	3 250	3 050	2 550	2 770	2 930	2 920	2 600	2 680
b. Transport[b]	**145 000**	**140 000**	**143 000**	**147 000**	**154 000**	**159 000**	**163 000**	**169 000**	**172 000**	**176 000**
Aviation	7 510	6 500	6 390	6 020	6 380	6 700	7 080	7 240	7 500	7 890
Domestic Aviation (Civil)	10 000	10 000	10 000	10 000	10 000	10 000	10 000	10 000	10 000	10 000
Military	-	-	-	-	-	-	-	-	-	-
Road Transportation	83 800	79 900	80 400	81 900	85 600	86 600	90 400	96 400	103 000	108 000
Light-Duty Gasoline Vehicles	41 600	39 900	40 200	40 700	41 100	40 400	40 000	40 100	40 400	40 500
Light-Duty Gasoline Trucks	20 300	19 700	20 100	20 600	22 500	23 900	25 300	27 100	28 900	30 800
Heavy-Duty Gasoline Vehicles	6 320	6 360	6 680	7 170	7 350	7 170	7 940	8 810	9 850	10 300
Motorcycles	90	87	85	83	81	78	75	74	72	110
Light-Duty Diesel Vehicles	467	403	383	379	397	400	408	455	500	537
Light-Duty Diesel Trucks	153	138	134	138	150	156	182	222	259	294
Heavy-Duty Diesel Vehicles	13 600	12 200	11 800	12 100	13 100	13 600	15 700	18 900	21 900	24 700
Propane and Natural Gas Vehicles	1 160	1 140	1 070	724	913	903	797	762	795	643
Railways	6 920	6 410	6 700	6 680	6 910	6 260	6 120	6 210	5 980	6 330
Marine	3 070	3 130	3 180	3 230	3 280	3 330	3 380	3 440	3 490	3 540
Domestic Navigation	-	-	-	-	-	-	-	-	-	-
Fishing	1 000	1 000	1 000	1 000	1 000	1 000	1 000	1 000	1 000	1 000
Military Water-Borne Navigation	-	-	-	-	-	-	-	-	-	-
Other Transportation	43 600	43 500	46 600	49 300	52 100	55 600	55 600	55 400	52 100	50 900
Off-Road Agriculture and Forestry	9 040	9 090	9 180	10 200	11 400	12 400	12 600	12 900	12 400	11 700
Off-Road Commercial and Institutional	1 520	1 490	1 570	1 690	1 830	1 990	2 010	2 090	2 070	2 020
Off-Road Manufacturing, Mining and Construction	9 160	9 100	9 720	10 400	11 300	12 400	12 500	12 600	10 800	10 700
Off-Road Residential	241	238	248	284	327	380	451	531	615	705
Off-Road Other Transportation	16 700	16 000	16 000	16 300	16 400	16 300	15 600	14 700	13 700	13 300
Pipeline Transport	6 900	7 650	9 890	10 400	10 800	12 000	12 500	12 600	12 500	12 600
c. Fugitive Sources	**49 000**	**51 000**	**55 000**	**57 000**	**61 000**	**64 000**	**68 000**	**70 000**	**73 000**	**70 000**
Coal Mining	3 000	3 000	2 000	3 000	3 000	2 000	2 000	2 000	2 000	2 000
Oil and Natural Gas	46 000	48 000	52 000	55 000	58 000	62 000	66 000	68 000	71 000	68 000
Oil	5 000	5 200	5 600	5 600	5 700	6 200	6 400	6 700	6 500	6 500
Natural Gas	13 000	14 000	15 000	15 000	16 000	17 000	19 000	18 000	20 000	19 000
Venting	23 000	24 000	27 000	29 000	31 000	33 000	35 000	37 000	37 000	37 000
Flaring	4 700	5 000	5 200	5 000	5 400	5 400	5 700	5 700	7 500	5 700
d. CO_2 Transport and Storage	-	-	-	-	-	-	-	-	-	-
INDUSTRIAL PROCESSES AND PRODUCT USE	**57 000**	**58 400**	**56 200**	**55 900**	**57 800**	**58 400**	**60 700**	**60 200**	**57 100**	**54 600**
a. Mineral Products	**8 500**	**7 600**	**7 300**	**7 400**	**8 500**	**9 200**	**8 900**	**9 600**	**9 700**	**9 900**
Cement Production	5 800	4 800	4 800	4 900	5 800	6 500	6 200	6 700	6 800	7 100
Lime Production	1 800	1 800	1 900	1 900	1 900	1 900	1 900	1 900	1 900	2 000
Mineral Product Use	860	980	670	660	820	750	890	990	940	790
b. Chemical Industry	**17 600**	**17 000**	**16 800**	**16 900**	**19 100**	**18 500**	**19 500**	**17 600**	**13 500**	**10 000**
Ammonia Production	2 800	2 780	2 550	2 950	3 060	2 960	2 830	2 830	3 130	3 030
Nitric Acid Production	973	1 020	1 040	1 010	919	965	1 060	1 020	995	1 120
Adipic Acid Production	10 000	9 600	9 600	8 700	11 000	10 000	11 000	9 500	4 900	1 700
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
c. Metal Production	**23 800**	**26 800**	**25 600**	**25 400**	**23 900**	**23 500**	**23 200**	**23 000**	**24 000**	**23 200**
Iron and Steel Production	10 500	12 100	12 400	11 900	11 000	11 500	11 300	11 100	11 400	11 600
Aluminium Production	10 300	11 200	10 900	11 400	10 700	10 000	10 400	10 300	10 500	9 340
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
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**
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**
f. Other Product Manufacture and Use	**370**	**370**	**350**	**350**	**360**	**390**	**350**	**390**	**500**	**580**
AGRICULTURE	**47 000**	**47 000**	**48 000**	**50 000**	**52 000**	**54 000**	**55 000**	**55 000**	**56 000**	**56 000**
a. Enteric Fermentation	**22 000**	**23 000**	**24 000**	**24 000**	**25 000**	**27 000**	**27 000**	**27 000**	**27 000**	**27 000**
b. Manure Management	**6 100**	**6 200**	**6 500**	**6 600**	**6 900**	**7 200**	**7 400**	**7 400**	**7 600**	**7 800**
c. Agricultural Soils	**17 000**	**16 000**	**17 000**	**17 000**	**18 000**	**18 000**	**19 000**	**19 000**	**19 000**	**19 000**
Direct Sources	14 000	14 000	14 000	14 000	15 000	15 000	16 000	16 000	16 000	16 000
Indirect Sources	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000
d. Field Burning of Agricultural Residues	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**100**
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**
WASTE	**26 000**	**27 000**	**28 000**	**29 000**	**30 000**	**31 000**	**31 000**	**29 000**	**29 000**	**30 000**
a. Solid Waste Disposal (Landfills)	**21 000**	**22 000**	**22 000**	**23 000**	**24 000**	**25 000**	**26 000**	**23 000**	**23 000**	**24 000**
b. Biological Treatment of Solid Waste	**70**	**100**	**100**	**100**	**200**	**200**	**200**	**200**	**200**	**200**
c. Wastewater Treatment and Discharge	**830**	**820**	**830**	**830**	**840**	**850**	**860**	**870**	**880**	**880**
d. Incineration and Open Burning of Waste	**300**	**300**	**300**	**300**	**300**	**400**	**300**	**300**	**300**	**400**
e. Industrial Wood Waste Landfills	**4 000**	**4 000**	**4 000**	**4 000**	**4 000**	**4 000**	**4 000**	**4 000**	**5 000**	**5 000**
LAND USE, LAND-USE CHANGE AND FORESTRY	**-57 000**	**-61 000**	**-51 000**	**-45 000**	**-45 000**	**-30 000**	**-37 000**	**-38 000**	**-50 000**	**-35 000**
a. Forest Land	**-200 000**	**-210 000**	**-210 000**	**-200 000**	**-200 000**	**-190 000**	**-190 000**	**-190 000**	**-190 000**	**-180 000**
b. Cropland	**7 600**	**6 400**	**5 000**	**3 600**	**2 400**	**1 000**	**- 68**	**-1 300**	**-2 600**	**-3 900**
c. Grassland	**0.60**	**0.80**	**1**	**0.40**	**1**	**0.30**	**0.50**	**0.60**	**0.70**	**0.80**
d. Wetlands	**5 300**	**5 200**	**5 100**	**5 400**	**3 200**	**3 100**	**3 000**	**3 100**	**3 400**	**3 700**
e. Settlements	**1 800**	**1 800**	**1 700**	**1 500**	**1 300**	**1 200**	**1 200**	**1 200**	**1 200**	**1 300**
f. Harvested Wood Products	**130 000**	**130 000**	**140 000**	**150 000**	**150 000**	**150 000**	**150 000**	**150 000**	**140 000**	**150 000**

Greenhouse Gas Categories	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
TOTAL[a]	**734 000**	**723 000**	**727 000**	**745 000**	**746 000**	**739 000**	**730 000**	**752 000**	**736 000**	**694 000**
ENERGY	**592 000**	**584 000**	**585 000**	**600 000**	**595 000**	**591 000**	**584 000**	**608 000**	**593 000**	**562 000**
a. Stationary Combustion Sources	**345 000**	**341 000**	**343 000**	**355 000**	**347 000**	**341 000**	**333 000**	**354 000**	**342 000**	**320 000**
Public Electricity and Heat Production	132 000	133 000	128 000	133 000	126 000	125 000	119 000	124 000	116 000	100 000
Petroleum Refining Industries	17 000	18 000	19 000	20 000	22 000	20 000	20 000	21 000	19 000	19 000
Oil and Gas Extraction	52 700	55 600	58 700	63 000	61 200	63 300	67 900	75 800	75 300	77 700
Mining	4 890	4 890	4 520	4 910	4 790	4 330	5 140	5 710	6 060	5 650
Manufacturing Industries	55 900	51 600	51 300	49 200	50 900	48 000	46 200	47 200	44 600	39 900
Iron and Steel	6 210	5 010	5 860	5 530	5 830	5 550	5 550	6 000	5 770	4 290
Non-Ferrous Metals	3 580	3 780	3 520	3 530	3 540	3 660	3 490	3 850	3 830	2 930
Chemical	10 700	9 470	9 030	8 150	8 970	8 330	8 890	8 720	8 800	8 880
Pulp and Paper	12 600	11 600	10 900	10 400	10 200	8 650	7 490	7 740	6 270	6 390
Cement	4 640	4 600	4 970	4 990	5 460	5 410	5 720	5 030	4 910	4 490
Other Manufacturing	18 200	17 200	17 000	16 700	16 900	16 400	15 100	15 800	15 000	12 900
Construction	1 080	1 030	1 270	1 350	1 420	1 450	1 410	1 410	1 390	1 230
Commercial and Institutional	33 400	32 700	34 200	35 400	34 100	32 600	29 700	30 800	30 400	30 200
Residential	44 700	41 700	43 700	45 900	44 400	43 700	41 600	46 100	45 400	43 600
Agriculture and Forestry	2 570	2 240	2 160	2 300	2 210	2 190	2 110	2 690	2 750	2 760
b. Transport[b]	**177 000**	**175 000**	**177 000**	**181 000**	**185 000**	**190 000**	**189 000**	**193 000**	**192 000**	**186 000**
Aviation	7 800	7 150	7 020	7 140	7 630	7 720	7 740	7 820	7 460	6 640
Domestic Aviation (Civil)	10 000	10 000	10 000	10 000	10 000	10 000	10 000	10 000	10 000	10 000
Military	-	-	-	-	-	-	-	-	-	-
Road Transportation	111 000	116 000	118 000	122 000	125 000	130 000	130 000	133 000	133 000	132 000
Light-Duty Gasoline Vehicles	40 400	41 500	41 900	41 800	41 200	41 400	40 400	39 700	38 500	38 100
Light-Duty Gasoline Trucks	31 800	33 400	34 700	36 000	37 100	38 100	38 600	39 300	39 000	39 900
Heavy-Duty Gasoline Vehicles	10 500	11 600	11 700	12 000	12 600	11 700	11 900	12 000	12 100	12 200
Motorcycles	123	144	161	176	189	203	216	225	231	239
Light-Duty Diesel Vehicles	600	603	642	710	762	605	658	669	619	574
Light-Duty Diesel Trucks	338	363	370	408	442	344	329	347	366	368
Heavy-Duty Diesel Vehicles	26 500	27 900	27 800	30 300	32 100	36 800	38 000	40 400	42 000	40 300
Propane and Natural Gas Vehicles	522	574	465	429	430	381	293	199	126	62
Railways	6 530	6 470	5 950	6 010	6 180	6 580	6 890	7 380	7 800	6 670
Marine	3 600	3 670	3 750	3 820	3 900	3 980	3 920	3 860	3 800	3 740
Domestic Navigation	-	-	-	-	-	-	-	-	-	-
Fishing	1 000	1 000	1 000	1 000	1 000	1 000	1 000	1 000	1 000	1 000
Military Water-Borne Navigation	-	-	-	-	-	-	-	-	-	-
Other Transportation	48 800	42 200	42 500	42 300	42 900	41 900	40 500	40 600	39 800	37 600
Off-Road Agriculture and Forestry	11 600	10 500	10 300	11 200	11 400	11 400	10 700	11 000	10 600	10 200
Off-Road Commercial and Institutional	2 080	2 130	2 060	2 290	2 420	2 400	2 390	2 540	2 550	2 460
Off-Road Manufacturing, Mining and Construction	11 300	9 910	10 100	11 000	11 200	10 400	10 200	11 100	11 700	11 200
Off-Road Residential	775	913	1 030	1 150	1 250	1 250	1 230	1 240	1 200	1 160
Off-Road Other Transportation	11 700	8 440	8 110	7 600	7 990	6 390	6 260	6 320	6 220	6 150
Pipeline Transport	11 300	10 300	10 900	9 120	8 550	10 200	9 690	8 440	7 520	6 360
c. Fugitive Sources	**69 000**	**67 000**	**65 000**	**63 000**	**63 000**	**61 000**	**61 000**	**61 000**	**59 000**	**55 000**
Coal Mining	2 000	2 000	2 000	1 000	1 000	1 000	1 000	1 000	1 000	1 000
Oil and Natural Gas	68 000	66 000	63 000	62 000	61 000	60 000	60 000	59 000	58 000	54 000
Oil	6 600	6 900	6 600	6 400	6 300	5 900	5 800	5 700	5 400	5 100
Natural Gas	18 000	16 000	14 000	14 000	14 000	14 000	14 000	13 000	13 000	13 000
Venting	38 000	38 000	37 000	37 000	36 000	35 000	35 000	35 000	35 000	32 000
Flaring	5 800	5 200	5 800	5 000	5 200	5 300	5 700	5 400	4 900	4 300
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**
INDUSTRIAL PROCESSES AND PRODUCT USE	**54 100**	**52 100**	**54 000**	**56 100**	**60 200**	**56 600**	**57 000**	**55 600**	**54 800**	**47 500**
a. Mineral Products	**10 000**	**9 400**	**9 700**	**9 700**	**10 000**	**10 000**	**10 000**	**10 000**	**9 300**	**7 200**
Cement Production	7 200	7 000	7 100	7 200	7 500	7 600	7 700	7 700	7 000	5 400
Lime Production	1 900	1 700	1 700	1 700	1 800	1 800	1 700	1 600	1 600	1 200
Mineral Product Use	910	770	820	790	880	910	880	810	750	610
b. Chemical Industry	**8 810**	**8 740**	**8 990**	**9 270**	**11 500**	**10 400**	**9 000**	**8 280**	**9 090**	**5 930**
Ammonia Production	2 990	2 630	2 660	2 660	2 960	2 740	2 810	2 600	2 830	2 430
Nitric Acid Production	1 180	1 230	1 210	1 220	1 180	1 200	1 190	1 090	780	456
Adipic Acid Production	870	770	1 200	1 000	3 000	2 500	1 200	1 400	2 300	640
Petrochemical and Carbon Black Production	3 780	4 100	3 920	4 360	4 370	3 960	3 840	3 160	3 170	2 420
c. Metal Production	**23 400**	**21 400**	**21 300**	**21 000**	**20 500**	**20 200**	**20 700**	**19 300**	**19 000**	**15 900**
Iron and Steel Production	11 800	10 800	10 600	10 500	10 600	10 300	11 300	11 100	10 800	8 140
Aluminium Production	8 890	8 260	7 930	8 130	7 770	8 680	8 080	7 630	7 760	7 540
SF_6 Used in Magnesium Smelters and Casters	2 660	2 250	2 800	2 370	2 090	1 230	1 340	489	435	184
d. Production and Consumption of Halocarbons, SF_6 and NF_3[c]	**2 800**	**3 200**	**3 600**	**4 000**	**4 600**	**5 100**	**5 400**	**6 100**	**6 100**	**6 900**
e. Non-Energy Products from Fuels and Solvent Use	**8 500**	**8 700**	**9 900**	**12 000**	**13 000**	**10 000**	**11 000**	**11 000**	**11 000**	**11 000**
f. Other Product Manufacture and Use	**610**	**680**	**520**	**610**	**630**	**540**	**520**	**540**	**530**	**470**
AGRICULTURE	**57 000**	**56 000**	**56 000**	**58 000**	**59 000**	**60 000**	**59 000**	**58 000**	**59 000**	**56 000**
a. Enteric Fermentation	**28 000**	**29 000**	**29 000**	**29 000**	**30 000**	**31 000**	**30 000**	**29 000**	**28 000**	**26 000**
b. Manure Management	**8 000**	**8 300**	**8 400**	**8 500**	**8 700**	**8 800**	**8 700**	**8 400**	**8 100**	**7 900**
c. Agricultural Soils	**19 000**	**18 000**	**17 000**	**19 000**	**19 000**	**19 000**	**19 000**	**19 000**	**21 000**	**20 000**
Direct Sources	16 000	15 000	14 000	15 000	16 000	15 000	15 000	16 000	17 000	17 000
Indirect Sources	3 000	3 000	3 000	3 000	3 000	3 000	3 000	4 000	4 000	4 000
d. Field Burning of Agricultural Residues	**100**	**100**	**100**	**100**	**30**	**40**	**50**	**40**	**50**	**50**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**1 600**	**1 400**	**1 500**	**1 600**	**1 500**	**1 400**	**1 500**	**1 700**	**1 700**	**1 800**
WASTE	**31 000**	**31 000**	**31 000**	**31 000**	**31 000**	**31 000**	**30 000**	**30 000**	**30 000**	**28 000**
a. Solid Waste Disposal (Landfills)	**25 000**	**25 000**	**25 000**	**25 000**	**25 000**	**25 000**	**25 000**	**24 000**	**24 000**	**23 000**
b. Biological Treatment of Solid Waste	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**300**	**300**
c. Wastewater Treatment and Discharge	**890**	**920**	**910**	**920**	**930**	**940**	**950**	**960**	**960**	**960**
d. Incineration and Open Burning of Waste	**400**	**400**	**400**	**400**	**400**	**300**	**300**	**300**	**300**	**300**
e. Industrial Wood Waste Landfills	**5 000**	**5 000**	**5 000**	**4 000**	**4 000**	**4 000**	**4 000**	**4 000**	**4 000**	**4 000**
LAND USE, LAND-USE CHANGE AND FORESTRY	**-22 000**	**-38 000**	**-20 000**	**-24 000**	**3 500**	**8 200**	**-3 900**	**-7 900**	**-13 000**	**-24 000**
a. Forest Land	**-170 000**	**-170 000**	**-160 000**	**-150 000**	**-140 000**	**-130 000**	**-130 000**	**-130 000**	**-140 000**	**-140 000**
b. Cropland	**-5 200**	**-5 400**	**-6 700**	**-8 000**	**-9 300**	**-10 000**	**-12 000**	**-12 000**	**-12 000**	**-12 000**
c. Grassland	**1**	**1**	**1**	**1**	**0.90**	**0.90**	**1**	**0.40**	**0.50**	**0.40**
d. Wetlands	**3 200**	**3 100**	**3 200**	**3 000**	**3 200**	**3 100**	**3 200**	**3 200**	**3 200**	**3 100**
e. Settlements	**1 300**	**1 300**	**1 600**	**1 600**	**1 600**	**1 700**	**2 000**	**2 100**	**2 000**	**1 700**
f. Harvested Wood Products	**150 000**	**130 000**	**140 000**	**130 000**	**150 000**	**150 000**	**140 000**	**130 000**	**130 000**	**130 000**

Greenhouse Gas Categories	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
TOTAL[a]	**703 000**	**714 000**	**717 000**	**725 000**	**723 000**	**723 000**	**707 000**	**716 000**	**728 000**	**730 000**
ENERGY	**569 000**	**577 000**	**575 000**	**583 000**	**584 000**	**585 000**	**566 000**	**578 000**	**588 000**	**589 000**
a. Stationary Combustion Sources	**321 000**	**327 000**	**321 000**	**322 000**	**323 000**	**324 000**	**311 000**	**316 000**	**318 000**	**319 000**
Public Electricity and Heat Production	102 000	94 500	91 300	87 500	83 800	87 000	80 500	78 400	69 800	68 600
Petroleum Refining Industries	19 000	18 000	18 000	17 000	16 000	16 000	16 000	14 000	15 000	15 000
Oil and Gas Extraction	78 100	84 500	88 100	91 100	94 900	97 500	94 000	97 500	104 000	105 000
Mining	5 740	5 780	6 270	5 460	5 080	4 580	4 340	4 910	6 310	6 420
Manufacturing Industries	41 200	44 200	43 700	44 800	45 000	43 400	41 900	42 100	42 000	42 400
Iron and Steel	4 980	5 290	5 500	5 580	6 030	5 700	5 560	5 940	6 300	5 970
Non-Ferrous Metals	3 070	3 420	2 970	3 100	2 920	3 110	3 190	3 220	2 790	2 830
Chemical	9 920	11 100	11 000	11 600	12 400	12 000	10 700	9 640	9 280	9 420
Pulp and Paper	5 970	6 220	5 990	6 230	6 090	5 950	5 950	6 320	6 970	7 310
Cement	4 080	4 310	4 030	3 850	4 000	3 910	3 920	4 150	4 160	4 220
Other Manufacturing	13 200	13 800	14 200	14 400	13 500	12 800	12 600	12 800	12 500	12 600
Construction	1 520	1 370	1 390	1 290	1 300	1 300	1 280	1 290	1 360	1 360
Commercial and Institutional	28 700	30 700	28 700	29 700	31 300	30 100	30 100	32 500	33 200	34 400
Residential	40 800	43 800	40 200	41 800	41 400	40 500	38 900	40 900	42 500	42 200
Agriculture and Forestry	3 110	3 680	3 780	3 790	3 840	3 630	3 810	3 700	3 760	3 690
b. Transport[b]	**194 000**	**195 000**	**195 000**	**200 000**	**199 000**	**201 000**	**201 000**	**207 000**	**215 000**	**217 000**
Aviation	6 690	6 590	7 600	7 880	7 590	7 590	7 520	7 940	8 660	8 540
Domestic Aviation (Civil)	10 000	10 000	10 000	10 000	10 000	10 000	10 000	10 000	10 000	10 000
Military	-	-	-	-	-	-	-	-	-	-
Road Transportation	137 000	139 000	140 000	144 000	142 000	143 000	145 000	148 000	152 000	153 000
Light-Duty Gasoline Vehicles	37 800	36 500	35 400	35 600	34 200	34 500	34 600	33 700	33 000	32 400
Light-Duty Gasoline Trucks	41 300	41 400	41 900	43 300	43 400	45 300	48 100	49 200	51 100	53 100
Heavy-Duty Gasoline Vehicles	12 500	12 100	12 800	13 400	12 400	12 300	13 000	13 300	13 400	13 500
Motorcycles	248	251	260	262	260	271	287	296	296	298
Light-Duty Diesel Vehicles	663	793	798	855	857	901	842	842	811	779
Light-Duty Diesel Trucks	421	482	473	531	641	812	903	1 080	1 180	1 210
Heavy-Duty Diesel Vehicles	44 200	47 600	48 700	50 000	49 800	48 500	46 900	49 300	51 900	51 800
Propane and Natural Gas Vehicles	38	40	30	18	9	8	9	10	10	10
Railways	6 540	7 390	7 560	7 290	7 470	7 120	6 540	7 490	7 650	7 700
Marine	3 680	3 630	3 580	3 530	3 480	3 430	3 510	3 650	3 830	4 360
Domestic Navigation	-	-	-	-	-	-	-	-	-	-
Fishing	1 000	1 000	1 000	-	-	-	-	-	-	-
Military Water-Borne Navigation	-	-	100	100	100	-	100	100	-	100
Other Transportation	39 500	38 400	36 100	37 700	39 000	40 500	38 900	40 400	43 300	43 100
Off-Road Agriculture and Forestry	11 100	11 000	10 400	10 500	10 400	10 400	9 650	10 400	11 200	11 200
Off-Road Commercial and Institutional	2 680	2 730	2 520	2 720	2 760	2 720	2 550	2 820	2 900	2 960
Off-Road Manufacturing, Mining and Construction	12 600	13 200	12 000	12 300	12 200	13 100	12 200	13 500	14 500	14 300
Off-Road Residential	1 170	1 300	1 220	1 180	1 210	1 220	1 170	1 190	1 230	1 240
Off-Road Other Transportation	6 300	4 450	4 310	4 300	4 540	4 830	4 920	5 120	5 260	5 050
Pipeline Transport	5 710	5 650	5 730	6 720	7 890	8 160	8 420	7 420	8 190	8 290
c. Fugitive Sources	**55 000**	**56 000**	**59 000**	**61 000**	**63 000**	**59 000**	**54 000**	**55 000**	**55 000**	**54 000**
Coal Mining	1 000	1 000	1 000	2 000	1 000	1 000	1 000	1 000	1 000	1 000
Oil and Natural Gas	54 000	54 000	57 000	59 000	61 000	58 000	53 000	54 000	53 000	52 000
Oil	5 100	4 900	5 700	5 700	5 600	5 400	5 200	5 200	5 500	5 600
Natural Gas	12 000	12 000	12 000	13 000	13 000	12 000	12 000	12 000	12 000	12 000
Venting	31 000	32 000	34 000	33 000	36 000	34 000	29 000	29 000	29 000	28 000
Flaring	4 700	5 000	5 800	7 000	7 300	6 900	5 900	6 600	6 600	6 300
d. CO_2 Transport and Storage	**0.09**	**0.09**	**0.09**	**0.09**	**0.10**	**0.20**	**0.30**	**0.30**	**0.30**	**0.30**
INDUSTRIAL PROCESSES AND PRODUCT USE	**50 700**	**54 300**	**58 500**	**56 200**	**53 900**	**53 500**	**54 500**	**53 000**	**54 300**	**54 300**
a. Mineral Products	**7 800**	**8 000**	**8 500**	**7 800**	**7 800**	**8 000**	**7 900**	**8 600**	**8 700**	**8 800**
Cement Production	6 000	6 000	6 500	6 000	5 900	6 200	6 200	6 900	7 000	7 200
Lime Production	1 400	1 500	1 500	1 400	1 500	1 400	1 400	1 400	1 400	1 300
Mineral Product Use	410	450	440	380	380	410	390	330	320	320
b. Chemical Industry	**5 850**	**6 490**	**6 780**	**6 680**	**6 430**	**6 740**	**6 960**	**6 350**	**6 850**	**6 810**
Ammonia Production	2 520	2 910	3 030	2 980	2 560	2 880	2 820	2 580	2 460	2 550
Nitric Acid Production	479	476	358	310	213	225	261	245	272	258
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
Petrochemical and Carbon Black Production	2 850	3 110	3 390	3 400	3 650	3 630	3 880	3 520	4 110	4 000
c. Metal Production	**16 000**	**16 900**	**16 700**	**14 800**	**15 000**	**14 400**	**15 300**	**14 600**	**14 500**	**13 800**
Iron and Steel Production	8 980	9 880	9 980	8 050	8 890	8 470	9 220	8 450	8 870	8 260
Aluminium Production	6 870	6 810	6 470	6 530	5 830	5 720	5 990	6 010	5 510	5 290
SF_6 Used in Magnesium Smelters and Casters	186	184	248	214	249	238	141	140	146	290
d. Production and Consumption of Halocarbons, SF_6 and NF_3[c]	**7 700**	**8 600**	**9 100**	**10 000**	**11 000**	**11 000**	**11 000**	**12 000**	**13 000**	**12 000**
e. Non-Energy Products from Fuels and Solvent Use	**13 000**	**14 000**	**17 000**	**16 000**	**13 000**	**13 000**	**12 000**	**11 000**	**11 000**	**12 000**
f. Other Product Manufacture and Use	**430**	**390**	**500**	**560**	**480**	**570**	**620**	**660**	**730**	**750**
AGRICULTURE	**55 000**	**55 000**	**57 000**	**59 000**	**58 000**	**58 000**	**59 000**	**58 000**	**59 000**	**59 000**
a. Enteric Fermentation	**25 000**	**25 000**	**25 000**	**25 000**	**24 000**	**24 000**	**24 000**	**24 000**	**24 000**	**24 000**
b. Manure Management	**7 700**	**7 700**	**7 700**	**7 800**	**7 700**	**7 800**	**7 900**	**7 900**	**7 900**	**7 900**
c. Agricultural Soils	**20 000**	**21 000**	**22 000**	**24 000**	**23 000**	**24 000**	**25 000**	**24 000**	**25 000**	**24 000**
Direct Sources	17 000	17 000	18 000	20 000	19 000	20 000	20 000	20 000	20 000	20 000
Indirect Sources	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	**30**	**30**	**40**	**50**	**50**	**60**	**50**	**50**	**50**	**50**
e. Liming, Urea Application and Other Carbon-containing Fertilizers	**1 800**	**2 000**	**2 300**	**2 700**	**2 500**	**2 600**	**2 500**	**2 400**	**2 600**	**2 600**
WASTE	**28 000**	**27 000**	**27 000**	**27 000**	**27 000**	**27 000**	**27 000**	**27 000**	**27 000**	**28 000**
a. Solid Waste Disposal (Landfills)	**22 000**	**22 000**	**22 000**	**22 000**	**22 000**	**22 000**	**22 000**	**22 000**	**23 000**	**23 000**
b. Biological Treatment of Solid Waste	**300**	**300**	**300**	**300**	**300**	**300**	**300**	**300**	**400**	**400**
c. Wastewater Treatment and Discharge	**990**	**1 000**	**1 000**	**1 000**	**1 000**	**1 000**	**1 000**	**1 000**	**1 000**	**1 000**
d. Incineration and Open Burning of Waste	**300**	**300**	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**200**
e. Industrial Wood Waste Landfills	**4 000**	**4 000**	**4 000**	**4 000**	**3 000**	**3 000**	**3 000**	**3 000**	**3 000**	**3 000**
LAND USE, LAND-USE CHANGE AND FORESTRY	**-7 300**	**-6 500**	**-9 400**	**-4 200**	**-3 500**	**4 000**	**95**	**700**	**8 400**	**9 900**
a. Forest Land	**-140 000**	**-140 000**	**-140 000**	**-140 000**	**-140 000**	**-130 000**	**-140 000**	**-140 000**	**-130 000**	**-130 000**
b. Cropland	**-12 000**	**-11 000**	**-10 000**	**-9 300**	**-8 100**	**-7 000**	**-6 300**	**-5 700**	**-4 800**	**-4 200**
c. Grassland	**0.30**	**0.60**	**2**	**2**	**0.80**	**1**	**1**	**1**	**1**	**1**
d. Wetlands	**3 100**	**3 000**	**3 000**	**3 000**	**3 100**	**2 900**	**2 900**	**3 000**	**2 700**	**2 600**
e. Settlements	**1 700**	**1 800**	**1 800**	**2 200**	**2 300**	**2 600**	**2 400**	**2 200**	**2 400**	**2 200**
f. Harvested Wood Products	**140 000**	**140 000**	**140 000**	**140 000**	**140 000**	**140 000**	**140 000**	**140 000**	**140 000**	**140 000**

Notes: Estimates for the latest year (2019) 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.

0.00 Indicates emissions were truncated due to rounding.
\- Indicates no emissions.

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Table A9–3 **2019 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]	**582 000**	**3 900**	**98 000**	**120**	**37 000**	**12 000**	**600**	**480**	**0.60**	**730 000**
ENERGY	**540 000**	**1 700**	**43 000**	**20**	**7 000**	**-**	**-**	**-**	**-**	**589 000**
a. Stationary Combustion Sources	**312 000**	**200**	**4 000**	**8**	**2 000**	**-**	**-**	**-**	**-**	**319 000**
Public Electricity and Heat Production	68 000	6	160	1	400	-	-	-	-	68 600
Petroleum Refining Industries	15 000	0.30	8	0.10	30	-	-	-	-	15 000
Oil and Gas Extraction	102 000	100	3 000	2	600	-	-	-	-	105 000
Mining	6 380	0.10	3	0.10	40	-	-	-	-	6 420
Manufacturing Industries	41 800	3	64	2	480	-	-	-	-	42 400
Iron and Steel	5 930	0.10	3	0.10	40	-	-	-	-	5 970
Non-Ferrous Metals	2 820	0.06	1	0.05	10	-	-	-	-	2 830
Chemical	9 370	0.18	5	0.20	50	-	-	-	-	9 420
Pulp and Paper	7 080	1	30	0.70	200	-	-	-	-	7 310
Cement	4 200	0.20	5	0.05	20	-	-	-	-	4 220
Other Manufacturing	12 400	0.70	20	0.60	200	-	-	-	-	12 600
Construction	1 350	0.03	0.62	0.04	11	-	-	-	-	1 360
Commercial and Institutional	34 100	0.83	21	0.80	200	-	-	-	-	34 400
Residential	40 300	60	1 000	2	500	-	-	-	-	42 200
Agriculture and Forestry	3 660	0.07	2	0.10	30	-	-	-	-	3 690
b. Transport[b]	**212 000**	**39**	**980**	**14**	**4 100**	**-**	**-**	**-**	**-**	**217 000**
Aviation	8 460	0.20	5	0.20	70	-	-	-	-	8 540
Domestic Aviation (Civil)	10 000	-	10	-	100	-	-	-	-	10 000
Military	-	-	0.10	0.01	-	-	-	-	-	-
Road Transportation	150 000	10	200	9	2 600	-	-	-	-	153 000
Light-Duty Gasoline Vehicles	31 800	3	70	2	520	-	-	-	-	32 400
Light-Duty Gasoline Trucks	52 100	4	100	3	840	-	-	-	-	53 100
Heavy-Duty Gasoline Vehicles	13 200	0.50	10	1	350	-	-	-	-	13 500
Motorcycles	294	0.10	3	0.01	2	-	-	-	-	298
Light-Duty Diesel Vehicles	759	0.01	0.40	0.06	19	-	-	-	-	779
Light-Duty Diesel Trucks	1 170	0.03	0.80	0.10	29	-	-	-	-	1 210
Heavy-Duty Diesel Vehicles	50 900	2	50	3	860	-	-	-	-	51 800
Propane and Natural Gas Vehicles	9	0.00	0.10	0.00	0.05	-	-	-	-	10
Railways	6 890	0.40	10	3	800	-	-	-	-	7 700
Marine	4 310	0.41	10	0.10	30	-	-	-	-	4 360
Domestic Navigation	-	-	10	-	-	-	-	-	-	-
Fishing	-	-	1	0.01	-	-	-	-	-	-
Military Water-Borne Navigation	100	0.01	-	-	1	-	-	-	-	100
Other Transportation	41 800	28	710	2	500	-	-	-	-	43 100
Off-Road Agriculture and Forestry	11 100	0.51	13	0.50	100	-	-	-	-	11 200
Off-Road Commercial and Institutional	**2 830**	**4**	**100**	**0.09**	**30**	**-**	**-**	**-**	**-**	**2 960**
Off-Road Manufacturing, Mining and Construction	14 000	2	43	0.80	300	-	-	-	-	14 300
Off-Road Residential	1 170	3	64	0.03	10	-	-	-	-	1 240
Off-Road Other Transportation	4 730	11	290	0.10	40	-	-	-	-	5 050
Pipeline Transport	8 030	8	200	0.20	60	-	-	-	-	8 290
c. Fugitive Sources	16 000	1 500	38 000	0.38	110	-	-	-	-	54 000
Coal Mining	-	60	1 000	-	-	-	-	-	-	1 000
Oil and Natural Gas	**16 000**	**1 500**	**36 000**	**0.40**	**100**	**-**	**-**	**-**	**-**	**52 000**
Oil	560	200	4 900	0.30	100	-	-	-	-	5 600
Natural Gas	**110**	**480**	**12 000**	-	-	-	-	-	-	**12 000**
Venting	9 500	760	19 000	-	-	-	-	-	-	28 000
Flaring	5 800	22	560	0.03	8	-	-	-	-	6 300
d. CO_2 Transport and Storage	0.30	-	-	-	-	-	-	-	-	0.30
INDUSTRIAL PROCESSES AND PRODUCT USE	**39 900**	**6**	**140**	**3**	**789**	**12 000**	**597**	**480**	**0.60**	**54 300**
a. Mineral Products	8 800	-	-	-	-	-	-	-	-	8 800
Cement Production	7 200	-	-	-	-	-	-	-	-	7 200
Lime Production	1 300	-	-	-	-	-	-	-	-	1 300
Mineral Product Use	320	-	-	-	-	-	-	-	-	320
b. Chemical Industry	**6 410**	**5**	**140**	**0.91**	**271**	**-**	**-**	**-**	**-**	**6 810**
Ammonia Production	2 550	-	-	-	-	-	-	-	-	2 550
Nitric Acid Production	-	-	-	0.87	258	-	-	-	-	258
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
Petrochemical and Carbon Black Production	3 860	5	140	0.04	13	-	-	-	-	4 000
c. Metal Production	13 000	0.08	2	-	-	-	556	291	-	13 800
Iron and Steel Production	8 260	0.08	2	-	-	-	-	-	-	8 260
Aluminium Production	4 740	-	-	-	-	-	556	0.84	-	5 290
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	290	-	290
d. Production and Consumption of Halocarbons, SF_6 and NF_3[c]	-	-	-	-	-	12 000	11	20	0.60	12 000
e. Non-Energy Products from Fuels and Solvent Use	12 000	-	-	-	-	-	-	-	-	12 000
f. Other Product Manufacture and Use	32	-	-	2	520	-	30	170	-	750
AGRICULTURE	**2 600**	**1 100**	**28 000**	**96**	**29 000**	**-**	**-**	**-**	**-**	**59 000**
a. Enteric Fermentation	**-**	**960**	**24 000**	**-**	**-**	**-**	**-**	**-**	**-**	**24 000**
b. Manure Management	**-**	**160**	**3 900**	**10**	**4 000**	**-**	**-**	**-**	**-**	**7 900**
c. Agricultural Soils	-	-	-	82	24 000	-	-	-	-	24 000
Direct Sources	**-**	**-**	**-**	**68**	**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	**100**	**1 100**	**27 000**	**3**	**800**	**-**	**-**	**-**	**-**	**28 000**
a. Solid Waste Disposal (Landfills)	**-**	**920**	**23 000**	**-**	**-**	**-**	**-**	**-**	**-**	**23 000**
b. Biological Treatment of Solid Waste	**-**	**7**	**200**	**0.70**	**200**	**-**	**-**	**-**	**-**	**400**
c. Wastewater Treatment and Discharge	-	21	530	2	500	-	-	-	-	1 000
d. Incineration and Open Burning of Waste	**100**	**0.05**	**1**	**0.30**	**80**	**-**	**-**	**-**	**-**	**200**
e. Industrial Wood Waste Landfills	**-**	**100**	**3 000**	**-**	**-**	**-**	**-**	**-**	**-**	**3 000**
LAND USE, LAND-USE CHANGE AND FORESTRY	**8 900**	**25**	**620**	**1**	**370**	**-**	**-**	**-**	**-**	**9 900**
a. Forest Land	**-130 000**	**20**	**400**	**0.80**	**200**	**-**	**-**	**-**	**-**	**-130 000**
b. Cropland	**-4 400**	**5**	**110**	**0.26**	**79**	**-**	**-**	**-**	**-**	**-4 200**
c. Grassland	-	0.04	0.90	0.00	0.30	-	-	-	-	1
d. Wetlands	**2 600**	**0.61**	**15**	**0.01**	**4**	**-**	**-**	**-**	**-**	**2 600**
e. Settlements	**2 000**	**5**	**120**	**0.18**	**55**	**-**	**-**	**-**	**-**	**2 200**
f. Harvested Wood Products	**140 000**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**140 000**

Notes: Estimates for the latest year (2019) 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. 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.

b. National totals exclude all GHGs from the Land-Use, Land-Use Change and Forestry Sector.

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

d. 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.

0.00 Indicates emissions were truncated due to rounding.

\- Indicates no emissions.

ANNEX 10

CANADA'S GREENHOUSE GAS EMISSION TABLES BY CANADIAN ECONOMIC SECTOR, 1990–2019

This annex contains summary tables illustrating national GHG emissions for the period 1990–2019 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 and 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 2020).

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

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

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

- **Mining** – Metal and non-metal mining fuel consumption data from the Canadian Industrial Energy End-Use Data and Analysis Centre (CEEDC) database on Energy, Production and Intensity Indicators for Canadian Industry (CEEDC, n.d.).
- **Coal Production** – Fuel consumption estimates for the coal mining industry are based on the *Compilation of a National Inventory of Greenhouse Gas and Fugitive VOC Emissions by the Canadian Coal Mining Industry* (Cheminfo/Clearstone 2014) and annual coal production data provided by Statistics Canada (see Annex 3.2 for further discussion on this activity data).

- **UOG sectors** – Fuel consumption data for the various UOG sectors, except Oil Sands, is estimated from the UOG study (Environment Canada 2014).
- **Oil Sands** – Fuel consumption data for the Oil Sands industry (including mining and extraction, in-situ and upgrading) is modelled by ECCC and adjusted so that the resultant emissions align with the facility level emissions data that is reported to ECCC through the Greenhouse Gas Emissions Reporting Program (GHGRP) (see Chapter 1 for more information on the GHGRP).

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

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

In terms of process and product use-related emissions, emissions from mineral products, chemical industry and metal production are reallocated to Heavy Industry and Light Manufacturing. Emissions from consumption of halocarbons, SF_6 and NF_3, which mainly consist of HFC emissions from refrigeration and air conditioning, are reallocated to Transport 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.
TRANSPORT	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 8500 lb. GVWR and motorcycles.
Bus, Rail and Aviation	All buses and the passenger component of rail and 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 8500 lb. GVWR and the freight component of rail.
Aviation and Marine	Cargo component of aviation and all domestic navigation (inclusive of all fishing and military operations).
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 and Gypsum	– lime and gypsum product manufacturing
Chemicals and 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 other treatment 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 AND 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, 1990–2019**

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	2019
	Mt CO_2 eq																													
NATIONAL GHG TOTAL	**602**	**596**	**614**	**617**	**638**	**656**	**679**	**691**	**697**	**710**	**734**	**723**	**727**	**745**	**746**	**739**	**730**	**752**	**736**	**694**	**703**	**714**	**717**	**725**	**723**	**723**	**707**	**716**	**728**	**730**
OIL AND GAS	**102**	**102**	**111**	**118**	**122**	**128**	**136**	**137**	**141**	**149**	**153**	**153**	**156**	**159**	**159**	**160**	**165**	**171**	**167**	**165**	**166**	**172**	**178**	**184**	**190**	**190**	**181**	**183**	**191**	**191**
Upstream Oil and Gas	**82**	**83**	**92**	**98**	**103**	**109**	**114**	**115**	**120**	**129**	**133**	**133**	**134**	**136**	**135**	**137**	**142**	**147**	**145**	**142**	**143**	**150**	**157**	**163**	**170**	**169**	**160**	**163**	**172**	**172**
Natural Gas Production and Processing	34	33	36	38	41	43	45	43	45	53	58	58	60	63	59	61	62	64	63	60	56	60	58	58	58	55	52	50	53	53
Conventional Oil Production	21	22	24	25	26	28	30	31	31	32	34	33	32	30	29	29	28	29	28	25	25	27	28	30	32	31	27	27	27	25
Conventional Light Oil Production	11	11	11	12	12	12	12	12	11	11	12	12	12	12	12	13	13	13	13	12	12	14	16	18	19	18	16	17	17	17
Conventional Heavy Oil Production	10	11	13	14	14	16	17	19	18	19	21	20	18	16	15	14	13	13	12	11	11	11	11	11	12	12	9	9	8	7
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	2
Oil Sands (Mining, In-situ, Upgrading)	15	15	17	18	19	20	20	22	24	25	25	28	29	32	36	35	41	44	45	49	54	56	62	65	70	72	69	76	81	83
Mining and Extraction	2	2	2	2	3	3	3	3	3	3	3	4	4	5	6	6	6	7	7	8	8	8	9	10	10	11	11	13	15	15
In-situ	4	4	4	4	4	4	5	7	9	8	9	9	9	10	11	12	14	16	18	20	23	24	29	31	35	38	37	41	43	43
Upgrading	8	9	11	12	13	12	13	12	13	13	14	15	16	17	19	17	20	22	20	22	23	23	24	25	24	24	21	23	24	25
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	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**	**22**	**22**	**21**	**21**	**21**	**19**	**19**	**20**
Petroleum Refining	18	17	17	18	17	17	20	20	19	18	19	19	21	22	23	22	22	22	21	21	22	20	21	21	20	19	20	18	18	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	1
ELECTRICITY	**95**	**96**	**103**	**93**	**95**	**98**	**98**	**109**	**122**	**119**	**129**	**129**	**124**	**127**	**119**	**118**	**112**	**118**	**109**	**94**	**95**	**87**	**83**	**80**	**76**	**79**	**74**	**72**	**62**	**61**
TRANSPORT	**120**	**114**	**115**	**117**	**121**	**122**	**126**	**131**	**137**	**143**	**145**	**147**	**148**	**152**	**156**	**160**	**161**	**165**	**165**	**161**	**167**	**168**	**170**	**174**	**171**	**172**	**174**	**179**	**184**	**186**
Passenger Transport	**71**	**68**	**68**	**69**	**71**	**72**	**74**	**76**	**79**	**81**	**82**	**85**	**86**	**88**	**89**	**90**	**90**	**90**	**89**	**88**	**90**	**89**	**89**	**91**	**89**	**92**	**94**	**95**	**97**	**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	88	89
Bus, Rail and 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	9	9	9	9	10	10
Freight Transport	**31**	**29**	**29**	**30**	**31**	**31**	**34**	**38**	**42**	**46**	**48**	**50**	**50**	**53**	**56**	**60**	**61**	**64**	**66**	**63**	**67**	**71**	**73**	**75**	**74**	**72**	**70**	**74**	**78**	**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	72	72
Aviation and Marine	5	5	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	5	5	5	6
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**	**9**
HEAVY INDUSTRY	**97**	**97**	**95**	**94**	**100**	**100**	**103**	**103**	**98**	**95**	**94**	**88**	**89**	**88**	**92**	**87**	**87**	**86**	**85**	**72**	**75**	**81**	**80**	**78**	**79**	**77**	**76**	**75**	**77**	**77**
Mining	**7**	**6**	**6**	**7**	**8**	**8**	**8**	**9**	**8**	**7**	**8**	**7**	**7**	**7**	**7**	**7**	**7**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**7**	**8**	**9**	**9**
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**	**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**	**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**	**16**	**15**	**16**	**14**	**15**	**15**	**16**	**15**
Cement	**10**	**8**	**8**	**9**	**10**	**11**	**11**	**11**	**11**	**12**	**12**	**12**	**12**	**12**	**13**	**13**	**14**	**13**	**12**	**10**	**10**	**10**	**11**	**10**	**10**	**10**	**10**	**11**	**11**	**11**
Lime and 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**	**3**	**2**
Chemicals and Fertilizers	**29**	**29**	**28**	**28**	**31**	**31**	**33**	**32**	**28**	**25**	**23**	**23**	**24**	**23**	**27**	**25**	**24**	**24**	**24**	**20**	**22**	**24**	**25**	**25**	**26**	**26**	**24**	**21**	**21**	**21**
BUILDINGS	**71**	**71**	**72**	**76**	**76**	**77**	**83**	**81**	**72**	**76**	**83**	**80**	**84**	**89**	**88**	**84**	**79**	**85**	**85**	**83**	**80**	**85**	**83**	**84**	**85**	**83**	**81**	**86**	**90**	**91**
Service Industry	**28**	**28**	**29**	**30**	**30**	**32**	**34**	**34**	**32**	**34**	**38**	**38**	**40**	**43**	**43**	**40**	**37**	**39**	**39**	**39**	**38**	**41**	**42**	**42**	**42**	**41**	**41**	**44**	**45**	**47**
Residential	**44**	**42**	**44**	**46**	**46**	**45**	**50**	**46**	**41**	**43**	**45**	**42**	**44**	**46**	**45**	**44**	**42**	**46**	**46**	**44**	**41**	**45**	**41**	**42**	**42**	**42**	**40**	**42**	**44**	**44**
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**	**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**	**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**	**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**	**36**
WASTE	**26**	**27**	**28**	**29**	**30**	**31**	**31**	**29**	**29**	**30**	**31**	**31**	**31**	**31**	**31**	**31**	**30**	**30**	**30**	**28**	**28**	**27**	**27**	**27**	**27**	**27**	**27**	**27**	**27**	**28**
Solid Waste	**25**	**26**	**27**	**28**	**29**	**30**	**30**	**28**	**28**	**29**	**29**	**29**	**30**	**30**	**30**	**30**	**29**	**29**	**28**	**27**	**26**	**26**	**26**	**26**	**25**	**26**	**25**	**26**	**26**	**26**
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**	**1**
Waste Incineration	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
COAL PRODUCTION	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**2**	**2**	**3**	**3**	**2**	**3**	**3**	**3**	**3**	**2**	**2**	**2**	**2**	**3**	**3**
LIGHT MANUFACTURING, CONSTRUCTION AND 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**	**21**
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**	**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**	**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**	**1**

Notes:

Totals may not add up due to rounding.

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.

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.

a. 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 were truncated due to rounding.

- Indicates no emissions

Table A10–3 Relationship between Canadian Economic Sectors and IPCC Sectors, 2019

ECONOMIC CATEGORY	Economic Category Total	NATIONAL INVENTORY CATEGORY[a]																										LULUCF[b]
		Energy								Industrial Processes and Product Use							Agriculture				Waste						CO_2 Captured[j]	
		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		
		Stationary Combustion			Transport	Fugitive (Unintentional)	Flaring	Venting																				
		Stationary	Industrial Cogeneration																									
			Electricity[c]	Steam for Sale																								
	Mt CO_2 equivalent																											
National Inventory Total[a,b]	**730**	**295**	**23.2**	**0.9**	**217**	**19.1**	**6.3**	**29.6**	**591**	**8.8**	**6.8**	**13.8**	**12.4**	**11.6**	**0.8**	**54.3**	**7.9**	**24.0**	**27.1**	**59.1**	**23.0**	**0.4**	**1.0**	**0.2**	**3.0**	**27.6**	**-1.7**	
OIL AND GAS	**191**	**109.2**	**14.9**	**0.0**	**12.9**	**17.7**	**6.3**	**29.6**	**190.7**					**1.8**		**1.8**											**-1.1**	
Upstream Oil and Gas	**172**	**95.0**	**14.0**		**12.9**	**16.6**	**5.9**	**28.4**	**172.7**					**0.1**		**0.1**											**-1.1**	
Natural Gas Production and Processing	53	30.0	1.5		0.2	9.6	1.3	10.2	52.7					0.0		0.0												
Conventional Oil Production	25	8.2	0.3		0.2	2.9	3.2	10.6	25.3					0.0		0.0												
Conventional Light Oil Production	17	4.1			0.1	2.1	2.0	8.1	16.5					0.0		0.0												
Conventional Heavy Oil Production	7	3.1			0.1	0.7	0.6	2.5	6.9																			
Frontier Oil Production	2	0.9	0.3		0.0	0.0	0.6	0.0	1.9																			
Oil Sands (Mining, In-situ, Upgrading)[c]	83	56.8	12.2		4.3	2.6	1.4	6.8	84.1					0.1		0.1											-1.1	
Mining and Extraction	15	7.0	2.0		4.2	2.0	0.2	0.0	15.4					0.1		0.1												
In-situ	43	33.9	7.0		0.1	0.6	0.2	1.0	42.7																			
Upgrading	25	15.9	3.3		0.0	0.1	1.1	5.7	26.0					0.0		0.0											-1.1	
Oil, Natural Gas and CO_2 Transmission	11				8.2	1.4	0.0	0.9	10.5																			
Downstream Oil and Gas	**20**	**14.2**	**1.0**	**0.0**	**0.1**	**1.1**	**0.4**	**1.2**	**18.0**					**1.7**		**1.7**												
Petroleum Refining	19	14.2	1.0	0.0	0.0	0.1	0.4	1.1	16.8					1.7		1.7												
Natural Gas Distribution	1				0.1	1.0	0.0	0.1	1.1																			
ELECTRICITY	**61**	**61.1**		**0.5**					**61.5**						**0.2**	**0.2**											**-0.6**	
TRANSPORT[g]	**186**				**183.0**				**183.0**				**2.6**	**0.2**	**0.0**	**2.8**												
Passenger Transport	**99**				**97.2**				**97.2**				**1.3**	**0.1**	**0.0**	**1.4**												
Cars, Light Trucks and Motorcycles	89				87.7				87.7				1.2	0.1	0.0	1.3												
Bus, Rail and Aviation	10				9.5				9.5				0.1	0.0	0.0	0.1												
Freight Transport	**78**				**76.6**				**76.6**				**1.3**	**0.1**	**0.0**	**1.4**												
Heavy Duty Trucks, Rail	72				71.1				71.1				1.2	0.1	0.0	1.3												
Aviation and Marine	6				5.5				5.5				0.2	0.0		0.2												
Other: Recreational, Commercial and Residential	**9**				**9.2**				**9.2**																			
HEAVY INDUSTRY	**77**	**32.4**	**7.1**	**0.3**	**3.1**				**42.9**	**8.7**	**6.8**	**13.8**	**0.3**	**4.6**		**34.2**												
Mining	**9**	**5.1**	**1.2**		**2.4**				**8.6**				**0.0**	**0.2**		**0.2**												
Smelting and Refining (Non-Ferrous Metals)	**10**	**2.8**		**0.0**	**0.2**				**3.0**			**5.6**		**1.5**		**7.1**												
Pulp and Paper	**8**	**5.4**	**2.5**	**0.1**	**0.3**				**8.2**	**0.0**				**0.0**		**0.1**												
Iron and Steel	**15**	**5.8**	**0.1**	**0.0**	**0.2**				**6.2**			**8.3**		**0.2**		**8.4**												
Cement	**11**	**4.2**			**0.1**				**4.3**	**7.2**				**0.0**		**7.2**												
Lime and Gypsum	**2**	**1.0**			**0.0**				**1.0**	**1.3**				**0.0**		**1.4**												
Chemicals and Fertilizers	**21**	**8.1**	**3.3**	**0.2**	**0.1**				**11.6**	**0.1**	**6.8**		**0.2**	**2.6**		**9.8**												
BUILDINGS	**91**	**76.0**	**0.6**						**76.6**				**9.1**	**4.5**	**0.5**	**14.1**												
Service Industry	**47**	**33.8**	**0.6**						**34.4**				**7.2**	**4.5**	**0.5**	**12.2**												
Residential	**44**	**42.2**							**42.2**				**1.9**			**1.9**												
AGRICULTURE	**73**	**3.6**	**0.0**		**10.0**				**13.6**					**0.1**		**0.1**	**7.9**	**24.0**	**27.1**	**59.1**								
On Farm Fuel Use[h]	**14**	**3.6**	**0.0**		**10.0**				**13.6**					**0.1**		**0.1**												
Crop Production	**24**																		**23.5**	**23.5**								
Animal Production	**36**																**7.9**	**24.0**	**3.6**	**35.6**								
WASTE	**28**												**0.0**			**0.0**					**23.0**	**0.4**	**1.0**	**0.2**	**3.0**	**27.6**		
Solid Waste[i]	**26**												**0.0**			**0.0**					**23.0**	**0.4**			**3.0**	**26.4**		
Wastewater	**1**																		**1.0**							**1.0**		
Waste Incineration	**0**																			**0.2**				**0.2**		**0.2**		
COAL PRODUCTION	**3**	**0.5**			**0.7**	**1.4**			**2.6**																			
LIGHT MANUFACTURING, CONSTRUCTION AND FOREST RESOURCES	**21**	**12.4**	**0.5**	**0.1**	**7.1**				**20.1**	**0.2**			**0.5**	**0.5**	**0.0**	**1.1**												
Light Manufacturing	**14**	**10.9**	**0.5**	**0.1**	**1.3**				**12.9**	**0.2**			**0.5**	**0.4**	**0.0**	**1.1**												
Construction	**6**	**1.4**	**0.0**		**4.6**				**5.9**					**0.0**		**0.0**												
Forest Resources	**1**	**0.1**			**1.2**				**1.3**					**0.0**		**0.0**												
																												9.9

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.

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 the production of ammonia, nitric acid, adipic acid, carbide and petrochemicals. 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 Transport are allocated to Cars, Light Trucks and Buses

h. On Farm Fuel Use includes emissions associated with the use of lube oils and greases.

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

j. Some facilities capture CO_2 emissions. This is displayed as a negative quantity, as it is computed as an emission reduction at the source. Though the CO_2 has been captured, this does not imply permanent storage; some portion may be subsequently re-emitted (for instance, as fugitive releases) in another activity—in such cases, the re-emissions are reported in the economic sectors where they occur.

0.0 Indicates emissions of less than 0.05 Mt CO_2 eq were truncated due to rounding.

ANNEX 11

PROVINCIAL/ TERRITORIAL GREENHOUSE GAS EMISSION TABLES BY IPCC SECTOR, 1990–2019

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

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

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

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

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

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

Table A11–1 GHG Source/Sink Category 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 and 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 and 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:
Aviation	– Consumption of fossil fuels by civilian aircrafts flying domestically and all military aircraft operations with Canadian purchased fuel
Domestic Aviation (Civil)	– Consumption of fossil fuels by civilian aircraft flying domestically with Canadian purchased fuel
Military	– Consumption of fossil fuels by military aircraft operations 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
Marine	– Consumption of fuels (excluding the biogenic CO_2 emissions from Ethanol and biodiesel) by marine vessels navigating between Canadian ports (inclusive of all fishing and military operations)
Domestic Navigation	– Consumption of fuels (excluding the biogenic CO_2 emissions from Ethanol and biodiesel) by marine vessels navigating between Canadian ports
Fishing	– Consumption of fuels (excluding the biogenic CO_2 emissions from Ethanol and biodiesel) by fishing vessels operating in Canadian waters
Military Water-Borne Navigation	– Consumption of fuels (excluding the biogenic CO_2 emissions from Ethanol and biodiesel) by military vessels operating in Canadian waters
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 other limestone and dolomite use)
b. Chemical Industry	– Production of ammonia, nitric acid, adipic acid, carbide and petrochemicals. Petrochemical production includes production of carbon black, ethylene, ethylene dichloride, ethylene oxide, methanol, styrene and other uses of urea.
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 (Landfills)	– Municipal solid waste management sites (landfills)
b. Biological Treatment of Solid Waste	– Composting and anaerobic digestion 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	2014	2015	2016	2017	2018	2019
	kt CO_2 eq							
TOTAL	**9 550**	**10 500**	**10 900**	**11 000**	**11 200**	**11 100**	**10 900**	**11 100**
ENERGY	**8 670**	**9 500**	**9 950**	**10 000**	**10 200**	**10 100**	**9 890**	**10 100**
a. Stationary Combustion Sources	**5 450**	**4 690**	**5 000**	**4 990**	**5 150**	**5 010**	**4 480**	**4 700**
Public Electricity and Heat Production	1 640	819	1 210	1 340	1 520	1 530	1 130	1 140
Petroleum Refining Industries	1 000	950	850	960	1 100	890	860	930
Oil and Gas Extraction	-	764	1 130	1 030	1 170	1 170	1 090	1 160
Mining	1 160	1 130	742	692	373	390	557	612
Manufacturing Industries	506	276	40	35	40	82	81	78
Construction	33	24	7	18	5	6	7	6
Commercial and Institutional	320	358	630	599	572	488	317	349
Residential	728	360	380	306	352	446	434	409
Agriculture and Forestry	25	8	11	12	10	9	7	9
b. Transport[a]	**3 190**	**3 900**	**4 300**	**4 490**	**4 520**	**4 440**	**4 580**	**4 630**
Aviation	238	340	312	307	303	280	289	280
Road Transportation	1 570	2 120	2 940	3 100	3 120	3 030	3 060	3 050
Light-Duty Gasoline Vehicles	678	604	679	684	640	627	589	551
Light-Duty Gasoline Trucks	440	646	1 090	1 160	1 160	1 220	1 210	1 190
Heavy-Duty Gasoline Vehicles	86	102	208	223	232	253	255	245
Motorcycles	3	2	8	9	9	10	10	10
Light-Duty Diesel Vehicles	4	5	7	8	8	6	6	6
Light-Duty Diesel Trucks	2	6	6	8	10	10	11	12
Heavy-Duty Diesel Vehicles	358	756	943	1 020	1 060	903	982	1 030
Propane and Natural Gas Vehicles	0.05	0.03	0.00	0.00	0.00	0.00	0.00	0.00
Railways	-	-	-	-	-	-	-	-
Marine	764	929	610	552	570	604	649	726
Other Transportation	614	513	442	530	522	521	576	575
Off-Road Agriculture and Forestry	25	34	21	26	23	22	26	28
Off-Road Commercial and Institutional	31	48	46	50	21	11	12	12
Off-Road Manufacturing, Mining and Construction	223	282	242	307	335	341	394	394
Off-Road Residential	7	25	28	30	29	29	29	30
Off-Road Other Transportation	328	124	105	117	114	117	116	111
Pipeline Transport	-	-	-	-	-	-	-	-
c. Fugitive Sources	**41**	**910**	**660**	**560**	**560**	**660**	**840**	**740**
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	41	910	660	560	560	660	840	740
Oil	6	49	35	30	35	37	38	42
Natural Gas	0.00	1	2	2	2	2	2	2
Venting	25	52	39	46	45	59	55	61
Flaring	11	810	580	490	480	560	740	640
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**99**	**148**	**192**	**189**	**201**	**241**	**256**	**228**
a. Mineral Products	**65**	**2**	**0.59**	**0.63**	**0.54**	**0.53**	**0.48**	**0.44**
Cement Production	61	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-
Mineral Products Use	4	2	0.59	0.63	0.54	0.53	0.48	0.44
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[c]	**-**	**71**	**160**	**160**	**160**	**170**	**190**	**190**
e. Non-Energy Products from Fuels and Solvent Use	**29**	**68**	**28**	**19**	**26**	**57**	**55**	**28**
f. Other Product Manufacture and Use	**5**	**7**	**6**	**9**	**10**	**9**	**10**	**10**
AGRICULTURE	**54**	**66**	**96**	**89**	**90**	**85**	**87**	**89**
a. Enteric Fermentation	**23**	**31**	**32**	**31**	**31**	**31**	**33**	**34**
b. Manure Management	**16**	**20**	**25**	**25**	**25**	**25**	**25**	**25**
c. Agricultural Soils	**12**	**15**	**18**	**19**	**18**	**18**	**19**	**19**
Direct Sources	10	12	14	15	15	14	15	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**	**-**	**21**	**14**	**17**	**12**	**11**	**11**
WASTE	**720**	**810**	**700**	**690**	**710**	**710**	**710**	**700**
a. Solid Waste Disposal (Landfills)	**620**	**710**	**630**	**630**	**640**	**650**	**640**	**640**
b. Biological Treatment of Solid Waste	**-**	**0.01**	**0.02**	**0.02**	**0.02**	**0.02**	**0.10**	**0.10**
c. Wastewater Treatment and Discharge	**23**	**21**	**20**	**20**	**21**	**22**	**22**	**22**
d. Incineration and Open Burning of Waste	**30**	**10**	**0.20**	**0.20**	**0.10**	**0.10**	**0.09**	**0.09**
e. Industrial Wood Waste Landfills	**60**	**60**	**50**	**40**	**40**	**40**	**40**	**40**

Notes:

Estimates for the latest year (2019) 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.

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 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.

0.00 Indicates emissions were truncated due to rounding.

- Indicates no emissions.

x Indicates data has been suppressed to respect confidentiality.

Table A11–3 2019 GHG Emission Summary for Newfoundland and Labrador

Greenhouse Gas Categories	Greenhouse Gases									
	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[a]	PFCs[a]	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	**9 800**	**39**	**960**	**0.45**	**130**	**190**	**0.05**	**2**	**-**	**11 100**
ENERGY	**9 760**	**9**	**220**	**0.30**	**90**	**-**	**-**	**-**	**-**	**10 100**
a. Stationary Combustion Sources	**4 560**	**4**	**100**	**0.10**	**30**	**-**	**-**	**-**	**-**	**4 700**
Public Electricity and Heat Production	1 130	0.02	0.39	0.02	7	-	-	-	-	1 140
Petroleum Refining Industries	930	0.02	0.60	0.01	2	-	-	-	-	930
Oil and Gas Extraction	1 090	3	70	0.03	7	-	-	-	-	1 160
Mining	610	0.01	0.40	0.01	3	-	-	-	-	612
Manufacturing Industries	77	0.00	0.05	0.00	0.55	-	-	-	-	78
Construction	6	0.00	0.00	0.00	0.02	-	-	-	-	6
Commercial and Institutional	347	0.00	0.10	0.01	2	-	-	-	-	349
Residential	363	1	40	0.03	9	-	-	-	-	409
Agriculture and Forestry	9	0.00	0.00	0.00	0.03	-	-	-	-	9
b. Transport[b]	**4 560**	**0.59**	**15**	**0.19**	**55**	**-**	**-**	**-**	**-**	**4 630**
Aviation	278	0.00	0.07	0.01	2	-	-	-	-	280
Road Transportation	3 010	0.20	5	0.13	40	-	-	-	-	3 050
Light-Duty Gasoline Vehicles	544	0.04	1	0.02	5	-	-	-	-	551
Light-Duty Gasoline Trucks	1 180	0.09	2	0.04	11	-	-	-	-	1 190
Heavy-Duty Gasoline Vehicles	239	0.01	0.20	0.02	6	-	-	-	-	245
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	12	0.00	0.01	0.00	0.29	-	-	-	-	12
Heavy-Duty Diesel Vehicles	1 010	0.04	1	0.06	17	-	-	-	-	1 030
Propane and Natural Gas Vehicles	0.00	0.00	0.00	0.00	0.00	-	-	-	-	0.00
Railways	-	-	-	-	-	-	-	-	-	-
Marine	719	0.07	2	0.02	6	-	-	-	-	726
Other Transportation	559	0.33	8	0.03	8	-	-	-	-	575
Off-Road Agriculture and Forestry	27	0.00	0.04	0.00	0.50	-	-	-	-	28
Off-Road Commercial and Institutional	12	0.01	0.36	0.00	0.10	-	-	-	-	12
Off-Road Manufacturing, Mining and Construction	387	0.03	0.67	0.02	6	-	-	-	-	394
Off-Road Residential	28	0.05	1	0.00	0.20	-	-	-	-	30
Off-Road Other Transportation	105	0.23	6	0.00	0.90	-	-	-	-	111
Pipeline Transport	-	-	-	-	-	-	-	-	-	-
c. Fugitive Sources	**640**	**4**	**100**	**0.01**	**2**	**-**	**-**	**-**	**-**	**740**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	640	4	100	0.01	2	-	-	-	-	740
Oil	0.18	2	40	0.01	2	-	-	-	-	42
Natural Gas	0.02	0.08	2	-	-	-	-	-	-	2
Venting	61	0.02	0.49	-	-	-	-	-	-	61
Flaring	580	2	57	0.00	0.30	-	-	-	-	640
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**29**	**-**	**-**	**0.02**	**7**	**190**	**0.05**	**2**	**-**	**228**
a. Mineral Products	**0.44**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.44**
Cement Production	-	-	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-	-	-
Mineral Products Use	0.44	-	-	-	-	-	-	-	-	0.44
b. Chemical Industry[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**-**	**-**	**-**	**-**	**190**	**0.03**	**-**	**-**	**190**
e. Non-Energy Products from Fuels and Solvent Use	**28**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**28**
f. Other Product Manufacture and Use	**0.60**	**-**	**-**	**0.02**	**7**	**-**	**0.02**	**2**	**-**	**10**
AGRICULTURE	**11**	**2**	**46**	**0.11**	**32**	**-**	**-**	**-**	**-**	**89**
a. Enteric Fermentation	**-**	**1**	**34**	**-**	**-**	**-**	**-**	**-**	**-**	**34**
b. Manure Management	**-**	**0.50**	**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	**11**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**11**
WASTE	**0.09**	**28**	**700**	**0.02**	**7**	**-**	**-**	**-**	**-**	**700**
a. Solid Waste Disposal (Landfills)	**-**	**26**	**640**	**-**	**-**	**-**	**-**	**-**	**-**	**640**
b. Biological Treatment of Solid Waste	**-**	**0.00**	**0.05**	**0.00**	**0.08**	**-**	**-**	**-**	**-**	**0.10**
c. Wastewater Treatment and Discharge	**-**	**0.59**	**15**	**0.02**	**7**	**-**	**-**	**-**	**-**	**22**
d. Incineration and Open Burning of Waste	**0.09**	**0.00**	**0.00**	**0.00**	**0.01**	**-**	**-**	**-**	**-**	**0.09**
e. Industrial Wood Waste Landfills	**-**	**2**	**40**	**-**	**-**	**-**	**-**	**-**	**-**	**40**

Notes:
Estimates for the latest year (2019) 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.
a. 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.
b. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
c. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial/territorial tables.
d. 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.
0.00 Indicates emissions were truncated due to rounding.
- Indicates no emissions.
x Indicates data has been suppressed to respect confidentiality.

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

Greenhouse Gas Categories	1990	2005	2014	2015	2016	2017	2018	2019
	kt CO_2 eq							
TOTAL	**1 870**	**2 040**	**1 710**	**1 660**	**1 720**	**1 740**	**1 730**	**1 760**
ENERGY	**1 400**	**1 430**	**1 190**	**1 180**	**1 190**	**1 210**	**1 170**	**1 200**
a. Stationary Combustion Sources	**756**	**642**	**444**	**393**	**366**	**373**	**345**	**369**
Public Electricity and Heat Production	104	5	4	14	4	9	3	1
Petroleum Refining Industries	-	-	-	-	-	-	-	-
Oil and Gas Extraction	-	-	-	-	-	-	-	-
Mining	0.89	x	x	x	x	x	x	x
Manufacturing Industries	55	145	75	63	67	74	60	75
Construction	11	x	x	x	x	x	x	x
Commercial and Institutional	202	152	93	96	67	57	61	61
Residential	364	306	258	208	213	220	208	218
Agriculture and Forestry	19	24	12	10	11	11	12	13
b. Transport[a]	**642**	**791**	**749**	**783**	**820**	**840**	**825**	**828**
Aviation	17	13	20	20	21	22	24	25
Road Transportation	467	624	590	612	648	657	633	634
Light-Duty Gasoline Vehicles	234	243	195	196	206	207	187	185
Light-Duty Gasoline Trucks	127	228	218	222	247	263	254	265
Heavy-Duty Gasoline Vehicles	41	47	40	40	44	47	44	44
Motorcycles	0.58	0.98	1	1	2	2	2	2
Light-Duty Diesel Vehicles	1	2	2	3	3	2	2	2
Light-Duty Diesel Trucks	0.45	0.90	0.67	1	1	1	2	2
Heavy-Duty Diesel Vehicles	62	102	133	149	146	133	142	136
Propane and Natural Gas Vehicles	-	-	-	-	-	-	-	-
Railways	-	-	-	-	-	-	-	-
Marine	32	46	55	55	53	58	62	66
Other Transportation	126	107	85	96	99	103	106	102
Off-Road Agriculture and Forestry	47	48	36	42	37	31	34	33
Off-Road Commercial and Institutional	5	9	9	9	8	8	7	7
Off-Road Manufacturing, Mining and Construction	15	15	14	17	26	35	38	36
Off-Road Residential	0.86	7	5	5	6	6	6	6
Off-Road Other Transportation	60	28	21	22	23	24	21	20
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**	**54**	**53**	**54**	**57**	**62**	**61**
a. Mineral Products	**0.34**	**0.91**	**0.59**	**0.69**	**0.62**	**0.36**	**0.44**	**0.44**
Cement Production	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-
Mineral Products Use	0.34	0.91	0.59	0.69	0.62	0.36	0.44	0.44
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[c]	**-**	**25**	**51**	**50**	**51**	**54**	**59**	**58**
e. Non-Energy Products from Fuels and Solvent Use	**5**	**2**	**1**	**0.87**	**0.90**	**0.73**	**0.61**	**0.62**
f. Other Product Manufacture and Use	**0.83**	**2**	**1**	**2**	**2**	**2**	**2**	**2**
AGRICULTURE	**370**	**440**	**350**	**320**	**380**	**370**	**400**	**400**
a. Enteric Fermentation	**140**	**130**	**110**	**110**	**110**	**110**	**110**	**110**
b. Manure Management	**47**	**51**	**40**	**39**	**37**	**38**	**38**	**39**
c. Agricultural Soils	**180**	**250**	**200**	**170**	**230**	**220**	**240**	**240**
Direct Sources	150	210	170	140	200	190	210	200
Indirect Sources	30	40	30	30	40	40	40	40
d. Field Burning of Agricultural Residues	**0.10**	**0.20**	**0.10**	**0.20**	**0.20**	**0.20**	**0.20**	**0.20**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**5**	**5**	**2**	**3**	**3**	**2**	**2**	**4**
WASTE	**89**	**140**	**110**	**110**	**100**	**100**	**100**	**99**
a. Solid Waste Disposal (Landfills)	**82**	**130**	**96**	**93**	**92**	**90**	**89**	**88**
b. Biological Treatment of Solid Waste	**-**	**3**	**3**	**3**	**3**	**3**	**2**	**2**
c. Wastewater Treatment and Discharge	**6**	**8**	**8**	**9**	**8**	**8**	**8**	**8**
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:

Estimates for the latest year (2019) 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.

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 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.

0.00 Indicates emissions were truncated due to rounding.

- Indicates no emissions.

x Indicates data has been suppressed to respect confidentiality.

Table A11–5 **2019 GHG Emission Summary for Prince Edward Island**

Greenhouse Gas Categories	Greenhouse Gases									
	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[a]	PFCs[a]	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**	**10**	**240**	**0.95**	**280**	**58**	**0.06**	**-**	**-**	**1 760**
ENERGY	**1 170**	**0.64**	**16**	**0.05**	**10**	**-**	**-**	**-**	**-**	**1 200**
a. Stationary Combustion Sources	**353**	**0.50**	**10**	**0.01**	**4**	**-**	**-**	**-**	**-**	**369**
Public Electricity and Heat Production	1	0.00	0.00	0.00	0.00	-	-	-	-	1
Petroleum Refining Industries	-	-	-	-	-	-	-	-	-	-
Oil and Gas Extraction	-	-	-	-	-	-	-	-	-	-
Mining	x	x	x	x	x	x	x	x	x	x
Manufacturing Industries	75	0.00	0.03	0.00	0.40	-	-	-	-	75
Construction	x	x	x	x	x	x	x	x	x	x
Commercial and Institutional	60	0.01	0.22	0.00	0.70	-	-	-	-	61
Residential	203	0.50	10	0.01	3	-	-	-	-	218
Agriculture and Forestry	13	0.00	0.00	0.00	0.05	-	-	-	-	13
b. Transport[b]	**814**	**0.13**	**3**	**0.04**	**10**	**-**	**-**	**-**	**-**	**828**
Aviation	25	0.00	0.01	0.00	0.20	-	-	-	-	25
Road Transportation	625	0.05	1	0.03	9	-	-	-	-	634
Light-Duty Gasoline Vehicles	182	0.02	0.40	0.01	2	-	-	-	-	185
Light-Duty Gasoline Trucks	261	0.02	0.60	0.01	3	-	-	-	-	265
Heavy-Duty Gasoline Vehicles	43	0.00	0.04	0.00	1	-	-	-	-	44
Motorcycles	2	0.00	0.01	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	134	0.01	0.10	0.01	2	-	-	-	-	136
Propane and Natural Gas Vehicles	-	-	-	-	-	-	-	-	-	-
Railways	-	-	-	-	-	-	-	-	-	-
Marine	65	0.01	0.15	0.00	0.50	-	-	-	-	66
Other Transportation	99	0.08	2	0.00	1	-	-	-	-	102
Off-Road Agriculture and Forestry	33	0.00	0.03	0.00	0.40	-	-	-	-	33
Off-Road Commercial and Institutional	7	0.01	0.23	0.00	0.06	-	-	-	-	7
Off-Road Manufacturing, Mining and Construction	35	0.01	0.14	0.00	0.50	-	-	-	-	36
Off-Road Residential	5	0.01	0.27	0.00	0.04	-	-	-	-	6
Off-Road Other Transportation	19	0.05	1	0.00	0.10	-	-	-	-	20
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	**1**	**-**	**-**	**0.01**	**2**	**58**	**0.06**	**-**	**-**	**61**
a. Mineral Products	**0.44**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.44**
Cement Production	-	-	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-	-	-
Mineral Products Use	0.44	-	-	-	-	-	-	-	-	0.44
b. Chemical Industry[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**-**	**-**	**-**	**-**	**58**	**0.01**	**-**	**-**	**58**
e. Non-Energy Products from Fuels and Solvent Use	**0.62**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.62**
f. Other Product Manufacture and Use	**0.08**	**-**	**-**	**0.01**	**2**	**-**	**0.05**	**-**	**-**	**2**
AGRICULTURE	**4**	**5**	**130**	**0.88**	**260**	**-**	**-**	**-**	**-**	**400**
a. Enteric Fermentation	**-**	**5**	**110**	**-**	**-**	**-**	**-**	**-**	**-**	**110**
b. Manure Management	**-**	**0.73**	**18**	**0.07**	**20**	**-**	**-**	**-**	**-**	**39**
c. Agricultural Soils	**-**	**-**	**-**	**0.81**	**240**	**-**	**-**	**-**	**-**	**240**
Direct Sources	-	-	-	0.68	200	-	-	-	-	200
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	**4**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**4**
WASTE	**0.10**	**4**	**96**	**0.01**	**3**	**-**	**-**	**-**	**-**	**99**
a. Solid Waste Disposal (Landfills)	**-**	**4**	**88**	**-**	**-**	**-**	**-**	**-**	**-**	**88**
b. Biological Treatment of Solid Waste	**-**	**0.03**	**0.80**	**0.00**	**1**	**-**	**-**	**-**	**-**	**2**
c. Wastewater Treatment and Discharge	**-**	**0.25**	**6**	**0.01**	**2**	**-**	**-**	**-**	**-**	**8**
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:
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Provincial/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report.
a. 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.
b. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
c. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial/territorial tables.
d. 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.
0.00 Indicates emissions were truncated due to rounding.
- Indicates no emissions.
x Indicates data has been suppressed to respect confidentiality.

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

Greenhouse Gas Categories	1990	2005	2014	2015	2016	2017	2018	2019
	kt CO_2 eq							
TOTAL	**19 600**	**23 200**	**16 600**	**16 700**	**15 600**	**16 200**	**16 800**	**16 200**
ENERGY	**17 900**	**21 400**	**15 000**	**15 300**	**14 100**	**14 700**	**15 300**	**14 700**
a. Stationary Combustion Sources	**11 500**	**15 400**	**10 300**	**10 000**	**8 880**	**9 110**	**9 420**	**8 940**
Public Electricity and Heat Production	6 900	10 700	7 210	6 990	6 390	6 680	6 990	6 690
Petroleum Refining Industries	620	1 100	x	x	x	x	x	x
Oil and Gas Extraction	46	302	727	565	415	284	184	-
Mining	39	39	5	4	4	4	3	3
Manufacturing Industries	775	556	416	397	366	369	455	443
Construction	50	x	x	x	x	x	x	x
Commercial and Institutional	816	x	538	651	539	571	486	502
Residential	2 130	1 330	1 360	1 380	1 140	1 170	1 270	1 270
Agriculture and Forestry	104	96	33	28	24	32	31	24
b. Transport[a]	**4 780**	**5 740**	**4 650**	**5 170**	**5 140**	**5 500**	**5 750**	**5 630**
Aviation	299	277	265	269	266	278	302	294
Road Transportation	3 100	4 100	3 410	3 910	3 930	4 080	4 180	4 090
Light-Duty Gasoline Vehicles	1 490	1 350	971	1 190	1 200	1 190	1 170	1 120
Light-Duty Gasoline Trucks	735	1 190	1 030	1 310	1 390	1 470	1 530	1 560
Heavy-Duty Gasoline Vehicles	165	237	224	272	288	302	310	309
Motorcycles	6	5	7	9	10	11	11	12
Light-Duty Diesel Vehicles	29	42	44	44	38	37	27	24
Light-Duty Diesel Trucks	6	9	8	12	12	15	16	16
Heavy-Duty Diesel Vehicles	664	1 260	1 120	1 070	990	1 050	1 110	1 050
Propane and Natural Gas Vehicles	4	2	0.00	0.00	0.00	0.00	0.00	0.00
Railways	66	115	x	x	x	151	163	158
Marine	504	605	380	326	291	375	434	474
Other Transportation	815	638	x	x	x	621	666	619
Off-Road Agriculture and Forestry	86	90	60	63	51	57	62	57
Off-Road Commercial and Institutional	43	66	68	74	65	68	72	71
Off-Road Manufacturing, Mining and Construction	225	235	188	208	211	273	294	266
Off-Road Residential	9	38	32	38	x	x	x	x
Off-Road Other Transportation	452	175	129	161	164	177	190	176
Pipeline Transport	-	35	x	x	x	x	x	x
c. Fugitive Sources	**1 700**	**230**	**79**	**53**	**49**	**110**	**130**	**170**
Coal Mining	2 000	100	0.70	0.60	0.70	70	100	200
Oil and Natural Gas	51	130	79	52	48	38	29	15
Oil	7	5	0.00	0.00	0.00	0.00	0.00	0.00
Natural Gas	-	13	14	14	14	13	15	14
Venting	30	80	33	20	18	13	7	0.09
Flaring	13	32	32	19	17	12	7	-
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**333**	**498**	**525**	**528**	**528**	**466**	**489**	**487**
a. Mineral Products	**190**	**250**	**190**	**200**	**190**	**110**	**120**	**98**
Cement Production	180	250	190	200	190	x	x	x
Lime Production	-	-	-	-	-	-	-	-
Mineral Products Use	4	3	1	1	1	x	x	x
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[c]	**-**	**140**	**260**	**260**	**270**	**280**	**310**	**310**
e. Non-Energy Products from Fuels and Solvent Use	**120**	**71**	**35**	**24**	**30**	**23**	**23**	**43**
f. Other Product Manufacture and Use	**29**	**40**	**42**	**42**	**39**	**53**	**39**	**40**
AGRICULTURE	**470**	**440**	**410**	**390**	**390**	**380**	**380**	**380**
a. Enteric Fermentation	**230**	**210**	**170**	**170**	**170**	**170**	**170**	**170**
b. Manure Management	**80**	**100**	**100**	**99**	**91**	**92**	**89**	**89**
c. Agricultural Soils	**120**	**120**	**110**	**110**	**110**	**110**	**120**	**110**
Direct Sources	95	98	93	88	95	94	96	93
Indirect Sources	20	20	20	20	20	20	20	20
d. Field Burning of Agricultural Residues	**0.06**	**0.10**	**0.05**	**0.05**	**0.07**	**0.08**	**0.06**	**0.06**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**38**	**13**	**20**	**15**	**17**	**12**	**12**	**14**
WASTE	**890**	**810**	**610**	**560**	**600**	**610**	**610**	**610**
a. Solid Waste Disposal (Landfills)	**790**	**680**	**490**	**440**	**480**	**490**	**490**	**490**
b. Biological Treatment of Solid Waste	**0.70**	**20**	**30**	**30**	**30**	**30**	**30**	**30**
c. Wastewater Treatment and Discharge	**41**	**43**	**38**	**41**	**39**	**37**	**37**	**38**
d. Incineration and Open Burning of Waste	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Industrial Wood Waste Landfills	**60**	**60**	**50**	**50**	**50**	**50**	**40**	**40**

Notes:

Estimates for the latest year (2019) 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.

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 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.

0.00 Indicates emissions were truncated due to rounding.

- Indicates no emissions.

x Indicates data has been suppressed to respect confidentiality.

Table A11–7 **2019 GHG Emission Summary for Nova Scotia**

Greenhouse Gas Categories	Greenhouse Gases									
	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[a]	PFCs[a]	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	**14 500**	**43**	**1 100**	**1**	**340**	**310**	**0.55**	**25**	**-**	**16 200**
ENERGY	**14 300**	**12**	**290**	**0.50**	**100**	**-**	**-**	**-**	**-**	**14 700**
a. Stationary Combustion Sources	**8 790**	**4**	**100**	**0.20**	**60**	**-**	**-**	**-**	**-**	**8 940**
Public Electricity and Heat Production	6 660	0.27	7	0.09	30	-	-	-	-	6 690
Petroleum Refining Industries	x	x	x	x	x	x	x	x	x	x
Oil and Gas Extraction	-	-	-	-	-	-	-	-	-	-
Mining	3	0.00	0.00	0.00	0.01	-	-	-	-	3
Manufacturing Industries	432	0.04	1	0.03	10	-	-	-	-	443
Construction	x	x	x	x	x	x	x	x	x	x
Commercial and Institutional	499	0.01	0.21	0.01	3	-	-	-	-	502
Residential	1 160	4	90	0.06	20	-	-	-	-	1 270
Agriculture and Forestry	24	0.00	0.01	0.00	0.09	-	-	-	-	24
b. Transport[b]	**5 520**	**1**	**26**	**0.27**	**82**	**-**	**-**	**-**	**-**	**5 630**
Aviation	291	0.00	0.07	0.01	2	-	-	-	-	294
Road Transportation	4 030	0.30	7	0.18	52	-	-	-	-	4 090
Light-Duty Gasoline Vehicles	1 110	0.09	2	0.04	11	-	-	-	-	1 120
Light-Duty Gasoline Trucks	1 540	0.10	3	0.05	16	-	-	-	-	1 560
Heavy-Duty Gasoline Vehicles	301	0.01	0.20	0.03	8	-	-	-	-	309
Motorcycles	11	0.00	0.10	0.00	0.06	-	-	-	-	12
Light-Duty Diesel Vehicles	24	0.00	0.01	0.00	0.58	-	-	-	-	24
Light-Duty Diesel Trucks	15	0.00	0.01	0.00	0.37	-	-	-	-	16
Heavy-Duty Diesel Vehicles	1 030	0.04	1	0.06	17	-	-	-	-	1 050
Propane and Natural Gas Vehicles	0.00	0.00	0.00	0.00	0.00	-	-	-	-	0.00
Railways	142	0.01	0.20	0.05	20	-	-	-	-	158
Marine	469	0.04	1	0.01	4	-	-	-	-	474
Other Transportation	595	0.70	17	0.02	7	-	-	-	-	619
Off-Road Agriculture and Forestry	56	0.00	0.09	0.00	0.90	-	-	-	-	57
Off-Road Commercial and Institutional	67	0.14	4	0.00	0.60	-	-	-	-	71
Off-Road Manufacturing, Mining and Construction	261	0.04	0.90	0.01	4	-	-	-	-	266
Off-Road Residential	x	x	x	x	x	x	x	x	x	x
Off-Road Other Transportation	164	0.42	11	0.00	1	-	-	-	-	176
Pipeline Transport	x	x	x	x	x	x	x	x	x	x
c. Fugitive Sources	**0.00**	**7**	**170**	**-**	**-**	**-**	**-**	**-**	**-**	**170**
Coal Mining	-	6	200	-	-	-	-	-	-	200
Oil and Natural Gas	0.00	0.58	15	-	-	-	-	-	-	15
Oil	-	0.00	0.00	-	-	-	-	-	-	0.00
Natural Gas	0.00	0.58	14	-	-	-	-	-	-	14
Venting	0.00	0.00	0.09	-	-	-	-	-	-	0.09
Flaring	-	-	-	-	-	-	-	-	-	-
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**141**	**-**	**-**	**0.04**	**13**	**310**	**0.55**	**25**	**-**	**487**
a. Mineral Products	**98**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**98**
Cement Production	x	-	-	-	-	-	-	-	-	x
Lime Production	-	-	-	-	-	-	-	-	-	-
Mineral Products Use	x	-	-	-	-	-	-	-	-	x
b. Chemical Industry[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**-**	**-**	**-**	**-**	**310**	**0.06**	**-**	**-**	**310**
e. Non-Energy Products from Fuels and Solvent Use	**43**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**43**
f. Other Product Manufacture and Use	**0.62**	**-**	**-**	**0.05**	**13**	**-**	**0.49**	**25**	**-**	**40**
AGRICULTURE	**14**	**9**	**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	-	-	-	0.31	93	-	-	-	-	93
Indirect Sources	-	-	-	0.06	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	**14**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**14**
WASTE	**-**	**23**	**580**	**0.10**	**30**	**-**	**-**	**-**	**-**	**610**
a. Solid Waste Disposal (Landfills)	**-**	**20**	**490**	**-**	**-**	**-**	**-**	**-**	**-**	**490**
b. Biological Treatment of Solid Waste	**-**	**0.70**	**20**	**0.05**	**20**	**-**	**-**	**-**	**-**	**30**
c. Wastewater Treatment and Discharge	**-**	**1**	**25**	**0.04**	**10**	**-**	**-**	**-**	**-**	**38**
d. Incineration and Open Burning of Waste	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Industrial Wood Waste Landfills	**-**	**2**	**40**	**-**	**-**	**-**	**-**	**-**	**-**	**40**

Notes:
Estimates for the latest year (2019) 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.
a. 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.
b. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
c. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial/territorial tables.
d. 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.
0.00 Indicates emissions were truncated due to rounding.
- Indicates no emissions.
x Indicates data has been suppressed to respect confidentiality.

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

Greenhouse Gas Categories	1990	2005	2014	2015	2016	2017	2018	2019
	kt CO_2 eq							
TOTAL	**16 300**	**20 000**	**13 500**	**13 700**	**14 400**	**13 300**	**13 100**	**12 400**
ENERGY	**14 700**	**18 300**	**12 000**	**12 300**	**12 800**	**11 800**	**11 500**	**11 000**
a. Stationary Combustion Sources	**10 700**	**13 000**	**8 080**	**8 070**	**8 270**	**7 590**	**7 420**	**7 030**
Public Electricity and Heat Production	6 020	8 060	3 760	3 780	4 000	3 340	3 670	3 300
Petroleum Refining Industries	1 200	2 300	x	x	x	x	x	x
Oil and Gas Extraction	-	-	35	29	26	26	34	24
Mining	126	161	x	x	x	x	x	x
Manufacturing Industries	1 630	1 170	680	673	615	621	678	653
Construction	69	6	10	28	17	10	10	7
Commercial and Institutional	580	602	403	428	380	271	305	331
Residential	1 060	750	676	816	691	628	619	557
Agriculture and Forestry	53	33	60	25	31	36	34	32
b. Transport[a]	**3 990**	**5 050**	**3 720**	**4 010**	**4 380**	**3 950**	**3 900**	**3 790**
Aviation	137	127	114	111	109	108	116	118
Road Transportation	2 260	3 590	2 790	3 090	3 420	3 010	2 980	2 880
Light-Duty Gasoline Vehicles	931	1 030	716	851	943	810	770	729
Light-Duty Gasoline Trucks	533	985	894	1 100	1 290	1 170	1 190	1 190
Heavy-Duty Gasoline Vehicles	125	197	182	216	251	226	222	219
Motorcycles	3	6	7	9	10	9	9	9
Light-Duty Diesel Vehicles	15	22	16	16	15	12	9	8
Light-Duty Diesel Trucks	6	10	4	6	7	7	7	7
Heavy-Duty Diesel Vehicles	649	1 340	975	891	902	768	776	715
Propane and Natural Gas Vehicles	0.67	0.15	-	0.00	0.00	0.00	0.00	0.00
Railways	129	284	x	x	x	157	160	151
Marine	182	217	140	121	126	145	133	162
Other Transportation	1 280	829	x	x	x	534	510	476
Off-Road Agriculture and Forestry	123	167	96	98	87	81	78	71
Off-Road Commercial and Institutional	30	55	46	48	48	44	42	41
Off-Road Manufacturing, Mining and Construction	151	194	130	138	155	158	152	137
Off-Road Residential	5	x	x	x	x	30	28	28
Off-Road Other Transportation	971	386	172	205	229	211	200	184
Pipeline Transport	-	x	-	-	13	10	11	15
c. Fugitive Sources	**61**	**220**	**150**	**180**	**190**	**220**	**170**	**200**
Coal Mining	1	0.30	-	-	-	-	-	-
Oil and Natural Gas	60	220	150	180	190	220	170	200
Oil	8	18	15	17	17	16	13	14
Natural Gas	0.02	20	16	16	19	19	19	19
Venting	36	150	100	120	130	150	110	140
Flaring	15	31	21	25	27	31	23	29
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**188**	**269**	**401**	**395**	**477**	**525**	**538**	**371**
a. Mineral Products	**91**	**98**	**3**	**4**	**78**	**60**	**48**	**46**
Cement Production	-	-	-	-	-	-	-	-
Lime Production	81	90	-	-	75	x	x	x
Mineral Products Use	10	8	3	4	4	x	x	x
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[c]	**-**	**130**	**240**	**240**	**240**	**250**	**270**	**270**
e. Non-Energy Products from Fuels and Solvent Use	**92**	**37**	**150**	**140**	**150**	**200**	**210**	**45**
f. Other Product Manufacture and Use	**5**	**9**	**8**	**9**	**9**	**12**	**13**	**13**
AGRICULTURE	**490**	**540**	**480**	**430**	**480**	**450**	**460**	**460**
a. Enteric Fermentation	**200**	**180**	**150**	**150**	**150**	**150**	**150**	**150**
b. Manure Management	**60**	**74**	**61**	**60**	**58**	**59**	**60**	**59**
c. Agricultural Soils	**160**	**230**	**180**	**160**	**200**	**190**	**200**	**200**
Direct Sources	140	190	150	130	170	160	170	170
Indirect Sources	30	40	30	20	30	30	30	30
d. Field Burning of Agricultural Residues	**0.02**	**0.02**	**0.03**	**0.03**	**0.03**	**0.03**	**0.02**	**0.02**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**68**	**55**	**92**	**62**	**73**	**52**	**49**	**51**
WASTE	**830**	**930**	**640**	**620**	**560**	**570**	**570**	**580**
a. Solid Waste Disposal (Landfills)	**760**	**790**	**520**	**500**	**450**	**460**	**480**	**480**
b. Biological Treatment of Solid Waste	**3**	**50**	**30**	**30**	**30**	**30**	**20**	**20**
c. Wastewater Treatment and Discharge	**36**	**38**	**38**	**38**	**36**	**35**	**35**	**35**
d. Incineration and Open Burning of Waste	**-**	**0.04**	**1**	**1**	**0.20**	**-**	**-**	**-**
e. Industrial Wood Waste Landfills	**40**	**60**	**50**	**40**	**40**	**40**	**40**	**40**

Notes:

Estimates for the latest year (2019) 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.

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 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.

0.00 Indicates emissions were truncated due to rounding.

- Indicates no emissions.

x Indicates data has been suppressed to respect confidentiality.

Table A11–9 **2019 GHG Emission Summary for New Brunswick**

Greenhouse Gas Categories	Greenhouse Gases									
	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[a]	PFCs[a]	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	**10 900**	**35**	**880**	**1**	**400**	**270**	**0.07**	**1**	**-**	**12 400**
ENERGY	**10 700**	**6**	**140**	**0.50**	**100**	**-**	**-**	**-**	**-**	**11 000**
a. Stationary Combustion Sources	**6 870**	**4**	**90**	**0.20**	**70**	**-**	**-**	**-**	**-**	**7 030**
Public Electricity and Heat Production	3 280	0.22	6	0.05	20	-	-	-	-	3 300
Petroleum Refining Industries	x	x	x	x	x	x	x	x	x	x
Oil and Gas Extraction	23	0.00	0.01	0.00	0.50	-	-	-	-	24
Mining	x	x	x	x	x	x	x	x	x	x
Manufacturing Industries	621	0.16	4	0.09	28	-	-	-	-	653
Construction	7	0.00	0.00	0.00	0.02	-	-	-	-	7
Commercial and Institutional	328	0.01	0.13	0.01	3	-	-	-	-	331
Residential	455	3	80	0.06	20	-	-	-	-	557
Agriculture and Forestry	32	0.00	0.01	0.00	0.10	-	-	-	-	32
b. Transport[b]	**3 700**	**0.83**	**21**	**0.21**	**64**	**-**	**-**	**-**	**-**	**3 790**
Aviation	117	0.01	0.20	0.00	1	-	-	-	-	118
Road Transportation	2 830	0.20	5	0.14	41	-	-	-	-	2 880
Light-Duty Gasoline Vehicles	719	0.06	2	0.03	9	-	-	-	-	729
Light-Duty Gasoline Trucks	1 180	0.10	3	0.05	14	-	-	-	-	1 190
Heavy-Duty Gasoline Vehicles	213	0.01	0.20	0.02	6	-	-	-	-	219
Motorcycles	9	0.00	0.08	0.00	0.05	-	-	-	-	9
Light-Duty Diesel Vehicles	8	0.00	0.00	0.00	0.20	-	-	-	-	8
Light-Duty Diesel Trucks	7	0.00	0.00	0.00	0.16	-	-	-	-	7
Heavy-Duty Diesel Vehicles	703	0.03	0.70	0.04	12	-	-	-	-	715
Propane and Natural Gas Vehicles	0.00	0.00	0.00	0.00	0.00	-	-	-	-	0.00
Railways	135	0.01	0.20	0.05	20	-	-	-	-	151
Marine	161	0.02	0.38	0.00	1	-	-	-	-	162
Other Transportation	456	0.59	15	0.02	5	-	-	-	-	476
Off-Road Agriculture and Forestry	70	0.01	0.14	0.00	1	-	-	-	-	71
Off-Road Commercial and Institutional	39	0.05	1	0.00	0.40	-	-	-	-	41
Off-Road Manufacturing, Mining and Construction	135	0.02	0.58	0.01	2	-	-	-	-	137
Off-Road Residential	26	0.06	1	0.00	0.20	-	-	-	-	28
Off-Road Other Transportation	172	0.44	11	0.01	1	-	-	-	-	184
Pipeline Transport	14	0.01	0.36	0.00	0.10	-	-	-	-	15
c. Fugitive Sources	**170**	**1**	**30**	**0.01**	**4**	**-**	**-**	**-**	**-**	**200**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	170	1	30	0.01	4	-	-	-	-	200
Oil	0.10	0.42	11	0.01	4	-	-	-	-	14
Natural Gas	0.01	0.77	19	-	-	-	-	-	-	19
Venting	140	0.01	0.17	-	-	-	-	-	-	140
Flaring	29	0.00	0.03	0.00	0.01	-	-	-	-	29
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**92**	**-**	**-**	**0.04**	**11**	**270**	**0.07**	**1**	**-**	**371**
a. Mineral Products	**46**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**46**
Cement Production	-	-	-	-	-	-	-	-	-	-
Lime Production	x	-	-	-	-	-	-	-	-	x
Mineral Products Use	x	-	-	-	-	-	-	-	-	x
b. Chemical Industry[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**-**	**-**	**-**	**-**	**270**	**0.05**	**-**	**-**	**270**
e. Non-Energy Products from Fuels and Solvent Use	**45**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**45**
f. Other Product Manufacture and Use	**0.42**	**-**	**-**	**0.04**	**11**	**-**	**0.02**	**1**	**-**	**13**
AGRICULTURE	**51**	**7**	**180**	**0.76**	**230**	**-**	**-**	**-**	**-**	**460**
a. Enteric Fermentation	**-**	**6**	**150**	**-**	**-**	**-**	**-**	**-**	**-**	**150**
b. Manure Management	**-**	**1**	**29**	**0.10**	**30**	**-**	**-**	**-**	**-**	**59**
c. Agricultural Soils	**-**	**-**	**-**	**0.66**	**200**	**-**	**-**	**-**	**-**	**200**
Direct Sources	-	-	-	0.56	170	-	-	-	-	170
Indirect Sources	-	-	-	0.10	30	-	-	-	-	30
d. Field Burning of Agricultural Residues	**-**	**0.00**	**0.02**	**0.00**	**0.01**	**-**	**-**	**-**	**-**	**0.02**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**51**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**51**
WASTE	**-**	**22**	**560**	**0.07**	**20**	**-**	**-**	**-**	**-**	**580**
a. Solid Waste Disposal (Landfills)	**-**	**19**	**480**	**-**	**-**	**-**	**-**	**-**	**-**	**480**
b. Biological Treatment of Solid Waste	**-**	**0.50**	**10**	**0.04**	**10**	**-**	**-**	**-**	**-**	**20**
c. Wastewater Treatment and Discharge	**-**	**0.98**	**25**	**0.03**	**10**	**-**	**-**	**-**	**-**	**35**
d. Incineration and Open Burning of Waste	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Industrial Wood Waste Landfills	**-**	**2**	**40**	**-**	**-**	**-**	**-**	**-**	**-**	**40**

Notes:
Estimates for the latest year (2019) 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.
a. 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.
b. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
c. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial/territorial tables.
d. 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.
0.00 Indicates emissions were truncated due to rounding.
- Indicates no emissions.
x Indicates data has been suppressed to respect confidentiality.

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

Greenhouse Gas Categories	1990	2005	2014	2015	2016	2017	2018	2019
	kt CO_2 eq							
TOTAL	**86 400**	**87 600**	**79 200**	**79 100**	**79 000**	**81 200**	**82 500**	**83 700**
ENERGY	**57 800**	**60 200**	**54 400**	**55 300**	**54 700**	**56 600**	**57 500**	**58 500**
a. Stationary Combustion Sources	**30 300**	**26 500**	**21 100**	**21 300**	**20 300**	**20 400**	**21 300**	**21 600**
Public Electricity and Heat Production	1 490	621	245	205	233	239	242	234
Petroleum Refining Industries	3 500	3 600	1 800	2 000	1 800	1 500	2 000	1 800
Oil and Gas Extraction	-	-	-	-	-	-	-	-
Mining	824	319	722	570	648	826	1 470	1 480
Manufacturing Industries	12 300	10 000	9 240	9 440	8 540	8 760	8 710	8 800
Construction	458	314	374	351	345	363	395	405
Commercial and Institutional	4 410	5 450	4 610	4 800	4 770	5 140	4 830	5 060
Residential	7 070	5 810	3 560	3 470	3 530	3 140	3 210	3 390
Agriculture and Forestry	291	367	469	484	496	451	461	473
b. Transport[a]	**27 100**	**33 300**	**33 000**	**33 600**	**34 100**	**35 800**	**35 900**	**36 500**
Aviation	952	764	718	718	742	806	904	896
Road Transportation	18 100	26 300	26 400	26 800	27 400	28 600	28 500	29 000
Light-Duty Gasoline Vehicles	10 600	10 800	9 110	9 170	9 120	9 210	8 920	8 810
Light-Duty Gasoline Trucks	3 580	6 900	7 270	7 530	7 880	8 390	8 620	9 130
Heavy-Duty Gasoline Vehicles	785	1 620	1 790	1 800	1 880	2 010	1 990	2 030
Motorcycles	17	71	65	68	70	74	72	72
Light-Duty Diesel Vehicles	210	151	196	204	194	191	176	172
Light-Duty Diesel Trucks	57	69	121	156	184	225	231	241
Heavy-Duty Diesel Vehicles	2 820	6 680	7 880	7 890	8 040	8 470	8 460	8 550
Propane and Natural Gas Vehicles	2	0.99	0.22	0.20	0.17	0.11	0.11	0.11
Railways	567	706	776	682	673	621	696	639
Marine	699	947	810	794	818	863	916	1 100
Other Transportation	6 800	4 570	4 300	4 620	4 490	4 970	4 890	4 880
Off-Road Agriculture and Forestry	999	780	691	739	677	713	680	686
Off-Road Commercial and Institutional	359	456	575	585	687	876	859	891
Off-Road Manufacturing, Mining and Construction	2 030	1 620	1 660	1 890	1 870	2 130	2 040	2 020
Off-Road Residential	61	264	244	251	216	225	234	239
Off-Road Other Transportation	3 330	1 120	765	829	854	939	976	948
Pipeline Transport	26	338	359	326	189	80	96	100
c. Fugitive Sources	**430**	**380**	**270**	**290**	**310**	**330**	**300**	**330**
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	430	380	270	290	310	330	300	330
Oil	22	28	21	22	22	20	20	20
Natural Gas	260	74	48	49	52	53	51	51
Venting	99	240	170	190	200	220	200	220
Flaring	40	47	29	32	35	39	35	40
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**14 800**	**12 700**	**11 500**	**10 200**	**9 910**	**10 600**	**10 300**	**10 600**
a. Mineral Products	**1 900**	**2 100**	**1 800**	**1 700**	**1 600**	**2 200**	**2 100**	**2 500**
Cement Production	1 400	1 300	1 200	1 300	1 200	1 700	1 600	2 100
Lime Production	290	490	470	350	330	x	x	x
Mineral Products Use	200	260	69	68	64	x	x	x
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**10 900**	**7 560**	**5 320**	**5 280**	**5 160**	**5 250**	**4 750**	**4 560**
Iron and Steel Production	-	-	27	29	29	18	7	7
Aluminium Production	8 660	7 460	5 280	5 240	5 130	5 220	4 740	4 540
SF_6 Used in Magnesium Smelters and Casters	2 280	103	11	11	8	11	11	11
d. Production and Consumption of Halocarbons, SF_6 and NF_3[c]	**2**	**1 100**	**2 200**	**2 200**	**2 300**	**2 300**	**2 500**	**2 500**
e. Non-Energy Products from Fuels and Solvent Use	**1 900**	**1 900**	**2 200**	**830**	**690**	**760**	**790**	**850**
f. Other Product Manufacture and Use	**80**	**120**	**97**	**160**	**180**	**140**	**190**	**190**
AGRICULTURE	**7 000**	**7 600**	**7 700**	**7 900**	**8 000**	**7 600**	**8 200**	**7 900**
a. Enteric Fermentation	**3 100**	**3 100**	**2 700**	**2 600**	**2 600**	**2 600**	**2 700**	**2 700**
b. Manure Management	**1 100**	**1 600**	**1 600**	**1 600**	**1 700**	**1 700**	**1 700**	**1 700**
c. Agricultural Soils	**2 500**	**2 700**	**3 200**	**3 400**	**3 500**	**3 100**	**3 600**	**3 400**
Direct Sources	2 100	2 300	2 700	2 900	3 000	2 700	3 100	2 900
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**	**0.10**	**0.20**	**0.20**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**220**	**160**	**270**	**220**	**260**	**190**	**240**	**220**
WASTE	**6 700**	**7 100**	**5 500**	**5 800**	**6 300**	**6 400**	**6 500**	**6 700**
a. Solid Waste Disposal (Landfills)	**5 800**	**6 000**	**4 700**	**5 000**	**5 500**	**5 700**	**5 700**	**5 900**
b. Biological Treatment of Solid Waste	**40**	**30**	**30**	**30**	**30**	**30**	**70**	**80**
c. Wastewater Treatment and Discharge	**180**	**180**	**220**	**220**	**210**	**210**	**220**	**220**
d. Incineration and Open Burning of Waste	**200**	**200**	**40**	**40**	**40**	**40**	**40**	**40**
e. Industrial Wood Waste Landfills	**500**	**700**	**500**	**500**	**500**	**500**	**500**	**400**

Notes:

Estimates for the latest year (2019) 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.

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 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.

0.00 Indicates emissions were truncated due to rounding.

- Indicates no emissions.

x Indicates data has been suppressed to respect confidentiality.

Table A11–11 **2019 GHG Emission Summary for Quebec**

Greenhouse Gas Categories	Greenhouse Gases									
	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[a]	PFCs[a]	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	**64 300**	**450**	**11 000**	**17**	**5 000**	**2 500**	**510**	**79**	**0.60**	**83 700**
ENERGY	**56 700**	**38**	**950**	**3**	**900**	**-**	**-**	**-**	**-**	**58 500**
a. Stationary Combustion Sources	**20 600**	**30**	**700**	**1**	**300**	**-**	**-**	**-**	**-**	**21 600**
Public Electricity and Heat Production	228	0.04	0.87	0.02	5	-	-	-	-	234
Petroleum Refining Industries	1 800	0.04	1	0.02	7	-	-	-	-	1 800
Oil and Gas Extraction	-	-	-	-	-	-	-	-	-	-
Mining	1 480	0.04	0.90	0.02	6	-	-	-	-	1 480
Manufacturing Industries	8 680	0.58	15	0.35	100	-	-	-	-	8 800
Construction	403	0.01	0.19	0.01	3	-	-	-	-	405
Commercial and Institutional	5 010	0.18	5	0.10	40	-	-	-	-	5 060
Residential	2 560	30	700	0.50	100	-	-	-	-	3 390
Agriculture and Forestry	465	0.01	0.20	0.03	7	-	-	-	-	473
b. Transport[b]	**35 800**	**6**	**160**	**2**	**540**	**-**	**-**	**-**	**-**	**36 500**
Aviation	887	0.03	0.80	0.03	8	-	-	-	-	896
Road Transportation	28 600	2	50	1	400	-	-	-	-	29 000
Light-Duty Gasoline Vehicles	8 690	0.70	20	0.33	97	-	-	-	-	8 810
Light-Duty Gasoline Trucks	9 010	0.80	20	0.33	100	-	-	-	-	9 130
Heavy-Duty Gasoline Vehicles	1 980	0.07	2	0.17	52	-	-	-	-	2 030
Motorcycles	71	0.03	0.70	0.00	0.39	-	-	-	-	72
Light-Duty Diesel Vehicles	167	0.00	0.08	0.01	4	-	-	-	-	172
Light-Duty Diesel Trucks	235	0.01	0.20	0.02	6	-	-	-	-	241
Heavy-Duty Diesel Vehicles	8 400	0.40	9	0.47	140	-	-	-	-	8 550
Propane and Natural Gas Vehicles	0.11	0.00	0.00	0.00	0.00	-	-	-	-	0.11
Railways	571	0.03	0.80	0.20	70	-	-	-	-	639
Marine	1 090	0.10	3	0.03	9	-	-	-	-	1 100
Other Transportation	4 720	4	100	0.20	60	-	-	-	-	4 880
Off-Road Agriculture and Forestry	676	0.03	0.86	0.03	10	-	-	-	-	686
Off-Road Commercial and Institutional	854	1	29	0.03	8	-	-	-	-	891
Off-Road Manufacturing, Mining and Construction	1 980	0.32	8	0.10	30	-	-	-	-	2 020
Off-Road Residential	225	0.49	12	0.01	2	-	-	-	-	239
Off-Road Other Transportation	890	2	50	0.03	8	-	-	-	-	948
Pipeline Transport	97	0.10	2	0.00	0.80	-	-	-	-	100
c. Fugitive Sources	**230**	**4**	**91**	**0.02**	**5**	**-**	**-**	**-**	**-**	**330**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	230	4	91	0.02	5	-	-	-	-	330
Oil	0.14	0.58	15	0.02	5	-	-	-	-	20
Natural Gas	0.04	2	51	-	-	-	-	-	-	51
Venting	190	1	26	-	-	-	-	-	-	220
Flaring	40	0.00	0.02	0.00	0.01	-	-	-	-	40
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**7 440**	**0.00**	**0.00**	**0.39**	**117**	**2 500**	**508**	**79**	**0.60**	**10 600**
a. Mineral Products	**2 500**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2 500**
Cement Production	2 100	-	-	-	-	-	-	-	-	2 100
Lime Production	x	-	-	-	-	-	-	-	-	x
Mineral Products Use	x	-	-	-	-	-	-	-	-	x
b. Chemical Industry[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**4 050**	**0.00**	**0.00**	**-**	**-**	**-**	**496**	**12**	**-**	**4 560**
Iron and Steel Production	7	0.00	0.00	-	-	-	-	-	-	7
Aluminium Production	4 040	-	-	-	-	-	496	0.84	-	4 540
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	11	-	11
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**-**	**-**	**-**	**-**	**2 500**	**4**	**10**	**0.60**	**2 500**
e. Non-Energy Products from Fuels and Solvent Use	**850**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**850**
f. Other Product Manufacture and Use	**5**	**-**	**-**	**0.39**	**120**	**-**	**8**	**58**	**-**	**190**
AGRICULTURE	**220**	**160**	**3 900**	**13**	**3 800**	**-**	**-**	**-**	**-**	**7 900**
a. Enteric Fermentation	**-**	**110**	**2 700**	**-**	**-**	**-**	**-**	**-**	**-**	**2 700**
b. Manure Management	**-**	**48**	**1 200**	**2**	**500**	**-**	**-**	**-**	**-**	**1 700**
c. Agricultural Soils	**-**	**-**	**-**	**11**	**3 400**	**-**	**-**	**-**	**-**	**3 400**
Direct Sources	-	-	-	10	2 900	-	-	-	-	2 900
Indirect Sources	-	-	-	2	500	-	-	-	-	500
d. Field Burning of Agricultural Residues	**-**	**0.01**	**0.10**	**0.00**	**0.04**	**-**	**-**	**-**	**-**	**0.20**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**220**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**220**
WASTE	**8**	**260**	**6 500**	**0.60**	**200**	**-**	**-**	**-**	**-**	**6 700**
a. Solid Waste Disposal (Landfills)	**-**	**240**	**5 900**	**-**	**-**	**-**	**-**	**-**	**-**	**5 900**
b. Biological Treatment of Solid Waste	**-**	**2**	**40**	**0.10**	**40**	**-**	**-**	**-**	**-**	**80**
c. Wastewater Treatment and Discharge	**-**	**4**	**110**	**0.40**	**100**	**-**	**-**	**-**	**-**	**220**
d. Incineration and Open Burning of Waste	**8**	**0.00**	**0.03**	**0.10**	**30**	**-**	**-**	**-**	**-**	**40**
e. Industrial Wood Waste Landfills	**-**	**20**	**400**	**-**	**-**	**-**	**-**	**-**	**-**	**400**

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Provincial/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report.
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b. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
c. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial/territorial tables.
d. 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.
0.00 Indicates emissions were truncated due to rounding.
- Indicates no emissions.
x Indicates data has been suppressed to respect confidentiality.

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

Greenhouse Gas Categories	1990	2005	2014	2015	2016	2017	2018	2019
	kt CO_2 eq							
TOTAL	**180 000**	**206 000**	**164 000**	**163 000**	**161 000**	**158 000**	**163 000**	**163 000**
ENERGY	**131 000**	**161 000**	**123 000**	**123 000**	**120 000**	**118 000**	**123 000**	**124 000**
a. Stationary Combustion Sources	**82 500**	**96 400**	**63 300**	**61 700**	**59 200**	**56 400**	**59 400**	**59 500**
Public Electricity and Heat Production	25 900	35 400	6 030	6 250	5 540	2 560	4 090	3 880
Petroleum Refining Industries	6 200	6 900	5 300	4 900	4 800	3 400	3 800	3 800
Oil and Gas Extraction	100	169	60	72	76	31	57	95
Mining	493	420	569	436	529	553	489	489
Manufacturing Industries	22 000	18 800	16 600	15 900	15 700	16 300	16 000	16 000
Construction	571	637	380	350	341	305	289	297
Commercial and Institutional	9 180	12 800	13 300	12 700	12 200	12 600	13 000	13 500
Residential	17 300	20 300	19 600	19 600	18 400	19 200	20 200	20 000
Agriculture and Forestry	775	1 040	1 500	1 420	1 510	1 360	1 390	1 480
b. Transport[a]	**47 400**	**63 500**	**58 300**	**59 800**	**59 500**	**60 200**	**62 400**	**62 800**
Aviation	2 370	2 220	2 240	2 270	2 280	2 410	2 590	2 580
Road Transportation	29 300	47 800	45 500	46 300	46 600	46 800	48 300	49 000
Light-Duty Gasoline Vehicles	16 400	16 600	12 800	12 900	12 700	12 100	12 000	11 900
Light-Duty Gasoline Trucks	7 210	15 800	16 400	16 900	17 700	18 000	19 000	19 900
Heavy-Duty Gasoline Vehicles	1 480	3 150	3 310	3 310	3 420	3 410	3 430	3 560
Motorcycles	27	61	86	88	93	95	95	96
Light-Duty Diesel Vehicles	127	217	327	363	337	339	337	314
Light-Duty Diesel Trucks	34	72	241	328	376	467	523	518
Heavy-Duty Diesel Vehicles	3 970	11 800	12 300	12 400	11 900	12 300	13 000	12 700
Propane and Natural Gas Vehicles	68	55	0.91	0.65	0.74	0.53	0.53	0.52
Railways	1 780	1 550	1 410	1 430	1 450	1 450	1 540	1 560
Marine	201	259	259	265	261	272	273	287
Other Transportation	13 700	11 700	8 970	9 500	8 920	9 250	9 660	9 370
Off-Road Agriculture and Forestry	1 340	1 410	1 110	1 170	1 040	1 040	1 120	1 090
Off-Road Commercial and Institutional	561	960	1 020	993	1 040	1 200	1 250	1 270
Off-Road Manufacturing, Mining and Construction	3 130	3 310	3 130	3 540	3 420	3 790	3 930	3 760
Off-Road Residential	89	491	480	475	452	460	471	481
Off-Road Other Transportation	6 340	2 460	1 700	1 770	1 780	1 850	1 890	1 840
Pipeline Transport	2 280	3 070	1 530	1 550	1 200	914	997	931
c. Fugitive Sources	**1 600**	**1 600**	**1 500**	**1 500**	**1 500**	**1 500**	**1 500**	**1 500**
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	1 600	1 600	1 500	1 500	1 500	1 500	1 500	1 500
Oil	64	42	35	34	32	27	29	28
Natural Gas	1 000	960	920	920	940	960	960	970
Venting	340	460	440	440	450	450	450	480
Flaring	160	100	65	67	60	61	62	67
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**30 600**	**25 100**	**23 900**	**23 400**	**24 500**	**23 000**	**23 600**	**23 000**
a. Mineral Products	**3 900**	**4 800**	**3 500**	**3 700**	**3 500**	**3 800**	**3 800**	**3 600**
Cement Production	2 400	3 700	2 700	2 800	2 700	3 000	2 900	2 800
Lime Production	1 100	810	730	740	710	x	x	x
Mineral Products Use	380	320	120	130	120	x	x	x
b. Chemical Industry[b]	**10 300**	**2 550**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	10 000	2 500	-	-	-	-	-	-
c. Metal Production	**11 200**	**11 400**	**9 100**	**8 670**	**9 320**	**8 560**	**9 000**	**8 540**
Iron and Steel Production	10 500	10 300	8 870	8 440	9 190	8 430	8 870	8 260
Aluminium Production	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	687	1 130	238	227	131	129	135	279
d. Production and Consumption of Halocarbons, SF_6 and NF_3[c]	**970**	**2 000**	**4 300**	**4 200**	**4 300**	**4 400**	**4 800**	**4 700**
e. Non-Energy Products from Fuels and Solvent Use	**4 100**	**4 100**	**6 900**	**6 600**	**7 200**	**6 000**	**5 800**	**5 900**
f. Other Product Manufacture and Use	**140**	**200**	**180**	**200**	**220**	**250**	**270**	**280**
AGRICULTURE	**10 000**	**10 000**	**9 700**	**9 500**	**10 000**	**10 000**	**9 900**	**9 600**
a. Enteric Fermentation	**4 300**	**4 100**	**3 300**	**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**	**1 900**	**1 900**
c. Agricultural Soils	**3 900**	**3 800**	**4 400**	**4 200**	**4 600**	**4 600**	**4 500**	**4 200**
Direct Sources	3 300	3 200	3 800	3 600	4 000	4 000	3 900	3 700
Indirect Sources	600	600	600	600	600	600	600	600
d. Field Burning of Agricultural Residues	**3**	**0.60**	**0.30**	**0.30**	**0.30**	**0.20**	**0.20**	**0.30**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**250**	**160**	**190**	**150**	**200**	**200**	**200**	**160**
WASTE	**7 700**	**9 000**	**7 100**	**7 000**	**6 600**	**6 600**	**6 600**	**6 700**
a. Solid Waste Disposal (Landfills)	**7 000**	**8 200**	**6 300**	**6 100**	**5 700**	**5 700**	**5 800**	**5 900**
b. Biological Treatment of Solid Waste	**30**	**60**	**100**	**100**	**100**	**100**	**100**	**100**
c. Wastewater Treatment and Discharge	**240**	**310**	**340**	**340**	**340**	**340**	**350**	**360**
d. Incineration and Open Burning of Waste	**70**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
e. Industrial Wood Waste Landfills	**300**	**400**	**300**	**300**	**300**	**300**	**300**	**300**

Notes:

Estimates for the latest year (2019) 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.

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 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.

0.00 Indicates emissions were truncated due to rounding.

- Indicates no emissions.

x Indicates data has been suppressed to respect confidentiality.

Table A11–13 **2019 GHG Emission Summary for Ontario**

Greenhouse Gas Categories	Greenhouse Gases									
	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[a]	PFCs[a]	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	**138 000**	**510**	**13 000**	**25**	**7 300**	**4 700**	**17**	**340**	**-**	**163 000**
ENERGY	**120 000**	**78**	**1 900**	**6**	**2 000**	**-**	**-**	**-**	**-**	**124 000**
a. Stationary Combustion Sources	**58 600**	**20**	**400**	**2**	**500**	**-**	**-**	**-**	**-**	**59 500**
Public Electricity and Heat Production	3 820	1	25	0.10	30	-	-	-	-	3 880
Petroleum Refining Industries	3 800	0.08	2	0.03	8	-	-	-	-	3 800
Oil and Gas Extraction	93	0.00	0.04	0.01	1	-	-	-	-	95
Mining	482	0.01	0.20	0.02	7	-	-	-	-	489
Manufacturing Industries	15 800	0.53	13	0.39	120	-	-	-	-	16 000
Construction	294	0.01	0.13	0.01	3	-	-	-	-	297
Commercial and Institutional	13 400	0.35	9	0.30	90	-	-	-	-	13 500
Residential	19 400	10	400	0.60	200	-	-	-	-	20 000
Agriculture and Forestry	1 470	0.03	0.70	0.04	10	-	-	-	-	1 480
b. Transport[b]	**61 300**	**12**	**290**	**4**	**1 200**	**-**	**-**	**-**	**-**	**62 800**
Aviation	2 560	0.05	1	0.07	20	-	-	-	-	2 580
Road Transportation	48 000	3	80	3	920	-	-	-	-	49 000
Light-Duty Gasoline Vehicles	11 600	0.90	20	0.78	230	-	-	-	-	11 900
Light-Duty Gasoline Trucks	19 600	1	40	1	360	-	-	-	-	19 900
Heavy-Duty Gasoline Vehicles	3 470	0.10	3	0.31	94	-	-	-	-	3 560
Motorcycles	94	0.04	0.90	0.00	0.54	-	-	-	-	96
Light-Duty Diesel Vehicles	307	0.01	0.20	0.03	8	-	-	-	-	314
Light-Duty Diesel Trucks	504	0.01	0.30	0.04	13	-	-	-	-	518
Heavy-Duty Diesel Vehicles	12 500	0.50	10	0.72	220	-	-	-	-	12 700
Propane and Natural Gas Vehicles	0.51	0.00	0.01	0.00	0.00	-	-	-	-	0.52
Railways	1 390	0.08	2	0.60	200	-	-	-	-	1 560
Marine	285	0.03	0.65	0.01	2	-	-	-	-	287
Other Transportation	9 050	8	210	0.40	100	-	-	-	-	9 370
Off-Road Agriculture and Forestry	1 080	0.05	1	0.05	10	-	-	-	-	1 090
Off-Road Commercial and Institutional	1 220	2	39	0.04	10	-	-	-	-	1 270
Off-Road Manufacturing, Mining and Construction	3 690	0.64	16	0.20	60	-	-	-	-	3 760
Off-Road Residential	452	1	25	0.01	4	-	-	-	-	481
Off-Road Other Transportation	1 720	4	100	0.05	20	-	-	-	-	1 840
Pipeline Transport	902	0.88	22	0.02	7	-	-	-	-	931
c. Fugitive Sources	**290**	**50**	**1 200**	**0.02**	**6**	**-**	**-**	**-**	**-**	**1 500**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	290	50	1 200	0.02	6	-	-	-	-	1 500
Oil	0.17	0.88	22	0.02	6	-	-	-	-	28
Natural Gas	2	39	960	-	-	-	-	-	-	970
Venting	220	10	260	-	-	-	-	-	-	480
Flaring	64	0.11	3	0.00	0.03	-	-	-	-	67
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**17 700**	**2**	**43**	**0.77**	**229**	**4 700**	**17**	**340**	**-**	**23 000**
a. Mineral Products	**3 600**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3 600**
Cement Production	2 800	-	-	-	-	-	-	-	-	2 800
Lime Production	x	-	-	-	-	-	-	-	-	x
Mineral Products Use	x	-	-	-	-	-	-	-	-	x
b. Chemical Industry[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**8 250**	**0.08**	**2**	**-**	**-**	**-**	**-**	**279**	**-**	**8 540**
Iron and Steel Production	8 250	0.08	2	-	-	-	-	-	-	8 260
Aluminium Production	-	-	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	279	-	279
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**-**	**-**	**-**	**-**	**4 700**	**4**	**8**	**-**	**4 700**
e. Non-Energy Products from Fuels and Solvent Use	**5 800**	**-**	**-**	**0.10**	**-**	**-**	**-**	**-**	**-**	**5 900**
f. Other Product Manufacture and Use	**8**	**-**	**-**	**0.67**	**200**	**-**	**12**	**57**	**-**	**280**
AGRICULTURE	**160**	**170**	**4 300**	**17**	**5 100**	**-**	**-**	**-**	**-**	**9 600**
a. Enteric Fermentation	**-**	**130**	**3 300**	**-**	**-**	**-**	**-**	**-**	**-**	**3 300**
b. Manure Management	**-**	**40**	**1 000**	**3**	**900**	**-**	**-**	**-**	**-**	**1 900**
c. Agricultural Soils	**-**	**-**	**-**	**14**	**4 200**	**-**	**-**	**-**	**-**	**4 200**
Direct Sources	-	-	-	12	3 700	-	-	-	-	3 700
Indirect Sources	-	-	-	2	600	-	-	-	-	600
d. Field Burning of Agricultural Residues	**-**	**0.01**	**0.20**	**0.00**	**0.07**	**-**	**-**	**-**	**-**	**0.30**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**160**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**160**
WASTE	**70**	**250**	**6 400**	**1**	**300**	**-**	**-**	**-**	**-**	**6 700**
a. Solid Waste Disposal (Landfills)	**-**	**240**	**5 900**	**-**	**-**	**-**	**-**	**-**	**-**	**5 900**
b. Biological Treatment of Solid Waste	**-**	**2**	**60**	**0.20**	**70**	**-**	**-**	**-**	**-**	**100**
c. Wastewater Treatment and Discharge	**-**	**7**	**170**	**0.60**	**200**	**-**	**-**	**-**	**-**	**360**
d. Incineration and Open Burning of Waste	**70**	**0.05**	**1**	**0.10**	**40**	**-**	**-**	**-**	**-**	**100**
e. Industrial Wood Waste Landfills	**-**	**10**	**300**	**-**	**-**	**-**	**-**	**-**	**-**	**300**

Notes:
Estimates for the latest year (2019) 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.
a. 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.
b. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
c. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial/territorial tables.
d. 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.
0.00 Indicates emissions were truncated due to rounding.
- Indicates no emissions.
x Indicates data has been suppressed to respect confidentiality.

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

Greenhouse Gas Categories	1990	2005	2014	2015	2016	2017	2018	2019
	kt CO_2 eq							
TOTAL	**18 600**	**20 600**	**21 500**	**21 200**	**21 500**	**22 200**	**23 000**	**22 600**
ENERGY	**12 500**	**12 300**	**13 100**	**12 600**	**12 800**	**13 300**	**13 900**	**13 600**
a. Stationary Combustion Sources	**4 910**	**4 540**	**4 210**	**4 030**	**4 030**	**4 270**	**4 210**	**4 130**
Public Electricity and Heat Production	519	358	127	124	69	69	41	40
Petroleum Refining Industries	-	-	-	-	-	-	-	-
Oil and Gas Extraction	1	0.46	0.31	0.00	-	0.00	0.00	-
Mining	79	96	91	78	59	97	120	118
Manufacturing Industries	1 180	1 470	1 190	1 400	1 500	1 490	1 180	1 130
Construction	63	86	111	104	122	113	125	121
Commercial and Institutional	1 400	1 420	1 450	1 300	1 260	1 360	1 510	1 480
Residential	1 620	1 070	1 200	1 000	994	1 100	1 190	1 180
Agriculture and Forestry	43	43	34	32	26	40	49	49
b. Transport[a]	**7 100**	**7 510**	**8 470**	**8 130**	**8 340**	**8 630**	**9 330**	**9 120**
Aviation	472	534	470	438	433	475	515	509
Road Transportation	3 260	4 180	5 560	5 250	5 540	5 660	6 020	5 910
Light-Duty Gasoline Vehicles	1 540	1 210	1 230	1 140	1 130	1 080	1 120	1 070
Light-Duty Gasoline Trucks	915	1 470	2 100	2 080	2 150	2 130	2 340	2 350
Heavy-Duty Gasoline Vehicles	318	443	500	487	497	487	520	513
Motorcycles	4	4	8	9	9	9	10	10
Light-Duty Diesel Vehicles	8	10	16	14	15	17	14	13
Light-Duty Diesel Trucks	6	15	11	11	13	15	15	15
Heavy-Duty Diesel Vehicles	442	1 020	1 690	1 500	1 720	1 930	2 010	1 930
Propane and Natural Gas Vehicles	31	7	0.09	0.07	0.05	0.08	0.08	0.08
Railways	605	299	656	704	660	803	881	893
Marine	2	2	3	1	0.13	1	4	3
Other Transportation	2 750	2 490	1 780	1 740	1 710	1 690	1 910	1 800
Off-Road Agriculture and Forestry	1 060	1 310	971	890	908	919	938	911
Off-Road Commercial and Institutional	41	81	100	92	84	88	96	95
Off-Road Manufacturing, Mining and Construction	193	229	213	215	238	297	307	288
Off-Road Residential	6	45	51	51	51	51	57	56
Off-Road Other Transportation	604	222	177	185	182	182	205	192
Pipeline Transport	848	601	268	311	245	155	304	261
c. Fugitive Sources	**450**	**210**	**440**	**420**	**400**	**370**	**390**	**400**
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	450	210	440	420	400	370	390	400
Oil	6	65	120	110	100	91	99	100
Natural Gas	380	72	130	120	120	120	120	120
Venting	41	40	72	67	64	58	63	66
Flaring	29	31	130	120	110	99	110	110
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**488**	**703**	**859**	**918**	**905**	**942**	**1 030**	**992**
a. Mineral Products	**220**	**70**	**57**	**58**	**55**	**85**	**80**	**73**
Cement Production	150	-	-	-	-	-	-	-
Lime Production	61	60	51	52	50	x	x	x
Mineral Products Use	6	10	6	6	5	x	x	x
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[c]	**-**	**190**	**430**	**430**	**450**	**450**	**480**	**470**
e. Non-Energy Products from Fuels and Solvent Use	**250**	**420**	**360**	**410**	**390**	**390**	**440**	**420**
f. Other Product Manufacture and Use	**11**	**18**	**13**	**14**	**18**	**20**	**23**	**23**
AGRICULTURE	**4 700**	**6 300**	**6 100**	**6 300**	**6 500**	**6 600**	**6 700**	**6 700**
a. Enteric Fermentation	**1 900**	**3 200**	**2 400**	**2 300**	**2 300**	**2 400**	**2 400**	**2 300**
b. Manure Management	**410**	**780**	**690**	**710**	**720**	**740**	**740**	**720**
c. Agricultural Soils	**2 100**	**2 100**	**2 800**	**3 000**	**3 100**	**3 200**	**3 200**	**3 300**
Direct Sources	1 700	1 600	2 300	2 500	2 500	2 600	2 600	2 700
Indirect Sources	400	400	500	600	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**	**240**	**260**	**280**	**310**	**310**	**330**
WASTE	**960**	**1 400**	**1 400**	**1 400**	**1 300**	**1 300**	**1 300**	**1 400**
a. Solid Waste Disposal (Landfills)	**900**	**1 300**	**1 300**	**1 300**	**1 200**	**1 300**	**1 300**	**1 300**
b. Biological Treatment of Solid Waste	**0.30**	**5**	**9**	**9**	**9**	**9**	**9**	**9**
c. Wastewater Treatment and Discharge	**35**	**38**	**46**	**43**	**43**	**43**	**43**	**43**
d. Incineration and Open Burning of Waste	**0.40**	**0.40**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.06**
e. Industrial Wood Waste Landfills	**30**	**30**	**20**	**20**	**20**	**20**	**20**	**20**

Notes:

Estimates for the latest year (2019) 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.

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 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.

0.00 Indicates emissions were truncated due to rounding.

- Indicates no emissions.

x Indicates data has been suppressed to respect confidentiality.

Table A11–15 **2019 GHG Emission Summary for Manitoba**

Greenhouse Gas Categories	Greenhouse Gases									
	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[a]	PFCs[a]	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	**13 800**	**180**	**4 400**	**13**	**3 900**	**470**	**0.98**	**2**	**-**	**22 600**
ENERGY	**13 000**	**14**	**360**	**0.80**	**200**	**-**	**-**	**-**	**-**	**13 600**
a. Stationary Combustion Sources	**4 070**	**0.90**	**20**	**0.10**	**30**	**-**	**-**	**-**	**-**	**4 130**
Public Electricity and Heat Production	40	0.00	0.10	0.00	0.20	-	-	-	-	40
Petroleum Refining Industries	-	-	-	-	-	-	-	-	-	-
Oil and Gas Extraction	-	-	-	-	-	-	-	-	-	-
Mining	116	0.00	0.05	0.01	2	-	-	-	-	118
Manufacturing Industries	1 120	0.05	1	0.03	10	-	-	-	-	1 130
Construction	120	0.00	0.06	0.00	0.69	-	-	-	-	121
Commercial and Institutional	1 470	0.03	0.71	0.03	9	-	-	-	-	1 480
Residential	1 150	0.80	20	0.03	10	-	-	-	-	1 180
Agriculture and Forestry	48	0.00	0.02	0.00	1	-	-	-	-	49
b. Transport[b]	**8 870**	**2**	**40**	**0.70**	**210**	**-**	**-**	**-**	**-**	**9 120**
Aviation	504	0.01	0.30	0.01	4	-	-	-	-	509
Road Transportation	5 810	0.40	10	0.30	90	-	-	-	-	5 910
Light-Duty Gasoline Vehicles	1 050	0.10	3	0.05	15	-	-	-	-	1 070
Light-Duty Gasoline Trucks	2 320	0.20	6	0.10	29	-	-	-	-	2 350
Heavy-Duty Gasoline Vehicles	499	0.02	0.50	0.05	13	-	-	-	-	513
Motorcycles	10	0.00	0.10	0.00	0.06	-	-	-	-	10
Light-Duty Diesel Vehicles	13	0.00	0.01	0.00	0.32	-	-	-	-	13
Light-Duty Diesel Trucks	15	0.00	0.01	0.00	0.36	-	-	-	-	15
Heavy-Duty Diesel Vehicles	1 900	0.08	2	0.11	32	-	-	-	-	1 930
Propane and Natural Gas Vehicles	0.08	0.00	0.00	0.00	0.00	-	-	-	-	0.08
Railways	799	0.05	1	0.30	90	-	-	-	-	893
Marine	3	0.00	0.01	0.00	0.03	-	-	-	-	3
Other Transportation	1 760	1	27	0.07	20	-	-	-	-	1 800
Off-Road Agriculture and Forestry	899	0.04	1	0.04	10	-	-	-	-	911
Off-Road Commercial and Institutional	91	0.14	4	0.00	0.90	-	-	-	-	95
Off-Road Manufacturing, Mining and Construction	282	0.06	2	0.01	4	-	-	-	-	288
Off-Road Residential	52	0.13	3	0.00	0.40	-	-	-	-	56
Off-Road Other Transportation	179	0.46	11	0.01	2	-	-	-	-	192
Pipeline Transport	253	0.25	6	0.01	2	-	-	-	-	261
c. Fugitive Sources	**100**	**12**	**300**	**0.00**	**0.10**	**-**	**-**	**-**	**-**	**400**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	100	12	300	0.00	0.10	-	-	-	-	400
Oil	0.25	4	100	-	-	-	-	-	-	100
Natural Gas	6	5	110	-	-	-	-	-	-	120
Venting	0.47	3	65	-	-	-	-	-	-	66
Flaring	98	0.62	15	0.00	0.10	-	-	-	-	110
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**449**	**-**	**-**	**0.23**	**68**	**470**	**0.98**	**2**	**-**	**992**
a. Mineral Products	**73**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**73**
Cement Production	-	-	-	-	-	-	-	-	-	-
Lime Production	x	-	-	-	-	-	-	-	-	x
Mineral Products Use	x	-	-	-	-	-	-	-	-	x
b. Chemical Industry[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**-**	**-**	**-**	**-**	**470**	**0.09**	**-**	**-**	**470**
e. Non-Energy Products from Fuels and Solvent Use	**380**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**420**
f. Other Product Manufacture and Use	**1**	**-**	**-**	**0.06**	**19**	**-**	**0.90**	**2**	**-**	**23**
AGRICULTURE	**330**	**110**	**2 700**	**12**	**3 600**	**-**	**-**	**-**	**-**	**6 700**
a. Enteric Fermentation	**-**	**91**	**2 300**	**-**	**-**	**-**	**-**	**-**	**-**	**2 300**
b. Manure Management	**-**	**18**	**440**	**0.90**	**300**	**-**	**-**	**-**	**-**	**720**
c. Agricultural Soils	**-**	**-**	**-**	**11**	**3 300**	**-**	**-**	**-**	**-**	**3 300**
Direct Sources	-	-	-	9	2 700	-	-	-	-	2 700
Indirect Sources	-	-	-	2	600	-	-	-	-	600
d. Field Burning of Agricultural Residues	**-**	**0.60**	**10**	**0.02**	**5**	**-**	**-**	**-**	**-**	**20**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**330**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**330**
WASTE	**0.05**	**53**	**1 300**	**0.08**	**20**	**-**	**-**	**-**	**-**	**1 400**
a. Solid Waste Disposal (Landfills)	**-**	**51**	**1 300**	**-**	**-**	**-**	**-**	**-**	**-**	**1 300**
b. Biological Treatment of Solid Waste	**-**	**0.10**	**4**	**0.02**	**6**	**-**	**-**	**-**	**-**	**9**
c. Wastewater Treatment and Discharge	**-**	**1**	**25**	**0.06**	**20**	**-**	**-**	**-**	**-**	**43**
d. Incineration and Open Burning of Waste	**0.05**	**0.00**	**0.00**	**0.00**	**0.00**	**-**	**-**	**-**	**-**	**0.06**
e. Industrial Wood Waste Landfills	**-**	**0.80**	**20**	**-**	**-**	**-**	**-**	**-**	**-**	**20**

Notes:
Estimates for the latest year (2019) 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.
a. 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.
b. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
c. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial/territorial tables.
d. 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.
0.00 Indicates emissions were truncated due to rounding.
- Indicates no emissions.
x Indicates data has been suppressed to respect confidentiality.

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

Greenhouse Gas Categories	1990	2005	2014	2015	2016	2017	2018	2019
	kt CO_2 eq							
TOTAL	**43 300**	**67 800**	**74 200**	**76 200**	**73 800**	**76 000**	**76 200**	**74 800**
ENERGY	**34 200**	**53 100**	**59 600**	**61 200**	**58 600**	**60 600**	**60 700**	**59 400**
a. Stationary Combustion Sources	**18 300**	**26 400**	**27 900**	**28 800**	**28 300**	**29 200**	**29 400**	**29 100**
Public Electricity and Heat Production	11 100	15 300	15 200	16 100	16 000	16 600	16 100	15 800
Petroleum Refining Industries	630	770	1 100	1 200	1 200	1 200	1 100	1 200
Oil and Gas Extraction	1 400	5 190	4 640	4 980	4 690	4 230	3 780	3 620
Mining	974	1 280	1 930	1 920	1 810	2 210	2 760	2 800
Manufacturing Industries	790	534	970	851	804	864	1 240	1 210
Construction	70	42	39	67	39	45	43	35
Commercial and Institutional	985	1 510	1 130	1 110	1 300	1 470	1 600	1 650
Residential	2 080	1 590	1 850	1 670	1 640	1 800	1 950	2 060
Agriculture and Forestry	296	256	997	870	783	815	785	723
b. Transport[a]	**9 160**	**11 500**	**16 600**	**16 900**	**16 400**	**16 700**	**17 500**	**17 200**
Aviation	259	193	234	234	225	224	235	217
Road Transportation	3 780	5 170	8 650	9 060	9 110	9 380	9 440	9 240
Light-Duty Gasoline Vehicles	1 480	1 370	1 320	1 400	1 380	1 300	1 220	1 160
Light-Duty Gasoline Trucks	1 230	1 720	2 860	3 200	3 350	3 380	3 360	3 370
Heavy-Duty Gasoline Vehicles	628	777	898	971	1 000	1 000	978	967
Motorcycles	2	3	7	7	8	8	8	7
Light-Duty Diesel Vehicles	5	11	25	26	24	25	24	22
Light-Duty Diesel Trucks	8	39	33	37	36	40	40	40
Heavy-Duty Diesel Vehicles	386	1 250	3 510	3 420	3 310	3 630	3 810	3 670
Propane and Natural Gas Vehicles	37	5	0.16	0.14	0.27	0.50	0.51	0.53
Railways	584	410	718	802	781	1 120	1 280	1 360
Marine	0.00	-	-	-	-	-	-	-
Other Transportation	4 540	5 730	6 990	6 790	6 300	6 020	6 520	6 350
Off-Road Agriculture and Forestry	2 130	3 240	3 830	3 870	3 760	4 130	4 480	4 400
Off-Road Commercial and Institutional	32	77	131	128	54	32	32	33
Off-Road Manufacturing, Mining and Construction	166	238	392	438	304	287	310	269
Off-Road Residential	4	35	50	51	59	62	60	60
Off-Road Other Transportation	612	243	268	292	294	301	289	275
Pipeline Transport	1 590	1 900	2 320	2 010	1 830	1 210	1 350	1 300
c. Fugitive Sources	**6 700**	**15 000**	**15 000**	**16 000**	**14 000**	**15 000**	**14 000**	**13 000**
Coal Mining	20	20	20	20	20	20	20	20
Oil and Natural Gas	6 700	15 000	15 000	16 000	14 000	15 000	14 000	13 000
Oil	650	1 300	1 100	1 000	980	1 000	1 000	1 000
Natural Gas	2 100	2 000	2 400	2 300	2 600	2 600	2 600	2 600
Venting	3 500	10 000	9 000	9 500	7 900	8 400	8 000	7 400
Flaring	390	1 500	2 500	2 700	2 400	2 700	2 100	2 000
d. CO_2 Transport and Storage	**-**	**0.09**	**0.10**	**0.20**	**0.20**	**0.20**	**0.20**	**0.20**
INDUSTRIAL PROCESSES AND PRODUCT USE	**355**	**850**	**881**	**874**	**856**	**803**	**792**	**826**
a. Mineral Products	**96**	**10**	**8**	**8**	**7**	**6**	**6**	**5**
Cement Production	88	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-
Mineral Products Use	8	10	8	8	7	6	6	5
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[c]	**-**	**180**	**400**	**410**	**410**	**430**	**460**	**460**
e. Non-Energy Products from Fuels and Solvent Use	**250**	**650**	**460**	**450**	**420**	**350**	**300**	**340**
f. Other Product Manufacture and Use	**8**	**13**	**12**	**13**	**15**	**18**	**19**	**19**
AGRICULTURE	**7 700**	**12 000**	**12 000**	**13 000**	**13 000**	**13 000**	**13 000**	**13 000**
a. Enteric Fermentation	**3 300**	**6 100**	**4 600**	**4 600**	**4 600**	**4 700**	**4 600**	**4 600**
b. Manure Management	**710**	**1 300**	**1 000**	**1 000**	**1 100**	**1 100**	**1 000**	**1 000**
c. Agricultural Soils	**3 500**	**4 500**	**5 800**	**6 200**	**6 400**	**6 400**	**6 600**	**6 600**
Direct Sources	3 000	3 700	4 700	5 000	5 200	5 200	5 400	5 400
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**	**40**	**30**	**30**	**30**	**30**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**190**	**450**	**850**	**950**	**940**	**1 000**	**1 000**	**1 000**
WASTE	**1 000**	**1 400**	**1 400**	**1 400**	**1 300**	**1 400**	**1 400**	**1 400**
a. Solid Waste Disposal (Landfills)	**870**	**1 200**	**1 200**	**1 200**	**1 200**	**1 200**	**1 300**	**1 300**
b. Biological Treatment of Solid Waste	**0.01**	**1**	**3**	**3**	**3**	**3**	**3**	**3**
c. Wastewater Treatment and Discharge	**44**	**43**	**44**	**36**	**35**	**34**	**35**	**35**
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**	**90**	**90**	**80**	**80**	**80**	**80**

Notes:

Estimates for the latest year (2019) 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.

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 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.

0.00 Indicates emissions were truncated due to rounding.

- Indicates no emissions.

x Indicates data has been suppressed to respect confidentiality.

Table A11–17 **2019 GHG Emission Summary for Saskatchewan**

Greenhouse Gas Categories	Greenhouse Gases									
	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[a]	PFCs[a]	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	**49 200**	**690**	**17 000**	**27**	**8 000**	**460**	**0.50**	**0.27**	**-**	**74 800**
ENERGY	**47 800**	**440**	**11 000**	**2**	**600**	**-**	**-**	**-**	**-**	**59 400**
a. Stationary Combustion Sources	**28 700**	**8**	**200**	**0.70**	**200**	**-**	**-**	**-**	**-**	**29 100**
Public Electricity and Heat Production	15 700	1	33	0.40	100	-	-	-	-	15 800
Petroleum Refining Industries	1 200	0.03	0.70	0.01	4	-	-	-	-	1 200
Oil and Gas Extraction	3 430	6	200	0.09	30	-	-	-	-	3 620
Mining	2 780	0.06	1	0.05	20	-	-	-	-	2 800
Manufacturing Industries	1 200	0.04	0.88	0.03	9	-	-	-	-	1 210
Construction	35	0.00	0.02	0.00	0.27	-	-	-	-	35
Commercial and Institutional	1 640	0.03	0.82	0.03	10	-	-	-	-	1 650
Residential	2 040	0.50	10	0.05	10	-	-	-	-	2 060
Agriculture and Forestry	719	0.01	0.30	0.01	4	-	-	-	-	723
b. Transport[b]	**16 700**	**3**	**79**	**1**	**350**	**-**	**-**	**-**	**-**	**17 200**
Aviation	215	0.01	0.20	0.01	2	-	-	-	-	217
Road Transportation	9 080	0.60	20	0.48	140	-	-	-	-	9 240
Light-Duty Gasoline Vehicles	1 140	0.10	3	0.06	16	-	-	-	-	1 160
Light-Duty Gasoline Trucks	3 320	0.30	8	0.13	40	-	-	-	-	3 370
Heavy-Duty Gasoline Vehicles	942	0.04	0.90	0.08	25	-	-	-	-	967
Motorcycles	7	0.00	0.07	0.00	0.04	-	-	-	-	7
Light-Duty Diesel Vehicles	21	0.00	0.01	0.00	0.53	-	-	-	-	22
Light-Duty Diesel Trucks	39	0.00	0.02	0.00	0.95	-	-	-	-	40
Heavy-Duty Diesel Vehicles	3 610	0.20	4	0.20	60	-	-	-	-	3 670
Propane and Natural Gas Vehicles	0.52	0.00	0.01	0.00	0.00	-	-	-	-	0.53
Railways	1 210	0.07	2	0.50	100	-	-	-	-	1 360
Marine	-	-	-	-	-	-	-	-	-	-
Other Transportation	6 220	2	60	0.20	70	-	-	-	-	6 350
Off-Road Agriculture and Forestry	4 350	0.18	5	0.20	50	-	-	-	-	4 400
Off-Road Commercial and Institutional	31	0.06	2	0.00	0.30	-	-	-	-	33
Off-Road Manufacturing, Mining and Construction	264	0.04	0.91	0.01	4	-	-	-	-	269
Off-Road Residential	57	0.13	3	0.00	0.50	-	-	-	-	60
Off-Road Other Transportation	256	0.70	18	0.01	2	-	-	-	-	275
Pipeline Transport	1 260	1	33	0.03	10	-	-	-	-	1 300
c. Fugitive Sources	**2 400**	**420**	**11 000**	**0.26**	**77**	**-**	**-**	**-**	**-**	**13 000**
Coal Mining	-	0.60	20	-	-	-	-	-	-	20
Oil and Natural Gas	2 400	420	11 000	0.30	80	-	-	-	-	13 000
Oil	4	38	960	0.30	70	-	-	-	-	1 000
Natural Gas	50	100	2 500	-	-	-	-	-	-	2 600
Venting	440	280	6 900	-	-	-	-	-	-	7 400
Flaring	1 900	7	160	0.01	2	-	-	-	-	2 000
d. CO_2 Transport and Storage	**0.20**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.20**
INDUSTRIAL PROCESSES AND PRODUCT USE	**336**	**-**	**-**	**0.10**	**30**	**460**	**0.50**	**0.27**	**-**	**826**
a. Mineral Products	**5**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**5**
Cement Production	-	-	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-	-	-
Mineral Products Use	5	-	-	-	-	-	-	-	-	5
b. Chemical Industry[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**-**	**-**	**-**	**-**	**460**	**0.08**	**-**	**-**	**460**
e. Non-Energy Products from Fuels and Solvent Use	**330**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**340**
f. Other Product Manufacture and Use	**2**	**-**	**-**	**0.05**	**16**	**-**	**0.42**	**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**	**300**	**2**	**700**	**-**	**-**	**-**	**-**	**1 000**
c. Agricultural Soils	**-**	**-**	**-**	**22**	**6 600**	**-**	**-**	**-**	**-**	**6 600**
Direct Sources	-	-	-	18	5 400	-	-	-	-	5 400
Indirect Sources	-	-	-	4	1 000	-	-	-	-	1 000
d. Field Burning of Agricultural Residues	**-**	**0.80**	**20**	**0.02**	**6**	**-**	**-**	**-**	**-**	**30**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**1 000**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1 000**
WASTE	**0.02**	**54**	**1 400**	**0.06**	**20**	**-**	**-**	**-**	**-**	**1 400**
a. Solid Waste Disposal (Landfills)	**-**	**50**	**1 300**	**-**	**-**	**-**	**-**	**-**	**-**	**1 300**
b. Biological Treatment of Solid Waste	**-**	**0.05**	**1**	**0.01**	**2**	**-**	**-**	**-**	**-**	**3**
c. Wastewater Treatment and Discharge	**-**	**0.80**	**20**	**0.05**	**20**	**-**	**-**	**-**	**-**	**35**
d. Incineration and Open Burning of Waste	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**-**	**-**	**-**	**-**	**0.02**
e. Industrial Wood Waste Landfills	**-**	**3**	**80**	**-**	**-**	**-**	**-**	**-**	**-**	**80**

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Provincial/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report.
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b. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
c. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial/territorial tables.
d. 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.
0.00 Indicates emissions were truncated due to rounding.
- Indicates no emissions.
x Indicates data has been suppressed to respect confidentiality.

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

Greenhouse Gas Categories	1990	2005	2014	2015	2016	2017	2018	2019
	kt CO_2 eq							
TOTAL	**172 000**	**235 000**	**278 000**	**278 000**	**264 000**	**271 000**	**272 000**	**276 000**
ENERGY	**149 000**	**201 000**	**244 000**	**242 000**	**228 000**	**236 000**	**237 000**	**239 000**
a. Stationary Combustion Sources	**92 800**	**130 000**	**160 000**	**164 000**	**155 000**	**161 000**	**159 000**	**160 000**
Public Electricity and Heat Production	39 800	52 000	49 200	51 500	45 800	46 700	36 500	36 300
Petroleum Refining Industries	3 000	4 000	3 900	4 100	4 300	4 300	4 400	4 400
Oil and Gas Extraction	26 800	51 200	80 100	83 700	80 100	84 100	90 700	91 600
Mining	298	324	207	158	160	148	162	171
Manufacturing Industries	10 500	8 850	11 400	10 200	9 570	8 640	8 650	9 050
Construction	238	171	298	297	307	343	382	381
Commercial and Institutional	5 040	5 660	6 340	5 770	6 300	7 580	8 190	8 490
Residential	6 740	7 550	8 520	8 170	8 100	8 920	9 300	8 990
Agriculture and Forestry	477	240	347	346	358	390	385	313
b. Transport[a]	**22 300**	**34 000**	**44 100**	**41 900**	**40 100**	**42 600**	**44 900**	**46 200**
Aviation	1 140	1 350	1 580	1 570	1 490	1 540	1 700	1 660
Road Transportation	11 900	19 400	28 300	26 400	25 800	27 200	28 200	29 000
Light-Duty Gasoline Vehicles	4 200	3 680	3 370	3 040	3 120	3 090	3 030	3 040
Light-Duty Gasoline Trucks	3 400	5 140	7 020	6 910	7 380	7 610	7 830	8 210
Heavy-Duty Gasoline Vehicles	1 720	3 200	3 390	3 180	3 390	3 490	3 520	3 580
Motorcycles	13	28	44	44	47	48	50	52
Light-Duty Diesel Vehicles	21	51	100	90	77	82	82	83
Light-Duty Diesel Trucks	16	52	107	122	119	144	157	166
Heavy-Duty Diesel Vehicles	2 180	7 200	14 200	13 000	11 600	12 800	13 600	13 900
Propane and Natural Gas Vehicles	395	97	0.97	0.96	1	2	2	2
Railways	1 760	2 780	2 910	2 530	1 890	2 070	1 910	1 950
Marine	0.01	0.04	0.01	0.03	0.02	0.29	-	0.01
Other Transportation	7 460	10 400	11 300	11 300	11 000	11 700	13 000	13 600
Off-Road Agriculture and Forestry	2 520	3 430	3 030	2 870	2 490	2 710	3 010	3 160
Off-Road Commercial and Institutional	165	295	392	363	237	204	214	222
Off-Road Manufacturing, Mining and Construction	1 520	2 610	4 750	4 710	4 010	4 390	4 870	5 060
Off-Road Residential	20	128	126	119	128	136	142	148
Off-Road Other Transportation	1 940	751	611	607	609	636	660	654
Pipeline Transport	1 300	3 210	2 360	2 660	3 500	3 640	4 120	4 330
c. Fugitive Sources	**34 000**	**37 000**	**39 000**	**36 000**	**33 000**	**33 000**	**33 000**	**33 000**
Coal Mining	400	300	200	300	300	200	200	200
Oil and Natural Gas	33 000	37 000	39 000	36 000	33 000	32 000	33 000	33 000
Oil	4 000	4 300	4 300	4 100	3 900	3 900	4 200	4 300
Natural Gas	8 500	9 700	8 600	7 900	7 900	7 900	7 700	7 500
Venting	17 000	21 000	23 000	21 000	19 000	18 000	18 000	18 000
Flaring	3 600	2 000	3 200	2 900	2 300	2 500	2 900	2 900
d. CO_2 Transport and Storage	**-**	**-**	**-**	**0.04**	**0.09**	**0.09**	**0.10**	**0.10**
INDUSTRIAL PROCESSES AND PRODUCT USE	**6 820**	**11 600**	**11 700**	**13 300**	**12 900**	**12 600**	**13 100**	**13 900**
a. Mineral Products	**1 100**	**1 500**	**1 100**	**1 200**	**1 400**	**1 400**	**1 500**	**1 500**
Cement Production	790	1 100	890	930	1 100	x	x	x
Lime Production	110	130	110	110	110	x	x	x
Mineral Products Use	190	250	140	170	160	150	150	150
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**1**	**0.67**	**0.61**	**-**	**-**
Iron and Steel Production	-	-	-	1	0.67	0.61	-	-
Aluminium Production	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[c]	**0.27**	**710**	**1 600**	**1 600**	**1 600**	**1 700**	**1 800**	**1 800**
e. Non-Energy Products from Fuels and Solvent Use	**5 700**	**9 400**	**8 900**	**10 000**	**9 800**	**9 400**	**9 700**	**11 000**
f. Other Product Manufacture and Use	**17**	**40**	**47**	**50**	**56**	**65**	**73**	**76**
AGRICULTURE	**14 000**	**19 000**	**18 000**	**18 000**	**18 000**	**17 000**	**18 000**	**18 000**
a. Enteric Fermentation	**7 800**	**12 000**	**9 400**	**9 400**	**9 500**	**9 400**	**9 300**	**9 200**
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**	**5 900**	**5 300**	**5 600**	**5 800**
Direct Sources	3 400	3 600	4 900	4 900	4 800	4 300	4 600	4 800
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**	**0.80**	**0.80**	**0.80**	**1**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**260**	**370**	**790**	**870**	**730**	**610**	**720**	**760**
WASTE	**2 400**	**3 800**	**4 600**	**4 600**	**4 800**	**4 900**	**5 000**	**5 200**
a. Solid Waste Disposal (Landfills)	**1 700**	**3 000**	**3 900**	**4 000**	**4 100**	**4 200**	**4 400**	**4 500**
b. Biological Treatment of Solid Waste	**4**	**20**	**20**	**20**	**20**	**20**	**30**	**20**
c. Wastewater Treatment and Discharge	**110**	**120**	**130**	**120**	**120**	**120**	**120**	**120**
d. Incineration and Open Burning of Waste	**7**	**20**	**20**	**30**	**40**	**40**	**30**	**40**
e. Industrial Wood Waste Landfills	**500**	**600**	**500**	**500**	**500**	**500**	**500**	**400**

Notes:

Estimates for the latest year (2019) 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.

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 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.

0.00 Indicates emissions were truncated due to rounding.

- Indicates no emissions.

x Indicates data has been suppressed to respect confidentiality.

Table A11–19 **2019 GHG Emission Summary for Alberta**

Greenhouse Gas Categories	Greenhouse Gases									
	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[a]	PFCs[a]	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	**225 000**	**1 600**	**40 000**	**31**	**9 300**	**1 800**	**6**	**4**	**-**	**276 000**
ENERGY	**213 000**	**990**	**25 000**	**6**	**2 000**	**-**	**-**	**-**	**-**	**239 000**
a. Stationary Combustion Sources	**157 000**	**80**	**2 000**	**3**	**1 000**	**-**	**-**	**-**	**-**	**160 000**
Public Electricity and Heat Production	36 000	3	79	0.70	200	-	-	-	-	36 300
Petroleum Refining Industries	4 400	0.09	2	0.02	6	-	-	-	-	4 400
Oil and Gas Extraction	89 200	70	2 000	2	500	-	-	-	-	91 600
Mining	170	0.00	0.08	0.00	0.90	-	-	-	-	171
Manufacturing Industries	8 950	0.42	11	0.29	85	-	-	-	-	9 050
Construction	377	0.01	0.17	0.01	4	-	-	-	-	381
Commercial and Institutional	8 430	0.16	4	0.20	60	-	-	-	-	8 490
Residential	8 860	2	60	0.20	60	-	-	-	-	8 990
Agriculture and Forestry	310	0.01	0.10	0.01	3	-	-	-	-	313
b. Transport[b]	**45 100**	**9**	**220**	**3**	**860**	**-**	**-**	**-**	**-**	**46 200**
Aviation	1 650	0.03	0.70	0.05	10	-	-	-	-	1 660
Road Transportation	28 500	2	40	2	460	-	-	-	-	29 000
Light-Duty Gasoline Vehicles	3 000	0.30	7	0.13	38	-	-	-	-	3 040
Light-Duty Gasoline Trucks	8 100	0.70	20	0.31	91	-	-	-	-	8 210
Heavy-Duty Gasoline Vehicles	3 490	0.10	3	0.31	92	-	-	-	-	3 580
Motorcycles	52	0.02	0.50	0.00	0.29	-	-	-	-	52
Light-Duty Diesel Vehicles	81	0.00	0.04	0.01	2	-	-	-	-	83
Light-Duty Diesel Trucks	162	0.00	0.10	0.01	4	-	-	-	-	166
Heavy-Duty Diesel Vehicles	13 600	0.60	10	0.77	230	-	-	-	-	13 900
Propane and Natural Gas Vehicles	2	0.00	0.02	0.00	0.01	-	-	-	-	2
Railways	1 740	0.10	2	0.70	200	-	-	-	-	1 950
Marine	0.01	0.00	0.00	0.00	0.00	-	-	-	-	0.01
Other Transportation	13 200	7	170	0.60	200	-	-	-	-	13 600
Off-Road Agriculture and Forestry	3 110	0.15	4	0.10	40	-	-	-	-	3 160
Off-Road Commercial and Institutional	207	0.52	13	0.01	2	-	-	-	-	222
Off-Road Manufacturing, Mining and Construction	4 940	0.28	7	0.40	100	-	-	-	-	5 060
Off-Road Residential	140	0.29	7	0.00	1	-	-	-	-	148
Off-Road Other Transportation	610	2	39	0.02	5	-	-	-	-	654
Pipeline Transport	4 200	4	100	0.10	30	-	-	-	-	4 330
c. Fugitive Sources	**11 000**	**900**	**22 000**	**0.06**	**17**	**-**	**-**	**-**	**-**	**33 000**
Coal Mining	-	9	200	-	-	-	-	-	-	200
Oil and Natural Gas	11 000	890	22 000	0.06	20	-	-	-	-	33 000
Oil	550	150	3 700	0.04	10	-	-	-	-	4 300
Natural Gas	42	300	7 500	-	-	-	-	-	-	7 500
Venting	7 500	430	11 000	-	-	-	-	-	-	18 000
Flaring	2 600	10	260	0.02	5	-	-	-	-	2 900
d. CO_2 Transport and Storage	**0.10**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.10**
INDUSTRIAL PROCESSES AND PRODUCT USE	**11 800**	**4**	**94**	**0.80**	**240**	**1 800**	**6**	**4**	**-**	**13 900**
a. Mineral Products	**1 500**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1 500**
Cement Production	x	-	-	-	-	-	-	-	-	x
Lime Production	x	-	-	-	-	-	-	-	-	x
Mineral Products Use	150	-	-	-	-	-	-	-	-	150
b. Chemical Industry[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**-**	**-**	**-**	**-**	**1 800**	**1**	**2**	**-**	**1 800**
e. Non-Energy Products from Fuels and Solvent Use	**10 000**	**-**	**100**	**1**	**-**	**-**	**-**	**-**	**-**	**11 000**
f. Other Product Manufacture and Use	**8**	**-**	**-**	**0.20**	**60**	**-**	**5**	**2**	**-**	**76**
AGRICULTURE	**760**	**390**	**9 800**	**24**	**7 200**	**-**	**-**	**-**	**-**	**18 000**
a. Enteric Fermentation	**-**	**370**	**9 200**	**-**	**-**	**-**	**-**	**-**	**-**	**9 200**
b. Manure Management	**-**	**26**	**650**	**4**	**1 000**	**-**	**-**	**-**	**-**	**2 000**
c. Agricultural Soils	**-**	**-**	**-**	**20**	**5 800**	**-**	**-**	**-**	**-**	**5 800**
Direct Sources	-	-	-	16	4 800	-	-	-	-	4 800
Indirect Sources	-	-	-	4	1 000	-	-	-	-	1 000
d. Field Burning of Agricultural Residues	**-**	**0.03**	**0.80**	**0.00**	**0.30**	**-**	**-**	**-**	**-**	**1**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**760**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**760**
WASTE	**30**	**200**	**5 000**	**0.30**	**80**	**-**	**-**	**-**	**-**	**5 200**
a. Solid Waste Disposal (Landfills)	**-**	**180**	**4 500**	**-**	**-**	**-**	**-**	**-**	**-**	**4 500**
b. Biological Treatment of Solid Waste	**-**	**0.50**	**10**	**0.03**	**10**	**-**	**-**	**-**	**-**	**20**
c. Wastewater Treatment and Discharge	**-**	**2**	**60**	**0.20**	**60**	**-**	**-**	**-**	**-**	**120**
d. Incineration and Open Burning of Waste	**30**	**0.00**	**0.02**	**0.03**	**10**	**-**	**-**	**-**	**-**	**40**
e. Industrial Wood Waste Landfills	**-**	**20**	**400**	**-**	**-**	**-**	**-**	**-**	**-**	**400**

Notes:
Estimates for the latest year (2019) 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.
a. 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.
b. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
c. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial/territorial tables.
d. 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.
0.00 Indicates emissions were truncated due to rounding.
- Indicates no emissions.
x Indicates data has been suppressed to respect confidentiality.

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

Greenhouse Gas Categories	1990	2005	2014	2015	2016	2017	2018	2019
	kt CO_2 eq							
TOTAL	**51 800**	**63 000**	**60 400**	**59 200**	**61 800**	**63 200**	**65 500**	**65 700**
ENERGY	**41 700**	**50 000**	**49 700**	**48 900**	**51 100**	**52 700**	**54 800**	**55 300**
a. Stationary Combustion Sources	**19 300**	**21 700**	**21 300**	**19 600**	**20 800**	**21 700**	**22 100**	**22 900**
Public Electricity and Heat Production	804	1 340	578	503	677	574	697	971
Petroleum Refining Industries	1 200	490	510	530	630	500	370	420
Oil and Gas Extraction	2 140	5 390	8 230	7 070	7 440	7 620	8 190	8 420
Mining	616	386	562	456	490	471	516	515
Manufacturing Industries	6 490	6 190	4 390	4 410	4 660	4 840	4 900	4 940
Construction	307	114	66	71	95	95	104	99
Commercial and Institutional	2 950	3 170	2 650	2 420	2 450	2 820	2 730	2 870
Residential	4 470	4 520	3 880	3 730	3 770	4 220	4 030	4 110
Agriculture and Forestry	323	75	382	413	563	560	602	575
b. Transport[a]	**18 200**	**23 000**	**23 400**	**24 500**	**25 900**	**26 800**	**28 300**	**28 200**
Aviation	1 340	1 550	1 310	1 320	1 350	1 460	1 600	1 590
Road Transportation	9 600	15 500	16 300	16 800	18 000	18 200	19 200	19 000
Light-Duty Gasoline Vehicles	3 900	4 450	3 680	3 800	4 110	4 030	3 970	3 780
Light-Duty Gasoline Trucks	2 110	3 910	4 380	4 680	5 260	5 370	5 540	5 600
Heavy-Duty Gasoline Vehicles	950	1 860	1 750	1 740	1 960	1 990	2 050	1 970
Motorcycles	15	21	25	27	30	30	30	29
Light-Duty Diesel Vehicles	44	93	121	131	128	127	131	130
Light-Duty Diesel Trucks	17	45	86	107	119	135	157	166
Heavy-Duty Diesel Vehicles	1 940	4 890	6 270	6 300	6 350	6 520	7 270	7 320
Propane and Natural Gas Vehicles	624	214	7	6	6	7	7	7
Railways	1 430	430	664	665	789	1 100	1 000	985
Marine	576	809	1 100	1 190	1 260	1 200	1 240	1 400
Other Transportation	5 240	4 710	3 960	4 500	4 540	4 800	5 300	5 160
Off-Road Agriculture and Forestry	707	873	588	656	576	660	792	778
Off-Road Commercial and Institutional	243	330	356	359	301	284	317	313
Off-Road Manufacturing, Mining and Construction	1 350	1 460	1 260	1 410	1 440	1 650	2 040	1 960
Off-Road Residential	35	183	165	169	145	140	147	141
Off-Road Other Transportation	2 050	867	561	608	634	647	682	622
Pipeline Transport	862	998	1 040	1 300	1 440	1 410	1 320	1 350
c. Fugitive Sources	**4 100**	**5 400**	**5 100**	**4 800**	**4 400**	**4 300**	**4 300**	**4 200**
Coal Mining	800	1 000	1 000	900	1 000	900	1 000	1 000
Oil and Natural Gas	3 300	4 400	4 100	4 000	3 500	3 400	3 300	3 200
Oil	190	85	46	45	49	46	45	36
Natural Gas	870	880	760	770	770	780	810	780
Venting	1 900	2 700	2 600	2 600	2 100	2 000	1 900	1 900
Flaring	360	690	670	590	510	570	570	500
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**3 320**	**4 630**	**3 850**	**3 640**	**4 030**	**3 810**	**4 070**	**3 760**
a. Mineral Products	**880**	**1 500**	**1 200**	**1 200**	**1 100**	**960**	**1 000**	**990**
Cement Production	660	1 300	970	1 000	970	x	x	x
Lime Production	170	190	160	170	110	x	x	x
Mineral Products Use	53	51	23	23	22	20	19	18
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**1 670**	**1 220**	**547**	**477**	**867**	**793**	**771**	**754**
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminium Production	1 670	1 220	546	476	867	793	771	754
SF_6 Used in Magnesium Smelters and Casters	-	1	0.66	0.66	0.84	0.01	0.01	0.01
d. Production and Consumption of Halocarbons, SF_6 and NF_3[c]	**-**	**620**	**1 400**	**1 400**	**1 500**	**1 500**	**1 600**	**1 600**
e. Non-Energy Products from Fuels and Solvent Use	**690**	**1 200**	**710**	**470**	**540**	**470**	**540**	**310**
f. Other Product Manufacture and Use	**77**	**97**	**71**	**70**	**71**	**88**	**88**	**98**
AGRICULTURE	**2 200**	**2 700**	**2 200**	**2 300**	**2 400**	**2 400**	**2 500**	**2 500**
a. Enteric Fermentation	**1 400**	**1 800**	**1 300**	**1 400**	**1 400**	**1 400**	**1 500**	**1 500**
b. Manure Management	**310**	**440**	**390**	**400**	**400**	**410**	**420**	**420**
c. Agricultural Soils	**510**	**500**	**470**	**490**	**520**	**510**	**550**	**550**
Direct Sources	410	390	380	390	410	410	440	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**	**21**	**23**	**26**	**28**	**33**	**33**
WASTE	**4 600**	**5 600**	**4 500**	**4 400**	**4 300**	**4 300**	**4 200**	**4 200**
a. Solid Waste Disposal (Landfills)	**2 300**	**3 000**	**2 400**	**2 400**	**2 300**	**2 300**	**2 300**	**2 300**
b. Biological Treatment of Solid Waste	**1**	**40**	**60**	**60**	**60**	**60**	**70**	**80**
c. Wastewater Treatment and Discharge	**99**	**130**	**140**	**130**	**130**	**140**	**140**	**140**
d. Incineration and Open Burning of Waste	**5**	**0.20**	**-**	**-**	**-**	**-**	**-**	**-**
e. Industrial Wood Waste Landfills	**2 000**	**2 000**	**2 000**	**2 000**	**2 000**	**2 000**	**2 000**	**2 000**

Notes:

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

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 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.

0.00 Indicates emissions were truncated due to rounding.

- Indicates no emissions.

x Indicates data has been suppressed to respect confidentiality.

Table A11–21 2019 GHG Emission Summary for British Columbia

Greenhouse Gas Categories	Greenhouse Gases									
	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[a]	PFCs[a]	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	**52 900**	**370**	**9 200**	**6**	**1 900**	**1 600**	**63**	**21**	**-**	**65 700**
ENERGY	**50 900**	**140**	**3 500**	**3**	**900**	**-**	**-**	**-**	**-**	**55 300**
a. Stationary Combustion Sources	**22 100**	**20**	**600**	**0.90**	**300**	**-**	**-**	**-**	**-**	**22 900**
Public Electricity and Heat Production	952	0.25	6	0.04	10	-	-	-	-	971
Petroleum Refining Industries	420	0.01	0.20	0.00	0.80	-	-	-	-	420
Oil and Gas Extraction	7 900	20	500	0.20	60	-	-	-	-	8 420
Mining	512	0.01	0.20	0.01	3	-	-	-	-	515
Manufacturing Industries	4 810	0.75	19	0.40	120	-	-	-	-	4 940
Construction	99	0.00	0.05	0.00	0.62	-	-	-	-	99
Commercial and Institutional	2 850	0.05	1	0.07	20	-	-	-	-	2 870
Residential	3 990	3	80	0.10	40	-	-	-	-	4 110
Agriculture and Forestry	571	0.01	0.30	0.01	3	-	-	-	-	575
b. Transport[b]	**27 400**	**5**	**130**	**2**	**630**	**-**	**-**	**-**	**-**	**28 200**
Aviation	1 580	0.04	1	0.05	10	-	-	-	-	1 590
Road Transportation	18 500	1	30	2	440	-	-	-	-	19 000
Light-Duty Gasoline Vehicles	3 690	0.30	7	0.30	89	-	-	-	-	3 780
Light-Duty Gasoline Trucks	5 420	0.40	10	0.57	170	-	-	-	-	5 600
Heavy-Duty Gasoline Vehicles	1 920	0.08	2	0.16	48	-	-	-	-	1 970
Motorcycles	28	0.01	0.30	0.00	0.16	-	-	-	-	29
Light-Duty Diesel Vehicles	127	0.00	0.06	0.01	3	-	-	-	-	130
Light-Duty Diesel Trucks	162	0.00	0.10	0.01	4	-	-	-	-	166
Heavy-Duty Diesel Vehicles	7 190	0.30	8	0.41	120	-	-	-	-	7 320
Propane and Natural Gas Vehicles	6	0.00	0.07	0.00	0.04	-	-	-	-	7
Railways	880	0.05	1	0.30	100	-	-	-	-	985
Marine	1 390	0.13	3	0.04	10	-	-	-	-	1 400
Other Transportation	5 000	4	91	0.20	60	-	-	-	-	5 160
Off-Road Agriculture and Forestry	763	0.05	1	0.05	10	-	-	-	-	778
Off-Road Commercial and Institutional	299	0.46	11	0.01	3	-	-	-	-	313
Off-Road Manufacturing, Mining and Construction	1 920	0.28	7	0.10	30	-	-	-	-	1 960
Off-Road Residential	132	0.29	7	0.00	1	-	-	-	-	141
Off-Road Other Transportation	584	1	32	0.02	5	-	-	-	-	622
Pipeline Transport	1 310	1	32	0.03	10	-	-	-	-	1 350
c. Fugitive Sources	**1 400**	**110**	**2 800**	**0.00**	**1**	**-**	**-**	**-**	**-**	**4 200**
Coal Mining	-	40	1 000	-	-	-	-	-	-	1 000
Oil and Natural Gas	1 400	72	1 800	0.00	1	-	-	-	-	3 200
Oil	0.18	1	35	0.00	1	-	-	-	-	36
Natural Gas	6	31	780	-	-	-	-	-	-	780
Venting	920	38	940	-	-	-	-	-	-	1 900
Flaring	440	3	62	0.00	0.20	-	-	-	-	500
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**2 000**	**-**	**-**	**0.24**	**70**	**1 600**	**63**	**21**	**-**	**3 760**
a. Mineral Products	**990**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**990**
Cement Production	x	-	-	-	-	-	-	-	-	x
Lime Production	x	-	-	-	-	-	-	-	-	x
Mineral Products Use	18	-	-	-	-	-	-	-	-	18
b. Chemical Industry[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**694**	**-**	**-**	**-**	**-**	**-**	**60**	**0.01**	**-**	**754**
Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
Aluminium Production	694	-	-	-	-	-	60	-	-	754
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	0.01	-	0.01
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**-**	**-**	**-**	**-**	**1 600**	**0.31**	**-**	**-**	**1 600**
e. Non-Energy Products from Fuels and Solvent Use	**310**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**310**
f. Other Product Manufacture and Use	**5**	**-**	**-**	**0.24**	**70**	**-**	**3**	**21**	**-**	**98**
AGRICULTURE	**33**	**66**	**1 700**	**3**	**780**	**-**	**-**	**-**	**-**	**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	**-**	**160**	**4 100**	**0.40**	**100**	**-**	**-**	**-**	**-**	**4 200**
a. Solid Waste Disposal (Landfills)	**-**	**93**	**2 300**	**-**	**-**	**-**	**-**	**-**	**-**	**2 300**
b. Biological Treatment of Solid Waste	**-**	**2**	**40**	**0.10**	**40**	**-**	**-**	**-**	**-**	**80**
c. Wastewater Treatment and Discharge	**-**	**3**	**74**	**0.20**	**70**	**-**	**-**	**-**	**-**	**140**
d. Incineration and Open Burning of Waste	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Industrial Wood Waste Landfills	**-**	**70**	**2 000**	**-**	**-**	**-**	**-**	**-**	**-**	**2 000**

Notes:
Estimates for the latest year (2019) 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.
a. 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.
b. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
c. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial/territorial tables.
d. 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.
0.00 Indicates emissions were truncated due to rounding.
- Indicates no emissions.
x Indicates data has been suppressed to respect confidentiality.

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

Greenhouse Gas Categories	1990	2005	2014	2015	2016	2017	2018	2019
	kt CO_2 eq							
TOTAL	**550**	**568**	**499**	**529**	**527**	**564**	**645**	**690**
ENERGY	**525**	**528**	**453**	**483**	**479**	**513**	**590**	**633**
a. Stationary Combustion Sources	**216**	**192**	**66**	**67**	**65**	**67**	**85**	**106**
Public Electricity and Heat Production	90	22	16	18	19	24	33	47
Petroleum Refining Industries	-	-	-	-	-	-	-	-
Oil and Gas Extraction	0.31	67	-	-	-	-	-	-
Mining	8	8	4	4	4	x	x	x
Manufacturing Industries	6	-	14	14	15	16	16	17
Construction	4	2	1	0.62	1.00	x	x	x
Commercial and Institutional	77	41	25	25	22	17	23	19
Residential	30	44	6	5	4	5	6	7
Agriculture and Forestry	1	8	-	-	-	-	0.83	-
b. Transport[a]	**309**	**326**	**387**	**416**	**414**	**446**	**504**	**528**
Aviation	35	36	46	42	43	48	54	54
Road Transportation	220	256	314	343	346	375	422	443
Light-Duty Gasoline Vehicles	73	36	30	31	35	34	38	43
Light-Duty Gasoline Trucks	32	80	78	81	91	92	103	120
Heavy-Duty Gasoline Vehicles	15	25	33	37	43	45	54	58
Motorcycles	0.26	0.24	0.42	0.41	0.42	0.38	0.40	0.43
Light-Duty Diesel Vehicles	2	0.92	1	1	0.99	1	1	1
Light-Duty Diesel Trucks	0.28	7	6	6	5	6	6	6
Heavy-Duty Diesel Vehicles	96	107	165	186	171	196	220	214
Propane and Natural Gas Vehicles	1	-	-	-	-	-	-	-
Railways	-	-	-	-	-	-	-	-
Marine	2	4	4	4	2	0.58	0.46	3
Other Transportation	52	31	23	26	23	23	28	28
Off-Road Agriculture and Forestry	0.48	0.31	0.20	0.25	1	0.28	0.34	0.32
Off-Road Commercial and Institutional	3	3	3	3	1	0.67	0.84	0.96
Off-Road Manufacturing, Mining and Construction	28	18	13	15	13	13	16	15
Off-Road Residential	0.69	x	x	x	x	x	x	x
Off-Road Other Transportation	20	8	6	7	7	7	9	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**	**16**	**16**	**17**	**19**	**21**	**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	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[c]	**-**	**7**	**14**	**15**	**16**	**17**	**19**	**20**
e. Non-Energy Products from Fuels and Solvent Use	**2**	**0.48**	**1**	**0.28**	**0.08**	**0.08**	**0.07**	**0.75**
f. Other Product Manufacture and Use	**0.17**	**0.37**	**0.41**	**0.46**	**0.64**	**1**	**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	**23**	**32**	**30**	**30**	**32**	**33**	**34**	**35**
a. Solid Waste Disposal (Landfills)	**19**	**27**	**25**	**24**	**26**	**27**	**28**	**29**
b. Biological Treatment of Solid Waste	**0.01**	**0.10**	**0.20**	**0.30**	**0.30**	**0.20**	**0.40**	**0.40**
c. Wastewater Treatment and Discharge	**4**	**5**	**6**	**6**	**6**	**6**	**6**	**6**
d. Incineration and Open Burning of Waste	**-**	**0.02**	**-**	**-**	**-**	**-**	**-**	**-**
e. Industrial Wood Waste Landfills	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Notes:

Estimates for the latest year (2019) 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.

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 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.

0.00 Indicates emissions were truncated due to rounding.

- Indicates no emissions.

x Indicates data has been suppressed to respect confidentiality.

Table A11–23 **2019 GHG Emission Summary for Yukon**

Greenhouse Gas Categories	Greenhouse Gases									
	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[a]	PFCs[a]	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	**624**	**2**	**36**	**0.03**	**10**	**20**	**0.01**	**0.68**	**-**	**690**
ENERGY	**623**	**0.07**	**2**	**0.03**	**8**	**-**	**-**	**-**	**-**	**633**
a. Stationary Combustion Sources	**104**	**0.01**	**0.20**	**0.00**	**0.90**	**-**	**-**	**-**	**-**	**106**
Public Electricity and Heat Production	47	0.01	0.20	0.00	0.30	-	-	-	-	47
Petroleum Refining Industries	-	-	-	-	-	-	-	-	-	-
Oil and Gas Extraction	-	-	-	-	-	-	-	-	-	-
Mining	x	x	x	x	x	x	x	x	x	x
Manufacturing Industries	17	0.00	0.00	0.00	0.06	-	-	-	-	17
Construction	x	x	x	x	x	x	x	x	x	x
Commercial and Institutional	19	0.00	0.01	0.00	0.30	-	-	-	-	19
Residential	7	0.00	0.00	0.00	0.10	-	-	-	-	7
Agriculture and Forestry	-	-	-	-	-	-	-	-	-	-
b. Transport[b]	**519**	**0.06**	**1**	**0.03**	**8**	**-**	**-**	**-**	**-**	**528**
Aviation	54	0.00	0.10	0.00	0.50	-	-	-	-	54
Road Transportation	435	0.02	0.60	0.02	7	-	-	-	-	443
Light-Duty Gasoline Vehicles	42	0.00	0.08	0.00	0.40	-	-	-	-	43
Light-Duty Gasoline Trucks	119	0.01	0.20	0.00	1	-	-	-	-	120
Heavy-Duty Gasoline Vehicles	57	0.00	0.05	0.00	1	-	-	-	-	58
Motorcycles	0.43	0.00	0.00	0.00	0.00	-	-	-	-	0.43
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	0.15	-	-	-	-	6
Heavy-Duty Diesel Vehicles	210	0.01	0.20	0.01	4	-	-	-	-	214
Propane and Natural Gas Vehicles	-	-	-	-	-	-	-	-	-	-
Railways	-	-	-	-	-	-	-	-	-	-
Marine	3	0.00	0.01	0.00	0.02	-	-	-	-	3
Other Transportation	27	0.03	0.71	0.00	0.30	-	-	-	-	28
Off-Road Agriculture and Forestry	0.31	0.00	0.00	0.00	0.01	-	-	-	-	0.32
Off-Road Commercial and Institutional	0.92	0.00	0.03	0.00	0.01	-	-	-	-	0.96
Off-Road Manufacturing, Mining and Construction	15	0.00	0.06	0.00	0.20	-	-	-	-	15
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	**0.88**	**-**	**-**	**0.00**	**0.57**	**20**	**0.01**	**0.68**	**-**	**22**
a. Mineral Products	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Cement Production	-	-	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-	-	-
Mineral Products Use	-	-	-	-	-	-	-	-	-	-
b. Chemical Industry[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**-**	**-**	**-**	**-**	**20**	**0.01**	**-**	**-**	**20**
e. Non-Energy Products from Fuels and Solvent Use	**0.75**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.75**
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	**-**	**1**	**35**	**0.00**	**0.80**	**-**	**-**	**-**	**-**	**35**
a. Solid Waste Disposal (Landfills)	**-**	**1**	**29**	**-**	**-**	**-**	**-**	**-**	**-**	**29**
b. Biological Treatment of Solid Waste	**-**	**0.01**	**0.20**	**0.00**	**0.20**	**-**	**-**	**-**	**-**	**0.40**
c. Wastewater Treatment and Discharge	**-**	**0.22**	**6**	**0.00**	**0.50**	**-**	**-**	**-**	**-**	**6**
d. Incineration and Open Burning of Waste	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Industrial Wood Waste Landfills	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Notes:
Estimates for the latest year (2019) 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.
a. 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.
b. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
c. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial/territorial tables.
d. 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.
0.00 Indicates emissions were truncated due to rounding.
- Indicates no emissions.
x Indicates data has been suppressed to respect confidentiality.

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

Greenhouse Gas Categories	1999	2005	2014	2015	2016	2017	2018	2019
	kt CO_2 eq							
TOTAL	**1 260**	**1 630**	**1 530**	**1 740**	**1 620**	**1 320**	**1 420**	**1 380**
ENERGY	**1 220**	**1 570**	**1 470**	**1 680**	**1 560**	**1 260**	**1 350**	**1 310**
a. Stationary Combustion Sources	**598**	**720**	**580**	**612**	**563**	**385**	**467**	**419**
Public Electricity and Heat Production	88	x	x	x	x	x	x	x
Petroleum Refining Industries	-	-	-	-	-	-	-	-
Oil and Gas Extraction	128	214	2	1	5	13	11	41
Mining	104	164	210	205	220	198	215	192
Manufacturing Industries	-	x	x	x	x	x	x	x
Construction	0.83	1	x	x	x	x	x	x
Commercial and Institutional	192	141	181	190	200	62	115	69
Residential	85	102	104	97	67	49	58	43
Agriculture and Forestry	0.02	2	-	-	-	-	-	-
b. Transport[a]	**604**	**833**	**872**	**1 050**	**981**	**865**	**877**	**875**
Aviation	131	182	141	144	132	136	153	146
Road Transportation	277	473	551	670	672	586	607	612
Light-Duty Gasoline Vehicles	41	12	15	14	16	15	15	15
Light-Duty Gasoline Trucks	26	41	68	69	77	74	77	80
Heavy-Duty Gasoline Vehicles	16	9	18	20	24	24	25	25
Motorcycles	0.16	0.12	0.30	0.29	0.30	0.26	0.26	0.23
Light-Duty Diesel Vehicles	3	2	2	2	3	2	2	3
Light-Duty Diesel Trucks	0.74	19	13	16	16	13	14	15
Heavy-Duty Diesel Vehicles	191	390	435	548	537	457	473	475
Propane and Natural Gas Vehicles	0.80	-	-	-	-	-	-	-
Railways	3	6	18	16	14	14	14	14
Marine	22	32	12	9	7	6	4	10
Other Transportation	170	141	150	210	157	125	100	93
Off-Road Agriculture and Forestry	0.65	0.58	0.44	0.64	0.57	0.61	0.48	0.46
Off-Road Commercial and Institutional	11	9	9	12	2	0.76	0.69	0.68
Off-Road Manufacturing, Mining and Construction	130	116	125	180	136	107	83	78
Off-Road Residential	2	2	3	3	3	2	2	2
Off-Road Other Transportation	21	10	12	14	15	14	12	12
Pipeline Transport	4	3	1	0.77	0.27	0.27	0.27	0.27
c. Fugitive Sources	**15**	**18**	**19**	**15**	**16**	**5**	**6**	**14**
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	15	18	19	15	16	5	6	14
Oil	4	4	2	2	2	0.27	0.54	2
Natural Gas	5	5	5	4	5	3	4	5
Venting	2	2	0.86	0.74	0.69	0.03	0.13	0.57
Flaring	4	7	12	8	8	0.83	1	7
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**9**	**20**	**28**	**27**	**27**	**26**	**28**	**29**
a. Mineral Products	**0.01**	**0.15**	**0.05**	**0.04**	**0.04**	**0.02**	**0.03**	**0.02**
Cement Production	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-
Mineral Products Use	0.01	0.15	0.05	0.04	0.04	0.02	0.03	0.02
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[c]	**5**	**12**	**21**	**21**	**22**	**23**	**26**	**26**
e. Non-Energy Products from Fuels and Solvent Use	**4**	**7**	**7**	**5**	**4**	**2**	**1**	**2**
f. Other Product Manufacture and Use	**0.52**	**0.51**	**0.58**	**0.71**	**0.81**	**0.86**	**0.91**	**0.91**
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	**38**	**39**	**36**	**36**	**37**	**38**	**39**	**40**
a. Solid Waste Disposal (Landfills)	**35**	**36**	**33**	**33**	**34**	**35**	**36**	**37**
b. Biological Treatment of Solid Waste	**-**	**-**	**0.01**	**0.03**	**0.04**	**0.06**	**0.10**	**0.10**
c. Wastewater Treatment and Discharge	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**
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:

Estimates for the latest year (2019) 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.

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 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.

0.00 Indicates emissions were truncated due to rounding.

- Indicates no emissions.

x Indicates data has been suppressed to respect confidentiality.

Table A11–25 2019 GHG Emission Summary for Northwest Territories

Greenhouse Gas Categories	Greenhouse Gases									
	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[a]	PFCs[a]	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	**1 280**	**2**	**53**	**0.06**	**18**	**26**	**0.01**	**-**	**-**	**1 380**
ENERGY	**1 280**	**0.52**	**13**	**0.05**	**20**	**-**	**-**	**-**	**-**	**1 310**
a. Stationary Combustion Sources	**412**	**0.20**	**4**	**0.01**	**3**	**-**	**-**	**-**	**-**	**419**
Public Electricity and Heat Production	x	x	x	x	x	x	x	x	x	x
Petroleum Refining Industries	-	-	-	-	-	-	-	-	-	-
Oil and Gas Extraction	39	0.10	2	0.00	0.30	-	-	-	-	41
Mining	191	0.01	0.10	0.00	0.90	-	-	-	-	192
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	69	0.00	0.02	0.00	0.60	-	-	-	-	69
Residential	41	0.05	1	0.00	0.50	-	-	-	-	43
Agriculture and Forestry	-	-	-	-	-	-	-	-	-	-
b. Transport[b]	**859**	**0.06**	**2**	**0.05**	**14**	**-**	**-**	**-**	**-**	**875**
Aviation	144	0.01	0.30	0.01	1	-	-	-	-	146
Road Transportation	602	0.03	0.70	0.03	10	-	-	-	-	612
Light-Duty Gasoline Vehicles	14	0.00	0.03	0.00	0.14	-	-	-	-	15
Light-Duty Gasoline Trucks	79	0.01	0.20	0.00	0.74	-	-	-	-	80
Heavy-Duty Gasoline Vehicles	24	0.00	0.02	0.00	0.61	-	-	-	-	25
Motorcycles	0.23	0.00	0.00	0.00	0.00	-	-	-	-	0.23
Light-Duty Diesel Vehicles	2	0.00	0.00	0.00	0.06	-	-	-	-	3
Light-Duty Diesel Trucks	15	0.00	0.01	0.00	0.35	-	-	-	-	15
Heavy-Duty Diesel Vehicles	467	0.02	0.50	0.03	8	-	-	-	-	475
Propane and Natural Gas Vehicles	-	-	-	-	-	-	-	-	-	-
Railways	12	0.00	0.02	0.01	1	-	-	-	-	14
Marine	10	0.00	0.02	0.00	0.08	-	-	-	-	10
Other Transportation	91	0.02	0.55	0.00	1	-	-	-	-	93
Off-Road Agriculture and Forestry	0.45	0.00	0.00	0.00	0.01	-	-	-	-	0.46
Off-Road Commercial and Institutional	0.66	0.00	0.02	0.00	0.01	-	-	-	-	0.68
Off-Road Manufacturing, Mining and Construction	77	0.00	0.09	0.00	1	-	-	-	-	78
Off-Road Residential	2	0.00	0.07	0.00	0.02	-	-	-	-	2
Off-Road Other Transportation	11	0.02	0.37	0.00	0.10	-	-	-	-	12
Pipeline Transport	0.27	0.00	0.00	0.00	0.00	-	-	-	-	0.27
c. Fugitive Sources	**6**	**0.30**	**8**	**0.00**	**0.00**	**-**	**-**	**-**	**-**	**14**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	6	0.30	8	0.00	0.00	-	-	-	-	14
Oil	0.01	0.07	2	-	-	-	-	-	-	2
Natural Gas	0.00	0.20	5	-	-	-	-	-	-	5
Venting	0.00	0.02	0.57	-	-	-	-	-	-	0.57
Flaring	6	0.01	0.28	0.00	0.00	-	-	-	-	7
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[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**-**	**-**	**-**	**-**	**26**	**0.01**	**-**	**-**	**26**
e. Non-Energy Products from Fuels and Solvent Use	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**
f. Other Product Manufacture and Use	**0.29**	**-**	**-**	**0.00**	**0.62**	**-**	**-**	**-**	**-**	**0.91**
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**	**2**	**40**	**0.00**	**0.70**	**-**	**-**	**-**	**-**	**40**
a. Solid Waste Disposal (Landfills)	**-**	**2**	**37**	**-**	**-**	**-**	**-**	**-**	**-**	**37**
b. Biological Treatment of Solid Waste	**-**	**0.00**	**0.05**	**0.00**	**0.07**	**-**	**-**	**-**	**-**	**0.10**
c. Wastewater Treatment and Discharge	**-**	**0.10**	**3**	**0.00**	**0.60**	**-**	**-**	**-**	**-**	**3**
d. Incineration and Open Burning of Waste	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**-**	**-**	**-**	**-**	**0.01**
e. Industrial Wood Waste Landfills	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

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Provincial/Territorial GHG emissions allocated to Canadian economic sectors are provided in Annex 12 of this report.
a. 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.
b. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
c. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial/territorial tables.
d. 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.
0.00 Indicates emissions were truncated due to rounding.
- Indicates no emissions.
x Indicates data has been suppressed to respect confidentiality.

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

Greenhouse Gas Categories	1999	2005	2014	2015	2016	2017	2018	2019
	kt CO_2 eq							
TOTAL	**415**	**584**	**696**	**637**	**742**	**748**	**747**	**733**
ENERGY	**388**	**551**	**656**	**596**	**699**	**702**	**697**	**680**
a. Stationary Combustion Sources	**104**	**128**	**118**	**113**	**135**	**137**	**169**	**167**
Public Electricity and Heat Production	17	x	x	x	x	x	x	x
Petroleum Refining Industries	-	-	-	-	-	-	-	-
Oil and Gas Extraction	-	-	-	-	-	-	-	-
Mining	87	0.26	-	-	-	-	5	5
Manufacturing Industries	-	x	x	x	x	x	x	x
Construction	-	-	-	-	-	-	-	-
Commercial and Institutional	-	x	-	-	-	-	-	-
Residential	-	-	-	-	-	-	-	-
Agriculture and Forestry	-	-	-	-	-	-	-	-
b. Transport[a]	**284**	**424**	**538**	**483**	**564**	**565**	**529**	**514**
Aviation	112	141	148	143	129	147	171	168
Road Transportation	19	94	202	163	236	243	207	191
Light-Duty Gasoline Vehicles	3	2	2	2	2	2	2	2
Light-Duty Gasoline Trucks	5	18	29	28	36	36	31	32
Heavy-Duty Gasoline Vehicles	3	4	8	8	11	12	11	11
Motorcycles	0.01	0.02	0.05	0.04	0.05	0.05	0.04	0.04
Light-Duty Diesel Vehicles	0.07	0.03	0.16	0.10	0.14	0.13	0.09	0.09
Light-Duty Diesel Trucks	-	1	4	3	4	4	3	3
Heavy-Duty Diesel Vehicles	8	69	159	122	183	190	160	144
Propane and Natural Gas Vehicles	0.86	-	-	-	-	-	-	-
Railways	-	-	-	-	-	-	-	-
Marine	137	127	108	113	124	120	115	124
Other Transportation	16	62	80	64	74	55	35	30
Off-Road Agriculture and Forestry	-	-	-	-	-	-	-	-
Off-Road Commercial and Institutional	2	7	8	7	1	0.89	0.61	0.56
Off-Road Manufacturing, Mining and Construction	10	45	54	42	54	36	22	19
Off-Road Residential	0.62	3	4	4	3	2	2	2
Off-Road Other Transportation	4	8	13	12	15	16	11	9
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**	**14**	**14**	**15**	**16**	**19**	**20**
a. Mineral Products	**0.01**	**0.15**	**0.05**	**0.04**	**0.04**	**0.02**	**0.03**	**0.02**
Cement Production	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-
Mineral Products Use	0.01	0.15	0.05	0.04	0.04	0.02	0.03	0.02
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[c]	**2**	**6**	**13**	**14**	**14**	**16**	**18**	**19**
e. Non-Energy Products from Fuels and Solvent Use	**0.03**	**0.09**	**0.12**	**0.07**	**0.08**	**0.08**	**0.13**	**0.09**
f. Other Product Manufacture and Use	**0.34**	**0.36**	**0.39**	**0.41**	**0.51**	**0.61**	**0.64**	**0.62**
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	**24**	**26**	**26**	**27**	**28**	**30**	**31**	**32**
a. Solid Waste Disposal (Landfills)	**22**	**24**	**25**	**25**	**27**	**28**	**29**	**31**
b. Biological Treatment of Solid Waste	**-**	**-**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
c. Wastewater Treatment and Discharge	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**
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:

Estimates for the latest year (2019) 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.

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 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.

0.00 Indicates emissions were truncated due to rounding.

- Indicates no emissions.

x Indicates data has been suppressed to respect confidentiality.

Table A11–27 **2019 GHG Emission Summary for Nunavut**

Greenhouse Gas Categories	Greenhouse Gases									
	CO_2	CH_4	CH_4	N_2O	N_2O	HFCs[a]	PFCs[a]	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	**673**	**1**	**33**	**0.02**	**7**	**19**	**0.00**	**-**	**-**	**733**
ENERGY	**673**	**0.05**	**1**	**0.02**	**6**	**-**	**-**	**-**	**-**	**680**
a. Stationary Combustion Sources	**166**	**0.01**	**0.10**	**0.00**	**0.40**	**-**	**-**	**-**	**-**	**167**
Public Electricity and Heat Production	x	x	x	x	x	x	x	x	x	x
Petroleum Refining Industries	-	-	-	-	-	-	-	-	-	-
Oil and Gas Extraction	-	-	-	-	-	-	-	-	-	-
Mining	5	0.00	0.00	0.00	0.02	-	-	-	-	5
Manufacturing Industries	x	x	x	x	x	x	x	x	x	x
Construction	-	-	-	-	-	-	-	-	-	-
Commercial and Institutional	-	-	-	-	-	-	-	-	-	-
Residential	-	-	-	-	-	-	-	-	-	-
Agriculture and Forestry	-	-	-	-	-	-	-	-	-	-
b. Transport[b]	**507**	**0.04**	**1**	**0.02**	**6**	**-**	**-**	**-**	**-**	**514**
Aviation	166	0.00	0.09	0.01	1	-	-	-	-	168
Road Transportation	188	0.01	0.20	0.01	3	-	-	-	-	191
Light-Duty Gasoline Vehicles	2	0.00	0.00	0.00	0.02	-	-	-	-	2
Light-Duty Gasoline Trucks	32	0.00	0.06	0.00	0.30	-	-	-	-	32
Heavy-Duty Gasoline Vehicles	10	0.00	0.01	0.00	0.26	-	-	-	-	11
Motorcycles	0.04	0.00	0.00	0.00	0.00	-	-	-	-	0.04
Light-Duty Diesel Vehicles	0.08	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	141	0.01	0.10	0.01	2	-	-	-	-	144
Propane and Natural Gas Vehicles	-	-	-	-	-	-	-	-	-	-
Railways	-	-	-	-	-	-	-	-	-	-
Marine	123	0.01	0.28	0.00	1	-	-	-	-	124
Other Transportation	30	0.02	0.52	0.00	0.40	-	-	-	-	30
Off-Road Agriculture and Forestry	-	-	-	-	-	-	-	-	-	-
Off-Road Commercial and Institutional	0.53	0.00	0.02	0.00	0.01	-	-	-	-	0.56
Off-Road Manufacturing, Mining and Construction	19	0.00	0.03	0.00	0.30	-	-	-	-	19
Off-Road Residential	1	0.00	0.06	0.00	0.01	-	-	-	-	2
Off-Road Other Transportation	9	0.02	0.41	0.00	0.09	-	-	-	-	9
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	**0.19**	**-**	**-**	**0.00**	**0.53**	**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[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
Aluminium Production	-	-	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**-**	**-**	**-**	**-**	**19**	**0.00**	**-**	**-**	**19**
e. Non-Energy Products from Fuels and Solvent Use	**0.09**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.09**
f. Other Product Manufacture and Use	**0.09**	**-**	**-**	**0.00**	**0.53**	**-**	**-**	**-**	**-**	**0.62**
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**	**1**	**32**	**0.00**	**0.50**	**-**	**-**	**-**	**-**	**32**
a. Solid Waste Disposal (Landfills)	**-**	**1**	**31**	**-**	**-**	**-**	**-**	**-**	**-**	**31**
b. Biological Treatment of Solid Waste	**-**	**0.00**	**0.00**	**0.00**	**0.00**	**-**	**-**	**-**	**-**	**0.00**
c. Wastewater Treatment and Discharge	**-**	**0.04**	**1**	**0.00**	**0.50**	**-**	**-**	**-**	**-**	**2**
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:
Estimates for the latest year (2019) 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.
a. 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.
b. Emissions from ethanol and biodiesel are included in the Transport categories using gasoline and diesel respectively.
c. Emissions from Ammonia Production, Nitric Acid Production and Petrochemical Production categories are included in Non-Energy Products from Fuels and Solvent Use as CO_2 eq values within provincial/territorial tables.
d. 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.
0.00 Indicates emissions were truncated due to rounding.
- Indicates no emissions.
x Indicates data has been suppressed to respect confidentiality.

Table A11–28 GHG Emission Summary for Northwest Territories and Nunavut, 1990–1998

Greenhouse Gas Categories	1990	1991	1992	1993	1994	1995	1996	1997	1998
	kt CO_2 eq								
TOTAL	**1 790**	**1 760**	**1 580**	**1 880**	**2 040**	**2 110**	**2 120**	**1 940**	**1 760**
ENERGY	**1 740**	**1 700**	**1 520**	**1 800**	**1 890**	**1 960**	**2 060**	**1 870**	**1 690**
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]	**725**	**611**	**586**	**759**	**815**	**750**	**976**	**891**	**952**
Aviation	257	228	232	265	265	243	266	257	242
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
Marine	113	123	133	143	153	164	163	162	160
Other Transportation	180	129	104	179	211	186	309	243	274
Off-Road Agriculture and Forestry	0.38	0.26	0.20	0.37	0.45	0.40	0.70	0.56	0.75
Off-Road Commercial and Institutional	12	9	7	12	15	13	23	18	23
Off-Road Manufacturing, Mining and 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	-	-	-	-	-	-	-	-	-
Aluminium 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	**44**	**46**	**48**	**50**	**52**	**54**	**56**	**58**	**60**
a. Solid Waste Disposal (Landfills)	**40**	**42**	**44**	**46**	**48**	**50**	**52**	**53**	**55**
b. Biological Treatment of Solid Waste	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
c. Wastewater Treatment and Discharge	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**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:

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

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 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.

0.00 Indicates emissions were truncated due to rounding.

- Indicates no emissions.

x Indicates data has been suppressed to respect confidentiality.

ANNEX 12

PROVINCIAL/ TERRITORIAL GREENHOUSE GAS EMISSION TABLES BY CANADIAN ECONOMIC SECTOR, 1990–2019

This annex contains summary tables (Table A12–2 to Table A12–15) illustrating GHG emissions by province/ territory, allocated to Canadian economic sectors, from 1990–2019. To account for the creation of Nunavut in 1999, a time series from 1999–2019 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.
TRANSPORT	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 8500 lb. GVWR and motorcycles.
Bus, Rail and Aviation	All buses and the passenger component of rail and 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 8500 lb. GVWR and the freight component of rail.
Aviation and Marine	Cargo component of aviation and all domestic navigation (inclusive of all fishing and military operations).
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 and Gypsum	– lime and gypsum product manufacturing
Chemicals and 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 other treatment 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 AND 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	2014	2015	2016	2017	2018	2019
	Mt CO_2 eq							
GHG TOTAL	**9.5**	**10.5**	**10.9**	**11.0**	**11.2**	**11.1**	**10.9**	**11.1**
OIL AND GAS	**1.1**	**2.6**	**2.6**	**2.6**	**2.8**	**2.8**	**2.8**	**2.8**
Upstream Oil and Gas	0.0	1.6	1.7	1.5	1.7	1.8	1.9	1.8
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	1.7	1.5	1.7	1.8	1.9	1.8
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	1.7	1.5	1.7	1.8	1.9	1.8
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	0.9	1.0	1.2	1.0	1.0	1.0
Petroleum Refining	1.1	1.0	0.9	1.0	1.2	1.0	1.0	1.0
Natural Gas Distribution	-	-	-	-	-	-	-	-
ELECTRICITY	**1.6**	**0.8**	**1.2**	**1.3**	**1.5**	**1.5**	**1.1**	**1.1**
TRANSPORT	**2.9**	**3.6**	**4.1**	**4.2**	**4.2**	**4.1**	**4.2**	**4.3**
Passenger Transport	1.3	1.6	2.1	2.2	2.2	2.2	2.2	2.1
Cars, Light Trucks and Motorcycles	1.1	1.3	1.8	1.9	1.9	1.9	1.8	1.8
Bus, Rail and Aviation	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Freight Transport	1.2	1.8	1.8	1.8	1.9	1.8	1.9	2.0
Heavy Duty Trucks, Rail	0.4	0.8	1.1	1.2	1.3	1.1	1.2	1.2
Aviation and Marine	0.8	1.0	0.7	0.6	0.6	0.6	0.7	0.8
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**	**0.9**	**0.8**	**0.5**	**0.6**	**0.7**	**0.8**
Mining	1.3	1.3	0.8	0.8	0.4	0.5	0.6	0.7
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	0.1	0.0	0.0
Iron and Steel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cement	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lime and Gypsum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chemicals and Fertilizers	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BUILDINGS	**1.1**	**0.8**	**1.1**	**1.0**	**1.0**	**1.1**	**0.9**	**0.9**
Service Industry	0.3	0.4	0.7	0.7	0.7	0.6	0.4	0.5
Residential	0.7	0.4	0.4	0.3	0.4	0.5	0.5	0.4
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**	**0.8**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**
Solid Waste[a]	0.7	0.8	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	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
LIGHT MANUFACTURING, CONSTRUCTION AND FOREST RESOURCES	**0.2**	**0.2**	**0.2**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**
Light Manufacturing	0.1	0.0	0.1	0.1	0.1	0.0	0.0	0.1
Construction	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.2
Forest Resources	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Notes:

Totals may not add up due to rounding.

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.

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.

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

0.0 Indicates emissions of less than 0.05 Mt CO_2 eq were truncated due to rounding.

- Indicates no emissions

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

	1990	2005	2014	2015	2016	2017	2018	2019
	Mt CO_2 eq							
GHG TOTAL	**1.9**	**2.0**	**1.7**	**1.7**	**1.7**	**1.7**	**1.7**	**1.8**
OIL AND GAS	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Upstream Oil and Gas	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Natural Gas Production and Processing	-	-	-	-	-	-	-	-
Conventional Oil Production	-	-	-	-	-	-	-	-
Conventional Light Oil Production	-	-	-	-	-	-	-	-
Conventional Heavy Oil Production	-	-	-	-	-	-	-	-
Frontier Oil Production	-	-	-	-	-	-	-	-
Oil Sands (Mining, In-situ, Upgrading)	-	-	-	-	-	-	-	-
Mining and Extraction	-	-	-	-	-	-	-	-
In-situ	-	-	-	-	-	-	-	-
Upgrading	-	-	-	-	-	-	-	-
Oil, 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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Natural Gas Distribution	-	-	-	-	-	-	-	-
ELECTRICITY	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
TRANSPORT	**0.6**	**0.7**	**0.7**	**0.7**	**0.8**	**0.8**	**0.8**	**0.8**
Passenger Transport	**0.4**	**0.5**	**0.4**	**0.4**	**0.5**	**0.5**	**0.5**	**0.5**
Cars, Light Trucks and Motorcycles	0.4	0.5	0.4	0.4	0.5	0.5	0.5	0.5
Bus, Rail and Aviation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Freight Transport	**0.1**	**0.2**	**0.2**	**0.3**	**0.3**	**0.2**	**0.3**	**0.3**
Heavy Duty Trucks, Rail	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Aviation and Marine	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
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 and Gypsum	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**-**	**-**
Chemicals and Fertilizers	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
BUILDINGS	**0.6**	**0.5**	**0.4**	**0.3**	**0.3**	**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**	**0.2**	**0.2**	**0.2**	**0.2**	**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**	**0.2**	**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[a]	**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 AND 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**	**0.1**
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.

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.

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.

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

0.0 Indicates emissions of less than 0.05 Mt CO_2 eq were truncated due to rounding.

- Indicates no emissions

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

	1990	2005	2014	2015	2016	2017	2018	2019
	Mt CO_2 eq							
GHG TOTAL	**19.6**	**23.2**	**16.6**	**16.7**	**15.6**	**16.2**	**16.8**	**16.2**
OIL AND GAS	**0.7**	**1.5**	**0.8**	**0.6**	**0.5**	**0.3**	**0.2**	**0.0**
Upstream Oil and Gas	**0.0**	**0.4**	**0.8**	**0.6**	**0.5**	**0.3**	**0.2**	**0.0**
Natural Gas Production and Processing	0.0	0.4	0.8	0.6	0.5	0.3	0.2	0.0
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**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Petroleum Refining	0.7	1.1	-	0.0	0.0	0.0	0.0	0.0
Natural Gas Distribution	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ELECTRICITY	**6.9**	**10.8**	**7.2**	**7.0**	**6.4**	**6.7**	**7.0**	**6.7**
TRANSPORT	**4.5**	**5.4**	**4.5**	**5.0**	**4.9**	**5.2**	**5.5**	**5.4**
Passenger Transport	**2.5**	**2.9**	**2.4**	**2.9**	**3.0**	**3.1**	**3.1**	**3.1**
Cars, Light Trucks and Motorcycles	2.3	2.6	2.1	2.6	2.7	2.8	2.8	2.8
Bus, Rail and Aviation	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Freight Transport	**1.4**	**2.2**	**1.8**	**1.8**	**1.7**	**1.9**	**2.0**	**2.0**
Heavy Duty Trucks, Rail	0.9	1.6	1.4	1.4	1.4	1.5	1.5	1.5
Aviation and Marine	0.6	0.7	0.4	0.4	0.3	0.4	0.5	0.5
Other: Recreational, Commercial and Residential	**0.5**	**0.3**	**0.2**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**
HEAVY INDUSTRY	**1.0**	**0.8**	**0.5**	**0.5**	**0.5**	**0.4**	**0.4**	**0.4**
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**	**0.2**	**0.2**	**0.2**
Lime and Gypsum	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Chemicals and Fertilizers	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
BUILDINGS	**3.0**	**2.7**	**2.1**	**2.2**	**1.9**	**2.0**	**2.0**	**2.0**
Service Industry	**0.8**	**1.4**	**0.7**	**0.8**	**0.7**	**0.8**	**0.7**	**0.7**
Residential	**2.1**	**1.3**	**1.4**	**1.4**	**1.2**	**1.2**	**1.3**	**1.3**
AGRICULTURE	**0.6**	**0.6**	**0.5**	**0.5**	**0.4**	**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	**0.9**	**0.8**	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
Solid Waste[a]	**0.9**	**0.8**	**0.6**	**0.5**	**0.6**	**0.6**	**0.6**	**0.6**
Wastewater	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Waste Incineration	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
COAL PRODUCTION	**1.6**	**0.1**	**0.0**	**0.0**	**0.0**	**0.1**	**0.1**	**0.2**
LIGHT MANUFACTURING, CONSTRUCTION AND FOREST RESOURCES	**0.4**	**0.4**	**0.4**	**0.3**	**0.3**	**0.4**	**0.5**	**0.5**
Light Manufacturing	**0.2**	**0.2**	**0.3**	**0.2**	**0.2**	**0.2**	**0.3**	**0.3**
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.

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.

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.

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

0.0 Indicates emissions of less than 0.05 Mt CO_2 eq were truncated due to rounding.

- Indicates no emissions

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

	1990	2005	2014	2015	2016	2017	2018	2019
	Mt CO_2 eq							
GHG TOTAL	**16.3**	**20.0**	**13.5**	**13.7**	**14.4**	**13.3**	**13.1**	**12.4**
OIL AND GAS	**1.2**	**2.7**	**3.0**	**2.8**	**3.1**	**3.3**	**2.8**	**2.9**
Upstream Oil and Gas	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.1**	**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**	**2.9**	**2.8**	**3.0**	**3.2**	**2.8**	**2.8**
Petroleum Refining	1.2	2.7	2.9	2.8	3.0	3.2	2.8	2.8
Natural Gas Distribution	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ELECTRICITY	**6.0**	**7.8**	**3.4**	**3.4**	**3.6**	**3.0**	**3.1**	**2.8**
TRANSPORT	**3.7**	**4.7**	**3.6**	**3.8**	**4.2**	**3.8**	**3.7**	**3.6**
Passenger Transport	**1.6**	**2.3**	**1.8**	**2.1**	**2.4**	**2.2**	**2.2**	**2.1**
Cars, Light Trucks and Motorcycles	1.5	2.1	1.7	2.0	2.3	2.0	2.0	2.0
Bus, Rail and Aviation	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1
Freight Transport	**1.1**	**2.0**	**1.5**	**1.4**	**1.4**	**1.3**	**1.3**	**1.3**
Heavy Duty Trucks, Rail	0.9	1.8	1.4	1.3	1.3	1.1	1.1	1.1
Aviation and Marine	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.2
Other: Recreational, Commercial and Residential	**1.0**	**0.5**	**0.2**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**
HEAVY INDUSTRY	**1.8**	**1.2**	**0.7**	**0.7**	**0.8**	**0.8**	**0.8**	**0.6**
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**	**0.0**
Pulp and Paper	**1.3**	**0.7**	**0.4**	**0.4**	**0.4**	**0.3**	**0.4**	**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 and Gypsum	**0.1**	**0.1**	**0.0**	**0.0**	**0.1**	**0.1**	**0.1**	**0.1**
Chemicals and Fertilizers	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
BUILDINGS	**1.7**	**1.4**	**1.3**	**1.4**	**1.2**	**1.1**	**1.1**	**1.1**
Service Industry	**0.6**	**0.7**	**0.6**	**0.6**	**0.5**	**0.4**	**0.5**	**0.5**
Residential	**1.1**	**0.8**	**0.7**	**0.8**	**0.7**	**0.7**	**0.7**	**0.6**
AGRICULTURE	**0.6**	**0.6**	**0.6**	**0.5**	**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**	**0.2**	**0.2**	**0.2**	**0.3**	**0.2**
WASTE	**0.8**	**0.9**	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
Solid Waste[a]	**0.8**	**0.9**	**0.6**	**0.6**	**0.5**	**0.5**	**0.5**	**0.5**
Wastewater	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Waste Incineration	**-**	**0.0**	**0.0**	**0.0**	**0.0**	**-**	**-**	**-**
COAL PRODUCTION	**0.0**	**0.0**	**-**	**-**	**-**	**-**	**-**	**-**
LIGHT MANUFACTURING, CONSTRUCTION AND FOREST RESOURCES	**0.4**	**0.5**	**0.3**	**0.3**	**0.3**	**0.3**	**0.4**	**0.3**
Light Manufacturing	**0.2**	**0.4**	**0.2**	**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.

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.

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.

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

0.0 Indicates emissions of less than 0.05 Mt CO_2 eq were truncated due to rounding.

- Indicates no emissions

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

	1990	2005	2014	2015	2016	2017	2018	2019
	Mt CO_2 eq							
GHG TOTAL	**86.4**	**87.6**	**79.2**	**79.1**	**79.0**	**81.2**	**82.5**	**83.7**
OIL AND GAS	**3.9**	**4.4**	**2.5**	**2.6**	**2.3**	**1.9**	**2.4**	**2.2**
Upstream Oil and Gas	**0.2**	**0.3**	**0.3**	**0.3**	**0.2**	**0.1**	**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	0.2	0.1	0.1	0.1
Downstream Oil and Gas	**3.7**	**4.1**	**2.2**	**2.3**	**2.1**	**1.8**	**2.3**	**2.1**
Petroleum Refining	3.6	4.0	2.1	2.2	2.1	1.8	2.2	2.1
Natural Gas Distribution	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
ELECTRICITY	**1.5**	**0.7**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**
TRANSPORT	**24.2**	**31.0**	**30.8**	**31.1**	**31.8**	**33.4**	**33.5**	**34.2**
Passenger Transport	**15.6**	**19.3**	**18.1**	**18.5**	**18.8**	**19.6**	**19.5**	**20.0**
Cars, Light Trucks and Motorcycles	14.6	18.2	17.0	17.4	17.7	18.3	18.2	18.6
Bus, Rail and Aviation	1.0	1.1	1.1	1.1	1.2	1.2	1.3	1.3
Freight Transport	**4.9**	**9.8**	**11.1**	**11.0**	**11.2**	**11.8**	**11.9**	**12.1**
Heavy Duty Trucks, Rail	4.0	8.7	10.2	10.1	10.3	10.8	10.8	10.9
Aviation and Marine	0.9	1.1	0.9	0.9	0.9	1.0	1.1	1.3
Other: Recreational, Commercial and Residential	**3.7**	**1.8**	**1.6**	**1.7**	**1.8**	**2.0**	**2.1**	**2.1**
HEAVY INDUSTRY	**25.0**	**19.6**	**17.4**	**16.5**	**15.3**	**16.5**	**16.6**	**16.7**
Mining	**2.1**	**1.5**	**1.7**	**1.6**	**1.6**	**1.7**	**2.4**	**2.4**
Smelting and Refining (Non-Ferrous Metals)	**12.9**	**9.8**	**7.3**	**7.4**	**7.3**	**7.4**	**6.6**	**6.4**
Pulp and Paper	**4.5**	**2.8**	**1.2**	**1.3**	**1.4**	**1.5**	**1.6**	**1.6**
Iron and Steel	**1.2**	**0.9**	**2.2**	**1.2**	**1.1**	**1.2**	**1.2**	**1.1**
Cement	**2.5**	**2.5**	**2.2**	**2.3**	**2.2**	**2.7**	**2.7**	**3.3**
Lime and Gypsum	**0.5**	**0.9**	**0.8**	**0.7**	**0.6**	**0.8**	**0.7**	**0.6**
Chemicals and Fertilizers	**1.2**	**1.2**	**2.0**	**2.0**	**1.1**	**1.2**	**1.3**	**1.3**
BUILDINGS	**11.7**	**12.4**	**9.8**	**9.9**	**10.0**	**10.1**	**10.1**	**10.5**
Service Industry	**4.6**	**6.5**	**6.0**	**6.2**	**6.2**	**6.7**	**6.5**	**6.7**
Residential	**7.1**	**5.9**	**3.8**	**3.7**	**3.8**	**3.4**	**3.6**	**3.8**
AGRICULTURE	**8.1**	**8.5**	**8.6**	**8.8**	**9.0**	**8.5**	**9.0**	**8.8**
On Farm Fuel Use	**1.1**	**0.9**	**0.9**	**1.0**	**0.9**	**0.9**	**0.9**	**0.9**
Crop Production	**1.8**	**1.9**	**2.5**	**2.7**	**2.8**	**2.3**	**2.9**	**2.6**
Animal Production	**5.1**	**5.7**	**5.2**	**5.2**	**5.3**	**5.3**	**5.3**	**5.3**
WASTE	**6.7**	**7.1**	**5.5**	**5.8**	**6.3**	**6.4**	**6.5**	**6.7**
Solid Waste[a]	**6.4**	**6.7**	**5.3**	**5.6**	**6.0**	**6.2**	**6.3**	**6.4**
Wastewater	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**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 AND FOREST RESOURCES	**5.3**	**4.1**	**4.2**	**3.9**	**4.0**	**4.1**	**4.0**	**4.2**
Light Manufacturing	**3.7**	**2.9**	**3.0**	**2.7**	**2.6**	**2.6**	**2.5**	**2.7**
Construction	**1.4**	**1.0**	**1.0**	**1.0**	**1.1**	**1.3**	**1.2**	**1.2**
Forest Resources	**0.2**	**0.2**	**0.2**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**

Notes:

Totals may not add up due to rounding.

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.

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.

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

0.0 Indicates emissions of less than 0.05 Mt CO_2 eq were truncated due to rounding.

- Indicates no emissions

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

	1990	2005	2014	2015	2016	2017	2018	2019
	Mt CO_2 eq							
GHG TOTAL	**180.0**	**205.7**	**163.9**	**162.9**	**161.2**	**157.6**	**163.4**	**163.2**
OIL AND GAS	**10.3**	**11.7**	**10.1**	**9.6**	**9.0**	**7.3**	**7.6**	**7.6**
Upstream Oil and Gas	**3.3**	**3.9**	**2.3**	**2.3**	**1.9**	**1.6**	**1.8**	**1.7**
Natural Gas Production and Processing	0.3	0.4	0.2	0.2	0.2	0.1	0.2	0.2
Conventional Oil Production	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Conventional Light Oil Production	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Conventional Heavy Oil Production	-	-	-	-	-	-	-	-
Frontier Oil Production	-	-	-	-	-	-	-	-
Oil Sands (Mining, In-situ, Upgrading)	-	-	-	-	-	-	-	-
Mining and Extraction	-	-	-	-	-	-	-	-
In-situ	-	-	-	-	-	-	-	-
Upgrading	-	-	-	-	-	-	-	-
Oil, Natural Gas and CO_2 Transmission	3.0	3.6	2.1	2.1	1.7	1.5	1.6	1.5
Downstream Oil and Gas	**7.0**	**7.8**	**7.8**	**7.3**	**7.1**	**5.7**	**5.8**	**5.9**
Petroleum Refining	6.6	7.2	7.2	6.7	6.5	5.2	5.3	5.3
Natural Gas Distribution	0.4	0.6	0.5	0.5	0.6	0.5	0.5	0.5
ELECTRICITY	**26.0**	**34.0**	**5.0**	**5.4**	**4.8**	**2.2**	**3.4**	**3.3**
TRANSPORT	**41.0**	**56.5**	**53.5**	**54.4**	**54.7**	**55.5**	**57.5**	**58.1**
Passenger Transport	**26.4**	**35.8**	**33.0**	**33.7**	**34.4**	**34.3**	**35.5**	**36.2**
Cars, Light Trucks and Motorcycles	24.1	33.3	30.4	31.1	31.7	31.6	32.6	33.3
Bus, Rail and Aviation	2.2	2.5	2.6	2.7	2.6	2.7	2.9	2.9
Freight Transport	**7.7**	**16.8**	**17.3**	**17.5**	**17.1**	**17.6**	**18.4**	**18.3**
Heavy Duty Trucks, Rail	7.0	16.2	16.7	16.9	16.5	17.0	17.7	17.6
Aviation and Marine	0.7	0.6	0.6	0.6	0.6	0.6	0.7	0.7
Other: Recreational, Commercial and Residential	**7.0**	**3.9**	**3.2**	**3.2**	**3.3**	**3.5**	**3.6**	**3.6**
HEAVY INDUSTRY	**43.2**	**35.2**	**30.5**	**29.4**	**30.5**	**28.5**	**28.7**	**28.1**
Mining	**1.0**	**0.9**	**1.3**	**1.2**	**1.3**	**1.3**	**1.2**	**1.2**
Smelting and Refining (Non-Ferrous Metals)	**1.5**	**1.9**	**0.8**	**0.7**	**0.9**	**1.0**	**0.9**	**1.1**
Pulp and Paper	**3.2**	**2.0**	**1.8**	**1.6**	**1.5**	**1.5**	**1.5**	**1.7**
Iron and Steel	**15.0**	**15.1**	**13.6**	**12.9**	**13.6**	**13.3**	**14.0**	**13.2**
Cement	**4.6**	**6.4**	**4.4**	**4.2**	**4.1**	**4.4**	**4.3**	**4.3**
Lime and Gypsum	**1.8**	**1.7**	**1.2**	**1.2**	**1.2**	**1.3**	**1.3**	**1.3**
Chemicals and Fertilizers	**16.2**	**7.1**	**7.4**	**7.6**	**7.8**	**5.7**	**5.5**	**5.4**
BUILDINGS	**27.1**	**35.8**	**36.8**	**36.2**	**34.8**	**36.2**	**38.2**	**38.6**
Service Industry	**9.8**	**15.4**	**16.8**	**16.1**	**15.9**	**16.5**	**17.3**	**17.9**
Residential	**17.3**	**20.4**	**20.0**	**20.1**	**18.9**	**19.7**	**20.9**	**20.7**
AGRICULTURE	**12.4**	**12.4**	**12.2**	**12.0**	**12.4**	**12.3**	**12.4**	**12.1**
On Farm Fuel Use	**2.1**	**2.3**	**2.5**	**2.5**	**2.5**	**2.3**	**2.4**	**2.5**
Crop Production	**3.1**	**2.8**	**3.6**	**3.4**	**3.8**	**3.8**	**3.7**	**3.4**
Animal Production	**7.2**	**7.3**	**6.1**	**6.2**	**6.2**	**6.2**	**6.2**	**6.3**
WASTE	**7.7**	**9.0**	**7.1**	**7.0**	**6.6**	**6.6**	**6.6**	**6.7**
Solid Waste[a]	**7.4**	**8.6**	**6.7**	**6.5**	**6.1**	**6.1**	**6.2**	**6.3**
Wastewater	**0.2**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.4**
Waste Incineration	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
COAL PRODUCTION	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
LIGHT MANUFACTURING, CONSTRUCTION AND FOREST RESOURCES	**12.4**	**11.1**	**8.6**	**8.9**	**8.4**	**9.0**	**9.1**	**8.7**
Light Manufacturing	**9.8**	**8.0**	**6.4**	**6.4**	**6.1**	**6.3**	**6.2**	**6.0**
Construction	**2.5**	**2.9**	**2.2**	**2.5**	**2.2**	**2.5**	**2.7**	**2.6**
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.

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.

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.

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

0.0 Indicates emissions of less than 0.05 Mt CO_2 eq were truncated due to rounding.

- Indicates no emissions

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

	1990	2005	2014	2015	2016	2017	2018	2019
	Mt CO_2 eq							
GHG TOTAL	**18.6**	**20.6**	**21.5**	**21.2**	**21.5**	**22.2**	**23.0**	**22.6**
OIL AND GAS	**1.3**	**0.8**	**0.7**	**0.7**	**0.6**	**0.5**	**0.7**	**0.7**
Upstream Oil and Gas	**1.3**	**0.8**	**0.7**	**0.7**	**0.6**	**0.5**	**0.7**	**0.6**
Natural Gas Production and Processing	-	-	-	-	-	-	-	-
Conventional Oil Production	0.1	0.2	0.4	0.4	0.4	0.3	0.4	0.4
Conventional Light Oil Production	0.1	0.2	0.4	0.4	0.4	0.3	0.4	0.4
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	0.3	0.3	0.3	0.2	0.3	0.3
Downstream Oil and Gas	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Petroleum Refining	0.0	-	-	-	-	-	0.0	0.0
Natural Gas Distribution	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ELECTRICITY	**0.5**	**0.4**	**0.1**	**0.1**	**0.1**	**0.1**	**0.0**	**0.0**
TRANSPORT	**5.0**	**5.4**	**7.2**	**6.8**	**7.1**	**7.4**	**7.9**	**7.8**
Passenger Transport	**2.9**	**3.3**	**3.9**	**3.8**	**3.8**	**3.8**	**4.1**	**4.1**
Cars, Light Trucks and Motorcycles	2.5	2.8	3.4	3.3	3.4	3.3	3.5	3.5
Bus, Rail and Aviation	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Freight Transport	**1.4**	**1.8**	**2.9**	**2.7**	**2.9**	**3.3**	**3.5**	**3.4**
Heavy Duty Trucks, Rail	1.3	1.7	2.8	2.7	2.9	3.2	3.4	3.3
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**	**0.4**	**0.3**
HEAVY INDUSTRY	**1.3**	**1.6**	**1.2**	**1.3**	**1.3**	**1.3**	**1.3**	**1.2**
Mining	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.2**	**0.2**
Smelting and Refining (Non-Ferrous Metals)	**0.3**	**0.2**	**0.1**	**0.0**	**0.0**	**0.1**	**0.0**	**0.0**
Pulp and Paper	**0.2**	**0.2**	**0.1**	**0.0**	**0.1**	**0.0**	**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 and Gypsum	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Chemicals and Fertilizers	**0.3**	**0.9**	**0.8**	**0.9**	**1.0**	**0.8**	**0.9**	**0.8**
BUILDINGS	**3.1**	**2.7**	**2.9**	**2.6**	**2.6**	**2.8**	**3.1**	**3.1**
Service Industry	**1.4**	**1.6**	**1.7**	**1.6**	**1.5**	**1.7**	**1.8**	**1.8**
Residential	**1.6**	**1.1**	**1.2**	**1.0**	**1.0**	**1.2**	**1.2**	**1.2**
AGRICULTURE	**5.8**	**7.7**	**7.1**	**7.3**	**7.4**	**7.6**	**7.7**	**7.6**
On Farm Fuel Use	**1.1**	**1.4**	**1.0**	**0.9**	**0.9**	**1.0**	**1.0**	**1.0**
Crop Production	**2.2**	**2.0**	**2.8**	**3.0**	**3.2**	**3.2**	**3.3**	**3.4**
Animal Production	**2.5**	**4.3**	**3.3**	**3.3**	**3.3**	**3.4**	**3.4**	**3.3**
WASTE	**1.0**	**1.4**	**1.4**	**1.4**	**1.3**	**1.3**	**1.3**	**1.4**
Solid Waste[a]	**0.9**	**1.3**	**1.3**	**1.3**	**1.3**	**1.3**	**1.3**	**1.3**
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 AND FOREST RESOURCES	**0.6**	**0.8**	**0.8**	**1.0**	**1.1**	**1.2**	**0.9**	**0.9**
Light Manufacturing	**0.4**	**0.5**	**0.6**	**0.8**	**0.8**	**0.9**	**0.6**	**0.6**
Construction	**0.2**	**0.3**	**0.2**	**0.2**	**0.3**	**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.

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.

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.

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

0.0 Indicates emissions of less than 0.05 Mt CO_2 eq were truncated due to rounding.

- Indicates no emissions

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

	1990	2005	2014	2015	2016	2017	2018	2019
	Mt CO_2 eq							
GHG TOTAL	**43.3**	**67.8**	**74.2**	**76.2**	**73.8**	**76.0**	**76.2**	**74.8**
OIL AND GAS	**10.3**	**24.1**	**24.1**	**24.6**	**22.5**	**22.2**	**21.0**	**20.1**
Upstream Oil and Gas	**9.2**	**23.0**	**22.7**	**23.1**	**21.0**	**20.7**	**19.6**	**18.6**
Natural Gas Production and Processing	2.1	3.4	3.1	3.0	3.2	3.3	3.2	3.2
Conventional Oil Production	4.7	14.6	14.6	15.5	13.2	13.6	12.3	11.3
Conventional Light Oil Production	1.4	3.2	6.7	7.4	6.8	8.0	7.7	7.3
Conventional Heavy Oil Production	3.3	11.4	7.8	8.0	6.3	5.7	4.5	4.0
Frontier Oil Production	-	-	-	-	-	-	-	-
Oil Sands (Mining, In-situ, Upgrading)	0.0	2.6	2.2	2.2	2.3	2.1	2.3	2.3
Mining and Extraction	-	-	-	-	-	-	-	-
In-situ	-	-	-	-	-	-	-	-
Upgrading	0.0	2.6	2.2	2.2	2.3	2.1	2.3	2.3
Oil, Natural Gas and CO_2 Transmission	2.4	2.3	2.8	2.5	2.3	1.7	1.8	1.8
Downstream Oil and Gas	**1.2**	**1.1**	**1.4**	**1.5**	**1.5**	**1.5**	**1.4**	**1.5**
Petroleum Refining	0.7	0.8	1.2	1.3	1.3	1.3	1.2	1.3
Natural Gas Distribution	0.5	0.2	0.2	0.2	0.2	0.2	0.2	0.2
ELECTRICITY	**11.1**	**14.3**	**13.8**	**14.7**	**14.6**	**15.2**	**14.8**	**14.7**
TRANSPORT	**5.3**	**6.2**	**10.2**	**10.7**	**10.7**	**11.3**	**11.5**	**11.3**
Passenger Transport	**3.0**	**3.4**	**4.6**	**5.0**	**5.2**	**5.1**	**5.1**	**5.0**
Cars, Light Trucks and Motorcycles	2.8	3.2	4.3	4.7	4.9	4.8	4.7	4.7
Bus, Rail and Aviation	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.3
Freight Transport	**1.6**	**2.5**	**5.2**	**5.2**	**5.1**	**5.7**	**6.1**	**6.0**
Heavy Duty Trucks, Rail	1.6	2.4	5.1	5.2	5.1	5.7	6.0	6.0
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**	**0.5**	**0.4**	**0.4**	**0.4**	**0.4**
HEAVY INDUSTRY	**1.6**	**2.2**	**3.3**	**3.4**	**3.2**	**3.6**	**4.5**	**4.3**
Mining	**1.0**	**1.3**	**2.6**	**2.6**	**2.5**	**2.8**	**3.3**	**3.2**
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**	**0.2**	**0.2**	**0.2**
Cement	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Lime and Gypsum	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Chemicals and Fertilizers	**0.2**	**0.6**	**0.5**	**0.6**	**0.6**	**0.6**	**0.9**	**0.9**
BUILDINGS	**3.1**	**3.3**	**3.3**	**3.1**	**3.2**	**3.6**	**3.9**	**4.1**
Service Industry	**1.0**	**1.7**	**1.4**	**1.4**	**1.5**	**1.7**	**1.9**	**1.9**
Residential	**2.1**	**1.6**	**1.9**	**1.7**	**1.7**	**1.8**	**2.0**	**2.1**
AGRICULTURE	**10.2**	**16.0**	**17.2**	**17.5**	**17.6**	**18.1**	**18.6**	**18.4**
On Farm Fuel Use	**2.4**	**3.5**	**4.8**	**4.7**	**4.5**	**4.9**	**5.3**	**5.1**
Crop Production	**3.5**	**4.6**	**6.4**	**6.8**	**7.1**	**7.2**	**7.4**	**7.4**
Animal Production	**4.3**	**7.9**	**6.0**	**5.9**	**6.0**	**6.0**	**6.0**	**5.9**
WASTE	**1.0**	**1.4**	**1.4**	**1.4**	**1.3**	**1.4**	**1.4**	**1.4**
Solid Waste[a]	**1.0**	**1.4**	**1.3**	**1.3**	**1.3**	**1.3**	**1.3**	**1.3**
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 AND FOREST RESOURCES	**0.6**	**0.4**	**0.9**	**0.8**	**0.7**	**0.6**	**0.6**	**0.6**
Light Manufacturing	**0.5**	**0.2**	**0.6**	**0.5**	**0.4**	**0.5**	**0.5**	**0.5**
Construction	**0.1**	**0.2**	**0.2**	**0.3**	**0.2**	**0.2**	**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.

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.

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.

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

0.0 Indicates emissions of less than 0.05 Mt CO_2 eq were truncated due to rounding.

- Indicates no emissions

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

	1990	2005	2014	2015	2016	2017	2018	2019
	Mt CO_2 eq							
GHG TOTAL	**171.8**	**235.5**	**278.1**	**278.4**	**263.8**	**271.0**	**272.5**	**275.8**
OIL AND GAS	**65.2**	**99.8**	**132.2**	**133.0**	**126.5**	**130.9**	**139.9**	**141.3**
Upstream Oil and Gas	**61.6**	**95.1**	**127.3**	**128.0**	**121.4**	**125.7**	**134.4**	**135.6**
Natural Gas Production and Processing	27.8	47.4	42.0	40.8	38.1	36.1	38.5	38.3
Conventional Oil Production	15.3	11.3	14.7	13.5	11.7	10.8	11.9	11.2
Conventional Light Oil Production	8.8	8.8	10.8	9.8	8.6	7.8	8.6	8.3
Conventional Heavy Oil Production	6.5	2.5	3.9	3.7	3.1	2.9	3.3	2.9
Frontier Oil Production	-	-	-	-	-	-	-	-
Oil Sands (Mining, In-situ, Upgrading)	14.6	32.4	67.4	70.2	67.2	74.2	79.0	80.8
Mining and Extraction	2.2	5.6	10.5	11.1	11.3	12.9	14.8	15.5
In-situ	4.1	12.2	34.9	37.7	37.2	40.9	42.9	42.7
Upgrading	8.4	14.6	22.1	21.4	18.8	20.5	21.4	22.7
Oil, Natural Gas and CO_2 Transmission	3.9	4.0	3.1	3.4	4.4	4.6	5.0	5.3
Downstream Oil and Gas	**3.6**	**4.7**	**4.9**	**5.0**	**5.2**	**5.3**	**5.5**	**5.7**
Petroleum Refining	3.2	4.4	4.7	4.8	5.0	5.1	5.3	5.5
Natural Gas Distribution	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2
ELECTRICITY	**39.8**	**47.7**	**44.3**	**46.3**	**41.6**	**42.4**	**31.3**	**31.0**
TRANSPORT	**17.0**	**25.1**	**34.5**	**32.1**	**30.6**	**32.3**	**33.4**	**34.2**
Passenger Transport	**9.1**	**10.6**	**12.5**	**12.1**	**12.5**	**12.8**	**13.1**	**13.5**
Cars, Light Trucks and Motorcycles	8.0	9.1	10.8	10.4	10.9	11.1	11.3	11.7
Bus, Rail and Aviation	1.1	1.4	1.7	1.7	1.6	1.7	1.8	1.8
Freight Transport	**5.8**	**13.3**	**20.8**	**19.0**	**17.1**	**18.6**	**19.3**	**19.7**
Heavy Duty Trucks, Rail	5.5	13.1	20.6	18.8	17.0	18.4	19.1	19.5
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**	**1.1**	**1.1**	**1.0**	**1.0**	**1.0**	**1.0**
HEAVY INDUSTRY	**12.6**	**17.7**	**18.8**	**18.7**	**17.2**	**16.8**	**17.3**	**18.1**
Mining	**0.2**	**0.3**	**0.5**	**0.5**	**0.4**	**0.3**	**0.3**	**0.2**
Smelting and Refining (Non-Ferrous Metals)	**0.4**	**0.6**	**0.7**	**1.1**	**0.8**	**0.8**	**0.8**	**1.4**
Pulp and Paper	**0.5**	**0.8**	**1.0**	**0.9**	**1.0**	**1.2**	**1.8**	**2.0**
Iron and Steel	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Cement	**1.2**	**1.8**	**1.4**	**1.5**	**1.5**	**1.7**	**1.8**	**1.7**
Lime and Gypsum	**0.2**	**0.3**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**
Chemicals and Fertilizers	**10.0**	**13.9**	**14.8**	**14.4**	**13.2**	**12.6**	**12.2**	**12.6**
BUILDINGS	**12.0**	**16.1**	**18.8**	**18.7**	**18.6**	**20.2**	**21.6**	**21.6**
Service Industry	**5.3**	**8.5**	**10.1**	**10.4**	**10.4**	**11.2**	**12.1**	**12.4**
Residential	**6.7**	**7.6**	**8.6**	**8.3**	**8.2**	**9.1**	**9.5**	**9.2**
AGRICULTURE	**16.6**	**22.7**	**21.5**	**21.3**	**20.8**	**20.2**	**20.8**	**21.0**
On Farm Fuel Use	**2.9**	**3.5**	**3.2**	**3.1**	**2.7**	**2.9**	**3.2**	**3.3**
Crop Production	**3.7**	**4.0**	**6.1**	**6.2**	**5.9**	**5.2**	**5.6**	**5.9**
Animal Production	**9.9**	**15.2**	**12.1**	**12.1**	**12.2**	**12.1**	**12.0**	**11.9**
WASTE	**2.4**	**3.8**	**4.6**	**4.6**	**4.8**	**4.9**	**5.0**	**5.2**
Solid Waste[a]	**2.3**	**3.6**	**4.4**	**4.5**	**4.6**	**4.7**	**4.9**	**5.0**
Wastewater	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Waste Incineration	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
COAL PRODUCTION	**0.6**	**0.5**	**0.5**	**0.6**	**0.6**	**0.4**	**0.4**	**0.4**
LIGHT MANUFACTURING, CONSTRUCTION AND FOREST RESOURCES	**5.6**	**2.2**	**3.2**	**3.0**	**3.1**	**2.8**	**2.7**	**3.1**
Light Manufacturing	**4.8**	**1.4**	**2.5**	**2.3**	**2.3**	**2.0**	**1.9**	**2.2**
Construction	**0.7**	**0.7**	**0.6**	**0.5**	**0.6**	**0.7**	**0.7**	**0.7**
Forest Resources	**0.1**	**0.2**	**0.1**	**0.2**	**0.1**	**0.2**	**0.2**	**0.2**

Notes:

Totals may not add up due to rounding.

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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.

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

0.0 Indicates emissions of less than 0.05 Mt CO_2 eq were truncated due to rounding.

- Indicates no emissions

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

	1990	2005	2014	2015	2016	2017	2018	2019
	Mt CO_2 eq							
GHG TOTAL	**51.8**	**63.0**	**60.4**	**59.2**	**61.8**	**63.2**	**65.5**	**65.7**
OIL AND GAS	**7.6**	**11.9**	**14.4**	**13.3**	**13.4**	**13.4**	**13.6**	**13.7**
Upstream Oil and Gas	**6.2**	**11.3**	**13.7**	**12.6**	**12.5**	**12.7**	**13.0**	**13.1**
Natural Gas Production and Processing	3.9	9.2	11.9	10.6	10.3	10.5	10.9	11.0
Conventional Oil Production	0.8	0.7	0.6	0.6	0.6	0.6	0.6	0.5
Conventional Light Oil Production	0.8	0.7	0.6	0.6	0.6	0.6	0.6	0.5
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	1.2	1.5	1.6	1.6	1.5	1.6
Downstream Oil and Gas	**1.5**	**0.6**	**0.7**	**0.7**	**0.8**	**0.7**	**0.6**	**0.6**
Petroleum Refining	1.3	0.5	0.6	0.6	0.7	0.6	0.5	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**	**0.3**	**0.3**	**0.4**	**0.4**	**0.5**	**0.8**
TRANSPORT	**15.4**	**19.9**	**20.8**	**21.4**	**22.8**	**23.4**	**24.5**	**24.4**
Passenger Transport	**7.9**	**10.2**	**9.8**	**10.2**	**11.1**	**11.3**	**11.6**	**11.4**
Cars, Light Trucks and Motorcycles	6.7	8.8	8.4	8.9	9.8	9.8	10.0	9.8
Bus, Rail and Aviation	1.2	1.4	1.3	1.3	1.4	1.5	1.6	1.6
Freight Transport	**5.1**	**8.3**	**10.0**	**10.1**	**10.6**	**11.0**	**11.8**	**11.9**
Heavy Duty Trucks, Rail	4.3	7.2	8.7	8.7	9.1	9.6	10.3	10.3
Aviation and Marine	0.9	1.1	1.3	1.4	1.5	1.4	1.5	1.6
Other: Recreational, Commercial and Residential	**2.3**	**1.4**	**1.1**	**1.1**	**1.1**	**1.1**	**1.1**	**1.1**
HEAVY INDUSTRY	**8.7**	**7.1**	**5.6**	**5.7**	**6.2**	**6.3**	**6.4**	**6.5**
Mining	**0.5**	**0.3**	**0.3**	**0.3**	**0.3**	**0.4**	**0.5**	**0.5**
Smelting and Refining (Non-Ferrous Metals)	**2.0**	**1.7**	**1.0**	**0.9**	**1.3**	**1.2**	**1.1**	**1.2**
Pulp and Paper	**4.0**	**1.8**	**1.9**	**1.9**	**2.0**	**2.1**	**2.1**	**2.4**
Iron and Steel	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Cement	**1.0**	**2.0**	**1.8**	**2.0**	**2.1**	**2.1**	**2.2**	**2.0**
Lime and Gypsum	**0.2**	**0.3**	**0.2**	**0.2**	**0.2**	**0.1**	**0.1**	**0.1**
Chemicals and Fertilizers	**0.9**	**0.9**	**0.3**	**0.3**	**0.4**	**0.4**	**0.3**	**0.3**
BUILDINGS	**7.5**	**8.4**	**7.8**	**7.3**	**7.4**	**8.3**	**8.2**	**8.3**
Service Industry	**3.1**	**3.8**	**3.8**	**3.4**	**3.5**	**3.9**	**3.9**	**3.9**
Residential	**4.5**	**4.6**	**4.0**	**3.9**	**3.9**	**4.4**	**4.3**	**4.4**
AGRICULTURE	**2.8**	**3.1**	**2.8**	**2.9**	**3.1**	**3.1**	**3.3**	**3.2**
On Farm Fuel Use	**0.6**	**0.3**	**0.6**	**0.6**	**0.7**	**0.7**	**0.8**	**0.8**
Crop Production	**0.4**	**0.3**	**0.3**	**0.3**	**0.4**	**0.4**	**0.4**	**0.4**
Animal Production	**1.8**	**2.4**	**1.9**	**2.0**	**2.0**	**2.0**	**2.1**	**2.1**
WASTE	**4.6**	**5.6**	**4.5**	**4.4**	**4.3**	**4.3**	**4.2**	**4.2**
Solid Waste[a]	**4.5**	**5.5**	**4.4**	**4.3**	**4.2**	**4.1**	**4.1**	**4.1**
Wastewater	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Waste Incineration	**0.0**	**0.0**	-	-	-	-	-	-
COAL PRODUCTION	**1.8**	**1.7**	**1.9**	**1.6**	**1.8**	**1.7**	**2.0**	**2.0**
LIGHT MANUFACTURING, CONSTRUCTION AND FOREST RESOURCES	**2.6**	**4.3**	**2.2**	**2.4**	**2.4**	**2.5**	**2.9**	**2.5**
Light Manufacturing	**1.4**	**3.1**	**1.4**	**1.5**	**1.4**	**1.4**	**1.5**	**1.3**
Construction	**0.6**	**0.5**	**0.3**	**0.4**	**0.6**	**0.6**	**0.7**	**0.6**
Forest Resources	**0.5**	**0.7**	**0.4**	**0.5**	**0.4**	**0.5**	**0.6**	**0.6**

Notes:

Totals may not add up due to rounding.

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.

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.

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

0.0 Indicates emissions of less than 0.05 Mt CO_2 eq were truncated due to rounding.

- Indicates no emissions

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

	1990	2005	2014	2015	2016	2017	2018	2019
	Mt CO_2 eq							
GHG TOTAL	**0.6**	**0.6**	**0.5**	**0.5**	**0.5**	**0.6**	**0.6**	**0.7**
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**	**0.0**	**-**
Petroleum Refining	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
Natural Gas Distribution	-	-	-	-	-	-	-	-
ELECTRICITY	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
TRANSPORT	**0.3**	**0.3**	**0.4**	**0.4**	**0.4**	**0.4**	**0.5**	**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	0.2
Bus, Rail and Aviation	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Freight Transport	**0.1**	**0.1**	**0.2**	**0.2**	**0.2**	**0.2**	**0.3**	**0.3**
Heavy Duty Trucks, Rail	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.3
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**	**-**
Pulp and Paper	**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**	**-**
Cement	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**-**
Lime and Gypsum	**0.0**	**-**	**0.0**	**0.0**	**-**	**-**	**-**	**-**
Chemicals and Fertilizers	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
BUILDINGS	**0.1**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Service Industry	**0.1**	**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	**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[a]	**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 AND 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.

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.

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.

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

0.0 Indicates emissions of less than 0.05 Mt CO_2 eq were truncated due to rounding.

- Indicates no emissions

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

	1999	2005	2014	2015	2016	2017	2018	2019
	Mt CO_2 eq							
GHG TOTAL	**1.3**	**1.6**	**1.5**	**1.7**	**1.6**	**1.3**	**1.4**	**1.4**
OIL AND GAS	**0.2**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**
Upstream Oil and Gas	**0.2**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**
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**
TRANSPORT	**0.5**	**0.7**	**0.8**	**0.9**	**0.9**	**0.8**	**0.8**	**0.8**
Passenger Transport	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**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
Bus, Rail and Aviation	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1
Freight Transport	**0.2**	**0.5**	**0.5**	**0.6**	**0.6**	**0.5**	**0.5**	**0.5**
Heavy Duty Trucks, Rail	0.2	0.4	0.5	0.6	0.6	0.5	0.5	0.5
Aviation and Marine	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Other: Recreational, Commercial and Residential	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
HEAVY INDUSTRY	**0.2**	**0.3**	**0.3**	**0.4**	**0.3**	**0.3**	**0.3**	**0.3**
Mining	**0.2**	**0.3**	**0.3**	**0.4**	**0.3**	**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 and Gypsum	**-**	**0.0**	**0.0**	**0.0**	**-**	**-**	**-**	**-**
Chemicals and 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**	**0.1**	**0.2**	**0.1**
Service Industry	**0.2**	**0.1**	**0.2**	**0.2**	**0.2**	**0.1**	**0.1**	**0.1**
Residential	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.0**
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[a]	**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 AND 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.

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.

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.

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

0.0 Indicates emissions of less than 0.05 Mt CO_2 eq were 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	2014	2015	2016	2017	2018	2019
	Mt CO_2 eq							
GHG TOTAL	**0.4**	**0.6**	**0.7**	**0.6**	**0.7**	**0.7**	**0.7**	**0.7**
OIL AND GAS	**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**	**-**	**-**	**-**
Petroleum Refining	0.0	0.0	0.0	0.0	0.0	-	-	-
Natural Gas Distribution	-	-	-	-	-	-	-	-
ELECTRICITY	**0.0**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
TRANSPORT	**0.3**	**0.4**	**0.5**	**0.4**	**0.5**	**0.5**	**0.5**	**0.5**
Passenger Transport	**0.1**	**0.1**	**0.2**	**0.2**	**0.2**	**0.2**	**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 Aviation	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2
Freight Transport	**0.2**	**0.2**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**
Heavy Duty Trucks, Rail	0.0	0.1	0.2	0.1	0.2	0.2	0.2	0.2
Aviation and Marine	0.2	0.2	0.1	0.1	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**	**0.0**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**
Mining	**0.1**	**0.0**	**0.0**	**0.0**	**0.1**	**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 and Gypsum	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Chemicals and 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[a]	**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 AND 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.

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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.

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

0.0 Indicates emissions of less than 0.05 Mt CO_2 eq were 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								
GHG TOTAL	**1.8**	**1.8**	**1.6**	**1.9**	**2.0**	**2.1**	**2.1**	**1.9**	**1.8**
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**
TRANSPORT	**0.6**	**0.5**	**0.5**	**0.6**	**0.7**	**0.6**	**0.7**	**0.7**	**0.7**
Passenger Transport	**0.3**	**0.3**	**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 Aviation	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Freight Transport	**0.3**	**0.2**	**0.2**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.4**
Heavy Duty Trucks, Rail	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.2
Aviation and Marine	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
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 and Gypsum	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**-**	**-**	**-**
Chemicals and 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**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Solid Waste[a]	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.1**	**0.1**
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 AND 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.

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.

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.

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

0.0 Indicates emissions of less than 0.05 Mt CO_2 eq were 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, provincial and territorial 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 [IPPU] 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, n.d.[a], 57-003-X), in the publication *Electric Power Generation, Transmission and Distribution* (EPGTD) (Statistics Canada, n.d.[b], 57-202-X) and online via Statistics Canada data tables 25-10-0019-01, 25-10-0020-01, 25-10-0021-01 and 25-10-0017-01 (Statistics Canada, n.d. [c], n.d. [d], n.d. [e], n.d. [f]).

A "generation intensity" indicator is derived to reflect the GHG emissions intensity of electricity as it is delivered to the electricity grid. Electricity generation intensity values were derived for each fuel type using GHG emission estimates and electricity generation data. The methodology used to develop the GHG emissions is discussed in Chapter 3 and Annex 3.1 of this report. GHG emissions are based on the total fuel consumed by the public utility sector, as provided in the RESD,[1] while generation data are from StatCan data tables (2005–2019) and the EPGTD publication (1990–2004).

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

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.

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

	1990	2000	2005	2013	2014	2015	2016	2017	2018	2019[a]
Greenhouse Gas Emissions[b]										
	kt CO_2 equivalent									
Combustion	**94 500**	**132 000**	**125 000**	**87 400**	**83 800**	**87 000**	**80 400**	**78 400**	**69 700**	**68 600**
Coal	80 500	109 000	98 200	63 800	60 300	62 300	57 100	57 200	44 100	42 500
Natural Gas	2 720	13 800	15 400	19 300	18 600	19 300	18 300	16 300	20 900	21 900
Other Fuels[c]	11 300	9 380	11 200	4 260	4 860	5 400	5 020	4 800	4 610	4 200
Other Emissions[d]	**0**	**27**	**52**	**63**	**73**	**87**	**80**	**80**	**78**	**80**
Overall Total[e, f, g]	**94 500**	**132 000**	**125 000**	**87 500**	**83 800**	**87 000**	**80 500**	**78 400**	**69 800**	**68 600**
Electricity Generation[h, i]										
	GWh									
Combustion[j]	**101 000**	**146 000**	**140 000**	**104 000**	**110 000**	**108 000**	**106 000**	**99 300**	**98 900**	**98 000**
Coal	82 200	106 000	93 900	60 900	61 600	57 800	57 900	55 900	47 000	44 500
Natural Gas	4 140	26 600	29 800	35 600	40 000	41 200	39 100	35 100	43 300	46 100
Other Fuels	14 800	13 400	16 700	7 900	8 640	8 560	9 120	8 290	8 630	7 440
Refined Petroleum Products	14 700	10 600	10 800	2 160	3 170	3 550	3 570	3 100	2 920	2 390
Biomass	14	1 830	1 780	2 050	2 030	1 980	2 250	2 170	2 250	1 880
Other	91	960	4 100	3 700	3 400	3 000	3 300	3 000	3 500	3 200
Nuclear	**68 800**	**68 700**	**86 800**	**97 600**	**101 000**	**96 000**	**95 700**	**95 600**	**95 000**	**95 500**
Hydro	**263 000**	**323 000**	**327 000**	**357 000**	**348 000**	**345 000**	**354 000**	**361 000**	**353 000**	**347 000**
Other Renewables[k]	**26**	**264**	**1 580**	**11 400**	**12 900**	**27 500**	**31 600**	**32 100**	**34 000**	**33 500**
Other Generation[l, m]	**0**	**0**	**32**	**9 550**	**2 240**	**140**	**180**	**200**	**210**	**170**
Overall Total[f]	**433 000**	**539 000**	**556 000**	**580 000**	**575 000**	**576 000**	**587 000**	**588 000**	**581 000**	**575 000**
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	120
CH_4 intensity (g CH_4 / kWh)	0	0	0	0	0	0	0	0	0	0
N_2O intensity (g N_2O / kWh)	0	0	0	0	0	0	0	0	0	0
Generation Intensity (g CO_2 eq / kWh)[f]	**220**	**250**	**220**	**150**	**150**	**150**	**140**	**130**	**120**	**120**
	Losses									
Unallocated Energy (GWh)[o, p]	31 000	42 000	37 000	41 000	29 000	13 000	3 000	17 000	22 000	3 000
SF_6 Emissions (kt CO_2 eq)[q]	200	200	160	220	130	190	190	140	160	170
	Consumption Intensity (g GHG / kWh electricity consumed)									
Consumption Intensity (g CO_2 eq / kWh)[r]	**240**	**270**	**240**	**160**	**150**	**150**	**140**	**140**	**130**	**120**

Notes:

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

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. CO_2 from carbon capture and storage has been removed from the total.
h. Taken from StatCan Data Tables 25-10-0019-01 and 25-10-0020-01 (2005–2019).
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 (2005–2019) 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.

– Indicates no emissions or no electricity generation

0 Indicates emissions or electricity generation value less than 0.1

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

	1990	2000	2005	2013	2014	2015	2016	2017	2018	2019[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**	**1 140**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	–	–	–	–	–	–	–	–	–	–
Other Fuels[c]	1 640	822	819	867	1 210	1 340	1 520	1 530	1 130	1 140
Other Emissions[d]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[e, f, g]	**1 640**	**822**	**819**	**867**	**1 210**	**1 340**	**1 520**	**1 530**	**1 130**	**1 140**
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**	**1 320**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	–	–	–	–	–	–	–	–	–	–
Other Fuels	2 090	1 020	1 360	1 090	1 470	1 560	1 800	1 800	1 370	1 320
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**34 300**	**41 800**	**38 900**	**40 500**	**38 200**	**38 800**	**39 500**	**36 500**	**41 800**	**40 800**
Other Renewables[k]	**0**	**–**	**–**	**192**	**177**	**172**	**190**	**186**	**206**	**182**
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**	**42 300**
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	27
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	0.0004
N_2O intensity (g N_2O / kWh)	0.001	0.0004	0	0	0.001	0.001	0.001	0.001	0	0.001
Generation Intensity (g CO_2 eq / kWh)[f]	**45**	**19**	**20**	**21**	**30**	**33**	**37**	**40**	**26**	**27**
	Losses									
Unallocated Energy (GWh)[o, p]	990	1 300	810	1 400	1 200	1 100	780	673	941	1 090
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	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**	**28**

Notes:

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

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. CO_2 from carbon capture and storage has been removed from the total
h. Taken from StatCan Data Tables 25-10-0019-01 and 25-10-0020-01 (2005–2019).
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 (2005–2019) 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.

– Indicates no emissions or no electricity generation

0 Indicates emissions or electricity generation value less than 0.1

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

	1990	2000	2005	2013	2014	2015	2016	2017	2018	2019[a]
Greenhouse Gas Emissions[b]										
	kt CO_2 equivalent									
Combustion	**104**	**53.0**	**4.8**	**3.9**	**4.3**	**13.9**	**4.2**	**8.6**	**2.8**	**1.1**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	–	–	–	–	–	–	–	–	–	–
Other Fuels[c]	104	53.0	4.8	3.9	4.3	13.9	4.2	8.6	2.8	1.1
Other Emissions[d]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[e, f, g]	**104**	**53.0**	**4.8**	**3.9**	**4.3**	**13.9**	**4.2**	**8.6**	**2.8**	**1.1**
Electricity Generation[h, i]										
	GWh									
Combustion[j]	**81.1**	**48.1**	**6.3**	**8.2**	**8.3**	**9.8**	**9.8**	**5.6**	**3.0**	**0.9**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	–	–	–	–	–	–	–	–	–	–
Other Fuels	81.1	48.1	6.3	8.2	8.3	9.8	9.8	5.6	3.0	0.9
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Other Renewables[k]	**–**	**–**	**40.1**	**499**	**611**	**606**	**594**	**604**	**640**	**646**
Other Generation[l, m]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[f]	**81.1**	**48.1**	**46.4**	**507**	**620**	**616**	**603**	**610**	**643**	**647**
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	2
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	0.0001
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**	**2**
	Losses									
Unallocated Energy (GWh)[o, p]	unk	unk	unk	20	33	20	22	10	20	20
SF_6 Emissions (kt CO_2 eq)[q]	0	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.

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. CO_2 from carbon capture and storage has been removed from the total
h. Taken from StatCan Data Tables 25-10-0019-01 and 25-10-0020-01 (2005–2019).
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 (2005–2019) 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.

– Indicates no emissions or no electricity generation

0 Indicates emissions or electricity generation value less than 0.1

unk Indicates unknown as appropriate data were unavailable

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

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

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

	1990	2000	2005	2013	2014	2015	2016	2017	2018	2019[a]
Greenhouse Gas Emissions[b]										
	kt CO_2 equivalent									
Combustion	**6 900**	**9 600**	**10 700**	**7 590**	**7 210**	**6 990**	**6 390**	**6 680**	**6 990**	**6 690**
Coal	5 110	8 320	5 520	5 170	4 850	4 450	4 390	4 740	4 890	4 870
Natural Gas	–	–	x	x	760	690	640	730	780	770
Other Fuels[c]	1 790	1 280	x	x	1 610	1 860	1 360	1 210	1 320	1 050
Other Emissions[d]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[e, f, g]	**6 900**	**9 600**	**10 700**	**7 590**	**7 210**	**6 990**	**6 390**	**6 680**	**6 990**	**6 690**
Electricity Generation[h, i]										
	GWh									
Combustion[j]	**8 440**	**10 500**	**11 100**	**8 770**	**8 560**	**8 220**	**7 820**	**7 700**	**7 890**	**7 400**
Coal	6 020	8 850	6 770	5 500	5 250	4 870	4 830	4 840	4 980	4 990
Natural Gas	–	–	181	1 370	1 470	1 300	1 240	1 440	1 420	1 360
Other Fuels	2 430	1 610	4 110	1 890	1 840	2 050	1 750	1 410	1 490	1 050
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**1 120**	**887**	**1 040**	**964**	**1 100**	**1 010**	**803**	**850**	**938**	**1 032**
Other Renewables[k]	**26.1**	**0**	**113**	**780**	**764**	**821**	**979**	**1 270**	**1 090**	**970**
Other Generation[l, m]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[f]	**9 590**	**11 300**	**12 200**	**10 500**	**10 400**	**10 000**	**9 610**	**9 810**	**9 910**	**9 400**
Greenhouse Gas Intensity[n]										
	Generation Intensity (g GHG / kWh electricity generated)									
CO_2 intensity (g CO_2 / kWh)	720	840	880	720	690	690	660	680	700	710
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	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	0.01
Generation Intensity (g CO_2 eq / kWh)[f]	**720**	**850**	**880**	**720**	**690**	**700**	**670**	**680**	**710**	**710**
	Losses									
Unallocated Energy (GWh)[o, p]	580	830	770	570	680	570	630	640	420	610
SF_6 Emissions (kt CO_2 eq)[q]	23	23	29	39	33	33	28	40	25	25
	Consumption Intensity (g GHG / kWh electricity consumed)									
Consumption Intensity (g CO_2 eq / kWh)[r]	**770**	**920**	**940**	**770**	**740**	**740**	**720**	**730**	**740**	**760**

Notes:

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

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. CO_2 from carbon capture and storage has been removed from the total
h. Taken from StatCan Data Tables 25-10-0019-01 and 25-10-0020-01 (2005–2019).
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 (2005–2019) 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.

– Indicates no emissions or no electricity generation

0 Indicates emissions or electricity generation value less than 0.1

x Indicates data not shown due to statistical limitations

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

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

	1990	2000	2005	2013	2014	2015	2016	2017	2018	2019[a]
Greenhouse Gas Emissions[b]										
	kt CO_2 equivalent									
Combustion	**6 020**	**8 970**	**8 060**	**4 190**	**3 760**	**3 780**	**4 000**	**3 340**	**3 670**	**3 300**
Coal	1 180	3 130	2 910	x	1 330	1 160	1 490	1 370	1 530	1 300
Natural Gas	–	–	x	x	1 040	1 040	1 000	580	650	640
Other Fuels[c]	4 840	5 840	x	1 150	1 390	1 590	1 500	1 390	1 480	1 360
Other Emissions[d]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[e, f, g]	**6 020**	**8 970**	**8 060**	**4 190**	**3 760**	**3 780**	**4 000**	**3 340**	**3 670**	**3 300**
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**	**3 920**
Coal	1 270	3 820	2 920	2 250	2 560	1 650	2 160	2 090	2 330	1 820
Natural Gas	–	–	1 970	1 770	2 570	2 320	2 360	1 300	980	940
Other Fuels	6 360	7 210	7 210	1 290	1 850	1 650	1 580	1 000	1 480	1 150
Nuclear	**5 340**	**3 960**	**4 380**	**4 480**	**5 010**	**4 280**	**4 540**	**5 120**	**4 870**	**5 020**
Hydro	**3 460**	**3 220**	**3 820**	**3 400**	**2 960**	**2 620**	**3 260**	**2 600**	**2 530**	**2 990**
Other Renewables[k]	**–**	**–**	**–**	**737**	**786**	**792**	**766**	**781**	**825**	**888**
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**	**12 800**
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	260
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	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	0.004
Generation Intensity (g CO_2 eq / kWh)[f]	**370**	**490**	**400**	**290**	**240**	**280**	**270**	**260**	**280**	**260**
	Losses									
Unallocated Energy (GWh)[o, p]	990	1 300	1 100	490	530	450	590	220	460	540
SF_6 Emissions (kt CO_2 eq)[q]	0.71	0.70	–	0.82	0.58	0.83	0.59	1.50	1.40	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**	**290**	**270**

Notes:

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

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. CO_2 from carbon capture and storage has been removed from the total
h. Taken from StatCan Data Tables 25-10-0019-01 and 25-10-0020-01 (2005–2019).
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 (2005–2019) 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.

– Indicates no emissions or no electricity generation

0 Indicates emissions or electricity generation value less than 0.1

x Indicates data not shown due to statistical limitations

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

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

	1990	2000	2005	2013	2014	2015	2016	2017	2018	2019[a]
Greenhouse Gas Emissions[b]										
	kt CO_2 equivalent									
Combustion	**1 490**	**567**	**616**	**367**	**245**	**205**	**233**	**239**	**242**	**232**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	114	194	269	144	13	0	1.0	1.0	2.0	1.0
Other Fuels[c]	1 380	373	347	223	231	205	232	238	241	231
Other Emissions[d]	**–**	**2.5**	**4.6**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[e, f, g]	**1 490**	**569**	**621**	**367**	**245**	**205**	**233**	**239**	**242**	**232**
Electricity Generation[h, i]										
	GWh									
Combustion[j]	**1 980**	**1 150**	**1 390**	**1 140**	**1 010**	**960**	**1 290**	**1 310**	**1 340**	**1 230**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	–	191	212	14	14	0	0	0	0	0
Other Fuels	1 980	961	1 170	1 130	1 000	960	1 290	1 310	1 340	1 230
Nuclear	**4 070**	**4 890**	**4 480**	**0**	**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**	**180 000**
Other Renewables[k]	**–**	**173**	**416**	**1 030**	**1 010**	**6 420**	**9 420**	**9 530**	**10 200**	**10 700**
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**	**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	1.2
CH_4 intensity (g CH_4 / kWh)	0.0004	0.0005	0.001	0.0002	0	0	0	0	0	0.0002
N_2O intensity (g N_2O / kWh)	0.0003	0.0002	0.0004	0	0	0	0	0	0	0.0001
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**	**1.2**
	Losses									
Unallocated Energy (GWh)[o, p]	7 300	13 000	9 100	12 000	13 000	2 600	9 000	12 000	9 000	2 000
SF_6 Emissions (kt CO_2 eq)[q]	37	36	30	67	17	74	81	22	58	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**	**1.6**	**1.5**

Notes:

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

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. CO_2 from carbon capture and storage has been removed from the total
h. Taken from StatCan Data Tables 25-10-0019-01 and 25-10-0020-01 (2005–2019).
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 (2005–2019) 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.

– Indicates no emissions or no electricity generation

0 Indicates emissions or electricity generation value less than 0.1

x Indicates data not shown due to statistical limitations

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

	1990	2000	2005	2013	2014	2015	2016	2017	2018	2019[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**	**4 090**	**3 880**
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	3 970	3 820
Other Fuels[c]	1 160	477	185	60	120	80	120	140	120	60
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**	**4 090**	**3 880**
Electricity Generation[h, i]										
	GWh									
Combustion[j]	**29 200**	**52 200**	**40 900**	**17 500**	**15 600**	**15 900**	**13 600**	**6 800**	**10 600**	**10 100**
Coal	27 800	40 800	29 400	2 900	100	0	0	0	0	0
Natural Gas	3	10200	10 000	13 900	14 700	15 300	12 700	5 900	9 800	9 400
Other Fuels	1 430	1 140	1 440	720	780	640	900	870	840	750
Nuclear	**59 400**	**59 800**	**78 000**	**93 100**	**96 200**	**91 800**	**91 100**	**90 400**	**90 200**	**90 500**
Hydro	**38 700**	**36 600**	**34 600**	**36 900**	**38 200**	**34 800**	**36 100**	**39 500**	**37 800**	**35 700**
Other Renewables[k]	**–**	**1**	**26**	**4 240**	**3 660**	**12 200**	**12 100**	**11 800**	**13 600**	**12 600**
Other Generation[l, m]	**–**	**–**	**–**	**3 340**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[f]	**127 000**	**149 000**	**153 000**	**155 000**	**154 000**	**155 000**	**153 000**	**149 000**	**152 000**	**149 000**
Greenhouse Gas Intensity[n]										
	Generation Intensity (g GHG / kWh electricity generated)									
CO_2 intensity (g CO_2 / kWh)	200	300	230	70	40	40	40	20	30	30
CH_4 intensity (g CH_4 / kWh)	0.002	0.011	0.013	0.012	0.010	0.010	0.009	0.004	0.007	0.007
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	0.001
Generation Intensity (g CO_2 eq / kWh)[f]	**200**	**300**	**230**	**70**	**40**	**40**	**40**	**20**	**30**	**30**
	Losses									
Unallocated Energy (GWh)[o, p]	10 000	12 000	12 000	22 000	9 000	5 000	13 000	13 000	13 000	12 000
SF_6 Emissions (kt CO_2 eq)[q]	76	75	50	64	43	56	62	56	57	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**	**30**

Notes:

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

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. CO_2 from carbon capture and storage has been removed from the total
h. Taken from StatCan Data Tables 25-10-0019-01 and 25-10-0020-01 (2005–2019).
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 (2005–2019) 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.

– Indicates no emissions or no electricity generation

0 Indicates emissions or electricity generation value less than 0.1

x Indicates data not shown due to statistical limitations

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

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

	1990	2000	2005	2013	2014	2015	2016	2017	2018	2019[a]
Greenhouse Gas Emissions[b]										
	kt CO_2 equivalent									
Combustion	**519**	**1 070**	**349**	**104**	**110**	**103**	**54.0**	**53.9**	**25.1**	**24.3**
Coal	x	x	x	x	77.4	71.3	33.4	29.6	5.6	0
Natural Gas	x	x	x	x	31.0	31.8	7.5	11.7	7.1	12.4
Other Fuels[c]	48.6	11.8	15.1	1.7	1.7	–	13.2	12.6	12.4	11.8
Other Emissions[d]	**–**	**4.8**	**8.8**	**16**	**16**	**21**	**15**	**16**	**16**	**16**
Overall Total[e, f, g]	**519**	**1 070**	**358**	**120**	**127**	**124**	**69**	**69**	**41**	**40**
Electricity Generation[h, i]										
	GWh									
Combustion[j]	**399**	**881**	**447**	**91**	**96**	**107**	**56**	**62**	**30**	**32**
Coal	375	869	421	65.4	68.9	63.4	28.5	29.5	5.3	0
Natural Gas	0.904	–	10.6	24.0	25.2	29.4	11.7	17.0	9.7	16.6
Other Fuels	22.4	12.4	15.1	1.5	1.6	14.4	15.5	15.2	15.0	15.2
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**19 800**	**31 500**	**36 400**	**35 300**	**34 500**	**34 800**	**36 600**	**36 000**	**30 700**	**32 900**
Other Renewables[k]	**–**	**–**	**53.4**	**868**	**911**	**903**	**966**	**927**	**873**	**884**
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**	**33 900**
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	1.2
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	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
Generation Intensity (g CO_2 eq / kWh)[f]	**26**	**33**	**9.7**	**3.3**	**3.6**	**3.5**	**1.8**	**1.9**	**1.3**	**1.2**
	Losses									
Unallocated Energy (GWh)[o, p]	2 100	3 750	1 900	3 800	3 900	3 700	2 500	450	370	190
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	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**	**2.0**	**1.9**	**1.4**	**1.3**

Notes:

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

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. CO_2 from carbon capture and storage has been removed from the total
h. Taken from StatCan Data Tables 25-10-0019-01 and 25-10-0020-01 (2005–2019).
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 (2005–2019) 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.

– Indicates no emissions or no electricity generation

0 Indicates emissions or electricity generation value less than 0.1

x Indicates data not shown due to statistical limitations

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

	1990	2000	2005	2013	2014	2015	2016	2017	2018	2019[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**	**15 800**
Coal	x	x	x	x	12 600	12 600	12 200	12 500	11 700	11 400
Natural Gas	x	x	x	x	2 580	3 520	3 780	4 030	4 400	4 380
Other Fuels[c]	6.47	10.4	4.30	0.27	6.36	9.12	9.40	9.40	9.40	5.80
Other Emissions[d]	**–**	**10**	**18**	**35**	**35**	**39**	**42**	**41**	**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**	**15 800**
Electricity Generation[h, i]										
	GWh									
Combustion[j]	**9 660**	**14 100**	**14 800**	**15 300**	**14 800**	**19 100**	**20 300**	**20 700**	**19 400**	**19 300**
Coal	9 340	11 400	12 200	11 800	10 200	12 100	12 000	12 000	10 300	10 000
Natural Gas	310	2 660	2 610	3 510	4 530	6 990	8 220	8 660	9 020	9 270
Other Fuels	10	10	10	10	10	0	10	10	0	0
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**4 210**	**3 050**	**4 570**	**4 450**	**4 710**	**3 430**	**3 280**	**3 850**	**3 590**	**3 670**
Other Renewables[k]	**–**	**–**	**92**	**640**	**615**	**620**	**746**	**739**	**694**	**707**
Other Generation[l, m]	**–**	**–**	**–**	**878**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[f]	**13 900**	**17 100**	**19 500**	**21 300**	**20 100**	**23 100**	**24 300**	**25 200**	**23 800**	**23 800**
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	670	660
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	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	0.02
Generation Intensity (g CO_2 eq / kWh)[f]	**800**	**850**	**780**	**710**	**760**	**700**	**660**	**660**	**680**	**660**
	Losses									
Unallocated Energy (GWh)[o, p]	1 300	1 700	1 400	1 900	3 200	1 400	1 200	2 200	2 400	1 500
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	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**	**750**	**710**

Notes:

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

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. CO_2 from carbon capture and storage has been removed from the total
h. Taken from StatCan Data Tables 25-10-0019-01 and 25-10-0020-01 (2005–2019).
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 (2005–2019) 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.

– Indicates no emissions or no electricity generation

0 Indicates emissions or electricity generation value less than 0.1

x Indicates data not shown due to statistical limitations

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

	1990	2000	2005	2013	2014	2015	2016	2017	2018	2019[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**	**36 500**	**36 300**
Coal	38 000	44 200	46 800	40 700	41 400	44 100	39 000	38 600	26 000	24 900
Natural Gas	1 700	5 740	5 170	7 520	7 820	7 360	6 810	8 030	10 500	11 300
Other Fuels[c]	11.4	300	68.5	18.6	16.9	17.6	1.7	0	0	21.2
Other Emissions[d]	**–**	**5.7**	**10**	**6**	**14**	**19**	**17**	**16**	**15**	**16**
Overall Total[e, f, g]	**39 800**	**50 300**	**52 000**	**48 200**	**49 200**	**51 500**	**45 800**	**46 700**	**36 500**	**36 300**
Electricity Generation[h, i]										
	GWh									
Combustion[j]	**39 900**	**51 300**	**54 200**	**53 200**	**59 700**	**54 100**	**53 200**	**54 800**	**51 400**	**52 000**
Coal	37 300	40 700	42 200	38 500	43 400	39 100	38 900	37 000	29 400	27 700
Natural Gas	2 510	10 200	11 600	14 100	15 700	14 500	13 900	17 300	21 400	23 600
Other Fuels	21.6	443	424	630	550	517	448	576	647	670
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**2 060**	**1 760**	**2 240**	**1 990**	**1 820**	**1 980**	**1 970**	**2 060**	**1 990**	**2 040**
Other Renewables[k]	**–**	**88.9**	**837**	**2 260**	**3 520**	**4 090**	**4 590**	**4 630**	**4 140**	**4 220**
Other Generation[l, m]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[f]	**41 900**	**53 200**	**57 300**	**59 700**	**65 200**	**60 300**	**59 900**	**61 700**	**57 700**	**58 300**
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	630	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	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	0.01
Generation Intensity (g CO_2 eq / kWh)[f]	**950**	**950**	**910**	**810**	**760**	**850**	**760**	**750**	**630**	**620**
	Losses									
Unallocated Energy (GWh)[o, p]	3 400	4 100	4 900	4 600	5 000	2 300	4 700	3 100	4 500	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	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**	**690**	**670**

Notes:

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

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. CO_2 from carbon capture and storage has been removed from the total
h. Taken from StatCan Data Tables 25-10-0019-01 and 25-10-0020-01 (2005–2019).
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 (2005–2019) 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.

– Indicates no emissions or no electricity generation

0 Indicates emissions or electricity generation value less than 0.1

x Indicates data not shown due to statistical limitations

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

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

	1990	2000	2005	2013	2014	2015	2016	2017	2018	2019[a]
Greenhouse Gas Emissions[b]										
	kt CO_2 equivalent									
Combustion	**804**	**1 930**	**1 330**	**590**	**571**	**496**	**671**	**567**	**690**	**963**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	x	x	x	x	517	447	628	516	631	890
Other Fuels[c]	x	x	x	x	53	49	43	51	59	73
Other Emissions[d]	**–**	**2.4**	**4.6**	**6.7**	**7.4**	**7.2**	**6.5**	**6.5**	**6.9**	**7.4**
Overall Total[e, f, g]	**804**	**1 940**	**1 340**	**596**	**578**	**503**	**677**	**574**	**697**	**971**
Electricity Generation[h, i]										
	GWh									
Combustion[j]	**1 390**	**3 930**	**3 820**	**1 820**	**1 780**	**1 610**	**1 560**	**1 410**	**1 670**	**2 360**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	1 310	3 350	3 140	892	936	788	603	457	543	1 420
Other Fuels	79.4	585	689	926	846	818	956	950	1 130	950
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**46 400**	**50 800**	**50 300**	**50 500**	**49 000**	**52 400**	**54 500**	**57 100**	**52 900**	**48 000**
Other Renewables[k]	**–**	**–**	**–**	**152**	**849**	**868**	**1 220**	**1 590**	**1 690**	**1 650**
Other Generation[l, m]	**–**	**–**	**–**	**2 520**	**2 240**	**0**	**0**	**0**	**0**	**0**
Overall Total[f]	**47 800**	**54 700**	**54 100**	**55 000**	**53 900**	**54 800**	**57 300**	**60 100**	**56 300**	**52 100**
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	12.1	18.3
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	0.005
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	0.0008
Generation Intensity (g CO_2 eq / kWh)[f]	**17**	**35**	**25**	**11**	**11**	**9.2**	**12**	**9.5**	**12.4**	**18.6**
	Losses									
Unallocated Energy (GWh)[o, p]	2 200	2 300	2 100	2200	3 900	2 100	2 200	2 400	2 100	1 600
SF_6 Emissions (kt CO_2 eq)[q]	57	56	48	42	26	20	14	19	12	21
	Consumption Intensity (g GHG / kWh electricity consumed)									
Consumption Intensity (g CO_2 eq / kWh)[r]	**19**	**38**	**27**	**12**	**12**	**9.9**	**13**	**10.3**	**13.1**	**19.7**

Notes:

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

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. CO_2 from carbon capture and storage has been removed from the total
h. Taken from StatCan Data Tables 25-10-0019-01 and 25-10-0020-01 (2005–2019).
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 (2005–2019) 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.

– Indicates no emissions or no electricity generation

0 Indicates emissions or electricity generation value less than 0.1

x Indicates data not shown due to statistical limitations

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

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

	1990	2000	2005	2013	2014	2015	2016	2017	2018	2019[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**	**47.2**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	–	–	–	–	–	0.77	1.74	3.66	11.6	28.9
Other Fuels[c]	90.2	21.3	22.0	16.9	16.4	17.5	17.5	19.9	21.2	18.3
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**	**47.2**
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**	**91.7**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	–	–	–	–	–	1.30	3.25	9.86	30.1	66.1
Other Fuels	62.1	36.7	22.4	23.3	22.7	24.2	23.8	26.8	29.2	25.6
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**423**	**261**	**320**	**425**	**411**	**422**	**419**	**448**	**419**	**376**
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**	**467**
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	100
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	0.017
N_2O intensity (g N_2O / kWh)	0.002	0.001	0.001	0	0	0	0	0.001	0.001	0.002
Generation Intensity (g CO_2 eq / kWh)[f]	**190**	**71**	**64**	**38**	**38**	**41**	**43**	**49**	**69**	**101**
	Losses									
Unallocated Energy (GWh)[o, p]	47	24	45	55	17	54	47	55	56	44
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**	**113**

Notes:

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

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. CO_2 from carbon capture and storage has been removed from the total
h. Taken from StatCan Data Tables 25-10-0019-01 and 25-10-0020-01 (2005–2019).
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 (2005–2019) 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.

– Indicates no emissions or no electricity generation

0 Indicates emissions or electricity generation value less than 0.1

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

	1990	2000	2005	2013	2014	2015	2016	2017	2018	2019[a]
Greenhouse Gas Emissions[b]										
	kt CO_2 equivalent									
Combustion	**156**	**105**	**91**	**64**	**83**	**118**	**68**	**62**	**67**	**73**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	x	x	x	x	4.82	6.17	7.71	7.71	3.86	3.47
Other Fuels[c]	x	x	x	x	78	112	61	54	63	70
Other Emissions[d]	**0**	**2**	**5**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[e, f, g]	**156**	**106**	**96**	**64**	**83**	**118**	**68**	**62**	**67**	**73**
Electricity Generation[h, i]										
	GWh									
Combustion[j]	**227**	**195**	**78**	**84**	**109**	**161**	**147**	**142**	**107**	**98**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	–	15.8	23.3	5.77	7.53	10.7	15.6	15.6	6.6	8.2
Other Fuels	227	179	54	79	102	150	131	127	100	90
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**226**	**247**	**259**	**263**	**234**	**164**	**243**	**249**	**253**	**267**
Other Renewables[k]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Other Generation[l, m]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[f]	**453**	**442**	**337**	**347**	**343**	**325**	**391**	**392**	**360**	**365**
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	200
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	0.01
N_2O intensity (g N_2O / kWh)	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**	**200**
	Losses									
Unallocated Energy (GWh)[o, p]	21	21	19	17	58	9	36	23	7	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**	**200**

Notes:

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

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. CO_2 from carbon capture and storage has been removed from the total
h. Taken from StatCan Data Tables 25-10-0019-01 and 25-10-0020-01 (2005–2019).
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 (2005–2019) 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.

– Indicates no emissions or no electricity generation

0 Indicates emissions or electricity generation value less than 0.1

x Indicates data not shown due to statistical limitations

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

	1990	2000	2005	2013	2014	2015	2016	2017	2018	2019[a]
Greenhouse Gas Emissions[b]										
	kt CO_2 equivalent									
Combustion	**	**	**x**	**x**	**118**	**113**	**135**	**137**	**164**	**162**
Coal	**	**	–	–	–	–	–	–	–	–
Natural Gas	**	**	x	x	–	–	–	–	–	–
Other Fuels[c]	**	**	x	x	118	113	135	137	164	162
Other Emissions[d]	**	**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[e, f, g]	**	**	**x**	**x**	**118**	**113**	**135**	**137**	**164**	**162**
Electricity Generation[h, i]										
	GWh									
Combustion[j]	**	**	**142**	**98**	**158**	**157**	**189**	**190**	**194**	**191**
Coal	**	**	–	–	–	–	–	–	–	–
Natural Gas	**	**	–	–	–	–	–	–	–	–
Other Fuels	**	**	142	98	158	157	189	190	194	191
Nuclear	**	**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**	**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Other Renewables[k]	**	**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Other Generation[l, m]	**	**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[f]	**	**	**142**	**98**	**158**	**157**	**189**	**190**	**194**	**191**
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	840
CH_4 intensity (g CH_4 / kWh)	**	**	x	0	0	0	0	0	0	0
N_2O intensity (g N_2O / kWh)	**	**	x	0	0	0	0	0	0	0
Generation Intensity (g CO_2 eq / kWh)[f]	**	**	**x**	**700**	**750**	**720**	**710**	**720**	**840**	**850**
	Losses									
Unallocated Energy (GWh)[o, p]	**	**	7	2	6	6	6	9	10	9
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**	**890**

Notes:

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

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. CO_2 from carbon capture and storage has been removed from the total
h. Taken from StatCan Data Tables 25-10-0019-01 and 25-10-0020-01 (2005–2019).
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 (2005–2019) 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.

– 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

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

Annex 8, Rounding Protocol

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