NATIONAL INVENTORY REPORT 1990–2021: GREENHOUSE GAS SOURCES AND SINKS IN CANADA

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

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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*
CFC ..... chlorofluorocarbon
CFS ..... Canadian Forest Service
DOC ..... dissolved organic carbon
ECCC ..... Environment and Climate Change Canada
EF ..... emission factor
FRD ..... facility reported data
GDP ..... gross domestic product
GHG ..... greenhouse gas
GHGRP ..... Greenhouse Gas Reporting Program
GWP ..... global warming potential
HCFC ..... hydrochlorofluorocarbon
HFC ..... hydrofluorocarbon
HWP ..... harvested wood products
IPCC ..... Intergovernmental Panel on Climate Change
IPPU ..... Industrial Processes and Product Use
LTO ..... landing and takeoff
LULUCF ..... Land Use, Land-Use Change and Forestry
MSW ..... municipal solid waste
N/A ..... not available
NDC ..... nationally determined contribution
NIR ..... National Inventory Report
NMVOC ..... non-methane volatile organic compound
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*

TAN ..... total ammoniacal nitrogen

UOG ..... upstream oil and gas

VKT ..... vehicle kilometres traveled

UNECE ..... United Nations Economic Commission for Europe

UNFCCC ..... United Nations Framework Convention on Climate Change

Chemical Formulas

Al ..... aluminium

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

$CaMg(CO_3)_2$ ..... dolomite

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

CO ..... carbon monoxide

CO_2 ..... carbon dioxide

CO_2 eq ..... carbon dioxide equivalent

H_2 ..... hydrogen

H_2O ..... water

H_2S ..... hydrogen sulphide

HNO_3 ..... nitric acid

Mg ..... magnesium

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

MgO ..... magnesia; dolomitic lime

N ..... nitrogen

N_2 ..... nitrogen gas

Na_2CO_3 ..... sodium carbonate; soda ash

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

TJ ..... terajoule

t ..... tonne

TWh ..... terawatt-hour

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 National Inventory Report (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 two 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, two 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	1					3
Domestic Aviation (Civil)	3	1	1					3
Military	3	1	1					3
Road Transportation	3	1	2					3
Light-Duty Gasoline Vehicles	3	1	2					3
Light-Duty Gasoline Trucks	3	1	2					3
Heavy-Duty Gasoline Vehicles	3	1	2					3
Motorcycles	3	1	2					3
Light-Duty Diesel Vehicles	3	1	2					3
Light-Duty Diesel Trucks	3	1	2					3
Heavy-Duty Diesel Vehicles	3	1	2					3
Propane 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**	**3**	**2**					**2**
Coal Mining		1						1
Oil and Natural Gas	2	3	1					3
Oil	2	3	1					3
Natural Gas	2	3	1					3
Venting	2	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			3					3
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)		**1**						**1**
b. Biological Treatment of Solid Waste		**1**	**1**					**1**
c. Wastewater Treatment and Discharge		**1**	**1**					**1**
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	**3**							**2**

CANADA'S GREENHOUSE GAS EMISSION TABLES BY IPCC SECTOR, 1990–2021

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 (IPPU), Agriculture, Land Use, Land-Use Change and Forestry (LULUCF), 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 greenhouse gas (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 GHG 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 and Sink Category Descriptions**

GHG Source and 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 aircraft 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
Oil	– unintentional releases of greenhouse gases from the production, processing, transmission, storage and delivery of crude oil
Natural Gas	– unintentional releases of greenhouse gases from the production, processing, transmission, storage and delivery of natural gas (includes post-meter fugitive emissions from residential and commercial natural gas appliances, natural gas vehicles and industrial facilities)
Venting	– intentional releases of greenhouse gases at oil and natural gas facilities
Flaring	– routine or emergency disposal of waste gas through combustion in an open flame or incinerator at oil and natural gas facilities
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 and the use of urea in selective catalytic reduction (SCR) equipped vehicles
f. Other Product Manufacture and Use	– use of N_2O as an anaesthetic and propellant; use of SF_6 in electrical equipment; and PFCs in other contained product uses as a dielectric coolant, electric insulator, or heat transfer medium
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, loss of soil organic carbon, tillage, 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 and perennial crops (forage, specialty crops, orchards); soil organic carbon (SOC) impacted by crop productivity changes and manure application; 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, forest conversion and firewood collection activities in Canada

Table A9–2 **Canada's 1990–2021 GHG Emissions by IPCC Sector**

Greenhouse Gas Categories	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
	kt CO_2 eq																															
TOTAL[a]	**589 000**	**582 000**	**599 000**	**602 000**	**622 000**	**639 000**	**661 000**	**676 000**	**682 000**	**695 000**	**719 000**	**710 000**	**715 000**	**734 000**	**737 000**	**732 000**	**725 000**	**748 000**	**731 000**	**690 000**	**702 000**	**711 000**	**716 000**	**723 000**	**720 000**	**723 000**	**705 000**	**712 000**	**725 000**	**724 000**	**659 000**	**670 000**
ENERGY	**472 000**	**463 000**	**481 000**	**482 000**	**498 000**	**513 000**	**531 000**	**547 000**	**555 000**	**569 000**	**593 000**	**586 000**	**589 000**	**604 000**	**601 000**	**600 000**	**593 000**	**618 000**	**602 000**	**571 000**	**582 000**	**588 000**	**587 000**	**593 000**	**594 000**	**596 000**	**577 000**	**586 000**	**596 000**	**596 000**	**532 000**	**543 000**
a. Stationary Combustion Sources	**278 000**	**273 000**	**283 000**	**278 000**	**284 000**	**291 000**	**301 000**	**308 000**	**311 000**	**323 000**	**345 000**	**341 000**	**343 000**	**354 000**	**345 000**	**339 000**	**330 000**	**354 000**	**339 000**	**317 000**	**319 000**	**324 000**	**320 000**	**321 000**	**322 000**	**326 000**	**315 000**	**318 000**	**321 000**	**322 000**	**298 000**	**300 000**
Public Electricity and Heat Production	94 500	95 900	102 000	93 200	95 400	98 900	98 600	111 000	123 000	121 000	132 000	133 000	128 000	133 000	126 000	125 000	119 000	126 000	117 000	101 000	102 000	94 300	91 400	87 500	84 500	87 900	81 600	79 500	71 000	69 600	61 500	60 400
Petroleum Refining Industries	17 400	16 300	16 600	17 200	16 100	16 300	18 700	18 600	18 200	17 300	17 300	18 000	19 100	20 100	21 600	20 000	20 100	20 500	19 300	18 700	19 000	18 200	17 500	16 600	16 000	16 000	16 300	14 500	14 700	15 600	13 200	13 200
Oil and Gas Extraction	30 800	29 300	31 200	34 400	35 100	36 400	36 700	35 100	37 600	48 600	52 700	55 300	58 300	62 400	60 700	62 900	66 000	74 000	73 400	75 600	76 800	82 800	87 000	89 800	93 600	97 300	94 100	97 600	104 000	104 000	99 200	103 000
Mining	4 650	4 320	3 730	4 020	4 580	4 970	5 070	5 230	4 700	4 490	4 950	4 930	4 560	4 930	4 810	4 350	5 150	5 780	6 100	5 710	5 820	5 890	6 400	5 610	5 280	4 860	4 490	5 090	6 620	6 260	6 030	6 410
Manufacturing Industries	56 400	54 100	53 200	50 900	54 400	56 200	57 800	58 000	55 000	56 000	56 000	51 700	51 300	49 200	50 800	47 800	46 000	47 100	44 600	39 800	41 200	44 100	43 900	45 100	45 200	44 100	42 600	42 800	42 700	43 200	39 400	40 700
Iron and Steel	4 950	4 960	5 300	5 400	6 020	5 790	6 150	6 170	6 230	6 330	6 200	5 000	5 850	5 510	5 800	5 510	5 500	5 950	5 740	4 270	4 960	5 280	5 510	5 600	6 050	5 760	5 620	6 010	6 390	6 080	4 570	5 170
Non-Ferrous Metals	3 540	2 850	3 130	2 980	3 610	3 420	4 240	4 110	4 120	3 910	3 800	4 010	3 710	3 720	3 730	3 840	3 680	4 060	4 070	3 050	3 240	3 580	3 220	3 330	3 020	3 380	3 460	3 430	2 960	3 450	3 250	3 200
Chemical	8 260	8 650	8 600	8 530	10 000	10 300	9 920	10 200	10 800	11 100	10 600	9 430	8 980	8 100	8 900	8 260	8 790	8 630	8 730	8 830	9 870	11 100	11 000	11 600	12 400	12 100	10 800	9 780	9 450	9 640	9 520	9 190
Pulp and Paper	14 500	14 000	13 000	13 000	12 900	12 800	13 400	13 200	12 100	12 500	12 500	11 500	10 900	10 300	10 100	8 600	7 430	7 680	6 230	6 340	5 920	6 180	5 970	6 220	6 080	6 000	6 010	6 400	7 090	7 190	6 500	6 860
Cement	3 970	3 440	3 400	3 470	4 070	4 160	4 130	4 040	4 190	4 460	4 640	4 590	4 970	4 990	5 460	5 400	5 720	5 080	4 950	4 490	4 080	4 310	4 030	3 850	4 000	3 910	3 930	4 160	4 200	4 040	3 600	3 850
Other Manufacturing	21 200	20 200	19 700	17 600	17 800	19 700	20 000	20 200	17 500	17 600	18 200	17 100	16 900	16 600	16 800	16 200	14 900	15 700	14 900	12 900	13 100	13 700	14 200	14 500	13 600	12 900	12 800	13 000	12 600	12 800	12 000	12 400
Construction	1 880	1 630	1 760	1 390	1 400	1 180	1 270	1 260	1 120	1 170	1 080	1 030	1 260	1 340	1 410	1 440	1 390	1 400	1 380	1 230	1 520	1 360	1 390	1 290	1 300	1 310	1 300	1 300	1 380	1 440	1 430	1 460
Commercial and Institutional	26 200	26 800	27 500	28 500	27 800	29 400	30 000	30 400	27 800	29 400	33 300	32 600	34 100	35 200	33 900	32 400	29 400	30 500	30 200	30 000	28 600	30 500	28 700	29 700	31 400	30 400	31 700	34 000	35 500	37 200	35 900	35 400
Residential	43 800	42 300	43 600	45 500	46 200	44 900	49 700	46 300	40 700	42 400	44 700	41 600	43 500	45 700	44 100	43 300	41 200	45 700	45 100	43 300	41 300	43 600	40 100	41 900	41 500	40 900	39 300	40 100	41 900	40 700	38 000	36 500
Agriculture and Forestry	2 410	2 740	3 250	3 050	2 550	2 770	2 930	2 920	2 600	2 680	2 570	2 240	2 160	2 300	2 210	2 180	2 110	2 490	2 470	2 460	2 660	3 160	3 260	3 150	3 000	2 960	3 180	3 080	3 190	3 490	3 030	3 090
b. Transport[b]	**145 000**	**140 000**	**145 000**	**148 000**	**156 000**	**160 000**	**164 000**	**170 000**	**173 000**	**177 000**	**178 000**	**176 000**	**178 000**	**182 000**	**186 000**	**191 000**	**190 000**	**193 000**	**192 000**	**187 000**	**193 000**	**193 000**	**193 000**	**198 000**	**196 000**	**197 000**	**196 000**	**202 000**	**209 000**	**210 000**	**179 000**	**188 000**
Aviation	7 510	6 500	6 390	6 020	6 380	6 700	7 080	7 240	7 500	7 890	7 800	7 150	7 020	7 140	7 630	7 720	7 740	7 820	7 460	6 640	6 690	6 590	7 600	7 880	7 590	7 590	7 520	7 940	8 660	8 590	4 750	5 590
Domestic Aviation (Civil)	7 280	6 280	6 160	5 810	6 160	6 470	6 830	6 990	7 260	7 670	7 530	6 950	6 760	6 840	7 330	7 460	7 510	7 510	7 160	6 380	6 430	6 360	7 350	7 670	7 380	7 350	7 270	7 710	8 420	8 340	4 560	5 390
Military	233	221	228	205	213	231	248	247	235	211	265	205	263	306	301	259	237	305	297	266	257	228	244	213	205	235	255	231	247	243	185	200
Road Transportation	92 000	89 300	91 200	94 500	99 500	100 000	102 000	105 000	107 000	109 000	110 000	110 000	112 000	117 000	121 000	123 000	124 000	129 000	130 000	131 000	133 000	131 000	130 000	132 000	131 000	129 000	128 000	129 000	132 000	132 000	111 000	116 000
Light-Duty Gasoline Vehicles	44 500	43 200	43 900	44 900	45 700	44 300	44 000	43 400	43 100	42 400	41 900	41 700	41 800	41 900	41 900	40 800	40 100	40 100	39 100	38 600	38 000	36 300	35 300	35 400	34 100	34 500	34 300	33 600	33 000	32 300	25 000	24 200
Light-Duty Gasoline Trucks	24 800	24 400	25 400	26 600	28 200	28 600	29 800	31 400	33 200	34 800	35 200	36 100	37 300	38 800	40 500	41 100	41 900	43 100	43 000	44 200	45 300	43 200	44 000	45 900	46 100	47 700	50 400	51 600	53 300	55 100	47 200	50 500
Heavy-Duty Gasoline Vehicles	4 790	4 470	4 470	4 370	4 390	4 170	4 150	4 100	4 140	4 350	4 270	4 360	4 310	4 460	4 630	4 620	4 640	4 670	4 620	4 660	4 590	4 360	4 530	4 480	4 310	4 310	4 370	4 430	4 470	4 540	4 200	4 310
Motorcycles	204	199	206	217	228	225	230	242	255	279	319	332	360	389	430	458	489	526	555	579	594	725	770	785	790	838	874	897	922	952	773	765
Light-Duty Diesel Vehicles	368	363	375	383	409	435	439	457	451	434	464	464	481	579	629	667	741	818	812	818	741	770	740	766	763	702	644	615	588	505	310	323
Light-Duty Diesel Trucks	889	927	993	1 000	1 080	1 240	1 330	1 360	1 300	1 220	1 100	905	823	874	812	750	686	660	646	622	516	495	490	515	595	589	576	642	720	744	600	716
Heavy-Duty Diesel Vehicles	15 700	15 100	15 400	16 700	19 200	21 300	22 200	24 100	24 600	25 600	26 300	26 000	26 600	30 000	32 000	34 400	35 200	39 000	41 000	41 400	43 700	44 900	44 000	44 300	44 000	40 100	36 900	37 100	38 500	37 500	32 600	35 200
Propane and Natural Gas Vehicles	760	619	532	303	290	218	166	115	92	63	42	37	28	26	25	23	21	24	25	27	33	34	33	36	51	67	77	114	131	170	178	191
Railways	6 920	6 410	6 700	6 680	6 910	6 260	6 120	6 210	5 980	6 330	6 530	6 470	5 950	6 010	6 180	6 580	6 890	7 380	7 790	6 650	6 460	7 200	7 370	7 100	7 270	6 930	6 350	7 250	7 410	7 460	6 930	6 840
Marine	3 100	3 150	3 200	3 250	3 300	3 350	3 410	3 460	3 520	3 570	3 630	3 710	3 790	3 870	3 940	4 020	3 960	3 900	3 840	3 780	3 700	3 570	3 450	3 330	3 220	3 100	3 280	3 460	3 470	4 310	3 840	4 400
Domestic Navigation	2 200	2 250	2 300	2 350	2 400	2 450	2 510	2 560	2 620	2 670	2 730	2 810	2 890	2 970	3 050	3 120	3 070	3 020	2 970	2 910	2 850	2 840	2 830	2 820	2 820	2 810	2 990	3 200	3 220	4 050	3 610	4 140
Military Water-Borne Navigation	28	28	28	28	28	28	28	28	28	28	28	28	28	27	27	27	27	27	27	27	26	49	72	95	118	141	131	103	86	100	82	81
Other Transportation	36 000	35 100	37 000	38 100	39 800	43 200	45 100	47 800	48 700	50 200	50 600	48 900	49 100	47 800	47 500	49 500	47 800	44 800	43 200	39 000	42 500	44 900	44 700	47 000	46 800	50 500	50 700	54 800	57 500	57 800	52 300	54 700
Off-Road Agriculture and Forestry	8 730	7 850	7 300	7 480	7 750	7 810	8 180	8 880	8 650	8 730	9 200	8 690	8 420	8 970	9 430	9 920	9 520	9 510	9 260	8 020	9 200	9 890	9 990	10 400	10 900	11 800	11 900	13 600	14 400	14 300	13 400	13 400
Off-Road Commercial and Institutional	4 250	3 910	3 740	3 590	3 510	3 980	3 950	4 200	4 440	4 670	4 570	4 520	4 710	4 500	4 470	4 500	4 350	3 700	3 540	3 640	4 650	5 350	5 210	5 310	4 700	4 930	5 230	5 650	5 920	6 030	5 340	5 800
Off-Road Manufacturing, Mining and Construction	12 300	11 900	12 300	12 600	13 100	13 900	14 500	15 600	16 000	16 400	17 400	16 900	16 100	16 300	16 100	16 100	15 800	15 000	14 900	13 400	15 200	16 400	15 900	16 300	15 100	17 100	16 900	19 000	19 800	20 100	17 300	18 100
Off-Road Residential	366	404	464	538	633	686	748	801	859	944	993	1 050	1 080	1 140	1 210	1 220	1 220	1 240	1 220	1 210	1 190	1 100	1 100	1 090	1 050	1 060	1 060	1 040	1 020	1 000	974	936
Off-Road Other Transportation	3 460	3 330	3 330	3 530	3 990	4 850	5 250	5 740	6 210	6 840	7 180	7 480	7 860	7 810	7 770	7 620	7 330	6 970	6 760	6 350	6 480	6 510	6 710	7 090	7 060	7 330	7 940	8 030	7 960	7 900	7 550	7 740
Pipeline Transport	6 900	7 650	9 890	10 400	10 800	12 000	12 500	12 600	12 500	12 600	11 300	10 300	10 900	9 090	8 500	10 100	9 610	8 400	7 520	6 360	5 720	5 660	5 770	6 770	7 960	8 280	7 720	7 550	8 380	8 480	7 740	8 730
c. Fugitive Sources	**48 000**	**49 000**	**53 000**	**56 000**	**59 000**	**62 000**	**66 000**	**69 000**	**71 000**	**69 000**	**70 000**	**69 000**	**69 000**	**68 000**	**70 000**	**70 000**	**73 000**	**72 000**	**71 000**	**67 000**	**70 000**	**71 000**	**74 000**	**75 000**	**77 000**	**73 000**	**66 000**	**66 000**	**66 000**	**64 000**	**55 000**	**55 000**
Coal Mining	3 000	3 000	2 000	3 000	3 000	2 000	2 000	2 000	2 000	2 000	2 000	2 000	2 000	1 000	1 000	1 000	1 000	1 000	1 000	1 000	1 000	1 000	1 000	2 000	1 000	1 000	1 000	1 000	1 000	1 000	1 000	1 000
Oil and Natural Gas	45 300	46 600	50 900	53 000	56 400	59 500	64 200	66 700	69 500	67 600	68 400	67 200	66 900	66 700	68 400	68 700	71 600	70 400	69 600	65 600	68 400	69 500	72 500	73 300	75 300	72 200	64 800	64 700	64 800	63 000	54 300	54 000
Oil	6 500	6 620	6 940	7 320	7 550	8 080	8 480	9 030	8 950	9 190	9 570	10 200	10 300	10 500	10 700	10 700	11 400	11 800	11 900	11 900	12 600	12 900	14 000	14 300	14 200	13 400	13 000	13 200	13 400	13 400	12 000	12 200
Natural Gas	11 500	11 700	12 300	12 700	13 300	13 800	15 300	14 700	16 000	15 400	14 200	12 900	12 200	12 700	13 700	15 000	15 800	14 600	14 200	13 500	14 400	14 200	13 800	13 900	13 500	13 000	12 300	11 800	11 900	11 600	10 500	10 400
Venting	22 300	22 900	26 000	27 500	29 600	31 800	34 100	36 500	36 100	36 600	38 300	38 400	38 200	38 100	38 500	37 600	38 600	38 300	38 300	35 800	36 400	37 100	38 600	38 000	40 200	39 000	33 800	33 700	33 300	32 100	25 200	24 300
Flaring	5 050	5 350	5 590	5 450	5 910	5 910	6 300	6 430	8 470	6 360	6 380	5 740	6 290	5 310	5 430	5 450	5 800	5 670	5 130	4 450	4 970	5 190	6 100	7 090	7 460	6 860	5 680	6 020	6 230	6 010	6 550	7 070
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.09**	**0.09**	**0.09**	**0.09**	**0.09**	**0.09**	**0.09**	**0.09**	**0.09**	**0.09**	**0.09**	**0.09**	**0.09**	**0.09**	**0.10**	**0.20**	**0.30**	**0.30**	**0.30**	**0.30**	**0.50**	**0.60**
INDUSTRIAL PROCESSES AND PRODUCT USE	**57 000**	**58 400**	**56 100**	**55 900**	**57 800**	**58 400**	**60 700**	**60 200**	**57 000**	**54 500**	**54 000**	**51 900**	**53 900**	**56 000**	**60 100**	**56 500**	**56 900**	**55 500**	**54 700**	**47 500**	**50 600**	**54 100**	**58 400**	**56 200**	**53 900**	**53 400**	**54 200**	**52 400**	**53 900**	**52 900**	**50 400**	**51 900**
a. Mineral Products	**8 500**	**7 600**	**7 300**	**7 400**	**8 500**	**9 200**	**8 900**	**9 600**	**9 700**	**9 900**	**10 000**	**9 400**	**9 700**	**9 700**	**10 000**	**10 000**	**10 000**	**10 000**	**9 300**	**7 200**	**7 800**	**7 900**	**8 500**	**7 800**	**7 800**	**8 000**	**7 900**	**8 600**	**8 700**	**8 800**	**8 200**	**9 000**
Cement Production	5 820	4 770	4 800	4 890	5 770	6 530	6 190	6 660	6 830	7 120	7 230	6 980	7 150	7 250	7 520	7 610	7 730	7 730	6 990	5 360	6 010	6 020	6 530	5 970	5 910	6 180	6 110	6 860	6 990	7 200	6 710	7 380
Lime Production	1 800	1 830	1 840	1 840	1 890	1 900	1 840	1 910	1 890	1 970	1 920	1 680	1 710	1 700	1 830	1 750	1 670	1 630	1 580	1 220	1 410	1 480	1 490	1 410	1 520	1 410	1 380	1 420	1 390	1 340	1 190	1 310
Mineral Product Use	860	980	670	660	820	750	890	990	940	790	910	770	820	790	880	910	880	810	750	610	410	450	440	380	380	410	390	330	320	310	300	310
b. Chemical Industry	**17 500**	**16 900**	**16 700**	**16 800**	**19 000**	**18 500**	**19 400**	**17 500**	**13 400**	**9 930**	**8 720**	**8 640**	**8 920**	**9 210**	**11 400**	**10 400**	**8 930**	**8 180**	**9 000**	**5 870**	**5 760**	**6 410**	**6 690**	**6 650**	**6 380**	**6 730**	**6 830**	**6 340**	**6 410**	**6 230**	**5 940**	**5 750**
Ammonia Production	2 740	2 720	2 490	2 910	3 030	2 920	2 790	2 780	3 090	2 990	2 950	2 600	2 630	2 620	2 920	2 700	2 770	2 570	2 800	2 380	2 470	2 860	2 990	2 990	2 580	2 920	2 850	2 620	2 420	2 500	2 290	2 540
Nitric Acid Production	973	1 020	1 020	1 010	919	965	1 060	1 020	995	1 120	1 180	1 230	1 210	1 220	1 180	1 200	1 190	1 090	780	456	479	476	358	310	213	225	261	245	272	253	189	216
Adipic Acid Production	10 300	9 610	9 570	8 730	10 500	10 300	11 000	9 500	4 870	1 680	865	773	1 200	1 040	2 970	2 550	1 160	1 430	2 320	636	-	-	-	-	-	-	-	-	-	-	-	-
Petrochemical and Carbon Black Production	3 510	3 560	3 590	4 160	4 520	4 290	4 540	4 210	4 440	4 130	3 720	4 040	3 880	4 330	4 350	3 920	3 800	3 100	3 110	2 390	2 810	3 080	3 350	3 350	3 580	3 590	3 720	3 470	3 720	3 480	3 460	2 990
c. Metal Production	**23 800**	**26 800**	**25 600**	**25 400**	**23 900**	**23 500**	**23 200**	**23 000**	**24 000**	**23 200**	**23 400**	**21 400**	**21 300**	**21 000**	**20 500**	**20 200**	**20 700**	**19 300**	**19 000**	**15 900**	**16 000**	**16 700**	**16 700**	**14 800**	**15 000**	**14 400**	**15 300**	**14 600**	**14 500**	**13 900**	**13 100**	**13 900**
Iron and Steel Production	10 500	12 100	12 400	11 900	11 000	11 500	11 300	11 100	11 400	11 600	11 800	10 800	10 600	10 500	10 600	10 300	11 300	11 100	10 800	8 140	8 980	9 880	9 980	8 050	8 900	8 470	9 220	8 450	8 880	8 330	7 110	7 960
Aluminium Production	10 300	11 200	10 900	11 400	10 700	10 000	10 400	10 300	10 500	9 340	8 890	8 260	7 930	8 130	7 770	8 680	8 080	7 630	7 760	7 540	6 870	6 620	6 470	6 530	5 830	5 720	5 990	6 010	5 510	5 310	5 920	5 850
SF_6 Used in Magnesium Smelters and Casters	2 960	3 420	2 290	2 110	2 180	2 010	1 560	1 600	2 100	2 160	2 660	2 250	2 800	2 370	2 090	1 230	1 340	489	435	184	184	183	248	213	248	235	140	137	147	296	102	139
d. Production and Consumption of Halocarbons, SF_6 and NF_3[c]	**980**	**1 100**	**830**	**5**	**5**	**500**	**840**	**1 100**	**1 600**	**2 200**	**2 800**	**3 200**	**3 600**	**4 000**	**4 600**	**5 100**	**5 400**	**6 100**	**6 100**	**6 900**	**7 700**	**8 600**	**9 100**	**10 000**	**11 000**	**11 000**	**11 000**	**11 000**	**12 000**	**12 000**	**12 000**	**11 000**
e. Non-Energy Products from Fuels and Solvent Use	**5 800**	**5 600**	**5 300**	**5 900**	**6 000**	**6 300**	**7 900**	**8 500**	**7 800**	**8 800**	**8 500**	**8 600**	**9 900**	**12 000**	**13 000**	**10 000**	**11 000**	**11 000**	**11 000**	**11 000**	**13 000**	**14 000**	**17 000**	**16 000**	**13 000**	**13 000**	**12 000**	**11 000**	**11 000**	**11 000**	**10 000**	**11 000**
f. Other Product Manufacture and Use	**370**	**370**	**350**	**350**	**360**	**390**	**350**	**390**	**500**	**580**	**610**	**680**	**520**	**610**	**630**	**540**	**520**	**540**	**530**	**470**	**430**	**390**	**490**	**540**	**450**	**540**	**600**	**630**	**700**	**670**	**720**	**720**

Table A9–2 **Canada's 1990–2021 GHG Emissions by IPCC Sector** (cont'd)

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	2020	2021
	kt CO_2 eq																															
AGRICULTURE	**41 000**	**41 000**	**43 000**	**44 000**	**46 000**	**48 000**	**49 000**	**49 000**	**50 000**	**50 000**	**51 000**	**51 000**	**51 000**	**53 000**	**54 000**	**54 000**	**53 000**	**53 000**	**52 000**	**50 000**	**50 000**	**49 000**	**51 000**	**53 000**	**51 000**	**52 000**	**53 000**	**52 000**	**53 000**	**54 000**	**55 000**	**54 000**
a. Enteric Fermentation	**22 000**	**23 000**	**24 000**	**24 000**	**25 000**	**27 000**	**27 000**	**27 000**	**27 000**	**27 000**	**28 000**	**29 000**	**29 000**	**29 000**	**30 000**	**31 000**	**30 000**	**29 000**	**28 000**	**26 000**	**25 000**	**25 000**	**25 000**	**25 000**	**24 000**	**24 000**	**24 000**	**24 000**	**24 000**	**24 000**	**24 000**	**24 000**
b. Manure Management	**6 100**	**6 200**	**6 500**	**6 600**	**6 800**	**7 200**	**7 300**	**7 400**	**7 500**	**7 700**	**7 900**	**8 200**	**8 300**	**8 400**	**8 600**	**8 700**	**8 500**	**8 300**	**8 100**	**7 800**	**7 600**	**7 600**	**7 600**	**7 700**	**7 600**	**7 700**	**7 800**	**7 800**	**7 800**	**7 800**	**7 800**	**7 800**
c. Agricultural Soils	**11 000**	**11 000**	**11 000**	**12 000**	**12 000**	**12 000**	**13 000**	**13 000**	**13 000**	**13 000**	**13 000**	**13 000**	**13 000**	**14 000**	**13 000**	**13 000**	**13 000**	**14 000**	**15 000**	**14 000**	**15 000**	**15 000**	**16 000**	**18 000**	**17 000**	**18 000**	**18 000**	**17 000**	**19 000**	**19 000**	**20 000**	**19 000**
Direct Sources	8 700	8 500	8 800	9 300	9 500	9 600	10 000	10 000	10 000	10 000	10 000	10 000	9 800	11 000	10 000	10 000	10 000	11 000	11 000	11 000	12 000	12 000	13 000	14 000	13 000	14 000	14 000	14 000	15 000	15 000	16 000	15 000
Indirect Sources	3 000	2 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	4 000	4 000	4 000	4 000	4 000	4 000	4 000	4 000	4 000	4 000
d. Field Burning of Agricultural Residues	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**100**	**100**	**100**	**100**	**100**	**30**	**40**	**50**	**40**	**50**	**50**	**30**	**30**	**40**	**50**	**50**	**60**	**50**	**50**	**50**	**50**	**50**	**30**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**1 200**	**1 100**	**1 200**	**1 200**	**1 400**	**1 500**	**1 500**	**1 600**	**1 700**	**1 500**	**1 600**	**1 400**	**1 500**	**1 600**	**1 500**	**1 400**	**1 500**	**1 700**	**1 700**	**1 800**	**1 800**	**2 000**	**2 300**	**2 700**	**2 500**	**2 600**	**2 500**	**2 400**	**2 600**	**2 700**	**3 000**	**3 100**
WASTE	**19 000**	**19 000**	**19 000**	**19 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**21 000**	**21 000**	**21 000**	**21 000**	**22 000**	**22 000**	**22 000**	**22 000**	**21 000**	**21 000**	**21 000**	**20 000**	**20 000**	**20 000**	**21 000**	**21 000**	**21 000**	**21 000**	**21 000**	**21 000**	**21 000**	**21 000**	**21 000**
a. Solid Waste Disposal (Landfills)	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**	**20 000**
b. Biological Treatment of Solid Waste	**70**	**100**	**100**	**100**	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**300**	**300**	**300**	**300**	**300**	**300**	**300**	**300**	**400**	**400**	**400**	**400**	**400**	**400**
c. Wastewater Treatment and Discharge	**2 000**	**2 000**	**2 000**	**2 000**	**2 000**	**2 000**	**2 000**	**2 000**	**2 000**	**2 000**	**2 000**	**2 000**	**2 000**	**2 000**	**2 000**	**2 000**	**2 000**	**2 000**	**2 000**	**2 000**	**2 000**	**2 000**	**2 000**	**3 000**	**3 000**	**3 000**	**3 000**	**3 000**	**3 000**	**3 000**	**3 000**	**3 000**
d. Incineration and Open Burning of Waste	**260**	**270**	**280**	**290**	**330**	**360**	**340**	**310**	**330**	**320**	**330**	**370**	**380**	**360**	**330**	**350**	**330**	**320**	**320**	**290**	**310**	**300**	**170**	**190**	**170**	**200**	**200**	**190**	**180**	**180**	**160**	**150**
e. Industrial Wood Waste Landfills	**900**	**900**	**900**	**900**	**1 000**	**1 000**	**1 000**	**1 000**	**1 000**	**1 000**	**1 000**	**1 000**	**1 000**	**1 000**	**1 000**	**1 000**	**1 000**	**900**	**900**	**900**	**900**	**900**	**900**	**800**	**800**	**800**	**800**	**800**	**700**	**700**	**700**	**700**
LAND USE, LAND-USE CHANGE AND FORESTRY	**-65 000**	**-68 000**	**-57 000**	**-48 000**	**-57 000**	**-42 000**	**-48 000**	**-52 000**	**-58 000**	**-50 000**	**-38 000**	**-46 000**	**-12 000**	**-11 000**	**-12 000**	**-5 500**	**-19 000**	**-17 000**	**-21 000**	**-49 000**	**-18 000**	**-12 000**	**-21 000**	**-20 000**	**-39 000**	**24**	**-11 000**	**-16 000**	**-11 000**	**-19 000**	**-13 000**	**-17 000**
a. Forest Land	**-200 000**	**-200 000**	**-200 000**	**-200 000**	**-200 000**	**-190 000**	**-190 000**	**-190 000**	**-190 000**	**-190 000**	**-180 000**	**-170 000**	**-160 000**	**-150 000**	**-140 000**	**-140 000**	**-130 000**	**-130 000**	**-140 000**	**-140 000**	**-140 000**	**-140 000**	**-140 000**	**-140 000**	**-140 000**	**-130 000**	**-140 000**	**-140 000**	**-130 000**	**-140 000**	**-130 000**	**-130 000**
b. Cropland	**1 000**	**-6 000**	**-2 100**	**2 500**	**-8 300**	**-7 700**	**-7 700**	**-12 000**	**-7 800**	**-15 000**	**-19 000**	**-12 000**	**4 000**	**7 800**	**-23 000**	**-22 000**	**-25 000**	**-19 000**	**-20 000**	**-36 000**	**-22 000**	**-16 000**	**-21 000**	**-24 000**	**-43 000**	**-11 000**	**-17 000**	**-23 000**	**-22 000**	**-18 000**	**-16 000**	**-18 000**
c. Grassland	**0.60**	**0.80**	**1**	**0.40**	**1**	**0.30**	**0.50**	**0.60**	**0.70**	**0.80**	**1**	**1**	**1**	**1**	**0.90**	**0.90**	**1**	**0.40**	**0.50**	**0.40**	**0.30**	**0.60**	**2**	**2**	**0.80**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
d. Wetlands	**5 400**	**5 300**	**5 100**	**5 500**	**3 300**	**3 200**	**3 100**	**3 200**	**3 500**	**3 700**	**3 200**	**3 200**	**3 200**	**3 100**	**3 200**	**3 100**	**3 200**	**3 200**	**3 300**	**3 100**	**3 100**	**3 000**	**3 100**	**3 100**	**3 200**	**3 000**	**3 100**	**3 100**	**2 800**	**3 100**	**3 500**	**3 300**
e. Settlements	**1 900**	**1 800**	**1 600**	**1 600**	**1 400**	**1 300**	**1 200**	**1 200**	**1 200**	**1 300**	**1 400**	**1 200**	**1 500**	**1 700**	**1 600**	**1 500**	**1 800**	**1 900**	**1 900**	**1 600**	**1 700**	**1 600**	**1 700**	**2 000**	**2 200**	**2 300**	**2 300**	**2 200**	**2 100**	**1 900**	**2 100**	**2 000**
f. Harvested Wood Products	**131 000**	**132 000**	**142 000**	**146 000**	**149 000**	**154 000**	**150 000**	**150 000**	**137 000**	**145 000**	**152 000**	**135 000**	**141 000**	**128 000**	**150 000**	**148 000**	**135 000**	**130 000**	**130 000**	**127 000**	**136 000**	**139 000**	**136 000**	**140 000**	**140 000**	**139 000**	**137 000**	**137 000**	**139 000**	**130 000**	**128 000**	**128 000**

Notes: Estimates for the latest year (2021) 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 by Canadian economic sector 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.

Table A9–3 **2021 GHG Emission Summary for Canada**

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[b]	**537 000**	**3 600**	**91 000**	**100**	**30 000**	**11 000**	**750**	**330**	**0.60**	**670 000**
ENERGY	**495 000**	**1 700**	**43 000**	**20**	**5 000**	**-**	**-**	**-**	**-**	**543 000**
a. Stationary Combustion Sources	**294 000**	**100**	**4 000**	**7**	**2 000**	**-**	**-**	**-**	**-**	**300 000**
Public Electricity and Heat Production	59 900	8	190	1	400	-	-	-	-	60 400
Petroleum Refining Industries	13 100	0.30	7	0.09	30	-	-	-	-	13 200
Oil and Gas Extraction	100 000	90	2 000	2	600	-	-	-	-	103 000
Mining	6 370	0.10	3	0.10	40	-	-	-	-	6 410
Manufacturing Industries	40 200	2	60	2	450	-	-	-	-	40 700
Iron and Steel	5 130	0.10	3	0.10	30	-	-	-	-	5 170
Non-Ferrous Metals	3 180	0.06	2	0.05	20	-	-	-	-	3 200
Chemical	9 140	0.17	4	0.20	50	-	-	-	-	9 190
Pulp and Paper	6 660	1	30	0.60	200	-	-	-	-	6 860
Cement	3 830	0.20	4	0.05	20	-	-	-	-	3 850
Other Manufacturing	12 200	0.70	20	0.60	200	-	-	-	-	12 400
Construction	1 450	0.03	0.65	0.04	12	-	-	-	-	1 460
Commercial and Institutional	35 200	0.86	22	0.80	200	-	-	-	-	35 400
Residential	34 900	50	1 000	1	400	-	-	-	-	36 500
Agriculture and Forestry	3 060	0.05	1	0.08	20	-	-	-	-	3 090
b. Transport[c]	**184 000**	**48**	**1 200**	**9**	**2 700**	**-**	**-**	**-**	**-**	**188 000**
Aviation	5 540	0.20	4	0.20	50	-	-	-	-	5 590
Domestic Aviation (Civil)	5 340	0.20	4	0.20	50	-	-	-	-	5 390
Military	199	0.00	0.08	0.01	2	-	-	-	-	200
Road Transportation	115 000	7	200	4	1 200	-	-	-	-	116 000
Light-Duty Gasoline Vehicles	23 900	2	40	0.58	170	-	-	-	-	24 200
Light-Duty Gasoline Trucks	50 100	3	80	1	330	-	-	-	-	50 500
Heavy-Duty Gasoline Vehicles	4 200	0.10	4	0.37	110	-	-	-	-	4 310
Motorcycles	754	0.30	7	0.01	4	-	-	-	-	765
Light-Duty Diesel Vehicles	315	0.01	0.20	0.03	8	-	-	-	-	323
Light-Duty Diesel Trucks	698	0.02	0.50	0.06	18	-	-	-	-	716
Heavy-Duty Diesel Vehicles	34 600	1	40	2	600	-	-	-	-	35 200
Propane and Natural Gas Vehicles	178	0.50	10	0.00	1	-	-	-	-	191
Railways	6 110	0.30	9	2	700	-	-	-	-	6 840
Marine	4 360	0.41	10	0.10	40	-	-	-	-	4 400
Domestic Navigation	4 100	0.39	10	0.10	30	-	-	-	-	4 140
Fishing	179	0.02	0.40	0.01	1	-	-	-	-	181
Military Water-Borne Navigation	80	0.01	0.19	0.00	0.70	-	-	-	-	81
Other Transportation	53 000	40	990	2	700	-	-	-	-	54 700
Off-Road Agriculture and Forestry	13 200	0.95	24	0.70	200	-	-	-	-	13 400
Off-Road Commercial and Institutional	5 550	8	190	0.20	60	-	-	-	-	5 800
Off-Road Manufacturing, Mining and Construction	17 700	3	79	0.90	300	-	-	-	-	18 100
Off-Road Residential	869	2	60	0.02	7	-	-	-	-	936
Off-Road Other Transportation	7 250	17	430	0.20	60	-	-	-	-	7 740
Pipeline Transport	8 460	8	200	0.20	60	-	-	-	-	8 730
c. Fugitive Sources	**17 000**	**1 520**	**37 900**	**0.39**	**120**	**-**	**-**	**-**	**-**	**55 000**
Coal Mining	-	50	1 000	-	-	-	-	-	-	1 000
Oil and Natural Gas	17 000	1 470	36 700	0.40	100	-	-	-	-	54 000
Oil	600	458	11 500	0.40	100	-	-	-	-	12 200
Natural Gas	49	415	10 400	-	-	-	-	-	-	10 400
Venting	10 000	568	14 200	-	-	-	-	-	-	24 300
Flaring	6 390	27	665	0.03	8	-	-	-	-	7 070
d. CO_2 Transport and Storage	**0.60**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.60**
INDUSTRIAL PROCESSES AND PRODUCT USE	**38 500**	**5**	**130**	**3**	**779**	**11 000**	**753**	**330**	**0.60**	**51 900**
a. Mineral Products	**9 000**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**9 000**
Cement Production	7 380	-	-	-	-	-	-	-	-	7 380
Lime Production	1 310	-	-	-	-	-	-	-	-	1 310
Mineral Product Use	310	-	-	-	-	-	-	-	-	310
b. Chemical Industry	**5 390**	**5**	**130**	**0.77**	**229**	**-**	**-**	**-**	**-**	**5 750**
Ammonia Production	2 540	-	-	-	-	-	-	-	-	2 540
Nitric Acid Production	-	-	-	0.72	216	-	-	-	-	216
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
Petrochemical and Carbon Black Production	2 850	5	130	0.04	13	-	-	-	-	2 990
c. Metal Production	**13 100**	**0.07**	**2**	**-**	**-**	**-**	**714**	**139**	**-**	**13 900**
Iron and Steel Production	7 960	0.07	2	-	-	-	-	-	-	7 960
Aluminium Production	5 130	-	-	-	-	-	714	0.07	-	5 850
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	139	-	139
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**-**	**-**	**-**	**-**	**11 000**	**21**	**34**	**0.60**	**11 000**
e. Non-Energy Products from Fuels and Solvent Use	**11 000**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**11 000**
f. Other Product Manufacture and Use	**-**	**-**	**-**	**2**	**550**	**-**	**20**	**150**	**-**	**720**
AGRICULTURE	**3 100**	**1 100**	**28 000**	**76**	**23 000**	**-**	**-**	**-**	**-**	**54 000**
a. Enteric Fermentation	**-**	**980**	**24 000**	**-**	**-**	**-**	**-**	**-**	**-**	**24 000**
b. Manure Management	**-**	**160**	**3 900**	**10**	**4 000**	**-**	**-**	**-**	**-**	**7 800**
c. Agricultural Soils	**-**	**-**	**-**	**63**	**19 000**	**-**	**-**	**-**	**-**	**19 000**
Direct Sources	-	-	-	50	15 000	-	-	-	-	15 000
Indirect Sources	-	-	-	10	4 000	-	-	-	-	4 000
d. Field Burning of Agricultural Residues	**-**	**1**	**30**	**0.03**	**8**	**-**	**-**	**-**	**-**	**30**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**3 100**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3 100**
WASTE	**100**	**770**	**19 000**	**6**	**2 000**	**-**	**-**	**-**	**-**	**21 000**
a. Solid Waste Disposal (Landfills)	**-**	**700**	**20 000**	**-**	**-**	**-**	**-**	**-**	**-**	**20 000**
b. Biological Treatment of Solid Waste	**-**	**7**	**200**	**0.60**	**200**	**-**	**-**	**-**	**-**	**400**
c. Wastewater Treatment and Discharge	**-**	**40**	**1 000**	**5**	**1 000**	**-**	**-**	**-**	**-**	**3 000**
d. Incineration and Open Burning of Waste	**78**	**0.03**	**0.80**	**0.20**	**70**	**-**	**-**	**-**	**-**	**150**
e. Industrial Wood Waste Landfills	**-**	**30**	**700**	**-**	**-**	**-**	**-**	**-**	**-**	**700**
LAND USE, LAND-USE CHANGE AND FORESTRY	**-18 000**	**22**	**550**	**1**	**320**	**-**	**-**	**-**	**-**	**-17 000**
a. Forest Land	**-130 000**	**10**	**300**	**0.60**	**200**	**-**	**-**	**-**	**-**	**-130 000**
b. Cropland	**-18 000**	**5**	**130**	**0.24**	**71**	**-**	**-**	**-**	**-**	**-18 000**
c. Grassland	**-**	**0.04**	**0.90**	**0.00**	**0.30**	**-**	**-**	**-**	**-**	**1**
d. Wetlands	**3 300**	**1**	**26**	**0.03**	**9**	**-**	**-**	**-**	**-**	**3 300**
e. Settlements	**1 900**	**5**	**120**	**0.18**	**55**	**-**	**-**	**-**	**-**	**2 000**
f. Harvested Wood Products	**128 000**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**128 000**

Notes: Estimates for the latest year (2021) 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 by Canadian economic sector are provided in Annex 10 of this report.

a. Chapter 1, Table 1-1 of this report provides a list of global warming potentials (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.

CANADA'S GREENHOUSE GAS EMISSION TABLES BY CANADIAN ECONOMIC SECTOR, 1990–2021

This annex contains summary tables illustrating national Greenhouse Gas (GHG) emissions for the period 1990–2021 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, 2022).

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). (ECCC, 2021)

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 mostly allocated 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, 1990–). This ensures that the economic sector estimates match the IPCC sector estimates.

Canada's GHG 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	– conventional 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 in designated oil sands areas 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 up to and including the natural gas meter
ELECTRICITY	Combustion and process emissions from utility electricity generation, steam production (for sale) and transmission. Excludes utility owned cogeneration at industrial sites. Includes post-meter, unintentional leaks from natural gas consumption.
TRANSPORT	Mobile related emissions including all fossil fuels and non-CO_2 emission from biofuels. Includes post-meter, unintentional leaks from natural gas powered vehicles.
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). Includes post-meter, unintentional leaks from natural gas powered engines.
HEAVY INDUSTRY	Stationary combustion, onsite transportation, electricity and steam production, and process emissions. Includes post-meter, unintentional leaks from natural gas consumption.
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, including post-meter, unintentional leaks from natural gas appliances 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); includes post-meter, unintentional leaks from natural gas consumption
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. Includes post-meter, unintentional leaks from natural gas consumption.
LIGHT MANUFACTURING, CONSTRUCTION AND FOREST RESOURCES	Stationary combustion, onsite transportation, electricity and steam production, and process emissions, including post-meter, unintentional leaks from natural gas consumption 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, 1990–2021**

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	2020	2021
	Mt CO_2 eq																															
NATIONAL GHG TOTAL	**589**	**582**	**599**	**602**	**622**	**639**	**661**	**676**	**682**	**695**	**719**	**710**	**715**	**734**	**737**	**732**	**725**	**748**	**731**	**690**	**702**	**711**	**716**	**723**	**720**	**723**	**705**	**712**	**725**	**724**	**659**	**670**
OIL AND GAS	**100**	**100**	**109**	**115**	**119**	**125**	**133**	**135**	**139**	**148**	**153**	**155**	**159**	**163**	**165**	**168**	**175**	**180**	**177**	**174**	**179**	**185**	**192**	**197**	**202**	**203**	**191**	**194**	**202**	**201**	**183**	**189**
Upstream Oil and Gas	**81**	**81**	**90**	**96**	**101**	**107**	**112**	**113**	**118**	**128**	**134**	**134**	**137**	**140**	**141**	**145**	**152**	**156**	**154**	**151**	**156**	**163**	**170**	**175**	**182**	**182**	**171**	**175**	**183**	**181**	**166**	**172**
Natural Gas Production and Processing	32	31	33	35	37	39	42	38	41	50	56	57	60	63	61	65	66	68	67	63	62	66	64	62	62	61	57	54	56	54	49	50
Conventional Oil Production	21	22	24	26	27	29	31	33	34	34	36	35	35	34	33	33	33	34	33	31	32	34	36	38	40	39	35	35	35	34	26	26
Conventional Light Oil Production	13	13	13	14	15	15	16	16	15	15	16	16	16	16	17	17	17	18	18	17	18	20	22	23	25	24	22	23	24	23	18	18
Conventional Heavy Oil Production	8	9	11	12	12	14	15	17	16	16	19	18	16	16	15	14	14	14	13	12	13	13	13	13	14	13	11	10	10	9	7	7
Frontier Oil Production	0	0	0	0	0	0	0	0	3	2	1	1	2	2	2	2	2	2	2	2	2	1	1	1	2	1	1	2	2	2	2	1
Oil Sands (Mining, In-Situ, Upgrading)	15	16	18	19	20	20	21	23	25	25	26	29	30	33	36	35	41	44	45	49	54	56	62	65	70	72	69	76	81	83	81	85
Mining and Extraction	2	2	2	3	3	3	3	3	3	3	3	4	4	5	6	6	6	7	7	8	9	9	9	10	11	11	11	13	15	16	15	16
In-Situ	5	4	4	4	4	5	5	7	9	8	9	9	9	10	11	12	14	16	18	20	23	25	29	31	35	38	37	41	43	43	41	45
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	22	24	25	25	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	10	10	10	10	11	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**	**17**	**17**
Petroleum Refining	18	17	17	18	17	17	20	20	19	18	18	19	20	22	23	22	22	22	21	21	22	20	21	21	20	20	20	18	18	19	16	16
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	1	1
ELECTRICITY	**95**	**96**	**103**	**93**	**95**	**98**	**98**	**109**	**122**	**119**	**129**	**129**	**124**	**127**	**119**	**118**	**112**	**120**	**109**	**94**	**95**	**87**	**83**	**80**	**76**	**79**	**74**	**73**	**63**	**62**	**54**	**52**
TRANSPORT	**118**	**114**	**116**	**119**	**125**	**127**	**130**	**134**	**137**	**141**	**142**	**142**	**144**	**150**	**154**	**157**	**158**	**163**	**163**	**162**	**166**	**164**	**165**	**167**	**165**	**163**	**162**	**165**	**169**	**170**	**143**	**150**
Passenger Transport	**80**	**77**	**79**	**81**	**84**	**83**	**85**	**86**	**88**	**90**	**90**	**90**	**91**	**93**	**96**	**95**	**96**	**98**	**97**	**97**	**97**	**93**	**94**	**96**	**95**	**97**	**99**	**100**	**102**	**103**	**83**	**86**
Cars, Light Trucks and Motorcycles	71	70	71	74	76	75	76	77	79	80	80	81	82	84	85	85	85	87	86	86	87	83	83	85	84	86	88	89	90	91	75	78
Bus, Rail and Aviation	8	7	7	7	8	8	9	9	9	10	10	9	9	10	10	10	10	11	11	10	10	10	11	11	11	11	11	12	12	12	7	8
Freight Transport	**31**	**29**	**29**	**30**	**33**	**34**	**35**	**37**	**37**	**39**	**39**	**39**	**39**	**43**	**45**	**48**	**49**	**53**	**55**	**54**	**57**	**58**	**58**	**57**	**57**	**52**	**49**	**50**	**52**	**52**	**47**	**50**
Heavy Duty Trucks, Rail	26	24	25	26	28	29	30	32	32	34	34	34	34	37	40	43	44	48	50	49	52	53	53	53	52	48	44	45	47	46	41	43
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	4	4	4	5	5	6	5	6
Other: Recreational, Commercial and Residential	**8**	**8**	**8**	**8**	**8**	**10**	**10**	**11**	**12**	**13**	**13**	**13**	**14**	**14**	**14**	**13**	**13**	**12**	**12**	**11**	**12**	**13**	**13**	**14**	**13**	**13**	**14**	**15**	**15**	**15**	**14**	**14**
HEAVY INDUSTRY	**99**	**99**	**96**	**95**	**101**	**102**	**105**	**104**	**100**	**97**	**97**	**91**	**92**	**91**	**94**	**89**	**89**	**87**	**86**	**73**	**76**	**82**	**82**	**81**	**81**	**81**	**78**	**77**	**80**	**79**	**74**	**77**
Mining	**7**	**7**	**6**	**7**	**8**	**8**	**9**	**9**	**9**	**9**	**9**	**8**	**8**	**8**	**8**	**8**	**8**	**9**	**9**	**9**	**9**	**9**	**10**	**10**	**9**	**9**	**9**	**10**	**11**	**10**	**10**	**11**
Smelting and Refining (Non-Ferrous Metals)	**18**	**18**	**17**	**17**	**18**	**16**	**17**	**17**	**18**	**16**	**17**	**15**	**15**	**15**	**14**	**15**	**14**	**13**	**13**	**12**	**11**	**12**	**11**	**11**	**10**	**11**	**11**	**11**	**10**	**10**	**10**	**10**
Pulp and Paper	**15**	**15**	**14**	**14**	**14**	**14**	**14**	**14**	**13**	**13**	**13**	**12**	**11**	**11**	**11**	**9**	**8**	**8**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**6**	**7**	**7**	**8**	**8**	**7**	**8**
Iron and Steel	**17**	**18**	**19**	**18**	**18**	**18**	**18**	**18**	**19**	**19**	**19**	**17**	**17**	**17**	**17**	**16**	**17**	**18**	**17**	**13**	**14**	**17**	**16**	**15**	**16**	**15**	**15**	**15**	**16**	**15**	**12**	**14**
Cement	**10**	**9**	**9**	**9**	**10**	**11**	**11**	**11**	**11**	**12**	**12**	**12**	**12**	**12**	**13**	**13**	**13**	**13**	**12**	**10**	**10**	**10**	**11**	**10**	**10**	**10**	**10**	**11**	**11**	**11**	**10**	**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**	**2**	**2**	**2**	**2**
Chemicals and Fertilizers	**29**	**29**	**28**	**28**	**31**	**31**	**33**	**32**	**28**	**25**	**24**	**24**	**24**	**23**	**27**	**25**	**24**	**24**	**24**	**20**	**22**	**24**	**25**	**25**	**26**	**27**	**24**	**21**	**21**	**22**	**21**	**21**
BUILDINGS	**72**	**71**	**73**	**77**	**77**	**78**	**84**	**82**	**73**	**77**	**84**	**81**	**85**	**90**	**89**	**85**	**80**	**86**	**85**	**84**	**82**	**86**	**85**	**86**	**86**	**85**	**85**	**88**	**92**	**93**	**89**	**87**
Service Industry	**28**	**28**	**29**	**31**	**30**	**32**	**34**	**34**	**32**	**34**	**38**	**38**	**40**	**43**	**43**	**40**	**37**	**38**	**39**	**39**	**38**	**40**	**42**	**42**	**42**	**42**	**43**	**45**	**47**	**49**	**48**	**47**
Residential	**45**	**43**	**44**	**46**	**47**	**46**	**51**	**47**	**42**	**43**	**46**	**43**	**45**	**47**	**45**	**45**	**43**	**47**	**47**	**45**	**43**	**46**	**42**	**44**	**44**	**43**	**42**	**43**	**45**	**44**	**41**	**40**
AGRICULTURE	**49**	**49**	**52**	**53**	**54**	**57**	**58**	**59**	**59**	**60**	**61**	**60**	**60**	**62**	**63**	**64**	**62**	**62**	**62**	**59**	**59**	**60**	**62**	**64**	**63**	**65**	**66**	**67**	**69**	**69**	**70**	**69**
On Farm Fuel Use	**8**	**8**	**8**	**8**	**8**	**9**	**9**	**10**	**9**	**9**	**10**	**9**	**8**	**9**	**9**	**9**	**9**	**10**	**9**	**9**	**10**	**11**	**11**	**12**	**12**	**13**	**13**	**14**	**15**	**15**	**14**	**14**
Crop Production	**10**	**10**	**10**	**11**	**11**	**12**	**12**	**12**	**13**	**12**	**12**	**12**	**11**	**13**	**12**	**12**	**12**	**13**	**14**	**14**	**14**	**14**	**16**	**18**	**17**	**18**	**18**	**17**	**19**	**19**	**21**	**19**
Animal Production	**31**	**31**	**33**	**33**	**35**	**37**	**37**	**37**	**37**	**38**	**39**	**40**	**40**	**40**	**42**	**42**	**41**	**40**	**39**	**37**	**36**	**35**	**35**	**35**	**34**	**34**	**35**	**35**	**35**	**35**	**35**	**35**
WASTE	**19**	**19**	**19**	**19**	**20**	**20**	**20**	**20**	**20**	**21**	**21**	**21**	**21**	**22**	**22**	**22**	**22**	**21**	**21**	**21**	**20**	**20**	**20**	**21**	**21**	**21**	**21**	**21**	**21**	**21**	**21**	**21**
Solid Waste[a]	**17**	**17**	**17**	**18**	**18**	**18**	**18**	**18**	**18**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**20**	**19**	**19**	**18**	**18**	**18**	**18**	**18**	**18**	**18**	**18**	**18**	**18**	**18**	**18**	**18**
Wastewater	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**
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**	**0**	**0**
COAL PRODUCTION	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**4**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**
LIGHT MANUFACTURING, CONSTRUCTION AND FOREST RESOURCES	**31**	**29**	**28**	**26**	**26**	**28**	**28**	**29**	**27**	**27**	**28**	**27**	**27**	**27**	**28**	**28**	**26**	**26**	**25**	**21**	**23**	**24**	**24**	**24**	**23**	**24**	**24**	**25**	**25**	**25**	**22**	**23**
Light Manufacturing	**21**	**21**	**20**	**18**	**18**	**20**	**20**	**21**	**18**	**18**	**19**	**17**	**17**	**17**	**18**	**17**	**16**	**17**	**16**	**14**	**14**	**15**	**16**	**16**	**15**	**15**	**15**	**14**	**14**	**14**	**13**	**14**
Construction	**7**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**7**	**7**	**7**	**8**	**8**	**8**	**8**	**8**	**7**	**7**	**5**	**6**	**7**	**6**	**6**	**6**	**7**	**7**	**8**	**8**	**8**	**7**	**7**
Forest Resources	**3**	**3**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**3**	**3**	**3**	**3**	**3**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**3**	**3**	**2**	**2**

Notes:
Totals may not add up due to rounding.
Estimates presented here are under continual improvement. Historical emissions may be updated in future publications as new data become 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 and 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, 2021**

ECONOMIC CATEGORY	Economic Category Total	NATIONAL INVENTORY CATEGORY[a]																										
		Energy								Industrial Processes and Product Use							Agriculture				Waste						CO_2 Captured[j,k]	LULUCF[b]
		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]	**670**	**275**	**24.8**	**0.9**	**188**	**23.8**	**7.1**	**25.4**	**545**	**9.0**	**5.7**	**13.9**	**11.5**	**11.0**	**0.7**	**51.9**	**7.8**	**24.4**	**21.9**	**54.2**	**17.2**	**0.4**	**2.6**	**0.2**	**0.7**	**21.1**	**-1.5**	
	OIL AND GAS	**189**	**105.2**	**16.2**	**0.0**	**14.4**	**20.7**	**7.1**	**25.4**	**189.0**					**1.2**		**1.2**											**-1.1**	
	Upstream Oil and Gas	**172**	**92.5**	**15.2**		**14.3**	**19.6**	**6.9**	**24.4**	**172.9**					**0.2**		**0.2**											**-1.1**	
	Natural Gas Production and Processing	50	28.4	0.9		0.6	6.3	2.2	11.6	49.9					0.0		0.0												
	Conventional Oil Production	26	7.2	0.2		0.9	9.4	2.9	5.4	26.0					0.0		0.0												
	Conventional Light Oil Production	18	3.2			0.5	7.5	2.3	4.2	17.7					0.0		0.0												
	Conventional Heavy Oil Production	7	3.2			0.5	1.8	0.3	1.2	7.0																			
	Frontier Oil Production	1	0.8	0.2		0.0	0.0	0.3	0.0	1.4					0.0		0.0												
	Oil Sands (Mining, In-Situ, Upgrading)[c]	85	57.0	14.1		4.1	2.7	1.8	6.4	86.1					0.2		0.2											-1.1	
	Mining and Extraction	16	5.3	3.8		4.0	2.0	0.2	0.0	15.4					0.1		0.1												
	In-Situ	45	36.6	6.4		0.1	0.6	0.4	0.5	44.6																			
	Upgrading	25	15.1	3.9		0.0	0.1	1.2	5.9	26.1					0.1		0.1											-1.1	
	Oil, Natural Gas and CO_2 Transmission	11				8.6	1.3	0.0	0.9	10.8																			
	Downstream Oil and Gas	**17**	**12.7**	**1.0**	**0.0**	**0.1**	**1.1**	**0.2**	**1.0**	**16.1**					**1.0**		**1.0**												
	Petroleum Refining	16	12.7	1.0	0.0		0.1	0.2	0.9	14.9					1.0		1.0												
	Natural Gas Distribution	1				0.1	1.0	0.0	0.1	1.2																			
	ELECTRICITY	**52**	**51.4**		**0.4**		**0.1**			**52.0**						**0.2**	**0.2**											**-0.4**	
	TRANSPORT[g]	**150**				**147.7**	**0.0**			**147.7**				**2.3**	**0.2**		**2.5**												
	Passenger Transport	**86**				**84.7**	**0.0**			**84.7**				**1.3**	**0.1**		**1.4**												
	Cars, Light Trucks and Motorcycles	78				76.4	0.0			76.4				1.2	0.1		1.3												
	Bus, Rail and Aviation	8				8.2	0.0			8.2				0.1	0.0		0.1												
	Freight Transport	**50**				**48.5**	**0.0**			**48.5**				**1.0**	**0.1**		**1.1**												
	Heavy Duty Trucks, Rail	43				42.5	0.0			42.5				0.8	0.1		0.9												
	Aviation and Marine	6				6.0				6.0				0.2	0.0		0.2												
	Other: Recreational, Commercial and Residential	**14**				**14.5**				**14.5**																			
	HEAVY INDUSTRY	**77**	**30.9**	**7.7**	**0.3**	**4.6**	**0.1**			**43.6**	**8.8**	**5.7**	**13.9**	**0.1**	**4.6**		**33.2**												
	Mining	**11**	**4.9**	**1.5**		**4.0**	**0.0**			**10.4**				**0.0**	**0.3**		**0.3**												
	Smelting and Refining (Non-Ferrous Metals)	**10**	**3.2**		**0.0**	**0.1**	**0.0**			**3.3**	**0.0**		**6.0**		**0.7**		**6.7**												
	Pulp and Paper	**8**	**5.1**	**2.2**	**0.1**	**0.1**	**0.0**			**7.6**	**0.0**				**0.0**		**0.0**												
	Iron and Steel	**14**	**5.0**	**0.2**		**0.2**	**0.0**			**5.4**			**8.0**		**0.2**		**8.2**												
	Cement	**11**	**3.9**			**0.0**	**0.0**			**3.9**	**7.4**				**0.0**		**7.4**												
	Lime and Gypsum	**2**	**0.8**			**0.0**	**0.0**			**0.9**	**1.3**				**0.0**		**1.3**												
	Chemicals and Fertilizers	**21**	**7.9**	**3.9**	**0.2**	**0.1**	**0.1**			**12.1**	**0.1**	**5.7**		**0.1**	**3.3**		**9.3**												
	BUILDINGS	**87**	**71.4**	**0.5**	**0.1**		**1.6**			**73.6**				**8.6**	**4.4**	**0.6**	**13.6**												
	Service Industry	**47**	**34.8**	**0.5**	**0.1**		**0.1**			**35.6**				**6.8**	**4.4**	**0.6**	**11.8**												
	Residential	**40**	**36.5**				**1.4**			**38.0**				**1.8**			**1.8**												
	AGRICULTURE	**69**	**3.0**	**0.0**		**11.2**	**0.0**			**14.2**					**0.1**		**0.1**	**7.8**	**24.4**	**21.9**	**54.2**								
	On Farm Fuel Use[h]	**14**	**3.0**	**0.0**		**11.2**	**0.0**			**14.2**					**0.1**		**0.1**												
	Crop Production	**19**																		**19.4**	**19.4**								
	Animal Production	**35**																**7.8**	**24.4**	**2.6**	**34.9**								
	WASTE	**21**												**0.0**			**0.0**					**17.2**	**0.4**	**2.6**	**0.2**	**0.7**	**21.1**		
	Solid Waste[i]	**18**												**0.0**			**0.0**					**17.2**	**0.4**			**0.7**	**18.3**		
	Wastewater	**3**																						**2.6**			**2.6**		
	Waste Incineration	**0**																							**0.2**		**0.2**		
	COAL PRODUCTION	**3**	**0.5**			**0.9**	**1.2**			**2.6**																			
	LIGHT MANUFACTURING, CONSTRUCTION AND FOREST RESOURCES	**23**	**12.7**	**0.4**	**0.0**	**9.0**	**0.1**			**22.1**	**0.2**			**0.4**	**0.6**	**0.0**	**1.2**												
	Light Manufacturing	**14**	**11.1**	**0.4**	**0.0**	**1.5**	**0.1**			**13.2**	**0.2**			**0.4**	**0.3**	**0.0**	**0.9**												
	Construction	**7**	**1.5**	**0.0**		**5.2**	**0.0**			**6.7**					**0.0**		**0.0**												
	Forest Resources	**2**	**0.1**			**2.2**				**2.3**					**0.2**		**0.2**												
																												-17.3

Notes:

Totals may not add up due to rounding to nearest megatonne (Mt). The estimates for the economic categories may not add up to the national inventory totals by IPCC Sectors 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 updated in future publications as new data become 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.

f. Metal production includes iron and steel production, aluminum production, and SF_6 used in magnesium smelters and casters.

g. Emissions from the consumption of propane and natural gas in Transportation are allocated to Cars, Light Trucks and Buses.

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

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

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

k. Some ammonia production facilities engage in the capture of CO_2 emissions. These emissions have been subtracted directly in the Ammonia Production category, as per the 2006 IPCC Guidelines. Therefore, the CO_2 Captured column does not include recovered and/or captured CO_2 emissions in the Ammonia Production category.

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

PROVINCIAL AND TERRITORIAL GREENHOUSE GAS EMISSION TABLES BY IPCC SECTOR, 1990–2021

This annex contains summary tables (Table A11–2 to Table A11–28) illustrating greenhouse gas (GHG) emissions by province and 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 and 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 and territorial GHG emission tables are also available in electronic file format online at https://open.canada.ca.

Table A11–1 **GHG Source and Sink Category Descriptions**

GHG Source and 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 aircraft 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
Oil	– unintentional releases of greenhouse gases from the production, processing, transmission, storage and delivery of crude oil
Natural Gas	– unintentional releases of greenhouse gases from the production, processing, transmission, storage and delivery of natural gas (includes post-meter fugitive emissions from residential and commercial natural gas appliances, natural gas vehicles and industrial facilities)
Venting	– intentional releases of greenhouse gases at oil and natural gas facilities
Flaring	– routine or emergency disposal of waste gas through combustion in an open flame or incinerator at oil and natural gas facilities
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 and the use of urea in selective catalytic reduction (SCR) equipped vehicles
f. Other Product Manufacture and Use	– use of N_2O as an anaesthetic and propellant; use of SF_6 in electrical equipment; and PFCs in other contained product uses as a dielectric coolant, electric insulator, or heat transfer medium
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, loss of soil organic carbon, tillage, 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 and perennial crops (forage, specialty crops, orchards); soil organic carbon (SOC) impacted by crop productivity changes and manure application; 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, forest conversion and firewood collection activities in Canada

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

Greenhouse Gas Categories	1990	2005	2016	2017	2018	2019	2020	2021
	kt CO_2 eq							
TOTAL	**9 410**	**10 200**	**10 900**	**10 800**	**10 600**	**11 000**	**8 820**	**8 340**
ENERGY	**8 720**	**9 410**	**10 000**	**9 930**	**9 670**	**10 200**	**7 930**	**7 460**
a. Stationary Combustion Sources	**5 450**	**4 590**	**5 000**	**4 850**	**4 570**	**4 870**	**3 700**	**3 140**
Public Electricity and Heat Production	1 640	819	1 520	1 530	1 130	1 140	952	646
Petroleum Refining Industries	1 030	900	1 100	890	848	932	162	49
Oil and Gas Extraction	-	713	958	941	1 050	1 120	1 080	979
Mining	1 160	1 130	439	458	690	839	714	794
Manufacturing Industries	506	276	40	82	82	50	81	73
Construction	33	24	5	6	7	6	6	5
Commercial and Institutional	320	358	572	488	317	352	312	282
Residential	728	360	352	446	440	422	383	301
Agriculture and Forestry	25	8	10	9	7	9	9	6
b. Transport[a]	**3 240**	**3 960**	**4 510**	**4 450**	**4 330**	**4 600**	**3 770**	**3 990**
Aviation	238	340	303	280	289	282	153	174
Road Transportation	1 500	1 770	2 550	2 550	2 400	2 330	2 060	2 060
Light-Duty Gasoline Vehicles	625	580	655	647	559	508	451	437
Light-Duty Gasoline Trucks	548	641	1 220	1 280	1 160	1 110	1 060	1 130
Heavy-Duty Gasoline Vehicles	167	69	99	101	90	85	83	76
Motorcycles	3	6	25	25	22	21	17	15
Light-Duty Diesel Vehicles	1	3	4	4	4	3	2	2
Light-Duty Diesel Trucks	4	8	8	8	10	12	9	11
Heavy-Duty Diesel Vehicles	156	460	548	485	554	588	430	387
Propane and Natural Gas Vehicles	0.83	-	0.01	0.01	0.01	0.01	0.00	0.00
Railways	53	42	40	45	44	58	53	52
Marine	759	929	529	580	564	888	812	940
Other Transportation	681	880	1 090	1 000	1 040	1 050	701	764
Off-Road Agriculture and Forestry	96	68	78	73	82	85	53	60
Off-Road Commercial and Institutional	50	44	66	66	68	70	47	57
Off-Road Manufacturing, Mining and Construction	451	593	751	663	711	718	448	500
Off-Road Residential	6	25	27	27	24	23	22	18
Off-Road Other Transportation	77	149	164	171	156	151	130	129
Pipeline Transport	-	-	-	-	-	-	-	-
c. Fugitive Sources	**41**	**860**	**540**	**630**	**770**	**690**	**460**	**330**
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	41	864	539	632	771	688	463	331
Oil	6	50	36	38	40	44	42	37
Natural Gas	0.00	0.04	0.06	0.07	0.13	0.14	0.05	0.04
Venting	25	52	45	59	55	62	14	0.49
Flaring	11	761	458	534	676	582	407	294
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**98**	**162**	**214**	**244**	**259**	**232**	**250**	**241**
a. Mineral Products	**65**	**2**	**0.41**	**0.44**	**0.39**	**0.37**	**0.34**	**0.37**
Cement Production	61	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-
Mineral Products Use	4	2	0.41	0.44	0.39	0.37	0.34	0.37
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]	**-**	**86**	**180**	**180**	**190**	**190**	**200**	**190**
e. Non-Energy Products from Fuels and Solvent Use[b]	**29**	**67**	**27**	**57**	**56**	**28**	**42**	**44**
f. Other Product Manufacture and Use	**5**	**7**	**10**	**9**	**10**	**9**	**11**	**11**
AGRICULTURE	**49**	**61**	**83**	**78**	**78**	**79**	**78**	**77**
a. Enteric Fermentation	**23**	**31**	**31**	**31**	**32**	**32**	**32**	**31**
b. Manure Management	**17**	**20**	**26**	**26**	**26**	**26**	**26**	**26**
c. Agricultural Soils	**6**	**9**	**10**	**10**	**10**	**9**	**9**	**9**
Direct Sources	4	6	6	6	6	6	5	5
Indirect Sources	3	3	4	4	4	4	4	4
d. Field Burning of Agricultural Residues	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**3**	**-**	**17**	**12**	**11**	**11**	**11**	**11**
WASTE	**540**	**570**	**550**	**550**	**550**	**550**	**560**	**560**
a. Solid Waste Disposal (Landfills)	**500**	**500**	**500**	**500**	**500**	**500**	**500**	**500**
b. Biological Treatment of Solid Waste	**-**	**0.01**	**0.02**	**0.02**	**0.10**	**0.10**	**0.10**	**0.10**
c. Wastewater Treatment and Discharge	**30**	**30**	**30**	**30**	**30**	**30**	**30**	**30**
d. Incineration and Open Burning of Waste	**26**	**14**	**0.15**	**0.15**	**0.03**	**0.03**	**0.03**	**0.03**
e. Industrial Wood Waste Landfills	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**

Notes:

Estimates for the latest year (2021) 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 and Territorial GHG emissions by Canadian economic sector 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 and territorial tables to protect confidential data.

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 **2021 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	**7 310**	**29**	**730**	**0.35**	**110**	**190**	**0.10**	**3**	**-**	**8 340**
ENERGY	**7 260**	**5**	**130**	**0.20**	**60**	**-**	**-**	**-**	**-**	**7 460**
a. Stationary Combustion Sources	**3 060**	**2**	**50**	**0.08**	**20**	**-**	**-**	**-**	**-**	**3 140**
Public Electricity and Heat Production	642	0.01	0.23	0.01	4	-	-	-	-	646
Petroleum Refining Industries	48	0.00	0.03	0.00	0.60	-	-	-	-	49
Oil and Gas Extraction	966	0.20	5	0.03	8	-	-	-	-	979
Mining	791	0.02	0.40	0.01	3	-	-	-	-	794
Manufacturing Industries	72	0.00	0.02	0.00	0.37	-	-	-	-	73
Construction	5	0.00	0.00	0.00	0.02	-	-	-	-	5
Commercial and Institutional	281	0.00	0.07	0.01	1	-	-	-	-	282
Residential	251	2	40	0.02	7	-	-	-	-	301
Agriculture and Forestry	6	0.00	0.00	0.00	0.02	-	-	-	-	6
b. Transport[b]	**3 940**	**0.58**	**14**	**0.14**	**41**	**-**	**-**	**-**	**-**	**3 990**
Aviation	173	0.00	0.07	0.01	1	-	-	-	-	174
Road Transportation	2 040	0.10	3	0.05	15	-	-	-	-	2 060
Light-Duty Gasoline Vehicles	435	0.03	0.60	0.01	2	-	-	-	-	437
Light-Duty Gasoline Trucks	1 130	0.06	2	0.02	5	-	-	-	-	1 130
Heavy-Duty Gasoline Vehicles	74	0.00	0.06	0.01	2	-	-	-	-	76
Motorcycles	14	0.01	0.10	0.00	0.08	-	-	-	-	15
Light-Duty Diesel Vehicles	2	0.00	0.00	0.00	0.04	-	-	-	-	2
Light-Duty Diesel Trucks	10	0.00	0.01	0.00	0.25	-	-	-	-	11
Heavy-Duty Diesel Vehicles	380	0.02	0.40	0.02	6	-	-	-	-	387
Propane and Natural Gas Vehicles	0.00	0.00	0.00	0.00	0.00	-	-	-	-	0.00
Railways	47	0.00	0.07	0.02	5	-	-	-	-	52
Marine	930	0.09	2	0.02	7	-	-	-	-	940
Other Transportation	743	0.37	9	0.04	10	-	-	-	-	764
Off-Road Agriculture and Forestry	58	0.00	0.06	0.00	1	-	-	-	-	60
Off-Road Commercial and Institutional	55	0.04	0.87	0.00	0.70	-	-	-	-	57
Off-Road Manufacturing, Mining and Construction	491	0.03	0.80	0.03	9	-	-	-	-	500
Off-Road Residential	17	0.04	1	0.00	0.10	-	-	-	-	18
Off-Road Other Transportation	122	0.26	6	0.00	1	-	-	-	-	129
Pipeline Transport	-	-	-	-	-	-	-	-	-	-
c. Fugitive Sources	**260**	**3**	**71**	**0.00**	**0.15**	**-**	**-**	**-**	**-**	**330**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	260	3	71	0.00	0.10	-	-	-	-	331
Oil	0.15	1	37	-	-	-	-	-	-	37
Natural Gas	0.00	0.00	0.04	-	-	-	-	-	-	0.04
Venting	0.00	0.02	0.48	-	-	-	-	-	-	0.49
Flaring	260	1	33	0.00	0.10	-	-	-	-	294
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**44**	**-**	**-**	**0.03**	**7**	**190**	**0.10**	**3**	**-**	**241**
a. Mineral Products	**0.37**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.37**
Cement Production	-	-	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-	-	-
Mineral Products Use	0.37	-	-	-	-	-	-	-	-	0.37
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**	**0.09**	**-**	**-**	**190**
e. Non-Energy Products from Fuels and Solvent Use[c]	**44**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**44**
f. Other Product Manufacture and Use	**-**	**-**	**-**	**0.03**	**8**	**-**	**0.01**	**3**	**-**	**11**
AGRICULTURE	**11**	**2**	**43**	**0.08**	**23**	**-**	**-**	**-**	**-**	**77**
a. Enteric Fermentation	**-**	**1**	**31**	**-**	**-**	**-**	**-**	**-**	**-**	**31**
b. Manure Management	**-**	**0.46**	**12**	**0.05**	**10**	**-**	**-**	**-**	**-**	**26**
c. Agricultural Soils	**-**	**-**	**-**	**0.03**	**9**	**-**	**-**	**-**	**-**	**9**
Direct Sources	-	-	-	0.02	5	-	-	-	-	5
Indirect Sources	-	-	-	0.01	4	-	-	-	-	4
d. Field Burning of Agricultural Residues	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**11**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**11**
WASTE	**0.10**	**22**	**550**	**0.03**	**10**	**-**	**-**	**-**	**-**	**560**
a. Solid Waste Disposal (Landfills)	**-**	**20**	**500**	**-**	**-**	**-**	**-**	**-**	**-**	**500**
b. Biological Treatment of Solid Waste	**-**	**0.00**	**0.05**	**0.00**	**0.08**	**-**	**-**	**-**	**-**	**0.10**
c. Wastewater Treatment and Discharge	**-**	**0.70**	**20**	**0.03**	**10**	**-**	**-**	**-**	**-**	**30**
d. Incineration and Open Burning of Waste	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**-**	**-**	**-**	**-**	**0.03**
e. Industrial Wood Waste Landfills	**-**	**0.40**	**10**	**-**	**-**	**-**	**-**	**-**	**-**	**10**

Notes:

Estimates for the latest year (2021) 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 and Territorial GHG emissions by Canadian economic sector are provided in Annex 12 of this report.

a. Chapter 1, Table 1–1 of this report provides a list of global warming potentials (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 and territorial tables to protect confidential data.

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	2016	2017	2018	2019	2020	2021
	kt CO_2 eq							
TOTAL	**1 770**	**1 880**	**1 590**	**1 600**	**1 580**	**1 620**	**1 580**	**1 630**
ENERGY	**1 400**	**1 440**	**1 180**	**1 210**	**1 170**	**1 190**	**1 140**	**1 160**
a. Stationary Combustion Sources	**756**	**642**	**366**	**373**	**346**	**372**	**428**	**405**
Public Electricity and Heat Production	104	5	4	9	3	1	0.28	2
Petroleum Refining Industries	-	-	-	-	-	-	-	-
Oil and Gas Extraction	-	-	-	-	-	-	-	-
Mining	0.89	x	x	x	x	x	x	x
Manufacturing Industries	55	145	67	75	60	82	144	134
Construction	11	x	x	x	x	x	x	x
Commercial and Institutional	202	152	67	57	61	55	65	66
Residential	364	306	213	220	209	219	202	184
Agriculture and Forestry	19	24	11	11	12	13	12	16
b. Transport[a]	**647**	**798**	**818**	**836**	**820**	**816**	**716**	**756**
Aviation	17	13	21	22	24	25	9	11
Road Transportation	418	574	598	600	587	581	527	561
Light-Duty Gasoline Vehicles	218	237	202	201	186	182	159	163
Light-Duty Gasoline Trucks	133	237	253	271	265	274	257	288
Heavy-Duty Gasoline Vehicles	43	27	22	23	21	21	21	19
Motorcycles	0.78	2	6	7	6	6	4	4
Light-Duty Diesel Vehicles	0.29	0.91	1	1	1	1	0.70	0.79
Light-Duty Diesel Trucks	0.43	1	0.89	0.91	1	1	1	2
Heavy-Duty Diesel Vehicles	22	69	112	97	107	96	84	84
Propane and Natural Gas Vehicles	0.71	-	-	-	-	-	-	-
Railways	-	-	-	-	-	-	-	-
Marine	33	47	48	53	58	55	22	30
Other Transportation	180	163	151	160	152	154	159	154
Off-Road Agriculture and Forestry	53	46	49	53	56	57	61	60
Off-Road Commercial and Institutional	35	15	13	14	14	15	15	16
Off-Road Manufacturing, Mining and Construction	63	52	42	44	46	46	48	47
Off-Road Residential	2	9	9	9	6	6	6	5
Off-Road Other Transportation	27	41	37	40	29	30	29	26
Pipeline Transport	-	-	-	-	-	-	-	-
c. Fugitive Sources	**0.00**	**0.00**	**0.29**	**0.31**	**0.19**	**0.29**	**0.54**	**0.56**
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	0.00	0.00	0.29	0.31	0.20	0.29	0.54	0.56
Oil	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Natural Gas	-	-	0.29	0.31	0.19	0.29	0.54	0.56
Venting	-	-	-	-	-	-	-	-
Flaring	-	-	-	-	-	-	-	-
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**6**	**28**	**53**	**54**	**58**	**58**	**58**	**56**
a. Mineral Products	**0.34**	**0.91**	**0.59**	**0.37**	**0.41**	**0.43**	**0.49**	**0.48**
Cement Production	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-
Mineral Products Use	0.34	0.91	0.59	0.37	0.41	0.43	0.49	0.48
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]	**-**	**24**	**50**	**51**	**55**	**55**	**54**	**52**
e. Non-Energy Products from Fuels and Solvent Use[b]	**5**	**2**	**0.71**	**0.66**	**0.61**	**0.52**	**1**	**1**
f. Other Product Manufacture and Use	**0.83**	**2**	**2**	**2**	**2**	**2**	**2**	**2**
AGRICULTURE	**290**	**330**	**280**	**270**	**290**	**290**	**300**	**320**
a. Enteric Fermentation	**140**	**130**	**110**	**110**	**110**	**110**	**110**	**110**
b. Manure Management	**48**	**52**	**39**	**39**	**38**	**39**	**38**	**38**
c. Agricultural Soils	**97**	**140**	**130**	**130**	**140**	**140**	**150**	**160**
Direct Sources	63	95	94	87	96	94	100	110
Indirect Sources	30	50	40	40	40	40	50	50
d. Field Burning of Agricultural Residues	**0.10**	**0.20**	**0.20**	**0.20**	**0.20**	**0.20**	**0.20**	**0.20**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**5**	**5**	**3**	**2**	**2**	**4**	**7**	**7**
WASTE	**66**	**80**	**68**	**67**	**65**	**82**	**79**	**94**
a. Solid Waste Disposal (Landfills)	**60**	**60**	**50**	**50**	**40**	**40**	**40**	**40**
b. Biological Treatment of Solid Waste	**-**	**3**	**7**	**7**	**6**	**6**	**6**	**6**
c. Wastewater Treatment and Discharge	**10**	**10**	**10**	**10**	**10**	**30**	**30**	**50**
d. Incineration and Open Burning of Waste	**0.02**	**0.09**	**0.10**	**0.10**	**0.10**	**0.10**	**0.11**	**0.11**
e. Industrial Wood Waste Landfills	**0.07**	**0.07**	**0.05**	**0.05**	**0.05**	**0.05**	**0.04**	**0.04**

Notes:

Estimates for the latest year (2021) 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 and Territorial GHG emissions by Canadian economic sector 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 and territorial tables to protect confidential data.

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 **2021 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	**1 140**	**9**	**230**	**0.69**	**200**	**52**	**0.05**	**-**	**-**	**1 630**
ENERGY	**1 140**	**0.64**	**16**	**0.04**	**10**	**-**	**-**	**-**	**-**	**1 160**
a. Stationary Combustion Sources	**389**	**0.50**	**10**	**0.01**	**4**	**-**	**-**	**-**	**-**	**405**
Public Electricity and Heat Production	2	0.00	0.00	0.00	0.01	-	-	-	-	2
Petroleum Refining Industries	-	-	-	-	-	-	-	-	-	-
Oil and Gas Extraction	-	-	-	-	-	-	-	-	-	-
Mining	x	x	x	x	x	x	x	x	x	x
Manufacturing Industries	133	0.00	0.06	0.00	0.69	-	-	-	-	134
Construction	x	x	x	x	x	x	x	x	x	x
Commercial and Institutional	65	0.01	0.26	0.00	0.80	-	-	-	-	66
Residential	170	0.50	10	0.01	2	-	-	-	-	184
Agriculture and Forestry	16	0.00	0.00	0.00	0.07	-	-	-	-	16
b. Transport[b]	**746**	**0.13**	**3**	**0.02**	**7**	**-**	**-**	**-**	**-**	**756**
Aviation	11	0.00	0.01	0.00	0.10	-	-	-	-	11
Road Transportation	556	0.03	0.80	0.02	5	-	-	-	-	561
Light-Duty Gasoline Vehicles	162	0.01	0.20	0.00	1	-	-	-	-	163
Light-Duty Gasoline Trucks	286	0.02	0.40	0.01	2	-	-	-	-	288
Heavy-Duty Gasoline Vehicles	19	0.00	0.02	0.00	0.47	-	-	-	-	19
Motorcycles	4	0.00	0.03	0.00	0.02	-	-	-	-	4
Light-Duty Diesel Vehicles	0.77	0.00	0.00	0.00	0.02	-	-	-	-	0.79
Light-Duty Diesel Trucks	1	0.00	0.00	0.00	0.04	-	-	-	-	2
Heavy-Duty Diesel Vehicles	83	0.00	0.09	0.00	1	-	-	-	-	84
Propane and Natural Gas Vehicles	-	-	-	-	-	-	-	-	-	-
Railways	-	-	-	-	-	-	-	-	-	-
Marine	30	0.00	0.07	0.00	0.20	-	-	-	-	30
Other Transportation	150	0.09	2	0.01	2	-	-	-	-	154
Off-Road Agriculture and Forestry	59	0.00	0.05	0.00	0.90	-	-	-	-	60
Off-Road Commercial and Institutional	16	0.01	0.28	0.00	0.20	-	-	-	-	16
Off-Road Manufacturing, Mining and Construction	46	0.00	0.11	0.00	0.80	-	-	-	-	47
Off-Road Residential	4	0.01	0.29	0.00	0.03	-	-	-	-	5
Off-Road Other Transportation	25	0.06	2	0.00	0.20	-	-	-	-	26
Pipeline Transport	-	-	-	-	-	-	-	-	-	-
c. Fugitive Sources	**0.00**	**0.02**	**0.56**	**-**	**-**	**-**	**-**	**-**	**-**	**0.56**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	0.00	0.02	0.56	-	-	-	-	-	-	0.56
Oil	-	0.00	0.00	-	-	-	-	-	-	0.00
Natural Gas	0.00	0.02	0.55	-	-	-	-	-	-	0.56
Venting	-	-	-	-	-	-	-	-	-	-
Flaring	-	-	-	-	-	-	-	-	-	-
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**2**	**-**	**-**	**0.01**	**2**	**52**	**0.05**	**-**	**-**	**56**
a. Mineral Products	**0.48**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.48**
Cement Production	-	-	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-	-	-
Mineral Products Use	0.48	-	-	-	-	-	-	-	-	0.48
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]	**-**	**-**	**-**	**-**	**-**	**52**	**0.03**	**-**	**-**	**52**
e. Non-Energy Products from Fuels and Solvent Use[c]	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**
f. Other Product Manufacture and Use	**-**	**-**	**-**	**0.01**	**2**	**-**	**0.02**	**-**	**-**	**2**
AGRICULTURE	**7**	**5**	**130**	**0.61**	**180**	**-**	**-**	**-**	**-**	**320**
a. Enteric Fermentation	**-**	**4**	**110**	**-**	**-**	**-**	**-**	**-**	**-**	**110**
b. Manure Management	**-**	**0.73**	**18**	**0.07**	**20**	**-**	**-**	**-**	**-**	**38**
c. Agricultural Soils	**-**	**-**	**-**	**0.55**	**160**	**-**	**-**	**-**	**-**	**160**
Direct Sources	-	-	-	0.38	110	-	-	-	-	110
Indirect Sources	-	-	-	0.20	50	-	-	-	-	50
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	**7**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**7**
WASTE	**0.10**	**3**	**86**	**0.03**	**8**	**-**	**-**	**-**	**-**	**94**
a. Solid Waste Disposal (Landfills)	**-**	**2**	**40**	**-**	**-**	**-**	**-**	**-**	**-**	**40**
b. Biological Treatment of Solid Waste	**-**	**0.20**	**5**	**0.00**	**1**	**-**	**-**	**-**	**-**	**6**
c. Wastewater Treatment and Discharge	**-**	**2**	**40**	**0.02**	**7**	**-**	**-**	**-**	**-**	**50**
d. Incineration and Open Burning of Waste	**0.10**	**0.00**	**0.00**	**0.00**	**0.00**	**-**	**-**	**-**	**-**	**0.11**
e. Industrial Wood Waste Landfills	**-**	**0.00**	**0.04**	**-**	**-**	**-**	**-**	**-**	**-**	**0.04**

Notes:

Estimates for the latest year (2021) 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 and Territorial GHG emissions by Canadian economic sector are provided in Annex 12 of this report.

a. Chapter 1, Table 1–1 of this report provides a list of global warming potentials (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 and territorial tables to protect confidential data.

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	2016	2017	2018	2019	2020	2021
	kt CO_2 eq							
TOTAL	**19 300**	**22 800**	**15 300**	**15 900**	**16 400**	**16 200**	**14 600**	**14 600**
ENERGY	**17 900**	**21 300**	**14 000**	**14 600**	**15 100**	**14 900**	**13 300**	**13 300**
a. Stationary Combustion Sources	**11 500**	**15 400**	**8 890**	**9 120**	**9 430**	**8 930**	**8 360**	**8 040**
Public Electricity and Heat Production	6 900	10 700	6 390	6 680	7 000	6 730	6 340	6 070
Petroleum Refining Industries	617	1 050	x	x	x	x	x	x
Oil and Gas Extraction	46	302	415	284	184	-	-	-
Mining	39	39	4	4	4	4	4	4
Manufacturing Industries	775	555	366	370	339	295	215	260
Construction	50	x	x	x	x	x	x	x
Commercial and Institutional	809	x	540	573	566	572	553	560
Residential	2 130	1 330	1 140	1 170	1 290	1 290	1 220	1 110
Agriculture and Forestry	104	96	24	32	34	27	25	22
b. Transport[a]	**4 760**	**5 680**	**5 050**	**5 390**	**5 580**	**5 810**	**4 930**	**5 230**
Aviation	299	277	266	278	302	295	127	137
Road Transportation	3 020	3 620	3 770	3 870	3 980	3 890	3 420	3 650
Light-Duty Gasoline Vehicles	1 400	1 330	1 210	1 190	1 180	1 120	955	964
Light-Duty Gasoline Trucks	860	1 240	1 500	1 600	1 670	1 680	1 490	1 660
Heavy-Duty Gasoline Vehicles	311	133	123	127	131	132	118	109
Motorcycles	8	12	28	28	29	33	25	20
Light-Duty Diesel Vehicles	11	36	32	30	21	20	18	23
Light-Duty Diesel Trucks	22	18	11	15	17	17	14	21
Heavy-Duty Diesel Vehicles	403	846	866	881	935	888	791	848
Propane and Natural Gas Vehicles	3	-	2	2	3	3	4	4
Railways	64	56	38	42	40	32	26	26
Marine	479	580	290	388	403	790	646	735
Other Transportation	901	1 150	689	819	858	805	708	690
Off-Road Agriculture and Forestry	187	154	77	100	107	98	87	89
Off-Road Commercial and Institutional	122	104	87	109	117	113	97	104
Off-Road Manufacturing, Mining and Construction	465	592	295	367	387	350	305	311
Off-Road Residential	14	43	x	x	x	40	36	27
Off-Road Other Transportation	113	219	190	203	206	204	182	158
Pipeline Transport	-	34	x	x	x	1	1	1
c. Fugitive Sources	**1 700**	**230**	**55**	**120**	**130**	**180**	**21**	**21**
Coal Mining	2 000	100	0.70	70	100	200	0.40	0.40
Oil and Natural Gas	51	131	54	45	35	20	21	21
Oil	7	5	0.00	0.00	0.00	0.00	0.00	0.00
Natural Gas	-	14	20	20	20	20	21	20
Venting	31	80	18	13	7	0.08	0.08	0.08
Flaring	13	32	17	12	7	-	-	-
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**332**	**498**	**530**	**460**	**485**	**450**	**481**	**468**
a. Mineral Products	**190**	**250**	**190**	**110**	**120**	**98**	**100**	**110**
Cement Production	183	246	189	x	x	x	x	x
Lime Production	-	-	-	-	-	-	-	-
Mineral Products Use	4	3	1	x	x	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**	**280**	**280**	**310**	**310**	**300**	**290**
e. Non-Energy Products from Fuels and Solvent Use[b]	**120**	**68**	**27**	**19**	**19**	**24**	**56**	**45**
f. Other Product Manufacture and Use	**29**	**40**	**39**	**53**	**39**	**20**	**19**	**20**
AGRICULTURE	**410**	**390**	**340**	**340**	**330**	**330**	**330**	**330**
a. Enteric Fermentation	**230**	**210**	**170**	**170**	**170**	**160**	**160**	**160**
b. Manure Management	**83**	**100**	**94**	**94**	**91**	**84**	**85**	**81**
c. Agricultural Soils	**60**	**61**	**62**	**64**	**65**	**65**	**68**	**72**
Direct Sources	34	35	40	42	43	43	46	49
Indirect Sources	30	30	20	20	20	20	20	20
d. Field Burning of Agricultural Residues	**0.06**	**0.10**	**0.07**	**0.06**	**0.06**	**0.06**	**0.10**	**-**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**38**	**13**	**17**	**12**	**12**	**14**	**16**	**16**
WASTE	**720**	**560**	**480**	**480**	**470**	**490**	**510**	**510**
a. Solid Waste Disposal (Landfills)	**700**	**500**	**400**	**400**	**400**	**400**	**400**	**400**
b. Biological Treatment of Solid Waste	**0.70**	**20**	**30**	**30**	**30**	**30**	**30**	**30**
c. Wastewater Treatment and Discharge	**50**	**60**	**60**	**60**	**60**	**60**	**60**	**60**
d. Incineration and Open Burning of Waste	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Industrial Wood Waste Landfills	**8**	**9**	**8**	**7**	**7**	**7**	**7**	**7**

Notes:

Estimates for the latest year (2021) 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 and Territorial GHG emissions by Canadian economic sector 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 and territorial tables to protect confidential data.

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 **2021 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	**13 200**	**32**	**800**	**0.87**	**260**	**290**	**0.79**	**6**	**-**	**14 600**
ENERGY	**13 100**	**5**	**120**	**0.30**	**100**	**-**	**-**	**-**	**-**	**13 300**
a. Stationary Combustion Sources	**7 910**	**3**	**80**	**0.20**	**50**	**-**	**-**	**-**	**-**	**8 040**
Public Electricity and Heat Production	6 040	0.29	7	0.09	30	-	-	-	-	6 070
Petroleum Refining Industries	x	x	x	x	x	x	x	x	x	x
Oil and Gas Extraction	-	-	-	-	-	-	-	-	-	-
Mining	4	0.00	0.00	0.00	0.03	-	-	-	-	4
Manufacturing Industries	255	0.02	0.45	0.02	5	-	-	-	-	260
Construction	x	x	x	x	x	x	x	x	x	x
Commercial and Institutional	556	0.01	0.23	0.01	4	-	-	-	-	560
Residential	1 030	3	70	0.04	10	-	-	-	-	1 110
Agriculture and Forestry	22	0.00	0.01	0.00	0.10	-	-	-	-	22
b. Transport[b]	**5 160**	**0.87**	**22**	**0.17**	**50**	**-**	**-**	**-**	**-**	**5 230**
Aviation	136	0.00	0.05	0.00	1	-	-	-	-	137
Road Transportation	3 610	0.20	5	0.10	31	-	-	-	-	3 650
Light-Duty Gasoline Vehicles	957	0.06	1	0.02	5	-	-	-	-	964
Light-Duty Gasoline Trucks	1 650	0.09	2	0.03	8	-	-	-	-	1 660
Heavy-Duty Gasoline Vehicles	106	0.00	0.09	0.01	3	-	-	-	-	109
Motorcycles	19	0.01	0.20	0.00	0.10	-	-	-	-	20
Light-Duty Diesel Vehicles	23	0.00	0.01	0.00	0.55	-	-	-	-	23
Light-Duty Diesel Trucks	21	0.00	0.01	0.00	0.50	-	-	-	-	21
Heavy-Duty Diesel Vehicles	834	0.03	0.90	0.05	14	-	-	-	-	848
Propane and Natural Gas Vehicles	4	0.02	0.40	0.00	0.03	-	-	-	-	4
Railways	23	0.00	0.03	0.01	3	-	-	-	-	26
Marine	727	0.07	2	0.02	6	-	-	-	-	735
Other Transportation	666	0.58	15	0.03	9	-	-	-	-	690
Off-Road Agriculture and Forestry	87	0.00	0.08	0.01	2	-	-	-	-	89
Off-Road Commercial and Institutional	100	0.12	3	0.00	1	-	-	-	-	104
Off-Road Manufacturing, Mining and Construction	305	0.03	0.78	0.02	5	-	-	-	-	311
Off-Road Residential	25	0.07	2	0.00	0.20	-	-	-	-	27
Off-Road Other Transportation	148	0.36	9	0.00	1	-	-	-	-	158
Pipeline Transport	1	0.00	0.03	0.00	0.01	-	-	-	-	1
c. Fugitive Sources	**0.01**	**0.84**	**21**	**-**	**-**	**-**	**-**	**-**	**-**	**21**
Coal Mining	-	0.02	0.40	-	-	-	-	-	-	0.40
Oil and Natural Gas	0.01	0.82	21	-	-	-	-	-	-	21
Oil	-	0.00	0.00	-	-	-	-	-	-	0.00
Natural Gas	0.01	0.82	20	-	-	-	-	-	-	20
Venting	0.00	0.00	0.08	-	-	-	-	-	-	0.08
Flaring	-	-	-	-	-	-	-	-	-	-
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**157**	**-**	**-**	**0.05**	**14**	**290**	**0.79**	**6**	**-**	**468**
a. Mineral Products	**110**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**110**
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]	**-**	**-**	**-**	**-**	**-**	**290**	**0.15**	**-**	**-**	**290**
e. Non-Energy Products from Fuels and Solvent Use[c]	**45**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**45**
f. Other Product Manufacture and Use	**-**	**-**	**-**	**0.05**	**14**	**-**	**0.60**	**6**	**-**	**20**
AGRICULTURE	**16**	**8**	**200**	**0.38**	**110**	**-**	**-**	**-**	**-**	**330**
a. Enteric Fermentation	**-**	**7**	**160**	**-**	**-**	**-**	**-**	**-**	**-**	**160**
b. Manure Management	**-**	**2**	**41**	**0.10**	**40**	**-**	**-**	**-**	**-**	**81**
c. Agricultural Soils	**-**	**-**	**-**	**0.24**	**72**	**-**	**-**	**-**	**-**	**72**
Direct Sources	-	-	-	0.16	49	-	-	-	-	49
Indirect Sources	-	-	-	0.08	20	-	-	-	-	20
d. Field Burning of Agricultural Residues	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**16**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**16**
WASTE	**-**	**19**	**470**	**0.10**	**40**	**-**	**-**	**-**	**-**	**510**
a. Solid Waste Disposal (Landfills)	**-**	**20**	**400**	**-**	**-**	**-**	**-**	**-**	**-**	**400**
b. Biological Treatment of Solid Waste	**-**	**0.60**	**10**	**0.04**	**10**	**-**	**-**	**-**	**-**	**30**
c. Wastewater Treatment and Discharge	**-**	**2**	**40**	**0.08**	**20**	**-**	**-**	**-**	**-**	**60**
d. Incineration and Open Burning of Waste	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Industrial Wood Waste Landfills	**-**	**0.30**	**7**	**-**	**-**	**-**	**-**	**-**	**-**	**7**

Notes:

Estimates for the latest year (2021) 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 and Territorial GHG emissions by Canadian economic sector are provided in Annex 12 of this report.

a. Chapter 1, Table 1–1 of this report provides a list of global warming potentials (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 and territorial tables to protect confidential data.

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	2016	2017	2018	2019	2020	2021
	kt CO_2 eq							
TOTAL	**16 100**	**19 600**	**14 600**	**13 500**	**13 300**	**12 800**	**11 200**	**11 900**
ENERGY	**14 800**	**18 200**	**13 300**	**12 100**	**11 900**	**11 600**	**9 970**	**10 600**
a. Stationary Combustion Sources	**10 700**	**13 000**	**8 730**	**8 000**	**7 910**	**7 690**	**6 440**	**7 070**
Public Electricity and Heat Production	6 020	8 050	4 460	3 760	4 160	3 730	2 700	3 390
Petroleum Refining Industries	1 160	2 250	x	x	x	x	x	x
Oil and Gas Extraction	-	-	26	26	34	24	39	39
Mining	126	161	x	x	x	x	x	x
Manufacturing Industries	1 630	1 170	616	623	682	660	556	635
Construction	69	6	17	10	10	7	9	9
Commercial and Institutional	580	600	380	272	306	332	304	286
Residential	1 060	749	691	628	607	522	467	399
Agriculture and Forestry	53	33	31	36	34	32	28	36
b. Transport[a]	**4 020**	**4 910**	**4 340**	**3 920**	**3 840**	**3 710**	**3 350**	**3 330**
Aviation	137	127	109	108	116	118	61	64
Road Transportation	2 820	3 420	3 340	2 910	2 850	2 760	2 510	2 450
Light-Duty Gasoline Vehicles	1 230	1 040	969	833	796	751	629	593
Light-Duty Gasoline Trucks	810	1 040	1 380	1 250	1 260	1 260	1 140	1 170
Heavy-Duty Gasoline Vehicles	134	114	113	100	98	98	93	82
Motorcycles	5	15	30	27	27	27	21	17
Light-Duty Diesel Vehicles	9	31	10	8	6	5	5	5
Light-Duty Diesel Trucks	35	25	6	6	6	6	6	8
Heavy-Duty Diesel Vehicles	599	1 160	831	680	662	615	617	571
Propane and Natural Gas Vehicles	-	-	0.01	0.01	0.01	0.15	0.10	0.12
Railways	148	119	115	133	121	119	102	100
Marine	188	225	128	148	120	128	105	129
Other Transportation	723	1 020	648	626	629	590	571	589
Off-Road Agriculture and Forestry	273	241	123	128	135	123	114	129
Off-Road Commercial and Institutional	103	96	63	67	68	64	66	81
Off-Road Manufacturing, Mining and Construction	240	333	183	184	189	171	159	180
Off-Road Residential	10	x	32	27	x	25	24	18
Off-Road Other Transportation	97	315	235	210	201	191	188	166
Pipeline Transport	-	x	13	11	x	15	20	15
c. Fugitive Sources	**61**	**220**	**200**	**220**	**170**	**200**	**180**	**200**
Coal Mining	1	0.30	-	-	-	-	-	-
Oil and Natural Gas	60	220	198	221	169	205	184	196
Oil	8	18	16	16	13	15	14	14
Natural Gas	0.20	25	24	22	22	22	22	23
Venting	36	146	131	152	112	139	123	132
Flaring	15	31	27	32	23	29	25	27
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**187**	**261**	**478**	**510**	**522**	**353**	**360**	**345**
a. Mineral Products	**91**	**97**	**78**	**60**	**49**	**47**	**44**	**50**
Cement Production	-	-	-	-	-	-	-	-
Lime Production	80	89	75	x	x	x	x	x
Mineral Products Use	10	8	3	x	x	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]	**-**	**120**	**240**	**230**	**250**	**250**	**250**	**240**
e. Non-Energy Products from Fuels and Solvent Use[b]	**91**	**34**	**150**	**200**	**210**	**44**	**57**	**45**
f. Other Product Manufacture and Use	**5**	**9**	**9**	**12**	**12**	**11**	**12**	**12**
AGRICULTURE	**430**	**470**	**420**	**390**	**400**	**400**	**400**	**420**
a. Enteric Fermentation	**200**	**180**	**150**	**150**	**150**	**150**	**140**	**130**
b. Manure Management	**62**	**77**	**60**	**60**	**61**	**59**	**58**	**55**
c. Agricultural Soils	**100**	**150**	**140**	**130**	**140**	**140**	**150**	**180**
Direct Sources	72	110	110	100	110	110	120	140
Indirect Sources	30	40	30	30	30	30	30	40
d. Field Burning of Agricultural Residues	**0.02**	**0.02**	**0.03**	**0.03**	**0.02**	**0.02**	**0.01**	**0.04**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**68**	**55**	**73**	**52**	**49**	**51**	**54**	**54**
WASTE	**680**	**720**	**460**	**490**	**460**	**480**	**490**	**510**
a. Solid Waste Disposal (Landfills)	**600**	**600**	**300**	**300**	**400**	**400**	**400**	**400**
b. Biological Treatment of Solid Waste	**3**	**50**	**30**	**30**	**20**	**20**	**20**	**20**
c. Wastewater Treatment and Discharge	**50**	**50**	**90**	**90**	**50**	**70**	**70**	**90**
d. Incineration and Open Burning of Waste	**-**	**0.04**	**0.20**	**-**	**-**	**-**	**-**	**-**
e. Industrial Wood Waste Landfills	**40**	**40**	**40**	**30**	**30**	**30**	**30**	**30**

Notes:

Estimates for the latest year (2021) 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 and Territorial GHG emissions by Canadian economic sector 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 and territorial tables to protect confidential data.

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 **2021 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	**10 500**	**30**	**750**	**1**	**350**	**240**	**0.15**	**0.99**	**-**	**11 900**
ENERGY	**10 400**	**5**	**110**	**0.30**	**100**	**-**	**-**	**-**	**-**	**10 600**
a. Stationary Combustion Sources	**6 950**	**2**	**60**	**0.20**	**60**	**-**	**-**	**-**	**-**	**7 070**
Public Electricity and Heat Production	3 360	0.27	7	0.06	20	-	-	-	-	3 390
Petroleum Refining Industries	x	x	x	x	x	x	x	x	x	x
Oil and Gas Extraction	39	0.00	0.02	0.00	0.80	-	-	-	-	39
Mining	x	x	x	x	x	x	x	x	x	x
Manufacturing Industries	608	0.14	4	0.08	24	-	-	-	-	635
Construction	9	0.00	0.00	0.00	0.03	-	-	-	-	9
Commercial and Institutional	284	0.00	0.11	0.01	2	-	-	-	-	286
Residential	342	2	50	0.03	8	-	-	-	-	399
Agriculture and Forestry	36	0.00	0.01	0.00	0.20	-	-	-	-	36
b. Transport[b]	**3 270**	**0.72**	**18**	**0.14**	**41**	**-**	**-**	**-**	**-**	**3 330**
Aviation	64	0.00	0.09	0.00	0.60	-	-	-	-	64
Road Transportation	2 420	0.10	4	0.07	21	-	-	-	-	2 450
Light-Duty Gasoline Vehicles	589	0.04	0.90	0.01	3	-	-	-	-	593
Light-Duty Gasoline Trucks	1 160	0.07	2	0.02	6	-	-	-	-	1 170
Heavy-Duty Gasoline Vehicles	80	0.00	0.07	0.01	2	-	-	-	-	82
Motorcycles	17	0.01	0.10	0.00	0.09	-	-	-	-	17
Light-Duty Diesel Vehicles	5	0.00	0.00	0.00	0.11	-	-	-	-	5
Light-Duty Diesel Trucks	8	0.00	0.01	0.00	0.19	-	-	-	-	8
Heavy-Duty Diesel Vehicles	561	0.02	0.60	0.03	9	-	-	-	-	571
Propane and Natural Gas Vehicles	0.12	0.00	0.00	0.00	0.00	-	-	-	-	0.12
Railways	90	0.01	0.10	0.03	10	-	-	-	-	100
Marine	128	0.01	0.30	0.00	1	-	-	-	-	129
Other Transportation	567	0.56	14	0.03	8	-	-	-	-	589
Off-Road Agriculture and Forestry	126	0.01	0.18	0.01	3	-	-	-	-	129
Off-Road Commercial and Institutional	78	0.09	2	0.00	0.80	-	-	-	-	81
Off-Road Manufacturing, Mining and Construction	177	0.03	0.74	0.01	3	-	-	-	-	180
Off-Road Residential	17	0.05	1	0.00	0.10	-	-	-	-	18
Off-Road Other Transportation	155	0.38	10	0.00	1	-	-	-	-	166
Pipeline Transport	15	0.02	0.37	0.00	0.10	-	-	-	-	15
c. Fugitive Sources	**160**	**1**	**33**	**0.01**	**4**	**-**	**-**	**-**	**-**	**200**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	160	1	33	0.01	4	-	-	-	-	196
Oil	0.09	0.39	10	0.01	4	-	-	-	-	14
Natural Gas	0.02	0.91	23	-	-	-	-	-	-	23
Venting	130	0.01	0.14	-	-	-	-	-	-	132
Flaring	27	0.00	0.04	0.00	0.01	-	-	-	-	27
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**94**	**-**	**-**	**0.04**	**11**	**240**	**0.15**	**0.99**	**-**	**345**
a. Mineral Products	**50**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**50**
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]	**-**	**-**	**-**	**-**	**-**	**240**	**0.13**	**-**	**-**	**240**
e. Non-Energy Products from Fuels and Solvent Use[c]	**45**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**45**
f. Other Product Manufacture and Use	**-**	**-**	**-**	**0.04**	**11**	**-**	**0.01**	**0.99**	**-**	**12**
AGRICULTURE	**54**	**6**	**160**	**0.69**	**210**	**-**	**-**	**-**	**-**	**420**
a. Enteric Fermentation	**-**	**5**	**130**	**-**	**-**	**-**	**-**	**-**	**-**	**130**
b. Manure Management	**-**	**1**	**27**	**0.09**	**30**	**-**	**-**	**-**	**-**	**55**
c. Agricultural Soils	**-**	**-**	**-**	**0.60**	**180**	**-**	**-**	**-**	**-**	**180**
Direct Sources	-	-	-	0.47	140	-	-	-	-	140
Indirect Sources	-	-	-	0.10	40	-	-	-	-	40
d. Field Burning of Agricultural Residues	**-**	**0.00**	**0.03**	**0.00**	**0.01**	**-**	**-**	**-**	**-**	**0.04**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**54**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**54**
WASTE	**0.01**	**19**	**480**	**0.10**	**30**	**-**	**-**	**-**	**-**	**510**
a. Solid Waste Disposal (Landfills)	**-**	**10**	**400**	**-**	**-**	**-**	**-**	**-**	**-**	**400**
b. Biological Treatment of Solid Waste	**-**	**0.50**	**10**	**0.04**	**10**	**-**	**-**	**-**	**-**	**20**
c. Wastewater Treatment and Discharge	**0.01**	**3**	**70**	**0.07**	**20**	**-**	**-**	**-**	**-**	**90**
d. Incineration and Open Burning of Waste	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Industrial Wood Waste Landfills	**-**	**1**	**30**	**-**	**-**	**-**	**-**	**-**	**-**	**30**

Notes:

Estimates for the latest year (2021) 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 and Territorial GHG emissions by Canadian economic sector are provided in Annex 12 of this report.

a. Chapter 1, Table 1–1 of this report provides a list of global warming potentials (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 and territorial tables to protect confidential data.

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	2016	2017	2018	2019	2020	2021
	kt CO_2 eq							
TOTAL	**84 300**	**89 200**	**77 300**	**79 300**	**80 500**	**81 900**	**74 300**	**77 500**
ENERGY	**58 400**	**63 900**	**54 600**	**56 600**	**57 500**	**58 900**	**50 800**	**54 000**
a. Stationary Combustion Sources	**30 500**	**30 100**	**20 800**	**20 800**	**21 800**	**22 600**	**20 000**	**20 600**
Public Electricity and Heat Production	1 490	1 700	233	239	242	239	291	250
Petroleum Refining Industries	3 460	3 800	1 770	1 520	2 030	1 900	1 900	1 890
Oil and Gas Extraction	-	-	-	-	-	-	-	-
Mining	824	635	649	826	1 480	1 560	1 380	1 520
Manufacturing Industries	12 500	11 000	8 850	9 030	8 990	9 630	8 320	8 830
Construction	458	337	348	367	402	412	400	423
Commercial and Institutional	4 410	5 730	4 890	5 160	4 850	4 950	4 310	4 350
Residential	7 070	6 590	3 590	3 240	3 370	3 470	2 990	2 920
Agriculture and Forestry	291	340	496	452	463	476	385	387
b. Transport[a]	**27 400**	**33 400**	**33 400**	**35 300**	**35 300**	**35 900**	**30 500**	**33 000**
Aviation	952	755	742	806	904	901	551	663
Road Transportation	20 900	25 300	25 900	26 800	26 400	26 500	22 300	24 200
Light-Duty Gasoline Vehicles	12 000	11 100	9 310	9 410	9 130	9 010	7 030	7 120
Light-Duty Gasoline Trucks	4 040	7 060	8 470	8 930	9 140	9 630	8 520	9 940
Heavy-Duty Gasoline Vehicles	569	774	692	734	725	746	749	743
Motorcycles	77	154	243	261	272	280	249	226
Light-Duty Diesel Vehicles	194	235	158	156	141	114	56	65
Light-Duty Diesel Trucks	323	217	94	106	110	112	79	113
Heavy-Duty Diesel Vehicles	3 610	5 790	6 960	7 210	6 880	6 580	5 560	5 970
Propane and Natural Gas Vehicles	6	0.22	8	11	11	19	20	24
Railways	638	527	363	399	515	522	508	502
Marine	700	922	766	840	836	802	662	727
Other Transportation	4 240	5 860	5 610	6 480	6 670	7 160	6 500	6 950
Off-Road Agriculture and Forestry	813	738	852	998	1 050	1 150	1 020	1 130
Off-Road Commercial and Institutional	823	956	1 020	1 250	1 300	1 420	1 270	1 400
Off-Road Manufacturing, Mining and Construction	1 970	2 400	2 460	2 810	2 880	3 130	2 740	3 000
Off-Road Residential	83	235	198	201	195	193	205	179
Off-Road Other Transportation	525	1 280	1 000	1 150	1 150	1 160	1 170	1 130
Pipeline Transport	26	249	80	82	98	102	100	105
c. Fugitive Sources	**500**	**450**	**380**	**400**	**380**	**410**	**350**	**360**
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	500	452	381	404	379	411	351	363
Oil	22	27	21	20	20	20	17	17
Natural Gas	338	128	125	128	128	130	125	127
Venting	99	248	200	217	196	220	178	187
Flaring	40	49	35	39	35	40	31	33
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**14 900**	**12 600**	**9 930**	**10 500**	**10 300**	**10 500**	**10 900**	**11 200**
a. Mineral Products	**1 900**	**2 100**	**1 600**	**2 200**	**2 100**	**2 500**	**2 300**	**2 500**
Cement Production	1 450	1 310	1 210	1 660	1 620	2 080	1 870	2 040
Lime Production	286	510	332	x	x	x	x	x
Mineral Products Use	200	250	62	x	x	x	x	x
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**10 900**	**7 210**	**5 160**	**5 250**	**4 750**	**4 560**	**5 200**	**5 350**
Iron and Steel Production	-	12	29	18	7	7	10	6
Aluminium Production	8 660	6 270	5 130	5 220	4 740	4 540	5 180	5 330
SF_6 Used in Magnesium Smelters and Casters	2 280	933	8	11	11	11	9	14
d. Production and Consumption of Halocarbons, SF_6 and NF_3[c]	**2**	**920**	**2 300**	**2 200**	**2 400**	**2 400**	**2 400**	**2 300**
e. Non-Energy Products from Fuels and Solvent Use[b]	**1 900**	**2 300**	**680**	**750**	**790**	**830**	**850**	**820**
f. Other Product Manufacture and Use	**80**	**140**	**170**	**130**	**180**	**160**	**200**	**200**
AGRICULTURE	**6 500**	**7 400**	**7 900**	**7 400**	**8 100**	**7 800**	**8 000**	**7 800**
a. Enteric Fermentation	**3 100**	**3 200**	**2 600**	**2 600**	**2 600**	**2 600**	**2 600**	**2 500**
b. Manure Management	**1 200**	**1 600**	**1 700**	**1 700**	**1 700**	**1 700**	**1 700**	**1 700**
c. Agricultural Soils	**2 000**	**2 400**	**3 300**	**2 900**	**3 500**	**3 300**	**3 500**	**3 400**
Direct Sources	1 600	1 900	2 800	2 400	3 000	2 700	3 000	2 800
Indirect Sources	400	500	600	500	600	500	600	500
d. Field Burning of Agricultural Residues	**0.30**	**0.30**	**0.20**	**0.10**	**0.20**	**0.20**	**0.20**	**0.20**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**220**	**190**	**260**	**190**	**240**	**220**	**230**	**210**
WASTE	**4 500**	**5 200**	**4 900**	**4 800**	**4 700**	**4 600**	**4 600**	**4 500**
a. Solid Waste Disposal (Landfills)	**4 000**	**4 000**	**4 000**	**4 000**	**4 000**	**4 000**	**4 000**	**4 000**
b. Biological Treatment of Solid Waste	**40**	**30**	**30**	**40**	**70**	**70**	**70**	**70**
c. Wastewater Treatment and Discharge	**300**	**300**	**400**	**400**	**400**	**400**	**400**	**400**
d. Incineration and Open Burning of Waste	**160**	**200**	**38**	**38**	**38**	**37**	**37**	**38**
e. Industrial Wood Waste Landfills	**200**	**200**	**200**	**200**	**200**	**200**	**200**	**200**

Notes:

Estimates for the latest year (2021) 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 and Territorial GHG emissions by Canadian economic sector 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 and territorial tables to protect confidential data.

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 **2021 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	**60 600**	**360**	**9 000**	**16**	**4 800**	**2 300**	**660**	**97**	**0.60**	**77 500**
ENERGY	**52 400**	**39**	**980**	**2**	**600**	**-**	**-**	**-**	**-**	**54 000**
a. Stationary Combustion Sources	**19 700**	**30**	**700**	**0.90**	**300**	**-**	**-**	**-**	**-**	**20 600**
Public Electricity and Heat Production	249	0.00	0.12	0.00	1	-	-	-	-	250
Petroleum Refining Industries	1 880	0.04	1	0.02	7	-	-	-	-	1 890
Oil and Gas Extraction	-	-	-	-	-	-	-	-	-	-
Mining	1 520	0.04	1	0.02	6	-	-	-	-	1 520
Manufacturing Industries	8 720	0.53	13	0.32	94	-	-	-	-	8 830
Construction	420	0.01	0.20	0.01	3	-	-	-	-	423
Commercial and Institutional	4 310	0.17	4	0.10	30	-	-	-	-	4 350
Residential	2 170	30	600	0.30	100	-	-	-	-	2 920
Agriculture and Forestry	381	0.01	0.20	0.02	6	-	-	-	-	387
b. Transport[b]	**32 500**	**6**	**150**	**1**	**370**	**-**	**-**	**-**	**-**	**33 000**
Aviation	657	0.02	0.60	0.02	6	-	-	-	-	663
Road Transportation	24 000	1	40	0.70	210	-	-	-	-	24 200
Light-Duty Gasoline Vehicles	7 070	0.40	10	0.13	38	-	-	-	-	7 120
Light-Duty Gasoline Trucks	9 880	0.60	10	0.16	48	-	-	-	-	9 940
Heavy-Duty Gasoline Vehicles	723	0.02	0.60	0.06	19	-	-	-	-	743
Motorcycles	223	0.08	2	0.00	1	-	-	-	-	226
Light-Duty Diesel Vehicles	63	0.00	0.03	0.01	2	-	-	-	-	65
Light-Duty Diesel Trucks	110	0.00	0.07	0.01	3	-	-	-	-	113
Heavy-Duty Diesel Vehicles	5 870	0.20	6	0.33	100	-	-	-	-	5 970
Propane and Natural Gas Vehicles	23	0.06	2	0.00	0.17	-	-	-	-	24
Railways	449	0.03	0.60	0.20	50	-	-	-	-	502
Marine	720	0.07	2	0.02	6	-	-	-	-	727
Other Transportation	6 740	5	110	0.30	100	-	-	-	-	6 950
Off-Road Agriculture and Forestry	1 110	0.04	1	0.06	20	-	-	-	-	1 130
Off-Road Commercial and Institutional	1 350	1	31	0.05	20	-	-	-	-	1 400
Off-Road Manufacturing, Mining and Construction	2 940	0.36	9	0.20	50	-	-	-	-	3 000
Off-Road Residential	166	0.45	11	0.00	1	-	-	-	-	179
Off-Road Other Transportation	1 060	2	58	0.03	9	-	-	-	-	1 130
Pipeline Transport	101	0.10	3	0.00	0.80	-	-	-	-	105
c. Fugitive Sources	**190**	**7**	**165**	**0.02**	**5**	**-**	**-**	**-**	**-**	**360**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	190	7	165	0.02	5	-	-	-	-	363
Oil	0.11	0.46	12	0.02	5	-	-	-	-	17
Natural Gas	0.09	5	127	-	-	-	-	-	-	127
Venting	160	1	27	-	-	-	-	-	-	187
Flaring	33	0.00	0.02	0.00	0.01	-	-	-	-	33
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**7 990**	**0.00**	**0.00**	**0.42**	**124**	**2 300**	**664**	**97**	**0.60**	**11 200**
a. Mineral Products	**2 500**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2 500**
Cement Production	2 040	-	-	-	-	-	-	-	-	2 040
Lime Production	x	-	-	-	-	-	-	-	-	x
Mineral Products Use	x	-	-	-	-	-	-	-	-	x
b. Chemical Industry[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**4 680**	**0.00**	**0.00**	**-**	**-**	**-**	**651**	**14**	**-**	**5 350**
Iron and Steel Production	6	0.00	0.00	-	-	-	-	-	-	6
Aluminium Production	4 680	-	-	-	-	-	651	0.07	-	5 330
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	14	-	14
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**-**	**-**	**-**	**-**	**2 300**	**7**	**15**	**0.60**	**2 300**
e. Non-Energy Products from Fuels and Solvent Use[c]	**820**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**820**
f. Other Product Manufacture and Use	**-**	**-**	**-**	**0.42**	**120**	**-**	**5**	**69**	**-**	**200**
AGRICULTURE	**210**	**150**	**3 700**	**13**	**3 800**	**-**	**-**	**-**	**-**	**7 800**
a. Enteric Fermentation	**-**	**100**	**2 500**	**-**	**-**	**-**	**-**	**-**	**-**	**2 500**
b. Manure Management	**-**	**48**	**1 200**	**2**	**500**	**-**	**-**	**-**	**-**	**1 700**
c. Agricultural Soils	**-**	**-**	**-**	**11**	**3 400**	**-**	**-**	**-**	**-**	**3 400**
Direct Sources	-	-	-	10	2 800	-	-	-	-	2 800
Indirect Sources	-	-	-	2	500	-	-	-	-	500
d. Field Burning of Agricultural Residues	**-**	**0.01**	**0.20**	**0.00**	**0.05**	**-**	**-**	**-**	**-**	**0.20**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**210**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**210**
WASTE	**10**	**170**	**4 200**	**0.90**	**300**	**-**	**-**	**-**	**-**	**4 500**
a. Solid Waste Disposal (Landfills)	**-**	**200**	**4 000**	**-**	**-**	**-**	**-**	**-**	**-**	**4 000**
b. Biological Treatment of Solid Waste	**-**	**1**	**30**	**0.10**	**30**	**-**	**-**	**-**	**-**	**70**
c. Wastewater Treatment and Discharge	**-**	**8**	**200**	**0.70**	**200**	**-**	**-**	**-**	**-**	**400**
d. Incineration and Open Burning of Waste	**9**	**0.00**	**0.03**	**0.10**	**30**	**-**	**-**	**-**	**-**	**38**
e. Industrial Wood Waste Landfills	**-**	**7**	**200**	**-**	**-**	**-**	**-**	**-**	**-**	**200**

Notes:

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Provincial and Territorial GHG emissions by Canadian economic sector are provided in Annex 12 of this report.

a. Chapter 1, Table 1–1 of this report provides a list of global warming potentials (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 and territorial tables to protect confidential data.

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	2016	2017	2018	2019	2020	2021
	kt CO_2 eq							
TOTAL	**179 000**	**204 000**	**160 000**	**156 000**	**163 000**	**163 000**	**147 000**	**151 000**
ENERGY	**133 000**	**162 000**	**121 000**	**119 000**	**124 000**	**125 000**	**110 000**	**113 000**
a. Stationary Combustion Sources	**82 500**	**95 800**	**60 300**	**57 200**	**61 100**	**61 400**	**57 500**	**58 300**
Public Electricity and Heat Production	25 900	35 300	5 620	2 600	4 160	3 970	3 710	3 910
Petroleum Refining Industries	6 230	6 890	4 770	3 430	3 840	4 320	3 790	4 320
Oil and Gas Extraction	100	167	78	41	63	57	34	11
Mining	493	418	531	546	487	537	530	599
Manufacturing Industries	22 000	18 600	15 900	16 500	16 300	16 200	14 900	15 600
Construction	571	632	344	307	292	306	307	357
Commercial and Institutional	9 170	12 700	13 400	13 900	14 900	16 000	16 200	15 900
Residential	17 300	20 000	18 200	18 500	19 700	18 300	16 700	16 000
Agriculture and Forestry	775	1 030	1 520	1 370	1 410	1 770	1 440	1 540
b. Transport[a]	**48 000**	**64 200**	**58 700**	**59 100**	**60 900**	**61 300**	**50 000**	**52 400**
Aviation	2 370	2 220	2 280	2 410	2 590	2 590	1 350	1 570
Road Transportation	34 200	47 300	44 200	44 000	45 300	45 900	37 300	38 800
Light-Duty Gasoline Vehicles	18 200	16 500	12 900	12 500	12 400	12 300	9 010	8 330
Light-Duty Gasoline Trucks	8 960	16 300	18 400	18 600	19 500	20 400	16 600	17 300
Heavy-Duty Gasoline Vehicles	1 330	1 660	1 450	1 440	1 460	1 500	1 350	1 480
Motorcycles	68	140	275	274	282	288	224	252
Light-Duty Diesel Vehicles	76	228	247	235	229	190	115	107
Light-Duty Diesel Trucks	143	163	145	164	185	195	157	173
Heavy-Duty Diesel Vehicles	5 320	12 400	10 800	10 800	11 300	11 100	9 820	11 100
Propane and Natural Gas Vehicles	100	7	15	22	25	29	34	39
Railways	2 210	2 170	1 730	1 960	1 790	1 740	1 550	1 530
Marine	207	269	269	266	249	263	273	302
Other Transportation	9 020	12 200	10 300	10 400	11 000	10 800	9 520	10 200
Off-Road Agriculture and Forestry	766	795	1 020	1 170	1 280	1 250	1 090	1 140
Off-Road Commercial and Institutional	1 300	1 490	1 430	1 530	1 680	1 700	1 520	1 660
Off-Road Manufacturing, Mining and Construction	3 600	3 890	4 050	4 420	4 600	4 450	3 840	4 040
Off-Road Residential	151	496	416	402	400	396	370	398
Off-Road Other Transportation	930	2 480	2 020	1 980	2 020	2 020	1 920	2 090
Pipeline Transport	2 280	3 030	1 340	927	1 010	946	781	846
c. Fugitive Sources	**2 100**	**2 300**	**2 300**	**2 300**	**2 400**	**2 500**	**2 400**	**2 500**
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	2 090	2 330	2 320	2 340	2 400	2 470	2 390	2 460
Oil	64	42	31	26	29	29	28	28
Natural Gas	1 530	1 720	1 780	1 810	1 860	1 890	1 870	1 900
Venting	340	462	445	447	452	486	441	473
Flaring	155	101	60	61	62	68	56	61
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**30 600**	**25 100**	**24 300**	**22 600**	**23 400**	**23 000**	**20 800**	**21 700**
a. Mineral Products	**3 900**	**4 800**	**3 500**	**3 800**	**3 800**	**3 600**	**3 500**	**3 700**
Cement Production	2 440	3 700	2 640	3 020	2 950	2 830	2 870	2 970
Lime Production	1 100	804	708	x	x	x	x	x
Mineral Products Use	380	320	120	x	x	x	x	x
b. Chemical Industry[b]	**10 300**	**2 550**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	10 300	2 550	-	-	-	-	-	-
c. Metal Production	**11 200**	**11 400**	**9 320**	**8 560**	**9 010**	**8 610**	**7 190**	**8 080**
Iron and Steel Production	10 500	10 300	9 190	8 430	8 870	8 320	7 100	7 960
Aluminium Production	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	687	1 130	130	126	136	285	93	126
d. Production and Consumption of Halocarbons, SF_6 and NF_3[c]	**970**	**2 000**	**4 300**	**4 200**	**4 600**	**4 600**	**4 500**	**4 300**
e. Non-Energy Products from Fuels and Solvent Use[b]	**4 100**	**4 100**	**7 000**	**5 800**	**5 800**	**5 900**	**5 300**	**5 400**
f. Other Product Manufacture and Use	**140**	**200**	**220**	**240**	**270**	**260**	**290**	**280**
AGRICULTURE	**9 400**	**9 300**	**9 000**	**9 000**	**8 900**	**9 100**	**9 800**	**9 600**
a. Enteric Fermentation	**4 300**	**4 100**	**3 300**	**3 300**	**3 300**	**3 300**	**3 300**	**3 300**
b. Manure Management	**1 900**	**2 100**	**1 900**	**1 900**	**1 900**	**1 900**	**1 900**	**1 900**
c. Agricultural Soils	**3 000**	**2 900**	**3 600**	**3 600**	**3 500**	**3 600**	**4 300**	**4 100**
Direct Sources	2 300	2 300	2 900	2 900	2 800	2 900	3 500	3 300
Indirect Sources	700	600	700	700	700	700	800	800
d. Field Burning of Agricultural Residues	**3**	**0.60**	**0.30**	**0.20**	**0.20**	**0.30**	**0.20**	**0.20**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**250**	**160**	**200**	**200**	**200**	**210**	**260**	**240**
WASTE	**6 600**	**7 000**	**5 700**	**6 000**	**6 100**	**6 100**	**6 000**	**6 100**
a. Solid Waste Disposal (Landfills)	**6 000**	**6 000**	**4 000**	**5 000**	**5 000**	**5 000**	**5 000**	**5 000**
b. Biological Treatment of Solid Waste	**30**	**80**	**100**	**100**	**100**	**100**	**100**	**100**
c. Wastewater Treatment and Discharge	**600**	**800**	**900**	**900**	**1 000**	**1 000**	**1 000**	**1 000**
d. Incineration and Open Burning of Waste	**64**	**110**	**130**	**110**	**110**	**100**	**87**	**86**
e. Industrial Wood Waste Landfills	**100**	**100**	**100**	**100**	**100**	**100**	**90**	**90**

Notes:

Estimates for the latest year (2021) 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 and Territorial GHG emissions by Canadian economic sector 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 and territorial tables to protect confidential data.

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 **2021 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	**127 000**	**500**	**12 000**	**24**	**7 100**	**4 300**	**16**	**190**	**-**	**151 000**
ENERGY	**109 000**	**110**	**2 800**	**4**	**1 000**	**-**	**-**	**-**	**-**	**113 000**
a. Stationary Combustion Sources	**57 600**	**10**	**300**	**1**	**400**	**-**	**-**	**-**	**-**	**58 300**
Public Electricity and Heat Production	3 860	0.99	25	0.10	30	-	-	-	-	3 910
Petroleum Refining Industries	4 310	0.09	2	0.02	7	-	-	-	-	4 320
Oil and Gas Extraction	11	0.00	0.00	0.00	0.20	-	-	-	-	11
Mining	591	0.01	0.30	0.03	8	-	-	-	-	599
Manufacturing Industries	15 500	0.51	13	0.37	110	-	-	-	-	15 600
Construction	354	0.01	0.15	0.01	3	-	-	-	-	357
Commercial and Institutional	15 800	0.40	10	0.30	100	-	-	-	-	15 900
Residential	15 600	10	300	0.40	100	-	-	-	-	16 000
Agriculture and Forestry	1 530	0.03	0.70	0.04	10	-	-	-	-	1 540
b. Transport[b]	**51 400**	**12**	**290**	**2**	**680**	**-**	**-**	**-**	**-**	**52 400**
Aviation	1 560	0.04	1	0.05	10	-	-	-	-	1 570
Road Transportation	38 300	2	60	1	380	-	-	-	-	38 800
Light-Duty Gasoline Vehicles	8 260	0.50	10	0.18	52	-	-	-	-	8 330
Light-Duty Gasoline Trucks	17 200	1	30	0.28	83	-	-	-	-	17 300
Heavy-Duty Gasoline Vehicles	1 440	0.05	1	0.13	40	-	-	-	-	1 480
Motorcycles	248	0.09	2	0.00	1	-	-	-	-	252
Light-Duty Diesel Vehicles	104	0.00	0.05	0.01	3	-	-	-	-	107
Light-Duty Diesel Trucks	168	0.01	0.10	0.02	4	-	-	-	-	173
Heavy-Duty Diesel Vehicles	10 800	0.50	10	0.65	190	-	-	-	-	11 100
Propane and Natural Gas Vehicles	37	0.06	2	0.00	0.25	-	-	-	-	39
Railways	1 370	0.08	2	0.50	200	-	-	-	-	1 530
Marine	299	0.03	0.68	0.01	2	-	-	-	-	302
Other Transportation	9 820	9	230	0.40	100	-	-	-	-	10 200
Off-Road Agriculture and Forestry	1 130	0.04	1	0.06	20	-	-	-	-	1 140
Off-Road Commercial and Institutional	1 600	2	42	0.06	20	-	-	-	-	1 660
Off-Road Manufacturing, Mining and Construction	3 950	0.67	17	0.20	70	-	-	-	-	4 040
Off-Road Residential	369	1	26	0.01	3	-	-	-	-	398
Off-Road Other Transportation	1 950	5	120	0.05	20	-	-	-	-	2 090
Pipeline Transport	820	0.80	20	0.02	6	-	-	-	-	846
c. Fugitive Sources	**280**	**87**	**2 180**	**0.02**	**7**	**-**	**-**	**-**	**-**	**2 500**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	280	87	2 180	0.02	7	-	-	-	-	2 460
Oil	0.16	0.84	21	0.02	7	-	-	-	-	28
Natural Gas	3	76	1 900	-	-	-	-	-	-	1 900
Venting	220	10	256	-	-	-	-	-	-	473
Flaring	59	0.09	2	0.00	0.03	-	-	-	-	61
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**16 900**	**1**	**35**	**0.82**	**243**	**4 300**	**16**	**190**	**-**	**21 700**
a. Mineral Products	**3 700**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3 700**
Cement Production	2 970	-	-	-	-	-	-	-	-	2 970
Lime Production	x	-	-	-	-	-	-	-	-	x
Mineral Products Use	x	-	-	-	-	-	-	-	-	x
b. Chemical Industry[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**7 950**	**0.07**	**2**	**-**	**-**	**-**	**-**	**126**	**-**	**8 080**
Iron and Steel Production	7 950	0.07	2	-	-	-	-	-	-	7 960
Aluminium Production	-	-	-	-	-	-	-	-	-	-
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	126	-	126
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**-**	**-**	**-**	**-**	**4 300**	**8**	**13**	**-**	**4 300**
e. Non-Energy Products from Fuels and Solvent Use[c]	**5 300**	**-**	**-**	**0.10**	**-**	**-**	**-**	**-**	**-**	**5 400**
f. Other Product Manufacture and Use	**-**	**-**	**-**	**0.72**	**210**	**-**	**8**	**54**	**-**	**280**
AGRICULTURE	**240**	**170**	**4 400**	**17**	**5 000**	**-**	**-**	**-**	**-**	**9 600**
a. Enteric Fermentation	**-**	**130**	**3 300**	**-**	**-**	**-**	**-**	**-**	**-**	**3 300**
b. Manure Management	**-**	**40**	**1 000**	**3**	**900**	**-**	**-**	**-**	**-**	**1 900**
c. Agricultural Soils	**-**	**-**	**-**	**14**	**4 100**	**-**	**-**	**-**	**-**	**4 100**
Direct Sources	-	-	-	11	3 300	-	-	-	-	3 300
Indirect Sources	-	-	-	3	800	-	-	-	-	800
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	**240**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**240**
WASTE	**50**	**210**	**5 200**	**3**	**800**	**-**	**-**	**-**	**-**	**6 100**
a. Solid Waste Disposal (Landfills)	**-**	**200**	**5 000**	**-**	**-**	**-**	**-**	**-**	**-**	**5 000**
b. Biological Treatment of Solid Waste	**-**	**2**	**50**	**0.20**	**60**	**-**	**-**	**-**	**-**	**100**
c. Wastewater Treatment and Discharge	**-**	**10**	**300**	**2**	**700**	**-**	**-**	**-**	**-**	**1 000**
d. Incineration and Open Burning of Waste	**50**	**0.03**	**0.80**	**0.10**	**40**	**-**	**-**	**-**	**-**	**86**
e. Industrial Wood Waste Landfills	**-**	**4**	**90**	**-**	**-**	**-**	**-**	**-**	**-**	**90**

Notes:

Estimates for the latest year (2021) 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 and Territorial GHG emissions by Canadian economic sector are provided in Annex 12 of this report.

a. Chapter 1, Table 1–1 of this report provides a list of global warming potentials (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 and territorial tables to protect confidential data.

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	2016	2017	2018	2019	2020	2021
	kt CO_2 eq							
TOTAL	**18 000**	**20 300**	**20 900**	**21 400**	**22 200**	**21 900**	**21 200**	**20 700**
ENERGY	**12 600**	**12 600**	**13 000**	**13 400**	**14 000**	**13 800**	**12 700**	**12 700**
a. Stationary Combustion Sources	**4 910**	**4 500**	**4 090**	**4 310**	**4 280**	**4 320**	**4 140**	**3 960**
Public Electricity and Heat Production	519	357	69	70	41	40	41	57
Petroleum Refining Industries	-	-	-	-	-	-	-	-
Oil and Gas Extraction	1	0.46	-	-	-	-	-	-
Mining	79	96	59	97	120	120	119	108
Manufacturing Industries	1 180	1 450	1 510	1 500	1 200	1 200	1 220	1 180
Construction	63	85	122	114	126	123	114	112
Commercial and Institutional	1 400	1 400	1 260	1 370	1 530	1 560	1 430	1 370
Residential	1 620	1 060	1 050	1 110	1 210	1 220	1 160	1 080
Agriculture and Forestry	43	43	26	40	49	50	51	46
b. Transport[a]	**7 120**	**7 760**	**8 200**	**8 420**	**9 040**	**8 800**	**7 870**	**8 050**
Aviation	472	534	433	475	515	511	311	357
Road Transportation	3 470	3 890	4 300	4 270	4 570	4 540	4 030	4 210
Light-Duty Gasoline Vehicles	1 570	1 150	965	886	936	905	745	751
Light-Duty Gasoline Trucks	1 040	1 420	1 940	1 930	2 150	2 180	2 000	2 140
Heavy-Duty Gasoline Vehicles	195	162	158	155	169	172	171	168
Motorcycles	3	9	24	25	28	30	26	23
Light-Duty Diesel Vehicles	9	10	8	7	6	6	4	4
Light-Duty Diesel Trucks	16	15	9	11	11	11	9	11
Heavy-Duty Diesel Vehicles	621	1 130	1 190	1 260	1 270	1 230	1 080	1 110
Propane and Natural Gas Vehicles	15	0.12	0.21	0.61	1	2	2	2
Railways	602	519	523	607	622	598	539	532
Marine	2	3	0.13	1	4	1	0.77	0.79
Other Transportation	2 580	2 820	2 950	3 060	3 330	3 140	2 990	2 960
Off-Road Agriculture and Forestry	810	1 030	1 230	1 380	1 450	1 390	1 420	1 300
Off-Road Commercial and Institutional	274	303	447	460	475	451	394	410
Off-Road Manufacturing, Mining and Construction	461	503	469	508	524	497	479	444
Off-Road Residential	11	45	41	38	41	40	41	35
Off-Road Other Transportation	179	344	519	523	530	496	470	472
Pipeline Transport	848	594	250	157	308	265	192	294
c. Fugitive Sources	**610**	**360**	**710**	**690**	**700**	**710**	**650**	**650**
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	608	365	715	687	698	710	654	654
Oil	132	169	375	361	363	368	336	339
Natural Gas	389	91	99	100	100	100	101	102
Venting	58	73	130	127	128	127	119	119
Flaring	29	31	111	99	108	114	97	93
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**488**	**702**	**884**	**908**	**1 010**	**976**	**982**	**894**
a. Mineral Products	**220**	**70**	**55**	**86**	**80**	**73**	**72**	**70**
Cement Production	155	-	-	-	-	-	-	-
Lime Production	61	60	50	x	x	x	x	x
Mineral Products Use	6	10	5	x	x	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**	**420**	**460**	**450**	**440**	**420**
e. Non-Energy Products from Fuels and Solvent Use[b]	**260**	**420**	**380**	**390**	**460**	**430**	**450**	**380**
f. Other Product Manufacture and Use	**11**	**18**	**17**	**19**	**22**	**22**	**22**	**23**
AGRICULTURE	**4 100**	**5 800**	**5 800**	**5 900**	**6 000**	**6 000**	**6 300**	**5 900**
a. Enteric Fermentation	**1 900**	**3 200**	**2 300**	**2 400**	**2 400**	**2 400**	**2 300**	**2 300**
b. Manure Management	**390**	**740**	**690**	**690**	**700**	**690**	**680**	**680**
c. Agricultural Soils	**1 500**	**1 600**	**2 500**	**2 500**	**2 600**	**2 600**	**2 800**	**2 600**
Direct Sources	1 200	1 200	2 000	2 000	2 000	2 100	2 300	2 000
Indirect Sources	300	400	500	500	500	500	600	500
d. Field Burning of Agricultural Residues	**100**	**10**	**20**	**20**	**20**	**20**	**20**	**20**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**130**	**190**	**280**	**310**	**310**	**330**	**460**	**390**
WASTE	**800**	**1 200**	**1 200**	**1 200**	**1 200**	**1 100**	**1 200**	**1 200**
a. Solid Waste Disposal (Landfills)	**700**	**1 000**	**1 000**	**1 000**	**1 000**	**1 000**	**1 000**	**1 000**
b. Biological Treatment of Solid Waste	**0.20**	**5**	**9**	**9**	**10**	**10**	**8**	**8**
c. Wastewater Treatment and Discharge	**70**	**80**	**90**	**100**	**100**	**100**	**100**	**100**
d. Incineration and Open Burning of Waste	**0.41**	**0.44**	**0.08**	**0.08**	**0.03**	**0.03**	**0.01**	**0.01**
e. Industrial Wood Waste Landfills	**3**	**3**	**3**	**3**	**3**	**3**	**2**	**2**

Notes:

Estimates for the latest year (2021) 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 and Territorial GHG emissions by Canadian economic sector 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 and territorial tables to protect confidential data.

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 **2021 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	**12 600**	**180**	**4 600**	**10**	**3 100**	**420**	**0.77**	**2**	**-**	**20 700**
ENERGY	**11 800**	**27**	**670**	**0.60**	**200**	**-**	**-**	**-**	**-**	**12 700**
a. Stationary Combustion Sources	**3 890**	**1**	**40**	**0.10**	**30**	**-**	**-**	**-**	**-**	**3 960**
Public Electricity and Heat Production	56	0.01	0.21	0.00	0.30	-	-	-	-	57
Petroleum Refining Industries	-	-	-	-	-	-	-	-	-	-
Oil and Gas Extraction	-	-	-	-	-	-	-	-	-	-
Mining	106	0.00	0.04	0.01	2	-	-	-	-	108
Manufacturing Industries	1 170	0.05	1	0.04	12	-	-	-	-	1 180
Construction	111	0.00	0.05	0.00	0.65	-	-	-	-	112
Commercial and Institutional	1 360	0.03	0.64	0.03	9	-	-	-	-	1 370
Residential	1 040	1	30	0.04	10	-	-	-	-	1 080
Agriculture and Forestry	46	0.00	0.02	0.00	0.90	-	-	-	-	46
b. Transport[b]	**7 840**	**3**	**71**	**0.46**	**140**	**-**	**-**	**-**	**-**	**8 050**
Aviation	354	0.01	0.40	0.01	3	-	-	-	-	357
Road Transportation	4 160	0.30	6	0.15	45	-	-	-	-	4 210
Light-Duty Gasoline Vehicles	743	0.05	1	0.02	6	-	-	-	-	751
Light-Duty Gasoline Trucks	2 120	0.10	3	0.05	16	-	-	-	-	2 140
Heavy-Duty Gasoline Vehicles	163	0.01	0.20	0.02	4	-	-	-	-	168
Motorcycles	23	0.01	0.20	0.00	0.13	-	-	-	-	23
Light-Duty Diesel Vehicles	4	0.00	0.00	0.00	0.10	-	-	-	-	4
Light-Duty Diesel Trucks	10	0.00	0.01	0.00	0.25	-	-	-	-	11
Heavy-Duty Diesel Vehicles	1 090	0.05	1	0.06	18	-	-	-	-	1 110
Propane and Natural Gas Vehicles	2	0.00	0.02	0.00	0.01	-	-	-	-	2
Railways	476	0.03	0.70	0.20	60	-	-	-	-	532
Marine	0.78	0.00	0.00	0.00	0.01	-	-	-	-	0.79
Other Transportation	2 860	3	63	0.10	40	-	-	-	-	2 960
Off-Road Agriculture and Forestry	1 280	0.08	2	0.06	20	-	-	-	-	1 300
Off-Road Commercial and Institutional	387	0.78	19	0.01	4	-	-	-	-	410
Off-Road Manufacturing, Mining and Construction	431	0.24	6	0.02	7	-	-	-	-	444
Off-Road Residential	33	0.09	2	0.00	0.30	-	-	-	-	35
Off-Road Other Transportation	441	1	27	0.01	4	-	-	-	-	472
Pipeline Transport	285	0.28	7	0.01	2	-	-	-	-	294
c. Fugitive Sources	**87**	**23**	**566**	**0.00**	**0.09**	**-**	**-**	**-**	**-**	**650**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	87	23	566	0.00	0.09	-	-	-	-	654
Oil	0.84	14	338	-	-	-	-	-	-	339
Natural Gas	6	4	97	-	-	-	-	-	-	102
Venting	0.41	5	119	-	-	-	-	-	-	119
Flaring	81	0.51	13	0.00	0.09	-	-	-	-	93
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**401**	**-**	**-**	**0.23**	**69**	**420**	**0.78**	**2**	**-**	**894**
a. Mineral Products	**70**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**70**
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]	**-**	**-**	**-**	**-**	**-**	**420**	**0.23**	**-**	**-**	**420**
e. Non-Energy Products from Fuels and Solvent Use[c]	**x**	**-**	**-**	**x**	**x**	**-**	**-**	**-**	**-**	**380**
f. Other Product Manufacture and Use	**x**	**-**	**-**	**x**	**x**	**-**	**0.50**	**2**	**-**	**23**
AGRICULTURE	**390**	**110**	**2 700**	**9**	**2 800**	**-**	**-**	**-**	**-**	**5 900**
a. Enteric Fermentation	**-**	**92**	**2 300**	**-**	**-**	**-**	**-**	**-**	**-**	**2 300**
b. Manure Management	**-**	**18**	**440**	**0.80**	**200**	**-**	**-**	**-**	**-**	**680**
c. Agricultural Soils	**-**	**-**	**-**	**9**	**2 600**	**-**	**-**	**-**	**-**	**2 600**
Direct Sources	-	-	-	7	2 000	-	-	-	-	2 000
Indirect Sources	-	-	-	2	500	-	-	-	-	500
d. Field Burning of Agricultural Residues	**-**	**0.50**	**10**	**0.01**	**4**	**-**	**-**	**-**	**-**	**20**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**390**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**390**
WASTE	**0.01**	**46**	**1 100**	**0.20**	**60**	**-**	**-**	**-**	**-**	**1 200**
a. Solid Waste Disposal (Landfills)	**-**	**40**	**1 000**	**-**	**-**	**-**	**-**	**-**	**-**	**1 000**
b. Biological Treatment of Solid Waste	**-**	**0.10**	**3**	**0.02**	**5**	**-**	**-**	**-**	**-**	**8**
c. Wastewater Treatment and Discharge	**-**	**2**	**50**	**0.20**	**60**	**-**	**-**	**-**	**-**	**100**
d. Incineration and Open Burning of Waste	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**-**	**-**	**-**	**-**	**0.01**
e. Industrial Wood Waste Landfills	**-**	**0.10**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**2**

Notes:

Estimates for the latest year (2021) 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 and Territorial GHG emissions by Canadian economic sector are provided in Annex 12 of this report.

a. Chapter 1, Table 1–1 of this report provides a list of global warming potentials (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 and territorial tables to protect confidential data.

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	2016	2017	2018	2019	2020	2021
	kt CO_2 eq							
TOTAL	**42 500**	**67 800**	**73 500**	**76 000**	**77 100**	**74 800**	**65 100**	**67 100**
ENERGY	**35 300**	**55 100**	**60 600**	**63 000**	**64 000**	**61 600**	**51 700**	**53 900**
a. Stationary Combustion Sources	**18 300**	**26 600**	**28 200**	**29 000**	**29 400**	**28 300**	**25 300**	**27 800**
Public Electricity and Heat Production	11 100	15 300	16 200	16 700	16 400	16 000	13 900	16 500
Petroleum Refining Industries	627	782	1 260	1 260	1 160	1 170	1 030	1 120
Oil and Gas Extraction	1 400	5 210	4 730	4 240	3 790	3 580	2 940	2 850
Mining	974	1 300	1 880	2 310	2 900	2 230	2 390	2 490
Manufacturing Industries	790	541	834	897	1 300	1 260	1 320	1 160
Construction	70	43	40	46	45	36	34	34
Commercial and Institutional	985	1 540	1 390	1 510	1 670	1 750	1 580	1 550
Residential	2 080	1 620	1 700	1 850	2 040	2 130	1 920	1 890
Agriculture and Forestry	296	261	136	169	170	130	133	139
b. Transport[a]	**9 400**	**11 900**	**15 900**	**16 600**	**17 300**	**16 900**	**15 600**	**16 000**
Aviation	259	193	225	224	235	218	117	147
Road Transportation	3 110	5 000	6 950	7 060	7 080	6 920	6 270	6 520
Light-Duty Gasoline Vehicles	1 120	1 180	1 120	1 090	1 020	975	753	736
Light-Duty Gasoline Trucks	1 080	1 600	2 900	2 990	2 960	2 970	2 700	2 800
Heavy-Duty Gasoline Vehicles	333	237	296	297	286	282	276	260
Motorcycles	2	6	15	15	14	13	11	10
Light-Duty Diesel Vehicles	4	11	15	14	14	13	9	10
Light-Duty Diesel Trucks	16	36	36	40	44	44	38	48
Heavy-Duty Diesel Vehicles	518	1 930	2 560	2 620	2 740	2 610	2 490	2 650
Propane and Natural Gas Vehicles	39	0.40	2	3	3	4	3	2
Railways	777	698	854	990	1 070	1 060	923	911
Marine	0.00	-	-	-	-	-	-	-
Other Transportation	5 250	6 010	7 880	8 350	8 900	8 680	8 330	8 390
Off-Road Agriculture and Forestry	2 500	2 630	4 470	5 020	5 430	5 310	5 390	5 160
Off-Road Commercial and Institutional	360	334	504	471	471	467	396	410
Off-Road Manufacturing, Mining and Construction	414	424	521	528	539	520	491	469
Off-Road Residential	9	47	54	53	51	50	51	45
Off-Road Other Transportation	379	641	1 080	1 020	994	968	909	900
Pipeline Transport	1 590	1 930	1 250	1 250	1 410	1 370	1 100	1 410
c. Fugitive Sources	**7 500**	**17 000**	**17 000**	**17 000**	**17 000**	**16 000**	**11 000**	**10 000**
Coal Mining	20	20	20	20	20	20	10	10
Oil and Natural Gas	7 480	16 600	16 500	17 400	17 200	16 400	10 700	10 200
Oil	1 370	3 250	4 540	4 610	4 670	4 590	3 790	3 860
Natural Gas	1 360	947	964	944	959	945	606	621
Venting	4 040	10 700	8 830	9 630	9 550	8 940	4 400	3 640
Flaring	703	1 720	2 190	2 180	2 060	1 910	1 940	2 060
d. CO_2 Transport and Storage	**-**	**0.09**	**0.20**	**0.20**	**0.20**	**0.20**	**0.20**	**0.20**
INDUSTRIAL PROCESSES AND PRODUCT USE	**352**	**865**	**896**	**831**	**773**	**784**	**941**	**903**
a. Mineral Products	**96**	**10**	**7**	**6**	**6**	**5**	**5**	**5**
Cement Production	89	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-
Mineral Products Use	8	10	7	6	6	5	5	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]	**-**	**160**	**420**	**420**	**460**	**450**	**450**	**430**
e. Non-Energy Products from Fuels and Solvent Use[b]	**250**	**680**	**460**	**390**	**290**	**310**	**470**	**450**
f. Other Product Manufacture and Use	**8**	**13**	**13**	**16**	**17**	**17**	**18**	**18**
AGRICULTURE	**6 000**	**11 000**	**11 000**	**11 000**	**11 000**	**11 000**	**11 000**	**11 000**
a. Enteric Fermentation	**3 300**	**6 100**	**4 600**	**4 700**	**4 600**	**4 600**	**4 600**	**4 600**
b. Manure Management	**670**	**1 300**	**1 000**	**1 000**	**1 000**	**980**	**990**	**1 000**
c. Agricultural Soils	**1 800**	**2 700**	**4 200**	**4 300**	**4 400**	**4 500**	**4 500**	**4 100**
Direct Sources	1 400	2 000	3 200	3 200	3 400	3 400	3 400	3 100
Indirect Sources	400	700	1 000	1 000	1 000	1 000	1 000	1 000
d. Field Burning of Agricultural Residues	**70**	**30**	**30**	**30**	**30**	**30**	**30**	**20**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**190**	**450**	**940**	**1 000**	**1 000**	**1 000**	**1 100**	**1 200**
WASTE	**890**	**1 200**	**1 200**	**1 200**	**1 200**	**1 300**	**1 300**	**1 300**
a. Solid Waste Disposal (Landfills)	**800**	**1 000**	**1 000**	**1 000**	**1 000**	**1 000**	**1 000**	**1 000**
b. Biological Treatment of Solid Waste	**0.01**	**2**	**3**	**4**	**4**	**4**	**4**	**4**
c. Wastewater Treatment and Discharge	**80**	**80**	**90**	**100**	**90**	**100**	**100**	**100**
d. Incineration and Open Burning of Waste	**-**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.03**
e. Industrial Wood Waste Landfills	**30**	**40**	**30**	**30**	**30**	**20**	**20**	**20**

Notes:

Estimates for the latest year (2021) 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 and Territorial GHG emissions by Canadian economic sector 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 and territorial tables to protect confidential data.

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 **2021 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	**47 000**	**570**	**14 000**	**18**	**5 500**	**430**	**0.44**	**0.91**	**-**	**67 100**
ENERGY	**45 400**	**320**	**8 000**	**2**	**500**	**-**	**-**	**-**	**-**	**53 900**
a. Stationary Combustion Sources	**27 400**	**7**	**200**	**0.60**	**200**	**-**	**-**	**-**	**-**	**27 800**
Public Electricity and Heat Production	16 400	2	38	0.40	100	-	-	-	-	16 500
Petroleum Refining Industries	1 110	0.02	0.60	0.01	3	-	-	-	-	1 120
Oil and Gas Extraction	2 710	5	100	0.06	20	-	-	-	-	2 850
Mining	2 480	0.05	1	0.04	10	-	-	-	-	2 490
Manufacturing Industries	1 150	0.03	0.81	0.03	8	-	-	-	-	1 160
Construction	33	0.00	0.02	0.00	0.22	-	-	-	-	34
Commercial and Institutional	1 540	0.03	0.74	0.03	9	-	-	-	-	1 550
Residential	1 870	0.40	10	0.04	10	-	-	-	-	1 890
Agriculture and Forestry	138	0.00	0.07	0.00	0.80	-	-	-	-	139
b. Transport[b]	**15 500**	**6**	**140**	**0.96**	**290**	**-**	**-**	**-**	**-**	**16 000**
Aviation	145	0.01	0.20	0.01	1	-	-	-	-	147
Road Transportation	6 420	0.40	9	0.30	90	-	-	-	-	6 520
Light-Duty Gasoline Vehicles	725	0.05	1	0.03	10	-	-	-	-	736
Light-Duty Gasoline Trucks	2 770	0.20	5	0.10	30	-	-	-	-	2 800
Heavy-Duty Gasoline Vehicles	253	0.01	0.30	0.02	6	-	-	-	-	260
Motorcycles	10	0.00	0.09	0.00	0.06	-	-	-	-	10
Light-Duty Diesel Vehicles	10	0.00	0.01	0.00	0.24	-	-	-	-	10
Light-Duty Diesel Trucks	47	0.00	0.03	0.00	1	-	-	-	-	48
Heavy-Duty Diesel Vehicles	2 600	0.10	3	0.14	43	-	-	-	-	2 650
Propane and Natural Gas Vehicles	2	0.00	0.03	0.00	0.01	-	-	-	-	2
Railways	815	0.05	1	0.30	90	-	-	-	-	911
Marine	-	-	-	-	-	-	-	-	-	-
Other Transportation	8 160	5	130	0.30	100	-	-	-	-	8 390
Off-Road Agriculture and Forestry	5 070	0.43	11	0.20	70	-	-	-	-	5 160
Off-Road Commercial and Institutional	384	0.89	22	0.01	3	-	-	-	-	410
Off-Road Manufacturing, Mining and Construction	453	0.35	9	0.02	7	-	-	-	-	469
Off-Road Residential	42	0.12	3	0.00	0.30	-	-	-	-	45
Off-Road Other Transportation	840	2	52	0.02	7	-	-	-	-	900
Pipeline Transport	1 370	1	34	0.04	10	-	-	-	-	1 410
c. Fugitive Sources	**2 400**	**308**	**7 690**	**0.27**	**81**	**-**	**-**	**-**	**-**	**10 000**
Coal Mining	-	0.60	10	-	-	-	-	-	-	10
Oil and Natural Gas	2 400	307	7 680	0.30	80	-	-	-	-	10 200
Oil	15	151	3 770	0.30	80	-	-	-	-	3 860
Natural Gas	34	24	587	-	-	-	-	-	-	621
Venting	470	127	3 170	-	-	-	-	-	-	3 640
Flaring	1 900	6	154	0.01	2	-	-	-	-	2 060
d. CO_2 Transport and Storage	**0.20**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.20**
INDUSTRIAL PROCESSES AND PRODUCT USE	**445**	**-**	**-**	**0.10**	**30**	**430**	**0.44**	**0.91**	**-**	**903**
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]	**-**	**-**	**-**	**-**	**-**	**430**	**0.20**	**-**	**-**	**430**
e. Non-Energy Products from Fuels and Solvent Use[c]	**x**	**-**	**-**	**x**	**x**	**-**	**-**	**-**	**-**	**450**
f. Other Product Manufacture and Use	**x**	**-**	**-**	**x**	**x**	**-**	**0.20**	**0.91**	**-**	**18**
AGRICULTURE	**1 200**	**200**	**4 900**	**16**	**4 800**	**-**	**-**	**-**	**-**	**11 000**
a. Enteric Fermentation	**-**	**190**	**4 600**	**-**	**-**	**-**	**-**	**-**	**-**	**4 600**
b. Manure Management	**-**	**12**	**310**	**2**	**700**	**-**	**-**	**-**	**-**	**1 000**
c. Agricultural Soils	**-**	**-**	**-**	**14**	**4 100**	**-**	**-**	**-**	**-**	**4 100**
Direct Sources	-	-	-	11	3 100	-	-	-	-	3 100
Indirect Sources	-	-	-	3	1 000	-	-	-	-	1 000
d. Field Burning of Agricultural Residues	**-**	**0.50**	**10**	**0.01**	**4**	**-**	**-**	**-**	**-**	**20**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**1 200**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1 200**
WASTE	**10**	**49**	**1 200**	**0.10**	**40**	**-**	**-**	**-**	**-**	**1 300**
a. Solid Waste Disposal (Landfills)	**-**	**40**	**1 000**	**-**	**-**	**-**	**-**	**-**	**-**	**1 000**
b. Biological Treatment of Solid Waste	**-**	**0.06**	**1**	**0.01**	**2**	**-**	**-**	**-**	**-**	**4**
c. Wastewater Treatment and Discharge	**-**	**3**	**70**	**0.10**	**30**	**-**	**-**	**-**	**-**	**100**
d. Incineration and Open Burning of Waste	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**-**	**-**	**-**	**-**	**0.03**
e. Industrial Wood Waste Landfills	**-**	**0.90**	**20**	**-**	**-**	**-**	**-**	**-**	**-**	**20**

Notes:

Estimates for the latest year (2021) 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 and Territorial GHG emissions by Canadian economic sector are provided in Annex 12 of this report.

a. Chapter 1, Table 1–1 of this report provides a list of global warming potentials (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 and territorial tables to protect confidential data.

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	2016	2017	2018	2019	2020	2021
	kt CO_2 eq							
TOTAL	**165 000**	**236 000**	**267 000**	**273 000**	**274 000**	**275 000**	**254 000**	**256 000**
ENERGY	**145 000**	**204 000**	**234 000**	**241 000**	**240 000**	**242 000**	**221 000**	**223 000**
a. Stationary Combustion Sources	**92 800**	**130 000**	**156 000**	**162 000**	**160 000**	**161 000**	**151 000**	**150 000**
Public Electricity and Heat Production	39 800	52 000	45 900	46 800	36 700	36 400	32 500	28 400
Petroleum Refining Industries	2 990	4 000	4 300	4 270	4 390	4 480	3 600	3 090
Oil and Gas Extraction	26 800	51 100	80 700	84 700	91 500	92 400	88 100	92 400
Mining	298	325	162	152	169	217	184	102
Manufacturing Industries	10 500	8 780	9 700	8 760	8 800	9 300	8 710	8 690
Construction	238	170	310	346	386	439	450	422
Commercial and Institutional	5 040	5 620	6 470	7 800	8 410	8 630	8 120	7 830
Residential	6 740	7 480	8 420	8 590	8 970	8 890	8 690	8 190
Agriculture and Forestry	477	238	361	393	389	403	371	373
b. Transport[a]	**21 200**	**32 300**	**37 300**	**39 700**	**41 300**	**42 300**	**35 100**	**36 800**
Aviation	1 140	1 350	1 490	1 540	1 700	1 670	901	1 040
Road Transportation	11 900	17 500	20 300	20 700	22 000	22 200	17 900	18 300
Light-Duty Gasoline Vehicles	3 720	3 760	3 080	3 070	3 060	3 080	2 350	2 190
Light-Duty Gasoline Trucks	4 070	6 220	7 900	8 290	8 600	8 990	7 360	7 510
Heavy-Duty Gasoline Vehicles	1 120	842	794	820	841	868	710	739
Motorcycles	23	66	148	151	153	165	115	122
Light-Duty Diesel Vehicles	13	43	62	58	62	59	39	38
Light-Duty Diesel Trucks	116	112	147	161	187	191	153	163
Heavy-Duty Diesel Vehicles	2 540	6 430	8 140	8 110	9 000	8 760	7 130	7 480
Propane and Natural Gas Vehicles	303	6	27	45	50	67	70	72
Railways	527	895	1 050	1 230	1 200	1 180	1 130	1 110
Marine	0.01	0.05	0.02	0.30	-	0.01	0.01	0.02
Other Transportation	7 580	12 600	14 500	16 200	16 400	17 300	15 200	16 300
Off-Road Agriculture and Forestry	2 000	2 810	2 790	3 310	3 140	3 290	2 770	2 920
Off-Road Commercial and Institutional	813	655	970	953	902	909	762	847
Off-Road Manufacturing, Mining and Construction	2 650	4 450	5 480	6 480	6 500	6 960	5 890	6 160
Off-Road Residential	44	152	123	126	126	126	106	107
Off-Road Other Transportation	770	1 310	1 690	1 650	1 570	1 570	1 400	1 510
Pipeline Transport	1 300	3 190	3 400	3 690	4 190	4 410	4 240	4 750
c. Fugitive Sources	**31 000**	**42 000**	**40 000**	**39 000**	**39 000**	**38 000**	**35 000**	**36 000**
Coal Mining	400	300	300	200	200	200	100	70
Oil and Natural Gas	30 700	41 900	39 800	39 000	39 000	37 900	35 300	36 400
Oil	4 740	6 870	7 880	8 020	8 140	8 190	7 730	7 800
Natural Gas	6 650	10 300	8 230	7 780	7 800	7 480	6 940	6 800
Venting	15 600	22 700	21 500	20 700	20 300	19 500	17 200	18 000
Flaring	3 640	2 030	2 260	2 500	2 690	2 740	3 450	3 810
d. CO_2 Transport and Storage	**-**	**-**	**0.10**	**0.10**	**0.10**	**0.10**	**0.30**	**0.50**
INDUSTRIAL PROCESSES AND PRODUCT USE	**6 740**	**11 500**	**12 800**	**12 500**	**12 900**	**12 500**	**11 700**	**12 500**
a. Mineral Products	**1 100**	**1 500**	**1 400**	**1 400**	**1 500**	**1 500**	**1 300**	**1 600**
Cement Production	795	1 090	1 100	x	x	x	x	x
Lime Production	108	125	105	x	x	x	x	x
Mineral Products Use	190	250	160	150	150	150	150	150
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**-**	**-**	**0.67**	**0.61**	**-**	**-**	**-**	**-**
Iron and Steel Production	-	-	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**	**690**	**1 600**	**1 600**	**1 700**	**1 700**	**1 700**	**1 600**
e. Non-Energy Products from Fuels and Solvent Use[b]	**5 600**	**9 300**	**9 800**	**9 400**	**9 600**	**9 200**	**8 700**	**9 300**
f. Other Product Manufacture and Use	**17**	**40**	**49**	**58**	**65**	**67**	**67**	**68**
AGRICULTURE	**12 000**	**17 000**	**16 000**	**16 000**	**16 000**	**16 000**	**17 000**	**17 000**
a. Enteric Fermentation	**7 800**	**12 000**	**9 500**	**9 500**	**9 600**	**9 700**	**9 700**	**9 800**
b. Manure Management	**1 500**	**2 300**	**1 900**	**1 900**	**2 000**	**2 000**	**2 000**	**2 000**
c. Agricultural Soils	**2 500**	**2 900**	**4 100**	**3 600**	**3 900**	**4 100**	**4 400**	**4 000**
Direct Sources	2 000	2 200	3 200	2 800	3 000	3 200	3 400	3 100
Indirect Sources	600	700	900	800	900	900	1 000	900
d. Field Burning of Agricultural Residues	**4**	**0.70**	**0.80**	**0.80**	**0.80**	**1**	**1**	**0.80**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**260**	**370**	**730**	**610**	**720**	**760**	**880**	**920**
WASTE	**1 700**	**2 700**	**4 300**	**4 200**	**4 400**	**4 200**	**4 300**	**4 200**
a. Solid Waste Disposal (Landfills)	**1 000**	**2 000**	**3 000**	**3 000**	**3 000**	**3 000**	**4 000**	**4 000**
b. Biological Treatment of Solid Waste	**4**	**20**	**30**	**40**	**30**	**20**	**20**	**20**
c. Wastewater Treatment and Discharge	**200**	**300**	**900**	**700**	**800**	**600**	**600**	**400**
d. Incineration and Open Burning of Waste	**6**	**19**	**39**	**37**	**32**	**38**	**38**	**27**
e. Industrial Wood Waste Landfills	**90**	**100**	**80**	**80**	**80**	**80**	**80**	**80**

Notes:

Estimates for the latest year (2021) 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 and Territorial GHG emissions by Canadian economic sector 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 and territorial tables to protect confidential data.

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 **2021 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	**206 000**	**1 700**	**41 000**	**24**	**7 200**	**1 600**	**3**	**6**	**-**	**256 000**
ENERGY	**194 000**	**1 100**	**27 000**	**5**	**1 000**	**-**	**-**	**-**	**-**	**223 000**
a. Stationary Combustion Sources	**147 000**	**70**	**2 000**	**3**	**900**	**-**	**-**	**-**	**-**	**150 000**
Public Electricity and Heat Production	28 100	4	90	0.60	200	-	-	-	-	28 400
Petroleum Refining Industries	3 080	0.06	2	0.02	5	-	-	-	-	3 090
Oil and Gas Extraction	90 300	70	2 000	2	500	-	-	-	-	92 400
Mining	102	0.00	0.04	0.00	0.60	-	-	-	-	102
Manufacturing Industries	8 590	0.46	12	0.31	93	-	-	-	-	8 690
Construction	417	0.01	0.19	0.02	4	-	-	-	-	422
Commercial and Institutional	7 770	0.15	4	0.20	50	-	-	-	-	7 830
Residential	8 110	1	30	0.20	50	-	-	-	-	8 190
Agriculture and Forestry	370	0.01	0.20	0.01	3	-	-	-	-	373
b. Transport[b]	**35 900**	**12**	**310**	**2**	**530**	**-**	**-**	**-**	**-**	**36 800**
Aviation	1 030	0.02	0.60	0.03	9	-	-	-	-	1 040
Road Transportation	18 100	1	30	0.78	230	-	-	-	-	18 300
Light-Duty Gasoline Vehicles	2 170	0.10	4	0.08	23	-	-	-	-	2 190
Light-Duty Gasoline Trucks	7 440	0.50	10	0.21	62	-	-	-	-	7 510
Heavy-Duty Gasoline Vehicles	720	0.03	0.70	0.06	19	-	-	-	-	739
Motorcycles	120	0.04	1	0.00	0.67	-	-	-	-	122
Light-Duty Diesel Vehicles	37	0.00	0.02	0.00	0.91	-	-	-	-	38
Light-Duty Diesel Trucks	159	0.00	0.10	0.01	4	-	-	-	-	163
Heavy-Duty Diesel Vehicles	7 350	0.30	8	0.42	120	-	-	-	-	7 480
Propane and Natural Gas Vehicles	67	0.20	5	0.00	0.51	-	-	-	-	72
Railways	995	0.06	1	0.40	100	-	-	-	-	1 110
Marine	0.02	0.00	0.00	0.00	0.00	-	-	-	-	0.02
Other Transportation	15 800	11	280	0.60	200	-	-	-	-	16 300
Off-Road Agriculture and Forestry	2 870	0.25	6	0.10	40	-	-	-	-	2 920
Off-Road Commercial and Institutional	798	2	42	0.02	7	-	-	-	-	847
Off-Road Manufacturing, Mining and Construction	6 060	0.95	24	0.20	70	-	-	-	-	6 160
Off-Road Residential	99	0.27	7	0.00	0.70	-	-	-	-	107
Off-Road Other Transportation	1 420	4	88	0.04	10	-	-	-	-	1 510
Pipeline Transport	4 600	4	110	0.10	30	-	-	-	-	4 750
c. Fugitive Sources	**12 000**	**987**	**24 700**	**0.06**	**17**	**-**	**-**	**-**	**-**	**36 000**
Coal Mining	-	3	70	-	-	-	-	-	-	70
Oil and Natural Gas	12 000	984	24 600	0.06	20	-	-	-	-	36 400
Oil	580	288	7 200	0.04	10	-	-	-	-	7 800
Natural Gas	6	272	6 790	-	-	-	-	-	-	6 800
Venting	7 700	409	10 200	-	-	-	-	-	-	18 000
Flaring	3 430	15	378	0.02	6	-	-	-	-	3 810
d. CO_2 Transport and Storage	**0.50**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.50**
INDUSTRIAL PROCESSES AND PRODUCT USE	**10 600**	**4**	**92**	**0.68**	**202**	**1 600**	**3**	**6**	**-**	**12 500**
a. Mineral Products	**1 600**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1 600**
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]	**-**	**-**	**-**	**-**	**-**	**1 600**	**2**	**3**	**-**	**1 600**
e. Non-Energy Products from Fuels and Solvent Use[c]	**9 000**	**-**	**100**	**-**	**-**	**-**	**-**	**-**	**-**	**9 300**
f. Other Product Manufacture and Use	**-**	**-**	**-**	**0.21**	**64**	**-**	**1**	**3**	**-**	**68**
AGRICULTURE	**920**	**420**	**10 000**	**18**	**5 300**	**-**	**-**	**-**	**-**	**17 000**
a. Enteric Fermentation	**-**	**390**	**9 800**	**-**	**-**	**-**	**-**	**-**	**-**	**9 800**
b. Manure Management	**-**	**27**	**680**	**4**	**1 000**	**-**	**-**	**-**	**-**	**2 000**
c. Agricultural Soils	**-**	**-**	**-**	**13**	**4 000**	**-**	**-**	**-**	**-**	**4 000**
Direct Sources	-	-	-	10	3 100	-	-	-	-	3 100
Indirect Sources	-	-	-	3	900	-	-	-	-	900
d. Field Burning of Agricultural Residues	**-**	**0.02**	**0.60**	**0.00**	**0.20**	**-**	**-**	**-**	**-**	**0.80**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**920**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**920**
WASTE	**30**	**160**	**3 900**	**0.80**	**200**	**-**	**-**	**-**	**-**	**4 200**
a. Solid Waste Disposal (Landfills)	**-**	**100**	**4 000**	**-**	**-**	**-**	**-**	**-**	**-**	**4 000**
b. Biological Treatment of Solid Waste	**-**	**0.60**	**10**	**0.04**	**10**	**-**	**-**	**-**	**-**	**20**
c. Wastewater Treatment and Discharge	**10**	**9**	**200**	**0.70**	**200**	**-**	**-**	**-**	**-**	**400**
d. Incineration and Open Burning of Waste	**18**	**0.00**	**0.00**	**0.03**	**8**	**-**	**-**	**-**	**-**	**27**
e. Industrial Wood Waste Landfills	**-**	**3**	**80**	**-**	**-**	**-**	**-**	**-**	**-**	**80**

Notes:

Estimates for the latest year (2021) 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 and Territorial GHG emissions by Canadian economic sector are provided in Annex 12 of this report.

a. Chapter 1, Table 1–1 of this report provides a list of global warming potentials (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 and territorial tables to protect confidential data.

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	2016	2017	2018	2019	2020	2021
	kt CO_2 eq							
TOTAL	**50 300**	**61 600**	**60 700**	**61 700**	**63 600**	**62 500**	**58 800**	**59 400**
ENERGY	**42 600**	**52 100**	**52 400**	**53 700**	**55 300**	**54 400**	**50 900**	**51 800**
a. Stationary Combustion Sources	**19 300**	**21 200**	**21 300**	**22 000**	**21 900**	**21 200**	**20 600**	**20 900**
Public Electricity and Heat Production	804	1 330	1 010	889	1 020	1 040	725	950
Petroleum Refining Industries	1 240	493	630	501	376	472	382	437
Oil and Gas Extraction	2 140	5 100	7 210	7 380	7 440	6 790	7 000	6 760
Mining	616	384	499	487	538	537	541	587
Manufacturing Industries	6 490	6 120	4 690	4 890	4 970	4 520	4 000	4 030
Construction	307	112	96	96	106	101	100	91
Commercial and Institutional	2 950	3 140	2 720	2 870	2 780	2 930	3 010	3 130
Residential	4 470	4 460	3 880	4 280	4 040	4 210	4 280	4 370
Agriculture and Forestry	323	75	567	568	614	587	578	520
b. Transport[a]	**18 800**	**24 200**	**25 900**	**26 800**	**28 200**	**28 000**	**25 200**	**26 500**
Aviation	1 340	1 550	1 350	1 460	1 600	1 600	906	1 120
Road Transportation	10 400	14 100	15 400	15 300	15 700	15 400	13 900	14 700
Light-Duty Gasoline Vehicles	4 320	4 300	3 910	3 780	3 730	3 500	2 890	2 830
Light-Duty Gasoline Trucks	3 110	5 200	6 200	6 240	6 440	6 360	5 850	6 260
Heavy-Duty Gasoline Vehicles	568	598	607	611	623	603	612	616
Motorcycles	14	39	77	82	86	86	77	74
Light-Duty Diesel Vehicles	50	84	106	100	103	93	62	68
Light-Duty Diesel Trucks	211	175	109	118	138	144	121	152
Heavy-Duty Diesel Vehicles	1 850	3 690	4 370	4 310	4 520	4 600	4 270	4 620
Propane and Natural Gas Vehicles	292	10	23	28	37	47	45	48
Railways	1 900	1 490	1 640	1 850	2 010	2 150	2 090	2 070
Marine	615	859	1 120	1 060	1 120	1 230	1 220	1 430
Other Transportation	4 480	6 160	6 440	7 120	7 850	7 630	7 070	7 160
Off-Road Agriculture and Forestry	1 220	1 360	1 160	1 350	1 610	1 540	1 360	1 390
Off-Road Commercial and Institutional	354	433	611	710	792	801	759	791
Off-Road Manufacturing, Mining and Construction	1 680	2 480	2 250	2 520	2 970	2 810	2 460	2 510
Off-Road Residential	36	128	116	111	107	101	109	100
Off-Road Other Transportation	325	780	915	995	1 020	1 010	1 070	1 060
Pipeline Transport	862	984	1 390	1 430	1 340	1 380	1 310	1 300
c. Fugitive Sources	**4 500**	**6 700**	**5 200**	**5 000**	**5 100**	**5 100**	**5 100**	**4 500**
Coal Mining	800	1 000	1 000	900	1 000	1 000	900	1 000
Oil and Natural Gas	3 700	5 760	4 200	4 060	4 130	4 150	4 190	3 390
Oil	143	219	137	132	124	104	72	67
Natural Gas	1 210	1 680	1 040	987	988	983	828	827
Venting	1 990	3 170	2 520	2 380	2 440	2 540	2 750	1 810
Flaring	358	691	510	566	569	525	542	680
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**3 310**	**4 650**	**4 060**	**3 800**	**4 090**	**3 920**	**3 730**	**3 520**
a. Mineral Products	**880**	**1 500**	**1 100**	**970**	**1 100**	**1 000**	**900**	**1 000**
Cement Production	656	1 260	964	x	x	x	x	x
Lime Production	170	189	108	x	x	x	x	x
Mineral Products Use	53	51	21	20	18	17	16	15
b. Chemical Industry[b]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-
c. Metal Production	**1 670**	**1 220**	**867**	**793**	**771**	**767**	**739**	**518**
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminium Production	1 670	1 220	867	793	771	767	739	518
SF_6 Used in Magnesium Smelters and Casters	-	1	0.83	0.01	0.01	0.01	0.01	0.01
d. Production and Consumption of Halocarbons, SF_6 and NF_3[c]	**0.12**	**630**	**1 500**	**1 500**	**1 600**	**1 600**	**1 600**	**1 500**
e. Non-Energy Products from Fuels and Solvent Use[b]	**690**	**1 200**	**550**	**490**	**550**	**450**	**400**	**360**
f. Other Product Manufacture and Use	**77**	**97**	**68**	**84**	**84**	**95**	**79**	**89**
AGRICULTURE	**1 900**	**2 500**	**2 100**	**2 100**	**2 200**	**2 100**	**2 100**	**2 100**
a. Enteric Fermentation	**1 400**	**1 800**	**1 400**	**1 400**	**1 500**	**1 400**	**1 400**	**1 400**
b. Manure Management	**310**	**440**	**410**	**410**	**410**	**410**	**410**	**410**
c. Agricultural Soils	**220**	**230**	**240**	**240**	**260**	**250**	**260**	**270**
Direct Sources	130	130	150	150	170	160	170	170
Indirect Sources	80	90	90	90	90	90	100	100
d. Field Burning of Agricultural Residues	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**25**	**24**	**26**	**28**	**33**	**33**	**43**	**46**
WASTE	**2 400**	**2 400**	**2 200**	**2 100**	**2 100**	**2 100**	**2 000**	**2 000**
a. Solid Waste Disposal (Landfills)	**2 000**	**2 000**	**2 000**	**1 000**	**1 000**	**1 000**	**1 000**	**1 000**
b. Biological Treatment of Solid Waste	**1**	**40**	**50**	**60**	**70**	**80**	**80**	**80**
c. Wastewater Treatment and Discharge	**200**	**200**	**300**	**300**	**300**	**300**	**300**	**300**
d. Incineration and Open Burning of Waste	**5**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Industrial Wood Waste Landfills	**400**	**400**	**300**	**300**	**300**	**300**	**300**	**300**

Notes:

Estimates for the latest year (2021) 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 and Territorial GHG emissions by Canadian economic sector 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 and territorial tables to protect confidential data.

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 **2021 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	**49 800**	**260**	**6 500**	**5**	**1 600**	**1 500**	**67**	**16**	**-**	**59 400**
ENERGY	**47 900**	**130**	**3 100**	**3**	**800**	**-**	**-**	**-**	**-**	**51 800**
a. Stationary Combustion Sources	**20 100**	**20**	**500**	**0.80**	**200**	**-**	**-**	**-**	**-**	**20 900**
Public Electricity and Heat Production	907	1	26	0.05	20	-	-	-	-	950
Petroleum Refining Industries	436	0.01	0.30	0.00	0.70	-	-	-	-	437
Oil and Gas Extraction	6 350	10	400	0.20	50	-	-	-	-	6 760
Mining	584	0.01	0.30	0.01	3	-	-	-	-	587
Manufacturing Industries	3 920	0.64	16	0.34	100	-	-	-	-	4 030
Construction	90	0.00	0.04	0.00	0.55	-	-	-	-	91
Commercial and Institutional	3 100	0.06	2	0.07	20	-	-	-	-	3 130
Residential	4 240	4	100	0.10	40	-	-	-	-	4 370
Agriculture and Forestry	517	0.01	0.20	0.01	3	-	-	-	-	520
b. Transport[b]	**25 700**	**7**	**160**	**2**	**550**	**-**	**-**	**-**	**-**	**26 500**
Aviation	1 110	0.04	1	0.03	10	-	-	-	-	1 120
Road Transportation	14 400	1	20	0.69	210	-	-	-	-	14 700
Light-Duty Gasoline Vehicles	2 790	0.20	5	0.11	33	-	-	-	-	2 830
Light-Duty Gasoline Trucks	6 180	0.40	10	0.23	69	-	-	-	-	6 260
Heavy-Duty Gasoline Vehicles	600	0.02	0.60	0.05	15	-	-	-	-	616
Motorcycles	73	0.03	0.70	0.00	0.41	-	-	-	-	74
Light-Duty Diesel Vehicles	66	0.00	0.03	0.01	2	-	-	-	-	68
Light-Duty Diesel Trucks	148	0.00	0.10	0.01	4	-	-	-	-	152
Heavy-Duty Diesel Vehicles	4 540	0.20	5	0.27	81	-	-	-	-	4 620
Propane and Natural Gas Vehicles	44	0.10	3	0.00	0.35	-	-	-	-	48
Railways	1 850	0.10	3	0.70	200	-	-	-	-	2 070
Marine	1 420	0.14	4	0.04	10	-	-	-	-	1 430
Other Transportation	6 930	5	130	0.30	100	-	-	-	-	7 160
Off-Road Agriculture and Forestry	1 360	0.10	2	0.10	30	-	-	-	-	1 390
Off-Road Commercial and Institutional	757	1	26	0.03	8	-	-	-	-	791
Off-Road Manufacturing, Mining and Construction	2 460	0.50	12	0.10	40	-	-	-	-	2 510
Off-Road Residential	93	0.26	6	0.00	0.70	-	-	-	-	100
Off-Road Other Transportation	997	2	55	0.03	9	-	-	-	-	1 060
Pipeline Transport	1 260	1	30	0.03	10	-	-	-	-	1 300
c. Fugitive Sources	**2 000**	**99**	**2 480**	**0.00**	**1**	**-**	**-**	**-**	**-**	**4 500**
Coal Mining	-	40	1 000	-	-	-	-	-	-	1 000
Oil and Natural Gas	2 000	55	1 380	0.00	1	-	-	-	-	3 390
Oil	0.12	3	66	0.00	1	-	-	-	-	67
Natural Gas	1	33	826	-	-	-	-	-	-	827
Venting	1 400	16	403	-	-	-	-	-	-	1 810
Flaring	595	3	85	0.00	0.30	-	-	-	-	680
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**1 820**	**-**	**-**	**0.25**	**75**	**1 500**	**67**	**16**	**-**	**3 520**
a. Mineral Products	**1 000**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1 000**
Cement Production	x	-	-	-	-	-	-	-	-	x
Lime Production	x	-	-	-	-	-	-	-	-	x
Mineral Products Use	15	-	-	-	-	-	-	-	-	15
b. Chemical Industry[c]	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Adipic Acid Production	-	-	-	-	-	-	-	-	-	-
c. Metal Production	**455**	**-**	**-**	**-**	**-**	**-**	**63**	**0.01**	**-**	**518**
Iron and Steel Production	-	-	-	-	-	-	-	-	-	-
Aluminium Production	455	-	-	-	-	-	63	-	-	518
SF_6 Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	0.01	-	0.01
d. Production and Consumption of Halocarbons, SF_6 and NF_3[d]	**-**	**-**	**-**	**-**	**-**	**1 500**	**2**	**4**	**-**	**1 500**
e. Non-Energy Products from Fuels and Solvent Use[c]	**360**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**360**
f. Other Product Manufacture and Use	**-**	**-**	**-**	**0.25**	**75**	**-**	**2**	**12**	**-**	**89**
AGRICULTURE	**46**	**63**	**1 600**	**2**	**490**	**-**	**-**	**-**	**-**	**2 100**
a. Enteric Fermentation	**-**	**56**	**1 400**	**-**	**-**	**-**	**-**	**-**	**-**	**1 400**
b. Manure Management	**-**	**7**	**180**	**0.80**	**200**	**-**	**-**	**-**	**-**	**410**
c. Agricultural Soils	**-**	**-**	**-**	**0.89**	**270**	**-**	**-**	**-**	**-**	**270**
Direct Sources	-	-	-	0.57	170	-	-	-	-	170
Indirect Sources	-	-	-	0.30	100	-	-	-	-	100
d. Field Burning of Agricultural Residues	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**46**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**46**
WASTE	**-**	**70**	**1 700**	**0.80**	**200**	**-**	**-**	**-**	**-**	**2 000**
a. Solid Waste Disposal (Landfills)	**-**	**50**	**1 000**	**-**	**-**	**-**	**-**	**-**	**-**	**1 000**
b. Biological Treatment of Solid Waste	**-**	**2**	**40**	**0.10**	**40**	**-**	**-**	**-**	**-**	**80**
c. Wastewater Treatment and Discharge	**-**	**4**	**100**	**0.60**	**200**	**-**	**-**	**-**	**-**	**300**
d. Incineration and Open Burning of Waste	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Industrial Wood Waste Landfills	**-**	**10**	**300**	**-**	**-**	**-**	**-**	**-**	**-**	**300**

Notes:

Estimates for the latest year (2021) 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 and Territorial GHG emissions by Canadian economic sector are provided in Annex 12 of this report.

a. Chapter 1, Table 1–1 of this report provides a list of global warming potentials (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 and territorial tables to protect confidential data.

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	2016	2017	2018	2019	2020	2021
	kt CO_2 eq							
TOTAL	**546**	**561**	**528**	**564**	**644**	**691**	**596**	**650**
ENERGY	**528**	**530**	**480**	**513**	**590**	**635**	**540**	**593**
a. Stationary Combustion Sources	**218**	**193**	**66**	**68**	**86**	**107**	**106**	**94**
Public Electricity and Heat Production	90	22	19	24	33	48	54	42
Petroleum Refining Industries	-	-	-	-	-	-	-	-
Oil and Gas Extraction	0.31	67	-	-	-	-	-	-
Mining	8	x	x	x	x	14	8	6
Manufacturing Industries	6	-	15	16	16	17	16	17
Construction	4	x	x	x	x	1	1	1
Commercial and Institutional	77	41	22	17	23	19	19	21
Residential	31	45	5	6	6	7	9	6
Agriculture and Forestry	1	8	-	-	0.83	-	-	-
b. Transport[a]	**310**	**327**	**414**	**446**	**504**	**529**	**434**	**499**
Aviation	35	36	43	48	54	54	26	33
Road Transportation	174	198	267	271	287	297	265	278
Light-Duty Gasoline Vehicles	28	19	23	23	25	25	22	18
Light-Duty Gasoline Trucks	83	88	122	128	145	154	146	131
Heavy-Duty Gasoline Vehicles	14	10	12	14	16	19	14	12
Motorcycles	0.31	0.56	1	1	2	2	2	2
Light-Duty Diesel Vehicles	0.15	0.26	0.39	0.32	0.26	0.23	0.27	0.32
Light-Duty Diesel Trucks	2	1	2	2	2	2	3	4
Heavy-Duty Diesel Vehicles	46	79	107	103	98	94	79	110
Propane and Natural Gas Vehicles	-	-	0.21	0.25	0.16	0.21	-	-
Railways	-	-	-	-	-	-	-	-
Marine	2	3	2	0.52	0.46	3	4	4
Other Transportation	99	90	103	126	163	175	138	184
Off-Road Agriculture and Forestry	7	3	6	8	11	10	9	13
Off-Road Commercial and Institutional	4	9	7	7	10	13	8	11
Off-Road Manufacturing, Mining and Construction	79	54	69	92	119	117	98	135
Off-Road Residential	0.35	x	x	x	x	2	2	2
Off-Road Other Transportation	9	23	20	17	22	33	21	24
Pipeline Transport	-	x	x	x	x	-	-	-
c. Fugitive Sources	**0.10**	**10**	**0.13**	**0.14**	**0.19**	**0.28**	**0.23**	**0.17**
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	0.10	10	0.13	0.14	0.19	0.28	0.23	0.17
Oil	-	-	-	-	-	-	-	-
Natural Gas	0.10	2	0.13	0.14	0.19	0.28	0.23	0.17
Venting	-	6	-	-	-	-	-	-
Flaring	-	1	-	-	-	-	-	-
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**2**	**9**	**20**	**22**	**25**	**26**	**26**	**26**
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]	**-**	**8**	**19**	**20**	**23**	**24**	**23**	**22**
e. Non-Energy Products from Fuels and Solvent Use[b]	**2**	**0.42**	**0.32**	**0.34**	**0.48**	**0.97**	**2**	**1**
f. Other Product Manufacture and Use	**0.17**	**0.37**	**0.53**	**1**	**1**	**2**	**2**	**3**
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	**16**	**22**	**28**	**29**	**29**	**30**	**30**	**31**
a. Solid Waste Disposal (Landfills)	**10**	**20**	**20**	**20**	**20**	**20**	**20**	**20**
b. Biological Treatment of Solid Waste	**0.01**	**0.10**	**0.30**	**0.20**	**0.40**	**0.40**	**0.40**	**0.40**
c. Wastewater Treatment and Discharge	**2**	**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 (2021) 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 and Territorial GHG emissions by Canadian economic sector 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 and territorial tables to protect confidential data.

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 **2021 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	**585**	**1**	**32**	**0.03**	**9**	**22**	**0.01**	**2**	**-**	**650**
ENERGY	**584**	**0.09**	**2**	**0.02**	**7**	**-**	**-**	**-**	**-**	**593**
a. Stationary Combustion Sources	**93**	**0.02**	**0.50**	**0.00**	**0.80**	**-**	**-**	**-**	**-**	**94**
Public Electricity and Heat Production	42	0.00	0.08	0.00	0.10	-	-	-	-	42
Petroleum Refining Industries	-	-	-	-	-	-	-	-	-	-
Oil and Gas Extraction	-	-	-	-	-	-	-	-	-	-
Mining	6	0.00	0.00	0.00	0.10	-	-	-	-	6
Manufacturing Industries	17	0.00	0.00	0.00	0.06	-	-	-	-	17
Construction	1	0.00	0.00	0.00	0.02	-	-	-	-	1
Commercial and Institutional	21	0.00	0.01	0.00	0.30	-	-	-	-	21
Residential	5	0.02	0.40	0.00	0.20	-	-	-	-	6
Agriculture and Forestry	-	-	-	-	-	-	-	-	-	-
b. Transport[b]	**491**	**0.06**	**2**	**0.02**	**7**	**-**	**-**	**-**	**-**	**499**
Aviation	33	0.00	0.04	0.00	0.30	-	-	-	-	33
Road Transportation	274	0.01	0.40	0.01	3	-	-	-	-	278
Light-Duty Gasoline Vehicles	18	0.00	0.03	0.00	0.18	-	-	-	-	18
Light-Duty Gasoline Trucks	130	0.01	0.20	0.00	1	-	-	-	-	131
Heavy-Duty Gasoline Vehicles	12	0.00	0.01	0.00	0.30	-	-	-	-	12
Motorcycles	2	0.00	0.02	0.00	0.01	-	-	-	-	2
Light-Duty Diesel Vehicles	0.31	0.00	0.00	0.00	0.01	-	-	-	-	0.32
Light-Duty Diesel Trucks	4	0.00	0.00	0.00	0.09	-	-	-	-	4
Heavy-Duty Diesel Vehicles	108	0.00	0.10	0.01	2	-	-	-	-	110
Propane and Natural Gas Vehicles	-	-	-	-	-	-	-	-	-	-
Railways	-	-	-	-	-	-	-	-	-	-
Marine	4	0.00	0.01	0.00	0.03	-	-	-	-	4
Other Transportation	180	0.04	1	0.01	3	-	-	-	-	184
Off-Road Agriculture and Forestry	13	0.00	0.01	0.00	0.20	-	-	-	-	13
Off-Road Commercial and Institutional	11	0.00	0.10	0.00	0.10	-	-	-	-	11
Off-Road Manufacturing, Mining and Construction	133	0.01	0.17	0.01	2	-	-	-	-	135
Off-Road Residential	1	0.00	0.10	0.00	0.01	-	-	-	-	2
Off-Road Other Transportation	23	0.03	0.71	0.00	0.20	-	-	-	-	24
Pipeline Transport	-	-	-	-	-	-	-	-	-	-
c. Fugitive Sources	**0.00**	**0.01**	**0.17**	**-**	**-**	**-**	**-**	**-**	**-**	**0.17**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	0.00	0.01	0.17	-	-	-	-	-	-	0.17
Oil	-	-	-	-	-	-	-	-	-	-
Natural Gas	0.00	0.01	0.17	-	-	-	-	-	-	0.17
Venting	-	-	-	-	-	-	-	-	-	-
Flaring	-	-	-	-	-	-	-	-	-	-
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**1**	**-**	**-**	**0.00**	**0.62**	**22**	**0.01**	**2**	**-**	**26**
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]	**-**	**-**	**-**	**-**	**-**	**22**	**0.01**	**-**	**-**	**22**
e. Non-Energy Products from Fuels and Solvent Use[c]	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**
f. Other Product Manufacture and Use	**-**	**-**	**-**	**0.00**	**0.62**	**-**	**-**	**2**	**-**	**3**
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**	**29**	**0.00**	**1**	**-**	**-**	**-**	**-**	**31**
a. Solid Waste Disposal (Landfills)	**-**	**0.90**	**20**	**-**	**-**	**-**	**-**	**-**	**-**	**20**
b. Biological Treatment of Solid Waste	**-**	**0.01**	**0.20**	**0.00**	**0.20**	**-**	**-**	**-**	**-**	**0.40**
c. Wastewater Treatment and Discharge	**-**	**0.20**	**6**	**0.00**	**0.90**	**-**	**-**	**-**	**-**	**6**
d. Incineration and Open Burning of Waste	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Industrial Wood Waste Landfills	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Notes:

Estimates for the latest year (2021) 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 and Territorial GHG emissions by Canadian economic sector are provided in Annex 12 of this report.

a. Chapter 1, Table 1–1 of this report provides a list of global warming potentials (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 and territorial tables to protect confidential data.

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	2016	2017	2018	2019	2020	2021
	kt CO_2 eq							
TOTAL	**1 260**	**1 720**	**1 330**	**1 400**	**1 440**	**1 400**	**1 210**	**1 290**
ENERGY	**1 220**	**1 670**	**1 260**	**1 340**	**1 370**	**1 330**	**1 140**	**1 220**
a. Stationary Combustion Sources	**598**	**720**	**394**	**373**	**402**	**404**	**366**	**400**
Public Electricity and Heat Production	88	x	x	x	x	x	x	x
Petroleum Refining Industries	-	-	-	-	-	-	-	-
Oil and Gas Extraction	128	214	5	13	11	41	43	49
Mining	104	164	220	198	215	192	153	183
Manufacturing Industries	-	x	x	x	x	x	x	x
Construction	0.83	x	x	x	x	x	x	x
Commercial and Institutional	192	141	35	50	51	54	58	62
Residential	85	102	63	48	57	57	50	47
Agriculture and Forestry	0.02	2	-	-	-	-	-	-
b. Transport[a]	**604**	**930**	**850**	**960**	**960**	**913**	**766**	**807**
Aviation	131	182	132	136	153	147	102	115
Road Transportation	119	503	504	603	553	502	374	417
Light-Duty Gasoline Vehicles	14	14	16	16	14	14	11	10
Light-Duty Gasoline Trucks	52	66	84	85	78	82	71	72
Heavy-Duty Gasoline Vehicles	5	7	8	8	7	8	7	7
Motorcycles	0.24	0.43	1	1	1	1	0.92	0.96
Light-Duty Diesel Vehicles	0.12	0.47	2	2	2	1	1	2
Light-Duty Diesel Trucks	2	6	9	11	9	9	10	12
Heavy-Duty Diesel Vehicles	45	409	385	480	441	387	273	314
Propane and Natural Gas Vehicles	-	-	0.05	0.05	0.07	0.09	0.07	-
Railways	2	4	0.51	0.56	0.40	0.25	0.40	0.40
Marine	24	34	7	6	4	7	9	10
Other Transportation	328	208	207	214	250	257	280	264
Off-Road Agriculture and Forestry	2	1	1	1	2	2	2	2
Off-Road Commercial and Institutional	6	6	5	6	7	8	8	8
Off-Road Manufacturing, Mining and Construction	295	177	175	180	212	213	234	216
Off-Road Residential	0.87	1	1	1	1	1	1	1
Off-Road Other Transportation	20	20	24	25	29	33	35	36
Pipeline Transport	4	3	0.27	0.27	0.27	0.27	0.54	0.54
c. Fugitive Sources	**17**	**21**	**17**	**6**	**7**	**15**	**12**	**12**
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	17	21	17	6	7	15	12	13
Oil	5	5	3	1	1	2	2	2
Natural Gas	7	7	6	4	4	5	5	5
Venting	1	2	0.69	0.03	0.13	0.57	0.41	0.43
Flaring	4	7	8	0.83	1	7	5	5
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**11**	**25**	**32**	**31**	**34**	**35**	**34**	**32**
a. Mineral Products	**0.01**	**0.15**	**0.03**	**0.01**	**0.02**	**0.02**	**0.02**	**0.03**
Cement Production	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-
Mineral Products Use	0.01	0.15	0.03	0.01	0.02	0.02	0.02	0.03
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**	**16**	**26**	**28**	**31**	**31**	**30**	**27**
e. Non-Energy Products from Fuels and Solvent Use[b]	**4**	**8**	**5**	**3**	**2**	**3**	**3**	**3**
f. Other Product Manufacture and Use	**0.52**	**0.51**	**0.48**	**0.59**	**0.62**	**0.62**	**0.69**	**0.65**
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	**27**	**28**	**34**	**34**	**35**	**35**	**35**	**36**
a. Solid Waste Disposal (Landfills)	**20**	**30**	**30**	**30**	**30**	**30**	**30**	**30**
b. Biological Treatment of Solid Waste	**-**	**-**	**0.04**	**0.06**	**0.06**	**0.09**	**0.07**	**0.07**
c. Wastewater Treatment and Discharge	**3**	**3**	**4**	**4**	**4**	**4**	**4**	**4**
d. Incineration and Open Burning of Waste	**0.19**	**0.00**	**-**	**-**	**-**	**-**	**-**	**-**
e. Industrial Wood Waste Landfills	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Notes:

Estimates for the latest year (2021) 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 and Territorial GHG emissions by Canadian economic sector 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 and territorial tables to protect confidential data.

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 **2021 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	**1 190**	**2**	**50**	**0.05**	**15**	**27**	**0.02**	**-**	**-**	**1 290**
ENERGY	**1 190**	**0.58**	**15**	**0.05**	**10**	**-**	**-**	**-**	**-**	**1 220**
a. Stationary Combustion Sources	**393**	**0.20**	**4**	**0.01**	**3**	**-**	**-**	**-**	**-**	**400**
Public Electricity and Heat Production	x	x	x	x	x	x	x	x	x	x
Petroleum Refining Industries	-	-	-	-	-	-	-	-	-	-
Oil and Gas Extraction	46	0.10	3	0.00	0.30	-	-	-	-	49
Mining	182	0.01	0.10	0.00	0.80	-	-	-	-	183
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	62	0.00	0.02	0.00	0.60	-	-	-	-	62
Residential	46	0.05	1	0.00	0.50	-	-	-	-	47
Agriculture and Forestry	-	-	-	-	-	-	-	-	-	-
b. Transport[b]	**793**	**0.09**	**2**	**0.04**	**11**	**-**	**-**	**-**	**-**	**807**
Aviation	114	0.01	0.30	0.00	1	-	-	-	-	115
Road Transportation	411	0.02	0.50	0.02	6	-	-	-	-	417
Light-Duty Gasoline Vehicles	10	0.00	0.02	0.00	0.10	-	-	-	-	10
Light-Duty Gasoline Trucks	72	0.00	0.10	0.00	0.57	-	-	-	-	72
Heavy-Duty Gasoline Vehicles	7	0.00	0.01	0.00	0.17	-	-	-	-	7
Motorcycles	0.95	0.00	0.01	0.00	0.01	-	-	-	-	0.96
Light-Duty Diesel Vehicles	1	0.00	0.00	0.00	0.04	-	-	-	-	2
Light-Duty Diesel Trucks	11	0.00	0.01	0.00	0.28	-	-	-	-	12
Heavy-Duty Diesel Vehicles	309	0.01	0.30	0.02	5	-	-	-	-	314
Propane and Natural Gas Vehicles	-	-	-	-	-	-	-	-	-	-
Railways	0.36	0.00	0.00	0.00	0.04	-	-	-	-	0.40
Marine	9	0.00	0.02	0.00	0.08	-	-	-	-	10
Other Transportation	259	0.06	2	0.01	4	-	-	-	-	264
Off-Road Agriculture and Forestry	2	0.00	0.00	0.00	0.04	-	-	-	-	2
Off-Road Commercial and Institutional	8	0.01	0.17	0.00	0.09	-	-	-	-	8
Off-Road Manufacturing, Mining and Construction	213	0.01	0.31	0.01	3	-	-	-	-	216
Off-Road Residential	1	0.00	0.08	0.00	0.01	-	-	-	-	1
Off-Road Other Transportation	35	0.04	1	0.00	0.40	-	-	-	-	36
Pipeline Transport	0.54	0.00	0.00	0.00	0.00	-	-	-	-	0.54
c. Fugitive Sources	**5**	**0.31**	**8**	**0.00**	**0.00**	**-**	**-**	**-**	**-**	**12**
Coal Mining	-	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	5	0.31	8	0.00	0.00	-	-	-	-	13
Oil	0.00	0.08	2	-	-	-	-	-	-	2
Natural Gas	0.00	0.20	5	-	-	-	-	-	-	5
Venting	0.00	0.02	0.43	-	-	-	-	-	-	0.43
Flaring	5	0.01	0.21	0.00	0.00	-	-	-	-	5
d. CO_2 Transport and Storage	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
INDUSTRIAL PROCESSES AND PRODUCT USE	**3**	**-**	**-**	**0.00**	**0.66**	**27**	**0.01**	**-**	**-**	**32**
a. Mineral Products	**0.03**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.03**
Cement Production	-	-	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-	-	-
Mineral Products Use	0.03	-	-	-	-	-	-	-	-	0.03
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]	**-**	**-**	**-**	**-**	**-**	**27**	**0.02**	**-**	**-**	**27**
e. Non-Energy Products from Fuels and Solvent Use[c]	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**
f. Other Product Manufacture and Use	**-**	**-**	**-**	**0.00**	**0.65**	**-**	**-**	**-**	**-**	**0.65**
AGRICULTURE	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
a. Enteric Fermentation	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
b. Manure Management	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
c. Agricultural Soils	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Direct Sources	-	-	-	-	-	-	-	-	-	-
Indirect Sources	-	-	-	-	-	-	-	-	-	-
d. Field Burning of Agricultural Residues	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
WASTE	**0.00**	**1**	**35**	**0.00**	**0.60**	**-**	**-**	**-**	**-**	**36**
a. Solid Waste Disposal (Landfills)	**-**	**1**	**30**	**-**	**-**	**-**	**-**	**-**	**-**	**30**
b. Biological Treatment of Solid Waste	**-**	**0.00**	**0.03**	**0.00**	**0.04**	**-**	**-**	**-**	**-**	**0.07**
c. Wastewater Treatment and Discharge	**-**	**0.10**	**3**	**0.00**	**0.60**	**-**	**-**	**-**	**-**	**4**
d. Incineration and Open Burning of Waste	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
e. Industrial Wood Waste Landfills	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Notes:

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Provincial and Territorial GHG emissions by Canadian economic sector are provided in Annex 12 of this report.

a. Chapter 1, Table 1–1 of this report provides a list of global warming potentials (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 and territorial tables to protect confidential data.

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	2016	2017	2018	2019	2020	2021
	kt CO_2 eq							
TOTAL	**415**	**584**	**739**	**743**	**736**	**753**	**590**	**626**
ENERGY	**393**	**554**	**692**	**694**	**684**	**700**	**537**	**575**
a. Stationary Combustion Sources	**104**	**128**	**135**	**137**	**164**	**162**	**149**	**155**
Public Electricity and Heat Production	17	x	x	x	x	x	x	x
Petroleum Refining Industries	-	-	-	-	-	-	-	-
Oil and Gas Extraction	-	-	-	-	-	-	-	-
Mining	87	0.26	-	-	-	-	-	-
Manufacturing Industries	-	x	x	x	x	x	x	x
Construction	-	-	-	-	-	-	-	-
Commercial and Institutional	-	x	-	-	-	-	-	-
Residential	-	-	-	-	-	-	-	-
Agriculture and Forestry	-	-	-	-	-	-	-	-
b. Transport[a]	**289**	**427**	**557**	**558**	**521**	**539**	**388**	**420**
Aviation	112	141	129	147	171	169	135	157
Road Transportation	15	37	73	71	59	56	44	48
Light-Duty Gasoline Vehicles	1	3	5	5	4	4	3	4
Light-Duty Gasoline Trucks	5	12	29	29	25	25	22	26
Heavy-Duty Gasoline Vehicles	0.92	1	2	2	2	2	2	2
Motorcycles	0.01	0.04	0.15	0.15	0.14	0.14	0.12	0.15
Light-Duty Diesel Vehicles	-	0.07	0.11	0.08	0.06	0.04	0.04	0.01
Light-Duty Diesel Trucks	0.30	0.37	0.48	0.44	0.31	0.30	0.36	0.41
Heavy-Duty Diesel Vehicles	7	20	36	34	27	24	17	17
Propane and Natural Gas Vehicles	-	-	-	-	-	-	-	-
Railways	-	-	-	-	-	-	-	-
Marine	142	130	118	113	107	148	88	91
Other Transportation	19	119	237	227	184	166	120	123
Off-Road Agriculture and Forestry	-	-	-	-	-	-	-	-
Off-Road Commercial and Institutional	0.92	4	9	9	8	8	6	6
Off-Road Manufacturing, Mining and Construction	13	100	185	175	140	124	85	85
Off-Road Residential	0.51	1	2	2	1	1	1	2
Off-Road Other Transportation	5	14	41	41	35	33	28	31
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	**7**	**11**	**21**	**22**	**25**	**26**	**25**	**22**
a. Mineral Products	**0.01**	**0.15**	**0.03**	**0.01**	**0.02**	**0.02**	**0.02**	**0.03**
Cement Production	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-
Mineral Products Use	0.01	0.15	0.03	0.01	0.02	0.02	0.02	0.03
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]	**6**	**10**	**20**	**21**	**23**	**24**	**24**	**22**
e. Non-Energy Products from Fuels and Solvent Use[b]	**0.35**	**0.40**	**0.46**	**0.49**	**0.62**	**0.50**	**0.67**	**0.10**
f. Other Product Manufacture and Use	**0.34**	**0.36**	**0.40**	**0.49**	**0.54**	**0.53**	**0.55**	**0.57**
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	**16**	**18**	**25**	**26**	**27**	**27**	**28**	**29**
a. Solid Waste Disposal (Landfills)	**10**	**20**	**20**	**20**	**20**	**20**	**30**	**30**
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**	**3**
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 (2021) 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 and Territorial GHG emissions by Canadian economic sector 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 and territorial tables to protect confidential data.

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 **2021 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	**569**	**1**	**30**	**0.02**	**6**	**22**	**0.01**	**-**	**-**	**626**
ENERGY	**568**	**0.08**	**2**	**0.02**	**5**	**-**	**-**	**-**	**-**	**575**
a. Stationary Combustion Sources	**155**	**0.01**	**0.10**	**0.00**	**0.40**	**-**	**-**	**-**	**-**	**155**
Public Electricity and Heat Production	x	x	x	x	x	x	x	x	x	x
Petroleum Refining Industries	-	-	-	-	-	-	-	-	-	-
Oil and Gas Extraction	-	-	-	-	-	-	-	-	-	-
Mining	-	-	-	-	-	-	-	-	-	-
Manufacturing Industries	x	x	x	x	x	x	x	x	x	x
Construction	-	-	-	-	-	-	-	-	-	-
Commercial and Institutional	-	-	-	-	-	-	-	-	-	-
Residential	-	-	-	-	-	-	-	-	-	-
Agriculture and Forestry	-	-	-	-	-	-	-	-	-	-
b. Transport[b]	**414**	**0.07**	**2**	**0.01**	**4**	**-**	**-**	**-**	**-**	**420**
Aviation	156	0.00	0.05	0.00	1	-	-	-	-	157
Road Transportation	48	0.00	0.06	0.00	0.56	-	-	-	-	48
Light-Duty Gasoline Vehicles	4	0.00	0.01	0.00	0.03	-	-	-	-	4
Light-Duty Gasoline Trucks	26	0.00	0.04	0.00	0.20	-	-	-	-	26
Heavy-Duty Gasoline Vehicles	2	0.00	0.00	0.00	0.05	-	-	-	-	2
Motorcycles	0.15	0.00	0.00	0.00	0.00	-	-	-	-	0.15
Light-Duty Diesel Vehicles	0.01	0.00	0.00	0.00	0.00	-	-	-	-	0.01
Light-Duty Diesel Trucks	0.40	0.00	0.00	0.00	0.01	-	-	-	-	0.41
Heavy-Duty Diesel Vehicles	16	0.00	0.02	0.00	0.27	-	-	-	-	17
Propane and Natural Gas Vehicles	-	-	-	-	-	-	-	-	-	-
Railways	-	-	-	-	-	-	-	-	-	-
Marine	90	0.01	0.21	0.00	0.70	-	-	-	-	91
Other Transportation	120	0.06	2	0.01	2	-	-	-	-	123
Off-Road Agriculture and Forestry	-	-	-	-	-	-	-	-	-	-
Off-Road Commercial and Institutional	6	0.01	0.17	0.00	0.07	-	-	-	-	6
Off-Road Manufacturing, Mining and Construction	83	0.01	0.14	0.00	1	-	-	-	-	85
Off-Road Residential	2	0.00	0.10	0.00	0.01	-	-	-	-	2
Off-Road Other Transportation	30	0.05	1	0.00	0.30	-	-	-	-	31
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	**0.12**	**-**	**-**	**0.00**	**0.57**	**22**	**0.01**	**-**	**-**	**22**
a. Mineral Products	**0.03**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.03**
Cement Production	-	-	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-	-	-
Mineral Products Use	0.03	-	-	-	-	-	-	-	-	0.03
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]	**-**	**-**	**-**	**-**	**-**	**22**	**0.01**	**-**	**-**	**22**
e. Non-Energy Products from Fuels and Solvent Use[c]	**0.10**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.10**
f. Other Product Manufacture and Use	**-**	**-**	**-**	**0.00**	**0.57**	**-**	**-**	**-**	**-**	**0.57**
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**	**28**	**0.00**	**0.40**	**-**	**-**	**-**	**-**	**29**
a. Solid Waste Disposal (Landfills)	**-**	**1**	**30**	**-**	**-**	**-**	**-**	**-**	**-**	**30**
b. Biological Treatment of Solid Waste	**-**	**0.00**	**0.00**	**0.00**	**0.00**	**-**	**-**	**-**	**-**	**0.00**
c. Wastewater Treatment and Discharge	**-**	**0.08**	**2**	**0.00**	**0.40**	**-**	**-**	**-**	**-**	**3**
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 (2021) 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 and Territorial GHG emissions by Canadian economic sector are provided in Annex 12 of this report.

a. Chapter 1, Table 1–1 of this report provides a list of global warming potentials (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 and territorial tables to protect confidential data.

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	**1 780**	**1 750**	**1 570**	**1 870**	**2 040**	**2 100**	**2 120**	**1 930**	**1 750**
ENERGY	**1 740**	**1 710**	**1 530**	**1 810**	**1 890**	**1 970**	**2 070**	**1 880**	**1 700**
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]	**727**	**614**	**590**	**765**	**822**	**756**	**983**	**897**	**957**
Aviation	257	228	232	265	265	243	266	257	242
Road Transportation	105	97	97	125	134	113	137	133	131
Light-Duty Gasoline Vehicles	15	14	15	21	22	15	22	19	17
Light-Duty Gasoline Trucks	43	41	41	60	63	45	69	62	60
Heavy-Duty Gasoline Vehicles	6	6	6	8	8	6	8	7	7
Motorcycles	0.17	0.16	0.16	0.24	0.27	0.18	0.27	0.23	0.21
Light-Duty Diesel Vehicles	0.13	0.11	0.10	0.10	0.10	0.09	0.08	0.08	0.10
Light-Duty Diesel Trucks	2	2	2	2	2	2	2	2	2
Heavy-Duty Diesel Vehicles	38	35	33	34	38	45	36	43	45
Propane and Natural Gas Vehicles	-	-	-	-	-	-	-	-	-
Railways	1	0.49	0.70	0.72	0.82	0.71	0.87	0.79	1
Marine	116	127	137	148	159	170	169	168	166
Other Transportation	249	162	123	226	263	229	410	338	416
Off-Road Agriculture and Forestry	2	1	0.61	1	1	0.91	2	1	2
Off-Road Commercial and Institutional	12	8	8	10	10	11	10	13	9
Off-Road Manufacturing, Mining and Construction	203	130	93	185	220	183	364	285	377
Off-Road Residential	0.40	0.41	0.44	0.75	0.96	0.73	1	1	1
Off-Road Other Transportation	32	23	21	29	29	33	32	38	27
Pipeline Transport	-	-	-	-	2	0.13	0.09	0.04	-
c. Fugitive Sources	**99**	**110**	**91**	**96**	**67**	**67**	**63**	**14**	**13**
Coal Mining	-	-	-	-	-	-	-	-	-
Oil and Natural Gas	99	105	91	96	68	67	63	15	13
Oil	5	5	5	5	5	5	5	5	5
Natural Gas	2	2	2	3	2	2	2	2	2
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**	**27**	**106**	**90**	**8**	**9**	**12**
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]	**-**	**-**	**-**	**-**	**-**	**4**	**6**	**8**	**10**
e. Non-Energy Products from Fuels and Solvent Use[b]	**5**	**13**	**3**	**27**	**110**	**86**	**2**	**0.76**	**1**
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	**35**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**
a. Solid Waste Disposal (Landfills)	**30**	**30**	**30**	**30**	**30**	**30**	**40**	**40**	**40**
b. Biological Treatment of Solid Waste	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
c. Wastewater Treatment and Discharge	**4**	**4**	**4**	**4**	**5**	**5**	**5**	**5**	**5**
d. Incineration and Open Burning of Waste	**0.18**	**0.18**	**0.18**	**0.19**	**0.19**	**0.19**	**0.20**	**0.20**	**0.19**
e. Industrial Wood Waste Landfills	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Notes:

Estimates for the latest year (2021) 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 and Territorial GHG emissions by Canadian economic sector 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 and territorial tables to protect confidential data.

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.

PROVINCIAL AND TERRITORIAL GREENHOUSE GAS EMISSION TABLES BY CANADIAN ECONOMIC SECTOR, 1990–2021

This annex contains summary tables (Table A12–2 to Table A12–15) illustrating greenhouse gas (GHG) emissions by province and territory, allocated to Canadian economic sectors, from 1990–2021. To account for the creation of Nunavut in 1999, a time series from 1999–2021 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 and territorial GHG emissions allocated to Intergovernmental Panel on Climate Change (IPCC) sectors are provided in Annex 11 of this report.

Reallocating provincial and 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 and territorial emission estimates. Estimates for each economic sector include emissions from energy-related and non-energy-related processes.

Although the United Nations Framework Convention on Climate Change (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 and territorial GHG 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	– conventional 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 in designated oil sands areas 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 up to and including the natural gas meter
ELECTRICITY	Combustion and process emissions from utility electricity generation, steam production (for sale) and transmission. Excludes utility owned cogeneration at industrial sites. Includes post-meter, unintentional leaks from natural gas consumption.
TRANSPORT	Mobile related emissions including all fossil fuels and non-CO_2 emission from biofuels. Includes post-meter, unintentional leaks from natural gas powered vehicles.
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). Includes post-meter, unintentional leaks from natural gas powered engines.
HEAVY INDUSTRY	Stationary combustion, onsite transportation, electricity and steam production, and process emissions. Includes post-meter, unintentional leaks from natural gas consumption.
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, including post-meter, unintentional leaks from natural gas appliances 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); includes post-meter, unintentional leaks from natural gas consumption
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. Includes post-meter, unintentional leaks from natural gas consumption.
LIGHT MANUFACTURING, CONSTRUCTION AND FOREST RESOURCES	Stationary combustion, onsite transportation, electricity and steam production, and process emissions, including post-meter, unintentional leaks from natural gas consumption 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**

Greenhouse Gas Categories	1990	2005	2016	2017	2018	2019	2020	2021
	Mt CO_2 eq							
GHG TOTAL	**9.4**	**10.2**	**10.9**	**10.8**	**10.6**	**11.0**	**8.8**	**8.3**
OIL AND GAS	**1.1**	**2.5**	**2.6**	**2.5**	**2.7**	**2.8**	**1.7**	**1.4**
Upstream Oil and Gas	**0.0**	**1.5**	**1.5**	**1.5**	**1.8**	**1.8**	**1.5**	**1.3**
Natural Gas Production and Processing	-	-	-	-	-	-	-	-
Conventional Oil Production	0.0	1.5	1.5	1.5	1.8	1.8	1.5	1.3
Conventional Light Oil Production	-	-	-	-	-	-	-	-
Conventional Heavy Oil Production	-	-	-	-	-	-	-	-
Frontier Oil Production	0.0	1.5	1.5	1.5	1.8	1.8	1.5	1.3
Oil Sands (Mining, In-situ, Upgrading)	-	-	-	-	-	-	-	-
Mining and Extraction	-	-	-	-	-	-	-	-
In-Situ	-	-	-	-	-	-	-	-
Upgrading	-	-	-	-	-	-	-	-
Oil, Natural Gas and CO_2 Transmission	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Downstream Oil and Gas	**1.1**	**1.0**	**1.2**	**1.0**	**0.9**	**1.0**	**0.2**	**0.1**
Petroleum Refining	1.1	1.0	1.2	1.0	0.9	1.0	0.2	0.1
Natural Gas Distribution	-	-	-	-	-	-	-	-
ELECTRICITY	**1.6**	**0.8**	**1.5**	**1.5**	**1.1**	**1.1**	**1.0**	**0.6**
TRANSPORT	**2.7**	**3.4**	**3.8**	**3.8**	**3.6**	**3.9**	**3.3**	**3.5**
Passenger Transport	**1.4**	**1.6**	**2.3**	**2.3**	**2.1**	**2.0**	**1.8**	**1.8**
Cars, Light Trucks and Motorcycles	1.2	1.3	1.9	2.0	1.8	1.7	1.6	1.6
Bus, Rail and Aviation	0.2	0.4	0.4	0.3	0.3	0.3	0.2	0.2
Freight Transport	**1.2**	**1.5**	**1.2**	**1.2**	**1.2**	**1.6**	**1.4**	**1.5**
Heavy Duty Trucks, Rail	0.3	0.5	0.6	0.6	0.6	0.7	0.5	0.5
Aviation and Marine	0.8	1.0	0.6	0.6	0.6	0.9	0.9	1.0
Other: Recreational, Commercial and Residential	0.1	0.2	0.3	0.3	0.3	0.2	0.2	0.2
HEAVY INDUSTRY	**1.9**	**1.8**	**0.6**	**0.7**	**0.9**	**1.1**	**1.0**	**1.1**
Mining	**1.4**	**1.5**	**0.6**	**0.6**	**0.8**	**1.1**	**0.9**	**1.0**
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	**0.4**	**0.3**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**
Iron and Steel	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Cement	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Lime 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**	**1.0**	**1.1**	**0.9**	**0.9**	**0.8**	**0.7**
Service Industry	**0.3**	**0.4**	**0.7**	**0.6**	**0.4**	**0.5**	**0.4**	**0.4**
Residential	**0.7**	**0.4**	**0.4**	**0.5**	**0.5**	**0.5**	**0.4**	**0.3**
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	**0.5**	**0.6**	**0.5**	**0.5**	**0.6**	**0.6**	**0.6**	**0.6**
Solid Waste[a]	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**
Wastewater	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Waste Incineration	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
COAL PRODUCTION	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
LIGHT MANUFACTURING, CONSTRUCTION AND FOREST RESOURCES	**0.4**	**0.3**	**0.7**	**0.5**	**0.7**	**0.6**	**0.3**	**0.3**
Light Manufacturing	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Construction	**0.2**	**0.2**	**0.6**	**0.5**	**0.5**	**0.5**	**0.3**	**0.3**
Forest Resources	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.0**	**0.1**

Notes:

Totals may not add up due to rounding.

Estimates presented here are under continual improvement. Historical emissions may be updated in future publications as new data become 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 and 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**

Greenhouse Gas Categories	1990	2005	2016	2017	2018	2019	2020	2021
	Mt CO_2 eq							
GHG TOTAL	**1.8**	**1.9**	**1.6**	**1.6**	**1.6**	**1.6**	**1.6**	**1.6**
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	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Petroleum Refining	-	-	-	-	-	-	-	-
Natural Gas Distribution	-	-	-	-	-	-	-	-
ELECTRICITY	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
TRANSPORT	**0.5**	**0.7**	**0.7**	**0.8**	**0.7**	**0.7**	**0.6**	**0.7**
Passenger Transport	**0.4**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.4**	**0.5**
Cars, Light Trucks and Motorcycles	0.4	0.5	0.5	0.5	0.5	0.5	0.4	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**	**0.1**	**0.2**	**0.2**	**0.2**	**0.2**	**0.1**	**0.1**
Heavy Duty Trucks, Rail	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Aviation and Marine	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0
Other: Recreational, Commercial and Residential	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**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**
Chemicals and Fertilizers	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
BUILDINGS	**0.6**	**0.5**	**0.3**	**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**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**
AGRICULTURE	**0.4**	**0.4**	**0.3**	**0.3**	**0.4**	**0.4**	**0.4**	**0.4**
On Farm Fuel Use	**0.1**	**0.1**	**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**	**0.2**
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**	**0.0**	**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	**0.1**	**0.2**	**0.1**	**0.1**	**0.1**	**0.1**	**0.2**	**0.2**
Light Manufacturing	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Construction	**0.1**	**0.1**	**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 updated in future publications as new data become 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 and 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**

Greenhouse Gas Categories	1990	2005	2016	2017	2018	2019	2020	2021
	Mt CO_2 eq							
GHG TOTAL	**19.3**	**22.8**	**15.3**	**15.9**	**16.4**	**16.2**	**14.6**	**14.6**
OIL AND GAS	**0.7**	**1.6**	**0.5**	**0.3**	**0.2**	**0.0**	**0.0**	**0.0**
Upstream Oil and Gas	**0.0**	**0.5**	**0.5**	**0.3**	**0.2**	**0.0**	**0.0**	**0.0**
Natural Gas Production and Processing	0.0	0.4	0.5	0.3	0.2	0.0	0.0	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	-	-	-	-	-	-
Natural Gas Distribution	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ELECTRICITY	**6.9**	**10.8**	**6.4**	**6.7**	**7.0**	**6.7**	**6.4**	**6.1**
TRANSPORT	**4.1**	**5.0**	**4.8**	**5.0**	**5.2**	**5.4**	**4.6**	**4.9**
Passenger Transport	**2.6**	**3.0**	**3.2**	**3.3**	**3.4**	**3.3**	**2.7**	**2.9**
Cars, Light Trucks and Motorcycles	2.3	2.7	2.8	2.9	3.0	2.9	2.5	2.7
Bus, Rail and Aviation	0.3	0.3	0.4	0.4	0.4	0.4	0.2	0.2
Freight Transport	**1.3**	**1.6**	**1.3**	**1.4**	**1.5**	**1.8**	**1.6**	**1.7**
Heavy Duty Trucks, Rail	0.7	1.0	0.9	0.9	1.0	1.0	0.9	0.9
Aviation and Marine	0.5	0.6	0.3	0.4	0.5	0.8	0.7	0.8
Other: Recreational, Commercial and Residential	**0.3**	**0.4**	**0.3**	**0.4**	**0.4**	**0.4**	**0.3**	**0.3**
HEAVY INDUSTRY	**1.1**	**1.1**	**0.5**	**0.5**	**0.4**	**0.3**	**0.3**	**0.3**
Mining	**0.2**	**0.4**	**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**	**0.0**	**0.0**
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**	**0.2**	**0.2**	**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**	**0.1**	**0.0**
BUILDINGS	**3.0**	**2.7**	**1.9**	**2.0**	**2.1**	**2.1**	**2.0**	**1.9**
Service Industry	**0.8**	**1.4**	**0.7**	**0.8**	**0.8**	**0.8**	**0.8**	**0.8**
Residential	**2.1**	**1.3**	**1.2**	**1.2**	**1.3**	**1.3**	**1.3**	**1.2**
AGRICULTURE	**0.6**	**0.5**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**
On Farm Fuel Use	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Crop Production	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.1**
Animal Production	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**
WASTE	**0.7**	**0.6**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**
Solid Waste[a]	**0.7**	**0.5**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**
Wastewater	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Waste Incineration	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
COAL PRODUCTION	**1.7**	**0.1**	**0.0**	**0.1**	**0.2**	**0.2**	**0.0**	**0.0**
LIGHT MANUFACTURING, CONSTRUCTION AND FOREST RESOURCES	**0.6**	**0.5**	**0.4**	**0.4**	**0.5**	**0.4**	**0.4**	**0.4**
Light Manufacturing	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**
Construction	**0.3**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.1**	**0.2**
Forest Resources	**0.2**	**0.1**	**0.0**	**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 updated in future publications as new data become 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 and 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**

Greenhouse Gas Categories	1990	2005	2016	2017	2018	2019	2020	2021
	Mt CO_2 eq							
GHG TOTAL	**16.1**	**19.6**	**14.6**	**13.5**	**13.3**	**12.8**	**11.2**	**11.9**
OIL AND GAS	**1.2**	**2.7**	**3.1**	**3.2**	**2.8**	**3.2**	**3.1**	**3.1**
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**	**3.0**	**3.2**	**2.8**	**3.1**	**3.1**	**3.0**
Petroleum Refining	1.2	2.7	3.0	3.2	2.8	3.1	3.1	3.0
Natural Gas Distribution	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ELECTRICITY	**6.0**	**7.8**	**4.1**	**3.4**	**3.6**	**3.2**	**2.1**	**2.8**
TRANSPORT	**3.5**	**4.4**	**4.1**	**3.7**	**3.6**	**3.5**	**3.1**	**3.1**
Passenger Transport	**2.3**	**2.5**	**2.7**	**2.3**	**2.3**	**2.3**	**2.0**	**1.9**
Cars, Light Trucks and Motorcycles	2.1	2.2	2.4	2.2	2.1	2.1	1.8	1.8
Bus, Rail and Aviation	0.2	0.3	0.2	0.2	0.2	0.2	0.1	0.1
Freight Transport	**1.0**	**1.5**	**1.1**	**1.0**	**0.9**	**0.9**	**0.9**	**0.8**
Heavy Duty Trucks, Rail	0.8	1.2	0.9	0.8	0.8	0.8	0.7	0.7
Aviation and Marine	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.2
Other: Recreational, Commercial and Residential	**0.2**	**0.4**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**
HEAVY INDUSTRY	**1.8**	**1.3**	**0.8**	**0.8**	**0.8**	**0.6**	**0.6**	**0.6**
Mining	**0.2**	**0.4**	**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**	**0.0**	**0.0**	**0.0**
Pulp and Paper	**1.3**	**0.7**	**0.4**	**0.3**	**0.4**	**0.4**	**0.3**	**0.4**
Iron and Steel	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Cement	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Lime and Gypsum	**0.1**	**0.1**	**0.1**	**0.1**	**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**	**1.1**	**1.1**	**1.1**	**1.0**	**0.9**
Service Industry	**0.6**	**0.7**	**0.5**	**0.4**	**0.5**	**0.5**	**0.5**	**0.5**
Residential	**1.1**	**0.8**	**0.7**	**0.7**	**0.6**	**0.6**	**0.5**	**0.4**
AGRICULTURE	**0.5**	**0.5**	**0.5**	**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	**0.1**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**
Animal Production	**0.3**	**0.3**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**
WASTE	**0.7**	**0.7**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**
Solid Waste[a]	**0.6**	**0.7**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**
Wastewater	**0.0**	**0.0**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Waste Incineration	**-**	**0.0**	**0.0**	**-**	**-**	**-**	**-**	**-**
COAL PRODUCTION	**0.0**	**0.0**	**-**	**-**	**-**	**-**	**-**	**-**
LIGHT MANUFACTURING, CONSTRUCTION AND FOREST RESOURCES	**0.6**	**0.7**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**
Light Manufacturing	**0.2**	**0.4**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**
Construction	**0.2**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Forest Resources	**0.2**	**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 updated in future publications as new data become 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 and 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**

Greenhouse Gas Categories	1990	2005	2016	2017	2018	2019	2020	2021
	Mt CO_2 eq							
GHG TOTAL	**84.3**	**85.5**	**77.3**	**79.3**	**80.5**	**81.9**	**74.3**	**77.5**
OIL AND GAS	**3.9**	**4.4**	**2.2**	**1.9**	**2.4**	**2.3**	**2.3**	**2.3**
Upstream Oil and Gas	**0.2**	**0.3**	**0.1**	**0.1**	**0.1**	**0.1**	**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	-	-	-	-	-	-	-	-
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	0.1	0.1	0.1	0.1	0.1	0.1
Downstream Oil and Gas	**3.7**	**4.0**	**2.1**	**1.8**	**2.3**	**2.2**	**2.2**	**2.2**
Petroleum Refining	3.6	4.0	2.1	1.8	2.3	2.2	2.1	2.1
Natural Gas Distribution	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
ELECTRICITY	**1.5**	**0.6**	**0.3**	**0.3**	**0.3**	**0.3**	**0.4**	**0.3**
TRANSPORT	**24.7**	**30.2**	**30.6**	**32.0**	**31.8**	**32.0**	**27.2**	**29.3**
Passenger Transport	**18.3**	**20.2**	**20.4**	**21.1**	**21.1**	**21.4**	**17.6**	**19.3**
Cars, Light Trucks and Motorcycles	16.8	18.6	18.6	19.1	19.1	19.4	16.2	17.7
Bus, Rail and Aviation	1.5	1.5	1.9	2.0	2.0	2.0	1.4	1.6
Freight Transport	**5.0**	**7.5**	**7.9**	**8.3**	**8.1**	**7.8**	**6.8**	**7.3**
Heavy Duty Trucks, Rail	4.1	6.4	7.0	7.3	7.1	6.9	6.0	6.3
Aviation and Marine	0.9	1.1	0.9	1.0	1.0	1.0	0.9	0.9
Other: Recreational, Commercial and Residential	**1.5**	**2.6**	**2.2**	**2.6**	**2.7**	**2.8**	**2.7**	**2.7**
HEAVY INDUSTRY	**25.3**	**20.2**	**15.9**	**17.0**	**17.3**	**18.2**	**17.0**	**17.7**
Mining	**2.0**	**1.9**	**1.8**	**2.1**	**2.8**	**3.0**	**2.5**	**2.9**
Smelting and Refining (Non-Ferrous Metals)	**13.2**	**10.0**	**7.6**	**7.6**	**6.8**	**7.0**	**7.5**	**7.8**
Pulp and Paper	**4.5**	**2.8**	**1.4**	**1.5**	**1.7**	**1.6**	**1.6**	**1.5**
Iron and Steel	**1.3**	**0.9**	**1.1**	**1.2**	**1.3**	**1.1**	**0.3**	**0.3**
Cement	**2.5**	**2.5**	**2.2**	**2.7**	**2.7**	**3.5**	**3.2**	**3.4**
Lime and Gypsum	**0.5**	**0.9**	**0.6**	**0.8**	**0.7**	**0.7**	**0.6**	**0.6**
Chemicals and Fertilizers	**1.3**	**1.2**	**1.1**	**1.2**	**1.3**	**1.3**	**1.3**	**1.2**
BUILDINGS	**11.7**	**12.3**	**10.2**	**10.2**	**10.2**	**10.5**	**9.4**	**9.4**
Service Industry	**4.6**	**6.4**	**6.3**	**6.7**	**6.4**	**6.6**	**6.0**	**6.0**
Residential	**7.1**	**5.9**	**3.9**	**3.6**	**3.8**	**3.9**	**3.4**	**3.4**
AGRICULTURE	**7.1**	**8.0**	**8.8**	**8.4**	**9.1**	**8.9**	**9.0**	**8.8**
On Farm Fuel Use	**0.6**	**0.7**	**0.9**	**1.0**	**1.0**	**1.1**	**1.0**	**1.1**
Crop Production	**1.5**	**1.7**	**2.7**	**2.3**	**3.0**	**2.7**	**3.0**	**2.8**
Animal Production	**5.0**	**5.6**	**5.2**	**5.1**	**5.1**	**5.1**	**5.0**	**5.0**
WASTE	**4.5**	**5.1**	**4.9**	**4.8**	**4.7**	**4.6**	**4.6**	**4.5**
Solid Waste[a]	**4.0**	**4.5**	**4.5**	**4.4**	**4.3**	**4.2**	**4.1**	**4.1**
Wastewater	**0.3**	**0.3**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**
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	**5.6**	**4.7**	**4.5**	**4.7**	**4.7**	**5.0**	**4.6**	**5.1**
Light Manufacturing	**3.7**	**2.9**	**2.7**	**2.6**	**2.6**	**2.8**	**2.5**	**2.9**
Construction	**1.3**	**1.3**	**1.4**	**1.6**	**1.6**	**1.7**	**1.6**	**1.7**
Forest Resources	**0.6**	**0.5**	**0.4**	**0.4**	**0.5**	**0.5**	**0.4**	**0.5**

Notes:

Totals may not add up due to rounding.

Estimates presented here are under continual improvement. Historical emissions may be updated in future publications as new data become 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 and 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**

Greenhouse Gas Categories	1990	2005	2016	2017	2018	2019	2020	2021
	Mt CO_2 eq							
GHG TOTAL	**179.1**	**203.7**	**160.4**	**156.1**	**162.9**	**163.3**	**146.6**	**150.6**
OIL AND GAS	**10.3**	**11.7**	**9.2**	**7.4**	**7.6**	**8.1**	**7.1**	**7.7**
Upstream Oil and Gas	**3.3**	**3.9**	**2.1**	**1.6**	**1.8**	**1.7**	**1.5**	**1.6**
Natural Gas Production and Processing	0.3	0.4	0.2	0.2	0.2	0.2	0.1	0.1
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	3.5	1.9	1.5	1.6	1.5	1.3	1.4
Downstream Oil and Gas	**7.0**	**7.8**	**7.1**	**5.7**	**5.8**	**6.4**	**5.6**	**6.1**
Petroleum Refining	6.5	7.2	6.6	5.2	5.3	5.8	5.1	5.6
Natural Gas Distribution	0.4	0.6	0.5	0.5	0.5	0.5	0.5	0.6
ELECTRICITY	**26.0**	**34.0**	**4.9**	**2.2**	**3.5**	**3.4**	**3.4**	**3.4**
TRANSPORT	**41.7**	**57.3**	**53.2**	**53.6**	**55.2**	**55.7**	**45.3**	**47.2**
Passenger Transport	**30.3**	**37.0**	**35.7**	**35.9**	**36.9**	**37.6**	**28.9**	**29.2**
Cars, Light Trucks and Motorcycles	27.7	33.8	32.4	32.3	33.2	33.9	26.7	26.7
Bus, Rail and Aviation	2.6	3.2	3.4	3.5	3.8	3.7	2.2	2.5
Freight Transport	**9.0**	**15.8**	**13.6**	**13.8**	**14.1**	**14.0**	**12.6**	**13.8**
Heavy Duty Trucks, Rail	8.3	15.1	13.0	13.2	13.5	13.3	11.9	13.1
Aviation and Marine	0.7	0.6	0.6	0.6	0.6	0.6	0.7	0.8
Other: Recreational, Commercial and Residential	**2.4**	**4.5**	**3.9**	**4.0**	**4.1**	**4.1**	**3.8**	**4.2**
HEAVY INDUSTRY	**43.5**	**35.2**	**30.6**	**28.6**	**28.8**	**28.3**	**25.5**	**27.6**
Mining	**1.1**	**1.0**	**1.4**	**1.4**	**1.3**	**1.4**	**1.5**	**1.8**
Smelting and Refining (Non-Ferrous Metals)	**1.5**	**1.9**	**0.9**	**1.1**	**0.9**	**1.1**	**0.8**	**0.7**
Pulp and Paper	**3.3**	**2.0**	**1.6**	**1.5**	**1.6**	**1.7**	**1.3**	**1.6**
Iron and Steel	**15.0**	**15.0**	**13.7**	**13.3**	**14.0**	**13.3**	**11.4**	**12.9**
Cement	**4.6**	**6.4**	**4.0**	**4.4**	**4.3**	**4.3**	**4.4**	**4.5**
Lime and Gypsum	**1.7**	**1.7**	**1.2**	**1.3**	**1.2**	**1.1**	**1.0**	**1.1**
Chemicals and Fertilizers	**16.2**	**7.1**	**7.7**	**5.6**	**5.5**	**5.3**	**5.0**	**5.1**
BUILDINGS	**27.5**	**36.1**	**36.4**	**37.4**	**40.1**	**40.0**	**38.5**	**37.6**
Service Industry	**9.8**	**15.3**	**17.1**	**17.7**	**19.1**	**20.3**	**20.3**	**20.1**
Residential	**17.7**	**20.8**	**19.3**	**19.7**	**21.1**	**19.7**	**18.2**	**17.5**
AGRICULTURE	**10.7**	**10.9**	**11.5**	**11.4**	**11.5**	**11.9**	**12.3**	**12.1**
On Farm Fuel Use	**1.3**	**1.6**	**2.4**	**2.4**	**2.6**	**2.9**	**2.4**	**2.6**
Crop Production	**2.4**	**2.2**	**3.0**	**3.0**	**2.9**	**3.0**	**3.8**	**3.5**
Animal Production	**7.0**	**7.1**	**6.0**	**6.0**	**6.0**	**6.0**	**6.0**	**6.1**
WASTE	**6.6**	**7.0**	**5.7**	**6.0**	**6.1**	**6.1**	**6.0**	**6.1**
Solid Waste[a]	**5.9**	**6.1**	**4.6**	**4.9**	**5.0**	**5.0**	**4.9**	**5.0**
Wastewater	**0.6**	**0.8**	**0.9**	**0.9**	**1.0**	**1.0**	**1.0**	**1.0**
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	**12.9**	**11.5**	**9.0**	**9.6**	**10.0**	**9.8**	**8.6**	**8.8**
Light Manufacturing	**9.9**	**8.0**	**6.2**	**6.4**	**6.6**	**6.3**	**5.8**	**6.1**
Construction	**2.7**	**3.3**	**2.6**	**3.0**	**3.3**	**3.1**	**2.5**	**2.5**
Forest Resources	**0.3**	**0.2**	**0.1**	**0.2**	**0.2**	**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 updated in future publications as new data become 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 and 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**

Greenhouse Gas Categories	1990	2005	2016	2017	2018	2019	2020	2021
	Mt CO_2 eq							
GHG TOTAL	**18.0**	**20.3**	**20.9**	**21.4**	**22.2**	**21.9**	**21.2**	**20.7**
OIL AND GAS	**1.4**	**0.9**	**0.9**	**0.8**	**1.0**	**0.9**	**0.8**	**0.9**
Upstream Oil and Gas	**1.4**	**0.9**	**0.9**	**0.8**	**0.9**	**0.9**	**0.8**	**0.9**
Natural Gas Production and Processing	-	-	-	-	-	-	-	-
Conventional Oil Production	0.2	0.3	0.6	0.6	0.6	0.6	0.6	0.6
Conventional Light Oil Production	0.2	0.3	0.6	0.6	0.6	0.6	0.6	0.6
Conventional Heavy Oil Production	-	-	-	-	-	-	-	-
Frontier Oil Production	-	-	-	-	-	-	-	-
Oil Sands (Mining, In-situ, Upgrading)	-	-	-	-	-	-	-	-
Mining and Extraction	-	-	-	-	-	-	-	-
In-Situ	-	-	-	-	-	-	-	-
Upgrading	-	-	-	-	-	-	-	-
Oil, Natural Gas and CO_2 Transmission	1.2	0.6	0.3	0.2	0.3	0.3	0.2	0.3
Downstream Oil and Gas	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Petroleum Refining	0.0	-	-	-	-	-	-	-
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**	**0.0**	**0.0**	**0.0**	**0.1**
TRANSPORT	**5.0**	**5.7**	**6.4**	**6.5**	**6.9**	**6.8**	**5.9**	**6.1**
Passenger Transport	**3.1**	**3.2**	**3.5**	**3.4**	**3.8**	**3.8**	**3.2**	**3.3**
Cars, Light Trucks and Motorcycles	2.7	2.6	3.0	2.9	3.2	3.2	2.8	3.0
Bus, Rail and Aviation	0.4	0.5	0.5	0.5	0.6	0.6	0.3	0.4
Freight Transport	**1.5**	**1.8**	**1.9**	**2.0**	**2.1**	**2.0**	**1.8**	**1.9**
Heavy Duty Trucks, Rail	1.4	1.8	1.8	2.0	2.0	1.9	1.7	1.8
Aviation and Marine	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Other: Recreational, Commercial and Residential	**0.5**	**0.7**	**1.0**	**1.0**	**1.0**	**1.0**	**0.9**	**0.9**
HEAVY INDUSTRY	**1.4**	**1.6**	**1.4**	**1.3**	**1.4**	**1.3**	**1.3**	**1.3**
Mining	**0.2**	**0.2**	**0.1**	**0.2**	**0.2**	**0.2**	**0.2**	**0.3**
Smelting and Refining (Non-Ferrous Metals)	**0.3**	**0.2**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**
Pulp and Paper	**0.3**	**0.2**	**0.1**	**0.0**	**0.0**	**0.1**	**0.1**	**0.1**
Iron and Steel	**0.1**	**0.0**	**0.1**	**0.1**	**0.1**	**0.1**	**0.0**	**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**	**1.0**	**0.8**	**0.9**	**0.9**	**0.8**	**0.8**
BUILDINGS	**3.1**	**2.7**	**2.7**	**2.9**	**3.2**	**3.2**	**3.0**	**2.9**
Service Industry	**1.4**	**1.6**	**1.5**	**1.7**	**1.8**	**1.9**	**1.8**	**1.7**
Residential	**1.7**	**1.1**	**1.1**	**1.2**	**1.3**	**1.3**	**1.3**	**1.2**
AGRICULTURE	**4.9**	**6.8**	**7.0**	**7.3**	**7.5**	**7.4**	**7.8**	**7.3**
On Farm Fuel Use	**0.8**	**1.1**	**1.2**	**1.4**	**1.5**	**1.4**	**1.5**	**1.3**
Crop Production	**1.7**	**1.6**	**2.6**	**2.7**	**2.7**	**2.8**	**3.1**	**2.8**
Animal Production	**2.4**	**4.2**	**3.2**	**3.2**	**3.3**	**3.2**	**3.2**	**3.1**
WASTE	**0.8**	**1.2**	**1.2**	**1.2**	**1.2**	**1.1**	**1.2**	**1.2**
Solid Waste[a]	**0.7**	**1.1**	**1.1**	**1.1**	**1.1**	**1.0**	**1.1**	**1.1**
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	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
LIGHT MANUFACTURING, CONSTRUCTION AND FOREST RESOURCES	**0.8**	**1.0**	**1.2**	**1.4**	**1.1**	**1.1**	**1.1**	**1.0**
Light Manufacturing	**0.4**	**0.5**	**0.8**	**0.9**	**0.6**	**0.7**	**0.7**	**0.7**
Construction	**0.3**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**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 updated in future publications as new data become 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 and 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**

Greenhouse Gas Categories	1990	2005	2016	2017	2018	2019	2020	2021
	Mt CO_2 eq							
GHG TOTAL	**42.5**	**67.8**	**73.5**	**76.0**	**77.1**	**74.8**	**65.1**	**67.1**
OIL AND GAS	**11.1**	**25.5**	**24.6**	**25.0**	**24.5**	**23.4**	**16.7**	**16.6**
Upstream Oil and Gas	**9.9**	**24.5**	**23.1**	**23.4**	**23.1**	**21.9**	**15.4**	**15.1**
Natural Gas Production and Processing	1.3	2.6	2.0	2.0	2.0	1.9	1.0	1.0
Conventional Oil Production	6.2	16.9	17.0	17.5	16.9	15.8	10.6	9.7
Conventional Light Oil Production	3.2	5.7	9.7	10.9	11.3	10.8	7.0	6.2
Conventional Heavy Oil Production	3.0	11.1	7.3	6.6	5.5	5.0	3.6	3.5
Frontier Oil Production	-	-	-	-	-	-	-	-
Oil Sands (Mining, In-situ, Upgrading)	0.0	2.6	2.3	2.1	2.3	2.3	2.2	2.5
Mining and Extraction	-	-	-	-	-	-	-	-
In-Situ	-	-	-	-	-	-	-	-
Upgrading	0.0	2.6	2.3	2.1	2.3	2.3	2.2	2.5
Oil, Natural Gas and CO_2 Transmission	2.4	2.3	1.7	1.7	1.9	1.8	1.6	1.9
Downstream Oil and Gas	**1.2**	**1.1**	**1.6**	**1.6**	**1.5**	**1.5**	**1.3**	**1.4**
Petroleum Refining	0.7	0.9	1.3	1.3	1.2	1.3	1.1	1.2
Natural Gas Distribution	0.5	0.2	0.2	0.2	0.2	0.2	0.2	0.2
ELECTRICITY	**11.1**	**14.3**	**14.7**	**15.3**	**14.9**	**14.8**	**12.6**	**15.2**
TRANSPORT	**4.9**	**7.0**	**9.8**	**10.0**	**10.1**	**9.8**	**8.8**	**9.1**
Passenger Transport	**2.5**	**3.1**	**4.5**	**4.6**	**4.5**	**4.4**	**3.8**	**3.9**
Cars, Light Trucks and Motorcycles	2.2	2.9	4.2	4.2	4.1	4.1	3.6	3.7
Bus, Rail and Aviation	0.2	0.2	0.3	0.4	0.3	0.3	0.2	0.2
Freight Transport	**1.7**	**2.9**	**3.7**	**3.9**	**4.1**	**4.0**	**3.7**	**3.8**
Heavy Duty Trucks, Rail	1.6	2.8	3.7	3.8	4.1	3.9	3.7	3.8
Aviation and Marine	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other: Recreational, Commercial and Residential	**0.7**	**1.0**	**1.6**	**1.5**	**1.5**	**1.5**	**1.3**	**1.3**
HEAVY INDUSTRY	**1.7**	**2.3**	**3.4**	**3.8**	**4.7**	**3.8**	**4.3**	**4.1**
Mining	**1.0**	**1.4**	**2.6**	**3.0**	**3.6**	**2.7**	**3.0**	**3.1**
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	**0.3**	**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**	**0.2**	**0.1**	**0.1**	**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**	**0.6**	**0.6**	**0.9**	**0.9**	**1.1**	**0.8**
BUILDINGS	**3.2**	**3.4**	**3.5**	**3.7**	**4.1**	**4.3**	**3.9**	**3.9**
Service Industry	**1.0**	**1.7**	**1.6**	**1.8**	**1.9**	**2.0**	**1.9**	**1.8**
Residential	**2.1**	**1.7**	**1.8**	**2.0**	**2.2**	**2.3**	**2.1**	**2.0**
AGRICULTURE	**8.7**	**13.5**	**15.4**	**16.2**	**16.6**	**16.5**	**16.7**	**16.3**
On Farm Fuel Use	**2.8**	**2.9**	**4.6**	**5.2**	**5.6**	**5.4**	**5.5**	**5.3**
Crop Production	**1.9**	**3.0**	**5.0**	**5.1**	**5.3**	**5.4**	**5.4**	**5.2**
Animal Production	**4.1**	**7.6**	**5.8**	**5.9**	**5.8**	**5.7**	**5.7**	**5.8**
WASTE	**0.9**	**1.2**	**1.2**	**1.2**	**1.2**	**1.3**	**1.3**	**1.3**
Solid Waste[a]	**0.8**	**1.1**	**1.1**	**1.1**	**1.1**	**1.1**	**1.1**	**1.2**
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**
COAL PRODUCTION	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
LIGHT MANUFACTURING, CONSTRUCTION AND FOREST RESOURCES	**0.8**	**0.6**	**0.9**	**0.8**	**0.8**	**0.8**	**0.7**	**0.7**
Light Manufacturing	**0.5**	**0.2**	**0.4**	**0.5**	**0.5**	**0.5**	**0.4**	**0.4**
Construction	**0.3**	**0.3**	**0.4**	**0.3**	**0.3**	**0.2**	**0.2**	**0.2**
Forest Resources	**0.1**	**0.0**	**0.0**	**0.1**	**0.1**	**0.1**	**0.1**	**0.0**

Notes:

Totals may not add up due to rounding.

Estimates presented here are under continual improvement. Historical emissions may be updated in future publications as new data become 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 and 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**

Greenhouse Gas Categories	1990	2005	2016	2017	2018	2019	2020	2021
	Mt CO_2 eq							
GHG TOTAL	**165.5**	**235.9**	**267.0**	**273.1**	**273.7**	**274.8**	**254.2**	**256.1**
OIL AND GAS	**62.5**	**105.8**	**134.4**	**138.8**	**147.3**	**147.4**	**138.2**	**144.7**
Upstream Oil and Gas	**58.9**	**101.1**	**129.2**	**133.6**	**142.0**	**142.2**	**134.0**	**141.0**
Natural Gas Production and Processing	26.2	51.2	42.9	40.1	42.3	41.3	37.2	38.8
Conventional Oil Production	13.7	13.5	15.2	14.9	15.6	15.1	13.2	14.0
Conventional Light Oil Production	8.6	10.5	11.5	11.1	11.6	11.3	9.9	10.5
Conventional Heavy Oil Production	5.1	2.9	3.7	3.7	4.0	3.8	3.3	3.5
Frontier Oil Production	-	-	-	-	-	-	-	-
Oil Sands (Mining, In-situ, Upgrading)	15.1	32.5	67.0	74.1	79.1	80.7	78.6	82.7
Mining and Extraction	2.2	5.7	11.4	13.0	14.9	15.5	15.0	15.5
In-Situ	4.5	12.2	37.0	40.8	42.8	42.8	41.0	44.6
Upgrading	8.4	14.6	18.6	20.3	21.4	22.4	22.5	22.7
Oil, Natural Gas and CO_2 Transmission	3.9	3.9	4.2	4.5	5.0	5.2	5.0	5.5
Downstream Oil and Gas	**3.6**	**4.7**	**5.2**	**5.3**	**5.3**	**5.1**	**4.2**	**3.7**
Petroleum Refining	3.2	4.4	5.0	5.1	5.1	5.0	4.0	3.5
Natural Gas Distribution	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2
ELECTRICITY	**39.8**	**47.7**	**41.6**	**42.5**	**31.5**	**31.1**	**27.3**	**22.5**
TRANSPORT	**15.3**	**22.1**	**26.1**	**26.7**	**28.0**	**28.1**	**22.7**	**23.4**
Passenger Transport	**9.1**	**12.0**	**13.5**	**14.0**	**14.5**	**14.9**	**11.5**	**11.6**
Cars, Light Trucks and Motorcycles	8.0	10.3	11.5	11.9	12.3	12.7	10.2	10.2
Bus, Rail and Aviation	1.1	1.6	2.0	2.1	2.2	2.2	1.2	1.4
Freight Transport	**4.5**	**8.1**	**9.8**	**9.9**	**10.9**	**10.7**	**9.0**	**9.3**
Heavy Duty Trucks, Rail	4.3	7.8	9.6	9.7	10.7	10.4	8.7	9.0
Aviation and Marine	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3
Other: Recreational, Commercial and Residential	**1.6**	**2.1**	**2.8**	**2.7**	**2.6**	**2.6**	**2.3**	**2.5**
HEAVY INDUSTRY	**12.8**	**17.8**	**17.8**	**17.4**	**17.8**	**18.1**	**17.6**	**18.1**
Mining	**0.3**	**0.4**	**0.8**	**0.8**	**0.6**	**0.6**	**0.7**	**0.4**
Smelting and Refining (Non-Ferrous Metals)	**0.5**	**0.6**	**0.8**	**0.8**	**0.8**	**0.7**	**0.6**	**0.6**
Pulp and Paper	**0.5**	**0.8**	**1.0**	**1.2**	**1.8**	**1.9**	**1.6**	**1.7**
Iron and Steel	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Cement	**1.2**	**1.8**	**1.5**	**1.7**	**1.8**	**1.8**	**1.6**	**2.0**
Lime and Gypsum	**0.2**	**0.3**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**
Chemicals and Fertilizers	**10.0**	**13.8**	**13.4**	**12.7**	**12.3**	**12.8**	**12.8**	**13.2**
BUILDINGS	**12.2**	**16.2**	**19.4**	**20.4**	**21.7**	**21.9**	**21.0**	**20.4**
Service Industry	**5.3**	**8.5**	**10.6**	**11.4**	**12.3**	**12.5**	**11.8**	**11.7**
Residential	**6.9**	**7.7**	**8.8**	**9.0**	**9.4**	**9.4**	**9.2**	**8.7**
AGRICULTURE	**14.1**	**20.1**	**19.1**	**19.1**	**19.5**	**19.9**	**19.8**	**19.8**
On Farm Fuel Use	**2.1**	**2.7**	**2.9**	**3.4**	**3.3**	**3.4**	**2.9**	**3.1**
Crop Production	**2.4**	**2.8**	**4.4**	**3.8**	**4.1**	**4.4**	**4.8**	**4.4**
Animal Production	**9.6**	**14.7**	**11.9**	**11.9**	**12.1**	**12.1**	**12.1**	**12.3**
WASTE	**1.7**	**2.7**	**4.3**	**4.2**	**4.4**	**4.2**	**4.3**	**4.2**
Solid Waste[a]	**1.5**	**2.5**	**3.4**	**3.5**	**3.5**	**3.6**	**3.7**	**3.7**
Wastewater	**0.2**	**0.3**	**0.9**	**0.7**	**0.8**	**0.6**	**0.6**	**0.4**
Waste Incineration	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
COAL PRODUCTION	**0.8**	**0.7**	**0.9**	**0.8**	**0.7**	**0.8**	**0.5**	**0.2**
LIGHT MANUFACTURING, CONSTRUCTION AND FOREST RESOURCES	**6.3**	**2.8**	**3.4**	**3.2**	**3.0**	**3.4**	**2.9**	**2.9**
Light Manufacturing	**4.8**	**1.4**	**2.4**	**2.0**	**1.9**	**2.2**	**1.9**	**1.9**
Construction	**1.0**	**1.1**	**0.8**	**0.9**	**0.7**	**0.9**	**0.7**	**0.7**
Forest Resources	**0.4**	**0.4**	**0.2**	**0.3**	**0.3**	**0.3**	**0.2**	**0.2**

Notes:

Totals may not add up due to rounding.

Estimates presented here are under continual improvement. Historical emissions may be updated in future publications as new data become 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 and 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**

Greenhouse Gas Categories	1990	2005	2016	2017	2018	2019	2020	2021
	Mt CO_2 eq							
GHG TOTAL	**50.3**	**61.6**	**60.7**	**61.7**	**63.6**	**62.5**	**58.8**	**59.4**
OIL AND GAS	**7.9**	**12.9**	**14.0**	**14.0**	**13.9**	**13.2**	**13.3**	**12.4**
Upstream Oil and Gas	**6.4**	**12.3**	**13.2**	**13.3**	**13.3**	**12.6**	**12.8**	**11.8**
Natural Gas Production and Processing	4.4	10.2	11.0	11.1	11.2	10.5	10.8	10.0
Conventional Oil Production	0.6	0.7	0.6	0.6	0.6	0.5	0.4	0.4
Conventional Light Oil Production	0.6	0.7	0.6	0.6	0.6	0.5	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	1.5	1.4	1.6	1.6	1.5	1.6	1.5	1.5
Downstream Oil and Gas	**1.5**	**0.6**	**0.8**	**0.7**	**0.6**	**0.6**	**0.5**	**0.6**
Petroleum Refining	1.3	0.5	0.7	0.6	0.5	0.5	0.4	0.5
Natural Gas Distribution	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
ELECTRICITY	**0.9**	**1.0**	**0.4**	**0.4**	**0.5**	**0.6**	**0.2**	**0.4**
TRANSPORT	**15.1**	**19.6**	**21.5**	**21.8**	**22.7**	**22.7**	**20.5**	**21.6**
Passenger Transport	**9.2**	**11.8**	**12.3**	**12.4**	**12.7**	**12.4**	**10.4**	**10.9**
Cars, Light Trucks and Motorcycles	7.8	9.9	10.6	10.5	10.7	10.3	9.2	9.5
Bus, Rail and Aviation	1.5	1.9	1.8	1.9	2.1	2.0	1.2	1.4
Freight Transport	**5.1**	**6.5**	**7.6**	**7.7**	**8.1**	**8.4**	**8.2**	**8.7**
Heavy Duty Trucks, Rail	4.2	5.3	6.2	6.4	6.7	7.0	6.6	6.9
Aviation and Marine	0.9	1.1	1.3	1.3	1.4	1.5	1.5	1.8
Other: Recreational, Commercial and Residential	**0.7**	**1.4**	**1.6**	**1.8**	**1.9**	**1.9**	**1.9**	**1.9**
HEAVY INDUSTRY	**9.0**	**7.2**	**6.4**	**6.5**	**6.7**	**6.4**	**5.6**	**5.3**
Mining	**0.5**	**0.4**	**0.4**	**0.6**	**0.7**	**0.7**	**0.8**	**0.6**
Smelting and Refining (Non-Ferrous Metals)	**2.1**	**1.7**	**1.3**	**1.2**	**1.1**	**1.2**	**1.2**	**0.9**
Pulp and Paper	**4.1**	**1.8**	**2.0**	**2.2**	**2.2**	**2.5**	**2.1**	**2.2**
Iron and Steel	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Cement	**1.1**	**2.0**	**2.1**	**2.1**	**2.2**	**1.6**	**1.1**	**1.2**
Lime and Gypsum	**0.2**	**0.3**	**0.2**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Chemicals and Fertilizers	**1.0**	**0.9**	**0.4**	**0.4**	**0.4**	**0.3**	**0.3**	**0.3**
BUILDINGS	**7.7**	**8.4**	**8.0**	**8.6**	**8.4**	**8.8**	**8.9**	**9.1**
Service Industry	**3.1**	**3.8**	**3.8**	**3.9**	**3.9**	**4.1**	**4.2**	**4.2**
Residential	**4.6**	**4.7**	**4.2**	**4.7**	**4.5**	**4.7**	**4.8**	**4.8**
AGRICULTURE	**2.3**	**2.7**	**2.9**	**2.9**	**3.1**	**3.0**	**3.0**	**2.9**
On Farm Fuel Use	**0.4**	**0.2**	**0.8**	**0.8**	**0.9**	**0.9**	**0.8**	**0.8**
Crop Production	**0.2**	**0.1**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**
Animal Production	**1.8**	**2.3**	**1.9**	**1.9**	**2.0**	**1.9**	**1.9**	**1.9**
WASTE	**2.4**	**2.4**	**2.2**	**2.1**	**2.1**	**2.1**	**2.0**	**2.0**
Solid Waste[a]	**2.2**	**2.2**	**1.9**	**1.8**	**1.8**	**1.8**	**1.7**	**1.7**
Wastewater	**0.2**	**0.2**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**
Waste Incineration	**0.0**	-	-	-	-	-	-	-
COAL PRODUCTION	**1.7**	**2.0**	**2.1**	**1.9**	**2.2**	**2.3**	**2.0**	**2.3**
LIGHT MANUFACTURING, CONSTRUCTION AND FOREST RESOURCES	**3.3**	**5.3**	**3.2**	**3.4**	**3.9**	**3.4**	**3.3**	**3.3**
Light Manufacturing	**1.5**	**3.3**	**1.4**	**1.4**	**1.6**	**1.3**	**1.5**	**1.5**
Construction	**0.6**	**0.7**	**0.8**	**0.8**	**0.9**	**0.8**	**0.6**	**0.7**
Forest Resources	**1.2**	**1.3**	**1.0**	**1.1**	**1.4**	**1.3**	**1.1**	**1.1**

Notes:

Totals may not add up due to rounding.

Estimates presented here are under continual improvement. Historical emissions may be updated in future publications as new data become 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 and 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**

Greenhouse Gas Categories	1990	2005	2016	2017	2018	2019	2020	2021
	Mt CO_2 eq							
GHG TOTAL	**0.5**	**0.6**	**0.5**	**0.6**	**0.6**	**0.7**	**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	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Petroleum Refining	-	-	-	-	-	-	-	-
Natural Gas Distribution	-	-	-	-	-	-	-	-
ELECTRICITY	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**
TRANSPORT	**0.2**	**0.3**	**0.3**	**0.4**	**0.4**	**0.4**	**0.3**	**0.4**
Passenger Transport	**0.1**	**0.2**	**0.2**	**0.2**	**0.2**	**0.3**	**0.2**	**0.2**
Cars, Light Trucks and Motorcycles	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2
Bus, Rail and Aviation	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.1
Freight Transport	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Heavy Duty Trucks, Rail	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
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	**0.1**	**0.0**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Mining	**0.1**	**0.0**	**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	**0.0**	**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**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
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**	**0.0**	**0.0**	**0.0**	**0.0**
On Farm Fuel Use	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Crop Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Animal Production	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
WASTE	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
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 updated in future publications as new data become 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 and 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**

Greenhouse Gas Categories	1999	2005	2016	2017	2018	2019	2020	2021
	Mt CO_2 eq							
GHG TOTAL	**1.3**	**1.7**	**1.3**	**1.4**	**1.4**	**1.4**	**1.2**	**1.3**
OIL AND GAS	**0.2**	**0.3**	**0.0**	**0.0**	**0.0**	**0.1**	**0.1**	**0.1**
Upstream Oil and Gas	**0.2**	**0.3**	**0.0**	**0.0**	**0.0**	**0.1**	**0.1**	**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	0.1
Conventional Light Oil Production	-	-	-	-	-	-	-	-
Conventional Heavy Oil Production	-	-	-	-	-	-	-	-
Frontier Oil Production	0.1	0.1	0.0	0.0	0.0	0.0	0.0	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
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	**0.3**	**0.8**	**0.7**	**0.8**	**0.8**	**0.7**	**0.5**	**0.6**
Passenger Transport	**0.2**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.2**	**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	0.2	0.2	0.2	0.1	0.2
Freight Transport	**0.1**	**0.5**	**0.4**	**0.5**	**0.4**	**0.4**	**0.3**	**0.3**
Heavy Duty Trucks, Rail	0.1	0.4	0.4	0.5	0.4	0.3	0.2	0.3
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	**0.4**	**0.3**	**0.4**	**0.3**	**0.4**	**0.4**	**0.4**	**0.4**
Mining	**0.4**	**0.3**	**0.4**	**0.3**	**0.4**	**0.4**	**0.4**	**0.4**
Smelting and Refining (Non-Ferrous Metals)	**-**	**0.0**	**-**	**-**	**-**	**-**	**-**	**-**
Pulp and Paper	**-**	**0.0**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel	**-**	**0.0**	**-**	**-**	**-**	**-**	**-**	**-**
Cement	**-**	**0.0**	**-**	**-**	**-**	**-**	**-**	**-**
Lime and Gypsum	**-**	**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**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Service Industry	**0.2**	**0.1**	**0.0**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Residential	**0.1**	**0.1**	**0.1**	**0.0**	**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**	**-**	**-**	**-**	**-**	**-**	**-**
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 updated in future publications as new data become 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 and 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**

Greenhouse Gas Categories	1999	2005	2016	2017	2018	2019	2020	2021
	Mt CO_2 eq							
GHG TOTAL	**0.4**	**0.6**	**0.7**	**0.7**	**0.7**	**0.8**	**0.6**	**0.6**
OIL AND GAS	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
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	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Petroleum Refining	-	-	-	-	-	-	-	-
Natural Gas Distribution	-	-	-	-	-	-	-	-
ELECTRICITY	**0.0**	**x**	**x**	**x**	**x**	**x**	**x**	**x**
TRANSPORT	**0.3**	**0.3**	**0.4**	**0.4**	**0.4**	**0.4**	**0.3**	**0.3**
Passenger Transport	**0.1**	**0.1**	**0.2**	**0.2**	**0.2**	**0.2**	**0.1**	**0.2**
Cars, Light Trucks and Motorcycles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bus, Rail and Aviation	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1
Freight Transport	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.1**	**0.2**
Heavy Duty Trucks, Rail	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Aviation and Marine	0.2	0.2	0.1	0.1	0.1	0.2	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**	**0.1**	**0.2**	**0.2**	**0.1**	**0.1**	**0.1**	**0.1**
Mining	**0.1**	**0.1**	**0.2**	**0.2**	**0.1**	**0.1**	**0.1**	**0.1**
Smelting and Refining (Non-Ferrous Metals)	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Pulp and Paper	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Iron and Steel	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Cement	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
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.

Estimates presented here are under continual improvement. Historical emissions may be updated in future publications as new data become 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 and 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 and Nunavut by Canadian Economic Sector, 1990–1998**

Greenhouse Gas Categories	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	-	-	-	-	-	-	-	-	-
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**	**-**	**-**
Petroleum Refining	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	**0.5**	**0.5**	**0.5**	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
Passenger Transport	**0.3**	**0.2**	**0.2**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**
Cars, Light Trucks and Motorcycles	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Bus, Rail and Aviation	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Freight Transport	**0.2**	**0.2**	**0.2**	**0.2**	**0.3**	**0.3**	**0.3**	**0.3**	**0.3**
Heavy Duty Trucks, Rail	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1
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	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**
HEAVY INDUSTRY	**0.2**	**0.1**	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.4**	**0.5**
Mining	**0.2**	**0.1**	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.4**	**0.5**
Smelting and Refining (Non-Ferrous Metals)	**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**	**-**	**-**	**-**
Iron and Steel	**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**	**-**	**-**	**-**
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**	**0.0**	**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**	**0.0**
Wastewater	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Waste Incineration	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
COAL PRODUCTION	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
LIGHT MANUFACTURING, CONSTRUCTION AND FOREST RESOURCES	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**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 updated in future publications as new data become 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 and 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

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]), in the publication *Electric Power Generation, Transmission and Distribution* (EPGTD) (Statistics Canada, n.d. [b]) 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 Statistics Canada data tables (2005–2021) and the EPGTD publication (1990–2004).

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

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

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

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

	1990	2000	2005	2010	2015	2017	2018	2019	2020	2021[a]
Greenhouse Gas Emissions[b]										
	kt CO_2 equivalent									
Combustion	**94 500**	**132 000**	**125 000**	**102 000**	**87 800**	**79 400**	**71 000**	**69 500**	**61 400**	**60 400**
Coal	80 500	109 000	98 200	78 700	62 700	57 700	44 700	42 800	34 700	31 400
Natural Gas	2 720	13 900	15 300	18 900	19 800	17 000	21 700	22 500	23 300	25 900
Other Fuels[c]	11 300	9 370	11 200	4 590	5 360	4 730	4 560	4 160	3 420	3 060
Other Emissions[d]	**0.0**	**27**	**52**	**53**	**87**	**80**	**78**	**80**	**68**	**72**
Overall Total[e, f, g]	**94 500**	**132 000**	**125 000**	**102 000**	**87 900**	**79 500**	**71 000**	**69 600**	**61 500**	**60 400**
Electricity Generation[h, i]										
	GWh									
Combustion[j]	**101 000**	**146 000**	**140 000**	**117 000**	**108 000**	**99 100**	**98 700**	**97 700**	**90 500**	**93 000**
Coal	82 200	106 000	93 900	74 300	57 800	55 600	47 000	44 500	35 900	32 000
Natural Gas	4 140	26 600	29 800	33 600	41 200	35 200	43 500	45 800	47 800	54 400
Other Fuels	14 800	13 400	16 700	8 650	8 560	8 250	8 210	7 360	6 840	6 610
Refined Petroleum Products	14 700	10 600	10 800	3 010	3 550	3 050	2 750	2 400	2 140	2 060
Biomass	14	1 830	1 780	2 310	1 980	2 170	2 210	1 880	2 110	2 310
Other	91	960	4 070	3 330	3 030	3 030	3 260	3 080	2 590	2 240
Nuclear	**68 800**	**68 700**	**86 800**	**85 500**	**96 000**	**95 600**	**95 000**	**95 500**	**92 600**	**87 400**
Hydro	**263 000**	**323 000**	**327 000**	**321 000**	**345 000**	**361 000**	**353 000**	**349 000**	**355 000**	**358 000**
Other Renewables[k]	**26**	**260**	**1 580**	**8 780**	**27 500**	**32 100**	**34 300**	**33 600**	**36 300**	**35 600**
Other Generation[l, m]	**0.0**	**0.0**	**32**	**10 100**	**280**	**410**	**340**	**330**	**270**	**370**
Overall Total[f]	**433 000**	**539 000**	**556 000**	**542 000**	**577 000**	**588 000**	**581 000**	**577 000**	**575 000**	**575 000**
Greenhouse Gas Intensity[n]										
	Generation Intensity (g GHG / kWh electricity generated)									
CO_2 intensity (g CO_2 / kWh)	220	240	220	190	150	130	120	120	110	100
CH_4 intensity (g CH_4 / kWh)	0.004	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
N_2O intensity (g N_2O / kWh)	0.004	0.004	0.004	0.004	0.003	0.003	0.003	0.003	0.002	0.002
Generation Intensity (g CO_2 eq / kWh)[f]	**220**	**250**	**220**	**190**	**150**	**140**	**120**	**120**	**110**	**110**
	Losses									
Unallocated Energy (GWh)[o, p]	31 000	42 000	37 000	52 000	17 000	33 000	7 000	7 700	9 000	20 000
SF_6 Emissions (kt CO_2 eq)[q]	200	200	160	180	190	140	160	120	150	150
	Consumption Intensity (g GHG / kWh electricity consumed)									
Consumption Intensity (g CO_2 eq / kWh)[r]	**240**	**270**	**240**	**210**	**160**	**140**	**120**	**120**	**110**	**110**

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 (2005–2021).
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 most of 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, most of the 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 25-10-0021-01 (2005–2021) 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

0.0 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	2010	2015	2017	2018	2019	2020	2021[a]
Greenhouse Gas Emissions[b]										
	kt CO_2 equivalent									
Combustion	**1 640**	**820**	**820**	**690**	**1 340**	**1 530**	**1 130**	**1 140**	**950**	**650**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	–	–	–	–	–	–	–	–	–	–
Other Fuels[c]	1 640	820	820	690	1 340	1 530	1 130	1 140	950	650
Other Emissions[d]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[e, f, g]	**1 640**	**820**	**820**	**690**	**1 340**	**1 530**	**1 130**	**1 140**	**950**	**650**
Electricity Generation[h, i]										
	GWh									
Combustion[j]	**2 090**	**1 020**	**1 360**	**916**	**1 560**	**1 800**	**1 260**	**1 320**	**1 090**	**760**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	–	–	–	–	–	–	–	–	–	–
Other Fuels	2 090	1 020	1 360	920	1 560	1 800	1 260	1 320	1 090	760
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**34 300**	**41 800**	**38 900**	**39 400**	**38 800**	**36 500**	**41 800**	**40 800**	**38 500**	**39 400**
Other Renewables[k]	**–**	**–**	**–**	**180**	**170**	**190**	**210**	**180**	**180**	**160**
Other Generation[l, m]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[f]	**36 400**	**42 800**	**40 300**	**40 500**	**40 500**	**38 500**	**43 300**	**42 300**	**39 800**	**40 300**
Greenhouse Gas Intensity[n]										
	Generation Intensity (g GHG / kWh electricity generated)									
CO_2 intensity (g CO_2 / kWh)	45	19	20	17	33	39	26	27	24	16
CH_4 intensity (g CH_4 / kWh)	0.0005	0.0002	0.0002	0.0002	0.0005	0.0006	0.0004	0.0004	0.0003	0.0002
N_2O intensity (g N_2O / kWh)	0.001	0.0004	0.0	0.0	0.001	0.001	0.001	0.001	0.0	0.0
Generation Intensity (g CO_2 eq / kWh)[f]	**45**	**19**	**20**	**17**	**33**	**40**	**26**	**27**	**24**	**16**
	Losses									
Unallocated Energy (GWh)[o, p]	990	1 300	810	1 300	1 100	670	940	1 100	1 800	1 800
SF_6 Emissions (kt CO_2 eq)[q]	0.94	0.92	0.50	0.54	3.4	1.7	2.2	1.8	3.5	3.1
	Consumption Intensity (g GHG / kWh electricity consumed)									
Consumption Intensity (g CO_2 eq / kWh)[r]	**46**	**20**	**21**	**18**	**34**	**40**	**27**	**28**	**25**	**17**

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 (2005–2021).
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 most of 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, most of the 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 25-10-0021-01 (2005–2021) 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

0.0 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	2010	2015	2017	2018	2019	2020	2021[a]
Greenhouse Gas Emissions[b]										
	kt CO_2 equivalent									
Combustion	**100**	**53**	**4.8**	**1.6**	**14**	**8.6**	**2.8**	**1.1**	**0.3**	**1.9**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	–	–	–	–	–	–	–	–	–	–
Other Fuels[c]	100	53	4.8	1.6	14	8.6	2.8	1.1	0.3	1.9
Other Emissions[d]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[e, f, g]	**100**	**53**	**4.8**	**1.6**	**14**	**8.6**	**2.8**	**1.1**	**0.3**	**1.9**
Electricity Generation[h, i]										
	GWh									
Combustion[j]	**81**	**48**	**6.3**	**3.8**	**9.8**	**5.6**	**3.0**	**0.93**	**0.25**	**1.9**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	–	–	–	–	–	–	–	–	–	–
Other Fuels	81	48	6.3	3.8	9.8	5.6	3.0	0.93	0.25	1.9
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Other Renewables[k]	**–**	**–**	**40**	**460**	**610**	**600**	**640**	**650**	**660**	**600**
Other Generation[l, m]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[f]	**81**	**48**	**46**	**460**	**620**	**610**	**640**	**650**	**660**	**600**
Greenhouse Gas Intensity[n]										
	Generation Intensity (g GHG / kWh electricity generated)									
CO_2 intensity (g CO_2 / kWh)	1 300	1 100	100	3.4	22	14	4.0	2.0	0.0	3.0
CH_4 intensity (g CH_4 / kWh)	0.01	0.01	0.001	0.00004	0.0007	0.0005	0.0003	0.0001	0.0	0.0002
N_2O intensity (g N_2O / kWh)	0.03	0.02	0.002	0.0001	0.0004	0.0002	0.0	0.0	0.0	0.0
Generation Intensity (g CO_2 eq / kWh)[f]	**1 300**	**1 100**	**100**	**3.4**	**23**	**14**	**4.0**	**2.0**	**0.0**	**3.0**
	Losses									
Unallocated Energy (GWh)[o, p]	unk	unk	unk	8.6	20	7.0	20	20	20	20
SF_6 Emissions (kt CO_2 eq)[q]	0.02	0.02	–	–	–	–	–	–	–	–
	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 (2005–2021).
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 most of 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, most of the 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 25-10-0021-01 (2005–2021) 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
0.0 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	2010	2015	2017	2018	2019	2020	2021[a]
Greenhouse Gas Emissions[b]										
	kt CO_2 equivalent									
Combustion	**6 900**	**9 600**	**10 700**	**8 840**	**6 990**	**6 680**	**7 000**	**6 730**	**6 340**	**6 070**
Coal	5 110	8 320	5 520	6 420	4 450	4 740	4 890	4 870	4 300	4 470
Natural Gas	–	–	x	x	690	730	790	780	990	920
Other Fuels[c]	1 790	1 280	x	x	1 860	1 210	1 320	1 080	1 060	680
Other Emissions[d]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[e, f, g]	**6 900**	**9 600**	**10 700**	**8 840**	**6 990**	**6 680**	**7 000**	**6 730**	**6 340**	**6 070**
Electricity Generation[h, i]										
	GWh									
Combustion[j]	**8 440**	**10 500**	**11 100**	**10 300**	**8 220**	**7 680**	**7 890**	**7 410**	**7 410**	**7 230**
Coal	6 020	8 850	6 770	6 790	4 870	4 840	4 980	4 990	4 470	4 660
Natural Gas	–	–	180	2 270	1 300	1 440	1 420	1 360	1 860	1 670
Other Fuels	2 430	1 610	4 110	1 270	2 050	1 400	1 490	1 060	1 080	890
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**1 120**	**890**	**1 040**	**970**	**1 010**	**850**	**940**	**1 030**	**750**	**780**
Other Renewables[k]	**26**	**–**	**110**	**410**	**820**	**1 270**	**1 410**	**1 270**	**1 280**	**1 170**
Other Generation[l, m]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[f]	**9 590**	**11 300**	**12 200**	**11 700**	**10 000**	**9 800**	**10 200**	**9 710**	**9 430**	**9 170**
Greenhouse Gas Intensity[n]										
	Generation Intensity (g GHG / kWh electricity generated)									
CO_2 intensity (g CO_2 / kWh)	720	840	880	750	690	680	680	690	670	660
CH_4 intensity (g CH_4 / kWh)	0.007	0.009	0.02	0.04	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**	**750**	**700**	**680**	**680**	**690**	**670**	**660**
	Losses									
Unallocated Energy (GWh)[o, p]	580	830	770	670	570	510	430	500	170	310
SF_6 Emissions (kt CO_2 eq)[q]	23	23	29	27	33	40	25	6.0	4.0	5.5
	Consumption Intensity (g GHG / kWh electricity consumed)									
Consumption Intensity (g CO_2 eq / kWh)[r]	**770**	**920**	**940**	**800**	**740**	**720**	**720**	**730**	**690**	**690**

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 (2005–2021).
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 most of 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, most of the 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 25-10-0021-01 (2005–2021) 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
0.0 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	2010	2015	2017	2018	2019	2020	2021[a]
Greenhouse Gas Emissions[b]										
	kt CO_2 equivalent									
Combustion	**6 020**	**8 970**	**8 050**	**4 960**	**4 140**	**3 760**	**4 160**	**3 730**	**2 700**	**3 390**
Coal	1 180	3 130	2 910	1 800	1 560	1 850	2 070	1 750	1 140	1 390
Natural Gas	–	–	x	x	1 040	580	660	680	830	920
Other Fuels[c]	4 840	5 840	x	x	1 540	1 320	1 430	1 300	730	1 070
Other Emissions[d]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[e, f, g]	**6 020**	**8 970**	**8 050**	**4 960**	**4 140**	**3 760**	**4 160**	**3 730**	**2 700**	**3 390**
Electricity Generation[h, i]										
	GWh									
Combustion[j]	**7 630**	**11 000**	**12 100**	**6 220**	**5 630**	**4 390**	**4 780**	**4 010**	**3 240**	**3 950**
Coal	1 270	3 820	2 920	2 080	1 650	2 090	2 330	1 820	1 170	1 440
Natural Gas	–	–	1 970	1 840	2 320	1 300	980	1 030	1 370	1 580
Other Fuels	6 360	7 210	7 210	2 300	1 650	1 000	1 480	1 150	700	940
Nuclear	**5 340**	**3 960**	**4 380**	**–**	**4 280**	**5 120**	**4 870**	**5 020**	**4 790**	**4 420**
Hydro	**3 460**	**3 220**	**3 820**	**3 330**	**2 620**	**2 600**	**2 530**	**2 990**	**2 760**	**2 630**
Other Renewables[k]	**–**	**–**	**–**	**390**	**790**	**780**	**820**	**890**	**900**	**760**
Other Generation[l, m]	**–**	**–**	**–**	**680**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[f]	**16 400**	**18 200**	**20 300**	**10 600**	**13 300**	**12 900**	**13 000**	**12 900**	**11 700**	**11 800**
Greenhouse Gas Intensity[n]										
	Generation Intensity (g GHG / kWh electricity generated)									
CO_2 intensity (g CO_2 / kWh)	360	490	390	460	310	290	320	290	230	290
CH_4 intensity (g CH_4 / kWh)	0.004	0.005	0.01	0.03	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	0.008	0.005	0.004	0.005	0.004	0.004	0.005
Generation Intensity (g CO_2 eq / kWh)[f]	**370**	**490**	**400**	**470**	**310**	**290**	**320**	**290**	**230**	**290**
	Losses									
Unallocated Energy (GWh)[o, p]	990	1 300	1 060	390	440	220	450	630	340	360
SF_6 Emissions (kt CO_2 eq)[q]	0.71	0.70	–	0.35	0.83	1.5	1.4	0.7	1.0	1.0
	Consumption Intensity (g GHG / kWh electricity consumed)									
Consumption Intensity (g CO_2 eq / kWh)[r]	**390**	**530**	**420**	**490**	**320**	**300**	**330**	**300**	**240**	**300**

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 (2005–2021).
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 most of 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, most of the 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 25-10-0021-01 (2005–2021) 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
0.0 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	2010	2015	2017	2018	2019	2020	2021[a]
Greenhouse Gas Emissions[b]										
	kt CO_2 equivalent									
Combustion	**1 490**	**570**	**610**	**420**	**210**	**240**	**240**	**240**	**290**	**250**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	110	190	270	220	0.0	0.80	2.0	1.2	0.8	1.4
Other Fuels[c]	1 380	370	350	200	210	240	240	240	290	250
Other Emissions[d]	**–**	**2.5**	**4.6**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[e, f, g]	**1 490**	**570**	**620**	**420**	**210**	**240**	**240**	**240**	**290**	**250**
Electricity Generation[h, i]										
	GWh									
Combustion[j]	**1 980**	**1 150**	**1 390**	**1 510**	**960**	**1 310**	**1 350**	**1 240**	**1 270**	**1 280**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	–	190	210	200	0.0	0.0	0.0	0.0	0.0	0.0
Other Fuels	1 980	960	1 170	1 310	960	1 310	1 350	1 240	1 270	1 280
Nuclear	**4 070**	**4 890**	**4 480**	**3 550**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**112 000**	**153 000**	**155 000**	**161 000**	**175 000**	**182 000**	**180 000**	**180 000**	**176 000**	**183 000**
Other Renewables[k]	**–**	**170**	**420**	**1 550**	**6 420**	**9 530**	**10 200**	**10 700**	**10 800**	**10 500**
Other Generation[l, m]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[f]	**118 000**	**160 000**	**161 000**	**168 000**	**182 000**	**193 000**	**191 000**	**191 000**	**188 000**	**195 000**
Greenhouse Gas Intensity[n]										
	Generation Intensity (g GHG / kWh electricity generated)									
CO_2 intensity (g CO_2 / kWh)	13	3.5	3.7	2.5	1.1	1.2	1.3	1.2	1.5	1.3
CH_4 intensity (g CH_4 / kWh)	0.0004	0.0005	0.0010	0.0004	0.0	0.0	0.0	0.0002	0.0	0.0
N_2O intensity (g N_2O / kWh)	0.0003	0.0002	0.0004	0.0001	0.0	0.0	0.0	0.0001	0.0	0.0
Generation Intensity (g CO_2 eq / kWh)[f]	**13**	**3.6**	**3.8**	**2.5**	**1.1**	**1.2**	**1.3**	**1.2**	**1.5**	**1.3**
	Losses									
Unallocated Energy (GWh)[o, p]	7 280	12 500	9 060	12 800	2 570	11 900	7 630	2 110	1 950	2 110
SF_6 Emissions (kt CO_2 eq)[q]	37	36	30	31	74	22	58	38	69	69
	Consumption Intensity (g GHG / kWh electricity consumed)									
Consumption Intensity (g CO_2 eq / kWh)[r]	**14**	**4.1**	**4.3**	**2.9**	**1.6**	**1.4**	**1.6**	**1.5**	**1.9**	**1.7**

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 (2005–2021).
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 most of 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, most of the 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 25-10-0021-01 (2005–2021) 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
0.0 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	2010	2015	2017	2018	2019	2020	2021[a]
Greenhouse Gas Emissions[b]										
	kt CO_2 equivalent									
Combustion	**25 900**	**44 200**	**35 300**	**20 200**	**6 340**	**2 600**	**4 160**	**3 970**	**3 710**	**3 910**
Coal	24 700	38 800	29 000	12 700	–	–	–	–	–	–
Natural Gas	8.0	4 910	6 130	7 340	6 260	2 450	4 040	3 910	3 650	3 830
Other Fuels[c]	1 160	480	180	140	81	140	120	57	63	83
Other Emissions[d]	**–**	**0.77**	**1.4**	**0.23**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[e, f, g]	**25 900**	**44 200**	**35 300**	**20 200**	**6 340**	**2 600**	**4 160**	**3 970**	**3 710**	**3 910**
Electricity Generation[h, i]										
	GWh									
Combustion[j]	**29 200**	**52 200**	**40 900**	**27 200**	**15 900**	**7 000**	**10 600**	**10 100**	**9 300**	**9 800**
Coal	27 800	40 800	29 400	12 300	–	–	–	–	–	–
Natural Gas	3.2	10 200	10 000	14 100	15 300	6 090	9 780	9 370	8 600	9 100
Other Fuels	1 430	1 140	1 440	860	640	890	820	740	720	730
Nuclear	**59 400**	**59 800**	**78 000**	**82 000**	**91 800**	**90 400**	**90 200**	**90 500**	**87 800**	**83 000**
Hydro	**38 700**	**36 600**	**34 600**	**31 800**	**34 800**	**39 500**	**37 800**	**37 800**	**38 500**	**34 700**
Other Renewables[k]	**–**	**1.0**	**26**	**3 190**	**12 200**	**11 800**	**13 600**	**12 700**	**13 100**	**12 600**
Other Generation[l, m]	**–**	**–**	**–**	**3 630**	**–**	**–**	**6.0**	**11**	**21**	**19**
Overall Total[f]	**127 000**	**149 000**	**153 000**	**148 000**	**155 000**	**149 000**	**152 000**	**151 000**	**149 000**	**140 000**
Greenhouse Gas Intensity[n]										
	Generation Intensity (g GHG / kWh electricity generated)									
CO_2 intensity (g CO_2 / kWh)	200	300	230	140	40	17	27	26	25	28
CH_4 intensity (g CH_4 / kWh)	0.002	0.011	0.013	0.014	0.01	0.004	0.007	0.007	0.006	0.007
N_2O intensity (g N_2O / kWh)	0.003	0.005	0.004	0.003	0.001	0.001	0.001	0.001	0.001	0.001
Generation Intensity (g CO_2 eq / kWh)[f]	**200**	**300**	**230**	**140**	**41**	**17**	**27**	**26**	**25**	**28**
	Losses									
Unallocated Energy (GWh)[o, p]	10 300	12 000	12 400	15 500	5 460	12 700	11 800	11 700	11 600	6 500
SF_6 Emissions (kt CO_2 eq)[q]	76	75	50	59	56	56	57	50	68	54
	Consumption Intensity (g GHG / kWh electricity consumed)									
Consumption Intensity (g CO_2 eq / kWh)[r]	**220**	**320**	**250**	**150**	**43**	**19**	**30**	**29**	**28**	**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 (2005–2021).
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 most of 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, most of the 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 25-10-0021-01 (2005–2021) 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
0.0 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	2010	2015	2017	2018	2019	2020	2021[a]
Greenhouse Gas Emissions[b]										
	kt CO_2 equivalent									
Combustion	**520**	**1 070**	**350**	**78**	**100**	**54**	**25**	**24**	**28**	**43**
Coal	x	x	x	x	71	30	5.6	–	–	–
Natural Gas	x	x	x	x	32	12	7.2	13	16	29
Other Fuels[c]	49	12	15	11	–	13	12	12	13	14
Other Emissions[d]	**–**	**4.8**	**8.8**	**12**	**21**	**16**	**16**	**16**	**13**	**14**
Overall Total[e, f, g]	**520**	**1 070**	**360**	**90**	**120**	**70**	**41**	**40**	**41**	**57**
Electricity Generation[h, i]										
	GWh									
Combustion[j]	**400**	**880**	**450**	**84**	**110**	**62**	**30**	**32**	**35**	**60**
Coal	380	870	420	44	63	29	5.3	–	–	–
Natural Gas	0.90	–	11	23	29	17	9.7	17	19	43
Other Fuels	22	12	15	17	14	15	15	15	16	17
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**19 800**	**31 500**	**36 400**	**33 300**	**34 800**	**36 000**	**30 700**	**32 900**	**36 200**	**28 000**
Other Renewables[k]	**–**	**–**	**53**	**340**	**900**	**930**	**870**	**880**	**960**	**960**
Other Generation[l, m]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[f]	**20 200**	**32 400**	**36 900**	**33 700**	**35 800**	**37 000**	**31 600**	**33 900**	**37 200**	**29 000**
Greenhouse Gas Intensity[n]										
	Generation Intensity (g GHG / kWh electricity generated)									
CO_2 intensity (g CO_2 / kWh)	26	33	9.6	2.7	3.4	1.9	1.3	1.2	1.1	1.9
CH_4 intensity (g CH_4 / kWh)	0.0004	0.0004	0.0002	0.0002	0.0003	0.0001	0.0001	0.0001	0.0001	0.0003
N_2O intensity (g N_2O / kWh)	0.001	0.001	0.0002	0.0	0.0001	0.0	0.0	0.0	0.0	0.0
Generation Intensity (g CO_2 eq / kWh)[f]	**26**	**33**	**9.7**	**2.7**	**3.5**	**1.9**	**1.3**	**1.2**	**1.1**	**1.9**
	Losses									
Unallocated Energy (GWh)[o, p]	2 100	3 750	1 860	4 570	3 680	450	380	190	160	300
SF_6 Emissions (kt CO_2 eq)[q]	4.3	4.2	4.0	4.3	1.0	1.1	2.4	1.8	1.4	2.1
	Consumption Intensity (g GHG / kWh electricity consumed)									
Consumption Intensity (g CO_2 eq / kWh)[r]	**29**	**38**	**10**	**3.2**	**3.9**	**1.9**	**1.4**	**1.2**	**1.2**	**2.0**

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 (2005–2021).
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 most of 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, most of the 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 25-10-0021-01 (2005–2021) 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
0.0 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	2010	2015	2017	2018	2019	2020	2021[a]
Greenhouse Gas Emissions[b]										
	kt CO_2 equivalent									
Combustion	**11 100**	**14 500**	**15 300**	**16 200**	**16 200**	**16 700**	**16 300**	**16 000**	**13 900**	**16 500**
Coal	x	x	x	x	12 600	12 500	11 700	11 400	8 700	11 100
Natural Gas	x	x	x	x	3 620	4 180	4 620	4 600	5 170	5 390
Other Fuels[c]	6.5	10	4.3	0.27	9.1	9.4	9.4	5.8	4.7	5.5
Other Emissions[d]	**–**	**10**	**18**	**30**	**39**	**41**	**41**	**41**	**35**	**37**
Overall Total[e, f, g]	**11 100**	**14 500**	**15 300**	**16 200**	**16 200**	**16 700**	**16 400**	**16 000**	**13 900**	**16 500**
Electricity Generation[h, i]										
	GWh									
Combustion[j]	**9 660**	**14 100**	**14 800**	**15 100**	**19 100**	**20 300**	**19 400**	**19 300**	**18 800**	**20 500**
Coal	9 340	11 400	12 200	12 100	12 100	11 700	10 300	10 000	7 900	9 700
Natural Gas	310	2 660	2 610	3 040	6 990	8 660	9 020	9 270	10 900	10 800
Other Fuels	8.8	13	12	18	0.4	0.4	0.42	0.20	0.28	0.17
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**4 210**	**3 050**	**4 570**	**3 870**	**3 430**	**3 850**	**3 590**	**3 670**	**4 420**	**2 980**
Other Renewables[k]	**–**	**–**	**92**	**510**	**620**	**740**	**690**	**710**	**740**	**780**
Other Generation[l, m]	**–**	**–**	**–**	**630**	**–**	**260**	**210**	**220**	**180**	**280**
Overall Total[f]	**13 900**	**17 100**	**19 500**	**20 100**	**23 100**	**25 200**	**23 900**	**23 900**	**24 100**	**24 500**
Greenhouse Gas Intensity[n]										
	Generation Intensity (g GHG / kWh electricity generated)									
CO_2 intensity (g CO_2 / kWh)	800	840	780	800	700	660	680	670	570	670
CH_4 intensity (g CH_4 / kWh)	0.02	0.03	0.03	0.04	0.05	0.05	0.06	0.06	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	0.01	0.02
Generation Intensity (g CO_2 eq / kWh)[f]	**800**	**850**	**790**	**810**	**700**	**660**	**690**	**670**	**580**	**670**
	Losses									
Unallocated Energy (GWh)[o, p]	1 330	1 740	1 360	1 300	1 360	1 990	2 380	1 440	1 720	1 820
SF_6 Emissions (kt CO_2 eq)[q]	1.8	1.7	1.3	1.3	0.73	0.80	0.27	0.49	0.46	0.91
	Consumption Intensity (g GHG / kWh electricity consumed)									
Consumption Intensity (g CO_2 eq / kWh)[r]	**890**	**940**	**840**	**860**	**750**	**720**	**760**	**710**	**620**	**730**

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 (2005–2021).
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 most of 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, most of the 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 25-10-0021-01 (2005–2021) 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
0.0 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	2010	2015	2017	2018	2019	2020	2021[a]
Greenhouse Gas Emissions[b]										
	kt CO_2 equivalent									
Combustion	**39 800**	**50 200**	**52 000**	**49 000**	**51 500**	**46 800**	**36 700**	**36 400**	**32 500**	**28 400**
Coal	38 000	44 200	46 800	43 400	44 100	38 600	26 000	24 800	20 500	14 500
Natural Gas	1 700	5 730	5 130	5 580	7 420	8 140	10 600	11 500	12 000	13 900
Other Fuels[c]	11	300	68	19	18	0.0	0.0	21	10	8.6
Other Emissions[d]	**–**	**5.7**	**10**	**5.6**	**19**	**16**	**15**	**16**	**13**	**14**
Overall Total[e, f, g]	**39 800**	**50 200**	**52 000**	**49 000**	**51 500**	**46 800**	**36 700**	**36 400**	**32 500**	**28 400**
Electricity Generation[h, i]										
	GWh									
Combustion[j]	**39 900**	**51 300**	**54 200**	**51 700**	**54 100**	**54 800**	**51 500**	**51 600**	**47 300**	**46 800**
Coal	37 300	40 700	42 200	41 000	39 100	37 000	29 400	27 700	22 400	16 300
Natural Gas	2 510	10 200	11 600	10 200	14 500	17 300	21 500	23 200	24 300	29 900
Other Fuels	22	440	420	500	520	590	660	670	640	620
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**2 060**	**1 760**	**2 240**	**1 480**	**1 980**	**2 060**	**1 990**	**2 040**	**2 150**	**2 160**
Other Renewables[k]	**–**	**89**	**840**	**1 630**	**4 090**	**4 630**	**4 140**	**3 970**	**5 960**	**6 190**
Other Generation[l, m]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[f]	**41 900**	**53 200**	**57 300**	**56 400**	**60 400**	**61 700**	**57 800**	**57 700**	**55 500**	**55 200**
Greenhouse Gas Intensity[n]										
	Generation Intensity (g GHG / kWh electricity generated)									
CO_2 intensity (g CO_2 / kWh)	940	940	900	860	850	750	630	630	580	510
CH_4 intensity (g CH_4 / kWh)	0.02	0.04	0.03	0.03	0.04	0.04	0.05	0.05	0.06	0.07
N_2O intensity (g N_2O / kWh)	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01
Generation Intensity (g CO_2 eq / kWh)[f]	**950**	**940**	**910**	**870**	**850**	**760**	**630**	**630**	**590**	**510**
	Losses									
Unallocated Energy (GWh)[o, p]	3 380	4 100	4 870	9 760	2 340	3 420	3 380	3 380	3 250	2 930
SF_6 Emissions (kt CO_2 eq)[q]	1.6	1.6	0.43	1.0	3.2	1.4	2.4	3.9	2.8	2.8
	Consumption Intensity (g GHG / kWh electricity consumed)									
Consumption Intensity (g CO_2 eq / kWh)[r]	**1 030**	**1 020**	**990**	**1 050**	**890**	**800**	**670**	**670**	**620**	**540**

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 (2005–2021).
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 most of 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, most of the 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 25-10-0021-01 (2005–2021) 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
0.0 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	2010	2015	2017	2018	2019	2020	2021[a]
Greenhouse Gas Emissions[b]										
	kt CO_2 equivalent									
Combustion	**800**	**2 090**	**1 330**	**1 540**	**770**	**880**	**1 010**	**1 030**	**720**	**940**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	x	x	x	x	725	831	952	957	661	887
Other Fuels[c]	x	x	x	x	49	51	59	73	58	56
Other Emissions[d]	**–**	**2.4**	**4.6**	**6.0**	**7.2**	**6.5**	**6.9**	**7.4**	**6.7**	**6.9**
Overall Total[e, f, g]	**800**	**2 100**	**1 330**	**1 550**	**780**	**890**	**1 020**	**1 040**	**730**	**950**
Electricity Generation[h, i]										
	GWh									
Combustion[j]	**1 390**	**3 930**	**3 820**	**3 050**	**1 610**	**1 410**	**1 580**	**2 280**	**1 680**	**2 280**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	1 310	3 350	3 140	1 850	790	460	750	1 420	680	1 210
Other Fuels	79	580	690	1 210	820	950	830	870	1 000	1 070
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**46 400**	**50 800**	**50 300**	**45 000**	**52 400**	**57 100**	**52 900**	**48 000**	**55 000**	**64 000**
Other Renewables[k]	**–**	**–**	**–**	**120**	**870**	**1 590**	**1 690**	**1 650**	**1 760**	**1 800**
Other Generation[l, m]	**–**	**–**	**–**	**3 630**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[f]	**47 800**	**54 700**	**54 100**	**51 800**	**54 800**	**60 100**	**56 200**	**52 000**	**58 400**	**68 100**
Greenhouse Gas Intensity[n]										
	Generation Intensity (g GHG / kWh electricity generated)									
CO_2 intensity (g CO_2 / kWh)	17	37	24	29	14	14	17	19	12	13
CH_4 intensity (g CH_4 / kWh)	0.004	0.018	0.010	0.026	0.017	0.017	0.018	0.021	0.016	0.016
N_2O intensity (g N_2O / kWh)	0.0004	0.001	0.002	0.002	0.001	0.001	0.001	0.001	0.001	0.001
Generation Intensity (g CO_2 eq / kWh)[f]	**17**	**38**	**25**	**30**	**14**	**15**	**18**	**20**	**12**	**14**
	Losses									
Unallocated Energy (GWh)[o, p]	2 210	2 300	2 120	1 940	2 070	2 270	2 050	1 490	2 240	2 380
SF_6 Emissions (kt CO_2 eq)[q]	57	56	48	59	20	19	12	22	3.8	12
	Consumption Intensity (g GHG / kWh electricity consumed)									
Consumption Intensity (g CO_2 eq / kWh)[r]	**19**	**41**	**27**	**32**	**15**	**16**	**19**	**21**	**13**	**15**

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 (2005–2021).
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 most of 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, most of the 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 25-10-0021-01 (2005–2021) 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
0.0 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	2010	2015	2017	2018	2019	2020	2021[a]
Greenhouse Gas Emissions[b]										
	kt CO_2 equivalent									
Combustion	**90**	**21**	**22**	**18**	**18**	**24**	**33**	**48**	**54**	**42**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	–	–	–	–	0.79	3.8	12	30	22	10
Other Fuels[c]	90	21	22	18	17	20	21	18	32	32
Other Emissions[d]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[e, f, g]	**90**	**21**	**22**	**18**	**18**	**24**	**33**	**48**	**54**	**42**
Electricity Generation[h, i]										
	GWh									
Combustion[j]	**62**	**37**	**22**	**25**	**26**	**37**	**59**	**92**	**91**	**65**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	–	–	–	–	1.3	9.9	30	66	48	22
Other Fuels	62	37	22	25	24	27	29	26	44	44
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**420**	**260**	**320**	**380**	**420**	**450**	**420**	**380**	**440**	**510**
Other Renewables[k]	**–**	**0.39**	**0.89**	**0.09**	**0.65**	**0.03**	**0.0**	**0.0**	**0.0**	**0.0**
Other Generation[l, m]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[f]	**480**	**300**	**340**	**410**	**450**	**480**	**480**	**470**	**530**	**570**
Greenhouse Gas Intensity[n]										
	Generation Intensity (g GHG / kWh electricity generated)									
CO_2 intensity (g CO_2 / kWh)	190	71	64	44	41	49	69	100	100	70
CH_4 intensity (g CH_4 / kWh)	0.005	0.002	0.002	0.001	0.002	0.003	0.007	0.017	0.012	0.006
N_2O intensity (g N_2O / kWh)	0.002	0.001	0.001	0.0	0.0	0.001	0.001	0.002	0.001	0.001
Generation Intensity (g CO_2 eq / kWh)[f]	**190**	**71**	**64**	**44**	**41**	**49**	**69**	**100**	**100**	**70**
	Losses									
Unallocated Energy (GWh)[o, p]	47	24	45	33	54	55	56	45	42	45
SF_6 Emissions (kt CO_2 eq)[q]	–	–	–	–	–	0.5	0.7	0.9	0.9	2.1
	Consumption Intensity (g GHG / kWh electricity consumed)									
Consumption Intensity (g CO_2 eq / kWh)[r]	**210**	**78**	**74**	**48**	**46**	**56**	**80**	**120**	**110**	**80**

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 (2005–2021).
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 most of 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, most of the 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 25-10-0021-01 (2005–2021) 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

0.0 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	2010	2015	2017	2018	2019	2020	2021[a]
Greenhouse Gas Emissions[b]										
	kt CO_2 equivalent									
Combustion	**160**	**100**	**91**	**65**	**120**	**62**	**67**	**60**	**62**	**58**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	x	x	x	x	6.3	7.9	4.0	3.0	4.0	5.4
Other Fuels[c]	x	x	x	x	110	54	63	57	58	53
Other Emissions[d]	**0.0**	**1.5**	**4.6**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[e, f, g]	**160**	**110**	**96**	**65**	**120**	**62**	**67**	**60**	**62**	**58**
Electricity Generation[h, i]										
	GWh									
Combustion[j]	**230**	**200**	**78**	**85**	**160**	**90**	**90**	**82**	**86**	**78**
Coal	–	–	–	–	–	–	–	–	–	–
Natural Gas	–	16	23	27	11	16	6.6	7.6	11	15
Other Fuels	230	180	54	58	150	70	80	74	75	64
Nuclear	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**230**	**250**	**260**	**250**	**160**	**250**	**250**	**270**	**260**	**270**
Other Renewables[k]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Other Generation[l, m]	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[f]	**450**	**440**	**340**	**340**	**320**	**340**	**340**	**350**	**350**	**340**
Greenhouse Gas Intensity[n]										
	Generation Intensity (g GHG / kWh electricity generated)									
CO_2 intensity (g CO_2 / kWh)	340	240	280	190	360	180	200	170	180	170
CH_4 intensity (g CH_4 / kWh)	0.01	0.01	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01
N_2O intensity (g N_2O / kWh)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Generation Intensity (g CO_2 eq / kWh)[f]	**350**	**240**	**280**	**190**	**360**	**180**	**200**	**170**	**180**	**170**
	Losses									
Unallocated Energy (GWh)[o, p]	21	21	19	21	8.6	16	16	17	5.5	8.5
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**	**200**	**370**	**190**	**210**	**180**	**180**	**170**

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 (2005–2021).
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 most of 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, most of the 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 25-10-0021-01 (2005–2021) 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
0.0 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	2010	2015	2017	2018	2019	2020	2021[a]
Greenhouse Gas Emissions[b]										
	kt CO_2 equivalent									
Combustion	**	**	**x**	**x**	**110**	**140**	**160**	**160**	**150**	**160**
Coal	**	**	–	–	–	–	–	–	–	–
Natural Gas	**	**	x	x	–	–	–	–	–	–
Other Fuels[c]	**	**	x	x	110	140	160	160	150	160
Other Emissions[d]	**	**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[e, f, g]	**	**	**x**	**x**	**110**	**140**	**160**	**160**	**150**	**160**
Electricity Generation[h, i]										
	GWh									
Combustion[j]	**	**	**140**	**160**	**160**	**190**	**190**	**190**	**200**	**190**
Coal	**	**	–	–	–	–	–	–	–	–
Natural Gas	**	**	–	–	–	–	–	–	–	–
Other Fuels	**	**	140	160	160	190	190	190	200	190
Nuclear	**	**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Hydro	**	**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Other Renewables[k]	**	**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Other Generation[l, m]	**	**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Overall Total[f]	**	**	**140**	**160**	**160**	**190**	**190**	**190**	**200**	**190**
Greenhouse Gas Intensity[n]										
	Generation Intensity (g GHG / kWh electricity generated)									
CO_2 intensity (g CO_2 / kWh)	**	**	x	x	720	720	840	840	760	790
CH_4 intensity (g CH_4 / kWh)	**	**	x	x	0.0	0.0	0.0	0.0	0.0	0.0
N_2O intensity (g N_2O / kWh)	**	**	x	x	0.0	0.0	0.0	0.0	0.0	0.0
Generation Intensity (g CO_2 eq / kWh)[f]	**	**	**x**	**x**	**720**	**720**	**840**	**850**	**770**	**800**
	Losses									
Unallocated Energy (GWh)[o, p]	**	**	6.7	3.4	5.6	8.9	10	5.2	8.6	9.0
SF_6 Emissions (kt CO_2 eq)[q]	**	**	–	–	–	–	–	–	–	–
	Consumption Intensity (g GHG / kWh electricity consumed)									
Consumption Intensity (g CO_2 eq / kWh)[r]	**	**	**880**	**760**	**750**	**760**	**890**	**870**	**800**	**840**

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 (2005–2021).
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 most of 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, most of the 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 25-10-0021-01 (2005–2021) 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
0.0 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.

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