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National Inventory Report

1990–2011

GREENHOUSE GAS SOURCES
AND SINKS IN CANADA

The Canadian Government's Submission
to the UN Framework Convention on Climate Change

Part 3



Canada 

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Aussi disponible en français

List of Acronyms, Abbreviations and Units

AAC	Aluminum Association of Canada
AAFC	Agriculture and Agri-Food Canada
AC	air conditioning
AGEM	Aviation Greenhouse Gas Emission Model
AIA	Association de l'Industrie d'Aluminium du Québec
Al	aluminium
Al ₂ O ₃	alumina
API	American Petroleum Institute
ASH	manure ash content
Asha	Ash content in baked anodes
Ashp	Ash content in pitch
ATV	all-terrain vehicle
AWMS	animal waste management system
BADA	Base of Aircraft Data
B ₀	maximum methane production potential
BC	Average bunder content in paste
BOF	basic oxygen furnace
BOD ₅	five-day biochemical oxygen demand
BSM	Emissions of benzene-soluble matter
C	carbon
CAC	Criteria Air Contaminant
CaC ₂	calcium carbide
CaCO ₃	calcium carbonate; limestone
CaMg(CO ₃) ₂	dolomite (also CaCO ₃ ·MgCO ₃)
CanFI	Canada's National Forest Inventory
CANSIM	Statistics Canada's key socioeconomic database
CanSIS	Canadian Soil Information System
CanWEA	Canadian Wind Energy Association
CaO	lime; quicklime; calcined limestone
CAPP	Canadian Association of Petroleum Producers
CBM	Carbon Budget Model
CBM-CFS3	Carbon Budget Model for the Canadian Forest Sector, version 3
CC	baked anode consumption per tonne of aluminum
CEA	Canadian Electricity Association
CEPA 1999	Canadian Environmental Protection Act, 1999
CF ₄	carbon tetrafluoride
C ₂ F ₆	carbon hexafluoride
CFC	chlorofluorocarbon
CFS	Canadian Forest Service
CGA	Canadian Gas Association
CH ₃ OH	methanol
CH ₄	methane
C ₂ H ₆	ethane
C ₃ H ₈	propane
C ₄ H ₁₀	butane
C ₂ H ₄	Ethylene
C ₆ H ₆	Benzene
CHCL ₃	Chroloform

CIEEDAC	Canadian Industrial Energy End-Use Data Analysis Centre
CKD	cement kiln dust
CO	carbon monoxide
CO ₂	carbon dioxide
CO ₂ eq	carbon dioxide equivalent
COD	chemical oxygen demand
CORINAIR	Core Inventory of Air Emissions in Europe
CPPI	Canadian Petroleum Products Institute
CRF	Common Reporting Format
CSPA	Canadian Steel Producers Association
CTS	crop and tillage system
CVS	Canadian Vehicle Survey
DE	digestible energy
DM	dry matter
DMI	dry matter intake
DOC	degradable organic carbon
DOCF	degradable organic carbon dissimilated
DOM	dead organic matter
EAF	electric arc furnace
EC	Environment Canada
EDC	ethylene dichloride
EF	emission factor
EF _{BASE}	basic emission factor
EMEP	European Monitoring and Evaluation Programme
EPA	Environmental Protection Agency (United States)
EPGTD	Electric Power Generation, Transmission and Distribution
eq	equivalent
ERCB	Energy Resources Conservation Board
ERT	Expert Review Team
EU	European Union
FAA	Federal Aviation Administration (United States)
FAACS	Feasibility Assessment of Afforestation for Carbon Sequestration
FCR	fuel consumption ratio
FGD	flue gas desulphurization
FLCL	forest land converted to cropland
FLWL	forest land converted to wetland
FOI	Swedish Defence Research Agency
FTILL	tillage ratio factor
GCD	great-circle distance
GCV	gross calorific value
GDP	gross domestic product
GE	gross energy
GHG	greenhouse gas
GHGRP	Greenhouse gas reporting program
GIS	geographic information system
Gt	gigatonne
GRI	Gas Research Institute
GTIS	Global Trade Information Services
GVWR	gross vehicle weight rating
GWP	global warming potential
H ₂	hydrogen

H ₂ O	water
H ₂ S	Hydrogen Sulphide
HCFC	hydrochlorofluorocarbon
HCl	hydrochloric acid
HDD	heating degree-day
HDDV	heavy-duty diesel vehicle
HDGV	heavy-duty gasoline vehicle
HE	harvest emissions
HF	Hydrogen fluoride
HFC	hydrofluorocarbon
HHV	higher heating value
HNO ₃	nitric acid
HQ	Hydro Quebec
HRAI	Heating, Refrigeration and Air Conditioning Institute of Canada
HSS	horizontal stud Söderberg
HWP	harvested wood product
HWP-C	carbon stored in harvested wood products
IAI	International Aluminium Institute
ICAO	International Civil Aviation Organization
IE	included elsewhere
IEA	International Energy Agency
IESO	Independent Electricity System Operator
I/M	inspection and maintenance
Impa	fluorine and other impurities
IPCC	Intergovernmental Panel on Climate Change
IT	intensive tillage
KAR	kilometre accumulation rate
K ₂ CO ₃	potassium carbonate
kg	kilogram
kha	kilohectare
kt	kilotonne
kWh	kilowatt-hour
L ₀	methane generation potential
LDDT	light-duty diesel truck
LDDV	light-duty diesel vehicle
LDGT	light-duty gasoline truck
LDGV	light-duty gasoline vehicle
LFG	landfill gas
LHV	lower heating value
LMC	land management change
LPG	liquefied petroleum gas
LTO	landing and takeoff
LULUCF	Land Use, Land-Use Change and Forestry
m	metre
MARS	Monitoring, Accounting and Reporting System
MC	motorcycle
MCF	methane conversion factor (Agriculture)
MCF	methane correction factor (Waste)
Mg	magnesium; also megagram
MgCO ₃	magnesite; magnesium carbonate
MGEM	Mobile Greenhouse Gas Emission Model

MgO	magnesia; dolomitic lime
Mha	megahectare, equivalent to a million hectares
MMIC	Motorcycle & Moped Industry Council
MODTF	Modeling and Database Task Force
mol	mole
MP	Total aluminum production
MS	manure system distribution factor
MSW	municipal solid waste
Mt	megatonne
MTOW	maximum takeoff weight
MW	megawatt
N	nitrogen
N ₂	nitrogen gas
Na ₂ CO ₃	sodium carbonate; soda ash
Na ₃ AlF ₆	cryolite
NA	not applicable
N/A	not available
NAICS	North American Industry Classification System
NCASI	National Council for Air and Stream Improvement
NCV	net calorific value
NE	not estimated
NEB	National Energy Board
NGL	natural gas liquid
NH ₃	ammonia
NH ₄ ⁺	ammonium
NH ₄ NO ₃	ammonium nitrate
NIR	National Inventory Report
NM VOC	non-methane volatile organic compound
N ₂ O	nitrous oxide
NO	nitric oxide; also used for not occurring
NO ₂	nitrogen dioxide
NO ₃	nitrate
NO _x	nitrogen oxides
NOC	Nitrous Oxide of Canada
NPRI	National Pollutant Release Inventory
NRCan	Natural Resources Canada
NSCR	non-selective catalytic reduction
NT	no tillage
O ₂	oxygen
ODS	ozone-depleting substance
OECD	Organisation for Economic Co-operation and Development
OEM	original equipment manufacturer
OS/HOU	oil sands and heavy oil upgrading
PC	Paste Consumption
PFC	perfluorocarbon
PJ	petajoule
POP	persistent organic pollutant
P/PE	precipitation/potential evapotranspiration
PTRC	Petroleum Technology Research Centre
QA	quality assurance
QC	quality control

RA	reference approach
RESO	Report on Energy Supply and Demand in Canada
RPP	refined petroleum product
RT	reduced tillage
RTI	Research Triangle Institute
SA	sectoral approach
Sa	Sulphur content in baked anodes
SAGE	System for assessing Aviation's Global Emissions
SBR	styrene-butadiene
Sc	Sulphur content in calcinated coke
SCR	selective catalytic reduction
SF ₆	sulphur hexafluoride
SIC	Standard Industrial Classification
SiC	silicon carbide
SLC	Soil Landscapes of Canada
SMR	steam methane reforming
SO ₂	sulphur dioxide
SO _x	sulphur oxides
SOC	soil organic carbon
Sp	Sulphur content in pitch
SUV	sport utility vehicle
t	tonne
TWh	terrawatt-hour
UNFCCC	United Nations Framework Convention on Climate Change
UPCIS	Use Patterns and Controls Implementation Section
UOG	upstream oil and gas
VCM	vinyl chloride monomer
VKT	vehicle kilometres travelled
VSS	vertical stud S�derberg
VS	volatile solids
WMO	World Meteorological Organization

Table of Contents

List of Acronyms, Abbreviations and Units	3
Annex 11 Provincial/Territorial Greenhouse Gas Emission Tables, 1990–2011	11
Annex 12 Canada’s Greenhouse Gas Emission Tables, 1990–2011	40
Annex 13 Electricity in Canada: Summary and Intensity Tables	65
References	79

List of Tables

Table A11–1	GHG Category Description	12
Table A11–2	1990-2011 GHG Emission Summary for Newfoundland and Labrador	13
Table A11–3	2011 GHG Emission Summary for Newfoundland and Labrador	14
Table A11–4	1990-2011 GHG Emission Summary for Prince Edward Island	15
Table A11–5	2011 GHG Emission Summary for Prince Edward Island	16
Table A11–6	1990-2011 GHG Emission Summary for Nova Scotia	17
Table A11–7	2011 GHG Emission Summary for Nova Scotia	18
Table A11–8	1990-2011 GHG Emission Summary for New Brunswick	19
Table A11–9	2011 GHG Emission Summary for New Brunswick	20
Table A11–10	1990-2011 GHG Emission Summary for Quebec	21
Table A11–11	2011 GHG Emission Summary for Quebec	22
Table A11–12	1990-2011 GHG Emission Summary for Ontario	23
Table A11–13	2011 GHG Emission Summary for Ontario	24
Table A11–14	1990-2011 GHG Emission Summary for Manitoba	25
Table A11–15	2011 GHG Emission Summary for Manitoba	26
Table A11–16	1990-2011 GHG Emission Summary for Saskatchewan	27
Table A11–17	2011 GHG Emission Summary for Saskatchewan	28
Table A11–18	1990-2011 GHG Emission Summary for Alberta	29
Table A11–19	2011 GHG Emission Summary for Alberta	30
Table A11–20	1990-2011 GHG Emission Summary for British Columbia	31
Table A11–21	2011 GHG Emission Summary for British Columbia	32
Table A11–22	1990-2011 GHG Emission Summary for Yukon	33
Table A11–23	2011 GHG Emission Summary for Yukon	34
Table A11–24	1999-2011 GHG Emission Summary for Northwest Territories	35
Table A11–25	2011 GHG Emission Summary for Northwest Territories	36
Table A11–26	1999-2011 GHG Emission Summary for Nunavut	37
Table A11–27	2011 GHG Emission Summary for Nunavut	38
Table A11–28	1990-1998 GHG Emission Summary for Northwest Territories (including Nunavut)	39
Table A12–1	GHG Source/Sink Category Description	41
Table A12–2	Canada's 1990–2011 GHG Emissions by Sector	42
Table A12–3	2011 GHG Emission Summary for Canada	43
Table A12–4	2010 GHG Emission Summary for Canada	44
Table A12–5	2009 GHG Emission Summary for Canada	45
Table A12–6	2008 GHG Emission Summary for Canada	46
Table A12–7	2007 GHG Emission Summary for Canada	47
Table A12–8	2006 GHG Emission Summary for Canada	48
Table A12–9	2005 GHG Emission Summary for Canada	49
Table A12–10	2004 GHG Emission Summary for Canada	50
Table A12–11	2003 GHG Emission Summary for Canada	51
Table A12–12	2002 GHG Emission Summary for Canada	52
Table A12–13	2001 GHG Emission Summary for Canada	53
Table A12–14	2000 GHG Emission Summary for Canada	54
Table A12–15	1999 GHG Emission Summary for Canada	55
Table A12–16	1998 GHG Emission Summary for Canada	56

Table A12–17	1997 GHG Emission Summary for Canada	57
Table A12–18	1996 GHG Emission Summary for Canada	58
Table A12–19	1995 GHG Emission Summary for Canada	59
Table A12–20	1994 GHG Emission Summary for Canada	60
Table A12–21	1993 GHG Emission Summary for Canada	61
Table A12–22	1992 GHG Emission Summary for Canada	62
Table A12–23	1991 GHG Emission Summary for Canada	63
Table A12–24	1990 GHG Emission Summary for Canada	64
Table A13–1	Electricity Generation and GHG Emission Details for Canada	66
Table A13–2	Electricity Generation and GHG Emission Details for Newfoundland and Labrador	67
Table A13–3	Electricity Generation and GHG Emission Details for Prince Edward Island	68
Table A13–4	Electricity Generation and GHG Emission Details for Nova Scotia	69
Table A13–5	Electricity Generation and GHG Emission Details for New Brunswick	70
Table A13–6	Electricity Generation and GHG Emission Details for Quebec	71
Table A13–7	Electricity Generation and GHG Emission Details for Ontario	72
Table A13–8	Electricity Generation and GHG Emission Details for Manitoba	73
Table A13–9	Electricity Generation and GHG Emission Details for Saskatchewan	74
Table A13–10	Electricity Generation and GHG Emission Details for Alberta	75
Table A13–11	Electricity Generation and GHG Emission Details for British Columbia	76
Table A13–12	Electricity Generation and GHG Emission Details for Yukon	77
Table A13–13	Electricity Generation and GHG Emission Details for the Northwest Territories and Nunavut ¹	78

Annex 11

Provincial/Territorial Greenhouse Gas Emission Tables, 1990–2011

Summary tables illustrating GHG emissions (for GHG categories, see Table A11–1) by province/territory, sector, and year are included in this annex (Table A11–1 to Table A11–28). To account for the creation of Nunavut in 1999, a time series from 1999–2011 is provided for both Nunavut and the Northwest Territories (Table A11–24 and Table A11–26) and the years 1990–1998 are presented as a combined region in Table A11–28.

Although the UNFCCC reporting guidelines require that only national-level detail be reported, provincial- and territorial-level detail is important, owing to the regional differences in emission levels and trends. Note that provincial and territorial emission estimates may not necessarily sum to the national totals due to rounding and suppression of confidential data. For example, provincial and territorial emission totals do not include consumption of PFCs and SF₆ (e.g., refrigeration, air conditioning and semiconductor manufacturing).

The reader should also note that many 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 emissions inventory consistent with IPCC guidelines and international obligations, provincial governments may elect to develop an inventory structure in accordance with specific provincial needs. Environment Canada encourages collaboration with provinces for quality assurance and continuous improvement of this annual National Inventory Report. The Department is striving to ensure consistency between different estimates, as some provincial GHG estimates presented in this report used to develop the national estimates may differ from those developed by provincial governments.

Table A11-1 GHG Category Description

GHG Source/Sink Categories		
ENERGY		
a.	Stationary Combustion Sources	
	Electricity and Heat Generation Electricity Generation Heat Generation	Emissions from fuel consumed by: Utility electricity generation Steam generation (for sale)
	Fossil Fuel Production and Refining Petroleum Refining and Upgrading Fossil Fuel Production	Emissions from fuel consumed by: Petroleum refining and oil sands upgrading industries Natural gas production and some conventional and unconventional oil production industries (some refining is included)
	Mining & Oil and Gas Extraction	Emissions from commercial fuel sold to: Metal and non-metal mines, stone quarries, and gravel pits Oil and gas extraction industries Mineral exploration and contract drilling operations
	Manufacturing Industries	Emissions from fuel consumed by the following industries: Iron and Steel (steel foundries, casting and rolling mills) Non-ferrous metals (aluminium, magnesium and other production) Chemical (fertilizer manufacturing, organic and inorganic chemical manufacturing) Pulp and Paper (primarily pulp, paper, and paper product manufacturers) Cement production Other manufacturing industries not listed (such as automobile manufacturing, textiles, food and beverage industries)
	Construction	Emissions from fuels consumed by the construction industry - buildings, highways etc.
	Commercial & Institutional	Emissions from fuel consumed by: Service industries related to mining, communication, wholesale and retail trade, finance and insurance, real estate, education, etc.) Federal, provincial and municipal establishments National Defence and Canadian Coast Guard Train stations, airports and warehouses
	Residential	Emissions from fuel consumed for personal residences (homes, apartment hotels, condominiums and farm houses)
	Agriculture & Forestry	Emissions from fuel consumed by: Forestry and logging service industry Agricultural, hunting and trapping industry (excluding food processing, farm machinery manufacturing, and repair)
b.	Transportation Domestic Aviation Road Transportation Railways Domestic Marine Others - Off Road Others - Pipelines	Emissions resulting from the: -consumption of fossil fuels by Canadian registered airlines flying domestically -consumption of fossil fuels (including non-CO ₂ emissions from ethanol) by vehicles licensed to operate on roads -consumption of fossil fuels by Canadian railways -consumption of fossil fuels by Canadian registered marine vessels fuelled domestically -consumption of fossil fuels (including non-CO ₂ emissions from ethanol) by combustion devices not licensed to operate on roads -transportation and distribution of crude oil, natural gas and other products
c.	Fugitive Sources Coal Mining Oil and Natural Gas	Intentional and unintentional releases of greenhouse gases from the following activities: Underground and surface mining Conventional and unconventional oil and gas exploration, production, transportation, and distribution
INDUSTRIAL PROCESSES		
a.	Mineral Products	Emissions resulting from the following process activities: Production of cement and lime; use of soda ash, limestone & dolomite, and magnesite
b.	Chemical Industry	Production of ammonia, nitric acid, adipic acid, carbide, carbon black, ethylene dichloride, ethylene, methanol and styrene
c.	Metal Production	Production of aluminum, iron and steel, magnesium production and casting
d.	Production and Consumption of Halocarbons and SF ₆	Production of HCFC-22; use of HFCs and/or PFCs in air conditioning units, refrigeration units, fire extinguishers, aerosol cans, solvents, foam blowing, semiconductor manufacturing and electronics industry; use of SF ₆ in electrical equipment and semiconductors
e.	Other & Undifferentiated Production	Non-energy use of fossil fuels mostly in chemical/petrochemical activities
SOLVENT & OTHER PRODUCT USE		
Emissions resulting from the use of N ₂ O as an anaesthetic and propellant		
AGRICULTURE		
a.	Enteric Fermentation	Emissions resulting from the eructation of CH ₄ during the digestion of plant material by (mainly) ruminants
b.	Manure Management	Emissions resulting from the release of CH ₄ and N ₂ O due to microbial activity during the storage of feces, urine and bedding materials from the cleaning of barns and pens
c.	Agricultural Soils Direct sources Manure on Pasture, Range, and Paddock Indirect Sources	Direct N ₂ O emissions from synthetic fertilizer, manure on cropland, crop residue, tillage, summerfallow, irrigation and cultivation of organic soils Direct N ₂ O emissions from manure deposited on pasture, range and paddock Indirect N ₂ O emissions from volatilization and leaching of animal manure nitrogen, synthetic fertilizer nitrogen and crop residue nitrogen
d.	Field Burning of Agricultural Residues	CH ₄ and N ₂ O emissions from crop residue burning
WASTE		
a.	Solid Waste Disposal on Land	Emissions resulting from: Municipal solid waste management sites (landfills) and dedicated wood waste landfills
b.	Wastewater Handling	Domestic and industrial wastewater treatment
c.	Waste Incineration	Municipal solid waste and sewage sludge incineration

A11

Table A11–2 1990–2011 GHG Emission Summary for Newfoundland and Labrador

Greenhouse Gas Categories								
	1990	2000	2005	2007	2008	2009	2010	2011
<i>kt CO₂ equivalent</i>								
TOTAL	9 240	8 670	9 860	10 700	9 920	9 690	9 350	9 360
ENERGY	8 510	7 900	9 010	9 810	9 090	8 810	8 450	8 420
a. Stationary Combustion Sources	5 380	4 240	4 670	5 040	4 630	4 530	4 000	3 930
Electricity and Heat Generation	1 630	808	856	1 060	898	821	739	843
Fossil Fuel Production and Refining	1 000	1 400	1 700	2 000	1 800	2 100	2 000	1 700
Mining & Oil and Gas Extraction	1 060	891	1 050	851	861	829	442	434
Manufacturing Industries	501	243	276	192	152	87.1	76.0	78.6
Construction	32.7	10.1	23.4	17.1	22.2	8.63	11.1	14.8
Commercial & Institutional	317	320	353	324	279	197	255	260
Residential	800	520	410	540	600	500	460	530
Agriculture & Forestry	24.3	46.0	8.03	7.97	9.06	8.09	11.4	17.4
b. Transport ¹	3 090	3 360	3 490	3 800	3 710	3 710	3 910	4 040
Civil Aviation (Domestic Aviation)	190	180	210	210	200	180	190	180
Road Transportation	1 640	1 760	1 900	2 040	2 130	2 050	2 120	2 220
Light-Duty Gasoline Vehicles	753	631	595	638	662	641	646	680
Light-Duty Gasoline Trucks	429	646	751	806	838	814	822	868
Heavy-Duty Gasoline Vehicles	107	45.6	53.6	58.8	62.0	61.0	62.3	66.5
Motorcycles	5.12	3.63	4.07	4.47	4.70	4.62	4.72	5.03
Light-Duty Diesel Vehicles	2.29	1.31	1.55	1.72	1.85	1.92	2.04	2.27
Light-Duty Diesel Trucks	5.54	14.1	19.1	20.2	20.9	20.2	20.4	21.7
Heavy-Duty Diesel Vehicles	335	418	476	509	536	507	560	577
Propane & Natural Gas Vehicles	1.4	1.1	0.31	0.61	0.61	0.46	0.46	0.46
Railways	-	-	-	-	30	-	2	-
Navigation (Domestic Marine)	700	680	590	740	480	750	850	590
Other Transportation	560	730	800	810	870	730	750	1 100
Off-Road Gasoline	140	100	59	150	210	150	160	250
Off-Road Diesel	420	630	740	660	660	580	580	800
Pipelines	-	-	-	-	-	-	-	-
c. Fugitive Sources	40.5	303	845	972	749	571	537	451
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	40.5	303	845	972	749	571	537	451
INDUSTRIAL PROCESSES²	76.9	62.3	132	104	95.0	145	166	200
a. Mineral Products	57	0.39	0.22	0.25	0.24	0.19	0.12	0.11
Cement Production	57	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-
Mineral Products Use	0.60	0.39	0.22	0.25	0.24	0.19	0.12	0.11
b. Chemical Industry	-	-	-	-	-	-	-	-
Nitric Acid Production	-	-	-	-	-	-	-	-
Adipic Acid Production	-	-	-	-	-	-	-	-
Petrochemical Production ³	-	-	-	-	-	-	-	-
c. Metal Production	-	-	-	-	-	-	-	-
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminum Production	-	-	-	-	-	-	-	-
SF ₆ Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons and SF ₆ ⁴	0.98	39	66	69	69	79	87	92
e. Other & Undifferentiated Production	19	23	66	35	26	67	79	110
SOLVENT & OTHER PRODUCT USE	3.7	7.7	6.0	5.0	5.2	3.9	3.6	3.7
AGRICULTURE	49	51	61	65	67	66	64	62
a. Enteric Fermentation	18	20	25	27	27	27	26	25
b. Manure Management	14	14	16	16	16	16	16	16
c. Agriculture Soils	17	17	20	22	23	24	23	21
Direct Sources	8.3	8.1	9.7	11	11	12	12	9.7
Pasture, Range and Paddock Manure	1.6	1.7	2.1	2.2	2.2	2.2	2.0	2.0
Indirect Sources	7	7	9	9	10	10	9	9
d. Field Burning of Agricultural Residues	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WASTE	600	650	650	660	670	670	670	680
a. Solid Waste Disposal on Land	570	620	620	630	640	640	640	650
b. Wastewater Handling	33	31	30	30	29	30	30	30
c. Waste Incineration	-	-	-	-	-	-	-	-

Notes:

1. Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.

2. Emissions associated with ammonia production as well as with the consumption of PFCs and SF₆ (except for electric utilities) are only reported at the national level.3. The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene.CO₂ emissions from this category are in Other & Undifferentiated Production4. Only SF₆ emissions from electrical equipment are included. SF₆ emission estimates for semi-conductor manufacturing are only available at national level.

- Indicates no emissions

0.0 Indicates emissions truncated due to rounding

Note that 2003 to 2010 historical estimates have been revised on the basis of updated energy data provided by Statistics Canada. Also note that the 2011 estimates are based on preliminary energy data—which though the best available information at the time of publication—are subject to revision in the next submission year.

Table A11-3 2011 GHG Emission Summary for Newfoundland and Labrador

A11

Greenhouse Gas Categories		Greenhouse Gases							
Global Warming Potential		CO ₂	CH ₄	CH ₄	N ₂ O	N ₂ O	HFCs	PFCs	SF ₆
Unit		kt	kt	21 kt CO ₂ equivalent	kt	310 kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent
TOTAL		8 130	42	880	0.86	270	91	-	0.87
ENERGY		8 020	8.5	180	0.7	200			
a.	Stationary Combustion Sources	3 760	6	100	0.1	40			
	Electricity and Heat Generation	834	0.01	0.28	0.03	9			
	Fossil Fuel Production and Refining	1 670	3	70	0.04	10			
	Mining & Oil and Gas Extraction	433	0.01	0.1	0.00	1			
	Manufacturing Industries	78.0	0.00	0.02	0.00	0.6			
	Construction	14.8	0.00	0.00	0.00	0.06			
	Commercial & Institutional	258	0.00	0.06	0.01	2			
	Residential	460	3	60	0.03	10			
	Agriculture & Forestry	17.3	0.00	0.00	0.00	0.06			
b.	Transport ¹	3 850	0.5	10	0.6	200			
	Civil Aviation (Domestic Aviation)	176	0.01	0.2	0.01	2			
	Road Transportation	2 170	0.17	3.5	0.16	49			
	Light-Duty Gasoline Vehicles	663	0.06	1.2	0.05	16			
	Light-Duty Gasoline Trucks	845	0.08	1.7	0.07	21			
	Heavy-Duty Gasoline Vehicles	64.8	0.00	0.05	0.01	1.6			
	Motorcycles	4.97	0.00	0.04	0.00	0.03			
	Light-Duty Diesel Vehicles	2.21	0.00	0.00	0.00	0.06			
	Light-Duty Diesel Trucks	21.1	0.00	0.01	0.00	0.5			
	Heavy-Duty Diesel Vehicles	567	0.02	0.5	0.03	10			
	Propane & Natural Gas Vehicles	0.45	0.00	0.00	0.00	0.00			
	Railways	-	-	-	-	-			
	Navigation (Domestic Marine)	546	0.04	0.8	0.1	40			
	Other Transportation	960	0.3	7	0.3	90			
	Off-Road Gasoline	240	0.3	6	0.01	2			
	Off-Road Diesel	710	0.04	0.8	0.3	90			
	Pipelines	-	-	-	-	-			
c.	Fugitive Sources	410	1.9	41	0.00	1			
	Coal Mining	-	-	-	-	-			
	Oil and Natural Gas	410	1.93	40.6	0.00	1			
INDUSTRIAL PROCESSES ²		110	-	-	-	-	91	-	0.87
a.	Mineral Products	0.11							
	Cement Production	-							
	Lime Production	-							
	Mineral Product Use	0.11	-	-	-	-	-	-	0.11
b.	Chemical Industry	-	-	-	-	-			
	Nitric Acid Production	-	-	-	-	-			
	Adipic Acid Production	-	-	-	-	-	-	-	0
	Petrochemical Production ³	-	-	-	-	-			
c.	Metal Production	-	-	-	-	-			
	Iron and Steel Production	-	-	-	-	-			
	Aluminum Production	-	-	-	-	-			
	SF ₆ Used in Magnesium Smelters and Casters	-	-	-	-	-			
d.	Production and Consumption of Halocarbons and SF ₆ ⁴	-	-	-	-	-	91		0.87
e.	Other & Undifferentiated Production	110							
SOLVENT & OTHER PRODUCT USE					0.01	3.7			
AGRICULTURE			1.6	33	0.09	29			
a.	Enteric Fermentation		1.2	25					
b.	Manure Management		0.36	7.7	0.03	8.0			
c.	Agriculture Soils				0.07	21			
	Direct Sources				0.03	9.7			
	Pasture, Range and Paddock Manure				0.01	2.0			
	Indirect Sources				0.03	9			
d.	Field Burning of Agricultural Residues	-	-	-	-	-	-	-	-
WASTE		-	32	670	0.03	10			
a.	Solid Waste Disposal on Land		31	650		-			
b.	Wastewater Handling		0.93	20	0.03	10			
c.	Waste Incineration	-	-	-	-	-			

Notes:

1. Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.

2. Emissions associated with ammonia production as well as with the consumption of PFCs and SF₆ (except for electric utilities) are only reported at the national level.3. The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene.CO₂ emissions from this category are in Other & Undifferentiated Production4. Only SF₆ emissions from electrical equipment are included. SF₆ emission estimates for semi-conductor manufacturing are only available at national level.

- Indicates no emissions

0.0 Indicates emissions truncated due to rounding

Note that 2003 to 2010 historical estimates have been revised on the basis of updated energy data provided by Statistics Canada. Also note that the 2011 estimates are based on preliminary energy data—which though the best available information at the time of publication—are subject to revision in the next submission year.

Table A11–4 1990–2011 GHG Emission Summary for Prince Edward Island

Greenhouse Gas Categories		1990	2000	2005	2007	2008	2009	2010	2011
<i>kt CO₂ equivalent</i>									
TOTAL		1 960	2 200	2 140	2 070	1 980	1 960	2 000	2 200
ENERGY		1 430	1 590	1 480	1 520	1 440	1 440	1 510	1 720
a.	Stationary Combustion Sources	733	744	636	699	656	646	669	742
	Electricity and Heat Generation	103	56.6	4.72	4.40	4.09	5.97	1.57	0.94
	Fossil Fuel Production and Refining	0.11	2.2	-	-	-	-	-	-
	Mining & Oil and Gas Extraction	0.77	4.96	-	-	-	-	-	-
	Manufacturing Industries	54.7	134	143	175	162	129	169	142
	Construction	11.0	6.60	10.3	10.0	10.4	8.21	20.5	10.1
	Commercial & Institutional	158	191	119	74.6	62.7	51.9	47.2	85.4
	Residential	390	320	340	420	400	430	400	470
	Agriculture & Forestry	18.4	31.0	23.8	17.8	19.4	17.6	29.3	30.2
b.	Transport ¹	695	848	843	821	782	794	839	976
	Civil Aviation (Domestic Aviation)	17	10	14	16	17	17	18	16
	Road Transportation	507	582	615	614	608	613	608	630
	Light-Duty Gasoline Vehicles	243	229	215	213	214	204	209	216
	Light-Duty Gasoline Trucks	113	195	233	232	233	223	229	238
	Heavy-Duty Gasoline Vehicles	51.1	17.6	23.6	24.1	24.4	23.7	24.5	25.8
	Motorcycles	1.03	1.41	2.70	2.74	2.78	2.69	2.80	2.94
	Light-Duty Diesel Vehicles	2.34	1.83	2.01	2.00	2.06	2.03	2.16	2.36
	Light-Duty Diesel Trucks	3.16	7.22	9.04	8.92	8.95	8.56	8.77	9.16
	Heavy-Duty Diesel Vehicles	92.8	129	129	131	123	149	132	136
	Propane & Natural Gas Vehicles	1.1	0.70	-	-	-	-	-	-
	Railways	-	-	-	-	-	-	-	-
	Navigation (Domestic Marine)	89	84	99	97	80	81	110	140
	Other Transportation	83	170	120	94	77	83	110	190
	Off-Road Gasoline	44	77	77	79	77	57	70	95
	Off-Road Diesel	39	95	39	14	-	25	38	93
	Pipelines	-	-	-	-	-	-	-	-
c.	Fugitive Sources	-	-	-	-	-	-	-	-
	Coal Mining	-	-	-	-	-	-	-	-
	Oil and Natural Gas	-	-	-	-	-	-	-	-
INDUSTRIAL PROCESSES²		3.68	16.1	26.4	27.2	26.5	30.0	31.6	33.4
a.	Mineral Products	0.34	0.67	0.89	1.3	1.1	1.1	0.66	0.66
	Cement Production	-	-	-	-	-	-	-	-
	Lime Production	-	-	-	-	-	-	-	-
	Mineral Products Use	0.34	0.67	0.89	1.3	1.1	1.1	0.66	0.66
b.	Chemical Industry	-	-	-	-	-	-	-	-
	Nitric Acid Production	-	-	-	-	-	-	-	-
	Adipic Acid Production	-	-	-	-	-	-	-	-
	Petrochemical Production ³	-	-	-	-	-	-	-	-
c.	Metal Production	-	-	-	-	-	-	-	-
	Iron and Steel Production	-	-	-	-	-	-	-	-
	Aluminum Production	-	-	-	-	-	-	-	-
	SF ₆ Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d.	Production and Consumption of Halocarbons and SF ₆ ⁴	0.02	13	24	24	24	27	30	32
e.	Other & Undifferentiated Production	3.3	2.8	1.8	1.8	1.6	1.8	1.0	1.1
SOLVENT & OTHER PRODUCT USE		0.84	2.0	1.6	1.4	1.4	1.1	1.0	1.0
AGRICULTURE		440	490	540	430	420	400	370	360
a.	Enteric Fermentation	120	110	110	110	100	93	92	91
b.	Manure Management	46	47	46	45	37	33	32	32
c.	Agriculture Soils	280	330	380	280	290	280	250	240
	Direct Sources	150	190	220	160	160	160	140	140
	Pasture, Range and Paddock Manure	17	17	16	16	15	14	13	13
	Indirect Sources	100	100	100	100	100	100	90	90
d.	Field Burning of Agricultural Residues	0.08	0.18	0.19	0.14	0.16	0.11	0.12	0.12
WASTE		92	99	94	90	89	87	86	85
a.	Solid Waste Disposal on Land	75	80	75	71	69	68	66	65
b.	Wastewater Handling	5.7	7.2	7.3	7.3	7.5	7.3	7.4	7.5
c.	Waste Incineration	11	12	12	12	12	12	13	13

Notes:

1. Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.

2. Emissions associated with ammonia production as well as with the consumption of PFCs and SF₆ (except for electric utilities) are only reported at the national level.3. The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene.CO₂ emissions from this category are in Other & Undifferentiated Production4. Only SF₆ emissions from electrical equipment are included. SF₆ emission estimates for semi-conductor manufacturing are only available at national level.

- Indicates no emissions

0.0 Indicates emissions truncated due to rounding

Note that 2003 to 2010 historical estimates have been revised on the basis of updated energy data provided by Statistics Canada. Also note that the 2011 estimates are based on preliminary energy data—which though the best available information at the time of publication—are subject to revision in the next submission year.

Table A11-5 2011 GHG Emission Summary for Prince Edward Island

A11

Greenhouse Gas Categories		Greenhouse Gases							
Global Warming Potential		CO ₂	CH ₄	CH ₄	N ₂ O	N ₂ O	HFCs	PFCs	SF ₆
Unit		kt	kt	kt CO ₂ equivalent	kt	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent
TOTAL		1 620	11	230	1.0	320	32	-	0.01
ENERGY		1 610	2.5	53	0.2	50			
a.	Stationary Combustion Sources	683	2	50	0.03	10			
	Electricity and Heat Generation	0.94	0.00	0.00	0.00	0.01			
	Fossil Fuel Production and Refining	-	-	-	-	-			
	Mining & Oil and Gas Extraction	-	-	-	-	-			
	Manufacturing Industries	141	0.01	0.1	0.00	0.9			
	Construction	10.1	0.00	0.00	0.00	0.04			
	Commercial & Institutional	84.8	0.00	0.02	0.00	0.5			
	Residential	416	2	50	0.03	9			
	Agriculture & Forestry	30.1	0.00	0.01	0.00	0.1			
b.	Transport ¹	929	0.2	4	0.1	40			
	Civil Aviation (Domestic Aviation)	15.5	0.00	0.01	0.00	0.1			
	Road Transportation	614	0.05	1.1	0.05	16			
	Light-Duty Gasoline Vehicles	210	0.02	0.43	0.02	6.0			
	Light-Duty Gasoline Trucks	231	0.02	0.51	0.02	6.6			
	Heavy-Duty Gasoline Vehicles	25.2	0.00	0.03	0.00	0.57			
	Motorcycles	2.90	0.00	0.02	0.00	0.02			
	Light-Duty Diesel Vehicles	2.30	0.00	0.00	0.00	0.06			
	Light-Duty Diesel Trucks	8.93	0.00	0.01	0.00	0.2			
	Heavy-Duty Diesel Vehicles	134	0.01	0.1	0.01	2			
	Propane & Natural Gas Vehicles	-	-	-	-	-			
	Railways	-	-	-	-	-			
	Navigation (Domestic Marine)	126	0.01	0.1	0.05	20			
	Other Transportation	170	0.1	2	0.04	10			
	Off-Road Gasoline	92	0.1	2	0.00	0.6			
	Off-Road Diesel	82	0.01	0.1	0.03	10			
	Pipelines	-	-	-	-	-			
c.	Fugitive Sources	-	-	-	-	-			
	Coal Mining	-	-	-	-	-			
	Oil and Natural Gas	-	-	-	-	-			
INDUSTRIAL PROCESSES²		1.8	-	-	-	-	32	-	0.01
a.	Mineral Products	0.66							
	Cement Production	-							
	Lime Production	-							
	Mineral Product Use	0.66	-	-	-	-	-	-	-
b.	Chemical Industry	-	-	-	-	-			
	Nitric Acid Production	-	-	-	-	-			
	Adipic Acid Production	-	-	-	-	-	-	-	-
	Petrochemical Production ³	-	-	-	-	-			
c.	Metal Production	-	-	-	-	-			
	Iron and Steel Production	-	-	-	-	-			
	Aluminum Production	-	-	-	-	-			
	SF ₆ Used in Magnesium Smelters and Casters	-	-	-	-	-			
d.	Production and Consumption of Halocarbons and SF ₆ ⁴	-	-	-	-	-	32		0.01
e.	Other & Undifferentiated Production	1.1							
SOLVENT & OTHER PRODUCT USE					0.00	1.0			
AGRICULTURE			4.9	100	0.83	260			
a.	Enteric Fermentation		4.3	91					
b.	Manure Management		0.62	13	0.06	19			
c.	Agriculture Soils				0.77	240			
	Direct Sources				0.44	140			
	Pasture, Range and Paddock Manure				0.04	13			
	Indirect Sources				0.3	90			
d.	Field Burning of Agricultural Residues	-	0.00	0.09	0.00	0.03	-	-	-
WASTE		11	3.3	70	0.01	5			
a.	Solid Waste Disposal on Land		3.1	65					
b.	Wastewater Handling		0.22	4.6	0.01	3			
c.	Waste Incineration	11	-	-	0.01	2			

Notes:

1. Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.

2. Emissions associated with ammonia production as well as with the consumption of PFCs and SF₆ (except for electric utilities) are only reported at the national level.3. The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene.CO₂ emissions from this category are in Other & Undifferentiated Production4. Only SF₆ emissions from electrical equipment are included. SF₆ emission estimates for semi-conductor manufacturing are only available at national level.

- Indicates no emissions

0.0 Indicates emissions truncated due to rounding

Note that 2003 to 2010 historical estimates have been revised on the basis of updated energy data provided by Statistics Canada. Also note that the 2011 estimates are based on preliminary energy data—which though the best available information at the time of publication—are subject to revision in the next submission year.

Table A11–6 1990–2011 GHG Emission Summary for Nova Scotia

Greenhouse Gas Categories								
	1990	2000	2005	2007	2008	2009	2010	2011
<i>kt CO₂ equivalent</i>								
TOTAL	19 100	21 400	23 400	23 300	21 300	20 700	20 100	20 400
ENERGY	17 600	19 800	21 900	21 900	20 000	19 500	18 800	19 100
a. Stationary Combustion Sources	11 400	14 100	15 800	16 300	14 600	14 400	13 400	13 100
Electricity and Heat Generation	6 870	9 320	11 000	11 600	9 920	9 810	8 910	8 170
Fossil Fuel Production and Refining	650	1 000	1 400	1 100	1 200	1 200	1 200	1 300
Mining & Oil and Gas Extraction	35.2	53.8	38.2	8.10	8.91	8.25	8.80	21.9
Manufacturing Industries	757	719	555	539	611	651	581	540
Construction	49.2	27.2	48.2	31.9	32.4	25.0	25.8	23.6
Commercial & Institutional	790	903	1 250	1 100	913	808	776	914
Residential	2 100	1 800	1 400	1 700	1 800	1 800	1 800	2 000
Agriculture & Forestry	103	230	95.3	148	125	69.4	80.8	108
b. Transport ¹	4 870	5 590	6 010	5 540	5 300	4 990	5 310	5 880
Civil Aviation (Domestic Aviation)	280	300	260	250	240	220	220	210
Road Transportation	3 090	3 480	3 760	3 730	3 780	3 620	3 710	3 820
Light-Duty Gasoline Vehicles	1 560	1 290	1 270	1 240	1 270	1 200	1 220	1 270
Light-Duty Gasoline Trucks	672	1 170	1 300	1 270	1 300	1 230	1 260	1 320
Heavy-Duty Gasoline Vehicles	164	89.8	110	110	114	109	113	120
Motorcycles	9.85	7.51	9.21	9.19	9.54	9.13	9.43	9.99
Light-Duty Diesel Vehicles	23.1	19.3	23.9	24.1	25.9	25.7	27.6	30.5
Light-Duty Diesel Trucks	23.3	47.1	52.5	50.4	51.7	48.7	49.9	52.5
Heavy-Duty Diesel Vehicles	635	851	985	1 020	1 000	1 000	1 030	1 010
Propane & Natural Gas Vehicles	7.5	4.2	4.9	5.1	5.5	5.4	5.2	4.1
Railways	70	70	100	200	100	100	100	200
Navigation (Domestic Marine)	610	670	850	670	490	450	490	530
Other Transportation	820	1 100	1 000	730	650	590	750	1 200
Off-Road Gasoline	330	410	270	200	260	110	150	300
Off-Road Diesel	490	650	720	470	340	400	530	850
Pipelines	-	-	34.3	61.7	58.4	77.1	74.0	2.92
c. Fugitive Sources	1 290	184	128	129	132	119	116	105
Coal Mining	1 000	60	0.01	-	-	-	-	-
Oil and Natural Gas	49.8	128	128	129	132	119	116	105
INDUSTRIAL PROCESSES²	304	387	435	442	429	333	440	511
a. Mineral Products	180	220	240	210	210	97	180	190
Cement Production	170	220	230	210	210	95	180	180
Lime Production	-	-	-	-	-	-	-	-
Mineral Products Use	8.4	2.5	3.0	2.9	2.4	2.2	1.6	1.6
b. Chemical Industry	-	-	-	-	-	-	-	-
Nitric Acid Production	-	-	-	-	-	-	-	-
Adipic Acid Production	-	-	-	-	-	-	-	-
Petrochemical Production ³	-	-	-	-	-	-	-	-
c. Metal Production	-	1.28	-	-	-	-	-	-
Iron and Steel Production	-	1.28	-	-	-	-	-	-
Aluminum Production	-	-	-	-	-	-	-	-
SF ₆ Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons and SF ₆ ⁴	24	98	170	170	160	180	210	220
e. Other & Undifferentiated Production	100	69	33	64	56	60	50	100
SOLVENT & OTHER PRODUCT USE	5.9	14	11	9.3	9.6	7.3	6.7	6.8
AGRICULTURE	440	440	420	400	390	380	360	340
a. Enteric Fermentation	180	180	170	160	160	150	140	140
b. Manure Management	92	91	86	84	80	76	73	74
c. Agriculture Soils	170	170	170	150	150	150	150	130
Direct Sources	82	81	83	74	74	75	75	61
Pasture, Range and Paddock Manure	18	19	18	17	17	15	14	14
Indirect Sources	70	70	70	60	60	60	60	50
d. Field Burning of Agricultural Residues	0.01	0.13	0.13	0.05	0.07	0.04	0.04	0.05
WASTE	780	710	560	490	500	470	460	450
a. Solid Waste Disposal on Land	710	650	500	430	440	410	400	390
b. Wastewater Handling	46	48	48	49	48	48	49	49
c. Waste Incineration	27	15	13	14	14	13	11	9.9

Notes:

1. Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.

2. Emissions associated with ammonia production as well as with the consumption of PFCs and SF₆ (except for electric utilities) are only reported at the national level.3. The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene.CO₂ emissions from this category are in Other & Undifferentiated Production4. Only SF₆ emissions from electrical equipment are included. SF₆ emission estimates for semi-conductor manufacturing are only available at national level.

- Indicates no emissions

0.0 Indicates emissions truncated due to rounding

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Table A11-7 2011 GHG Emission Summary for Nova Scotia

A11

Greenhouse Gas Categories		Greenhouse Gases							
Global Warming Potential		CO ₂	CH ₄	CH ₄	N ₂ O	N ₂ O	HFCs	PFCs	SF ₆
Unit		kt	kt	21 kt CO ₂ equivalent	kt	310 kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent
TOTAL		18 700	43	900	1.7	530	190	-	35
ENERGY		18 400	14	300	1	300			20 400
a.	Stationary Combustion Sources	12 800	10	200	0.3	100			13 100
	Electricity and Heat Generation	8 130	0.43	9.0	0.1	40			8 170
	Fossil Fuel Production and Refining	1 270	2	30	0.02	5			1 300
	Mining & Oil and Gas Extraction	21.8	0.00	0.01	0.00	0.1			21.9
	Manufacturing Industries	521	0.08	2	0.06	20			540
	Construction	23.5	0.00	0.01	0.00	0.1			23.6
	Commercial & Institutional	908	0.01	0.2	0.02	6			914
	Residential	1 800	9	200	0.1	30			2 000
	Agriculture & Forestry	108	0.00	0.03	0.00	0.6			108
b.	Transport ¹	5 620	0.7	20	0.8	200			5 880
	Civil Aviation (Domestic Aviation)	203	0.01	0.2	0.01	2			210
	Road Transportation	3 730	0.29	6.0	0.27	83			3 820
	Light-Duty Gasoline Vehicles	1 240	0.11	2.3	0.10	30			1 270
	Light-Duty Gasoline Trucks	1 280	0.12	2.6	0.10	31			1 320
	Heavy-Duty Gasoline Vehicles	117	0.00	0.09	0.01	3.0			120
	Motorcycles	9.86	0.00	0.07	0.00	0.06			9.99
	Light-Duty Diesel Vehicles	29.7	0.00	0.01	0.00	0.8			30.5
	Light-Duty Diesel Trucks	51.2	0.00	0.03	0.00	1			52.5
	Heavy-Duty Diesel Vehicles	996	0.04	0.9	0.06	20			1 010
	Propane & Natural Gas Vehicles	4.08	0.00	0.04	0.00	0.02			4.1
	Railways	151	0.01	0.2	0.06	20			200
	Navigation (Domestic Marine)	484	0.03	0.7	0.1	40			530
	Other Transportation	1 000	0.4	8	0.3	100			1 200
	Off-Road Gasoline	300	0.3	7	0.01	2			300
	Off-Road Diesel	750	0.04	0.9	0.3	100			850
	Pipelines	2.84	0.00	0.06	0.00	0.02			2.92
c.	Fugitive Sources	46	2.8	58	0.00	1			105
	Coal Mining	-	-	-	-	-			0
	Oil and Natural Gas	45.9	2.77	58.2	0.00	1			105
INDUSTRIAL PROCESSES ²		290	-	-	-	-	190	-	511
a.	Mineral Products	190							190
	Cement Production	180							180
	Lime Production	-							0
	Mineral Product Use	1.6	-	-	-	-	-	-	1.6
b.	Chemical Industry	-	-	-	-	-			0
	Nitric Acid Production								0
	Adipic Acid Production	-	-	-	-	-	-	-	0
	Petrochemical Production ³		-	-	-	-			0
c.	Metal Production	-							0
	Iron and Steel Production	-							0
	Aluminum Production	-							0
	SF ₆ Used in Magnesium Smelters and Casters								0
d.	Production and Consumption of Halocarbons and SF ₆ ⁴						190		35
e.	Other & Undifferentiated Production	100							100
SOLVENT & OTHER PRODUCT USE					0.02	6.8			6.8
AGRICULTURE			8.7	180	0.51	160			340
a.	Enteric Fermentation		6.7	140					140
b.	Manure Management		2.0	42	0.10	32			74
c.	Agriculture Soils				0.41	130			130
	Direct Sources				0.20	61			61
	Pasture, Range and Paddock Manure				0.04	14			14
	Indirect Sources				0.2	50			50
d.	Field Burning of Agricultural Residues	-	0.00	0.04	0.00	0.01	-	-	0.05
WASTE		8.6	20	420	0.07	20			450
a.	Solid Waste Disposal on Land		18	390		-			390
b.	Wastewater Handling		1.4	30	0.06	20			49
c.	Waste Incineration	8.6	-	-	0.00	1			9.9

Notes:

1. Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.

2. Emissions associated with ammonia production as well as with the consumption of PFCs and SF₆ (except for electric utilities) are only reported at the national level.3. The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of ethylene dichloride; and of styrene.CO₂ emissions from this category are in Other & Undifferentiated Production4. Only SF₆ emissions from electrical equipment are included. SF₆ emission estimates for semi-conductor manufacturing are only available at national level.

- Indicates no emissions

0.0 Indicates emissions truncated due to rounding

Note that 2003 to 2010 historical estimates have been revised on the basis of updated energy data provided by Statistics Canada. Also note that the 2011 estimates are based on preliminary energy data—which though the best available information at the time of publication—are subject to revision in the next submission year.

Table A11–8 1990–2011 GHG Emission Summary for New Brunswick

Greenhouse Gas Categories								
	1990	2000	2005	2007	2008	2009	2010	2011
<i>kt CO₂ equivalent</i>								
TOTAL	16 000	20 800	20 100	19 800	18 600	18 400	18 300	18 600
ENERGY	14 800	19 400	18 600	18 400	17 200	16 400	16 000	16 700
a. Stationary Combustion Sources	10 700	13 800	13 100	13 100	12 200	11 700	10 700	10 500
Electricity and Heat Generation	5 970	8 790	8 020	7 550	7 070	7 030	5 320	4 970
Fossil Fuel Production and Refining	1 100	1 800	2 300	2 400	2 500	2 300	2 700	2 400
Mining & Oil and Gas Extraction	125	134	156	108	66.9	88.0	146	260
Manufacturing Industries	1 610	1 500	1 180	1 460	993	986	870	902
Construction	68.0	39.8	5.50	25.8	25.5	19.0	53.8	18.8
Commercial & Institutional	574	608	571	670	650	392	498	739
Residential	1 200	870	900	880	910	850	950	1 000
Agriculture & Forestry	52.4	63.7	31.5	28.9	27.8	61.4	112	145
b. Transport ¹	4 050	5 410	5 260	5 050	4 740	4 400	5 050	6 020
Civil Aviation (Domestic Aviation)	140	120	120	110	110	95	96	82
Road Transportation	2 940	3 650	3 860	3 870	3 860	3 680	3 870	3 940
Light-Duty Gasoline Vehicles	1 310	1 140	1 060	1 060	1 060	989	1 040	1 070
Light-Duty Gasoline Trucks	651	1 090	1 210	1 210	1 210	1 140	1 190	1 240
Heavy-Duty Gasoline Vehicles	164	89.4	127	129	131	124	132	138
Motorcycles	7.04	6.77	10.5	10.6	10.8	10.2	10.9	11.4
Light-Duty Diesel Vehicles	14.8	11.8	13.2	13.5	14.1	13.9	15.2	17.3
Light-Duty Diesel Trucks	23.1	43.3	48.6	47.9	48.1	45.1	47.5	51.8
Heavy-Duty Diesel Vehicles	768	1 260	1 380	1 400	1 400	1 360	1 430	1 420
Propane & Natural Gas Vehicles	5.1	6.8	0.61	0.77	0.77	0.77	0.61	0.77
Railways	100	200	300	300	200	300	300	400
Navigation (Domestic Marine)	270	400	420	400	340	320	400	540
Other Transportation	580	1 000	580	400	190	61	380	1 100
Off-Road Gasoline	180	160	150	130	180	61	84	330
Off-Road Diesel	390	860	430	260	7.9	-	290	730
Pipelines	-	-	-	-	-	-	-	-
c. Fugitive Sources	59.3	142	233	238	216	214	230	219
Coal Mining	0.8	0.3	0.2	0.2	0.09	0.2	-	-
Oil and Natural Gas	58.5	142	232	238	216	214	230	219
INDUSTRIAL PROCESSES²	163	306	351	348	430	988	1 360	895
a. Mineral Products	90	120	97	86	82	48	55	58
Cement Production	-	-	-	-	-	-	-	-
Lime Production	76	100	86	76	74	41	49	52
Mineral Products Use	14	15	11	10	7.8	7.3	6.2	6.1
b. Chemical Industry	-	-	-	-	-	-	-	-
Nitric Acid Production	-	-	-	-	-	-	-	-
Adipic Acid Production	-	-	-	-	-	-	-	-
Petrochemical Production ³	-	-	-	-	-	-	-	-
c. Metal Production	-	-	-	-	-	-	-	-
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminum Production	-	-	-	-	-	-	-	-
SF ₆ Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons and SF ₆ ⁴	0.74	65	110	120	110	130	140	150
e. Other & Undifferentiated Production	72	120	150	150	230	810	1 200	680
SOLVENT & OTHER PRODUCT USE	4.8	11	8.8	7.4	7.7	5.8	5.3	5.4
AGRICULTURE	440	470	500	440	430	430	420	390
a. Enteric Fermentation	150	150	140	140	140	140	140	130
b. Manure Management	66	72	69	68	64	63	63	60
c. Agriculture Soils	220	250	280	230	230	230	220	190
Direct Sources	120	140	160	130	130	130	120	110
Pasture, Range and Paddock Manure	19	19	18	18	17	17	17	16
Indirect Sources	80	90	100	80	80	80	80	70
d. Field Burning of Agricultural Residues	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01
WASTE	590	620	620	610	580	570	570	540
a. Solid Waste Disposal on Land	560	590	590	580	550	540	540	510
b. Wastewater Handling	27	29	29	29	29	28	29	29
c. Waste Incineration	-	-	-	-	-	-	-	-

Notes:

1. Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.

2. Emissions associated with ammonia production as well as with the consumption of PFCs and SF₆ (except for electric utilities) are only reported at the national level.3. The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene.CO₂ emissions from this category are in Other & Undifferentiated Production4. Only SF₆ emissions from electrical equipment are included. SF₆ emission estimates for semi-conductor manufacturing are only available at national level.

- Indicates no emissions

0.0 Indicates emissions truncated due to rounding

Note that 2003 to 2010 historical estimates have been revised on the basis of updated energy data provided by Statistics Canada. Also note that the 2011 estimates are based on preliminary energy data—which though the best available information at the time of publication—are subject to revision in the next submission year.

Table A11-9 2011 GHG Emission Summary for New Brunswick

A11

Greenhouse Gas Categories		Greenhouse Gases							
Global Warming Potential		CO ₂	CH ₄	CH ₄	N ₂ O	N ₂ O	HFCs	PFCs	SF ₆
Unit		kt	kt	21 kt CO ₂ equivalent	kt	310 kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent
TOTAL		16 800	46	960	2.0	630	150	-	0.64
ENERGY		16 100	13	280	1	400			
a.	Stationary Combustion Sources	10 200	10	200	0.3	90			
	Electricity and Heat Generation	4 940	0.33	6.9	0.07	20			
	Fossil Fuel Production and Refining	2 400	0.04	0.9	0.02	5			
	Mining & Oil and Gas Extraction	258	0.01	0.2	0.01	2			
	Manufacturing Industries	875	0.1	2	0.08	30			
	Construction	18.7	0.00	0.01	0.00	0.1			
	Commercial & Institutional	734	0.01	0.3	0.02	5			
	Residential	818	9	200	0.1	30			
	Agriculture & Forestry	144	0.00	0.05	0.00	0.8			
b.	Transport ¹	5 730	0.8	20	0.9	300			
	Civil Aviation (Domestic Aviation)	81.5	0.01	0.1	0.00	0.8			
	Road Transportation	3 850	0.30	6.3	0.29	89			
	Light-Duty Gasoline Vehicles	1 040	0.10	2.2	0.09	28			
	Light-Duty Gasoline Trucks	1 200	0.13	2.7	0.10	32			
	Heavy-Duty Gasoline Vehicles	135	0.01	0.11	0.01	3.5			
	Motorcycles	11.2	0.00	0.08	0.00	0.07			
	Light-Duty Diesel Vehicles	16.9	0.00	0.01	0.00	0.4			
	Light-Duty Diesel Trucks	50.5	0.00	0.03	0.00	1			
	Heavy-Duty Diesel Vehicles	1 400	0.06	1	0.08	20			
	Propane & Natural Gas Vehicles	0.76	0.00	0.01	0.00	0.00			
	Railways	357	0.02	0.4	0.1	50			
	Navigation (Domestic Marine)	481	0.03	0.6	0.2	60			
	Other Transportation	960	0.4	9	0.3	80			
	Off-Road Gasoline	320	0.4	8	0.01	2			
	Off-Road Diesel	640	0.04	0.7	0.3	80			
	Pipelines	-	-	-	-	-			
c.	Fugitive Sources	160	2.5	52	0.02	5			
	Coal Mining	-	-	-	-	-			
	Oil and Natural Gas	162	2.47	51.9	0.02	5			
	INDUSTRIAL PROCESSES ²	740	-	-	-	-	150	-	0.64
a.	Mineral Products	58							
	Cement Production	-							
	Lime Production	52							
	Mineral Product Use	6.1	-	-	-	-	-	-	6.1
b.	Chemical Industry	-	-	-	-	-			
	Nitric Acid Production	-	-	-	-	-			
	Adipic Acid Production	-	-	-	-	-			
	Petrochemical Production ³	-	-	-	-	-			
c.	Metal Production	-	-	-	-	-			
	Iron and Steel Production	-	-	-	-	-			
	Aluminum Production	-	-	-	-	-			
	SF ₆ Used in Magnesium Smelters and Casters	-	-	-	-	-			
d.	Production and Consumption of Halocarbons and SF ₆ ⁴	-	-	-	-	-	150		0.64
e.	Other & Undifferentiated Production	680							
	SOLVENT & OTHER PRODUCT USE				0.02	5.4			
	AGRICULTURE		7.7	160	0.72	220			
a.	Enteric Fermentation		6.4	130					
b.	Manure Management		1.4	29	0.10	31			
c.	Agriculture Soils				0.62	190			
	Direct Sources				0.34	110			
	Pasture, Range and Paddock Manure				0.05	16			
	Indirect Sources				0.2	70			
d.	Field Burning of Agricultural Residues	-	0.00	0.01	0.00	0.00	-	-	-
	WASTE	-	25	520	0.05	20			
a.	Solid Waste Disposal on Land		24	510		-			
b.	Wastewater Handling		0.65	14	0.05	20			
c.	Waste Incineration	-	-	-	-	-			

Notes:

1. Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.

2. Emissions associated with ammonia production as well as with the consumption of PFCs and SF₆ (except for electric utilities) are only reported at the national level.3. The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene. CO₂ emissions from this category are in Other & Undifferentiated Production.4. Only SF₆ emissions from electrical equipment are included. SF₆ emission estimates for semi-conductor manufacturing are only available at national level.

- Indicates no emissions

0.0 Indicates emissions truncated due to rounding

Note that 2003 to 2010 historical estimates have been revised on the basis of updated energy data provided by Statistics Canada. Also note that the 2011 estimates are based on preliminary energy data—which though the best available information at the time of publication—are subject to revision in the next submission year.

Table A11–10 1990–2011 GHG Emission Summary for Quebec

Greenhouse Gas Categories		1990	2000	2005	2007	2008	2009	2010	2011
<i>kt CO₂ equivalent</i>									
TOTAL		84 200	84 600	85 700	86 200	84 800	83 800	80 300	80 000
ENERGY		57 700	60 700	60 800	62 000	61 400	61 100	57 400	57 200
a.	Stationary Combustion Sources	29 600	28 100	26 500	26 300	24 900	24 700	21 600	20 600
	Electricity and Heat Generation	1 480	435	601	530	431	633	427	296
	Fossil Fuel Production and Refining	3 400	3 300	3 700	3 800	3 700	3 600	1 900	1 500
	Mining & Oil and Gas Extraction	734	926	315	632	959	1 580	1 200	521
	Manufacturing Industries	12 200	11 400	10 200	10 400	9 910	8 100	8 130	8 670
	Construction	455	187	306	312	309	385	417	339
	Commercial & Institutional	4 210	5 650	5 220	4 540	4 210	5 150	4 860	4 890
	Residential	6 800	5 900	5 800	5 700	5 100	4 900	4 200	4 000
	Agriculture & Forestry	287	259	290	302	291	410	447	424
b.	Transport ¹	27 700	32 000	33 600	35 000	35 700	35 600	35 100	35 900
	Civil Aviation (Domestic Aviation)	820	730	750	800	730	670	660	610
	Road Transportation	20 600	24 900	27 500	27 900	27 400	27 400	27 500	27 400
	Light-Duty Gasoline Vehicles	11 800	11 200	10 600	10 800	10 600	10 500	10 500	10 300
	Light-Duty Gasoline Trucks	3 720	6 500	7 690	7 820	7 730	7 660	7 660	7 520
	Heavy-Duty Gasoline Vehicles	578	540	854	888	889	892	903	894
	Motorcycles	31.8	46.9	80.4	83.6	83.7	83.9	84.9	84.1
	Light-Duty Diesel Vehicles	184	179	221	237	246	261	276	290
	Light-Duty Diesel Trucks	192	357	360	367	361	363	366	368
	Heavy-Duty Diesel Vehicles	3 980	6 080	7 670	7 720	7 470	7 580	7 660	7 930
	Propane & Natural Gas Vehicles	110	36	34	33	29	26	31	30
	Railways	600	800	700	900	900	900	900	900
	Navigation (Domestic Marine)	1 400	1 400	1 300	1 200	1 600	1 800	1 300	990
	Other Transportation	4 300	4 200	3 300	4 100	5 100	4 900	4 700	6 000
	Off-Road Gasoline	1 400	1 300	1 400	1 600	1 100	1 400	1 300	1 500
	Off-Road Diesel	2 900	2 800	1 600	2 300	3 700	3 300	3 200	4 300
	Pipelines	25.8	107	335	268	255	227	154	150
c.	Fugitive Sources	381	610	723	759	735	718	707	655
	Coal Mining	-	-	-	-	-	-	-	-
	Oil and Natural Gas	381	610	723	759	735	718	707	655
INDUSTRIAL PROCESSES²		13 800	11 400	11 900	11 000	10 300	9 790	9 780	9 850
a.	Mineral Products	1 900	1 900	2 000	2 000	1 800	1 500	1 700	1 700
	Cement Production	1 300	1 200	1 300	1 400	1 300	1 000	1 200	1 200
	Lime Production	270	430	460	420	400	350	420	450
	Mineral Products Use	240	300	270	190	180	150	110	110
b.	Chemical Industry	89	9.5	1.9	2.0	0.45	-	-	-
	Nitric Acid Production	79.7	-	-	-	-	-	-	-
	Adipic Acid Production	-	-	-	-	-	-	-	-
	Petrochemical Production ³	9.7	9.5	1.9	2.0	0.45	-	-	-
c.	Metal Production	10 200	7 650	7 110	6 240	6 300	6 080	5 870	5 840
	Iron and Steel Production	-	16.9	-	33.9	30.4	22.0	35.1	36.3
	Aluminum Production	7 800	6 400	7 000	6 200	6 300	6 100	5 800	5 800
	SF ₆ Used in Magnesium Smelters and Casters	2 370	1 230	75.1	14.1	-	-	-	-
d.	Production and Consumption of Halocarbons and SF ₆ ⁴	39	640	1 100	1 200	1 200	1 300	1 500	1 600
e.	Other & Undifferentiated Production	1 600	1 300	1 700	1 500	970	840	700	680
SOLVENT & OTHER PRODUCT USE		45	110	89	76	79	60	56	57
AGRICULTURE		7 200	7 000	7 300	7 600	7 600	7 400	7 400	7 200
a.	Enteric Fermentation	2 400	2 400	2 500	2 400	2 400	2 300	2 300	2 300
b.	Manure Management	1 200	1 300	1 300	1 300	1 300	1 300	1 300	1 300
c.	Agriculture Soils	3 600	3 300	3 500	4 000	3 900	3 800	3 800	3 700
	Direct Sources	2 000	1 800	1 900	2 300	2 300	2 100	2 200	2 200
	Pasture, Range and Paddock Manure	250	250	270	260	260	260	260	240
	Indirect Sources	1 000	1 000	1 000	1 000	1 000	1 000	1 000	1 000
d.	Field Burning of Agricultural Residues	0.37	0.21	0.24	0.25	0.18	0.19	0.23	0.18
WASTE		5 500	5 400	5 600	5 500	5 400	5 500	5 600	5 700
a.	Solid Waste Disposal on Land	4 900	4 900	5 100	5 000	4 900	5 000	5 100	5 200
b.	Wastewater Handling	250	230	230	240	240	240	240	240
c.	Waste Incineration	350	260	270	270	280	250	260	260

Notes:

1. Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.

2. Emissions associated with ammonia production as well as with the consumption of PFCs and SF₆ (except for electric utilities) are only reported at the national level.3. The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene.CO₂ emissions from this category are in Other & Undifferentiated Production4. Only SF₆ emissions from electrical equipment are included. SF₆ emission estimates for semi-conductor manufacturing are only available at national level.

- Indicates no emissions

0.0 Indicates emissions truncated due to rounding

Note that 2003 to 2010 historical estimates have been revised on the basis of updated energy data provided by Statistics Canada. Also note that the 2011 estimates are based on preliminary energy data—which though the best available information at the time of publication—are subject to revision in the next submission year.

Table A11-11 2011 GHG Emission Summary for Quebec

A11

Greenhouse Gas Categories		Greenhouse Gases							
Global Warming Potential		CO ₂	CH ₄	CH ₄	N ₂ O	N ₂ O	HFCs	PFCs	SF ₆
Unit		kt	kt	21 kt CO ₂ equivalent	kt	310 kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent
TOTAL		61 600	460	9 600	20	6 100	1 600	1 000	110
ENERGY		54 200	65	1 400	5	2 000			80 000
a.	Stationary Combustion Sources	19 500	40	800	1	300			20 600
	Electricity and Heat Generation	290	0.04	0.83	0.02	5			296
	Fossil Fuel Production and Refining	1 480	0.02	0.4	0.02	6			1 500
	Mining & Oil and Gas Extraction	518	0.02	0.4	0.01	3			521
	Manufacturing Industries	8 540	0.5	10	0.4	100			8 670
	Construction	337	0.01	0.1	0.01	2			339
	Commercial & Institutional	4 860	0.09	2	0.1	30			4 890
	Residential	3 070	40	800	0.5	100			4 000
	Agriculture & Forestry	418	0.01	0.1	0.02	5			424
b.	Transport ¹	34 500	4	90	4	1 000			35 900
	Civil Aviation (Domestic Aviation)	608	0.05	1	0.02	6			610
	Road Transportation	26 800	2.1	43	1.9	600			27 400
	Light-Duty Gasoline Vehicles	10 000	0.92	19	0.79	240			10 300
	Light-Duty Gasoline Trucks	7 320	0.71	15	0.58	180			7 520
	Heavy-Duty Gasoline Vehicles	871	0.03	0.69	0.07	23			894
	Motorcycles	83.0	0.03	0.61	0.00	0.48			84.1
	Light-Duty Diesel Vehicles	283	0.01	0.1	0.02	7			290
	Light-Duty Diesel Trucks	358	0.01	0.2	0.03	9			368
	Heavy-Duty Diesel Vehicles	7 790	0.3	7	0.4	100			7 930
	Propane & Natural Gas Vehicles	29.8	0.02	0.4	0.00	0.2			30
	Railways	792	0.04	0.9	0.3	100			900
	Navigation (Domestic Marine)	926	0.07	1	0.2	60			990
	Other Transportation	5 500	2	50	2	500			6 000
	Off-Road Gasoline	1 500	2	40	0.03	10			1 500
	Off-Road Diesel	3 800	0.2	4	2	500			4 300
	Pipelines	146	0.14	3.0	0.01	1			150
c.	Fugitive Sources	190	22	460	0.02	6			655
	Coal Mining		-	-	-	-			0
	Oil and Natural Gas	189	21.9	460	0.02	6			655
INDUSTRIAL PROCESSES ²		7 100	-	-	-	-	1 600	1 000	110
a.	Mineral Products	1 700							1 700
	Cement Production	1 200							1 200
	Lime Production	450							450
	Mineral Product Use	110	-	-	-	-	-	-	110
b.	Chemical Industry	-	-	-	-	-			0
	Nitric Acid Production								0
	Adipic Acid Production	-	-	-	-	-	-	-	0
	Petrochemical Production ³		-	-	-	-			0
c.	Metal Production	4 720						1 000	5 840
	Iron and Steel Production	36.3							36.3
	Aluminum Production	4 700						1 000	5 800
	SF ₆ Used in Magnesium Smelters and Casters								0
d.	Production and Consumption of Halocarbons and SF ₆ ⁴						1 600		31
e.	Other & Undifferentiated Production	680							680
SOLVENT & OTHER PRODUCT USE					0.18	57			57
AGRICULTURE			140	3 000	14	4 200			7 200
a.	Enteric Fermentation		110	2 300					2 300
b.	Manure Management		34	720	1.7	540			1 300
c.	Agriculture Soils				12	3 700			3 700
	Direct Sources				6.9	2 200			2 200
	Pasture, Range and Paddock Manure				0.79	240			240
	Indirect Sources				4	1 000			1 000
d.	Field Burning of Agricultural Residues	-	0.01	0.13	0.00	0.05	-	-	0.18
WASTE		180	250	5 300	0.8	200			5 700
a.	Solid Waste Disposal on Land		250	5 200		-			5 200
b.	Wastewater Handling		4.0	85	0.5	200			240
c.	Waste Incineration	180	0.1	2	0.3	80			260

Notes:

1. Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.

2. Emissions associated with ammonia production as well as with the consumption of PFCs and SF₆ (except for electric utilities) are only reported at the national level.3. The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene.CO₂ emissions from this category are in Other & Undifferentiated Production4. Only SF₆ emissions from electrical equipment are included. SF₆ emission estimates for semi-conductor manufacturing are only available at national level.

- Indicates no emissions

0.0 Indicates emissions truncated due to rounding

Note that 2003 to 2010 historical estimates have been revised on the basis of updated energy data provided by Statistics Canada. Also note that the 2011 estimates are based on preliminary energy data—which though the best available information at the time of publication—are subject to revision in the next submission year.

Table A11–12 1990–2011 GHG Emission Summary for Ontario

Greenhouse Gas Categories								
	1990	2000	2005	2007	2008	2009	2010	2011
<i>kt CO₂ equivalent</i>								
TOTAL	177 000	205 000	205 000	200 000	191 000	166 000	174 000	171 000
ENERGY	131 000	165 000	161 000	156 000	148 000	129 000	135 000	132 000
a. Stationary Combustion Sources	81 700	104 000	95 600	93 600	87 000	69 000	72 700	70 900
Electricity and Heat Generation	25 500	43 100	34 100	32 600	27 100	14 800	19 600	14 800
Fossil Fuel Production and Refining	6 200	6 200	7 000	7 300	7 000	6 400	6 600	6 000
Mining & Oil and Gas Extraction	491	467	586	584	656	644	635	730
Manufacturing Industries	21 800	20 500	19 000	18 700	17 800	15 000	14 900	15 600
Construction	568	435	633	509	545	459	549	399
Commercial & Institutional	9 090	13 100	12 800	11 900	11 900	11 300	10 800	11 700
Residential	17 000	19 000	20 000	21 000	21 000	19 000	18 000	20 000
Agriculture & Forestry	770	898	1 030	1 280	1 210	1 030	1 090	1 650
b. Transport ¹	47 800	60 300	64 200	60 500	59 000	58 400	60 700	59 000
Civil Aviation (Domestic Aviation)	2 300	2 300	2 200	2 200	2 100	1 900	1 900	1 800
Road Transportation	34 900	42 100	47 000	45 900	45 000	45 400	46 200	45 300
Light-Duty Gasoline Vehicles	18 600	16 800	16 400	15 800	15 500	15 900	16 000	15 500
Light-Duty Gasoline Trucks	7 470	13 500	16 600	16 000	15 600	16 000	16 200	15 600
Heavy-Duty Gasoline Vehicles	1 610	1 090	1 340	1 320	1 320	1 370	1 400	1 370
Motorcycles	43.9	39.8	66.3	65.4	65.1	67.7	69.4	67.9
Light-Duty Diesel Vehicles	150	157	195	210	228	250	272	289
Light-Duty Diesel Trucks	142	357	419	419	418	427	434	425
Heavy-Duty Diesel Vehicles	6 390	9 800	11 600	11 700	11 400	11 000	11 400	11 600
Propane & Natural Gas Vehicles	540	380	350	420	450	400	420	450
Railways	2 000	2 000	2 000	2 000	2 000	1 000	1 000	1 000
Navigation (Domestic Marine)	940	640	870	1 000	950	610	1 100	870
Other Transportation	7 800	14 000	13 000	10 000	9 400	9 300	10 000	9 700
Off-Road Gasoline	2 300	3 700	3 600	2 900	2 700	3 000	3 400	3 100
Off-Road Diesel	3 300	6 300	5 900	4 800	5 100	5 100	6 000	5 700
Pipelines	2 260	3 610	3 040	2 240	1 680	1 210	889	888
c. Fugitive Sources	1 210	1 540	1 610	1 640	1 630	1 610	1 660	1 650
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	1 210	1 540	1 610	1 640	1 630	1 610	1 660	1 650
INDUSTRIAL PROCESSES²	29 900	23 400	27 400	27 400	26 800	20 400	21 900	22 600
a. Mineral Products	4 000	4 800	4 700	4 600	4 300	3 200	3 400	3 400
Cement Production	2 300	3 300	3 500	3 400	3 100	2 300	2 600	2 600
Lime Production	1 100	910	800	770	750	520	570	600
Mineral Products Use	620	550	380	370	420	330	240	240
b. Chemical Industry	11 000	1 000	2 800	1 600	2 500	760	58	54
Nitric Acid Production	99.4	88.8	67.2	74.9	64.3	68.1	23.6	20.0
Adipic Acid Production	11 000	900	2 600	1 500	2 400	660	0.20	0.21
Petrochemical Production ³	56	40	37	41	38	33	34	34
c. Metal Production	10 900	12 900	11 400	11 500	11 100	8 180	9 160	10 000
Iron and Steel Production	10 200	11 400	10 200	11 100	10 600	8 000	8 990	9 820
Aluminum Production	-	-	-	-	-	-	-	-
SF ₆ Used in Magnesium Smelters and Casters	720	1 520	1 180	478	424	172	172	172
d. Production and Consumption of Halocarbons and SF ₆ ⁴	850	1 200	2 100	2 200	2 100	2 400	2 700	2 900
e. Other & Undifferentiated Production	3 300	3 400	6 600	7 500	6 900	5 800	6 600	6 200
SOLVENT & OTHER PRODUCT USE	66	170	150	130	130	100	94	96
AGRICULTURE	10 000	9 600	9 700	10 000	9 700	10 000	10 000	9 600
a. Enteric Fermentation	3 300	3 200	3 200	3 000	2 900	2 800	2 800	2 700
b. Manure Management	1 600	1 700	1 700	1 600	1 600	1 500	1 500	1 500
c. Agriculture Soils	5 100	4 700	4 800	5 400	5 200	5 800	6 200	5 400
Direct Sources	3 000	2 700	2 700	3 200	3 100	3 500	3 800	3 200
Pasture, Range and Paddock Manure	300	300	300	280	280	260	260	250
Indirect Sources	2 000	2 000	2 000	2 000	2 000	2 000	2 000	2 000
d. Field Burning of Agricultural Residues	3.4	1.4	0.51	0.43	0.36	0.40	0.43	0.27
WASTE	6 000	6 000	6 700	6 800	6 700	6 700	6 700	6 800
a. Solid Waste Disposal on Land	5 500	5 400	6 100	6 200	6 100	6 100	6 100	6 100
b. Wastewater Handling	230	280	300	310	310	310	310	320
c. Waste Incineration	260	340	290	250	300	310	320	320

Notes:

1. Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.

2. Emissions associated with ammonia production as well as with the consumption of PFCs and SF₆ (except for electric utilities) are only reported at the national level.3. The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene.CO₂ emissions from this category are in Other & Undifferentiated Production4. Only SF₆ emissions from electrical equipment are included. SF₆ emission estimates for semi-conductor manufacturing are only available at national level.

- Indicates no emissions

0.0 Indicates emissions truncated due to rounding

Note that 2003 to 2010 historical estimates have been revised on the basis of updated energy data provided by Statistics Canada. Also note that the 2011 estimates are based on preliminary energy data—which though the best available information at the time of publication—are subject to revision in the next submission year.

Table A11-13 2011 GHG Emission Summary for Ontario

A11

Greenhouse Gas Categories		Greenhouse Gases							
Global Warming Potential		CO ₂	CH ₄	CH ₄	N ₂ O	N ₂ O	HFCs	PFCs	SF ₆
Unit		kt	kt	21 kt CO ₂ equivalent	kt	310 kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent
TOTAL		147 000	560	12 000	30	9 200	2 800	-	210
ENERGY		127 000	100	2 200	8	3 000			132 000
a.	Stationary Combustion Sources	69 700	30	600	2	600			70 900
	Electricity and Heat Generation	14 700	2.8	58	0.3	100			14 800
	Fossil Fuel Production and Refining	5 950	0.06	1	0.04	10			6 000
	Mining & Oil and Gas Extraction	720	0.01	0.2	0.03	9			730
	Manufacturing Industries	15 400	0.7	10	0.5	200			15 600
	Construction	395	0.01	0.1	0.01	4			399
	Commercial & Institutional	11 600	0.2	5	0.3	80			11 700
	Residential	19 300	30	500	0.6	200			20 000
	Agriculture & Forestry	1 640	0.03	0.6	0.04	10			1 650
b.	Transport ¹	56 900	9	200	6	2 000			59 000
	Civil Aviation (Domestic Aviation)	1 780	0.06	1	0.05	20			1 800
	Road Transportation	44 100	3.4	71	3.5	1 100			45 300
	Light-Duty Gasoline Vehicles	15 000	1.2	26	1.4	420			15 500
	Light-Duty Gasoline Trucks	15 200	1.2	26	1.3	410			15 600
	Heavy-Duty Gasoline Vehicles	1 330	0.05	1.1	0.12	37			1 370
	Motorcycles	66.7	0.03	0.71	0.00	0.42			67.9
	Light-Duty Diesel Vehicles	282	0.01	0.1	0.02	7			289
	Light-Duty Diesel Trucks	414	0.01	0.2	0.03	10			425
	Heavy-Duty Diesel Vehicles	11 300	0.5	10	0.7	200			11 600
	Propane & Natural Gas Vehicles	441	0.3	7	0.01	3			450
	Railways	1 220	0.07	1	0.5	200			1 000
	Navigation (Domestic Marine)	847	0.09	2	0.07	20			870
	Other Transportation	8 900	5	100	2	700			9 700
	Off-Road Gasoline	3 000	4	80	0.07	20			3 100
	Off-Road Diesel	5 000	0.3	6	2	700			5 700
	Pipelines	863	0.87	18	0.02	7			888
c.	Fugitive Sources	250	66	1 400	0.02	7			1 650
	Coal Mining		-	-	-	-			0
	Oil and Natural Gas	246	66.3	1 390	0.02	7			1 650
INDUSTRIAL PROCESSES ²		19 000	1.3	28	0.08	26.2	2 800	-	210
a.	Mineral Products	3 400							3 400
	Cement Production	2 600							2 600
	Lime Production	600							600
	Mineral Product Use	240	-	-	-	-	-	-	240
b.	Chemical Industry	-	1.3	28	0.08	26.2			54
	Nitric Acid Production				0.06	20.0			20.0
	Adipic Acid Production	-	-	-	0.00	0.21	-	-	0.21
	Petrochemical Production ³		1.3	28	0.02	6.0			34
c.	Metal Production	9 820				-		-	10 000
	Iron and Steel Production	9 820							9 820
	Aluminum Production	-						-	0
	SF ₆ Used in Magnesium Smelters and Casters							172	172
d.	Production and Consumption of Halocarbons and SF ₆ ⁴						2 800	-	2 900
e.	Other & Undifferentiated Production	6 200							6 200
SOLVENT & OTHER PRODUCT USE					0.31	96			96
AGRICULTURE			160	3 400	20	6 200			9 600
a.	Enteric Fermentation		130	2 700					2 700
b.	Manure Management		32	660	2.6	810			1 500
c.	Agriculture Soils				17	5 400			5 400
	Direct Sources				10	3 200			3 200
	Pasture, Range and Paddock Manure				0.82	250			250
	Indirect Sources				6	2 000			2 000
d.	Field Burning of Agricultural Residues	-	0.01	0.20	0.00	0.08	-	-	0.27
WASTE		220	290	6 200	1	400			6 800
a.	Solid Waste Disposal on Land		290	6 100		-			6 100
b.	Wastewater Handling		2.4	50	0.9	300			320
c.	Waste Incineration	220	0.01	0.3	0.3	100			320

Notes:

1. Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.

2. Emissions associated with ammonia production as well as with the consumption of PFCs and SF₆ (except for electric utilities) are only reported at the national level.3. The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene. CO₂ emissions from this category are in Other & Undifferentiated Production.4. Only SF₆ emissions from electrical equipment are included. SF₆ emission estimates for semi-conductor manufacturing are only available at national level.

- Indicates no emissions

0.0 Indicates emissions truncated due to rounding

Note that 2003 to 2010 historical estimates have been revised on the basis of updated energy data provided by Statistics Canada. Also note that the 2011 estimates are based on preliminary energy data—which though the best available information at the time of publication—are subject to revision in the next submission year.

Table A11–14 1990-2011 GHG Emission Summary for Manitoba

Greenhouse Gas Categories		1990	2000	2005	2007	2008	2009	2010	2011
<i>kt CO₂ equivalent</i>									
TOTAL		18 300	21 000	20 500	21 300	21 200	19 800	19 700	19 500
ENERGY		12 300	13 200	12 700	13 100	12 700	11 900	11 600	12 000
a.	Stationary Combustion Sources	4 790	5 470	4 530	4 840	4 990	4 550	3 900	3 930
	Electricity and Heat Generation	517	978	334	462	414	190	86.6	116
	Fossil Fuel Production and Refining	4.0	1.0	0.46	0.46	0.46	0.31	0.31	0.46
	Mining & Oil and Gas Extraction	75.5	29.1	114	323	316	265	174	102
	Manufacturing Industries	1 070	1 290	1 420	1 420	1 480	1 430	1 250	1 210
	Construction	63.1	61.7	85.4	103	99.2	76.2	106	113
	Commercial & Institutional	1 400	1 670	1 420	1 400	1 490	1 380	1 200	1 220
	Residential	1 600	1 400	1 100	1 100	1 100	1 100	1 000	1 100
	Agriculture & Forestry	42.3	62.7	45.3	57.2	62.5	113	79.1	81.7
b.	Transport ¹	7 140	7 240	7 630	7 660	7 130	6 700	7 000	7 420
	Civil Aviation (Domestic Aviation)	480	550	570	570	530	460	470	420
	Road Transportation	3 750	4 410	4 670	5 180	4 840	4 860	5 160	5 250
	Light-Duty Gasoline Vehicles	1 610	1 310	1 140	1 240	1 080	1 080	1 150	1 180
	Light-Duty Gasoline Trucks	847	1 480	1 630	1 770	1 540	1 540	1 650	1 690
	Heavy-Duty Gasoline Vehicles	341	212	229	254	224	227	246	256
	Motorcycles	7.08	4.40	8.22	9.14	8.01	8.13	8.81	9.17
	Light-Duty Diesel Vehicles	14.5	10.6	11.0	12.8	12.7	13.5	15.2	16.3
	Light-Duty Diesel Trucks	40.1	90.1	100	112	108	110	119	123
	Heavy-Duty Diesel Vehicles	828	1 260	1 540	1 770	1 860	1 870	1 960	1 960
	Propane & Natural Gas Vehicles	61	36	14	18	20	17	13	10
	Railways	600	300	300	300	300	500	600	700
	Navigation (Domestic Marine)	0.02	-	2.4	2.1	2.4	5.9	-	-
	Other Transportation	2 300	2 000	2 100	1 600	1 500	860	750	1 100
	Off-Road Gasoline	460	440	370	380	310	320	440	530
	Off-Road Diesel	1 000	720	1 100	840	930	430	290	510
	Pipelines	841	822	596	426	244	102	17.8	32.1
c.	Fugitive Sources	386	512	557	626	623	618	651	700
	Coal Mining	-	-	-	-	-	-	-	-
	Oil and Natural Gas	386	512	557	626	623	618	651	700
	INDUSTRIAL PROCESSES ²	293	289	382	363	370	409	638	615
a.	Mineral Products	210	79	69	63	63	55	60	63
	Cement Production	140	-	-	-	-	-	-	-
	Lime Production	58	69	59	53	51	45	54	56
	Mineral Products Use	11	11	10	11	12	10	6.4	6.4
b.	Chemical Industry	20	44	54	51	53	52	47	59
	Nitric Acid Production	20.1	44.2	53.7	50.6	53.3	51.9	47.1	59.5
	Adipic Acid Production	-	-	-	-	-	-	-	-
	Petrochemical Production ³	-	-	-	-	-	-	-	-
c.	Metal Production	-	-	-	-	-	-	-	-
	Iron and Steel Production	-	-	-	-	-	-	-	-
	Aluminum Production	-	-	-	-	-	-	-	-
	SF ₆ Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d.	Production and Consumption of Halocarbons and SF ₆ ⁴	4.5	120	200	200	200	230	260	280
e.	Other & Undifferentiated Production	55	42	58	46	48	71	270	220
	SOLVENT & OTHER PRODUCT USE	7.1	17	14	12	12	9.4	8.8	9.0
	AGRICULTURE	5 100	6 700	6 500	7 000	7 200	6 700	6 600	5 900
a.	Enteric Fermentation	1 300	1 800	2 200	2 000	2 000	1 900	1 800	1 700
b.	Manure Management	380	570	700	660	630	610	610	590
c.	Agriculture Soils	3 300	4 200	3 600	4 200	4 500	4 100	4 200	3 600
	Direct Sources	1 800	2 200	1 700	2 100	2 300	2 100	2 200	1 800
	Pasture, Range and Paddock Manure	310	460	550	510	510	470	450	410
	Indirect Sources	1 000	2 000	1 000	2 000	2 000	2 000	2 000	1 000
d.	Field Burning of Agricultural Residues	130	75	12	16	21	19	14	9.1
	WASTE	600	760	830	860	870	880	900	910
a.	Solid Waste Disposal on Land	560	720	790	820	830	840	850	870
b.	Wastewater Handling	34	38	39	40	40	40	41	41
c.	Waste Incineration	-	-	-	-	-	-	-	-

Notes:

1. Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.

2. Emissions associated with ammonia production as well as with the consumption of PFCs and SF₆ (except for electric utilities) are only reported at the national level.3. The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene.CO₂ emissions from this category are in Other & Undifferentiated Production4. Only SF₆ emissions from electrical equipment are included. SF₆ emission estimates for semi-conductor manufacturing are only available at national level.

- Indicates no emissions

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Table A11-15 2011 GHG Emission Summary for Manitoba

A11

Greenhouse Gas Categories		Greenhouse Gases							
Global Warming Potential		CO ₂	CH ₄	CH ₄	N ₂ O	N ₂ O	HFCs	PFCs	SF ₆
Unit		kt	kt	21 kt CO ₂ equivalent	kt	310 kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent
TOTAL		11 300	170	3 600	14	4 300	270	-	6.3
ENERGY		11 100	33	690	1	300			12 000
a.	Stationary Combustion Sources	3 830	3	60	0.1	40			3 930
	Electricity and Heat Generation	115	0.01	0.26	0.00	1			116
	Fossil Fuel Production and Refining	0.45	0.00	0.00	0.00	0.01			0.46
	Mining & Oil and Gas Extraction	100	0.00	0.03	0.01	2			102
	Manufacturing Industries	1 200	0.05	1	0.04	10			1 210
	Construction	112	0.00	0.05	0.00	0.7			113
	Commercial & Institutional	1 220	0.02	0.5	0.03	8			1 220
	Residential	1 010	3	60	0.05	20			1 100
	Agriculture & Forestry	80.7	0.00	0.03	0.00	1			81.7
b.	Transport ¹	7 130	1	30	0.9	300			7 420
	Civil Aviation (Domestic Aviation)	412	0.03	0.6	0.01	4			420
	Road Transportation	5 120	0.42	8.8	0.38	120			5 250
	Light-Duty Gasoline Vehicles	1 150	0.13	2.7	0.10	31			1 180
	Light-Duty Gasoline Trucks	1 650	0.18	3.9	0.14	44			1 690
	Heavy-Duty Gasoline Vehicles	249	0.01	0.26	0.02	6.4			256
	Motorcycles	9.04	0.00	0.07	0.00	0.06			9.17
	Light-Duty Diesel Vehicles	15.9	0.00	0.01	0.00	0.4			16.3
	Light-Duty Diesel Trucks	120	0.00	0.06	0.01	3			123
	Heavy-Duty Diesel Vehicles	1 930	0.08	2	0.1	30			1 960
	Propane & Natural Gas Vehicles	10.3	0.00	0.09	0.00	0.06			10
	Railways	611	0.03	0.7	0.3	80			700
	Navigation (Domestic Marine)	-	-	-	-	-			0
	Other Transportation	990	0.7	20	0.2	60			1 100
	Off-Road Gasoline	510	0.7	10	0.01	4			530
	Off-Road Diesel	450	0.02	0.5	0.2	60			510
	Pipelines	31.2	0.03	0.66	0.00	0.3			32.1
c.	Fugitive Sources	92	29	610	-	-			700
	Coal Mining	-	-	-	-	-			0
	Oil and Natural Gas	92.2	28.9	607	-	-			700
INDUSTRIAL PROCESSES ²		280	-	-	0.19	59.5	270	-	6.3
a.	Mineral Products	63							63
	Cement Production	-							0
	Lime Production	56							56
	Mineral Product Use	6.4	-	-	-	-	-	-	6.4
b.	Chemical Industry	-	-	-	0.19	59.5			59
	Nitric Acid Production				0.19	59.5			59.5
	Adipic Acid Production	-	-	-	-	-	-	-	0
	Petrochemical Production ³	-	-	-	-	-			0
c.	Metal Production	-	-	-		-			0
	Iron and Steel Production	-							0
	Aluminum Production	-							0
	SF ₆ Used in Magnesium Smelters and Casters								0
d.	Production and Consumption of Halocarbons and SF ₆ ⁴						270	-	6.3
e.	Other & Undifferentiated Production	220							220
SOLVENT & OTHER PRODUCT USE					0.03	9.0			9.0
AGRICULTURE			98	2 100	12	3 900			5 900
a.	Enteric Fermentation		81	1 700					1 700
b.	Manure Management		17	350	0.79	250			590
c.	Agriculture Soils				12	3 600			3 600
	Direct Sources				5.9	1 800			1 800
	Pasture, Range and Paddock Manure				1.3	410			410
	Indirect Sources				4	1 000			1 000
d.	Field Burning of Agricultural Residues	-	0.31	6.6	0.01	2.5	-	-	9.1
WASTE		-	42	880	0.08	20			910
a.	Solid Waste Disposal on Land		41	870		-			870
b.	Wastewater Handling		0.77	16	0.08	20			41
c.	Waste Incineration	-	-	-	-	-			0

Notes:

1. Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.

2. Emissions associated with ammonia production as well as with the consumption of PFCs and SF₆ (except for electric utilities) are only reported at the national level.3. The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene.CO₂ emissions from this category are in Other & Undifferentiated Production4. Only SF₆ emissions from electrical equipment are included. SF₆ emission estimates for semi-conductor manufacturing are only available at national level.

- Indicates no emissions

0.0 Indicates emissions truncated due to rounding

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Table A11–16 1990-2011 GHG Emission Summary for Saskatchewan

Greenhouse Gas Categories								
	1990	2000	2005	2007	2008	2009	2010	2011
<i>kt CO₂ equivalent</i>								
TOTAL	43 500	65 100	70 200	71 500	72 700	72 600	72 300	72 700
ENERGY	35 000	53 100	56 500	58 300	58 700	59 200	59 800	60 000
a. Stationary Combustion Sources	20 100	26 800	28 000	28 600	28 700	29 900	30 000	29 400
Electricity and Heat Generation	11 100	14 700	15 200	15 200	15 200	16 300	16 100	15 500
Fossil Fuel Production and Refining	3 700	5 400	6 500	6 300	6 000	6 300	6 300	6 200
Mining & Oil and Gas Extraction	971	2 060	2 360	3 040	3 090	2 750	3 000	3 200
Manufacturing Industries	898	800	530	625	672	553	624	702
Construction	70.0	48.6	41.8	63.9	72.3	48.8	70.4	55.4
Commercial & Institutional	980	1 660	1 490	1 230	1 330	1 600	1 370	1 270
Residential	2 100	1 900	1 600	1 700	1 700	1 800	1 900	1 900
Agriculture & Forestry	294	271	255	425	502	529	526	609
b. Transport ¹	9 250	11 000	11 700	13 100	13 800	14 100	14 900	15 400
Civil Aviation (Domestic Aviation)	260	210	190	200	200	180	190	180
Road Transportation	4 060	5 550	5 820	6 390	6 790	6 980	7 210	7 600
Light-Duty Gasoline Vehicles	1 220	1 280	1 070	1 180	1 260	1 320	1 360	1 410
Light-Duty Gasoline Trucks	893	1 720	1 790	1 980	2 110	2 220	2 280	2 370
Heavy-Duty Gasoline Vehicles	589	358	356	400	431	457	475	498
Motorcycles	2.25	5.89	7.24	8.13	8.77	9.29	9.68	10.1
Light-Duty Diesel Vehicles	10.0	10.2	11.1	13.6	14.7	15.9	17.1	18.4
Light-Duty Diesel Trucks	57.9	201	231	276	290	303	316	331
Heavy-Duty Diesel Vehicles	1 220	1 940	2 340	2 510	2 660	2 650	2 740	2 950
Propane & Natural Gas Vehicles	65	27	11	10	11	12	11	10
Railways	600	400	400	200	500	400	700	700
Navigation (Domestic Marine)	0.10	0.02	-	-	-	-	-	-
Other Transportation	4 300	4 800	5 300	6 300	6 400	6 600	6 800	6 900
Off-Road Gasoline	1 200	660	910	1 000	1 200	1 300	1 400	1 600
Off-Road Diesel	1 600	1 800	2 500	3 000	2 700	3 000	3 200	3 300
Pipelines	1 580	2 320	1 880	2 240	2 480	2 270	2 150	2 050
c. Fugitive Sources	5 600	15 400	16 700	16 600	16 200	15 200	15 000	15 200
Coal Mining	10	20	20	20	20	20	20	20
Oil and Natural Gas	5 590	15 300	16 700	16 600	16 200	15 200	14 900	15 100
INDUSTRIAL PROCESSES²	299	437	605	620	579	581	573	443
a. Mineral Products	95	16	14	12	13	11	8.0	7.9
Cement Production	83	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-
Mineral Products Use	12	16	14	12	13	11	8.0	7.9
b. Chemical Industry	-	-	13	13	15	10	12	14
Nitric Acid Production	-	-	12.7	13.0	15.2	10.2	12.5	14.0
Adipic Acid Production	-	-	-	-	-	-	-	-
Petrochemical Production ³	-	-	-	-	-	-	-	-
c. Metal Production	-	-	-	-	-	-	-	-
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminum Production	-	-	-	-	-	-	-	-
SF ₆ Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons and SF ₆ ⁴	1.9	110	180	190	190	210	240	250
e. Other & Undifferentiated Production	200	320	400	400	360	350	320	170
SOLVENT & OTHER PRODUCT USE	6.5	15	12	9.9	10	7.9	7.4	7.6
AGRICULTURE	7 800	11 000	12 000	12 000	13 000	12 000	11 000	11 000
a. Enteric Fermentation	2 200	3 100	4 100	3 900	3 900	3 700	3 500	3 400
b. Manure Management	620	890	1 100	1 100	1 100	990	940	910
c. Agriculture Soils	4 900	6 900	7 200	6 800	7 800	7 400	6 800	7 200
Direct Sources	2 900	3 800	3 800	3 500	4 100	3 900	3 500	3 800
Pasture, Range and Paddock Manure	390	590	760	730	720	690	650	620
Indirect Sources	2 000	2 000	3 000	3 000	3 000	3 000	3 000	3 000
d. Field Burning of Agricultural Residues	64	41	27	18	23	24	14	17
WASTE	490	620	670	690	690	700	710	730
a. Solid Waste Disposal on Land	450	580	630	650	650	660	670	690
b. Wastewater Handling	37	39	38	39	39	39	40	40
c. Waste Incineration	0.52	-	-	-	-	-	-	-

Notes:

1. Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.

2. Emissions associated with ammonia production as well as with the consumption of PFCs and SF₆ (except for electric utilities) are only reported at the national level.3. The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene.CO₂ emissions from this category are in Other & Undifferentiated Production4. Only SF₆ emissions from electrical equipment are included. SF₆ emission estimates for semi-conductor manufacturing are only available at national level.

- Indicates no emissions

0.0 Indicates emissions truncated due to rounding

Note that 2003 to 2010 historical estimates have been revised on the basis of updated energy data provided by Statistics Canada. Also note that the 2011 estimates are based on preliminary energy data—which though the best available information at the time of publication—are subject to revision in the next submission year.

Table A11-17 2011 GHG Emission Summary for Saskatchewan

A11

Greenhouse Gas Categories		Greenhouse Gases								
Global Warming Potential		CO ₂	CH ₄	CH ₄	N ₂ O	N ₂ O	HFCs	PFCs	SF ₆	TOTAL
Unit		kt	kt	21 kt CO ₂ equivalent	kt	310 kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent
TOTAL		45 000	890	19 000	28	8 800	250	-	1.2	72 700
ENERGY		44 800	680	14 000	3	900				60 000
a.	Stationary Combustion Sources	28 900	20	300	0.7	200				29 400
	Electricity and Heat Generation	15 400	0.71	15	0.3	100				15 500
	Fossil Fuel Production and Refining	5 910	10	300	0.1	40				6 200
	Mining & Oil and Gas Extraction	3 170	0.06	1	0.07	20				3 200
	Manufacturing Industries	698	0.01	0.3	0.01	4				702
	Construction	55.0	0.00	0.02	0.00	0.4				55.4
	Commercial & Institutional	1 260	0.03	0.5	0.03	8				1 270
	Residential	1 800	2	40	0.05	20				1 900
	Agriculture & Forestry	605	0.01	0.2	0.01	4				609
b.	Transport ¹	14 700	5	100	2	600				15 400
	Civil Aviation (Domestic Aviation)	176	0.02	0.3	0.01	2				180
	Road Transportation	7 420	0.63	13	0.53	170				7 600
	Light-Duty Gasoline Vehicles	1 370	0.17	3.5	0.12	37				1 410
	Light-Duty Gasoline Trucks	2 310	0.28	6.0	0.19	60				2 370
	Heavy-Duty Gasoline Vehicles	487	0.03	0.63	0.04	11				498
	Motorcycles	10.0	0.00	0.08	0.00	0.06				10.1
	Light-Duty Diesel Vehicles	18.0	0.00	0.01	0.00	0.5				18.4
	Light-Duty Diesel Trucks	323	0.01	0.2	0.03	8				331
	Heavy-Duty Diesel Vehicles	2 900	0.1	3	0.2	50				2 950
	Propane & Natural Gas Vehicles	9.97	0.01	0.2	0.00	0.06				10
	Railways	632	0.04	0.7	0.3	80				700
	Navigation (Domestic Marine)	-	-	-	-	-				0
	Other Transportation	6 400	4	90	1	400				6 900
	Off-Road Gasoline	1 600	2	40	0.04	10				1 600
	Off-Road Diesel	2 900	0.2	3	1	400				3 300
	Pipelines	1 990	2.1	44	0.05	20				2 050
	c.	Fugitive Sources	1 300	660	14 000	0.02	6			
Coal Mining		-	0.7	20	-	-				20
Oil and Natural Gas		1 250	661	13 900	0.02	6				15 100
INDUSTRIAL PROCESSES ²		180	-	-	0.05	14.0	250	-	1.2	443
a.	Mineral Products	7.9	-	-	-	-				7.9
	Cement Production	-	-	-	-	-				0
	Lime Production	-	-	-	-	-				0
	Mineral Product Use	7.9	-	-	-	-	-	-	-	7.9
b.	Chemical Industry	-	-	-	0.05	14.0				14
	Nitric Acid Production	-	-	-	0.05	14.0				14.0
	Adipic Acid Production	-	-	-	-	-	-	-	-	0
	Petrochemical Production ³	-	-	-	-	-				0
c.	Metal Production	-	-	-	-	-		-	-	0
	Iron and Steel Production	-	-	-	-	-				0
	Aluminum Production	-	-	-	-	-		-		0
	SF ₆ Used in Magnesium Smelters and Casters	-	-	-	-	-			-	0
d.	Production and Consumption of Halocarbons and SF ₆ ⁴	-	-	-	-	-	250	-	1.2	250
e.	Other & Undifferentiated Production	170	-	-	-	-				170
SOLVENT & OTHER PRODUCT USE		-	-	-	0.02	7.6	-	-	-	7.6
AGRICULTURE		-	170	3 600	25	7 900	-	-	-	11 000
a.	Enteric Fermentation	-	160	3 400	-	-	-	-	-	3 400
b.	Manure Management	-	11	230	2.2	680	-	-	-	910
c.	Agriculture Soils	-	-	-	23	7 200	-	-	-	7 200
	Direct Sources	-	-	-	12	3 800	-	-	-	3 800
	Pasture, Range and Paddock Manure	-	-	-	2.0	620	-	-	-	620
	Indirect Sources	-	-	-	9	3 000	-	-	-	3 000
d.	Field Burning of Agricultural Residues	-	0.57	12	0.02	4.6	-	-	-	17
WASTE		-	34	710	0.07	20	-	-	-	730
a.	Solid Waste Disposal on Land	-	33	690	-	-	-	-	-	690
b.	Wastewater Handling	-	0.92	19	0.07	20	-	-	-	40
c.	Waste Incineration	-	-	-	-	-	-	-	-	0

Notes:

1. Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.

2. Emissions associated with ammonia production as well as with the consumption of PFCs and SF₆ (except for electric utilities) are only reported at the national level.3. The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene.CO₂ emissions from this category are in Other & Undifferentiated Production4. Only SF₆ emissions from electrical equipment are included. SF₆ emission estimates for semi-conductor manufacturing are only available at national level.

- Indicates no emissions

0.0 Indicates emissions truncated due to rounding

Note that 2003 to 2010 historical estimates have been revised on the basis of updated energy data provided by Statistics Canada. Also note that the 2011 estimates are based on preliminary energy data—which though the best available information at the time of publication—are subject to revision in the next submission year.

Table A11–18 1990-2011 GHG Emission Summary for Alberta

Greenhouse Gas Categories								
	1990	2000	2005	2007	2008	2009	2010	2011
<i>kt CO₂ equivalent</i>								
TOTAL	166 000	219 000	228 000	244 000	238 000	230 000	238 000	242 000
ENERGY	148 000	194 000	199 000	214 000	209 000	201 000	210 000	213 000
a. Stationary Combustion Sources	96 200	126 000	128 000	141 000	137 000	134 000	138 000	140 000
Electricity and Heat Generation	39 400	49 200	51 500	51 900	52 200	48 400	48 600	47 700
Fossil Fuel Production and Refining	31 000	44 000	41 000	43 000	38 000	38 000	38 000	37 000
Mining & Oil and Gas Extraction	2 710	7 010	13 800	21 900	22 200	23 700	27 400	29 100
Manufacturing Industries	10 400	11 000	8 950	9 350	9 200	9 280	10 500	10 900
Construction	237	174	169	192	147	120	162	254
Commercial & Institutional	5 020	5 440	5 590	5 870	5 590	5 610	5 540	5 860
Residential	6 700	8 400	7 500	9 000	8 800	8 600	8 200	8 600
Agriculture & Forestry	475	364	239	273	304	246	194	212
b. Transport ¹	22 100	29 500	33 600	36 800	36 700	33 500	38 000	39 800
Civil Aviation (Domestic Aviation)	1 100	1 300	1 400	1 500	1 400	1 300	1 300	1 200
Road Transportation	13 500	16 600	19 500	21 200	21 200	21 400	21 800	22 600
Light-Duty Gasoline Vehicles	4 500	3 750	3 540	3 730	3 750	3 690	3 790	3 900
Light-Duty Gasoline Trucks	3 300	5 550	6 620	6 950	6 980	6 870	7 050	7 250
Heavy-Duty Gasoline Vehicles	1 600	1 200	1 660	1 780	1 820	1 810	1 880	1 960
Motorcycles	24.3	27.2	36.7	39.4	40.2	40.1	41.6	43.2
Light-Duty Diesel Vehicles	32.1	23.4	30.6	33.6	35.0	36.4	39.0	43.4
Light-Duty Diesel Trucks	174	463	620	648	646	642	664	712
Heavy-Duty Diesel Vehicles	3 190	5 310	6 890	7 860	7 850	8 170	8 270	8 630
Propane & Natural Gas Vehicles	630	270	120	120	110	110	83	95
Railways	2 000	2 000	3 000	4 000	4 000	1 000	2 000	2 000
Navigation (Domestic Marine)	0.32	0.00	-	-	-	7.8	7.8	-
Other Transportation	5 700	9 900	9 900	11 000	10 000	9 500	13 000	14 000
Off-Road Gasoline	1 500	1 500	1 000	1 100	920	510	490	1 200
Off-Road Diesel	2 900	5 700	5 700	7 200	7 600	7 500	11 000	11 000
Pipelines	1 290	2 700	3 190	2 210	1 850	1 550	1 540	1 670
c. Fugitive Sources	29 700	39 000	37 100	36 200	35 300	33 700	33 500	33 800
Coal Mining	300	200	200	200	200	200	200	200
Oil and Natural Gas	29 400	38 800	36 900	36 000	35 100	33 400	33 200	33 600
INDUSTRIAL PROCESSES²	3 950	6 110	9 640	10 200	10 100	9 870	10 000	10 500
a. Mineral Products	1 100	1 400	1 400	1 400	1 300	1 000	1 100	1 100
Cement Production	740	960	1 000	1 100	1 000	780	860	860
Lime Production	100	150	120	110	100	91	110	120
Mineral Products Use	210	250	260	200	200	170	140	150
b. Chemical Industry	850	1 100	1 200	1 000	1 200	1 000	1 000	1 100
Nitric Acid Production	813	1 100	1 120	996	1 150	1 020	1 020	1 070
Adipic Acid Production	-	-	-	-	-	-	-	-
Petrochemical Production ³	41	47	40	38	35	30	30	30
c. Metal Production	-	-	-	-	-	-	-	-
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminum Production	-	-	-	-	-	-	-	-
SF ₆ Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons and SF ₆ ⁴	1.7	370	690	740	770	880	980	1 000
e. Other & Undifferentiated Production	2 000	3 200	6 400	7 100	6 800	6 900	6 900	7 200
SOLVENT & OTHER PRODUCT USE	16	44	39	35	37	28	26	27
AGRICULTURE	13 000	18 000	18 000	18 000	18 000	17 000	17 000	17 000
a. Enteric Fermentation	5 400	7 700	8 200	7 800	7 600	7 200	6 900	6 600
b. Manure Management	1 300	1 900	2 000	1 900	1 900	1 800	1 700	1 600
c. Agriculture Soils	6 400	7 900	7 800	7 700	8 400	7 600	8 100	8 300
Direct Sources	3 500	3 900	3 800	3 800	4 200	3 700	4 100	4 300
Pasture, Range and Paddock Manure	740	1 200	1 300	1 200	1 200	1 100	1 100	990
Indirect Sources	2 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000
d. Field Burning of Agricultural Residues	3.9	0.22	0.66	0.19	0.39	0.35	0.37	0.61
WASTE	1 000	1 200	1 500	1 500	1 600	1 600	1 700	1 800
a. Solid Waste Disposal on Land	960	1 100	1 400	1 400	1 500	1 500	1 600	1 700
b. Wastewater Handling	66	84	93	99	99	100	100	100
c. Waste Incineration	11	33	33	19	22	7.5	7.5	7.5

Notes:

1. Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.

2. Emissions associated with ammonia production as well as with the consumption of PFCs and SF₆ (except for electric utilities) are only reported at the national level.3. The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene.CO₂ emissions from this category are in Other & Undifferentiated Production4. Only SF₆ emissions from electrical equipment are included. SF₆ emission estimates for semi-conductor manufacturing are only available at national level.

- Indicates no emissions

0.0 Indicates emissions truncated due to rounding

Note that 2003 to 2010 historical estimates have been revised on the basis of updated energy data provided by Statistics Canada. Also note that the 2011 estimates are based on preliminary energy data—which though the best available information at the time of publication—are subject to revision in the next submission year.

Table A11-19 2011 GHG Emission Summary for Alberta

A11

Greenhouse Gas Categories		Greenhouse Gases								
Global Warming Potential		CO ₂	CH ₄	CH ₄	N ₂ O	N ₂ O	HFCs	PFCs	SF ₆	TOTAL
Unit		kt	kt	21 kt CO ₂ equivalent	kt	310 kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent
TOTAL		193 000	1 700	35 000	44	14 000	1 000	-	1.2	242 000
ENERGY		184 000	1 200	26 000	10	3 000				213 000
a.	Stationary Combustion Sources	138 000	60	1 000	4	1 000				140 000
	Electricity and Heat Generation	47 400	2.1	45	0.9	300				47 700
	Fossil Fuel Production and Refining	35 700	50	1 000	1	400				37 000
	Mining & Oil and Gas Extraction	28 900	0.5	10	0.6	200				29 100
	Manufacturing Industries	10 800	0.4	9	0.4	100				10 900
	Construction	251	0.01	0.09	0.01	3				254
	Commercial & Institutional	5 820	0.1	2	0.1	40				5 860
	Residential	8 570	0.8	20	0.2	50				8 600
	Agriculture & Forestry	211	0.00	0.08	0.01	2				212
b.	Transport ¹	37 700	5	100	6	2 000				39 800
	Civil Aviation (Domestic Aviation)	1 170	0.07	1	0.04	10				1 200
	Road Transportation	22 100	1.7	35	1.5	470				22 600
	Light-Duty Gasoline Vehicles	3 790	0.40	8.4	0.31	96				3 900
	Light-Duty Gasoline Trucks	7 070	0.72	15	0.53	160				7 250
	Heavy-Duty Gasoline Vehicles	1 900	0.08	1.6	0.16	50				1 960
	Motorcycles	42.6	0.02	0.32	0.00	0.25				43.2
	Light-Duty Diesel Vehicles	42.3	0.00	0.02	0.00	1				43.4
	Light-Duty Diesel Trucks	694	0.02	0.4	0.06	20				712
	Heavy-Duty Diesel Vehicles	8 480	0.4	7	0.5	100				8 630
	Propane & Natural Gas Vehicles	91.9	0.1	2	0.00	0.6				95
	Railways	1 520	0.08	2	0.6	200				2 000
	Navigation (Domestic Marine)	-	-	-	-	-				0
	Other Transportation	13 000	4	70	4	1 000				14 000
	Off-Road Gasoline	1 100	1	30	0.03	8				1 200
	Off-Road Diesel	10 000	0.6	10	4	1 000				11 000
	Pipelines	1 620	1.6	34	0.04	10				1 670
c.	Fugitive Sources	9 000	1 200	25 000	0.05	10				33 800
	Coal Mining	-	10	200	-	-				200
	Oil and Natural Gas	8 950	1 170	24 700	0.05	10				33 600
INDUSTRIAL PROCESSES ²		8 400	1.3	28	3.46	1 070	1 000	-	1.2	10 500
a.	Mineral Products	1 100								1 100
	Cement Production	860								860
	Lime Production	120								120
	Mineral Product Use	150	-	-	-	-	-	-	-	150
b.	Chemical Industry	-	1.3	28	3.46	1 070				1 100
	Nitric Acid Production				3.45	1 070				1 070
	Adipic Acid Production	-	-	-	-	-	-	-	-	0
	Petrochemical Production ³		1.3	28	0.01	1.9				30
c.	Metal Production	-				-				0
	Iron and Steel Production	-								0
	Aluminum Production	-								0
	SF ₆ Used in Magnesium Smelters and Casters								-	0
d.	Production and Consumption of Halocarbons and SF ₆ ⁴						1 000	-	1.2	1 000
e.	Other & Undifferentiated Production	7 200								7 200
SOLVENT & OTHER PRODUCT USE					0.09	27				27
AGRICULTURE			340	7 100	31	9 500				17 000
a.	Enteric Fermentation		320	6 600						6 600
b.	Manure Management		24	500	3.7	1 100				1 600
c.	Agriculture Soils				27	8 300				8 300
	Direct Sources				14	4 300				4 300
	Pasture, Range and Paddock Manure				3.2	990				990
	Indirect Sources				10	3 000				3 000
d.	Field Burning of Agricultural Residues	-	0.02	0.44	0.00	0.17	-	-	-	0.61
WASTE		4.7	80	1 700	0.3	80				1 800
a.	Solid Waste Disposal on Land		79	1 700		-				1 700
b.	Wastewater Handling		1.4	29	0.2	80				100
c.	Waste Incineration	4.7	0.00	0.01	0.01	3				7.5

Notes:

- Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.
 - Emissions associated with ammonia production as well as with the consumption of PFCs and SF₆ (except for electric utilities) are only reported at the national level.
 - The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene. CO₂ emissions from this category are in Other & Undifferentiated Production.
 - Only SF₆ emissions from electrical equipment are included. SF₆ emission estimates for semi-conductor manufacturing are only available at national level.
- Indicates no emissions
0.0 Indicates emissions truncated due to rounding
Note that 2003 to 2010 historical estimates have been revised on the basis of updated energy data provided by Statistics Canada. Also note that the 2011 estimates are based on preliminary energy data—which though the best available information at the time of publication—are subject to revision in the next submission year.

Table A11–20 1990–2011 GHG Emission Summary for British Columbia

Greenhouse Gas Categories		1990	2000	2005	2007	2008	2009	2010	2011
<i>kt CO₂ equivalent</i>									
TOTAL		49 400	61 900	64 000	62 600	63 000	60 000	59 900	59 100
ENERGY		41 200	51 800	53 300	51 500	52 500	49 700	49 900	49 300
a.	Stationary Combustion Sources	19 000	22 500	23 100	20 900	20 800	20 500	19 900	19 300
	Electricity and Heat Generation	803	1 810	1 320	1 130	1 470	1 320	1 210	637
	Fossil Fuel Production and Refining	3 600	3 800	7 300	6 200	6 000	6 300	6 400	5 200
	Mining & Oil and Gas Extraction	328	331	280	1 170	1 440	1 420	1 620	1 670
	Manufacturing Industries	6 460	8 060	6 340	4 660	4 070	4 040	4 060	3 990
	Construction	306	75.9	112	125	104	62.7	81.5	103
	Commercial & Institutional	2 840	3 470	3 010	2 910	3 090	2 740	2 500	2 820
	Residential	4 300	4 700	4 600	4 600	4 600	4 600	3 800	4 600
	Agriculture & Forestry	321	315	72.1	71.5	59.9	46.4	305	277
b.	Transport ¹	18 600	23 900	24 800	24 900	25 300	23 200	23 700	23 100
	Civil Aviation (Domestic Aviation)	1 300	1 500	1 500	1 400	1 300	1 200	1 200	1 100
	Road Transportation	11 400	14 800	15 400	15 500	15 400	15 500	15 500	16 100
	Light-Duty Gasoline Vehicles	3 740	4 400	4 160	4 060	4 020	4 090	3 930	3 940
	Light-Duty Gasoline Trucks	2 130	4 470	4 740	4 640	4 600	4 690	4 510	4 530
	Heavy-Duty Gasoline Vehicles	2 220	1 820	1 770	1 770	1 780	1 830	1 770	1 800
	Motorcycles	19.1	17.6	28.7	28.7	28.7	29.6	28.7	29.1
	Light-Duty Diesel Vehicles	34.4	51.1	63.4	66.2	70.6	78.1	82.7	88.1
	Light-Duty Diesel Trucks	40.1	72.4	58.5	59.4	59.7	63.0	63.3	64.0
	Heavy-Duty Diesel Vehicles	2 440	3 600	4 380	4 640	4 580	4 540	4 860	5 400
	Propane & Natural Gas Vehicles	780	330	190	230	250	210	220	210
	Railways	1 000	1 000	400	400	700	400	500	800
	Navigation (Domestic Marine)	1 000	1 200	2 500	2 600	2 600	2 700	2 700	2 400
	Other Transportation	3 500	5 200	5 000	4 900	5 300	3 300	3 900	2 800
	Off-Road Gasoline	350	520	450	440	350	260	340	460
	Off-Road Diesel	2 200	3 000	3 600	3 500	4 100	2 200	2 700	1 500
	Pipelines	856	1 650	989	933	895	868	836	806
c.	Fugitive Sources	3 670	5 350	5 450	5 760	6 430	6 090	6 230	6 920
	Coal Mining	700	700	800	700	700	600	800	800
	Oil and Natural Gas	2 980	4 680	4 670	5 040	5 730	5 470	5 470	6 160
INDUSTRIAL PROCESSES²		2 670	3 790	4 120	4 610	4 090	3 950	3 750	3 560
a.	Mineral Products	850	1 300	1 400	1 400	1 300	1 000	1 100	1 100
	Cement Production	610	1 100	1 200	1 200	1 100	860	930	940
	Lime Production	160	220	180	160	160	140	160	170
	Mineral Products Use	76	64	57	57	48	38	29	28
b.	Chemical Industry	0.29	0.04	0.23	-	-	-	-	-
	Nitric Acid Production	-	-	-	-	-	-	-	-
	Adipic Acid Production	-	-	-	-	-	-	-	-
	Petrochemical Production ³	0.29	0.04	0.23	-	-	-	-	-
c.	Metal Production	1 510	1 820	1 130	1 100	1 150	1 150	785	785
	Iron and Steel Production	-	-	-	-	-	-	-	-
	Aluminum Production	1 500	1 800	1 100	1 100	1 200	1 100	780	780
	SF ₆ Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d.	Production and Consumption of Halocarbons and SF ₆ ⁴	60	450	800	830	870	980	1 100	1 100
e.	Other & Undifferentiated Production	260	180	760	1 300	800	790	760	530
SOLVENT & OTHER PRODUCT USE		21	59	49	43	45	34	32	33
AGRICULTURE		2 100	2 400	2 600	2 300	2 300	2 100	2 100	2 000
a.	Enteric Fermentation	980	1 200	1 300	1 100	1 100	1 000	940	920
b.	Manure Management	310	380	400	370	360	350	340	340
c.	Agriculture Soils	820	830	890	840	820	770	780	730
	Direct Sources	370	310	340	340	330	320	330	310
	Pasture, Range and Paddock Manure	170	230	250	220	200	180	170	160
	Indirect Sources	300	300	300	300	300	300	300	300
d.	Field Burning of Agricultural Residues	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WASTE		3 300	3 900	3 900	4 100	4 100	4 100	4 200	4 200
a.	Solid Waste Disposal on Land	3 200	3 700	3 700	3 800	3 900	3 900	3 900	4 000
b.	Wastewater Handling	92	120	130	130	130	130	130	130
c.	Waste Incineration	81	87	85	85	85	84	84	84

Notes:

- Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.
 - Emissions associated with ammonia production as well as with the consumption of PFCs and SF₆ (except for electric utilities) are only reported at the national level.
 - The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene. CO₂ emissions from this category are in Other & Undifferentiated Production.
 - Only SF₆ emissions from electrical equipment are included. SF₆ emission estimates for semi-conductor manufacturing are only available at national level.
- Indicates no emissions
0.0 Indicates emissions truncated due to rounding
Note that 2003 to 2010 historical estimates have been revised on the basis of updated energy data provided by Statistics Canada. Also note that the 2011 estimates are based on preliminary energy data—which though the best available information at the time of publication—are subject to revision in the next submission year.

Table A11-21 2011 GHG Emission Summary for British Columbia

A11

Greenhouse Gas Categories		Greenhouse Gases								
Global Warming Potential		CO ₂	CH ₄	CH ₄	N ₂ O	N ₂ O	HFCs	PFCs	SF ₆	TOTAL
Unit		kt	kt	21 kt CO ₂ equivalent	kt	310 kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent
TOTAL		46 400	430	9 000	7.2	2 200	1 100	400	28	59 100
ENERGY		44 300	180	3 900	4	1 000				49 300
a.	Stationary Combustion Sources	18 500	30	600	1	300				19 300
	Electricity and Heat Generation	628	0.15	3.1	0.02	6				637
	Fossil Fuel Production and Refining	4 900	10	300	0.1	40				5 200
	Mining & Oil and Gas Extraction	1 660	0.03	0.6	0.03	9				1 670
	Manufacturing Industries	3 810	0.7	10	0.5	200				3 990
	Construction	103	0.00	0.04	0.00	0.6				103
	Commercial & Institutional	2 800	0.05	1	0.06	20				2 820
	Residential	4 270	10	200	0.2	70				4 600
	Agriculture & Forestry	275	0.01	0.1	0.01	2				277
	Transport ¹	22 100	3	60	3	900				23 100
b.	Civil Aviation (Domestic Aviation)	1 050	0.05	0.9	0.03	9				1 100
	Road Transportation	15 600	1.3	26	1.5	470				16 100
	Light-Duty Gasoline Vehicles	3 790	0.35	7.3	0.47	150				3 940
	Light-Duty Gasoline Trucks	4 340	0.38	7.9	0.59	180				4 530
	Heavy-Duty Gasoline Vehicles	1 750	0.08	1.6	0.15	45				1 800
	Motorcycles	28.6	0.01	0.29	0.00	0.17				29.1
	Light-Duty Diesel Vehicles	85.8	0.00	0.04	0.01	2				88.1
	Light-Duty Diesel Trucks	62.4	0.00	0.03	0.01	2				64.0
	Heavy-Duty Diesel Vehicles	5 300	0.2	5	0.3	90				5 400
	Propane & Natural Gas Vehicles	207	0.2	4	0.00	1				210
c.	Railways	714	0.04	0.9	0.3	90				800
	Navigation (Domestic Marine)	2 260	0.2	4	0.4	100				2 400
	Other Transportation	2 600	1	30	0.6	200				2 800
	Off-Road Gasoline	440	0.6	10	0.01	3				460
	Off-Road Diesel	1 300	0.08	2	0.6	200				1 500
	Pipelines	784	0.78	16	0.02	6				806
	Fugitive Sources	3 700	150	3 300	0.00	0.9				6 920
	Coal Mining		40	800	-	-				800
	Oil and Natural Gas	3 670	119	2 500	0.00	0.9				6 160
	INDUSTRIAL PROCESSES ²		2 100	-	-	-	-	1 100	400	28
a.	Mineral Products	1 100								1 100
	Cement Production	940								940
	Lime Production	170								170
b.	Mineral Product Use	28	-	-	-	-	-	-	-	28
	Chemical Industry	-	-	-	-	-				0
	Nitric Acid Production				-	-				0
	Adipic Acid Production	-	-	-	-	-	-	-	-	0
c.	Petrochemical Production ³		-	-	-	-				0
	Metal Production	383				-		400	-	785
	Iron and Steel Production	-								0
	Aluminum Production	380						400	-	780
d.	SF ₆ Used in Magnesium Smelters and Casters								-	0
	Production and Consumption of Halocarbons and SF ₆ ⁴						1 100	-	28	1 100
e.	Other & Undifferentiated Production	530								530
SOLVENT & OTHER PRODUCT USE					0.11	33				33
AGRICULTURE			52	1 100	2.9	900				2 000
a.	Enteric Fermentation		44	920						920
b.	Manure Management		8.0	170	0.55	170				340
c.	Agriculture Soils				2.4	730				730
	Direct Sources				1.0	310				310
	Pasture, Range and Paddock Manure				0.52	160				160
	Indirect Sources				0.8	300				300
d.	Field Burning of Agricultural Residues	-	-	-	-	-	-	-	-	0
WASTE		73	190	4 000	0.3	100				4 200
a.	Solid Waste Disposal on Land		190	4 000		-				4 000
b.	Wastewater Handling		2.1	44	0.3	90				130
c.	Waste Incineration	73	-	-	0.04	10				84

Notes:

1. Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.

2. Emissions associated with ammonia production as well as with the consumption of PFCs and SF₆ (except for electric utilities) are only reported at the national level.3. The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene.CO₂ emissions from this category are in Other & Undifferentiated Production4. Only SF₆ emissions from electrical equipment are included. SF₆ emission estimates for semi-conductor manufacturing are only available at national level.

- Indicates no emissions

0.0 Indicates emissions truncated due to rounding

Note that 2003 to 2010 historical estimates have been revised on the basis of updated energy data provided by Statistics Canada. Also note that the 2011 estimates are based on preliminary energy data—which though the best available information at the time of publication—are subject to revision in the next submission year.

Table A11–22 1990-2011 GHG Emission Summary for Yukon

Greenhouse Gas Categories								
	1990	2000	2005	2007	2008	2009	2010	2011
<i>kt CO₂ equivalent</i>								
TOTAL	537	451	450	418	381	345	341	374
ENERGY	534	443	437	406	367	330	325	357
a. Stationary Combustion Sources	221	192	195	213	203	134	136	159
Electricity and Heat Generation	93.6	17.0	22.9	17.9	18.1	17.0	18.7	27.6
Fossil Fuel Production and Refining	3.1	84	66	88	46	12	19	12
Mining & Oil and Gas Extraction	5.71	2.22	16.6	21.6	25.0	4.35	5.51	6.32
Manufacturing Industries	5.99	-	-	1.22	20.4	16.8	14.6	18.3
Construction	3.52	2.50	1.57	2.41	2.03	1.52	1.81	3.49
Commercial & Institutional	76.3	53.0	27.4	31.4	34.1	53.9	42.7	60.2
Residential	32	33	52	51	57	28	33	32
Agriculture & Forestry	1.08	0.95	8.19	-	-	-	-	-
b. Transport ¹	312	247	238	190	161	193	186	194
Civil Aviation (Domestic Aviation)	34	32	34	39	34	33	38	37
Road Transportation	179	161	144	113	98.2	119	114	117
Light-Duty Gasoline Vehicles	79.4	48.5	28.7	19.1	15.2	19.8	19.4	17.9
Light-Duty Gasoline Trucks	30.4	38.3	30.9	20.6	16.5	21.4	20.9	19.4
Heavy-Duty Gasoline Vehicles	10.0	6.49	4.92	3.28	2.65	3.50	3.48	3.26
Motorcycles	0.50	0.33	0.27	0.18	0.15	0.19	0.19	0.18
Light-Duty Diesel Vehicles	0.77	0.47	0.31	0.21	0.17	0.23	0.24	0.23
Light-Duty Diesel Trucks	0.62	2.46	2.02	1.35	1.08	1.39	1.39	1.29
Heavy-Duty Diesel Vehicles	55.7	63.3	75.6	67.0	60.7	71.3	67.1	73.0
Propane & Natural Gas Vehicles	1.5	0.68	1.3	1.8	1.8	0.92	1.3	1.5
Railways	-	-	-	-	-	-	-	-
Navigation (Domestic Marine)	-	-	-	-	-	-	-	-
Other Transportation	100	55	60	38	29	41	35	40
Off-Road Gasoline	10	14	2.4	1.5	1.2	1.8	0.86	0.40
Off-Road Diesel	89	41	58	36	28	40	34	40
Pipelines	-	-	-	-	-	-	-	-
c. Fugitive Sources	-	4.02	3.88	3.02	3.10	2.77	2.90	2.86
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	-	4.02	3.88	3.02	3.10	2.77	2.90	2.86
INDUSTRIAL PROCESSES²	1.50	5.45	9.42	9.60	9.97	11.6	13.0	14.0
a. Mineral Products	0.13	-	-	-	-	-	-	-
Cement Production	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-
Mineral Products Use	0.13	-	-	-	-	-	-	-
b. Chemical Industry	-	-	-	-	-	-	-	-
Nitric Acid Production	-	-	-	-	-	-	-	-
Adipic Acid Production	-	-	-	-	-	-	-	-
Petrochemical Production ³	-	-	-	-	-	-	-	-
c. Metal Production	-	-	-	-	-	-	-	-
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminum Production	-	-	-	-	-	-	-	-
SF ₆ Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons and SF ₆ ⁴	-	4.7	8.9	8.9	9.3	11	12	13
e. Other & Undifferentiated Production	1.4	0.71	0.56	0.71	0.71	0.71	0.99	1.1
SOLVENT & OTHER PRODUCT USE	0.18	0.45	0.37	0.32	0.34	0.26	0.25	0.25
AGRICULTURE	-	-	-	-	-	-	-	-
a. Enteric Fermentation	-	-	-	-	-	-	-	-
b. Manure Management	-	-	-	-	-	-	-	-
c. Agriculture Soils	-	-	-	-	-	-	-	-
Direct Sources	-	-	-	-	-	-	-	-
Pasture, Range and Paddock Manure	-	-	-	-	-	-	-	-
Indirect Sources	-	-	-	-	-	-	-	-
d. Field Burning of Agricultural Residues	-	-	-	-	-	-	-	-
WASTE	1.8	2.4	2.7	2.8	2.9	3.0	3.0	3.1
a. Solid Waste Disposal on Land	0.60	1.1	1.3	1.4	1.4	1.5	1.5	1.6
b. Wastewater Handling	1.2	1.3	1.4	1.4	1.4	1.5	1.5	1.5
c. Waste Incineration	-	-	-	-	-	-	-	-

Notes:

1. Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.

2. Emissions associated with ammonia production as well as with the consumption of PFCs and SF₆ (except for electric utilities) are only reported at the national level.3. The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene.CO₂ emissions from this category are in Other & Undifferentiated Production4. Only SF₆ emissions from electrical equipment are included. SF₆ emission estimates for semi-conductor manufacturing are only available at national level.

- Indicates no emissions

0.0 Indicates emissions truncated due to rounding

Note that 2003 to 2010 historical estimates have been revised on the basis of updated energy data provided by Statistics Canada. Also note that the 2011 estimates are based on preliminary energy data—which though the best available information at the time of publication—are subject to revision in the next submission year.

Table A11-23 2011 GHG Emission Summary for Yukon

A11

Greenhouse Gas Categories		Greenhouse Gases									
Global Warming Potential		CO ₂	CH ₄	CH ₄	N ₂ O	N ₂ O	HFCs	PFCs	SF ₆	TOTAL	
Unit		kt	kt	21 kt CO ₂ equivalent	kt	310 kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	
TOTAL		344	0.30	6.3	0.03	11	13	-	-	374	
ENERGY		343	0.19	3.9	0.03	10				357	
a.	Stationary Combustion Sources	154	0.2	3	0.01	3				159	
	Electricity and Heat Generation	26.4	0.00	0.03	0.00	1				27.6	
	Fossil Fuel Production and Refining	11.2	0.03	0.7	0.00	0.1				12	
	Mining & Oil and Gas Extraction	6.18	0.00	0.00	0.00	0.1				6.32	
	Manufacturing Industries	18.2	0.00	0.00	0.00	0.07				18.3	
	Construction	3.46	0.00	0.00	0.00	0.03				3.49	
	Commercial & Institutional	59.7	0.00	0.01	0.00	0.4				60.2	
	Residential	28.4	0.1	3	0.00	0.5				32	
	Agriculture & Forestry	-	-	-	-	-				0	
	Transport ¹	187	0.01	0.3	0.02	7				194	
b.	Civil Aviation (Domestic Aviation)	36.9	0.00	0.07	0.00	0.4				37	
	Road Transportation	114	0.01	0.17	0.01	2.2				117	
	Light-Duty Gasoline Vehicles	17.4	0.00	0.04	0.00	0.43				17.9	
	Light-Duty Gasoline Trucks	18.9	0.00	0.05	0.00	0.46				19.4	
	Heavy-Duty Gasoline Vehicles	3.18	0.00	0.00	0.00	0.08				3.26	
	Motorcycles	0.18	0.00	0.00	0.00	0.00				0.18	
	Light-Duty Diesel Vehicles	0.22	0.00	0.00	0.00	0.01				0.23	
	Light-Duty Diesel Trucks	1.26	0.00	0.00	0.00	0.03				1.29	
	Heavy-Duty Diesel Vehicles	71.7	0.00	0.06	0.00	1				73.0	
	Propane & Natural Gas Vehicles	1.51	0.00	0.01	0.00	0.01				1.5	
Railways	-	-	-	-	-				0		
Navigation (Domestic Marine)	-	-	-	-	-				0		
c.	Other Transportation	36	0.00	0.05	0.01	5				40	
	Off-Road Gasoline	0.38	0.00	0.01	0.00	0.00				0.40	
	Off-Road Diesel	35	0.00	0.04	0.01	5				40	
	Pipelines	-	-	-	-	-				0	
	Fugitive Sources	2.6	0.01	0.27	-	-				2.86	
	Coal Mining	-	-	-	-	-				0	
	Oil and Natural Gas	2.59	0.01	0.27	-	-				2.86	
	INDUSTRIAL PROCESSES ²		1.1	-	-	-	-	13	-	-	14.0
	a.	Mineral Products	-								0
		Cement Production	-								0
Lime Production		-								0	
Mineral Product Use		-	-	-	-	-	-	-	-	0	
b.	Chemical Industry	-	-	-	-	-				0	
	Nitric Acid Production	-								0	
	Adipic Acid Production	-	-	-	-	-	-	-	-	0	
	Petrochemical Production ³	-	-	-	-	-				0	
c.	Metal Production	-								0	
	Iron and Steel Production	-								0	
	Aluminum Production	-								0	
	SF ₆ Used in Magnesium Smelters and Casters	-								0	
d.	Production and Consumption of Halocarbons and SF ₆ ⁴	-					13	-	-	13	
e.	Other & Undifferentiated Production	1.1								1.1	
SOLVENT & OTHER PRODUCT USE					0.00	0.25				0.25	
AGRICULTURE			-	-	-	-				-	
a.	Enteric Fermentation		-	-	-	-				-	
b.	Manure Management		-	-	-	-				-	
c.	Agriculture Soils				-	-				-	
	Direct Sources				-	-				-	
	Pasture, Range and Paddock Manure				-	-				-	
	Indirect Sources				-	-				-	
d.	Field Burning of Agricultural Residues	-					-	-	-	-	
WASTE		-	0.12	2.4	0.00	0.7				3.1	
a.	Solid Waste Disposal on Land		0.08	1.6		-				1.6	
b.	Wastewater Handling		0.04	0.84	0.00	0.7				1.5	
c.	Waste Incineration	-	-	-	-	-				-	

Notes:

1. Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.

2. Emissions associated with ammonia production as well as with the consumption of PFCs and SF₆ (except for electric utilities) are only reported at the national level.3. The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene.CO₂ emissions from this category are in Other & Undifferentiated Production4. Only SF₆ emissions from electrical equipment are included. SF₆ emission estimates for semi-conductor manufacturing are only available at national level.

- Indicates no emissions

0.0 Indicates emissions truncated due to rounding

Note that 2003 to 2010 historical estimates have been revised on the basis of updated energy data provided by Statistics Canada. Also note that the 2011 estimates are based on preliminary energy data—which though the best available information at the time of publication—are subject to revision in the next submission year.

Table A11–24 1999–2011 GHG Emission Summary for Northwest Territories

Greenhouse Gas Categories								
	1999	2000	2005	2007	2008	2009	2010	2011
<i>kt CO₂ equivalent</i>								
TOTAL	1 210	1 430	1 600	2 130	1 850	1 220	1 340	1 420
ENERGY	1 200	1 420	1 590	2 120	1 830	1 210	1 330	1 410
a. Stationary Combustion Sources	586	811	681	667	684	657	657	642
Electricity and Heat Generation	80.4	95.2	98.0	93.7	80.7	68.7	66.2	65.1
Fossil Fuel Production and Refining	78	270	160	100	81	15	27	12
Mining & Oil and Gas Extraction	146	160	197	227	316	344	371	367
Manufacturing Industries	0.00	0.00	0.25	0.00	-	0.00	0.00	0.00
Construction	0.72	0.42	1.31	0.25	-	0.15	0.15	0.70
Commercial & Institutional	192	172	126	134	91.3	110	100	95.9
Residential	89	120	98	110	110	120	93	100
Agriculture & Forestry	0.02	0.01	1.53	0.25	-	-	-	-
b. Transport ¹	603	592	888	1 440	1 140	544	664	759
Civil Aviation (Domestic Aviation)	120	140	230	310	260	130	120	120
Road Transportation	222	217	251	309	246	210	186	240
Light-Duty Gasoline Vehicles	38.2	38.5	25.0	33.7	36.2	35.8	37.2	37.8
Light-Duty Gasoline Trucks	27.3	27.0	22.0	29.7	31.9	31.5	32.8	33.4
Heavy-Duty Gasoline Vehicles	3.35	3.76	2.92	4.04	4.43	4.45	4.63	4.76
Motorcycles	0.22	0.25	0.22	0.31	0.33	0.33	0.35	0.36
Light-Duty Diesel Vehicles	0.37	0.41	0.30	0.42	0.46	0.47	0.50	0.53
Light-Duty Diesel Trucks	1.41	1.63	1.53	2.07	2.24	2.22	2.31	2.35
Heavy-Duty Diesel Vehicles	150	146	199	237	170	135	108	160
Propane & Natural Gas Vehicles	0.83	0.34	0.65	0.88	0.92	0.46	0.65	0.77
Railways	3	3	5	7	8	2	3	10
Navigation (Domestic Marine)	4.6	5.8	-	-	-	-	-	0.30
Other Transportation	250	220	400	820	630	200	360	390
Off-Road Gasoline	21	26	15	17	26	23	19	19
Off-Road Diesel	230	190	380	800	600	170	340	370
Pipelines	4.72	5.66	2.74	2.46	1.62	2.51	2.51	1.90
c. Fugitive Sources	8.59	13.1	18.7	8.79	5.89	7.34	7.30	5.68
Coal Mining	-	-	-	-	-	-	-	-
Oil and Natural Gas	8.59	13.1	18.7	8.79	5.89	7.34	7.30	5.68
INDUSTRIAL PROCESSES²	3.59	5.58	7.05	6.95	5.91	5.35	8.05	6.23
a. Mineral Products	0.01	0.03	0.08	0.08	0.08	0.05	0.02	0.02
Cement Production	-	-	-	-	-	-	-	-
Lime Production	-	-	-	-	-	-	-	-
Mineral Products Use	0.01	0.03	0.08	0.08	0.08	0.05	0.02	0.02
b. Chemical Industry	-	-	-	-	-	-	-	-
Nitric Acid Production	-	-	-	-	-	-	-	-
Adipic Acid Production	-	-	-	-	-	-	-	-
Petrochemical Production ³	-	-	-	-	-	-	-	-
c. Metal Production	-	-	-	-	-	-	-	-
Iron and Steel Production	-	-	-	-	-	-	-	-
Aluminum Production	-	-	-	-	-	-	-	-
SF ₆ Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d. Production and Consumption of Halocarbons and SF ₆ ⁴	1.2	1.4	2.5	2.2	2.4	2.9	3.3	3.7
e. Other & Undifferentiated Production	2.4	4.1	4.5	4.7	3.4	2.4	4.7	2.5
SOLVENT & OTHER PRODUCT USE	0.55	0.59	0.51	0.43	0.45	0.34	0.31	0.31
AGRICULTURE	-	-	-	-	-	-	-	-
a. Enteric Fermentation	-	-	-	-	-	-	-	-
b. Manure Management	-	-	-	-	-	-	-	-
c. Agriculture Soils	-	-	-	-	-	-	-	-
Direct Sources	-	-	-	-	-	-	-	-
Pasture, Range and Paddock Manure	-	-	-	-	-	-	-	-
Indirect Sources	-	-	-	-	-	-	-	-
d. Field Burning of Agricultural Residues	-	-	-	-	-	-	-	-
WASTE	4.3	4.3	5.0	5.2	5.3	5.3	5.4	5.5
a. Solid Waste Disposal on Land	1.8	1.9	2.3	2.5	2.6	2.7	2.8	2.9
b. Wastewater Handling	2.5	2.5	2.6	2.7	2.7	2.6	2.7	2.7
c. Waste Incineration	-	-	-	-	-	-	-	-

Notes:

1. Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.

2. Emissions associated with ammonia production as well as with the consumption of PFCs and SF₆ (except for electric utilities) are only reported at the national level.3. The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene.CO₂ emissions from this category are in Other & Undifferentiated Production4. Only SF₆ emissions from electrical equipment are included. SF₆ emission estimates for semi-conductor manufacturing are only available at national level.

- Indicates no emissions

0.0 Indicates emissions truncated due to rounding

Note that 2003 to 2010 historical estimates have been revised on the basis of updated energy data provided by Statistics Canada. Also note that the 2011 estimates are based on preliminary energy data—which though the best available information at the time of publication—are subject to revision in the next submission year.

Table A11-25 2011 GHG Emission Summary for Northwest Territories

A11

Greenhouse Gas Categories		Greenhouse Gases							
Global Warming Potential		CO ₂	CH ₄	CH ₄	N ₂ O	N ₂ O	HFCs	PFCs	SF ₆
Unit		kt	kt	21 kt CO ₂ equivalent	kt	310 kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent
TOTAL		1 330	0.84	18	0.21	64	3.7	-	-
ENERGY		1 330	0.62	13	0.2	60	-	-	1 420
a.	Stationary Combustion Sources	621	0.3	7	0.04	10			642
	Electricity and Heat Generation	62.7	0.01	0.12	0.01	2			65.1
	Fossil Fuel Production and Refining	11.4	0.03	0.6	0.00	0.09			12
	Mining & Oil and Gas Extraction	357	0.01	0.3	0.03	10			367
	Manufacturing Industries	0.00	0.00	0.00	0.00	0.00			0.00
	Construction	0.70	0.00	0.00	0.00	0.01			0.70
	Commercial & Institutional	95.2	0.00	0.03	0.00	0.7			95.9
	Residential	94.4	0.3	6	0.00	1			100
	Agriculture & Forestry	-	-	-	-	-			0
b.	Transport ¹	709	0.07	1	0.2	50			759
	Civil Aviation (Domestic Aviation)	117	0.01	0.2	0.00	1			120
	Road Transportation	236	0.02	0.32	0.01	4.5			240
	Light-Duty Gasoline Vehicles	36.8	0.00	0.09	0.00	0.91			37.8
	Light-Duty Gasoline Trucks	32.5	0.00	0.08	0.00	0.78			33.4
	Heavy-Duty Gasoline Vehicles	4.66	0.00	0.01	0.00	0.10			4.76
	Motorcycles	0.35	0.00	0.00	0.00	0.00			0.36
	Light-Duty Diesel Vehicles	0.52	0.00	0.00	0.00	0.01			0.53
	Light-Duty Diesel Trucks	2.29	0.00	0.00	0.00	0.06			2.35
	Heavy-Duty Diesel Vehicles	158	0.01	0.1	0.01	3			160
	Propane & Natural Gas Vehicles	0.76	0.00	0.01	0.00	0.00			0.77
	Railways	8.52	0.00	0.01	0.00	1			10
	Navigation (Domestic Marine)	0.27	0.00	0.00	0.00	0.03			0.30
	Other Transportation	350	0.04	0.8	0.1	40			390
	Off-Road Gasoline	18	0.02	0.5	0.00	0.1			19
	Off-Road Diesel	330	0.02	0.4	0.1	40			370
	Pipelines	1.83	0.00	0.00	0.00	0.08			1.90
c.	Fugitive Sources	0.76	0.23	4.9	-	-			5.68
	Coal Mining	-	-	-	-	-			0
	Oil and Natural Gas	0.76	0.24	4.93	-	-			5.68
INDUSTRIAL PROCESSES ²		2.6	-	-	-	-	3.7	-	6.23
a.	Mineral Products	0.02	-	-	-	-	-	-	0.02
	Cement Production	-	-	-	-	-	-	-	0
	Lime Production	-	-	-	-	-	-	-	0
	Mineral Product Use	0.02	-	-	-	-	-	-	0.02
b.	Chemical Industry	-	-	-	-	-	-	-	0
	Nitric Acid Production	-	-	-	-	-	-	-	0
	Adipic Acid Production	-	-	-	-	-	-	-	0
	Petrochemical Production ³	-	-	-	-	-	-	-	0
c.	Metal Production	-	-	-	-	-	-	-	0
	Iron and Steel Production	-	-	-	-	-	-	-	0
	Aluminum Production	-	-	-	-	-	-	-	0
	SF ₆ Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	0
d.	Production and Consumption of Halocarbons and SF ₆ ⁴	-	-	-	-	-	3.7	-	3.7
e.	Other & Undifferentiated Production	2.5	-	-	-	-	-	-	2.5
SOLVENT & OTHER PRODUCT USE		-	-	-	0.00	0.31	-	-	0.31
AGRICULTURE		-	-	-	-	-	-	-	-
a.	Enteric Fermentation	-	-	-	-	-	-	-	-
b.	Manure Management	-	-	-	-	-	-	-	-
c.	Agriculture Soils	-	-	-	-	-	-	-	-
	Direct Sources	-	-	-	-	-	-	-	-
	Pasture, Range and Paddock Manure	-	-	-	-	-	-	-	-
	Indirect Sources	-	-	-	-	-	-	-	-
d.	Field Burning of Agricultural Residues	-	-	-	-	-	-	-	-
WASTE		-	0.22	4.7	0.00	0.9	-	-	5.5
a.	Solid Waste Disposal on Land	-	0.14	2.9	-	-	-	-	2.9
b.	Wastewater Handling	-	0.09	1.8	0.00	0.9	-	-	2.7
c.	Waste Incineration	-	-	-	-	-	-	-	0

Notes:

1. Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.

2. Emissions associated with ammonia production as well as with the consumption of PFCs and SF₆ (except for electric utilities) are only reported at the national level.3. The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene.CO₂ emissions from this category are in Other & Undifferentiated Production4. Only SF₆ emissions from electrical equipment are included. SF₆ emission estimates for semi-conductor manufacturing are only available at national level.

- Indicates no emissions

0.0 Indicates emissions truncated due to rounding

Note that 2003 to 2010 historical estimates have been revised on the basis of updated energy data provided by Statistics Canada. Also note that the 2011 estimates are based on preliminary energy data—which though the best available information at the time of publication—are subject to revision in the next submission year.

Table A11–26 1999–2011 GHG Emission Summary for Nunavut

Greenhouse Gas Categories		1999	2000	2005	2007	2008	2009	2010	2011
<i>kt CO₂ equivalent</i>									
TOTAL		271	349	344	540	548	433	422	225
ENERGY		265	343	334	530	538	421	409	211
a.	Stationary Combustion Sources	97.3	57.4	132	105	129	124	124	75.6
	Electricity and Heat Generation	-	-	124	105	129	124	124	75.6
	Fossil Fuel Production and Refining	-	-	-	-	-	-	-	-
	Mining & Oil and Gas Extraction	91.3	45.8	0.25	-	-	-	-	-
	Manufacturing Industries	-	-	-	-	-	-	-	-
	Construction	-	-	-	-	-	-	-	-
	Commercial & Institutional	3.31	6.23	8.14	-	-	-	-	-
	Residential	2.7	5.4	-	-	-	-	-	-
	Agriculture & Forestry	-	-	-	-	-	-	-	-
b.	Transport ¹	168	285	202	424	409	297	285	136
	Civil Aviation (Domestic Aviation)	110	120	140	130	130	110	120	120
	Road Transportation	19.3	24.9	25.2	28.7	28.4	29.7	32.9	12.3
	Light-Duty Gasoline Vehicles	3.91	5.26	3.75	3.93	3.97	4.59	4.55	-
	Light-Duty Gasoline Trucks	8.48	12.5	11.3	11.9	12.0	13.9	13.7	-
	Heavy-Duty Gasoline Vehicles	0.13	0.19	0.19	0.22	0.22	0.28	0.31	-
	Motorcycles	0.02	0.03	0.03	0.03	0.03	0.04	0.04	-
	Light-Duty Diesel Vehicles	0.04	0.06	0.05	0.06	0.06	0.07	0.07	-
	Light-Duty Diesel Trucks	0.47	0.71	0.74	0.74	0.75	0.86	0.87	-
	Heavy-Duty Diesel Vehicles	5.45	5.81	8.52	10.9	10.5	9.55	12.7	11.5
	Propane & Natural Gas Vehicles	0.83	0.34	0.65	0.88	0.92	0.46	0.65	0.77
	Railways	-	-	-	-	-	-	-	-
	Navigation (Domestic Marine)	3.6	4.6	-	-	-	-	-	-
	Other Transportation	38	130	41	260	250	160	140	5.0
	Off-Road Gasoline	-	2.2	-	-	-	0.89	0.52	-
	Off-Road Diesel	38	130	41	260	250	160	140	5.0
	Pipelines	-	-	-	-	-	-	-	-
c.	Fugitive Sources	-	-	-	-	-	-	-	-
	Coal Mining	-	-	-	-	-	-	-	-
	Oil and Natural Gas	-	-	-	-	-	-	-	-
INDUSTRIAL PROCESSES²		2.90	3.51	6.20	6.13	6.38	7.33	8.15	8.81
a.	Mineral Products	-	-	-	-	-	-	-	-
	Cement Production	-	-	-	-	-	-	-	-
	Lime Production	-	-	-	-	-	-	-	-
	Mineral Products Use	-	-	-	-	-	-	-	-
b.	Chemical Industry	-	-	-	-	-	-	-	-
	Nitric Acid Production	-	-	-	-	-	-	-	-
	Adipic Acid Production	-	-	-	-	-	-	-	-
	Petrochemical Production ³	-	-	-	-	-	-	-	-
c.	Metal Production	-	-	-	-	-	-	-	-
	Iron and Steel Production	-	-	-	-	-	-	-	-
	Aluminum Production	-	-	-	-	-	-	-	-
	SF ₆ Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-
d.	Production and Consumption of Halocarbons and SF ₆ ⁴	2.8	3.4	6.2	6.1	6.4	7.3	8.2	8.8
e.	Other & Undifferentiated Production	0.08	0.08	-	-	-	-	-	-
SOLVENT & OTHER PRODUCT USE		0.36	0.40	0.36	0.31	0.32	0.25	0.23	0.24
AGRICULTURE		-	-	-	-	-	-	-	-
a.	Enteric Fermentation	-	-	-	-	-	-	-	-
b.	Manure Management	-	-	-	-	-	-	-	-
c.	Agriculture Soils	-	-	-	-	-	-	-	-
	Direct Sources	-	-	-	-	-	-	-	-
	Pasture, Range and Paddock Manure	-	-	-	-	-	-	-	-
	Indirect Sources	-	-	-	-	-	-	-	-
d.	Field Burning of Agricultural Residues	-	-	-	-	-	-	-	-
WASTE		2.8	2.9	3.5	3.7	3.8	3.9	4.1	4.2
a.	Solid Waste Disposal on Land	1.2	1.3	1.6	1.8	1.9	2.0	2.1	2.2
b.	Wastewater Handling	1.6	1.7	1.9	1.9	1.9	2.0	2.0	2.0
c.	Waste Incineration	-	-	-	-	-	-	-	-

Notes:

1. Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.
 2. Emissions associated with ammonia production as well as with the consumption of PFCs and SF₆ (except for electric utilities) are only reported at the national level.
 3. The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene. CO₂ emissions from this category are in Other & Undifferentiated Production.
 4. Only SF₆ emissions from electrical equipment are included. SF₆ emission estimates for semi-conductor manufacturing are only available at national level.
- Indicates no emissions
0.0 Indicates emissions truncated due to rounding
- Note that 2003 to 2010 historical estimates have been revised on the basis of updated energy data provided by Statistics Canada. Also note that the 2011 estimates are based on preliminary energy data—which though the best available information at the time of publication—are subject to revision in the next submission year.

Table A11-27 2011 GHG Emission Summary for Nunavut

A11

Greenhouse Gas Categories		Greenhouse Gases							
Global Warming Potential		CO ₂	CH ₄	CH ₄	N ₂ O	N ₂ O	HFCs	PFCs	SF ₆
Unit		kt	kt	21 kt CO ₂ equivalent	kt	310 kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent
TOTAL		206	0.18	3.7	0.02	6.0	8.8	-	-
ENERGY		206	0.01	0.15	0.02	5	-	-	225
a.	Stationary Combustion Sources	72.2	0.00	0.08	0.01	3	-	-	75.6
	Electricity and Heat Generation	72.2	0.00	0.08	0.01	3	-	-	75.6
	Fossil Fuel Production and Refining	-	-	-	-	-	-	-	0
	Mining & Oil and Gas Extraction	-	-	-	-	-	-	-	0
	Manufacturing Industries	-	-	-	-	-	-	-	0
	Construction	-	-	-	-	-	-	-	0
	Commercial & Institutional	-	-	-	-	-	-	-	0
	Residential	-	-	-	-	-	-	-	0
	Agriculture & Forestry	-	-	-	-	-	-	-	0
b.	Transport ¹	134	0.00	0.08	0.01	2	-	-	136
	Civil Aviation (Domestic Aviation)	117	0.00	0.06	0.00	1	-	-	120
	Road Transportation	12.0	0.00	0.02	0.00	0.19	-	-	12.3
	Light-Duty Gasoline Vehicles	-	-	-	-	-	-	-	0
	Light-Duty Gasoline Trucks	-	-	-	-	-	-	-	0
	Heavy-Duty Gasoline Vehicles	-	-	-	-	-	-	-	0
	Motorcycles	-	-	-	-	-	-	-	0
	Light-Duty Diesel Vehicles	-	-	-	-	-	-	-	0
	Light-Duty Diesel Trucks	-	-	-	-	-	-	-	0
	Heavy-Duty Diesel Vehicles	11.3	0.00	0.01	0.00	0.2	-	-	11.5
	Propane & Natural Gas Vehicles	0.76	0.00	0.01	0.00	0.00	-	-	0.77
	Railways	-	-	-	-	-	-	-	0
	Navigation (Domestic Marine)	-	-	-	-	-	-	-	0
	Other Transportation	4.4	0.00	0.01	0.00	0.6	-	-	5.0
	Off-Road Gasoline	-	-	-	-	-	-	-	0
	Off-Road Diesel	4.4	0.00	0.01	0.00	0.6	-	-	5.0
	Pipelines	-	-	-	-	-	-	-	0
c.	Fugitive Sources	-	-	-	-	-	-	-	0
	Coal Mining	-	-	-	-	-	-	-	0
	Oil and Natural Gas	-	-	-	-	-	-	-	0
INDUSTRIAL PROCESSES ²		-	-	-	-	-	8.8	-	8.81
a.	Mineral Products	-	-	-	-	-	-	-	0
	Cement Production	-	-	-	-	-	-	-	0
	Lime Production	-	-	-	-	-	-	-	0
	Mineral Product Use	-	-	-	-	-	-	-	0
b.	Chemical Industry	-	-	-	-	-	-	-	0
	Nitric Acid Production	-	-	-	-	-	-	-	0
	Adipic Acid Production	-	-	-	-	-	-	-	0
	Petrochemical Production ³	-	-	-	-	-	-	-	0
c.	Metal Production	-	-	-	-	-	-	-	0
	Iron and Steel Production	-	-	-	-	-	-	-	0
	Aluminum Production	-	-	-	-	-	-	-	0
	SF ₆ Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	0
d.	Production and Consumption of Halocarbons and SF ₆ ⁴	-	-	-	-	-	8.8	-	8.8
e.	Other & Undifferentiated Production	-	-	-	-	-	-	-	0
SOLVENT & OTHER PRODUCT USE		-	-	-	0.00	0.24	-	-	0.24
AGRICULTURE		-	-	-	-	-	-	-	-
a.	Enteric Fermentation	-	-	-	-	-	-	-	-
b.	Manure Management	-	-	-	-	-	-	-	-
c.	Agriculture Soils	-	-	-	-	-	-	-	-
	Direct Sources	-	-	-	-	-	-	-	-
	Pasture, Range and Paddock Manure	-	-	-	-	-	-	-	-
	Indirect Sources	-	-	-	-	-	-	-	-
d.	Field Burning of Agricultural Residues	-	-	-	-	-	-	-	-
WASTE		-	0.17	3.6	0.00	0.7	-	-	4.2
a.	Solid Waste Disposal on Land	-	0.10	2.2	-	-	-	-	2.2
b.	Wastewater Handling	-	0.07	1.4	0.00	0.7	-	-	2.0
c.	Waste Incineration	-	-	-	-	-	-	-	0

Notes:

1. Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.

2. Emissions associated with ammonia production as well as with the consumption of PFCs and SF₆ (except for electric utilities) are only reported at the national level.3. The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene.CO₂ emissions from this category are in Other & Undifferentiated Production4. Only SF₆ emissions from electrical equipment are included. SF₆ emission estimates for semi-conductor manufacturing are only available at national level.

- Indicates no emissions

0.0 Indicates emissions truncated due to rounding

Note that 2003 to 2010 historical estimates have been revised on the basis of updated energy data provided by Statistics Canada. Also note that the 2011 estimates are based on preliminary energy data—which though the best available information at the time of publication—are subject to revision in the next submission year.

Table A11–28 1990-1998 GHG Emission Summary for Northwest Territories (including Nunavut)

Greenhouse Gas Categories		1990	1991	1992	1993	1994	1995	1996	1997	1998
<i>kt CO₂ equivalent</i>										
TOTAL		1 540	1 490	1 360	1 640	1 820	1 940	2 010	1 750	1 610
ENERGY		1 530	1 470	1 350	1 610	1 710	1 850	1 940	1 730	1 600
a.	Stationary Combustion Sources	857	923	852	948	1 010	1 160	1 060	984	739
	Electricity and Heat Generation	162	161	131	141	144	161	123	134	179
	Fossil Fuel Production and Refining	200	120	96	110	100	130	120	110	120
	Mining & Oil and Gas Extraction	50.8	55.0	38.7	66.1	151	232	193	182	142
	Manufacturing Industries	25.6	16.1	18.3	8.27	13.3	19.8	17.6	9.17	0.00
	Construction	5.69	5.26	5.64	3.12	3.70	20.4	0.67	0.69	0.52
	Commercial & Institutional	248	364	355	386	398	470	406	364	202
	Residential	160	190	200	230	190	120	200	180	91
	Agriculture & Forestry	2.46	8.91	11.9	2.02	2.03	0.01	-	0.01	0.02
b.	Transport ¹	611	481	445	601	656	649	838	745	852
	Civil Aviation (Domestic Aviation)	240	210	220	230	240	220	230	220	220
	Road Transportation	119	104	102	114	135	147	159	155	208
	Light-Duty Gasoline Vehicles	32.6	31.2	31.1	39.3	41.0	36.5	37.4	38.6	31.4
	Light-Duty Gasoline Trucks	14.1	14.4	15.2	20.4	23.3	22.4	24.5	28.4	23.4
	Heavy-Duty Gasoline Vehicles	4.64	3.86	3.52	4.24	3.68	3.53	3.59	3.40	2.83
	Motorcycles	0.20	0.20	0.20	0.25	0.25	0.23	0.24	0.26	0.18
	Light-Duty Diesel Vehicles	0.32	0.30	0.30	0.39	0.40	0.35	0.37	0.38	0.31
	Light-Duty Diesel Trucks	0.23	0.25	0.29	0.40	0.50	0.50	0.89	1.59	1.35
	Heavy-Duty Diesel Vehicles	65.6	52.1	48.5	47.1	60.3	79.1	89.7	80.5	147
	Propane & Natural Gas Vehicles	1.5	1.5	2.9	2.3	5.9	4.0	2.2	1.9	1.8
	Railways	3	2	2	2	1	2	1	3	2
	Navigation (Domestic Marine)	0.15	0.23	0.59	0.51	0.11	70	89	13	31
	Other Transportation	250	170	120	250	280	210	360	350	390
	Off-Road Gasoline	52	41	42	61	59	45	59	59	31
	Off-Road Diesel	200	130	82	190	220	160	300	290	350
	Pipelines	-	-	-	-	2.28	0.14	0.09	0.04	5.11
c.	Fugitive Sources	64.0	68.0	58.2	61.9	42.5	42.4	39.2	6.20	4.92
	Coal Mining	-	-	-	-	-	-	-	-	-
	Oil and Natural Gas	64.0	68.0	58.2	61.9	42.5	42.4	39.2	6.20	4.92
INDUSTRIAL PROCESSES²		3.04	11.4	2.23	24.3	104	85.6	65.4	4.58	4.03
a.	Mineral Products	-	-	-	-	-	-	-	-	-
	Cement Production	-	-	-	-	-	-	-	-	-
	Lime Production	-	-	-	-	-	-	-	-	-
	Mineral Products Use	-	-	-	-	-	-	-	-	-
b.	Chemical Industry	-	-	-	-	-	-	-	-	-
	Nitric Acid Production	-	-	-	-	-	-	-	-	-
	Adipic Acid Production	-	-	-	-	-	-	-	-	-
	Petrochemical Production ³	-	-	-	-	-	-	-	-	-
c.	Metal Production	-	-	-	-	-	-	-	-	-
	Iron and Steel Production	-	-	-	-	-	-	-	-	-
	Aluminum Production	-	-	-	-	-	-	-	-	-
	SF ₆ Used in Magnesium Smelters and Casters	-	-	-	-	-	-	-	-	-
d.	Production and Consumption of Halocarbons and SF ₆ ⁴	-	-	-	-	-	1.0	0.77	1.6	2.7
e.	Other & Undifferentiated Production	3.0	11	2.2	24	100	85	65	3.0	1.4
SOLVENT & OTHER PRODUCT USE		0.38	0.37	0.31	0.35	0.39	0.48	0.49	0.52	0.89
AGRICULTURE		-	-	-	-	-	-	-	-	-
a.	Enteric Fermentation	-	-	-	-	-	-	-	-	-
b.	Manure Management	-	-	-	-	-	-	-	-	-
c.	Agriculture Soils	-	-	-	-	-	-	-	-	-
	Direct Sources	-	-	-	-	-	-	-	-	-
	Pasture, Range and Paddock Manure	-	-	-	-	-	-	-	-	-
	Indirect Sources	-	-	-	-	-	-	-	-	-
d.	Field Burning of Agricultural Residues	-	-	-	-	-	-	-	-	-
WASTE		5.1	5.4	5.6	5.8	6.1	6.3	6.6	6.7	6.9
a.	Solid Waste Disposal on Land	1.6	1.7	1.9	2.0	2.2	2.3	2.5	2.6	2.8
b.	Wastewater Handling	3.5	3.6	3.7	3.8	3.9	4.0	4.1	4.1	4.1
c.	Waste Incineration	-	-	-	-	-	-	-	-	-

Notes:

1. Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.

2. Emissions associated with ammonia production as well as with the consumption of PFCs and SF₆ (except for electric utilities) are only reported at the national level.3. The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene.CO₂ emissions from this category are in Other & Undifferentiated Production4. Only SF₆ emissions from electrical equipment are included. SF₆ emission estimates for semi-conductor manufacturing are only available at national level.

- Indicates no emissions

0.0 Indicates emissions truncated due to rounding

Annex 12

Canada's Greenhouse Gas Emission Tables, 1990–2011

This annex contains summary tables (Table A12–1 to Table A12–24) illustrating national GHG emissions by year, by gas, and by sector.

Table A12–1 GHG Source/Sink Category Description

ENERGY	
a. Stationary Combustion Sources	
Electricity and Heat Generation	Emissions from fuel consumed by:
Electricity Generation	Utility electricity generation
Heat Generation	Steam generation (for sale)
Fossil Fuel Production and Refining	Emissions from fuel consumed by:
Petroleum Refining and Upgrading	Petroleum refining and oil sands upgrading industries
Fossil Fuel Production	Natural gas production and some conventional and unconventional oil production industries (some refining is included)
Mining & Oil and Gas Extraction	Emissions from commercial fuel sold to:
	Metal and non metal mines, stone quarries, and gravel pits
	Oil and gas extraction industries
	Mineral exploration and contract drilling operations
Manufacturing Industries	Emissions from fuel consumed by the following industries:
	Iron and Steel (steel foundries, casting and rolling mills)
	Non-ferrous metals (aluminium, magnesium, and other production)
	Chemical (fertilizer manufacturing, organic and inorganic chemical manufacturing)
	Pulp and Paper (primarily pulp, paper, and paper product manufacturers)
	Cement production
	Other manufacturing industries not listed (such as automobile manufacturing, textiles, food and beverage industries)
Construction	Emissions from fuels consumed by the construction industry - buildings, highways etc.
Commercial & Institutional	Emissions from fuel consumed by:
	Service industries related to mining, communication, wholesale and retail trade, finance and insurance, real estate, education, etc.)
	Federal, provincial, and municipal establishment
	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 house)
Agriculture & Forestry	Emissions from fuel consumed by:
	Forestry and logging service industry
	Agricultural, hunting, and trapping industry (excluding food processing, farm machinery manufacturing, and repair)
b. Transportation	Emissions resulting from the:
Domestic Aviation	-consumption of fossil fuels by Canadian registered airlines flying domestically
Road Transportation	-consumption of fossil fuels (including non-CO ₂ emissions from biofuels) by vehicles licensed to operate on roads
Railways	-consumption of fossil fuels (including non-CO ₂ emissions from biofuels) by Canadian railways
Domestic Marine	-consumption of fossil fuels (including non-CO ₂ emissions from biofuels) by Canadian registered marine vessels fuelled domestically
Others - Off Road	-consumption of fossil fuels (including non-CO ₂ emissions from biofuels) by combustion devices not licensed to operate on roads
Others - Pipelines	-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
Oil and Natural Gas	Conventional and unconventional oil and gas exploration, production, transportation, and distribution
INDUSTRIAL PROCESSES	Emissions resulting from the following process activities:
a. Mineral Products	Production of cement and lime; use of soda ash, limestone & dolomite, and magnesite
b. Chemical Industry	Production of ammonia, nitric acid, adipic acid, carbide, carbon black, ethylene dichloride, ethylene, methanol and styrene
c. Metal Production	Production of aluminum, iron and steel, magnesium production and casting
d. Production and Consumption of Halocarbons and SF₆	Production of HCFC-22; use of HFCs and/or PFCs in AC units, refrigeration units, fire extinguishers, aerosol cans, solvents, foam blowing, semiconductor manufacturing and electronics industry; use of SF ₆ in electrical equipment and semiconductors
e. Other & Undifferentiated Production	Non-energy use of fossil fuels mostly in chemical / petrochemical activities
SOLVENT & OTHER PRODUCT USE	Emissions resulting from the use of N ₂ O as anaesthetic and propellant
AGRICULTURE	Emissions resulting from:
a. Enteric Fermentation	Emissions resulting from the eructation of CH ₄ during the digestion of plant material by (mainly) ruminants
b. Manure Management	Emissions resulting from the release of CH ₄ and N ₂ O due to microbial activity during the storage of feces, urine and bedding materials from the cleaning of barns and pens
c. Agricultural Soils	
Direct sources	Direct N ₂ O emissions from synthetic fertilizer, manure on cropland, crop residue, tillage, summerfallow, irrigation, and cultivation of organic soils
Manure on Pasture, Range, and Paddock	Direct N ₂ O emissions from manure deposited on pasture, range, and paddock
Indirect Sources	Indirect N ₂ O emissions from volatilization and leaching of animal manure nitrogen, synthetic fertilizer nitrogen, and crop residue nitrogen
d. Field Burning of Agricultural Residues	CH ₄ and N ₂ O emissions from crop residue burning
WASTE	Emissions resulting from:
a. Solid Waste Disposal on Land	Municipal solid waste management sites (landfills) and dedicated wood waste landfills
b. Wastewater Handling	Domestic and industrial wastewater treatment
c. Waste Incineration	Municipal solid waste and sewage sludge incineration
LAND USE, LAND-USE CHANGE AND FORESTRY	Emissions and removals resulting from:
a. Forest Land	Managed forests and lands converted to forests; includes growth, natural and anthropogenic disturbances (fire, harvest, insects).
b. Cropland	Management practices on lands in annual crops, summerfallow and perennial crops (forage, specialty crops, orchards); residual emissions from lands converted to cropland.
c. Grassland	Managed agricultural grassland.
d. Wetlands	Peatlands disturbed for peat harvesting, 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

Table A12-2 Canada's 1990-2011 GHG Emissions by Sector

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Greenhouse Gas Categories	1990	2000	2005	2007	2008	2009	2010	2011
	kt CO ₂ equivalent							
TOTAL¹	591 000	718 000	737 000	749 000	731 000	689 000	701 000	702 000
ENERGY	469 000	589 000	597 000	610 000	592 000	560 000	570 000	572 000
a. Stationary Combustion Sources	281 000	346 000	341 000	352 000	336 000	315 000	316 000	313 000
Electricity and Heat Generation	93 600	129 000	123 000	122 000	115 000	99 600	101 000	93 300
Fossil Fuel Production and Refining	51 000	67 000	71 000	72 000	67 000	67 000	65 000	62 000
Petroleum Refining and Upgrading	17 000	16 000	20 000	21 000	19 000	19 000	18 000	16 000
Fossil Fuel Production	34 000	51 000	51 000	51 000	47 000	48 000	47 000	45 000
Mining & Oil and Gas Extraction	6 590	12 100	18 900	28 900	30 000	31 700	35 000	36 400
Manufacturing Industries	55 800	55 600	48 600	47 600	45 100	40 300	41 100	42 700
Iron and Steel	4 950	6 050	5 570	5 990	5 760	4 280	4 440	4 410
Non Ferrous Metals	3 260	3 230	3 570	3 750	3 750	2 810	2 950	3 110
Chemical	8 220	9 400	8 290	8 670	8 750	8 830	9 910	10 200
Pulp and Paper	14 500	12 300	8 770	7 850	6 400	6 510	6 090	6 190
Cement	3 920	4 330	5 380	5 040	4 910	4 480	4 030	4 050
Other Manufacturing	21 000	20 300	17 100	16 300	15 500	13 400	13 700	14 700
Construction	1 870	1 070	1 440	1 390	1 370	1 210	1 500	1 330
Commercial & Institutional	25 700	33 300	31 900	30 200	29 600	29 400	28 000	29 900
Residential	43 000	45 000	44 000	47 000	46 000	44 000	41 000	44 000
Agriculture & Forestry	2 390	2 540	2 100	2 610	2 610	2 530	2 880	3 550
b. Transport²	146 000	180 000	193 000	195 000	194 000	186 000	196 000	199 000
Civil Aviation (Domestic Aviation)	7 100	7 400	7 600	7 700	7 300	6 400	6 400	6 000
Road Transportation	96 700	118 000	130 000	133 000	132 000	132 000	134 000	135 000
Light-Duty Gasoline Vehicles	45 500	42 100	40 200	40 000	39 500	39 700	40 000	39 500
Light-Duty Gasoline Trucks	20 300	36 400	42 700	42 700	42 300	42 500	42 900	42 700
Heavy-Duty Gasoline Vehicles	7 440	5 470	6 540	6 750	6 800	6 910	7 020	7 130
Motorcycles	152	162	254	262	263	266	271	273
Light-Duty Diesel Vehicles	469	466	574	616	652	699	750	798
Light-Duty Diesel Trucks	702	1 660	1 920	2 010	2 020	2 030	2 090	2 160
Heavy-Duty Diesel Vehicles	20 000	30 900	37 600	39 500	39 200	39 000	40 200	41 800
Propane & Natural Gas Vehicles	2 200	1 100	720	830	880	780	780	820
Railways	7 000	7 000	7 000	7 000	8 000	5 000	7 000	7 000
Navigation (Domestic Marine)	5 000	5 100	6 700	6 800	6 500	6 700	7 000	6 000
Other Transportation	30 000	43 000	41 000	41 000	41 000	36 000	42 000	45 000
Off-Road Gasoline	7 800	8 800	8 300	8 000	7 300	7 300	7 900	9 400
Off-Road Diesel	16 000	23 000	23 000	24 000	26 000	23 000	28 000	30 000
Pipelines	6 850	11 200	10 100	8 380	7 460	6 310	5 670	5 600
c. Fugitive Sources	42 400	63 000	63 400	63 000	62 000	58 800	58 600	59 700
Coal Mining	2 000	1 000	1 000	1 000	900	900	1 000	1 000
Oil and Natural Gas	40 200	62 100	62 400	62 000	61 000	57 900	57 600	58 700
Oil	4 190	5 440	5 660	5 830	5 550	5 540	5 710	5 920
Natural Gas	11 400	17 700	19 200	19 700	19 700	19 300	19 300	19 400
Venting	20 200	33 500	32 100	31 200	30 700	28 700	28 200	28 700
Flaring	4 400	5 400	5 500	5 300	5 100	4 400	4 300	4 600
INDUSTRIAL PROCESSES	56 000	52 100	60 500	59 800	58 500	50 800	53 300	54 300
a. Mineral Products	8 400	9 800	9 900	9 800	9 000	7 000	7 600	7 700
Cement Production	5 400	6 700	7 200	7 300	6 600	5 100	5 700	5 700
Lime Production	1 800	1 900	1 700	1 600	1 500	1 200	1 400	1 400
Mineral Product Use ³	1 200	1 200	1 000	851	889	724	542	551
b. Chemical Industry	16 000	8 000	9 300	7 900	9 400	7 100	6 500	7 000
Ammonia Production	4 500	5 700	5 300	5 200	5 600	5 200	5 300	5 700
Nitric Acid Production	1 010	1 230	1 250	1 130	1 280	1 150	1 100	1 160
Adipic Acid Production	11 000	900	2 600	1 500	2 400	660	0.20	0.21
Petrochemical Production ⁴	110	97	79	81	73	62	64	64
c. Metal Production	22 600	22 500	19 700	18 900	18 500	15 400	15 800	16 600
Iron and Steel Production	10 200	11 500	10 200	11 100	10 700	8 030	9 030	9 860
Aluminum Production	9 300	8 200	8 200	7 300	7 400	7 200	6 600	6 600
SF ₆ Used in Magnesium Smelters and Casters	3 110	2 780	1 290	522	462	193	193	193
d. Production and Consumption of Halocarbons and SF₆⁵	990	3 200	5 500	5 700	5 800	6 500	7 300	7 700
e. Other & Undifferentiated Production	7 600	8 600	16 000	17 000	16 000	15 000	16 000	15 000
SOLVENT & OTHER PRODUCT USE	180	450	380	330	340	260	240	250
AGRICULTURE	47 000	56 000	58 000	58 000	59 000	56 000	56 000	54 000
a. Enteric Fermentation	16 000	20 000	22 000	21 000	20 000	19 000	19 000	18 000
b. Manure Management	5 700	7 000	7 500	7 200	6 900	6 700	6 500	6 400
c. Agriculture Soils	25 000	29 000	29 000	30 000	31 000	30 000	30 000	30 000
Direct Sources	14 000	15 000	15 000	16 000	17 000	16 000	16 000	16 000
Pasture, Range and Paddock Manure	2 200	3 100	3 400	3 300	3 200	3 000	2 900	2 700
Indirect Sources	9 000	10 000	10 000	10 000	10 000	10 000	10 000	10 000
d. Field Burning of Agricultural Residues	210	120	41	35	45	44	29	27
WASTE	19 000	20 000	21 000	21 000	21 000	21 000	22 000	22 000
a. Solid Waste Disposal on Land	17 000	18 000	20 000	20 000	20 000	20 000	20 000	20 000
b. Wastewater Handling	830	920	950	980	970	980	990	1 000
c. Waste Incineration	740	750	700	660	710	680	690	690
LAND USE, LAND-USE CHANGE AND FORESTRY	-62 000	-52 000	63 000	52 000	-11 000	-9 800	100 000	87 000
a. Forest Land	-88 000	-64 000	54 000	45 000	-18 000	-15 000	99 000	83 000
b. Cropland	12 000	44	-4 100	-5 700	-6 500	-6 900	-7 600	-8 000
c. Grassland	-	-	-	-	-	-	-	-
d. Wetlands	5 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000
e. Settlements	9 000	8 000	9 000	10 000	10 000	9 000	9 000	9 000

Notes:

- National totals exclude all GHGs from the Land Use, Land-use Change and Forestry sector.
- Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.
- The category Mineral Product Use includes CO₂ emissions coming from the use of limestone & dolomite, soda ash, and magnesite.
- The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene. CO₂ emissions are included in Other & Undifferentiated Production.
- Production of HFCs (HCFC-22 exclusively) only occurred in Canada from 1990-1992. HFC consumption began in 1995.

Table A12–3 2011 GHG Emission Summary for Canada

Greenhouse Gas Categories	Greenhouse Gases								
	CO ₂	CH ₄	CH ₄	N ₂ O	N ₂ O	HFCs	PFCs	SF ₆	TOTAL
Global Warming Potential Unit	kt	kt	kt CO ₂ equivalent	kt	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent
TOTAL¹	556 000	4 300	91 000	150	46 000	7 500	1 500	420	702 000
ENERGY	511 000	2 400	49 000	30	10 000				572 000
a. Stationary Combustion Sources	306 000	200	4 000	9	3 000				313 000
Electricity and Heat Generation	92 600	6.6	140	2	600				93 300
Fossil Fuel Production and Refining	59 300	80	2 000	2	600				62 000
Petroleum Refining and Upgrading	16 000	0.2	4	0.1	40				16 000
Fossil Fuel Production	43 200	80	2 000	2	500				45 000
Mining & Oil and Gas Extraction	36 200	0.7	10	0.8	200				36 400
Manufacturing Industries	42 100	3	50	2	600				42 700
Iron and Steel	4 360	0.2	4	0.2	50				4 410
Non Ferrous Metals	3 100	0.06	1	0.04	10				3 110
Chemical	10 200	0.20	4.2	0.2	50				10 200
Pulp and Paper	5 780	2	30	1	400				6 190
Cement	4 030	0.2	4	0.05	10				4 050
Other Manufacturing	14 600	0.3	6	0.3	90				14 700
Construction	1 320	0.02	0.5	0.03	10				1 330
Commercial & Institutional	29 700	0.6	10	0.7	200				29 900
Residential	41 700	100	2 000	2	600				44 000
Agriculture & Forestry	3 520	0.06	1	0.09	30				3 550
b. Transport²	190 000	30	600	30	8 000				199 000
Civil Aviation (Domestic Aviation)	5 950	0.3	7	0.2	50				6 000
Road Transportation	132 000	10	220	10	3 200				135 000
Light-Duty Gasoline Vehicles	38 400	3.5	74	3.4	1 100				39 500
Light-Duty Gasoline Trucks	41 500	3.8	81	3.7	1 100				42 700
Heavy-Duty Gasoline Vehicles	6 950	0.29	6.2	0.59	180				7 130
Motorcycles	269	0.11	2.3	0.01	1.6				273
Light-Duty Diesel Vehicles	778	0.02	0.3	0.06	20				798
Light-Duty Diesel Trucks	2 110	0.05	1	0.2	50				2 160
Heavy-Duty Diesel Vehicles	41 100	2	40	2	700				41 800
Propane & Natural Gas Vehicles	798	0.7	10	0.02	5				820
Railways	6 010	0.3	7	3	800				7 000
Navigation (Domestic Marine)	5 670	0.5	10	1	400				6 000
Other Transportation	41 000	20	400	10	4 000				45 000
Off-Road Gasoline	9 100	10	200	0.2	70				9 400
Off-Road Diesel	26 000	1	30	10	3 000				30 000
Pipelines	5 440	5.5	120	0.1	50				5 600
c. Fugitive Sources	15 000	2 100	45 000	0.1	40				59 700
Coal Mining		50	1 000						1 000
Oil and Natural Gas	15 000	2 080	43 700	0.1	40				58 700
Oil	210	271	5 680	0.1	30				5 920
Natural Gas	70.3	922	19 400	-	-				19 400
Venting	10 200	882	18 500	0.01	4				28 700
Flaring	4 600	3.7	78	0.02	6				4 600
INDUSTRIAL PROCESSES	44 000	2.7	56	3.78	1 170	7 500	1 500	420	54 300
a. Mineral Products	7 700								7 700
Cement Production	5 700								5 700
Lime Production	1 400								1 400
Mineral Product Use ³	551								551
b. Chemical Industry	5 700	2.7	56	3.78	1 170				7 000
Ammonia Production	5 700								5 700
Nitric Acid Production				3.75	1 160				1 160
Adipic Acid Production	-	-	-	0.00	0.21	-	-	-	0.21
Petrochemical Production ⁴		2.7	56	0.03	7.9				64
c. Metal Production	14 900						1 400	270	16 600
Iron and Steel Production	9 860								9 860
Aluminum Production	5 100						1 400	76.8	6 600
SF ₆ Used in Magnesium Smelters and Casters								193	193
d. Production and Consumption of Halocarbons and SF₆⁵						7 500	9	150	7 700
e. Other & Undifferentiated Production	15 000								15 000
SOLVENT & OTHER PRODUCT USE				0.80	250				250
AGRICULTURE		990	21 000	110	33 000				54 000
a. Enteric Fermentation		860	18 000						18 000
b. Manure Management		130	2 700	12	3 700				6 400
c. Agriculture Soils				95	30 000				30 000
Direct Sources				51	16 000				16 000
Pasture, Range and Paddock Manure				8.8	2 700				2 700
Indirect Sources				30	10 000				10 000
d. Field Burning of Agricultural Residues	-	0.93	20	0.02	7.5	-	-	-	27
WASTE	500	970	20 000	3	900				22 000
a. Solid Waste Disposal on Land		950	20 000		-				20 000
b. Wastewater Handling		15	310	2	700				1 000
c. Waste Incineration	500	0.1	2	0.6	200				690
LAND USE, LAND-USE CHANGE AND FORESTRY	69 000	550	11 000	23	7 100				87 000
a. Forest Land	65 000	540	11 000	23	7 000				83 000
b. Cropland	-8 100	5	100	0.2	70				-8 000
c. Grassland	-	-	-	-	-				-
d. Wetlands	3 000	-	-	-	-				3 000
e. Settlements	9 000	6	100	0.2	70				9 000

Notes:

1. National totals exclude all GHGs from the Land Use, Land-use Change and Forestry sector.

2. Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.

3. The category Mineral Product Use includes CO₂ emissions coming from the use of limestone & dolomite, soda ash, and magnesite.4. The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene. CO₂ emissions are included in Other & Undifferentiated Production.

5. Production of HFCs (HFC-22 exclusively) only occurred in Canada from 1990-1992. HFC consumption began in 1995.

Table A12-4 2010 GHG Emission Summary for Canada

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Greenhouse Gas Categories	Greenhouse Gases								
	CO ₂	CH ₄	CH ₄	N ₂ O	N ₂ O	HFCs	PFCs	SF ₆	TOTAL
Global Warming Potential			21		310				
Unit	kt	kt	kt CO ₂ equivalent	kt	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent
TOTAL¹	554 000	4 300	90 000	150	47 000	7 100	1 600	460	701 000
ENERGY	511 000	2 300	49 000	30	10 000				570 000
a. Stationary Combustion Sources	309 000	200	4 000	9	3 000				316 000
Electricity and Heat Generation	101 000	5.8	120	2	600				101 000
Fossil Fuel Production and Refining	62 400	90	2 000	2	600				65 000
Petroleum Refining and Upgrading	18 000	0.2	5	0.1	40				18 000
Fossil Fuel Production	44 700	90	2 000	2	500				47 000
Mining & Oil and Gas Extraction	34 800	0.7	10	0.7	200				35 000
Manufacturing Industries	40 500	3	50	2	600				41 100
Iron and Steel	4 380	0.2	4	0.2	50				4 440
Non Ferrous Metals	2 940	0.05	1	0.04	10				2 950
Chemical	9 860	0.19	4.0	0.2	50				9 910
Pulp and Paper	5 670	2	30	1	400				6 090
Cement	4 010	0.2	4	0.05	10				4 030
Other Manufacturing	13 600	0.3	6	0.3	90				13 700
Construction	1 490	0.03	0.5	0.04	10				1 500
Commercial & Institutional	27 800	0.5	10	0.6	200				28 000
Residential	38 600	100	2 000	2	600				41 000
Agriculture & Forestry	2 850	0.05	1	0.08	20				2 880
b. Transport²	187 000	30	600	30	8 000				196 000
Civil Aviation (Domestic Aviation)	6 360	0.3	7	0.2	60				6 400
Road Transportation	130 000	10	220	11	3 500				134 000
Light-Duty Gasoline Vehicles	38 700	3.6	75	3.9	1 200				40 000
Light-Duty Gasoline Trucks	41 500	3.9	81	4.3	1 300				42 900
Heavy-Duty Gasoline Vehicles	6 840	0.30	6.2	0.56	170				7 020
Motorcycles	268	0.11	2.2	0.01	1.6				271
Light-Duty Diesel Vehicles	731	0.01	0.3	0.06	20				750
Light-Duty Diesel Trucks	2 040	0.05	1	0.2	50				2 090
Heavy-Duty Diesel Vehicles	39 500	2	40	2	700				40 200
Propane & Natural Gas Vehicles	760	0.7	20	0.02	5				780
Railways	5 820	0.3	7	2	800				7 000
Navigation (Domestic Marine)	6 640	0.5	10	1	300				7 000
Other Transportation	38 000	20	300	10	3 000				42 000
Off-Road Gasoline	7 700	10	200	0.2	50				7 900
Off-Road Diesel	25 000	1	30	10	3 000				28 000
Pipelines	5 500	5.6	120	0.2	50				5 670
c. Fugitive Sources	15 000	2 100	44 000	0.1	40				58 600
Coal Mining		50	1 000						1 000
Oil and Natural Gas	14 500	2 050	43 000	0.1	40				57 600
Oil	210	260	5 460	0.1	30				5 710
Natural Gas	68.5	916	19 200	-	-				19 300
Venting	10 000	866	18 200	0.01	4				28 200
Flaring	4 200	3.9	81	0.02	8				4 300
INDUSTRIAL PROCESSES	43 000	2.7	56	3.58	1 110	7 100	1 600	460	53 300
a. Mineral Products	7 600								7 600
Cement Production	5 700								5 700
Lime Production	1 400								1 400
Mineral Product Use ³	542								542
b. Chemical Industry	5 300	2.7	56	3.58	1 110				6 500
Ammonia Production	5 300								5 300
Nitric Acid Production				3.56	1 100				1 100
Adipic Acid Production	-	-	-	0.00	0.20	-	-	-	0.20
Petrochemical Production ⁴		2.7	56	0.03	7.9				64
c. Metal Production	14 000						1 600	269	15 800
Iron and Steel Production	9 030								9 030
Aluminum Production	4 900						1 600	76.2	6 600
SF ₆ Used in Magnesium Smelters and Casters								193	193
d. Production and Consumption of Halocarbons and SF₆⁵						7 100	10	190	7 300
e. Other & Undifferentiated Production	16 000								16 000
SOLVENT & OTHER PRODUCT USE				0.78	240				240
AGRICULTURE		1 000	21 000	110	34 000				56 000
a. Enteric Fermentation		890	19 000						19 000
b. Manure Management		130	2 700	12	3 800				6 500
c. Agriculture Soils				98	30 000				30 000
Direct Sources				53	16 000				16 000
Pasture, Range and Paddock Manure				9.3	2 900				2 900
Indirect Sources				40	10 000				10 000
d. Field Burning of Agricultural Residues	-	1.0	21	0.03	8.1	-	-	-	29
WASTE	490	960	20 000	3	900				22 000
a. Solid Waste Disposal on Land		950	20 000		-				20 000
b. Wastewater Handling		15	310	2	700				990
c. Waste Incineration	490	0.1	2	0.6	200				690
LAND USE, LAND-USE CHANGE AND FORESTRY	84 000	560	12 000	24	7 300				100 000
a. Forest Land	80 000	550	12 000	23	7 200				99 000
b. Cropland	-7 800	5	100	0.2	70				-7 600
c. Grassland	-	-	-	-	-				-
d. Wetlands	3 000	0.5	10	0.02	6				3 000
e. Settlements	9 000	6	100	0.2	70				9 000

Notes:

- National totals exclude all GHGs from the Land Use, Land-use Change and Forestry sector.
- Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.
- The category Mineral Product Use includes CO₂ emissions coming from the use of limestone & dolomite, soda ash, and magnesite.
- The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene. CO₂ emissions are included in Other & Undifferentiated Production.
- Production of HFCs (HCFC-22 exclusively) only occurred in Canada from 1990-1992. HFC consumption began in 1995.

Table A12–5 2009 GHG Emission Summary for Canada

Greenhouse Gas Categories	Greenhouse Gases								
	CO ₂	CH ₄	CH ₄	N ₂ O	N ₂ O	HFCs	PFCs	SF ₆	TOTAL
Global Warming Potential Unit	kt	kt	21 kt CO ₂ equivalent	kt	310 kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent
TOTAL¹	542 000	4 300	91 000	150	47 000	6 300	2 200	390	689 000
ENERGY	502 000	2 300	49 000	30	10 000				560 000
a. Stationary Combustion Sources	308 000	200	4 000	9	3 000				315 000
Electricity and Heat Generation	98 900	4.9	100	2	600				99 600
Fossil Fuel Production and Refining	64 100	90	2 000	2	500				67 000
Petroleum Refining and Upgrading	19 000	0.3	6	0.1	40				19 000
Fossil Fuel Production	45 200	90	2 000	2	500				48 000
Mining & Oil and Gas Extraction	31 400	0.6	10	0.7	200				31 700
Manufacturing Industries	39 600	3	50	2	600				40 300
Iron and Steel	4 230	0.2	4	0.1	50				4 280
Non Ferrous Metals	2 800	0.05	1	0.04	10				2 810
Chemical	8 780	0.17	3.6	0.2	50				8 830
Pulp and Paper	6 080	2	40	1	400				6 510
Cement	4 460	0.2	4	0.05	20				4 480
Other Manufacturing	13 300	0.3	6	0.3	80				13 400
Construction	1 200	0.02	0.4	0.03	9				1 210
Commercial & Institutional	29 200	0.6	10	0.6	200				29 400
Residential	41 300	100	2 000	2	600				44 000
Agriculture & Forestry	2 510	0.04	0.9	0.07	20				2 530
b. Transport²	178 000	30	600	20	7 000				186 000
Civil Aviation (Domestic Aviation)	6 350	0.4	8	0.2	60				6 400
Road Transportation	128 000	10	220	12	3 700				132 000
Light-Duty Gasoline Vehicles	38 200	3.6	76	4.3	1 300				39 700
Light-Duty Gasoline Trucks	40 900	3.9	82	4.9	1 500				42 500
Heavy-Duty Gasoline Vehicles	6 740	0.30	6.3	0.53	170				6 910
Motorcycles	262	0.10	2.2	0.00	1.5				266
Light-Duty Diesel Vehicles	682	0.01	0.3	0.06	20				699
Light-Duty Diesel Trucks	1 980	0.05	1	0.2	50				2 030
Heavy-Duty Diesel Vehicles	38 400	2	30	2	700				39 000
Propane & Natural Gas Vehicles	764	0.7	20	0.02	5				780
Railways	4 510	0.3	5	2	600				5 000
Navigation (Domestic Marine)	6 360	0.5	10	1	300				6 700
Other Transportation	33 000	20	300	9	3 000				36 000
Off-Road Gasoline	7 000	9	200	0.2	50				7 300
Off-Road Diesel	20 000	1	20	8	3 000				23 000
Pipelines	6 130	6.2	130	0.2	50				6 310
c. Fugitive Sources	15 000	2 100	44 000	0.1	40				58 800
Coal Mining		40	900						900
Oil and Natural Gas	14 700	2 060	43 200	0.1	40				57 900
Oil	200	252	5 300	0.1	30				5 540
Natural Gas	67.3	917	19 300	-	-				19 300
Venting	10 100	881	18 500	0.01	4				28 700
Flaring	4 300	4.2	88	0.03	9				4 400
INDUSTRIAL PROCESSES	40 000	2.6	55	5.87	1 820	6 300	2 200	390	50 800
a. Mineral Products	7 000								7 000
Cement Production	5 100								5 100
Lime Production	1 200								1 200
Mineral Product Use ³	724								724
b. Chemical Industry	5 200	2.6	55	5.87	1 820				7 100
Ammonia Production	5 200								5 200
Nitric Acid Production				3.71	1 150				1 150
Adipic Acid Production	-	-	-	2.1	660	-	-	-	660
Petrochemical Production ⁴		2.6	55	0.02	7.0				62
c. Metal Production	13 100						2 200	207	15 400
Iron and Steel Production	8 030								8 030
Aluminum Production	5 000						2 200	13.7	7 200
SF ₆ Used in Magnesium Smelters and Casters								193	193
d. Production and Consumption of Halocarbons and SF₆⁵						6 300	9	190	6 500
e. Other & Undifferentiated Production	15 000								15 000
SOLVENT & OTHER PRODUCT USE				0.84	260				260
AGRICULTURE		1 100	22 000	110	34 000				56 000
a. Enteric Fermentation		920	19 000						19 000
b. Manure Management		130	2 700	13	3 900				6 700
c. Agriculture Soils				97	30 000				30 000
Direct Sources				52	16 000				16 000
Pasture, Range and Paddock Manure				9.7	3 000				3 000
Indirect Sources				40	10 000				10 000
d. Field Burning of Agricultural Residues	-	1.5	32	0.04	12	-	-	-	44
WASTE	490	950	20 000	3	900				21 000
a. Solid Waste Disposal on Land		940	20 000		-				20 000
b. Wastewater Handling		15	310	2	700				980
c. Waste Incineration	490	0.1	2	0.6	200				680
LAND USE, LAND-USE CHANGE AND FORESTRY	-20 000	300	6 200	12	3 900				-9 800
a. Forest Land	-25 000	280	6 000	12	3 700				-15 000
b. Cropland	-7 100	5	100	0.2	80				-6 900
c. Grassland	-	-	-	-	-				-
d. Wetlands	3 000	0.5	10	0.02	7				3 000
e. Settlements	9 000	6	100	0.2	70				9 000

Notes:

1. National totals exclude all GHGs from the Land Use, Land-use Change and Forestry sector.

2. Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.

3. The category Mineral Product Use includes CO₂ emissions coming from the use of limestone & dolomite, soda ash, and magnesite.4. The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene.CO₂ emissions are included in Other & Undifferentiated Production.

5. Production of HFCs (HCFC-22 exclusively) only occurred in Canada from 1990-1992. HFC consumption began in 1995.

Table A12-6 2008 GHG Emission Summary for Canada

Greenhouse Gas Categories	Greenhouse Gases								
	CO ₂	CH ₄	CH ₄	N ₂ O	N ₂ O	HFCs	PFCs	SF ₆	TOTAL
Global Warming Potential			21		310				
Unit	kt	kt	kt CO ₂ equivalent	kt	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent
TOTAL¹	577 000	4 500	94 000	170	52 000	5 600	2 300	680	731 000
ENERGY	530 000	2 400	51 000	40	10 000				592 000
a. Stationary Combustion Sources	329 000	200	4 000	9	3 000				336 000
Electricity and Heat Generation	114 000	5.3	110	2	700				115 000
Fossil Fuel Production and Refining	64 100	100	2 000	2	500				67 000
Petroleum Refining and Upgrading	19 000	0.3	6	0.1	40				19 000
Fossil Fuel Production	44 700	100	2 000	2	500				47 000
Mining & Oil and Gas Extraction	29 700	0.6	10	0.7	200				30 000
Manufacturing Industries	44 400	3	60	2	700				45 100
Iron and Steel	5 700	0.3	5	0.2	60				5 760
Non Ferrous Metals	3 730	0.08	2	0.05	20				3 750
Chemical	8 700	0.17	3.6	0.2	50				8 750
Pulp and Paper	5 940	2	40	1	400				6 400
Cement	4 880	0.2	5	0.06	20				4 910
Other Manufacturing	15 400	0.3	6	0.3	100				15 500
Construction	1 360	0.02	0.5	0.03	10				1 370
Commercial & Institutional	29 400	0.6	10	0.6	200				29 600
Residential	43 200	100	2 000	2	600				46 000
Agriculture & Forestry	2 590	0.04	0.9	0.07	20				2 610
b. Transport²	185 000	30	600	30	8 000				194 000
Civil Aviation (Domestic Aviation)	7 210	0.4	8	0.2	70				7 300
Road Transportation	127 000	11	220	13	4 100				132 000
Light-Duty Gasoline Vehicles	37 900	3.7	78	4.8	1 500				39 500
Light-Duty Gasoline Trucks	40 400	4.0	84	5.5	1 700				42 300
Heavy-Duty Gasoline Vehicles	6 630	0.33	7.0	0.52	160				6 800
Motorcycles	259	0.10	2.2	0.00	1.5				263
Light-Duty Diesel Vehicles	635	0.01	0.3	0.05	20				652
Light-Duty Diesel Trucks	1 970	0.05	1	0.2	50				2 020
Heavy-Duty Diesel Vehicles	38 500	2	30	2	600				39 200
Propane & Natural Gas Vehicles	857	0.8	20	0.02	5				880
Railways	6 970	0.4	8	3	900				8 000
Navigation (Domestic Marine)	6 150	0.5	10	1	300				6 500
Other Transportation	37 000	20	400	10	3 000				41 000
Off-Road Gasoline	7 100	9	200	0.2	50				7 300
Off-Road Diesel	23 000	1	30	10	3 000				26 000
Pipelines	7 240	7.3	150	0.2	60				7 460
c. Fugitive Sources	16 000	2 200	46 000	0.1	40				62 000
Coal Mining		40	900						900
Oil and Natural Gas	15 900	2 150	45 100	0.1	40				61 000
Oil	210	253	5 310	0.1	30				5 550
Natural Gas	68.3	936	19 700	-	-				19 700
Venting	10 600	955	20 100	0.01	4				30 700
Flaring	5 000	3.7	78	0.01	4				5 100
INDUSTRIAL PROCESSES	46 000	3.1	64	11.9	3 700	5 600	2 300	680	58 500
a. Mineral Products	9 000								9 000
Cement Production	6 600								6 600
Lime Production	1 500								1 500
Mineral Product Use ³	889								889
b. Chemical Industry	5 600	3.1	64	11.9	3 700				9 400
Ammonia Production	5 600								5 600
Nitric Acid Production				4.13	1 280				1 280
Adipic Acid Production	-	-	-	7.8	2 400	-	-	-	2 400
Petrochemical Production ⁴		3.1	64	0.03	8.4				73
c. Metal Production	15 800						2 200	465	18 500
Iron and Steel Production	10 700								10 700
Aluminum Production	5 200						2 200	3.74	7 400
SF ₆ Used in Magnesium Smelters and Casters								462	462
d. Production and Consumption of Halocarbons and SF₆⁵						5 600	10	220	5 800
e. Other & Undifferentiated Production	16 000								16 000
SOLVENT & OTHER PRODUCT USE				1.1	340				340
AGRICULTURE		1 100	23 000	110	35 000				59 000
a. Enteric Fermentation		960	20 000						20 000
b. Manure Management		140	2 900	13	4 100				6 900
c. Agriculture Soils				100	31 000				31 000
Direct Sources				54	17 000				17 000
Pasture, Range and Paddock Manure				10	3 200				3 200
Indirect Sources				40	10 000				10 000
d. Field Burning of Agricultural Residues	-	1.5	32	0.04	12	-	-	-	45
WASTE	510	950	20 000	3	900				21 000
a. Solid Waste Disposal on Land		930	20 000		-				20 000
b. Wastewater Handling		15	310	2	700				970
c. Waste Incineration	510	0.1	2	0.7	200				710
LAND USE, LAND-USE CHANGE AND FORESTRY	-18 000	200	4 200	8.4	2 600				-11 000
a. Forest Land	-24 000	190	4 000	7.9	2 500				-18 000
b. Cropland	-6 700	5	100	0.2	70				-6 500
c. Grassland	-	-	-	-	-				0
d. Wetlands	3 000	0.5	10	0.02	6				3 000
e. Settlements	10 000	7	100	0.3	80				10 000

Notes:

- National totals exclude all GHGs from the Land Use, Land-use Change and Forestry sector.
- Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.
- The category Mineral Product Use includes CO₂ emissions coming from the use of limestone & dolomite, soda ash, and magnesite.
- The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene. CO₂ emissions are included in Other & Undifferentiated Production.
- 5 Production of HFCs (HCFC-22 exclusively) only occurred in Canada from 1990-1992. HFC consumption began in 1995.

Table A12–7 2007 GHG Emission Summary for Canada

Greenhouse Gas Categories	Greenhouse Gases								
	CO ₂	CH ₄	CH ₄	N ₂ O	N ₂ O	HFCs	PFCs	SF ₆	TOTAL
Global Warming Potential			21		310				
Unit	kt	kt	kt CO ₂ equivalent	kt	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent
TOTAL¹	595 000	4 600	96 000	160	49 000	5 500	2 200	770	749 000
ENERGY	546 000	2 500	53 000	40	10 000				610 000
a. Stationary Combustion Sources	344 000	200	5 000	9	3 000				352 000
Electricity and Heat Generation	121 000	5.2	110	2	700				122 000
Fossil Fuel Production and Refining	69 400	100	2 000	2	500				72 000
Petroleum Refining and Upgrading	21 000	0.3	6	0.1	40				21 000
Fossil Fuel Production	48 800	100	2 000	2	500				51 000
Mining & Oil and Gas Extraction	28 700	0.6	10	0.6	200				28 900
Manufacturing Industries	46 800	3	60	2	700				47 600
Iron and Steel	5 920	0.3	6	0.2	60				5 990
Non Ferrous Metals	3 740	0.08	2	0.05	20				3 750
Chemical	8 620	0.17	3.6	0.1	50				8 670
Pulp and Paper	7 350	2	40	1	500				7 850
Cement	5 020	0.2	5	0.06	20				5 040
Other Manufacturing	16 200	0.3	7	0.3	100				16 300
Construction	1 380	0.02	0.5	0.03	10				1 390
Commercial & Institutional	30 000	0.6	10	0.6	200				30 200
Residential	43 900	100	2 000	2	600				47 000
Agriculture & Forestry	2 590	0.04	0.9	0.07	20				2 610
b. Transport²	186 000	30	700	30	9 000				195 000
Civil Aviation (Domestic Aviation)	7 610	0.3	7	0.2	70				7 700
Road Transportation	128 000	11	230	15	4 600				133 000
Light-Duty Gasoline Vehicles	38 200	3.9	82	5.5	1 700				40 000
Light-Duty Gasoline Trucks	40 600	4.1	87	6.4	2 000				42 700
Heavy-Duty Gasoline Vehicles	6 590	0.35	7.3	0.51	160				6 750
Motorcycles	258	0.10	2.2	0.00	1.5				262
Light-Duty Diesel Vehicles	601	0.01	0.3	0.05	20				616
Light-Duty Diesel Trucks	1 960	0.05	1	0.2	50				2 010
Heavy-Duty Diesel Vehicles	38 900	2	30	2	600				39 500
Propane & Natural Gas Vehicles	812	0.7	20	0.02	5				830
Railways	6 580	0.4	8	3	800				7 000
Navigation (Domestic Marine)	6 380	0.5	10	1	400				6 800
Other Transportation	37 000	20	400	9	3 000				41 000
Off-Road Gasoline	7 700	9	200	0.2	50				8 000
Off-Road Diesel	21 000	1	20	9	3 000				24 000
Pipelines	8 130	8.2	170	0.2	70				8 380
c. Fugitive Sources	16 000	2 300	47 000	0.1	40				63 000
Coal Mining		50	1 000						1 000
Oil and Natural Gas	15 600	2 210	46 400	0.1	40				62 000
Oil	220	266	5 580	0.1	30				5 830
Natural Gas	65.5	933	19 600	-	-				19 700
Venting	10 100	1 010	21 100	0.01	4				31 200
Flaring	5 200	3.6	76	0.01	2				5 300
INDUSTRIAL PROCESSES	49 000	3.4	71	8.50	2 640	5 500	2 200	770	59 800
a. Mineral Products	9 800								9 800
Cement Production	7 300								7 300
Lime Production	1 600								1 600
Mineral Product Use ³	851								851
b. Chemical Industry	5 200	3.4	71	8.50	2 640				7 900
Ammonia Production	5 200								5 200
Nitric Acid Production				3.66	1 130				1 130
Adipic Acid Production	-	-	-	4.8	1 500	-	-	-	1 500
Petrochemical Production ⁴		3.4	71	0.03	10				81
c. Metal Production	16 200						2 200	535	18 900
Iron and Steel Production	11 100								11 100
Aluminum Production	5 100						2 200	12.4	7 300
SF ₆ Used in Magnesium Smelters and Casters								522	522
d. Production and Consumption of Halocarbons and SF₆⁵						5 500	9	240	5 700
e. Other & Undifferentiated Production	17 000								17 000
SOLVENT & OTHER PRODUCT USE				1.1	330				330
AGRICULTURE		1 100	24 000	110	34 000				58 000
a. Enteric Fermentation		990	21 000						21 000
b. Manure Management		140	3 000	13	4 200				7 200
c. Agriculture Soils				96	30 000				30 000
Direct Sources				50	16 000				16 000
Pasture, Range and Paddock Manure				11	3 300				3 300
Indirect Sources				30	10 000				10 000
d. Field Burning of Agricultural Residues	-	1.2	25	0.03	9.6	-	-	-	35
WASTE	470	950	20 000	3	900				21 000
a. Solid Waste Disposal on Land		940	20 000		-				20 000
b. Wastewater Handling		14	300	2	700				980
c. Waste Incineration	470	0.1	2	0.6	200				660
LAND USE, LAND-USE CHANGE AND FORESTRY	41 000	300	6 400	13	4 000				52 000
a. Forest Land	35 000	290	6 100	12	3 800				45 000
b. Cropland	-5 800	5	100	0.2	80				-5 700
c. Grassland	-	-	-	-	-				-
d. Wetlands	3 000	-	-	-	-				3 000
e. Settlements	10 000	7	100	0.2	80				10 000

Notes:

1. National totals exclude all GHGs from the Land Use, Land-use Change and Forestry sector.

2. Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.

3. The category Mineral Product Use includes CO₂ emissions coming from the use of limestone & dolomite, soda ash, and magnesite.4. The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene. CO₂ emissions are included in Other & Undifferentiated Production.

5. Production of HFCs (HCFC-22 exclusively) only occurred in Canada from 1990-1992. HFC consumption began in 1995.

Table A12-8 2006 GHG Emission Summary for Canada

A12

Greenhouse Gas Categories	Greenhouse Gases								
	CO ₂	CH ₄	CH ₄	N ₂ O	N ₂ O	HFCs	PFCs	SF ₆	TOTAL
Global Warming Potential			21		310				
Unit	kt	kt	kt CO ₂ equivalent	kt	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent
TOTAL¹	572 000	4 700	98 000	160	48 000	5 100	2 600	1 600	727 000
ENERGY	522 000	2 500	53 000	40	10 000				587 000
a. Stationary Combustion Sources	323 000	200	5 000	9	3 000				331 000
Electricity and Heat Generation	116 000	5.4	110	2	700				117 000
Fossil Fuel Production and Refining	67 500	100	2 000	2	500				70 000
Petroleum Refining and Upgrading	20 000	0.3	6	0.1	50				20 000
Fossil Fuel Production	47 200	100	2 000	2	500				50 000
Mining & Oil and Gas Extraction	21 800	0.4	9	0.5	200				21 900
Manufacturing Industries	45 700	3	70	2	700				46 400
Iron and Steel	5 470	0.3	5	0.2	60				5 540
Non Ferrous Metals	3 380	0.07	2	0.05	20				3 400
Chemical	8 780	0.18	3.7	0.2	50				8 830
Pulp and Paper	7 070	2	40	2	500				7 590
Cement	5 690	0.2	5	0.06	20				5 710
Other Manufacturing	15 300	0.3	6	0.3	90				15 400
Construction	1 380	0.02	0.5	0.03	10				1 390
Commercial & Institutional	28 900	0.5	10	0.6	200				29 100
Residential	39 700	100	2 000	2	600				42 000
Agriculture & Forestry	2 030	0.03	0.7	0.06	20				2 050
b. Transport²	182 000	30	700	30	9 000				192 000
Civil Aviation (Domestic Aviation)	7 680	0.3	6	0.2	70				7 800
Road Transportation	127 000	11	230	16	4 900				132 000
Light-Duty Gasoline Vehicles	38 300	4.0	83	6.0	1 900				40 200
Light-Duty Gasoline Trucks	40 600	4.1	87	7.0	2 200				42 900
Heavy-Duty Gasoline Vehicles	6 500	0.35	7.4	0.48	150				6 660
Motorcycles	255	0.11	2.2	0.00	1.5				258
Light-Duty Diesel Vehicles	565	0.01	0.2	0.05	10				579
Light-Duty Diesel Trucks	1 910	0.05	1	0.2	50				1 960
Heavy-Duty Diesel Vehicles	37 800	2	30	2	600				38 500
Propane & Natural Gas Vehicles	770	0.7	20	0.02	5				790
Railways	6 140	0.3	7	3	800				7 000
Navigation (Domestic Marine)	5 770	0.4	9	1	400				6 200
Other Transportation	36 000	20	400	8	3 000				39 000
Off-Road Gasoline	7 300	9	200	0.2	50				7 600
Off-Road Diesel	19 000	1	20	8	2 000				22 000
Pipelines	9 340	9.4	200	0.3	80				9 610
c. Fugitive Sources	16 000	2 300	48 000	0.1	40				64 500
Coal Mining		40	900						900
Oil and Natural Gas	16 400	2 250	47 200	0.1	40				63 600
Oil	190	263	5 520	0.1	30				5 740
Natural Gas	65.8	936	19 700	-	-				19 700
Venting	10 200	1 040	21 900	0.01	5				32 100
Flaring	5 900	4.1	86	0.01	3				6 000
INDUSTRIAL PROCESSES	49 000	3.4	70	7.91	2 450	5 100	2 600	1 600	61 000
a. Mineral Products	9 900								9 900
Cement Production	7 300								7 300
Lime Production	1 600								1 600
Mineral Product Use ³	970								970
b. Chemical Industry	5 500	3.4	70	7.91	2 450				8 100
Ammonia Production	5 500								5 500
Nitric Acid Production				3.98	1 230				1 230
Adipic Acid Production	-	-	-	3.9	1 200	-	-	-	1 200
Petrochemical Production ⁴		3.4	70	0.03	9.7				80
c. Metal Production	16 300						2 600	1 410	20 300
Iron and Steel Production	11 200								11 200
Aluminum Production	5 100						2 600		7 700
SF ₆ Used in Magnesium Smelters and Casters								1 390	1 390
d. Production and Consumption of Halocarbons and SF₆⁵						5 100	8	190	5 300
e. Other & Undifferentiated Production	17 000								17 000
SOLVENT & OTHER PRODUCT USE				1.1	330				330
AGRICULTURE		1 200	24 000	110	33 000				57 000
a. Enteric Fermentation		1 000	21 000						21 000
b. Manure Management		150	3 200	14	4 200				7 400
c. Agriculture Soils				92	29 000				29 000
Direct Sources				48	15 000				15 000
Pasture, Range and Paddock Manure				11	3 400				3 400
Indirect Sources				30	10 000				10 000
d. Field Burning of Agricultural Residues		1.5	32	0.04	12				44
WASTE	490	970	20 000	3	900				22 000
a. Solid Waste Disposal on Land		950	20 000						20 000
b. Wastewater Handling		14	300	2	700				960
c. Waste Incineration	490	0.09	2	0.6	200				680
LAND USE, LAND-USE CHANGE AND FORESTRY	62 000	320	6 700	13	4 200				73 000
a. Forest Land	54 000	310	6 500	13	4 000				65 000
b. Cropland	-5 200	5	100	0.2	70				-5 100
c. Grassland									
d. Wetlands	3 000	0.2	3	0.01	2				3 000
e. Settlements	10 000	7	100	0.3	80				10 000

Notes:

- National totals exclude all GHGs from the Land Use, Land-use Change and Forestry sector.
- Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.
- The category Mineral Product Use includes CO₂ emissions coming from the use of limestone & dolomite, soda ash, and magnesite.
- The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene. CO₂ emissions are included in Other & Undifferentiated Production.
- Production of HFCs (HCFC-22 exclusively) only occurred in Canada from 1990-1992. HFC consumption began in 1995.

Table A12–9 2005 GHG Emission Summary for Canada

Greenhouse Gas Categories	Greenhouse Gases							
	CO ₂	CH ₄	CH ₄	N ₂ O	N ₂ O	HFCs	PFCs	SF ₆
	Global Warming Potential Unit	kt	kt	kt CO ₂ equivalent	kt	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent
TOTAL¹	579 000	4 700	98 000	160	50 000	5 300	3 300	1 500
ENERGY	532 000	2 500	53 000	40	10 000			
a. Stationary Combustion Sources	334 000	200	5 000	9	3 000			
Electricity and Heat Generation	122 000	5.3	110	2	700			
Fossil Fuel Production and Refining	68 000	100	2 000	2	500			
Petroleum Refining and Upgrading	20 000	0.3	7	0.2	50			
Fossil Fuel Production	47 900	100	2 000	2	500			
Mining & Oil and Gas Extraction	18 800	0.4	8	0.4	100			
Manufacturing Industries	47 800	3	70	2	700			
Iron and Steel	5 500	0.2	5	0.2	60			
Non Ferrous Metals	3 550	0.08	2	0.05	20			
Chemical	8 250	0.17	3.5	0.1	40			
Pulp and Paper	8 230	2	50	2	500			
Cement	5 350	0.2	4	0.06	20			
Other Manufacturing	16 900	0.3	7	0.3	100			
Construction	1 430	0.02	0.5	0.03	10			
Commercial & Institutional	31 700	0.6	10	0.7	200			
Residential	41 600	100	2 000	2	600			
Agriculture & Forestry	2 080	0.04	0.7	0.06	20			
b. Transport²	183 000	30	700	30	9 000			
Civil Aviation (Domestic Aviation)	7 500	0.3	7	0.2	70			
Road Transportation	125 000	11	230	17	5 300			
Light-Duty Gasoline Vehicles	38 000	4.1	87	6.7	2 100			
Light-Duty Gasoline Trucks	40 100	4.2	89	7.9	2 400			
Heavy-Duty Gasoline Vehicles	6 390	0.37	7.7	0.46	140			
Motorcycles	251	0.11	2.2	0.00	1.4			
Light-Duty Diesel Vehicles	559	0.01	0.2	0.05	10			
Light-Duty Diesel Trucks	1 870	0.05	1	0.2	50			
Heavy-Duty Diesel Vehicles	37 000	2	30	2	600			
Propane & Natural Gas Vehicles	706	0.7	10	0.01	4			
Railways	5 860	0.3	7	2	800			
Navigation (Domestic Marine)	6 250	0.5	10	1	400			
Other Transportation	38 000	20	400	9	3 000			
Off-Road Gasoline	8 100	10	200	0.2	50			
Off-Road Diesel	20 000	1	20	8	3 000			
Pipelines	9 780	9.8	210	0.3	80			
c. Fugitive Sources	16 000	2 300	48 000	0.1	40			
Coal Mining		50	1 000					
Oil and Natural Gas	15 600	2 230	46 800	0.1	40			
Oil	170	260	5 460	0.1	30			
Natural Gas	61.3	909	19 100	-	-			
Venting	9 920	1 050	22 100	0.01	5			
Flaring	5 400	3.7	78	0.01	2			
INDUSTRIAL PROCESSES	46 000	3.4	71	12.6	3 910	5 300	3 300	1 500
a. Mineral Products	9 900							
Cement Production	7 200							
Lime Production	1 700							
Mineral Product Use ³	1 000							
b. Chemical Industry	5 300	3.4	71	12.6	3 910			
Ammonia Production	5 300							
Nitric Acid Production				4.04	1 250			
Adipic Acid Production	-	-	-	8.5	2 600	-	-	-
Petrochemical Production ⁴		3.4	71	0.03	7.7			
c. Metal Production	15 100						3 300	1 310
Iron and Steel Production	10 200							
Aluminum Production	4 800						3 300	17.6
SF ₆ Used in Magnesium Smelters and Casters								1 290
d. Production and Consumption of Halocarbons and SF₆⁵						5 300	9	180
e. Other & Undifferentiated Production	16 000							
SOLVENT & OTHER PRODUCT USE				1.2	380			
AGRICULTURE		1 200	25 000	110	33 000			
a. Enteric Fermentation		1 000	22 000					
b. Manure Management		150	3 200	14	4 300			
c. Agriculture Soils				92	29 000			
Direct Sources				48	15 000			
Pasture, Range and Paddock Manure				11	3 400			
Indirect Sources				30	10 000			
d. Field Burning of Agricultural Residues	-	1.4	29	0.04	11	-	-	-
WASTE	500	940	20 000	3	900			
a. Solid Waste Disposal on Land		930	20 000		-			
b. Wastewater Handling		14	300	2	700			
c. Waste Incineration	500	0.09	2	0.7	200			
LAND USE, LAND-USE CHANGE AND FORESTRY	53 000	270	5 700	11	3 500			
a. Forest Land	46 000	260	5 400	11	3 400			
b. Cropland	-4 300	5	100	0.2	80			
c. Grassland	-	-	-	-	-			
d. Wetlands	3 000	2	30	0.06	20			
e. Settlements	9 000	6	100	0.2	70			

Notes:

- National totals exclude all GHGs from the Land Use, Land-use Change and Forestry sector.
- Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.
- The category Mineral Product Use includes CO₂ emissions coming from the use of limestone & dolomite, soda ash, and magnesite.
- The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene. CO₂ emissions are included in Other & Undifferentiated Production.
- 5 Production of HFCs (HCFC-22 exclusively) only occurred in Canada from 1990-1992. HFC consumption began in 1995.

Table A12-10 2004 GHG Emission Summary for Canada

A12

Greenhouse Gas Categories	Greenhouse Gases							
	CO ₂	CH ₄	CH ₄	N ₂ O	N ₂ O	HFCs	PFCs	SF ₆
	Global Warming Potential Unit	kt	kt	21 kt CO ₂ equivalent	310 kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent
TOTAL¹	585 000	4 700	98 000	170	52 000	4 800	3 000	2 500
ENERGY	537 000	2 600	54 000	40	10 000			
a. Stationary Combustion Sources	343 000	200	5 000	9	3 000			
Electricity and Heat Generation	124 000	5.3	110	2	700			
Fossil Fuel Production and Refining	71 900	100	2 000	2	500			
Petroleum Refining and Upgrading	21 000	0.4	8	0.2	50			
Fossil Fuel Production	50 900	100	2 000	2	500			
Mining & Oil and Gas Extraction	17 200	0.3	7	0.4	100			
Manufacturing Industries	50 500	3	70	2	700			
Iron and Steel	5 760	0.3	5	0.2	60			
Non Ferrous Metals	3 510	0.08	2	0.05	20			
Chemical	9 320	0.19	4.0	0.2	50			
Pulp and Paper	9 840	2	50	2	500			
Cement	5 400	0.2	5	0.06	20			
Other Manufacturing	16 700	0.3	7	0.3	90			
Construction	1 400	0.02	0.5	0.03	10			
Commercial & Institutional	33 400	0.6	10	0.7	200			
Residential	42 400	100	2 000	2	600			
Agriculture & Forestry	2 180	0.04	0.8	0.06	20			
b. Transport²	178 000	30	700	30	10 000			
Civil Aviation (Domestic Aviation)	7 390	0.3	6	0.2	70			
Road Transportation	123 000	12	240	19	5 800			
Light-Duty Gasoline Vehicles	38 900	4.4	93	7.6	2 400			
Light-Duty Gasoline Trucks	38 800	4.3	90	8.6	2 700			
Heavy-Duty Gasoline Vehicles	6 490	0.40	8.4	0.45	140			
Motorcycles	244	0.11	2.3	0.00	1.4			
Light-Duty Diesel Vehicles	555	0.01	0.3	0.04	10			
Light-Duty Diesel Trucks	1 790	0.05	1	0.1	40			
Heavy-Duty Diesel Vehicles	35 400	2	30	2	600			
Propane & Natural Gas Vehicles	838	0.7	20	0.02	5			
Railways	5 500	0.3	6	2	700			
Navigation (Domestic Marine)	6 540	0.5	10	1	400			
Other Transportation	36 000	20	400	8	3 000			
Off-Road Gasoline	8 700	10	200	0.2	60			
Off-Road Diesel	19 000	1	20	8	2 000			
Pipelines	8 230	8.3	170	0.2	70			
c. Fugitive Sources	16 000	2 300	48 000	0.1	40			
Coal Mining		40	900					
Oil and Natural Gas	16 100	2 250	47 300	0.1	40			
Oil	180	273	5 740	0.1	30			
Natural Gas	57.4	887	18 600	-	-			
Venting	10 300	1 090	22 900	0.02	5			
Flaring	5 500	3.8	80	0.01	2			
INDUSTRIAL PROCESSES	47 000	4.2	88	14.0	4 330	4 800	3 000	2 500
a. Mineral Products	9 800							
Cement Production	7 100							
Lime Production	1 800							
Mineral Product Use ³	967							
b. Chemical Industry	5 800	4.2	88	14.0	4 330			
Ammonia Production	5 800							
Nitric Acid Production				3.96	1 230			
Adipic Acid Production	-	-	-	10	3 100	-	-	-
Petrochemical Production ⁴		4.2	88	0.03	9.8			
c. Metal Production	14 800						3 000	2 220
Iron and Steel Production	10 500							
Aluminum Production	4 200						3 000	31.9
SF ₆ Used in Magnesium Smelters and Casters								2 190
d. Production and Consumption of Halocarbons and SF₆⁵						4 800	9	240
e. Other & Undifferentiated Production	17 000							
SOLVENT & OTHER PRODUCT USE				1.3	410			
AGRICULTURE		1 200	25 000	110	33 000			
a. Enteric Fermentation		1 000	21 000					
b. Manure Management		150	3 200	14	4 300			
c. Agriculture Soils				94	29 000			
Direct Sources				49	15 000			
Pasture, Range and Paddock Manure				11	3 300			
Indirect Sources				30	10 000			
d. Field Burning of Agricultural Residues		1.1	23	0.03	8.7			
WASTE	500	930	20 000	3	900			
a. Solid Waste Disposal on Land		910	19 000					
b. Wastewater Handling		14	290	2	700			
c. Waste Incineration	500	0.09	2	0.7	200			
LAND USE, LAND-USE CHANGE AND FORESTRY	91 000	460	9 700	19	6 000			
a. Forest Land	83 000	450	9 500	19	5 900			
b. Cropland	-3 700	5	100	0.2	80			
c. Grassland								
d. Wetlands	3 000	0.9	20	0.04	10			
e. Settlements	9 000	6	100	0.2	70			

Notes:

1. National totals exclude all GHGs from the Land Use, Land-use Change and Forestry sector.

2. Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.

3. The category Mineral Product Use includes CO₂ emissions coming from the use of limestone & dolomite, soda ash, and magnesite.4. The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene.CO₂ emissions are included in Other & Undifferentiated Production.

5. Production of HFCs (HCFC-22 exclusively) only occurred in Canada from 1990-1992. HFC consumption began in 1995.

Table A12–11 2003 GHG Emission Summary for Canada

Greenhouse Gas Categories	Greenhouse Gases								
	CO ₂	CH ₄	CH ₄	N ₂ O	N ₂ O	HFCs	PFCs	SF ₆	TOTAL
	Global Warming Potential Unit	kt	kt	kt CO ₂ equivalent	kt	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent
TOTAL¹		583 000	4 600	96 000	160	49 000	4 400	3 000	738 000
ENERGY		542 000	2 500	53 000	40	10 000			607 000
a. Stationary Combustion Sources		352 000	200	5 000	9	3 000			360 000
Electricity and Heat Generation		130 000	5.2	110	2	800			131 000
Fossil Fuel Production and Refining		71 500	100	2 000	2	500			74 000
Petroleum Refining and Upgrading		21 000	0.3	7	0.2	60			21 000
Fossil Fuel Production		50 500	100	2 000	2	500			53 000
Mining & Oil and Gas Extraction		17 500	0.3	7	0.4	100			17 600
Manufacturing Industries		49 500	3	60	2	700			50 200
Iron and Steel		5 500	0.2	5	0.2	60			5 570
Non Ferrous Metals		3 410	0.07	2	0.05	20			3 430
Chemical		9 060	0.18	3.9	0.2	50			9 110
Pulp and Paper		10 600	2	40	1	400			11 000
Cement		4 740	0.2	5	0.06	20			4 760
Other Manufacturing		16 200	0.3	7	0.3	90			16 300
Construction		1 280	0.02	0.5	0.03	9			1 290
Commercial & Institutional		37 600	0.7	10	0.8	200			37 800
Residential		42 500	100	2 000	2	600			45 000
Agriculture & Forestry		2 180	0.04	0.8	0.06	20			2 200
b. Transport²		173 000	30	700	30	10 000			184 000
Civil Aviation (Domestic Aviation)		7 090	0.3	7	0.2	70			7 200
Road Transportation		119 000	12	250	20	6 100			125 000
Light-Duty Gasoline Vehicles		39 100	4.7	99	8.4	2 600			41 800
Light-Duty Gasoline Trucks		37 300	4.3	89	9.1	2 800			40 200
Heavy-Duty Gasoline Vehicles		6 160	0.41	8.6	0.41	130			6 290
Motorcycles		226	0.10	2.2	0.00	1.3			230
Light-Duty Diesel Vehicles		512	0.01	0.2	0.04	10			525
Light-Duty Diesel Trucks		1 720	0.04	0.9	0.1	40			1 770
Heavy-Duty Diesel Vehicles		33 100	1	30	2	500			33 700
Propane & Natural Gas Vehicles		799	0.7	10	0.02	5			820
Railways		5 130	0.3	6	2	700			6 000
Navigation (Domestic Marine)		5 820	0.4	9	1	300			6 200
Other Transportation		36 000	20	400	8	3 000			39 000
Off-Road Gasoline		8 600	10	200	0.2	60			8 900
Off-Road Diesel		19 000	1	20	8	2 000			21 000
Pipelines		8 820	8.8	190	0.2	70			9 080
c. Fugitive Sources		16 000	2 300	47 000	0.1	40			63 700
Coal Mining			40	800					800
Oil and Natural Gas		16 300	2 220	46 700	0.1	40			63 000
Oil		170	265	5 570	0.1	30			5 770
Natural Gas		55.5	873	18 300	-	-			18 400
Venting		10 500	1 080	22 700	0.02	5			33 200
Flaring		5 600	3.7	77	0.00	1			5 600
INDUSTRIAL PROCESSES		41 000	3.7	78	7.61	2 360	4 400	3 000	53 600
a. Mineral Products		9 400							9 400
Cement Production		6 800							6 800
Lime Production		1 700							1 700
Mineral Product Use ³		913							913
b. Chemical Industry		5 200	3.7	78	7.61	2 360			7 600
Ammonia Production		5 200							5 200
Nitric Acid Production					4.08	1 260			1 260
Adipic Acid Production		-	-	-	3.5	1 100	-	-	1 100
Petrochemical Production ⁴			3.7	78	0.03	10			88
c. Metal Production		14 900					3 000	2 550	20 500
Iron and Steel Production		10 400							10 400
Aluminum Production		4 600					3 000	70.4	7 700
SF ₆ Used in Magnesium Smelters and Casters								2 480	2 480
d. Production and Consumption of Halocarbons and SF₆⁵						4 400	7	230	4 700
e. Other & Undifferentiated Production		11 000							11 000
SOLVENT & OTHER PRODUCT USE				1.4	450				450
AGRICULTURE			1 100	24 000	100	33 000			57 000
a. Enteric Fermentation			990	21 000					21 000
b. Manure Management			150	3 100	14	4 200			7 300
c. Agriculture Soils				91	28 000				28 000
Direct Sources				47	15 000				15 000
Pasture, Range and Paddock Manure				11	3 300				3 300
Indirect Sources				30	10 000				10 000
d. Field Burning of Agricultural Residues		-	4.1	87	0.11	33	-	-	120
WASTE		470	910	19 000	3	800			20 000
a. Solid Waste Disposal on Land			900	19 000		-			19 000
b. Wastewater Handling			14	300	2	600			940
c. Waste Incineration		470	0.08	2	0.6	200			660
LAND USE, LAND-USE CHANGE AND FORESTRY		36 000	410	8 500	17	5 300			50 000
a. Forest Land		27 000	390	8 300	17	5 100			40 000
b. Cropland		-2 700	5	100	0.2	80			-2 600
c. Grassland		-	-	-	-	-			-
d. Wetlands		3 000	0.6	10	0.03	8			3 000
e. Settlements		9 000	6	100	0.2	70			9 000

Notes:

- National totals exclude all GHGs from the Land Use, Land-use Change and Forestry sector.
- Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.
- The category Mineral Product Use includes CO₂ emissions coming from the use of limestone & dolomite, soda ash, and magnesite.
- The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene. CO₂ emissions are included in Other & Undifferentiated Production.
- Production of HFCs (HCFC-22 exclusively) only occurred in Canada from 1990-1992. HFC consumption began in 1995.

Table A12-12 2002 GHG Emission Summary for Canada

A12

Greenhouse Gas Categories	Greenhouse Gases								
	CO ₂	CH ₄	CH ₄	N ₂ O	N ₂ O	HFCs	PFCs	SF ₆	TOTAL
Global Warming Potential			21		310				
Unit	kt	kt	kt CO ₂ equivalent	kt	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent
TOTAL¹	566 000	4 500	95 000	150	46 000	3 900	3 000	3 200	718 000
ENERGY	526 000	2 500	53 000	40	10 000				591 000
a. Stationary Combustion Sources	340 000	200	5 000	9	3 000				348 000
Electricity and Heat Generation	124 000	4.6	96	2	700				125 000
Fossil Fuel Production and Refining	71 900	100	2 000	2	500				75 000
Petroleum Refining and Upgrading	20 000	0.3	7	0.2	50				20 000
Fossil Fuel Production	52 200	100	2 000	2	500				55 000
Mining & Oil and Gas Extraction	13 400	0.3	6	0.3	100				13 500
Manufacturing Industries	51 500	3	60	2	700				52 300
Iron and Steel	5 580	0.2	5	0.2	60				5 650
Non Ferrous Metals	3 220	0.07	1	0.05	10				3 230
Chemical	7 810	0.15	3.2	0.1	40				7 850
Pulp and Paper	10 200	2	40	1	400				10 600
Cement	4 640	0.2	5	0.06	20				4 670
Other Manufacturing	20 100	0.4	8	0.4	100				20 300
Construction	1 220	0.02	0.5	0.03	9				1 230
Commercial & Institutional	35 100	0.6	10	0.7	200				35 400
Residential	40 700	100	2 000	2	600				44 000
Agriculture & Forestry	2 080	0.04	0.7	0.06	20				2 090
b. Transport²	170 000	30	700	30	9 000				180 000
Civil Aviation (Domestic Aviation)	7 050	0.3	7	0.2	70				7 100
Road Transportation	116 000	12	250	19	6 000				123 000
Light-Duty Gasoline Vehicles	39 400	4.8	100	8.6	2 700				42 200
Light-Duty Gasoline Trucks	36 100	4.1	86	8.8	2 700				38 900
Heavy-Duty Gasoline Vehicles	5 990	0.44	9.2	0.37	120				6 110
Motorcycles	207	0.10	2.1	0.00	1.2				210
Light-Duty Diesel Vehicles	500	0.01	0.2	0.04	10				513
Light-Duty Diesel Trucks	1 680	0.04	0.9	0.1	40				1 720
Heavy-Duty Diesel Vehicles	31 800	1	30	2	500				32 300
Propane & Natural Gas Vehicles	824	0.7	20	0.02	5				840
Railways	5 150	0.3	6	2	700				6 000
Navigation (Domestic Marine)	5 110	0.4	8	1	400				5 500
Other Transportation	36 000	20	500	8	2 000				39 000
Off-Road Gasoline	8 500	10	200	0.2	60				8 800
Off-Road Diesel	17 000	1	20	7	2 000				20 000
Pipelines	10 500	11	220	0.3	90				10 800
c. Fugitive Sources	16 000	2 200	47 000	0.1	40				62 800
Coal Mining		40	900						900
Oil and Natural Gas	15 800	2 190	46 000	0.1	40				61 900
Oil	180	256	5 380	0.1	30				5 600
Natural Gas	51.8	857	18 000	-	-				18 000
Venting	10 400	1 080	22 600	0.01	4				33 000
Flaring	5 200	3.5	73	0.01	2				5 300
INDUSTRIAL PROCESSES	39 000	4.0	83	8.12	2 520	3 900	3 000	3 200	51 900
a. Mineral Products	9 400								9 400
Cement Production	6 700								6 700
Lime Production	1 700								1 700
Mineral Product Use ³	936								936
b. Chemical Industry	5 200	4.0	83	8.12	2 520				7 800
Ammonia Production	5 200								5 200
Nitric Acid Production				4.05	1 260				1 260
Adipic Acid Production	-	-	-	4.0	1 300	-	-	-	1 300
Petrochemical Production ⁴		4.0	83	0.03	9.6				93
c. Metal Production	14 800						3 000	3 020	20 800
Iron and Steel Production	10 300								10 300
Aluminum Production	4 400						3 000	80.2	7 500
SF ₆ Used in Magnesium Smelters and Casters								2 940	2 940
d. Production and Consumption of Halocarbons and SF₆⁵						3 900	20	150	4 100
e. Other & Undifferentiated Production	9 900								9 900
SOLVENT & OTHER PRODUCT USE				1.2	390				390
AGRICULTURE		1 100	24 000	98	30 000				54 000
a. Enteric Fermentation		990	21 000						21 000
b. Manure Management		150	3 100	13	4 200				7 300
c. Agriculture Soils				84	26 000				26 000
Direct Sources				43	13 000				13 000
Pasture, Range and Paddock Manure				10	3 200				3 200
Indirect Sources				30	10 000				10 000
d. Field Burning of Agricultural Residues	-	3.5	73	0.09	28	-	-	-	100
WASTE	530	900	19 000	3	900				20 000
a. Solid Waste Disposal on Land		880	19 000		-				19 000
b. Wastewater Handling		14	290	2	600				940
c. Waste Incineration	530	0.08	2	0.7	200				760
LAND USE, LAND-USE CHANGE AND FORESTRY	82 000	560	12 000	23	7 300				100 000
a. Forest Land	72 000	550	11 000	23	7 100				91 000
b. Cropland	-1 900	5	100	0.3	80				-1 800
c. Grassland	-	-	-	-	-				-
d. Wetlands	3 000	0.00	0.02	0.00	0.01				3 000
e. Settlements	9 000	6	100	0.2	70				9 000

Notes:

1. National totals exclude all GHGs from the Land Use, Land-use Change and Forestry sector.

2. Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.

3. The category Mineral Product Use includes CO₂ emissions coming from the use of limestone & dolomite, soda ash, and magnesite.4. The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene.CO₂ emissions are included in Other & Undifferentiated Production.

5. Production of HFCs (HCFC-22 exclusively) only occurred in Canada from 1990-1992. HFC consumption began in 1995.

Table A12–13 2001 GHG Emission Summary for Canada

Greenhouse Gas Categories	Greenhouse Gases								
	CO ₂	CH ₄	CH ₄	N ₂ O	N ₂ O	HFCs	PFCs	SF ₆	TOTAL
Global Warming Potential Unit	kt	kt	21 kt CO ₂ equivalent	kt	310 kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent
TOTAL¹	559 000	4 500	95 000	150	47 000	3 500	3 500	2 700	711 000
ENERGY	520 000	2 500	53 000	40	10 000				585 000
a. Stationary Combustion Sources	336 000	200	5 000	9	3 000				344 000
Electricity and Heat Generation	129 000	4.9	100	2	700				130 000
Fossil Fuel Production and Refining	67 900	100	2 000	2	500				71 000
Petroleum Refining and Upgrading	17 000	0.3	6	0.2	50				17 000
Fossil Fuel Production	51 100	100	2 000	1	500				54 000
Mining & Oil and Gas Extraction	11 900	0.2	5	0.3	90				12 000
Manufacturing Industries	51 800	3	60	2	600				52 500
Iron and Steel	4 900	0.2	5	0.2	60				4 960
Non Ferrous Metals	3 460	0.08	2	0.05	20				3 480
Chemical	8 690	0.18	3.7	0.2	50				8 740
Pulp and Paper	11 000	2	30	1	400				11 400
Cement	4 250	0.2	3	0.05	20				4 270
Other Manufacturing	19 500	0.4	8	0.4	100				19 600
Construction	997	0.02	0.4	0.03	8				1 010
Commercial & Institutional	33 000	0.6	10	0.7	200				33 200
Residential	39 100	100	2 000	2	500				42 000
Agriculture & Forestry	2 180	0.04	0.8	0.06	20				2 200
b. Transport²	168 000	30	700	30	9 000				178 000
Civil Aviation (Domestic Aviation)	6 810	0.4	8	0.2	60				6 900
Road Transportation	115 000	12	250	19	5 900				121 000
Light-Duty Gasoline Vehicles	39 100	4.9	100	8.7	2 700				41 900
Light-Duty Gasoline Trucks	34 500	3.9	83	8.4	2 600				37 200
Heavy-Duty Gasoline Vehicles	6 110	0.48	10	0.36	110				6 240
Motorcycles	182	0.10	2.0	0.00	1.1				185
Light-Duty Diesel Vehicles	473	0.01	0.2	0.04	10				485
Light-Duty Diesel Trucks	1 610	0.04	0.9	0.1	40				1 650
Heavy-Duty Diesel Vehicles	31 500	1	30	1	500				32 000
Propane & Natural Gas Vehicles	1 110	0.9	20	0.02	7				1 100
Railways	5 680	0.3	7	2	700				6 000
Navigation (Domestic Marine)	5 140	0.4	8	1	400				5 500
Other Transportation	36 000	20	400	8	2 000				39 000
Off-Road Gasoline	8 400	10	200	0.2	60				8 600
Off-Road Diesel	18 000	1	20	7	2 000				20 000
Pipelines	9 950	10	210	0.3	80				10 200
c. Fugitive Sources	16 000	2 300	48 000	0.1	40				63 400
Coal Mining		50	1 000						1 000
Oil and Natural Gas	15 600	2 230	46 800	0.1	40				62 400
Oil	170	265	5 570	0.1	30				5 780
Natural Gas	50.9	852	17 900	-	-				17 900
Venting	10 500	1 110	23 200	0.01	4				33 700
Flaring	4 900	3.4	72	0.01	2				5 000
INDUSTRIAL PROCESSES	39 000	4.1	87	6.76	2 100	3 500	3 500	2 700	50 500
a. Mineral Products	9 200								9 200
Cement Production	6 500								6 500
Lime Production	1 600								1 600
Mineral Product Use ³	972								972
b. Chemical Industry	5 200	4.1	87	6.76	2 100				7 400
Ammonia Production	5 200								5 200
Nitric Acid Production				4.14	1 280				1 280
Adipic Acid Production	-	-	-	2.6	800	-	-	-	800
Petrochemical Production ⁴		4.1	87	0.03	8.5				95
c. Metal Production	14 800						3 500	2 400	20 600
Iron and Steel Production	10 600								10 600
Aluminum Production	4 200						3 500	44.0	7 700
SF ₆ Used in Magnesium Smelters and Casters								2 360	2 360
d. Production and Consumption of Halocarbons and SF₆⁵						3 500	30	280	3 800
e. Other & Undifferentiated Production	9 600								9 600
SOLVENT & OTHER PRODUCT USE				1.4	420				420
AGRICULTURE		1 100	24 000	100	31 000				55 000
a. Enteric Fermentation		980	21 000						21 000
b. Manure Management		150	3 100	13	4 100				7 200
c. Agriculture Soils				87	27 000				27 000
Direct Sources				45	14 000				14 000
Pasture, Range and Paddock Manure				10	3 200				3 200
Indirect Sources				30	10 000				10 000
d. Field Burning of Agricultural Residues		3.5	73	0.09	28				100
WASTE	550	880	18 000	3	900				20 000
a. Solid Waste Disposal on Land		860	18 000						18 000
b. Wastewater Handling		14	290	2	600				930
c. Waste Incineration	550	0.08	2	0.7	200				780
LAND USE, LAND-USE CHANGE AND FORESTRY	-54 000	140	3 000	5.9	1 800				-49 000
a. Forest Land	-65 000	130	2 700	5.5	1 700				-60 000
b. Cropland	-870	6	100	0.3	80				-670
c. Grassland									
d. Wetlands	3 000	0.00	0.02	0.00	0.01				3 000
e. Settlements	8 000	5	100	0.2	60				9 000

Notes:

1. National totals exclude all GHGs from the Land Use, Land-use Change and Forestry sector.

2. Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.

3. The category Mineral Product Use includes CO₂ emissions coming from the use of limestone & dolomite, soda ash, and magnesite.4. The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene.CO₂ emissions are included in Other & Undifferentiated Production.

5. Production of HFCs (HCFC-22 exclusively) only occurred in Canada from 1990-1992. HFC consumption began in 1995.

Table A12-14 2000 GHG Emission Summary for Canada

A12

Greenhouse Gas Categories	Greenhouse Gases								
	CO ₂	CH ₄	CH ₄	N ₂ O	N ₂ O	HFCs	PFCs	SF ₆	TOTAL
Global Warming Potential			21		310				
Unit	kt	kt	kt CO ₂ equivalent	kt	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent
TOTAL¹	565 000	4 500	94 000	160	49 000	2 900	4 300	3 100	718 000
ENERGY	525 000	2 500	52 000	40	10 000				589 000
a. Stationary Combustion Sources	339 000	200	5 000	9	3 000				346 000
Electricity and Heat Generation	128 000	4.7	100	2	700				129 000
Fossil Fuel Production and Refining	64 600	100	2 000	2	500				67 000
Petroleum Refining and Upgrading	16 000	0.3	6	0.2	60				16 000
Fossil Fuel Production	48 400	100	2 000	1	400				51 000
Mining & Oil and Gas Extraction	12 000	0.2	5	0.3	90				12 100
Manufacturing Industries	54 900	3	60	2	700				55 600
Iron and Steel	5 980	0.3	6	0.2	60				6 050
Non Ferrous Metals	3 220	0.07	1	0.05	10				3 230
Chemical	9 340	0.19	3.9	0.2	50				9 400
Pulp and Paper	11 800	2	40	1	400				12 300
Cement	4 310	0.2	3	0.05	20				4 330
Other Manufacturing	20 200	0.4	8	0.4	100				20 300
Construction	1 060	0.02	0.4	0.03	8				1 070
Commercial & Institutional	33 000	0.6	10	0.7	200				33 300
Residential	42 200	100	2 000	2	600				45 000
Agriculture & Forestry	2 520	0.04	0.9	0.06	20				2 540
b. Transport²	170 000	40	700	30	10 000				180 000
Civil Aviation (Domestic Aviation)	7 360	0.4	8	0.2	70				7 400
Road Transportation	112 000	12	250	18	5 700				118 000
Light-Duty Gasoline Vehicles	39 300	5.2	110	8.5	2 600				42 100
Light-Duty Gasoline Trucks	33 800	4.0	84	8.1	2 500				36 400
Heavy-Duty Gasoline Vehicles	5 380	0.50	10	0.27	85				5 470
Motorcycles	159	0.09	2.0	0.00	0.94				162
Light-Duty Diesel Vehicles	455	0.01	0.2	0.04	10				466
Light-Duty Diesel Trucks	1 620	0.04	0.9	0.1	40				1 660
Heavy-Duty Diesel Vehicles	30 400	1	30	1	400				30 900
Propane & Natural Gas Vehicles	1 070	1	20	0.02	7				1 100
Railways	5 780	0.3	7	2	700				7 000
Navigation (Domestic Marine)	4 730	0.3	7	1	400				5 100
Other Transportation	40 000	20	500	9	3 000				43 000
Off-Road Gasoline	8 600	10	200	0.2	60				8 800
Off-Road Diesel	20 000	1	20	8	3 000				23 000
Pipelines	10 900	11	230	0.3	90				11 200
c. Fugitive Sources	16 000	2 200	47 000	0.1	40				63 000
Coal Mining		50	1 000						1 000
Oil and Natural Gas	16 000	2 190	46 000	0.1	40				62 100
Oil	130	252	5 280	0.1	30				5 440
Natural Gas	50.7	843	17 700	-	-				17 700
Venting	10 500	1 090	23 000	0.02	5				33 500
Flaring	5 300	3.8	80	0.00	0.7				5 400
INDUSTRIAL PROCESSES	40 000	4.2	89	6.90	2 140	2 900	4 300	3 100	52 100
a. Mineral Products	9 800								9 800
Cement Production	6 700								6 700
Lime Production	1 900								1 900
Mineral Product Use ³	1 200								1 200
b. Chemical Industry	5 700	4.2	89	6.90	2 140				8 000
Ammonia Production	5 700								5 700
Nitric Acid Production				3.97	1 230				1 230
Adipic Acid Production	-	-	-	2.9	900	-	-	-	900
Petrochemical Production ⁴		4.2	89	0.03	8.2				97
c. Metal Production	15 300						4 300	2 830	22 500
Iron and Steel Production	11 500								11 500
Aluminum Production	3 900						4 300	47.3	8 200
SF ₆ Used in Magnesium Smelters and Casters								2 780	2 780
d. Production and Consumption of Halocarbons and SF₆⁵						2 900	30	220	3 200
e. Other & Undifferentiated Production	8 600								8 600
SOLVENT & OTHER PRODUCT USE				1.5	450				450
AGRICULTURE		1 100	23 000	110	33 000				56 000
a. Enteric Fermentation		950	20 000						20 000
b. Manure Management		140	2 900	13	4 000				7 000
c. Agriculture Soils				93	29 000				29 000
Direct Sources				49	15 000				15 000
Pasture, Range and Paddock Manure				9.9	3 100				3 100
Indirect Sources				30	10 000				10 000
d. Field Burning of Agricultural Residues	-	4.1	85	0.11	33	-	-	-	120
WASTE	530	880	19 000	3	800				20 000
a. Solid Waste Disposal on Land		870	18 000		-				18 000
b. Wastewater Handling		14	290	2	600				920
c. Waste Incineration	530	0.07	1	0.7	200				750
LAND USE, LAND-USE CHANGE AND FORESTRY	-55 000	72	1 500	3.0	930				-52 000
a. Forest Land	-66 000	61	1 300	2.5	790				-64 000
b. Cropland	-160	6	100	0.3	80				44
c. Grassland	-	-	-	-	-				-
d. Wetlands	3 000	-	-	-	-				3 000
e. Settlements	8 000	5	100	0.2	60				8 000

Notes:

- National totals exclude all GHGs from the Land Use, Land-use Change and Forestry sector.
- Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.
- The category Mineral Product Use includes CO₂ emissions coming from the use of limestone & dolomite, soda ash, and magnesite.
- The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene. CO₂ emissions are included in Other & Undifferentiated Production.
- Production of HFCs (HCFC-22 exclusively) only occurred in Canada from 1990-1992. HFC consumption began in 1995.

Table A12–15 1999 GHG Emission Summary for Canada

Greenhouse Gas Categories	Greenhouse Gases								
	CO ₂	CH ₄	CH ₄	N ₂ O	N ₂ O	HFCs	PFCs	SF ₆	TOTAL
Global Warming Potential			21		310				
Unit	kt	kt	kt CO ₂ equivalent	kt	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent
TOTAL¹	542 000	4 400	92 000	160	49 000	2 400	4 600	2 500	692 000
ENERGY	502 000	2 400	50 000	40	10 000				564 000
a. Stationary Combustion Sources	317 000	200	5 000	8	3 000				324 000
Electricity and Heat Generation	117 000	3.8	81	2	700				118 000
Fossil Fuel Production and Refining	63 500	100	2 000	1	500				66 000
Petroleum Refining and Upgrading	16 000	0.3	6	0.2	50				16 000
Fossil Fuel Production	47 400	100	2 000	1	400				50 000
Mining & Oil and Gas Extraction	8 930	0.2	4	0.2	70				9 000
Manufacturing Industries	54 400	3	60	2	700				55 100
Iron and Steel	6 110	0.3	6	0.2	70				6 180
Non Ferrous Metals	3 270	0.06	1	0.05	10				3 290
Chemical	9 860	0.20	4.3	0.2	50				9 910
Pulp and Paper	11 900	2	40	1	400				12 400
Cement	4 290	0.2	3	0.05	20				4 310
Other Manufacturing	19 000	0.4	8	0.3	100				19 100
Construction	1 160	0.02	0.4	0.03	10				1 170
Commercial & Institutional	28 700	0.5	10	0.6	200				28 900
Residential	40 100	100	2 000	2	500				43 000
Agriculture & Forestry	2 640	0.04	0.8	0.06	20				2 660
b. Transport²	169 000	40	800	30	9 000				179 000
Civil Aviation (Domestic Aviation)	7 500	0.4	8	0.2	70				7 600
Road Transportation	111 000	12	260	18	5 700				117 000
Light-Duty Gasoline Vehicles	39 600	5.4	110	8.7	2 700				42 400
Light-Duty Gasoline Trucks	33 100	3.9	82	7.9	2 500				35 600
Heavy-Duty Gasoline Vehicles	5 300	0.53	11	0.25	76				5 390
Motorcycles	142	0.09	1.9	0.00	0.86				145
Light-Duty Diesel Vehicles	435	0.01	0.2	0.03	10				446
Light-Duty Diesel Trucks	1 520	0.04	0.8	0.1	40				1 560
Heavy-Duty Diesel Vehicles	29 600	1	30	1	400				30 000
Propane & Natural Gas Vehicles	1 460	1	20	0.03	9				1 500
Railways	5 640	0.3	7	2	700				6 000
Navigation (Domestic Marine)	4 600	0.3	7	1	400				5 000
Other Transportation	40 000	20	500	8	3 000				43 000
Off-Road Gasoline	9 100	10	200	0.2	60				9 400
Off-Road Diesel	19 000	1	20	8	2 000				21 000
Pipelines	12 200	12	260	0.3	100				12 500
c. Fugitive Sources	16 000	2 100	45 000	0.1	40				60 900
Coal Mining		50	1 000						1 000
Oil and Natural Gas	16 100	2 080	43 700	0.1	40				59 800
Oil	130	249	5 220	0.1	30				5 380
Natural Gas	46.9	809	17 000	-	-				17 000
Venting	10 600	1 020	21 400	0.01	4				32 100
Flaring	5 300	3.5	74	0.00	0.7				5 400
INDUSTRIAL PROCESSES	39 000	4.1	85	9.44	2 930	2 400	4 600	2 500	52 100
a. Mineral Products	9 500								9 500
Cement Production	6 600								6 600
Lime Production	1 900								1 900
Mineral Product Use ³	964								964
b. Chemical Industry	5 900	4.1	85	9.44	2 930				8 900
Ammonia Production	5 900								5 900
Nitric Acid Production				3.76	1 170				1 170
Adipic Acid Production	-	-	-	5.6	1 700	-	-	-	1 700
Petrochemical Production ⁴		4.1	85	0.03	9.5				95
c. Metal Production	15 400						4 600	2 320	22 300
Iron and Steel Production	11 400								11 400
Aluminum Production	3 900						4 600	53.5	8 600
SF ₆ Used in Magnesium Smelters and Casters								2 270	2 270
d. Production and Consumption of Halocarbons and SF₆⁵						2 400	20	210	2 600
e. Other & Undifferentiated Production	8 700								8 700
SOLVENT & OTHER PRODUCT USE				1.3	410				410
AGRICULTURE		1 100	22 000	110	33 000				55 000
a. Enteric Fermentation		930	19 000						19 000
b. Manure Management		140	2 900	12	3 900				6 700
c. Agriculture Soils				93	29 000				29 000
Direct Sources				50	15 000				15 000
Pasture, Range and Paddock Manure				9.5	2 900				2 900
Indirect Sources				30	10 000				10 000
d. Field Burning of Agricultural Residues	-	4.5	95	0.12	36	-	-	-	130
WASTE	480	900	19 000	3	800				20 000
a. Solid Waste Disposal on Land		890	19 000		-				19 000
b. Wastewater Handling		15	300	2	600				920
c. Waste Incineration	480	0.06	1	0.6	200				670
LAND USE, LAND-USE CHANGE AND FORESTRY	7 500	300	6 400	13	3 900				18 000
a. Forest Land	-5 400	290	6 100	12	3 800				4 500
b. Cropland	870	6	100	0.3	80				1 100
c. Grassland	-	-	-	-	-				-
d. Wetlands	4 000	2	30	0.07	20				4 000
e. Settlements	8 000	5	100	0.2	60				8 000

Notes:

- National totals exclude all GHGs from the Land Use, Land-use Change and Forestry sector.
- Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.
- The category Mineral Product Use includes CO₂ emissions coming from the use of limestone & dolomite, soda ash, and magnesite.
- The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene. CO₂ emissions are included in Other & Undifferentiated Production.
- Production of HFCs (HCFC-22 exclusively) only occurred in Canada from 1990-1992. HFC consumption began in 1995.

Table A12-16 1998 GHG Emission Summary for Canada

A12

Greenhouse Gas Categories	Greenhouse Gases								
	CO ₂	CH ₄	CH ₄	N ₂ O	N ₂ O	HFCs	PFCs	SF ₆	TOTAL
Global Warming Potential Unit	kt	kt	21 kt CO ₂ equivalent	kt	310 kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent
TOTAL¹	526 000	4 400	92 000	160	51 000	1 900	5 600	2 500	679 000
ENERGY	487 000	2 400	51 000	40	10 000				549 000
a. Stationary Combustion Sources	305 000	200	4 000	8	3 000				311 000
Electricity and Heat Generation	120 000	3.9	81	2	700				121 000
Fossil Fuel Production and Refining	53 100	90	2 000	1	400				55 000
Petroleum Refining and Upgrading	17 000	0.3	6	0.2	50				17 000
Fossil Fuel Production	36 300	90	2 000	1	300				38 000
Mining & Oil and Gas Extraction	9 220	0.2	4	0.2	70				9 290
Manufacturing Industries	53 300	3	60	2	600				54 000
Iron and Steel	6 050	0.3	6	0.2	60				6 120
Non Ferrous Metals	3 520	0.07	2	0.05	20				3 540
Chemical	9 730	0.20	4.2	0.2	50				9 790
Pulp and Paper	11 600	2	30	1	400				12 000
Cement	3 980	0.2	3	0.05	20				4 000
Other Manufacturing	18 400	0.4	8	0.3	100				18 500
Construction	1 100	0.02	0.4	0.03	10				1 110
Commercial & Institutional	27 100	0.5	10	0.6	200				27 300
Residential	38 300	100	2 000	2	500				41 000
Agriculture & Forestry	2 560	0.04	0.8	0.06	20				2 580
b. Transport²	164 000	40	800	30	9 000				174 000
Civil Aviation (Domestic Aviation)	7 120	0.4	8	0.2	70				7 200
Road Transportation	108 000	12	260	18	5 500				114 000
Light-Duty Gasoline Vehicles	38 700	5.4	110	8.6	2 700				41 400
Light-Duty Gasoline Trucks	31 000	3.6	77	7.4	2 300				33 400
Heavy-Duty Gasoline Vehicles	5 760	0.64	14	0.23	72				5 840
Motorcycles	146	0.11	2.2	0.00	0.89				149
Light-Duty Diesel Vehicles	416	0.01	0.2	0.03	10				426
Light-Duty Diesel Trucks	1 520	0.04	0.8	0.1	40				1 560
Heavy-Duty Diesel Vehicles	29 000	1	30	1	400				29 400
Propane & Natural Gas Vehicles	1 740	1	30	0.03	10				1 800
Railways	5 320	0.3	6	2	700				6 000
Navigation (Domestic Marine)	4 790	0.3	7	1	300				5 100
Other Transportation	39 000	20	500	8	2 000				42 000
Off-Road Gasoline	9 600	10	200	0.2	70				9 900
Off-Road Diesel	17 000	1	20	7	2 000				19 000
Pipelines	12 100	12	260	0.3	100				12 400
c. Fugitive Sources	18 000	2 200	46 000	0.1	40				63 400
Coal Mining		60	1 000						1 000
Oil and Natural Gas	17 600	2 110	44 400	0.1	40				62 000
Oil	120	251	5 270	0.1	30				5 420
Natural Gas	52.5	827	17 400	-	-				17 400
Venting	10 400	1 030	21 700	0.02	5				32 100
Flaring	7 000	4.6	96	0.00	1				7 100
INDUSTRIAL PROCESSES	39 000	3.6	76	19.7	6 110	1 900	5 600	2 500	55 400
a. Mineral Products	9 300								9 300
Cement Production	6 400								6 400
Lime Production	1 800								1 800
Mineral Product Use ³	1 110								1 110
b. Chemical Industry	6 100	3.6	76	19.7	6 110				12 000
Ammonia Production	6 100								6 100
Nitric Acid Production				3.34	1 040				1 040
Adipic Acid Production	-	-	-	16	5 100	-	-	-	5 100
Petrochemical Production ⁴		3.6	76	0.03	8.8				85
c. Metal Production	15 100				-		5 600	2 260	23 000
Iron and Steel Production	11 200								11 200
Aluminum Production	4 000						5 600	59.1	9 600
SF ₆ Used in Magnesium Smelters and Casters								2 210	2 210
d. Production and Consumption of Halocarbons and SF₆⁵						1 900	20	210	2 200
e. Other & Undifferentiated Production	8 600								8 600
SOLVENT & OTHER PRODUCT USE				1.3	400				400
AGRICULTURE		1 100	22 000	100	32 000				55 000
a. Enteric Fermentation		930	19 000						19 000
b. Manure Management		140	2 900	12	3 800				6 700
c. Agriculture Soils				91	28 000				28 000
Direct Sources				49	15 000				15 000
Pasture, Range and Paddock Manure				9.4	2 900				2 900
Indirect Sources				30	10 000				10 000
d. Field Burning of Agricultural Residues		6.2	130	0.16	49				180
WASTE	530	900	19 000	3	800				20 000
a. Solid Waste Disposal on Land		890	19 000						19 000
b. Wastewater Handling		15	320	2	600				920
c. Waste Incineration	530	0.06	1	0.7	200				740
LAND USE, LAND-USE CHANGE AND FORESTRY	96 000	710	15 000	30	9 200				120 000
a. Forest Land	83 000	690	15 000	29	9 000				110 000
b. Cropland	1 500	6	100	0.3	80				1 700
c. Grassland									
d. Wetlands	4 000	0.9	20	0.04	10				4 000
e. Settlements	8 000	5	100	0.2	60				9 000

Notes:

- National totals exclude all GHGs from the Land Use, Land-use Change and Forestry sector.
- Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.
- The category Mineral Product Use includes CO₂ emissions coming from the use of limestone & dolomite, soda ash, and magnesite.
- The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene. CO₂ emissions are included in Other & Undifferentiated Production.
- Production of HFCs (HCFC-22 exclusively) only occurred in Canada from 1990-1992. HFC consumption began in 1995.

Table A12–17 1997 GHG Emission Summary for Canada

Greenhouse Gas Categories	Greenhouse Gases								
	CO ₂	CH ₄	CH ₄	N ₂ O	N ₂ O	HFCs	PFCs	SF ₆	TOTAL
Global Warming Potential Unit	kt	kt	kt CO ₂ equivalent	kt	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent
TOTAL¹	517 000	4 300	91 000	180	55 000	1 400	5 500	1 900	672 000
ENERGY	478 000	2 400	50 000	40	10 000				539 000
a. Stationary Combustion Sources	301 000	200	4 000	8	2 000				307 000
Electricity and Heat Generation	108 000	3.2	67	2	600				109 000
Fossil Fuel Production and Refining	49 700	70	2 000	1	300				52 000
Petroleum Refining and Upgrading	17 000	0.3	6	0.2	50				17 000
Fossil Fuel Production	32 600	70	2 000	0.9	300				34 000
Mining & Oil and Gas Extraction	9 830	0.2	4	0.2	70				9 910
Manufacturing Industries	56 200	3	50	2	600				56 900
Iron and Steel	6 020	0.3	6	0.2	60				6 090
Non Ferrous Metals	3 550	0.07	2	0.05	20				3 560
Chemical	9 420	0.19	4.1	0.2	50				9 480
Pulp and Paper	12 700	2	30	1	400				13 100
Cement	3 850	0.1	2	0.04	10				3 870
Other Manufacturing	20 600	0.4	9	0.4	100				20 800
Construction	1 240	0.02	0.4	0.03	10				1 250
Commercial & Institutional	29 700	0.5	10	0.6	200				29 900
Residential	43 500	90	2 000	2	500				46 000
Agriculture & Forestry	2 880	0.04	0.9	0.07	20				2 900
b. Transport²	161 000	40	800	30	9 000				171 000
Civil Aviation (Domestic Aviation)	6 950	0.3	7	0.2	70				7 000
Road Transportation	105 000	13	270	17	5 300				111 000
Light-Duty Gasoline Vehicles	39 900	5.7	120	8.8	2 700				42 800
Light-Duty Gasoline Trucks	28 800	3.4	72	6.8	2 100				31 000
Heavy-Duty Gasoline Vehicles	5 660	0.71	15	0.19	58				5 730
Motorcycles	124	0.10	2.1	0.00	0.77				127
Light-Duty Diesel Vehicles	402	0.01	0.2	0.03	10				412
Light-Duty Diesel Trucks	1 390	0.04	0.8	0.1	30				1 420
Heavy-Duty Diesel Vehicles	27 300	1	30	1	300				27 600
Propane & Natural Gas Vehicles	1 800	1	30	0.04	10				1 800
Railways	5 520	0.3	6	2	700				6 000
Navigation (Domestic Marine)	4 170	0.3	6	1	300				4 500
Other Transportation	39 000	20	500	8	3 000				42 000
Off-Road Gasoline	8 500	10	200	0.2	60				8 700
Off-Road Diesel	19 000	1	20	8	2 000				21 000
Pipelines	12 100	12	260	0.3	100				12 500
c. Fugitive Sources	16 000	2 100	45 000	0.1	40				61 300
Coal Mining		70	2 000						2 000
Oil and Natural Gas	16 100	2 080	43 600	0.1	40				59 700
Oil	120	258	5 410	0.1	30				5 570
Natural Gas	41.3	759	15 900	-	-				16 000
Venting	10 400	1 050	22 100	0.01	4				32 600
Flaring	5 500	3.6	75	0.00	0.7				5 600
INDUSTRIAL PROCESSES	39 000	3.8	80	35.3	11 000	1 400	5 500	1 900	58 500
a. Mineral Products	9 200								9 200
Cement Production	6 200								6 200
Lime Production	1 900								1 900
Mineral Product Use ³	1 130								1 130
b. Chemical Industry	5 400	3.8	80	35.3	11 000				16 000
Ammonia Production	5 400								5 400
Nitric Acid Production				3.41	1 060				1 060
Adipic Acid Production	-	-	-	32	9 900	-	-	-	9 900
Petrochemical Production ⁴		3.8	80	0.03	8.9				89
c. Metal Production	14 900						5 500	1 730	22 100
Iron and Steel Production	10 900								10 900
Aluminum Production	3 900						5 500	59.1	9 500
SF ₆ Used in Magnesium Smelters and Casters								1 670	1 670
d. Production and Consumption of Halocarbons and SF₆⁵						1 400	20	190	1 600
e. Other & Undifferentiated Production	9 100								9 100
SOLVENT & OTHER PRODUCT USE				0.74	230				230
AGRICULTURE		1 100	22 000	100	32 000				54 000
a. Enteric Fermentation		920	19 000						19 000
b. Manure Management		130	2 800	12	3 800				6 600
c. Agriculture Soils				90	28 000				28 000
Direct Sources				48	15 000				15 000
Pasture, Range and Paddock Manure				9.2	2 900				2 900
Indirect Sources				30	10 000				10 000
d. Field Burning of Agricultural Residues		5.5	120	0.14	44				160
WASTE	500	890	19 000	3	800				20 000
a. Solid Waste Disposal on Land		870	18 000						18 000
b. Wastewater Handling		16	330	2	600				920
c. Waste Incineration	500	0.05	1	0.6	200				690
LAND USE, LAND-USE CHANGE AND FORESTRY	-65 000	87	1 800	3.7	1 100				-62 000
a. Forest Land	-79 000	76	1 600	3.2	990				-76 000
b. Cropland	2 600	6	100	0.3	90				2 800
c. Grassland									
d. Wetlands	3 000	0.1	3	0.01	2				3 000
e. Settlements	8 000	5	100	0.2	50				8 000

Notes:

- National totals exclude all GHGs from the Land Use, Land-use Change and Forestry sector.
- Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.
- The category Mineral Product Use includes CO₂ emissions coming from the use of limestone & dolomite, soda ash, and magnesite.
- The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene. CO₂ emissions are included in Other & Undifferentiated Production.
- Production of HFCs (HCFC-22 exclusively) only occurred in Canada from 1990-1992. HFC consumption began in 1995.

Table A12-18 1996 GHG Emission Summary for Canada

A12

Greenhouse Gas Categories	Greenhouse Gases								
	CO ₂	CH ₄	CH ₄	N ₂ O	N ₂ O	HFCs	PFCs	SF ₆	TOTAL
Global Warming Potential			21		310				
Unit	kt	kt	kt CO ₂ equivalent	kt	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent
TOTAL¹	504 000	4 200	89 000	180	56 000	850	5 600	1 900	658 000
ENERGY	466 000	2 300	48 000	30	10 000				525 000
a. Stationary Combustion Sources	295 000	200	4 000	8	2 000				301 000
Electricity and Heat Generation	96 400	2.6	54	2	600				97 000
Fossil Fuel Production and Refining	52 700	80	2 000	1	400				55 000
Petroleum Refining and Upgrading	17 000	0.3	6	0.2	50				17 000
Fossil Fuel Production	35 500	80	2 000	1	300				37 000
Mining & Oil and Gas Extraction	9 100	0.2	4	0.2	70				9 180
Manufacturing Industries	56 300	3	60	2	600				56 900
Iron and Steel	5 940	0.3	6	0.2	60				6 010
Non Ferrous Metals	3 730	0.08	2	0.05	20				3 750
Chemical	9 700	0.20	4.1	0.2	50				9 750
Pulp and Paper	12 900	2	30	1	400				13 300
Cement	3 920	0.2	4	0.05	20				3 940
Other Manufacturing	20 000	0.4	8	0.4	100				20 200
Construction	1 250	0.02	0.4	0.03	10				1 260
Commercial & Institutional	29 300	0.5	10	0.6	200				29 500
Residential	46 700	90	2 000	2	500				49 000
Agriculture & Forestry	2 890	0.04	0.9	0.07	20				2 910
b. Transport²	155 000	40	800	30	8 000				165 000
Civil Aviation (Domestic Aviation)	6 860	0.3	7	0.2	70				6 900
Road Transportation	101 000	13	270	16	5 000				106 000
Light-Duty Gasoline Vehicles	40 000	5.9	120	8.7	2 700				42 800
Light-Duty Gasoline Trucks	26 400	3.2	68	6.1	1 900				28 400
Heavy-Duty Gasoline Vehicles	5 750	0.77	16	0.16	50				5 820
Motorcycles	117	0.11	2.3	0.00	0.75				120
Light-Duty Diesel Vehicles	401	0.01	0.2	0.03	10				411
Light-Duty Diesel Trucks	1 260	0.03	0.7	0.1	30				1 290
Heavy-Duty Diesel Vehicles	25 300	1	30	0.9	300				25 600
Propane & Natural Gas Vehicles	1 940	1	30	0.04	10				2 000
Railways	5 450	0.3	6	2	700				6 000
Navigation (Domestic Marine)	4 110	0.3	6	1	300				4 500
Other Transportation	38 000	20	500	7	2 000				41 000
Off-Road Gasoline	9 000	10	200	0.2	60				9 300
Off-Road Diesel	17 000	0.9	20	7	2 000				19 000
Pipelines	12 100	12	250	0.3	100				12 400
c. Fugitive Sources	16 000	2 100	44 000	0.1	40				59 500
Coal Mining		70	1 000						1 000
Oil and Natural Gas	15 900	2 000	42 100	0.1	40				58 000
Oil	120	246	5 180	0.1	30				5 330
Natural Gas	46.3	783	16 400	-	-				16 500
Venting	10 400	971	20 400	0.01	4				30 800
Flaring	5 300	3.5	73	0.00	0.7				5 400
INDUSTRIAL PROCESSES	38 000	4.0	83	40.6	12 600	850	5 600	1 900	59 100
a. Mineral Products	8 600								8 600
Cement Production	5 800								5 800
Lime Production	1 800								1 800
Mineral Product Use ³	1 010								1 010
b. Chemical Industry	5 500	4.0	83	40.6	12 600				18 000
Ammonia Production	5 500								5 500
Nitric Acid Production				3.57	1 110				1 110
Adipic Acid Production	-	-	-	37	11 000	-	-	-	11 000
Petrochemical Production ⁴		4.0	83	0.03	8.7				92
c. Metal Production	15 000				-		5 600	1 700	22 300
Iron and Steel Production	11 100								11 100
Aluminum Production	3 900						5 600	59.1	9 500
SF ₆ Used in Magnesium Smelters and Casters								1 640	1 640
d. Production and Consumption of Halocarbons and SF₆⁵						850	20	160	1 000
e. Other & Undifferentiated Production	9 000								9 000
SOLVENT & OTHER PRODUCT USE				0.70	220				220
AGRICULTURE		1 100	22 000	100	32 000				54 000
a. Enteric Fermentation		930	19 000						19 000
b. Manure Management		130	2 800	12	3 800				6 600
c. Agriculture Soils				91	28 000				28 000
Direct Sources				49	15 000				15 000
Pasture, Range and Paddock Manure				9.2	2 800				2 800
Indirect Sources				30	10 000				10 000
d. Field Burning of Agricultural Residues		5.4	110	0.14	44	-	-	-	160
WASTE	540	880	18 000	3	800				20 000
a. Solid Waste Disposal on Land		860	18 000		-				18 000
b. Wastewater Handling		16	330	2	600				910
c. Waste Incineration	540	0.4	7	0.8	200				790
LAND USE, LAND-USE CHANGE AND FORESTRY	-30 000	220	4 600	9.2	2 800				-22 000
a. Forest Land	-44 000	210	4 400	8.7	2 700				-37 000
b. Cropland	3 500	6	100	0.3	90				3 700
c. Grassland	-	-	-	-	-				-
d. Wetlands	3 000	-	-	-	-				3 000
e. Settlements	8 000	5	100	0.2	50				8 000

Notes:

- National totals exclude all GHGs from the Land Use, Land-use Change and Forestry sector.
- Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.
- The category Mineral Product Use includes CO₂ emissions coming from the use of limestone & dolomite, soda ash, and magnesite.
- The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene. CO₂ emissions are included in Other & Undifferentiated Production.
- Production of HFCs (HCFC-22 exclusively) only occurred in Canada from 1990-1992. HFC consumption began in 1995.

Table A12–19 1995 GHG Emission Summary for Canada

Greenhouse Gas Categories	Greenhouse Gases								
	CO ₂	CH ₄	CH ₄	N ₂ O	N ₂ O	HFCs	PFCs	SF ₆	TOTAL
Global Warming Potential Unit	kt	kt	21 kt CO ₂ equivalent	kt	310 kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent
TOTAL¹	491 000	4 100	86 000	170	54 000	480	5 500	2 400	639 000
ENERGY	453 000	2 200	45 000	30	10 000				509 000
a. Stationary Combustion Sources	287 000	200	4 000	8	2 000				293 000
Electricity and Heat Generation	97 300	2.9	61	2	600				97 900
Fossil Fuel Production and Refining	51 700	80	2 000	1	400				54 000
Petroleum Refining and Upgrading	16 000	0.3	6	0.2	50				16 000
Fossil Fuel Production	35 800	80	2 000	1	300				38 000
Mining & Oil and Gas Extraction	8 360	0.2	4	0.2	70				8 430
Manufacturing Industries	55 000	3	50	2	600				55 700
Iron and Steel	5 710	0.3	5	0.2	60				5 780
Non Ferrous Metals	3 140	0.06	1	0.04	10				3 150
Chemical	10 200	0.21	4.3	0.2	50				10 200
Pulp and Paper	12 500	1	30	1	400				12 800
Cement	4 090	0.2	4	0.05	20				4 110
Other Manufacturing	19 400	0.4	8	0.3	100				19 500
Construction	1 160	0.02	0.4	0.03	10				1 170
Commercial & Institutional	28 700	0.5	10	0.6	200				28 900
Residential	42 000	100	2 000	2	500				45 000
Agriculture & Forestry	2 720	0.04	0.9	0.07	20				2 750
b. Transport²	152 000	40	700	30	8 000				160 000
Civil Aviation (Domestic Aviation)	6 510	0.4	8	0.2	60				6 600
Road Transportation	102 000	13	280	16	4 800				107 000
Light-Duty Gasoline Vehicles	41 000	6.3	130	8.7	2 700				43 800
Light-Duty Gasoline Trucks	25 400	3.2	67	5.8	1 800				27 300
Heavy-Duty Gasoline Vehicles	6 170	0.87	18	0.14	45				6 230
Motorcycles	121	0.12	2.6	0.00	0.79				125
Light-Duty Diesel Vehicles	419	0.01	0.2	0.03	10				429
Light-Duty Diesel Trucks	1 280	0.03	0.7	0.1	30				1 310
Heavy-Duty Diesel Vehicles	25 800	1	30	0.8	200				26 100
Propane & Natural Gas Vehicles	2 060	1	30	0.04	10				2 100
Railways	5 570	0.3	6	2	700				6 000
Navigation (Domestic Marine)	4 020	0.3	6	1	300				4 400
Other Transportation	33 000	20	400	6	2 000				36 000
Off-Road Gasoline	7 500	9	200	0.2	50				7 700
Off-Road Diesel	14 000	0.8	20	6	2 000				16 000
Pipelines	11 600	12	240	0.3	100				11 900
c. Fugitive Sources	15 000	1 900	41 000	0.1	40				55 500
Coal Mining		70	2 000						2 000
Oil and Natural Gas	14 700	1 860	39 200	0.1	40				53 900
Oil	120	238	4 990	0.1	30				5 150
Natural Gas	33.6	710	14 900	-	-				14 900
Venting	9 570	914	19 200	0.01	4				28 800
Flaring	5 000	3.3	69	0.00	0.3				5 100
INDUSTRIAL PROCESSES	37 000	3.9	81	37.9	11 700	480	5 500	2 400	57 500
a. Mineral Products	8 800								8 800
Cement Production	6 100								6 100
Lime Production	1 900								1 900
Mineral Product Use ³	887								887
b. Chemical Industry	5 300	3.9	81	37.9	11 700				17 000
Ammonia Production	5 300								5 300
Nitric Acid Production				3.24	1 000				1 000
Adipic Acid Production	-	-	-	35	11 000	-	-	-	11 000
Petrochemical Production ⁴		3.9	81	0.03	8.5				90
c. Metal Production	15 000				-		5 500	2 170	22 600
Iron and Steel Production	11 300								11 300
Aluminum Production	3 600						5 500	59.1	9 200
SF ₆ Used in Magnesium Smelters and Casters								2 110	2 110
d. Production and Consumption of Halocarbons and SF₆⁵						480	30	230	730
e. Other & Undifferentiated Production	8 200								8 200
SOLVENT & OTHER PRODUCT USE				0.69	210				210
AGRICULTURE		1 000	22 000	99	31 000				53 000
a. Enteric Fermentation		910	19 000						19 000
b. Manure Management		130	2 800	12	3 700				6 500
c. Agriculture Soils				87	27 000				27 000
Direct Sources				47	14 000				14 000
Pasture, Range and Paddock Manure				9.1	2 800				2 800
Indirect Sources				30	10 000				10 000
d. Field Burning of Agricultural Residues	-	5.8	120	0.15	46	-	-	-	170
WASTE	580	880	19 000	3	800				20 000
a. Solid Waste Disposal on Land		870	18 000		-				18 000
b. Wastewater Handling		16	330	2	600				900
c. Waste Incineration	580	0.4	8	0.9	300				850
LAND USE, LAND-USE CHANGE AND FORESTRY	160 000	900	19 000	38	12 000				190 000
a. Forest Land	150 000	890	19 000	37	12 000				180 000
b. Cropland	4 300	6	100	0.3	90				4 600
c. Grassland	-	-	-	-	-				-
d. Wetlands	3 000	0.01	0.3	0.00	0.2				3 000
e. Settlements	8 000	4	90	0.2	50				8 000

Notes:

- National totals exclude all GHGs from the Land Use, Land-use Change and Forestry sector.
- Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.
- The category Mineral Product Use includes CO₂ emissions coming from the use of limestone & dolomite, soda ash, and magnesite.
- The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene. CO₂ emissions are included in Other & Undifferentiated Production.
- Production of HFCs (HCFC-22 exclusively) only occurred in Canada from 1990-1992. HFC consumption began in 1995.

Table A12-20 1994 GHG Emission Summary for Canada

A12

Greenhouse Gas Categories	Greenhouse Gases								
	CO ₂	CH ₄	CH ₄	N ₂ O	N ₂ O	HFCs	PFCs	SF ₆	TOTAL
Global Warming Potential Unit	kt	kt	21 kt CO ₂ equivalent	kt	310 kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent
TOTAL¹	479 000	3 900	83 000	170	53 000	-	6 000	2 600	623 000
ENERGY	442 000	2 000	43 000	30	10 000				495 000
a. Stationary Combustion Sources	280 000	200	4 000	7	2 000				286 000
Electricity and Heat Generation	94 000	2.5	53	2	500				94 600
Fossil Fuel Production and Refining	50 400	80	2 000	1	300				52 000
Petroleum Refining and Upgrading	15 000	0.2	5	0.1	50				15 000
Fossil Fuel Production	34 900	80	2 000	1	300				37 000
Mining & Oil and Gas Extraction	7 920	0.2	4	0.2	50				7 970
Manufacturing Industries	53 200	3	50	2	600				53 900
Iron and Steel	5 950	0.3	6	0.2	60				6 020
Non Ferrous Metals	3 340	0.07	2	0.05	20				3 350
Chemical	9 900	0.20	4.3	0.2	50				9 960
Pulp and Paper	12 500	2	30	1	400				12 900
Cement	4 000	0.2	4	0.05	20				4 030
Other Manufacturing	17 500	0.4	7	0.3	100				17 600
Construction	1 380	0.02	0.5	0.03	10				1 390
Commercial & Institutional	27 100	0.5	10	0.6	200				27 300
Residential	43 300	100	2 000	2	500				46 000
Agriculture & Forestry	2 510	0.04	0.8	0.06	20				2 530
b. Transport²	148 000	30	700	20	8 000				156 000
Civil Aviation (Domestic Aviation)	6 140	0.3	7	0.2	60				6 200
Road Transportation	101 000	14	280	15	4 600				106 000
Light-Duty Gasoline Vehicles	41 600	6.6	140	8.5	2 600				44 400
Light-Duty Gasoline Trucks	24 700	3.2	68	5.4	1 700				26 500
Heavy-Duty Gasoline Vehicles	6 610	0.96	20	0.16	49				6 680
Motorcycles	125	0.13	2.7	0.00	0.82				129
Light-Duty Diesel Vehicles	435	0.01	0.2	0.03	10				446
Light-Duty Diesel Trucks	1 110	0.03	0.6	0.08	30				1 140
Heavy-Duty Diesel Vehicles	24 400	1	30	0.7	200				24 700
Propane & Natural Gas Vehicles	1 880	1	30	0.04	10				1 900
Railways	6 150	0.3	7	3	800				7 000
Navigation (Domestic Marine)	4 310	0.3	6	1	300				4 700
Other Transportation	30 000	20	400	6	2 000				33 000
Off-Road Gasoline	6 900	8	200	0.2	50				7 100
Off-Road Diesel	13 000	0.7	20	5	2 000				15 000
Pipelines	10 400	10	220	0.3	90				10 700
c. Fugitive Sources	14 000	1 800	38 000	0.1	40				52 600
Coal Mining		80	2 000						2 000
Oil and Natural Gas	14 200	1 750	36 600	0.1	40				50 900
Oil	110	221	4 630	0.1	30				4 780
Natural Gas	30.9	680	14 300	-	-				14 300
Venting	9 300	841	17 700	0.01	4				27 000
Flaring	4 700	3.1	66	0.00	1				4 800
INDUSTRIAL PROCESSES	36 000	4.0	84	38.5	11 900	-	6 000	2 600	57 000
a. Mineral Products	8 200								8 200
Cement Production	5 400								5 400
Lime Production	1 800								1 800
Mineral Product Use ³	930								930
b. Chemical Industry	5 700	4.0	84	38.5	11 900				18 000
Ammonia Production	5 700								5 700
Nitric Acid Production				3.08	956				956
Adipic Acid Production	-	-	-	35	11 000	-	-	-	11 000
Petrochemical Production ⁴		4.0	84	0.03	8.2				92
c. Metal Production	14 700				-		6 000	2 340	23 000
Iron and Steel Production	10 900								10 900
Aluminum Production	3 800						6 000	59.1	9 800
SF ₆ Used in Magnesium Smelters and Casters								2 280	2 280
d. Production and Consumption of Halocarbons and SF₆⁵						-	-	230	230
e. Other & Undifferentiated Production	7 900								7 900
SOLVENT & OTHER PRODUCT USE				0.57	180				180
AGRICULTURE		1 000	21 000	97	30 000				51 000
a. Enteric Fermentation		870	18 000						18 000
b. Manure Management		130	2 600	12	3 600				6 200
c. Agriculture Soils				85	26 000				26 000
Direct Sources				46	14 000				14 000
Pasture, Range and Paddock Manure				8.6	2 700				2 700
Indirect Sources				30	9 000				9 000
d. Field Burning of Agricultural Residues	-	5.6	120	0.14	45	-	-	-	160
WASTE	550	890	19 000	3	800				20 000
a. Solid Waste Disposal on Land		870	18 000		-				18 000
b. Wastewater Handling		16	330	2	600				890
c. Waste Incineration	550	0.3	7	0.8	200				790
LAND USE, LAND-USE CHANGE AND FORESTRY	-27 000	280	5 800	12	3 600				-17 000
a. Forest Land	-44 000	270	5 600	11	3 500				-35 000
b. Cropland	5 800	8	200	0.4	100				6 100
c. Grassland	-	-	-	-	-				-
d. Wetlands	3 000	0.00	0.00	0.00	0.00				3 000
e. Settlements	8 000	4	90	0.2	50				8 000

Notes:

1. National totals exclude all GHGs from the Land Use, Land-use Change and Forestry sector.

2. Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.

3. The category Mineral Product Use includes CO₂ emissions coming from the use of limestone & dolomite, soda ash, and magnesite.4. The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene. CO₂ emissions are included in Other & Undifferentiated Production.

5. Production of HFCs (HCFC-22 exclusively) only occurred in Canada from 1990-1992. HFC consumption began in 1995.

Table A12–21 1993 GHG Emission Summary for Canada

Greenhouse Gas Categories		Greenhouse Gases								
Global Warming Potential		CO ₂	CH ₄	CH ₄	N ₂ O	N ₂ O	HFCs	PFCs	SF ₆	TOTAL
Unit		kt	kt	21 kt CO ₂ equivalent	kt	310 kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent
TOTAL ¹		464 000	3 800	80 000	160	49 000	-	6 500	2 500	602 000
ENERGY		428 000	1 900	41 000	30	9 000				478 000
a.	Stationary Combustion Sources	274 000	200	4 000	7	2 000				280 000
	Electricity and Heat Generation	91 700	2.5	52	2	500				92 300
	Fossil Fuel Production and Refining	50 000	70	2 000	1	300				52 000
	Petroleum Refining and Upgrading	16 000	0.3	6	0.2	50				17 000
	Fossil Fuel Production	33 500	70	2 000	0.9	300				35 000
	Mining & Oil and Gas Extraction	7 730	0.2	4	0.2	50				7 790
	Manufacturing Industries	49 900	2	50	2	500				50 500
	Iron and Steel	5 330	0.3	5	0.2	60				5 390
	Non Ferrous Metals	2 750	0.06	1	0.04	10				2 760
	Chemical	8 430	0.17	3.6	0.1	50				8 480
	Pulp and Paper	12 600	1	30	1	300				13 000
	Cement	3 410	0.1	3	0.04	10				3 430
	Other Manufacturing	17 300	0.4	8	0.3	100				17 500
	Construction	1 370	0.02	0.5	0.03	10				1 380
	Commercial & Institutional	27 800	0.5	10	0.6	200				28 000
	Residential	42 500	100	2 000	2	500				45 000
	Agriculture & Forestry	3 000	0.05	1	0.07	20				3 030
b.	Transport ²	141 000	30	700	20	7 000				149 000
	Civil Aviation (Domestic Aviation)	5 870	0.3	7	0.2	60				5 900
	Road Transportation	95 400	14	280	14	4 300				99 900
	Light-Duty Gasoline Vehicles	42 100	6.9	140	8.0	2 500				44 700
	Light-Duty Gasoline Trucks	23 000	3.1	66	4.8	1 500				24 600
	Heavy-Duty Gasoline Vehicles	6 150	0.94	20	0.16	49				6 220
	Motorcycles	133	0.13	2.8	0.00	0.86				137
	Light-Duty Diesel Vehicles	446	0.01	0.3	0.03	10				457
	Light-Duty Diesel Trucks	942	0.03	0.5	0.07	20				965
	Heavy-Duty Diesel Vehicles	20 600	1	20	0.6	200				20 800
	Propane & Natural Gas Vehicles	1 990	1	30	0.04	10				2 000
	Railways	5 950	0.3	7	2	800				7 000
	Navigation (Domestic Marine)	4 150	0.3	6	1	300				4 500
	Other Transportation	30 000	20	400	6	2 000				32 000
	Off-Road Gasoline	6 400	8	200	0.1	40				6 700
	Off-Road Diesel	13 000	0.7	20	5	2 000				15 000
	Pipelines	10 000	10	210	0.3	80				10 300
c.	Fugitive Sources	13 000	1 700	36 000	0.1	30				49 100
	Coal Mining		80	2 000						2 000
	Oil and Natural Gas	12 700	1 650	34 700	0.1	30				47 500
	Oil	110	217	4 550	0.1	30				4 690
	Natural Gas	28.6	640	13 400	-	-				13 500
	Venting	8 010	794	16 700	-	-				24 700
	Flaring	4 500	3.0	64	0.00	0.7				4 600
INDUSTRIAL PROCESSES		36 000	3.9	82	32.7	10 100	-	6 500	2 500	55 000
a.	Mineral Products	7 100								7 100
	Cement Production	4 600								4 600
	Lime Production	1 800								1 800
	Mineral Product Use ³	790								790
b.	Chemical Industry	5 300	3.9	82	32.7	10 100				16 000
	Ammonia Production	5 300								5 300
	Nitric Acid Production				3.40	1 050				1 050
	Adipic Acid Production	-	-	-	29	9 100	-	-	-	9 100
	Petrochemical Production ⁴		3.9	82	0.03	8.2				90
c.	Metal Production	15 700				-		6 500	2 270	24 400
	Iron and Steel Production	11 800								11 800
	Aluminum Production	3 900						6 500	59.1	10 000
	SF ₆ Used in Magnesium Smelters and Casters								2 210	2 210
d.	Production and Consumption of Halocarbons and SF ₆ ⁵						-	-		230
e.	Other & Undifferentiated Production	7 700								7 700
SOLVENT & OTHER PRODUCT USE					0.51	160				160
AGRICULTURE			960	20 000	93	29 000				49 000
a.	Enteric Fermentation		830	17 000						17 000
b.	Manure Management		120	2 600						6 000
c.	Agriculture Soils				82	25 000				25 000
	Direct Sources				45	14 000				14 000
	Pasture, Range and Paddock Manure				8.2	2 500				2 500
	Indirect Sources				30	9 000				9 000
d.	Field Burning of Agricultural Residues	-	5.3	110	0.14	43	-	-	-	160
WASTE		520	890	19 000	2	800				20 000
a.	Solid Waste Disposal on Land		870	18 000		-				18 000
b.	Wastewater Handling		15	330	2	500				870
c.	Waste Incineration	520	0.3	7	0.7	200				750
LAND USE, LAND-USE CHANGE AND FORESTRY		-21 000	310	6 500	13	4 000				-11 000
a.	Forest Land	-43 000	290	6 200	12	3 800				-33 000
b.	Cropland	7 400	9	200	0.4	100				7 700
c.	Grassland	-	-	-	-	-				-
d.	Wetlands	5 000	0.2	4	0.01	3				5 000
e.	Settlements	8 000	5	100	0.2	50				9 000

Notes:

1. National totals exclude all GHGs from the Land Use, Land-use Change and Forestry sector.
2. Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.
3. The category Mineral Product Use includes CO₂ emissions coming from the use of limestone & dolomite, soda ash, and magnesite.
4. The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene. CO₂ emissions are included in Other & Undifferentiated Production.
5. Production of HFCs (HCFC-22 exclusively) only occurred in Canada from 1990-1992. HFC consumption began in 1995.

Table A12-22 1992 GHG Emission Summary for Canada

A12

Greenhouse Gas Categories		Greenhouse Gases								
Global Warming Potential		CO ₂	CH ₄	CH ₄	N ₂ O	N ₂ O	HFCs	PFCs	SF ₆	TOTAL
Unit		kt	kt	21 kt CO ₂ equivalent	kt	310 kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent
TOTAL ¹		465 000	3 700	77 000	160	48 000	660	6 600	2 700	600 000
ENERGY		430 000	1 900	39 000	30	9 000				478 000
a.	Stationary Combustion Sources	280 000	200	4 000	7	2 000				286 000
	Electricity and Heat Generation	101 000	2.3	48	2	600				101 000
	Fossil Fuel Production and Refining	49 500	70	2 000	1	300				51 000
	Petroleum Refining and Upgrading	16 000	0.3	6	0.1	50				16 000
	Fossil Fuel Production	33 500	70	2 000	0.9	300				35 000
	Mining & Oil and Gas Extraction	5 270	0.1	3	0.1	40				5 310
	Manufacturing Industries	52 100	2	50	2	600				52 700
	Iron and Steel	5 230	0.3	6	0.2	60				5 300
	Non Ferrous Metals	2 860	0.06	1	0.04	10				2 870
	Chemical	8 510	0.17	3.6	0.1	50				8 560
	Pulp and Paper	12 600	1	30	1	300				13 000
	Cement	3 420	0.1	2	0.04	10				3 430
	Other Manufacturing	19 500	0.4	9	0.4	100				19 600
	Construction	1 730	0.03	0.6	0.06	20				1 750
	Commercial & Institutional	26 800	0.5	10	0.5	200				26 900
	Residential	40 500	90	2 000	2	500				43 000
	Agriculture & Forestry	3 200	0.05	1	0.08	20				3 230
b.	Transport ²	138 000	30	700	20	7 000				145 000
	Civil Aviation (Domestic Aviation)	6 210	0.3	7	0.2	60				6 300
	Road Transportation	93 000	14	300	12	3 700				96 900
	Light-Duty Gasoline Vehicles	42 200	7.2	150	6.9	2 100				44 500
	Light-Duty Gasoline Trucks	21 300	3.1	66	4.0	1 200				22 600
	Heavy-Duty Gasoline Vehicles	6 280	0.99	21	0.17	51				6 350
	Motorcycles	136	0.14	2.9	0.00	0.89				140
	Light-Duty Diesel Vehicles	444	0.01	0.3	0.03	10				454
	Light-Duty Diesel Trucks	795	0.02	0.5	0.06	20				814
	Heavy-Duty Diesel Vehicles	19 200	1	20	0.6	200				19 400
	Propane & Natural Gas Vehicles	2 630	2	30	0.05	20				2 700
	Railways	5 970	0.3	7	2	800				7 000
	Navigation (Domestic Marine)	4 750	0.3	7	1	300				5 100
	Other Transportation	28 000	20	400	5	2 000				30 000
	Off-Road Gasoline	6 300	7	200	0.1	40				6 500
	Off-Road Diesel	12 000	0.7	10	5	2 000				14 000
	Pipelines	9 530	9.6	200	0.3	80				9 810
c.	Fugitive Sources	12 000	1 700	35 000	0.1	30				46 700
	Coal Mining		80	2 000						2 000
	Oil and Natural Gas	12 000	1 570	32 900	0.1	30				45 000
	Oil	110	215	4 520	0.1	30				4 660
	Natural Gas	25.6	604	12 700	-	-				12 700
	Venting	7 710	745	15 700	-	-				23 400
	Flaring	4 200	2.7	58	0.00	0.7				4 300
INDUSTRIAL PROCESSES		34 000	4.0	83	35.6	11 000	660	6 600	2 700	55 200
a.	Mineral Products	7 200								7 200
	Cement Production	4 500								4 500
	Lime Production	1 800								1 800
	Mineral Product Use ³	945								945
b.	Chemical Industry	4 200	4.0	83	35.6	11 000				15 000
	Ammonia Production	4 200								4 200
	Nitric Acid Production				3.50	1 080				1 080
	Adipic Acid Production	-	-	-	32	10 000	-	-	-	10 000
	Petrochemical Production ⁴		4.0	83	0.03	8.3				92
c.	Metal Production	15 500				-		6 600	2 460	24 500
	Iron and Steel Production	12 200								12 200
	Aluminum Production	3 300						6 600	59.1	9 900
	SF ₆ Used in Magnesium Smelters and Casters								2 400	2 400
d.	Production and Consumption of Halocarbons and SF ₆ ⁵						660	-	230	880
e.	Other & Undifferentiated Production	7 300								7 300
SOLVENT & OTHER PRODUCT USE					0.46	140				140
AGRICULTURE			950	20 000	89	28 000				48 000
a.	Enteric Fermentation		820	17 000						17 000
b.	Manure Management		130	2 600						6 000
c.	Agriculture Soils				78	24 000				24 000
	Direct Sources				43	13 000				13 000
	Pasture, Range and Paddock Manure				7.9	2 500				2 500
	Indirect Sources				30	9 000				9 000
d.	Field Burning of Agricultural Residues	-	4.8	100	0.12	38	-	-	-	140
WASTE		530	870	18 000	3	800				20 000
a.	Solid Waste Disposal on Land		860	18 000		-				18 000
b.	Wastewater Handling		15	320	2	500				860
c.	Waste Incineration	530	0.5	10	0.8	200				780
Land Use, Land-use Change and Forestry		-87 000	87	1 800	3.6	1 100				-84 000
a.	Forest Land	-110 000	71	1 500	3.0	920				-110 000
b.	Cropland	8 700	10	200	0.5	100				9 100
c.	Grassland	-	-	-	-	-				-
d.	Wetlands	5 000	0.8	20	0.03	10				5 000
e.	Settlements	9 000	5	100	0.2	50				9 000

Notes:

- National totals exclude all GHGs from the Land Use, Land-use Change and Forestry sector.
- Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.
- The category Mineral Product Use includes CO₂ emissions coming from the use of limestone & dolomite, soda ash, and magnesite.
- The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene. CO₂ emissions are included in Other & Undifferentiated Production.
- Production of HFCs (HCFC-22 exclusively) only occurred in Canada from 1990-1992. HFC consumption began in 1995.

Table A12–23 1991 GHG Emission Summary for Canada

Greenhouse Gas Categories	Greenhouse Gases								
	CO ₂	CH ₄	CH ₄	N ₂ O	N ₂ O	HFCs	PFCs	SF ₆	TOTAL
Global Warming Potential			21		310				
Unit	kt	kt	kt CO ₂ equivalent	kt	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent
TOTAL¹	450 000	3 500	74 000	150	48 000	840	6 900	3 900	583 000
ENERGY	415 000	1 700	36 000	30	9 000				460 000
a. Stationary Combustion Sources	270 000	200	4 000	7	2 000				275 000
Electricity and Heat Generation	94 400	1.6	35	2	500				95 000
Fossil Fuel Production and Refining	47 000	70	1 000	1	300				49 000
Petroleum Refining and Upgrading	16 000	0.3	6	0.2	50				16 000
Fossil Fuel Production	31 200	70	1 000	0.9	300				33 000
Mining & Oil and Gas Extraction	5 420	0.1	3	0.1	40				5 460
Manufacturing Industries	53 000	2	50	2	600				53 600
Iron and Steel	4 900	0.3	5	0.2	60				4 960
Non Ferrous Metals	2 630	0.06	1	0.04	10				2 640
Chemical	8 560	0.17	3.6	0.1	50				8 610
Pulp and Paper	13 700	1	30	1	300				14 000
Cement	3 410	0.1	2	0.04	10				3 430
Other Manufacturing	19 900	0.4	9	0.4	100				20 000
Construction	1 610	0.03	0.6	0.05	20				1 620
Commercial & Institutional	26 200	0.5	10	0.5	200				26 300
Residential	39 400	90	2 000	2	500				42 000
Agriculture & Forestry	2 700	0.04	0.8	0.06	20				2 720
b. Transport²	134 000	30	600	20	6 000				141 000
Civil Aviation (Domestic Aviation)	6 200	0.4	8	0.2	60				6 300
Road Transportation	91 200	14	290	11	3 500				94 900
Light-Duty Gasoline Vehicles	42 000	7.2	150	6.7	2 100				44 300
Light-Duty Gasoline Trucks	19 900	3.0	62	3.7	1 100				21 100
Heavy-Duty Gasoline Vehicles	6 570	1.1	22	0.18	55				6 650
Motorcycles	140	0.14	3.0	0.00	0.91				144
Light-Duty Diesel Vehicles	445	0.01	0.3	0.03	10				456
Light-Duty Diesel Trucks	722	0.02	0.4	0.05	20				739
Heavy-Duty Diesel Vehicles	19 000	1	20	0.6	200				19 200
Propane & Natural Gas Vehicles	2 280	1	30	0.04	10				2 300
Railways	5 710	0.3	7	2	700				6 000
Navigation (Domestic Marine)	4 900	0.4	7	1	300				5 200
Other Transportation	26 000	20	300	6	2 000				29 000
Off-Road Gasoline	6 400	8	200	0.1	40				6 600
Off-Road Diesel	13 000	0.7	10	5	2 000				14 000
Pipelines	7 370	7.4	160	0.2	60				7 590
c. Fugitive Sources	11 000	1 500	32 000	0.1	30				43 200
Coal Mining		100	2 000						2 000
Oil and Natural Gas	11 100	1 420	29 800	0.1	30				41 000
Oil	100	200	4 200	0.1	30				4 330
Natural Gas	23.6	563	11 800	-	-				11 800
Venting	6 900	654	13 700	-	-				20 600
Flaring	4 100	2.5	53	0.00	0.4				4 200
INDUSTRIAL PROCESSES	35 000	4.4	92	35.7	11 100	840	6 900	3 900	57 400
a. Mineral Products	7 500								7 500
Cement Production	4 400								4 400
Lime Production	1 800								1 800
Mineral Product Use ³	1 250								1 250
b. Chemical Industry	4 500	4.4	92	35.7	11 100				16 000
Ammonia Production	4 500								4 500
Nitric Acid Production				3.41	1 060				1 060
Adipic Acid Production	-	-	-	32	10 000	-	-	-	10 000
Petrochemical Production ⁴		4.4	92	0.03	8.0				100
c. Metal Production	15 100						6 900	3 650	25 700
Iron and Steel Production	11 900								11 900
Aluminum Production	3 100						6 900	59.1	10 000
SF ₆ Used in Magnesium Smelters and Casters								3 590	3 590
d. Production and Consumption of Halocarbons and SF₆⁵						840	-	230	1 100
e. Other & Undifferentiated Production	7 500								7 500
SOLVENT & OTHER PRODUCT USE				0.55	170				170
AGRICULTURE		910	19 000	88	27 000				46 000
a. Enteric Fermentation		780	16 000						16 000
b. Manure Management		120	2 600	10	3 200				5 800
c. Agriculture Soils				77	24 000				24 000
Direct Sources				43	13 000				13 000
Pasture, Range and Paddock Manure				7.3	2 300				2 300
Indirect Sources				30	8 000				8 000
d. Field Burning of Agricultural Residues	-	5.8	120	0.15	47	-	-	-	170
WASTE	510	860	18 000	2	800				19 000
a. Solid Waste Disposal on Land		850	18 000		-				18 000
b. Wastewater Handling		15	320	2	500				850
c. Waste Incineration	510	0.5	10	0.7	200				750
LAND USE, LAND-USE CHANGE AND FORESTRY	-45 000	250	5 300	11	3 300				-36 000
a. Forest Land	-69 000	240	5 000	9.9	3 100				-61 000
b. Cropland	10 000	10	200	0.5	200				11 000
c. Grassland	-	-	-	-	-				-
d. Wetlands	5 000	0.5	10	0.02	7				5 000
e. Settlements	9 000	5	100	0.2	60				9 000

Notes:

- National totals exclude all GHGs from the Land Use, Land-use Change and Forestry sector.
- Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.
- The category Mineral Product Use includes CO₂ emissions coming from the use of limestone & dolomite, soda ash, and magnesite.
- The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene. CO₂ emissions are included in Other & Undifferentiated Production.
- Production of HFCs (HCFC-22 exclusively) only occurred in Canada from 1990-1992. HFC consumption began in 1995.

Table A12-24 1990 GHG Emission Summary for Canada

A12

Greenhouse Gas Categories	Greenhouse Gases								
	CO ₂	CH ₄	CH ₄	N ₂ O	N ₂ O	HFCs	PFCs	SF ₆	TOTAL
Global Warming Potential			21		310				
Unit	kt	kt	kt CO ₂ equivalent	kt	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent	kt CO ₂ equivalent
TOTAL¹	459 000	3 400	72 000	160	49 000	770	6 500	3 400	591 000
ENERGY	425 000	1 700	35 000	30	9 000				469 000
a. Stationary Combustion Sources	275 000	200	4 000	7	2 000				281 000
Electricity and Heat Generation	93 000	1.8	37	2	500				93 600
Fossil Fuel Production and Refining	49 300	70	2 000	1	300				51 000
Petroleum Refining and Upgrading	17 000	0.3	6	0.2	50				17 000
Fossil Fuel Production	32 600	70	2 000	0.9	300				34 000
Mining & Oil and Gas Extraction	6 550	0.1	3	0.1	40				6 590
Manufacturing Industries	55 200	2	50	2	600				55 800
Iron and Steel	4 880	0.2	5	0.2	60				4 950
Non Ferrous Metals	3 240	0.07	1	0.05	10				3 260
Chemical	8 170	0.17	3.5	0.1	40				8 220
Pulp and Paper	14 100	1	30	1	300				14 500
Cement	3 900	0.1	2	0.05	10				3 920
Other Manufacturing	20 900	0.4	9	0.4	100				21 000
Construction	1 850	0.03	0.7	0.05	20				1 870
Commercial & Institutional	25 500	0.5	10	0.5	200				25 700
Residential	40 900	100	2 000	2	500				43 000
Agriculture & Forestry	2 370	0.04	0.8	0.05	20				2 390
b. Transport²	139 000	30	700	20	6 000				146 000
Civil Aviation (Domestic Aviation)	7 050	0.5	10	0.2	70				7 100
Road Transportation	93 200	14	300	10	3 200				96 700
Light-Duty Gasoline Vehicles	43 400	7.7	160	6.2	1 900				45 500
Light-Duty Gasoline Trucks	19 200	3.0	64	3.2	990				20 300
Heavy-Duty Gasoline Vehicles	7 350	1.2	26	0.21	65				7 440
Motorcycles	148	0.15	3.1	0.00	0.96				152
Light-Duty Diesel Vehicles	458	0.01	0.3	0.03	10				469
Light-Duty Diesel Trucks	686	0.02	0.4	0.05	20				702
Heavy-Duty Diesel Vehicles	19 800	1	20	0.6	200				20 000
Propane & Natural Gas Vehicles	2 170	1	30	0.04	10				2 200
Railways	6 160	0.3	7	3	800				7 000
Navigation (Domestic Marine)	4 690	0.3	7	1	300				5 000
Other Transportation	28 000	20	300	6	2 000				30 000
Off-Road Gasoline	7 600	9	200	0.2	50				7 800
Off-Road Diesel	14 000	0.8	20	6	2 000				16 000
Pipelines	6 650	6.7	140	0.2	60				6 850
c. Fugitive Sources	11 000	1 500	31 000	0.1	30				42 400
Coal Mining		100	2 000						2 000
Oil and Natural Gas	11 500	1 370	28 700	0.1	30				40 200
Oil	95	193	4 060	0.1	30				4 190
Natural Gas	22.6	543	11 400	-	-				11 400
Venting	6 990	627	13 200	-	-				20 200
Flaring	4 400	2.6	54	0.00	0.4				4 400
INDUSTRIAL PROCESSES	33 000	4.7	99	37.9	11 700	770	6 500	3 400	56 000
a. Mineral Products	8 400								8 400
Cement Production	5 400								5 400
Lime Production	1 800								1 800
Mineral Product Use ³	1 200								1 200
b. Chemical Industry	4 500	4.7	99	37.9	11 700				16 000
Ammonia Production	4 500								4 500
Nitric Acid Production				3.27	1 010				1 010
Adipic Acid Production	-	-	-	35	11 000	-	-	-	11 000
Petrochemical Production ⁴		4.7	99	0.03	8.0				110
c. Metal Production	12 900						6 500	3 170	22 600
Iron and Steel Production	10 200								10 200
Aluminum Production	2 700						6 500	59.1	9 300
SF ₆ Used in Magnesium Smelters and Casters								3 110	3 110
d. Production and Consumption of Halocarbons and SF₆⁵						770	-	230	990
e. Other & Undifferentiated Production	7 600								7 600
SOLVENT & OTHER PRODUCT USE				0.58	180				180
AGRICULTURE		900	19 000	90	28 000				47 000
a. Enteric Fermentation		770	16 000						16 000
b. Manure Management		120	2 600	10	3 200				5 700
c. Agriculture Soils				80	25 000				25 000
Direct Sources				45	14 000				14 000
Pasture, Range and Paddock Manure				7.1	2 200				2 200
Indirect Sources				30	9 000				9 000
d. Field Burning of Agricultural Residues		7.1	150	0.18	57	-	-	-	210
WASTE	510	850	18 000	2	700				19 000
a. Solid Waste Disposal on Land		830	17 000		-				17 000
b. Wastewater Handling		15	320	2	500				830
c. Waste Incineration	510	0.5	10	0.7	200				740
Land Use, Land-use Change and Forestry	-67 000	160	3 300	6.6	2 100				-62 000
a. Forest Land	-92 000	140	3 000	5.9	1 800				-88 000
b. Cropland	11 000	10	300	0.6	200				12 000
c. Grassland	-	-	-	-	-				-
d. Wetlands	5 000	0.3	6	0.01	4				5 000
e. Settlements	9 000	4	90	0.2	50				9 000

Notes:

- National totals exclude all GHGs from the Land Use, Land-use Change and Forestry sector.
- Emissions from Fuel Ethanol are reported within the gasoline transportation sub-categories.
- The category Mineral Product Use includes CO₂ emissions coming from the use of limestone & dolomite, soda ash, and magnesite.
- The category Petrochemical Production includes CH₄ and N₂O emissions coming from production of silicon/calcium carbides; of carbon black; of ethylene; of methanol; of ethylene dichloride; and of styrene. CO₂ emissions are included in Other & Undifferentiated Production.
- Production of HFCs (HCFC-22 exclusively) only occurred in Canada from 1990-1992. HFC consumption began in 1995.

Annex 13

Electricity in Canada: Summary and Intensity Tables

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

The Canadian electricity generation industry is composed of utility, non-utility and industrial generators that produce electricity by transforming the energy in falling water, coal, natural gas, refined petroleum products (RPPs), miscellaneous other 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 the sulphur hexafluoride [SF_6] emissions associated with switchgear and other electrical equipment, which is accounted for in the Industrial Processes Sector).

The analysis in this section relies on a variety of data sources. Fuel consumption and electricity production data are published by Statistics Canada in the *Report on Energy Supply–Demand in Canada* (RES-D) (Statistics Canada #57-003-XIB), the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication (Statistics Canada #57-202-XIB) and online via CANSIM (Tables 127-0006 and 127-0007).

Electricity 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 2 of this report. GHG emissions are based on the total fuel consumed by the utility sector, as provided in the RES-D, while generation data are from CANSIM (2005–2011) and the EPGTD publication (1990–2004). For the 1990–1997 period, net electricity generation was calculated from gross electricity generation values provided in the EPGTD publication.

Unallocated energy (such as transmission losses, distribution losses and inefficiencies) and SF_6 emissions are included in the calculation of the “Consumption Intensity,” a factor developed to better reflect the GHG emissions at a consumer level rather than the generation level. The “Generation Intensity” factors do not include unallocated energy or SF_6 impacts. The unallocated energy losses presented in Table A13–1 to Table A13–13 were obtained from CANSIM 127-0008.

Electricity generation and GHG emissions details for Canada and the provinces and territories are provided in Table A13–1 to Table A13–13.

Table A13-1 Electricity Generation and GHG Emission Details for Canada¹

	1990	2000	2005	2007	2008	2009	2010	2011 ²
Greenhouse Gas Emissions³								
<i>kt CO₂ eq</i>								
Combustion	93 600	129 000	123 000	122 000	115 000	99 500	101 000	93 200
Coal	79 700	107 000	96 700	97 800	92 400	77 400	78 000	67 100
Natural Gas	2 700	13 300	15 300	15 000	15 700	14 900	18 500	22 100
Other Fuels ⁴	11 200	8 710	11 200	9 370	6 910	7 200	4 690	3 970
Other Emissions ⁵	0	0	51	53	56	72	53	60
Overall Total⁶	93 600	129 000	123 000	122 000	115 000	99 600	101 000	93 000
Electricity Generation^{7,8}								
<i>GWh</i>								
Combustion	101 000	146 000	140 000	138 000	127 000	113 000	117 000	119 000
Coal	82 200	106 000	94 000	94 500	87 700	73 600	74 300	70 200
Natural Gas	4 140	26 600	29 800	30 800	27 800	28 400	33 600	41 900
Other Fuels	14 700	13 400	16 700	12 500	11 500	11 000	8 650	7 410
Refined Petroleum Products	14 700	10 600	10 800	6 740	5 860	5 400	3 010	2 310
Biomass	14.4	1 830	1 780	1 770	1 810	2 080	2 310	2 150
Other	31.4	1 000	4 100	3 900	3 800	3 500	3 300	3 000
Steam from Waste Heat	0	0	32.4	4 820	4 600	5 520	7 090	5 860
Nuclear	68 800	68 700	86 800	90 600	90 600	85 000	85 500	88 300
Hydro	263 000	323 000	327 000	335 000	341 000	334 000	321 000	342 000
Other Renewables ⁹	26.2	264	1 580	3 000	3 760	6 610	9 640	9 640
Other Generation ¹⁰	0	0	0	0	0	1 920	2 980	2 510
Overall Total¹¹	433 000	539 000	556 000	571 000	567 000	546 000	543 000	568 000
Greenhouse Gas Intensity								
<i>g GHG / kWh electricity generated</i>								
CO ₂ intensity (g CO ₂ / kWh)	215	238	220	213	201	181	185	163
CH ₄ intensity (g CH ₄ / kWh)	0.004	0.009	0.010	0.009	0.009	0.009	0.01	0.01
N ₂ O intensity (g N ₂ O / kWh)	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.003
Generation Intensity (g CO₂ eq / kWh)¹¹	216	240	222	214	203	182	187	164
Unallocated Energy (GWh) ^{12,13}	39 300	43 000	37 900	37 600	37 100	31 700	53 400	58 000
SF ₆ Emissions (kt CO ₂ eq) ¹⁴	210	210	170	240	210	180	190	140
Consumption Intensity (g CO₂ eq / kWh)¹⁵	240	260	240	230	220	190	210	180

Notes:

1. Data presented include emissions, generation and intensity for facilities classified under NAICS code 2211.
2. Preliminary data.
3. Based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.
4. Includes GHG emissions from the combustion of refined petroleum products (light fuel oil, heavy fuel oil and diesel fuel oil), petroleum coke, still gas and other fuels not easily categorized.
5. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
6. GHG emissions from the flooding of land for hydro dams are not included.
7. Taken from CANSIM Tables 127-0006 and 127-0007 (for 2005-2011).
8. Taken from the *Electric Power Generation, Transmission and Distribution* (EPGTD) publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990-2004).
9. Other Renewables - includes electricity generation by wind, tidal and solar.
10. NAICS category 221119.
11. Totals may not add up to overall total due to rounding.
12. Adapted from Statistics Canada CANSIM Table 127-0008 (2005-2010) or Cat. No. 57-202-XIB (1990-2004).
13. Includes transmission line losses, metering differences and other losses.
14. Emissions from electrical equipment from CRF Category 2.F.viii (Production and Consumption of Halocarbons and SF₆).
15. Consumption intensity values are rounded and incorporate unallocated energy and SF₆ transmission emissions.

Table A13–2 Electricity Generation and GHG Emission Details for Newfoundland and Labrador¹

	1990	2000	2005	2007	2008	2009	2010	2011 ²
Greenhouse Gas Emissions³								
<i>kt CO₂ equivalent</i>								
Combustion	1 630	808	856	1 060	898	821	739	843
Coal	0	0	0	0	0	0	0	0
Natural Gas	0	0	0	0	0	0	0	0
Other Fuels ⁴	1 630	808	856	1 060	898	821	739	843
Other Emissions ⁵	0	0	0	0	0	0	0	0
Overall Total⁶	1 630	808	856	1 060	898	821	739	843
Electricity Generation^{7,8}								
<i>GWh</i>								
Combustion	2 090	2 030	2 730	2 570	2 260	2 120	1 830	2 020
Coal	0	0	0	0	0	0	0	0
Natural Gas	0	0	0	0	0	0	0	0
Other Fuels	2 090	1 020	1 360	1 290	1 130	1 060	916	1 010
Steam from Waste Heat			0	0	0	0	0	0
Nuclear	0	0	0	0	0	0	0	0
Hydro	34 300	41 800	38 900	39 100	41 000	35 900	39 400	39 100
Other Renewables ⁹	0	0	0	0	7.8	102	183	198
Other Generation ¹⁰	0	0	0	0	0	0	0	0
Overall Total¹¹	38 500	43 800	41 700	41 700	43 300	38 100	41 400	41 300
Greenhouse Gas Intensity								
<i>g GHG / kWh electricity generated</i>								
CO ₂ intensity (g CO ₂ / kWh)	42.0	18.3	20.4	25.3	20.6	21.3	17.7	20.2
CH ₄ intensity (g CH ₄ / kWh)	0.0005	0.0002	0.0003	0.0003	0.0003	0.0003	0.0002	0.0003
N ₂ O intensity (g N ₂ O / kWh)	0.0011	0.0004	0.0006	0.0006	0.0005	0.0006	0.0005	0.0007
Generation Intensity (g CO₂ eq / kWh)¹¹	42.3	18.4	20.5	25.5	20.8	21.5	17.9	20.4
Unallocated Energy (GWh) ^{12,13}	1070	1290	842	896	1100	1120	1349	1364
SF ₆ Emissions (kt CO ₂ eq) ¹⁴	1	1	1	1	1	1	1	1
Consumption Intensity (g CO₂ eq / kWh)¹⁵	44	19	21	26	21	22	18	21

Notes:

1. Data presented include emissions, generation and intensity for facilities classified under NAICS code 2211.
2. Preliminary data.
3. Based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.
4. Includes GHG emissions from the combustion of refined petroleum products (light fuel oil, heavy fuel oil and diesel fuel oil), petroleum coke, still gas and other fuels not easily categorized.
5. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
6. GHG emissions from the flooding of land for hydro dams are not included.
7. Taken from CANSIM Tables 127-0006 and 127-0007 (for 2005–2011).
8. Taken from the *Electric Power Generation, Transmission and Distribution (EPGTD)* publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).
9. Other Renewables - includes electricity generation by wind, tidal and solar.
10. NAICS category 221119.
11. Totals may not add up to overall total due to rounding.
12. Adapted from Statistics Canada CANSIM Table 127-0008 (2005–2010) or Cat. No. 57-202-XIB (1990–2004).
13. Includes transmission line losses, metering differences and other losses.
14. Emissions from electrical equipment from CRF Category 2.F.viii (Production and Consumption of Halocarbons and SF₆).
15. Consumption intensity values are rounded and incorporate unallocated energy and SF₆ transmission emissions.

Table A13–3 Electricity Generation and GHG Emission Details for Prince Edward Island¹

	1990	2000	2005	2007	2008	2009	2010	2011 ²
Greenhouse Gas Emissions³								
<i>kt CO₂ equivalent</i>								
Combustion	102	55.5	4.7	4.4	4.1	6.0	1.6	0.9
Coal	0	0	0	0	0	0	0	0
Natural Gas	0	0	0	0	0	0	0	0
Other Fuels ⁴	102	55.5	4.7	4.4	4.1	6.0	1.6	0.9
Other Emissions ⁵	0	0	0	0	0	0	0	0
Overall Total⁶	102	55.5	4.7	4.4	4.1	6.0	1.6	0.9
Electricity Generation^{7,8}								
<i>GWh</i>								
Combustion	81.1	48.1	6.3	5.1	5.8	7.3	3.8	4.8
Coal	0	0	0	0	0	0	0	0
Natural Gas	0	0	0	0	0	0	0	0
Other Fuels	81.1	48.1	6.3	5.1	5.8	7.3	3.8	4.8
Steam from Waste Heat	0	0	0	0	0	0	0	0
Nuclear	0	0	0	0	0	0	0	0
Hydro	0	0	0	0	0	0	0	0
Other Renewables ⁹	0	0	40	40	142	347	458	488
Other Generation ¹⁰	0	0	0	0	0	0	0	0
Overall Total¹¹	81.1	48.1	46.4	44.7	147	355	461	492
Greenhouse Gas Intensity								
<i>g GHG / kWh electricity generated</i>								
CO ₂ intensity (g CO ₂ / kWh)	1 260	1 170	101	97.8	27.5	16.7	3.39	1.90
CH ₄ intensity (g CH ₄ / kWh)	0.02	0.01	0.001	0.001	0.000	0.000	0.000	0.000
N ₂ O intensity (g N ₂ O / kWh)	0.03	0.02	0.002	0.002	0.001	0.000	0.000	0.000
Generation Intensity (g CO₂ eq / kWh)¹¹	1 250	1 150	102	98.4	27.7	16.8	3.41	1.92
Unallocated Energy (GWh) ^{12,13}	unk ¹⁷	unk ¹⁷	unk ¹⁷	unk ¹⁷	71.5	88.1	27.6	29.4
SF ₆ Emissions (kt CO ₂ eq) ^{14,15}	0	0	0	0	0	0	0	0
Consumption Intensity (g CO₂ eq / kWh)¹⁵	unk¹⁷	unk¹⁷	unk¹⁷	unk¹⁷	53.8	22.4	3.62	2.04

Notes:

1. Data presented include emissions, generation and intensity for facilities classified under NAICS code 2211.
2. Preliminary data.
3. Based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.
4. Includes GHG emissions from the combustion of refined petroleum products (light fuel oil, heavy fuel oil and diesel fuel oil), petroleum coke, still gas and other fuels not easily categorized.
5. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
6. GHG emissions from the flooding of land for hydro dams are not included.
7. Taken from CANSIM Tables 127-0006 and 127-0007 (for 2005-2011).
8. Taken from the *Electric Power Generation, Transmission and Distribution (EPGTD)* publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990-2004).
9. Other Renewables - includes electricity generation by wind, tidal and solar.
10. NAICS category 221119.
11. Totals may not add up to overall total due to rounding.
12. Adapted from Statistics Canada CANSIM Table 127-0008 (2005-2010) or Cat. No. 57-202-XIB (1990-2004).
13. Includes transmission line losses, metering differences and other losses.
14. Emissions from electrical equipment from CRF Category 2.F.viii (Production and Consumption of Halocarbons and SF₆).
15. Zero value may indicate value was too small to display.
16. Consumption intensity values are rounded and incorporate unallocated energy and SF₆ transmission emissions.
17. Appropriate data were unavailable for certain years.

Table A13–4 Electricity Generation and GHG Emission Details for Nova Scotia¹

	1990	2000	2005	2007	2008	2009	2010	2011 ²
Greenhouse Gas Emissions³								
<i>kt CO₂ equivalent</i>								
Combustion	6 870	9 320	11 000	11 600	9 920	9 810	8 910	8 170
Coal	5 090	8 110	5 750	7 310	7 380	7 130	6 470	5 830
Natural Gas	0	0	136	584	708	886	1 280	1 350
Other Fuels ⁴	1 780	1 210	5 130	3 710	1 820	1 790	1 160	992
Other Emissions ⁵	0	0	0	0	0	0	0	0
Overall Total⁶	6 870	9 320	11 000	11 600	9 920	9 810	8 910	8 170
Electricity Generation^{7,8}								
<i>GWh</i>								
Combustion	8 440	10 500	11 100	11 300	10 800	10 200	10 300	9 500
Coal	6 020	8 850	6 800	7 210	7 790	6 960	6 790	6 020
Natural Gas	0	0	180	882	1 260	1 610	2 270	2 430
Other Fuels	2 430	1 610	4 110	3 180	1 700	1 660	1 300	1 100
Steam from Waste Heat	0	0	0	0	0	0	0	0
Nuclear	0	0	0	0	0	0	0	0
Hydro	1 120	887	1 040	890	1 060	1 040	969	1 068
Other Renewables ⁹	26.1	84.0	113	180	164	184	414	809
Other Generation ¹⁰	0	0	0	0	0	0	0	0
Overall Total¹¹	9 590	11 400	12 200	12 300	12 000	11 500	11 700	11 400
Greenhouse Gas Intensity								
<i>g GHG / kWh electricity generated</i>								
CO ₂ intensity (g CO ₂ / kWh)	713	812	898	935	824	852	756	714
CH ₄ intensity (g CH ₄ / kWh)	0.01	0.01	0.02	0.026	0.025	0.030	0.036	0.038
N ₂ O intensity (g N ₂ O / kWh)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Generation Intensity (g CO₂ eq / kWh)¹¹	716	815	902	940	828	856	760	718
Unallocated Energy (GWh) ^{12,13}	778	838	783	812	746	744	700	680
SF ₆ Emissions (kt CO ₂ eq) ¹⁴	24	24	31	30	25	18	28	35
Consumption Intensity (g CO₂ eq / kWh)¹⁵	780	880	970	1 010	890	920	810	770

Notes:

1. Data presented include emissions, generation and intensity for facilities classified under NAICS code 2211.
2. Preliminary data.
3. Based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.
4. Includes GHG emissions from the combustion of refined petroleum products (light fuel oil, heavy fuel oil and diesel fuel oil), petroleum coke, still gas and other fuels not easily categorized.
5. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
6. GHG emissions from the flooding of land for hydro dams are not included.
7. Taken from CANSIM Tables 127-0006 and 127-0007 (for 2005–2011).
8. Taken from the *Electric Power Generation, Transmission and Distribution (EPGTD)* publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).
9. Other Renewables - includes electricity generation by wind, tidal and solar.
10. NAICS category 221119.
11. Totals may not add up to overall total due to rounding.
12. Adapted from Statistics Canada CANSIM Table 127-0008 (2005–2010) or Cat. No. 57-202-XIB (1990–2004).
13. Includes transmission line losses, metering differences and other losses.
14. Emissions from electrical equipment from CRF Category 2.F.viii (Production and Consumption of Halocarbons and SF₆).
15. Consumption intensity values are rounded and incorporate unallocated energy and SF₆ transmission emissions.

Table A13–5 Electricity Generation and GHG Emission Details for New Brunswick¹

	1990	2000	2005	2007	2008	2009	2010	2011 ²
Greenhouse Gas Emissions³								
<i>kt CO₂ equivalent</i>								
Combustion	5 970	8 790	8 020	7 550	7 070	7 030	5 320	4 970
Coal	1 170	3 120	2 910	2 870	2 710	2 310	2 090	2 250
Natural Gas	0	0	730	843	826	1 050	1 060	1 050
Other Fuels ⁴	4 790	5 670	4 380	3 840	3 530	3 670	2 180	1 670
Other Emissions ⁵	0	0	0	0	0	0	0	0
Overall Total⁶	5 970	8 790	8 020	7 550	7 070	7 030	5 320	4 970
Electricity Generation^{7,8}								
<i>GWh</i>								
Combustion	7 630	11 000	12 100	9 370	8 520	8 660	6 220	6 040
Coal	1 270	3 820	2 920	2 910	2 880	2 770	2 080	2 340
Natural Gas	0	0	1 970	1 840	1 410	1 840	1 840	1 960
Other Fuels	6 360	7 210	7 210	4 610	4 230	4 050	2 300	1 740
Steam from Waste Heat	0	0	0	0	414	617	681	666
Nuclear	5 340	3 960	4 380	4 120	1 130	0	0	0
Hydro	3 460	3 220	3 820	2 790	3 540	2 970	3 330	3 840
Other Renewables ⁹	0	0	0	0	0	270	389	693
Other Generation ¹⁰	0	0	0	0	0	0	0	0
Overall Total¹¹	16 400	18 200	20 300	16 300	13 600	12 500	10 600	11 200
Greenhouse Gas Intensity								
<i>g GHG / kWh electricity generated</i>								
CO ₂ intensity (g CO ₂ / kWh)	361	480	393	461	517	558	499	440
CH ₄ intensity (g CH ₄ / kWh)	0.004	0.005	0.013	0.018	0.021	0.028	0.031	0.029
N ₂ O intensity (g N ₂ O / kWh)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Generation Intensity (g CO₂ eq / kWh)¹¹	363	483	395	464	520	561	502	443
Unallocated Energy (GWh) ^{12,13}	769	1380	1060	526	297	706	589	229
SF ₆ Emissions (kt CO ₂ eq) ^{14,15}	1	1	0	1	1	1	0	1
Consumption Intensity (g CO₂ eq / kWh)¹⁶	380	520	420	480	530	600	530	450

Notes:

1. Data presented include emissions, generation and intensity for facilities classified under NAICS code 2211.
2. Preliminary data.
3. Based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.
4. Includes GHG emissions from the combustion of refined petroleum products (light fuel oil, heavy fuel oil and diesel fuel oil), petroleum coke, still gas and other fuels not easily categorized.
5. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
6. GHG emissions from the flooding of land for hydro dams are not included.
7. Taken from CANSIM Tables 127-0006 and 127-0007 (for 2005-2011).
8. Taken from the *Electric Power Generation, Transmission and Distribution (EPGTD)* publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990-2004).
9. Other Renewables - includes electricity generation by wind, tidal and solar.
10. NAICS category 221119.
11. Totals may not add up to overall total due to rounding.
12. Adapted from Statistics Canada CANSIM Table 127-0008 (2005-2010) or Cat. No. 57-202-XIB (1990-2004).
13. Includes transmission line losses, metering differences and other losses.
14. Emissions from electrical equipment from CRF Category 2.F.viii (Production and Consumption of Halocarbons and SF₆).
15. Zero value may indicate value was too small to display.
16. Consumption intensity values are rounded and incorporate unallocated energy and SF₆ transmission emissions.

Table A13–6 Electricity Generation and GHG Emission Details for Quebec¹

	1990	2000	2005	2007	2008	2009	2010	2011 ²
Greenhouse Gas Emissions³								
<i>kt CO₂ equivalent</i>								
Combustion	1 480	435	596	530	431	633	427	296
Coal	0	0	0	0	0	0	0	0
Natural Gas	114	142	268	262	197	250	223	135
Other Fuels ⁴	1 370	293	329	268	234	383	204	162
Other Emissions ⁵	0	0	4.6	0	0.5	0	0	0
Overall Total⁶	1 480	435	601	530	431	633	427	296
Electricity Generation^{7,8}								
<i>GWh</i>								
Combustion	1 980	2 110	2 560	4 850	2 000	3 170	2 820	2 530
Coal	0	0	0	0	0	0	0	0
Natural Gas	0	191	212	3 090	211	211	200	198
Other Fuels	1 980	961	1 170	879	894	1 480	1 310	1 170
Steam from Waste Heat	0	0	0	1 470	0	0	0	0
Nuclear	4 070	4 890	4 480	4 320	3 620	3 600	3 550	3 530
Hydro	112 000	153 000	155 000	163 000	167 000	170 000	161 000	170 000
Other Renewables ⁹	0	173	416	617	565	1 320	1 550	1 000
Other Generation ¹⁰	0	0	0	0	0	0	0	0
Overall Total¹¹	118 000	161 000	162 000	175 000	173 000	178 000	169 000	177 000
Greenhouse Gas Intensity								
<i>g GHG / kWh electricity generated</i>								
CO ₂ intensity (g CO ₂ / kWh)	12.4	2.68	3.65	2.99	2.45	3.51	2.48	1.64
CH ₄ intensity (g CH ₄ / kWh)	0.0004	0.0003	0.0005	0.000	0.0003	0.0004	0.0004	0.0002
N ₂ O intensity (g N ₂ O / kWh)	0.0003	0.0001	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001
Generation Intensity (g CO₂ eq / kWh)¹¹	14.3	3.25	4.18	3.54	2.97	4.04	2.99	2.04
Unallocated Energy (GWh) ^{12,13}	11 600	14 900	11 100	14 200	11 100	12 600	15 600	16 300
SF ₆ Emissions (kt CO ₂ eq) ¹⁴	39	38	31	37	50	36	32	31
Consumption Intensity (g CO₂ eq / kWh)¹⁵	14	3.2	4.2	3.5	3.0	4.0	3.0	2.0

Notes:

1. Data presented include emissions, generation and intensity for facilities classified under NAICS code 2211.
2. Preliminary data.
3. Based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.
4. Includes GHG emissions from the combustion of refined petroleum products (light fuel oil, heavy fuel oil and diesel fuel oil), petroleum coke, still gas and other fuels not easily categorized.
5. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
6. GHG emissions from the flooding of land for hydro dams are not included.
7. Taken from CANSIM Tables 127-0006 and 127-0007 (for 2005–2011).
8. Taken from the *Electric Power Generation, Transmission and Distribution (EPGTD)* publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).
9. Other Renewables - includes electricity generation by wind, tidal and solar.
10. NAICS category 221119.
11. Totals may not add up to overall total due to rounding.
12. Adapted from Statistics Canada CANSIM Table 127-0008 (2005–2010) or Cat. No. 57-202-XIB (1990–2004).
13. Includes transmission line losses, metering differences and other losses.
14. Emissions from electrical equipment from CRF Category 2.F.viii (Production and Consumption of Halocarbons and SF₆).
15. Consumption intensity values are rounded and incorporate unallocated energy and SF₆ transmission emissions.

Table A13-7 Electricity Generation and GHG Emission Details for Ontario¹

	1990	2000	2005	2007	2008	2009	2010	2011 ²
Greenhouse Gas Emissions³								
<i>kt CO₂ equivalent</i>								
Combustion	25 500	43 100	34 100	32 600	27 100	14 800	19 600	14 800
Coal	24 400	37 900	27 800	26 600	22 000	9 640	12 100	4 140
Natural Gas	7.9	4 890	6 180	5 750	4 980	4 900	7 370	10 600
Other Fuels ⁴	1 140	376	161	250	135	234	131	66.8
Other Emissions ⁵	0	0	1.4	1.4	1.4	21.1	0.2	0.2
Overall Total⁶	25 500	43 100	34 100	32 600	27 100	14 800	19 600	14 800
Electricity Generation^{7,8}								
<i>GWh</i>								
Combustion	29 200	52 200	40 900	40 600	33 800	19 640	27 200	25 220
Coal	27 800	40 800	29 400	27 900	22 700	9 570	12 300	3 860
Natural Gas	3.2	10 200	10 000	11 800	9 240	9 120	14 100	20 600
Other Fuels	1 400	1 140	1 440	884	1 830	947	864	800
Steam from Waste Heat			0	1 150	1 440	2 580	3 630	3 330
Nuclear	59 400	59 800	78 000	79 800	85 800	81 400	82 000	84 800
Hydro	38 700	36 600	34 600	33 400	38 700	38 700	31 800	34 600
Other Renewables ⁹	0	0	25.7	494	958	2 100	3 190	3 420
Other Generation ¹⁰	0	0	0	0	0	0	0	0
Overall Total¹¹	127 000	149 000	153 000	155 000	161 000	144 000	148 000	151 000
Greenhouse Gas Intensity								
<i>g GHG / kWh electricity generated</i>								
CO ₂ intensity (g CO ₂ / kWh)	200	289	221	208	168	102	132	97
CH ₄ intensity (g CH ₄ / kWh)	0.002	0.01	0.01	0.01	0.01	0.01	0.01	0.02
N ₂ O intensity (g N ₂ O / kWh)	0.003	0.005	0.004	0.004	0.004	0.002	0.003	0.002
Generation Intensity (g CO₂ eq / kWh)¹¹	201	290	222	210	169	102	133	98
Unallocated Energy (GWh) ^{12,13}	13 870	12 400	13 600	17 500	1 580	22 600	16 200	16 800
SF ₆ Emissions (kt CO ₂ eq) ¹⁴	80	79	53	109	65	63	62	40
Consumption Intensity (g CO₂ eq / kWh)¹⁵	230	320	240	240	170	120	150	110

Notes:

1. Data presented include emissions, generation and intensity for facilities classified under NAICS code 2211.
2. Preliminary data.
3. Based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.
4. Includes GHG emissions from the combustion of refined petroleum products (light fuel oil, heavy fuel oil and diesel fuel oil), petroleum coke, still gas and other fuels not easily categorized.
5. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
6. GHG emissions from the flooding of land for hydro dams are not included.
7. Taken from CANSIM Tables 127-0006 and 127-0007 (for 2005-2011).
8. Taken from the *Electric Power Generation, Transmission and Distribution (EPGTD)* publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990-2004).
9. Other Renewables - includes electricity generation by wind, tidal and solar.
10. NAICS category 221119.
11. Totals may not add up to overall total due to rounding.
12. Adapted from Statistics Canada CANSIM Table 127-0008 (2005-2010) or Cat. No. 57-202-XIB (1990-2004).
13. Includes transmission line losses, metering differences and other losses.
14. Emissions from electrical equipment from CRF Category 2.F.viii (Production and Consumption of Halocarbons and SF₆).
15. Consumption intensity values are rounded and incorporate unallocated energy and SF₆ transmission emissions.

Table A13–8 Electricity Generation and GHG Emission Details for Manitoba¹

	1990	2000	2005	2007	2008	2009	2010	2011 ²
Greenhouse Gas Emissions³								
<i>kt CO₂ equivalent</i>								
Combustion	517	978	326	451	403	179	74.9	104
Coal	467	968	294	404	382	144	49.0	49.5
Natural Gas	0.1	0.0	16.0	36.3	9.9	23.6	14.5	43.9
Other Fuels ⁴	50.5	10.4	15.6	10.9	11.2	11.2	11.4	10.9
Other Emissions ⁵	0	0	8.7	11.5	10.6	10.8	11.7	12.2
Overall Total⁶	517	978	334	462	414	190	87	116
Electricity Generation^{7,8}								
<i>GWh</i>								
Combustion	399	894	462	501	439	209	101	121
Coal	380	869	421	388	387	140	44.4	49.7
Natural Gas	0.9	0	10.6	68.8	20.6	39.4	22.9	41.1
Other Fuels	22.4	12.4	15.1	22.0	15.3	14.9	17.0	15.3
Steam from Waste Heat			0	0	0	0	0	0
Nuclear	0	0	0	0	0	0	0	0
Hydro	19 800	31 500	36 400	33 500	34 600	33 500	33 300	34 200
Other Renewables ⁹	0	0	53.4	325	412	365	343	747
Other Generation ¹⁰	0	0	0	0	0	0	0	0
Overall Total¹¹	20 200	32 400	37 000	34 300	35 400	34 100	33 700	35 100
Greenhouse Gas Intensity								
<i>g GHG / kWh electricity generated</i>								
CO ₂ intensity (g CO ₂ / kWh)	25.3	30.0	9.0	13.4	11.6	5.51	2.54	3.28
CH ₄ intensity (g CH ₄ / kWh)	0.0005	0.0004	0.0002	0.0004	0.0002	0.0002	0.0001	0.0004
N ₂ O intensity (g N ₂ O / kWh)	0.001	0.001	0.0002	0.0003	0.0003	0.0001	0.0001	0.0001
Generation Intensity (g CO₂ eq / kWh)¹¹	25.6	30.2	9.1	13.5	11.7	5.56	2.57	3.32
Unallocated Energy (GWh) ^{12,13}	3 510	3 890	1 880	2 320	4 750	4 750	4 610	0
SF ₆ Emissions (kt CO ₂ eq) ¹⁴	5	4	4	4	3	3	5	5
Consumption Intensity (g CO₂ eq / kWh)¹⁵	31	34	10	15	14	6.6	3.1	3.5

Notes:

1. Data presented include emissions, generation and intensity for facilities classified under NAICS code 2211.
2. Preliminary data.
3. Based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.
4. Includes GHG emissions from the combustion of refined petroleum products (light fuel oil, heavy fuel oil and diesel fuel oil), petroleum coke, still gas and other fuels not easily categorized.
5. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
6. GHG emissions from the flooding of land for hydro dams are not included.
7. Taken from CANSIM Tables 127-0006 and 127-0007 (for 2005–2011).
8. Taken from the *Electric Power Generation, Transmission and Distribution (EPGTD)* publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).
9. Other Renewables - includes electricity generation by wind, tidal and solar.
10. NAICS category 221119.
11. Totals may not add up to overall total due to rounding.
12. Adapted from Statistics Canada CANSIM Table 127-0008 (2005–2010) or Cat. No. 57-202-XIB (1990–2004).
13. Includes transmission line losses, metering differences and other losses.
14. Emissions from electrical equipment from CRF Category 2.F.viii (Production and Consumption of Halocarbons and SF₆).
15. Consumption intensity values are rounded and incorporate unallocated energy and SF₆ transmission emissions.

Table A13–9 Electricity Generation and GHG Emission Details for Saskatchewan¹

	1990	2000	2005	2007	2008	2009	2010	2011 ²
Greenhouse Gas Emissions³								
<i>kt CO₂ equivalent</i>								
Combustion	11 100	14 700	15 200	15 200	15 200	16 300	16 100	15 500
Coal	10 900	13 400	13 600	13 700	13 500	14 500	14 200	13 600
Natural Gas	180	1 250	1 530	1 440	1 760	1 750	1 850	1 920
Other Fuels ⁴	6.7	18.4	4.5	0.3	0.6	0.8	0.3	0.3
Other Emissions ⁵	0	0	17	21	23	29	30	29
Overall Total⁶	11 100	14 700	15 200	15 200	15 200	16 300	16 100	15 500
Electricity Generation^{7,8}								
<i>GWh</i>								
Combustion	9 660	14 100	14 800	15 000	16 200	16 700	15 100	14 900
Coal	9 340	11 400	12 200	12 300	12 200	13 100	12 100	11 600
Natural Gas	308	2 660	2 610	2 620	4 000	3 570	3 040	3 260
Other Fuels	8.8	12.5	12.0	22.3	18.6	15.3	17.7	10.0
Steam from Waste Heat	0	0	0	322	630	360	628	685
Nuclear	0	0	0	0	0	0	0	0
Hydro	4 210	3 050	4 570	4 390	4 030	2 960	3 870	4 640
Other Renewables ⁹	0	0	91.9	579	574	579	507	608
Other Generation ¹⁰	0	0	0	0	0	0	0	0
Overall Total¹¹	13 900	17 100	19 500	20 300	21 500	20 600	20 100	20 800
Greenhouse Gas Intensity								
<i>g GHG / kWh electricity generated</i>								
CO ₂ intensity (g CO ₂ / kWh)	792	851	774	744	704	787	794	739
CH ₄ intensity (g CH ₄ / kWh)	0.02	0.03	0.03	0.03	0.03	0.03	0.04	0.03
N ₂ O intensity (g N ₂ O / kWh)	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Generation Intensity (g CO₂ eq / kWh)¹¹	798	858	780	750	709	793	800	745
Unallocated Energy (GWh) ^{12,13}	1 980	1 890	1 420	1 960	3 320	2 830	1 350	1 110
SF ₆ Emissions (kt CO ₂ eq) ¹⁴	2	2	1	3	1	1	1	1
Consumption Intensity (g CO₂ eq / kWh)¹⁵	930	960	840	830	840	920	860	790

Notes:

1. Data presented include emissions, generation and intensity for facilities classified under NAICS code 2211.
2. Preliminary data.
3. Based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.
4. Includes GHG emissions from the combustion of refined petroleum products (light fuel oil, heavy fuel oil and diesel fuel oil), petroleum coke, still gas and other fuels not easily categorized.
5. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
6. GHG emissions from the flooding of land for hydro dams are not included.
7. Taken from CANSIM Tables 127-0006 and 127-0007 (for 2005-2011).
8. Taken from the *Electric Power Generation, Transmission and Distribution (EPGTD)* publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990-2004).
9. Other Renewables - includes electricity generation by wind, tidal and solar.
10. NAICS category 221119.
11. Totals may not add up to overall total due to rounding.
12. Adapted from Statistics Canada CANSIM Table 127-0008 (2005-2010) or Cat. No. 57-202-XIB (1990-2004).
13. Includes transmission line losses, metering differences and other losses.
14. Emissions from electrical equipment from CRF Category 2.F.viii (Production and Consumption of Halocarbons and SF₆).
15. Consumption intensity values are rounded and incorporate unallocated energy and SF₆ transmission emissions.

Table A13–10 Electricity Generation and GHG Emission Details for Alberta¹

	1990	2000	2005	2007	2008	2009	2010	2011 ²
Greenhouse Gas Emissions³								
<i>kt CO₂ equivalent</i>								
Combustion	39 400	49 200	51 500	51 900	52 200	48 400	48 600	47 700
Coal	37 670	43 750	46 320	46 920	46 430	43 660	43 010	41 300
Natural Gas	1 690	5 270	5 140	4 960	5 780	4 760	5 560	6 380
Other Fuels ⁴	11.8	128	60.2	10.0	10.9	11.7	12.8	12.3
Other Emissions ⁵	0	0	10.3	7.8	8.0	5.0	5.5	12.4
Overall Total⁶	39 400	49 200	51 500	51 900	52 200	48 400	48 600	47 700
Electricity Generation^{7,8}								
<i>GWh</i>								
Combustion	39 900	51 300	54 200	52 400	51 300	51 500	51 700	59 200
Coal	37 300	40 700	42 200	43 700	41 700	41 000	41 000	46 300
Natural Gas	2 510	10 200	11 600	8 340	9 280	9 970	10 200	12 500
Other Fuels	21.6	443	424	345	364	548	501	494
Steam from Waste Heat			32.4	1 140	1 350	1 310	1 500	1 140
Nuclear	0	0	0	0	0	0	0	0
Hydro	2 060	1 760	2 240	2 090	1 980	1 620	1 480	1 970
Other Renewables ⁹	0	88.9	837	763	942	1 340	1 630	2 220
Other Generation ¹⁰	0	0	0	0	0	0	0	0
Overall Total¹¹	41 900	53 200	57 300	56 400	55 600	55 800	56 400	64 600
Greenhouse Gas Intensity								
<i>g GHG / kWh electricity generated</i>								
CO ₂ intensity (g CO ₂ / kWh)	933	918	893	914	933	862	856	734
CH ₄ intensity (g CH ₄ / kWh)	0.02	0.04	0.03	0.03	0.04	0.03	0.03	0.03
N ₂ O intensity (g N ₂ O / kWh)	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01
Generation Intensity (g CO₂ eq / kWh)¹¹	939	924	899	920	939	868	862	739
Unallocated Energy (GWh) ^{12,13}	8 000	4 170	5 040	6 220	12 500	11 600	10 600	18 600
SF ₆ Emissions (kt CO ₂ eq) ¹⁴	2	2	0	1	3	2	1	1
Consumption Intensity (g CO₂ eq / kWh)¹⁵	1 200	1 000	990	1 000	1 200	1 100	1 100	1 000

Notes:

1. Data presented include emissions, generation and intensity for facilities classified under NAICS code 2211.
2. Preliminary data.
3. Based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.
4. Includes GHG emissions from the combustion of refined petroleum products (light fuel oil, heavy fuel oil and diesel fuel oil), petroleum coke, still gas and other fuels not easily categorized.
5. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
6. GHG emissions from the flooding of land for hydro dams are not included.
7. Taken from CANSIM Tables 127-0006 and 127-0007 (for 2005–2011).
8. Taken from the *Electric Power Generation, Transmission and Distribution (EPGTD)* publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).
9. Other Renewables - includes electricity generation by wind, tidal and solar.
10. NAICS category 221119.
11. Totals may not add up to overall total due to rounding.
12. Adapted from Statistics Canada CANSIM Table 127-0008 (2005–2010) or Cat. No. 57-202-XIB (1990–2004).
13. Includes transmission line losses, metering differences and other losses.
14. Emissions from electrical equipment from CRF Category 2.F.viii (Production and Consumption of Halocarbons and SF₆).
15. Consumption intensity values are rounded and incorporate unallocated energy and SF₆ transmission emissions.

Table A13–11 Electricity Generation and GHG Emission Details for British Columbia¹

	1990	2000	2005	2007	2008	2009	2010	2011 ²
Greenhouse Gas Emissions³								
<i>kt CO₂ equivalent</i>								
Combustion	803	1 810	1 310	1 120	1 460	1 310	1 210	631
Coal	0	0	0	0	0	0	0	0
Natural Gas	720	1 780	1 250	1 070	1 400	1 230	1 140	568
Other Fuels ⁴	86.3	34.9	56.2	52.6	59.4	82.3	66.5	62.3
Other Emissions ⁵	0	0	4.6	4.8	4.6	5.7	6.0	6.4
Overall Total⁶	803	1 810	1 320	1 130	1 470	1 320	1 210	640
Electricity Generation^{7,8}								
<i>GWh</i>								
Combustion	1 390	3 930	3 820	3 160	3 390	3 020	3 050	1 860
Coal	0	0	0	0	0	0	0	0
Natural Gas	1 310	3 350	3 140	2 160	2 370	2 030	1 850	914
Other Fuels	79.4	585	689	1 000	1 020	993	1 210	942
Steam from Waste Heat			0	733	768	648	651	38.8
Nuclear	0	0	0	0	0	0	0	0
Hydro	46 400	50 800	50 300	54 700	48 600	46 300	45 000	51 700
Other Renewables ⁹	0	0	0	0	0	0	123	187
Other Generation ¹⁰	0	0	0	0	0	1 920	2 980	2 510
Overall Total¹¹	47 800	54 700	54 100	58 600	52 800	51 900	51 800	56 300
Greenhouse Gas Intensity								
<i>g GHG / kWh electricity generated</i>								
CO ₂ intensity (g CO ₂ / kWh)	16.5	32.7	24.0	18.9	27.4	25.1	23.1	11.1
CH ₄ intensity (g CH ₄ / kWh)	0.004	0.008	0.006	0.005	0.007	0.006	0.006	0.003
N ₂ O intensity (g N ₂ O / kWh)	0.001	0.001	0.0006	0.0005	0.0008	0.0008	0.0007	0.0004
Generation Intensity (g CO₂ eq / kWh)¹¹	16.8	33.1	24.3	19.2	27.8	25.4	23.4	11.3
Unallocated Energy (GWh) ^{12,13}	2 320	2 480	2 340	unk ¹⁶	880	2 630	2 260	940
SF ₆ Emissions (kt CO ₂ eq) ¹⁴	60	59	50	49	66	61	61	28
Consumption Intensity (g CO₂ eq / kWh)¹⁵	19	36	26	unk¹⁶	30	28	26	12

Notes:

1. Data presented include emissions, generation and intensity for facilities classified under NAICS code 2211.
2. Preliminary data.
3. Based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.
4. Includes GHG emissions from the combustion of refined petroleum products (light fuel oil, heavy fuel oil and diesel fuel oil), petroleum coke, still gas and other fuels not easily categorized.
5. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
6. GHG emissions from the flooding of land for hydro dams are not included.
7. Taken from CANSIM Tables 127-0006 and 127-0007 (for 2005-2011).
8. Taken from the *Electric Power Generation, Transmission and Distribution (EPGTD)* publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990-2004).
9. Other Renewables - includes electricity generation by wind, tidal and solar.
10. NAICS category 221119.
11. Totals may not add up to overall total due to rounding.
12. Adapted from Statistics Canada CANSIM Table 127-0008 (2005-2010) or Cat. No. 57-202-XIB (1990-2004).
13. Includes transmission line losses, metering differences and other losses.
14. Emissions from electrical equipment from CRF Category 2.F.viii (Production and Consumption of Halocarbons and SF₆).
15. Consumption intensity values are rounded and incorporate unallocated energy and SF₆ transmission emissions.
16. Appropriate data were unavailable for 2007.

Table A13–12 Electricity Generation and GHG Emission Details for Yukon¹

	1990	2000	2005	2007	2008	2009	2010	2011 ²
Greenhouse Gas Emissions³								
<i>kt CO₂ equivalent</i>								
Combustion	93.6	17.0	22.9	17.9	18.1	17.0	18.7	27.6
Coal	0	0	0	0	0	0	0	0
Natural Gas	0	0	0	0	0	0	0	0
Other Fuels ⁴	93.6	17.0	22.9	17.9	18.1	17.0	18.7	27.6
Other Emissions ⁵	0	0	0	0	0	0	0	0
Overall Total⁶	93.6	17.0	22.9	17.9	18.1	17.0	18.7	27.6
Electricity Generation^{7,8}								
<i>GWh</i>								
Combustion	62.1	36.7	22.4	23.7	23.9	22.6	25.0	36.9
Coal	0	0	0	0	0	0	0	0
Natural Gas	0	0	0	0	0	0	0	0
Other Fuels	62.1	36.7	22.4	23.7	23.9	22.6	25.0	36.9
Steam from Waste Heat			0	0	0	0	0	0
Nuclear	0	0	0	0	0	0	0	0
Hydro	423	261	320	331	348	379	380	388
Other Renewables ⁹	0	0.4	0.9	0.4	0.4	0.2	0.1	0.4
Other Generation ¹⁰	0	0	0	0	0	0	0	0
Overall Total¹¹	485	298	344	355	373	402	405	425
Greenhouse Gas Intensity								
<i>g GHG / kWh electricity generated</i>								
CO ₂ intensity (g CO ₂ / kWh)	184	54.4	63.5	48.1	46.5	40.4	44.0	62.0
CH ₄ intensity (g CH ₄ / kWh)	0.01	0.00	0.003	0.002	0.002	0.002	0.002	0.003
N ₂ O intensity (g N ₂ O / kWh)	0.03	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Generation Intensity (g CO₂ eq / kWh)¹¹	193	57.0	66.5	50.3	48.7	42.3	46.1	64.9
Unallocated Energy (GWh) ^{12,13}	33.0	23.8	44.8	30.6	29.0	29.2	32.6	50.8
SF ₆ Emissions (kt CO ₂ eq) ^{14,15}	0	0	0	0	0	0	0	0
Consumption Intensity (g CO₂ eq / kWh)¹⁶	210	62	77	55	53	46	50	74

Notes:

1. Data presented include emissions, generation and intensity for facilities classified under NAICS code 2211.
2. Preliminary data.
3. Based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.
4. Includes GHG emissions from the combustion of refined petroleum products (light fuel oil, heavy fuel oil and diesel fuel oil), petroleum coke, still gas and other fuels not easily categorized.
5. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
6. GHG emissions from the flooding of land for hydro dams are not included.
7. Taken from CANSIM Tables 127-0006 and 127-0007 (for 2005–2011).
8. Taken from the *Electric Power Generation, Transmission and Distribution (EPGTD)* publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990–2004).
9. Other Renewables - includes electricity generation by wind, tidal and solar.
10. NAICS category 221119.
11. Totals may not add up to overall total due to rounding.
12. Adapted from Statistics Canada CANSIM Table 127-0008 (2005–2010) or Cat. No. 57-202-XIB (1990–2004).
13. Includes transmission line losses, metering differences and other losses.
14. Emissions from electrical equipment from CRF Category 2.F.viii (Production and Consumption of Halocarbons and SF₆).
15. Zero value may indicate value was too small to display.
16. Consumption intensity values are rounded and incorporate unallocated energy and SF₆ transmission emissions.

Table A13–13 Electricity Generation and GHG Emission Details for the Northwest Territories and Nunavut¹

	1990	2000	2005	2007	2008	2009	2010	2011 ²
Greenhouse Gas Emissions³								
<i>kt CO₂ equivalent</i>								
Combustion	161	95.2	217	193	202	193	191	141
Coal	0	0	0	0	0	0	0	0
Natural Gas	0	0	27.5	40.9	21.8	19.6	19.6	17.1
Other Fuels ⁴	161	95.2	189	152	180	174	171	124
Other Emissions ⁵	0	0	5	6	8	0	0	0
Overall Total⁶	161	95.2	222	199	210	193	191	141
Electricity Generation^{7,8}								
<i>GWh</i>								
Combustion	227	195	219	232	269	251	247	181
Coal	0	0	0	0	0	0	0	0
Natural Gas	0	15.8	23.3	42.7	29.3	27.5	27.5	23.7
Other Fuels	227	179	196	189	240	223	220	157
Steam from Waste Heat			0	0	0	0	0	0
Nuclear	0	0	0	0	0	0	0	0
Hydro	251	299	259	250	247	254	254	260
Other Renewables ⁹	0	0	0	0	0	0	0	0
Other Generation ¹⁰	0	0	0	0	0	0	0	0
Overall Total¹¹	478	494	478	482	516	504	501	442
Greenhouse Gas Intensity								
<i>g GHG / kWh electricity generated</i>								
CO ₂ intensity (g CO ₂ / kWh)	324	184	445	398	391	367	364	306
CH ₄ intensity (g CH ₄ / kWh)	0.02	0.01	0.030	0.032	0.025	0.024	0.024	0.021
N ₂ O intensity (g N ₂ O / kWh)	0.05	0.03	0.06	0.05	0.05	0.05	0.05	0.04
Generation Intensity (g CO₂ eq / kWh)¹¹	337	193	463	413	407	383	380	319
Unallocated Energy (GWh) ^{12,13}	21.6	23.3	26.1	25.6	20.3	16.0	18.2	27.0
SF ₆ Emissions (kt CO ₂ eq) ^{14,15}	0	0	0	0	0	0	0	0
Consumption Intensity (g CO₂ eq / kWh)¹⁶	350	200	490	440	420	400	390	340

Notes:

1. Data presented include emissions, generation and intensity for facilities classified under NAICS code 2211.
2. Preliminary data.
3. Based on data taken from the *Report on Energy Supply-Demand in Canada*, Catalogue No. 57-003-XIB, Statistics Canada.
4. Includes GHG emissions from the combustion of refined petroleum products (light fuel oil, heavy fuel oil and diesel fuel oil), petroleum coke, still gas and other fuels not easily categorized.
5. GHG emissions from on-site combustion of fuel not directly related to electricity generation.
6. GHG emissions from the flooding of land for hydro dams are not included.
7. Taken from CANSIM Tables 127-0006 and 127-0007 (for 2005-2011).
8. Taken from the *Electric Power Generation, Transmission and Distribution (EPGTD)* publication, Catalogue No. 57-202-XIB, Statistics Canada (for 1990-2004).
9. Other Renewables - includes electricity generation by wind, tidal and solar.
10. NAICS category 221119.
11. Totals may not add up to overall total due to rounding.
12. Adapted from Statistics Canada CANSIM Table 127-0008 (2005-2010) or Cat. No. 57-202-XIB (1990-2004).
13. Includes transmission line losses, metering differences and other losses.
14. Emissions from electrical equipment from CRF Category 2.F.viii (Production and Consumption of Halocarbons and SF₆).
15. Zero value may indicate value was too small to display.
16. Consumption intensity values are rounded and incorporate unallocated energy and SF₆ transmission emissions.

References

Annex 13, Electricity in Canada: Summary and Intensity Tables

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