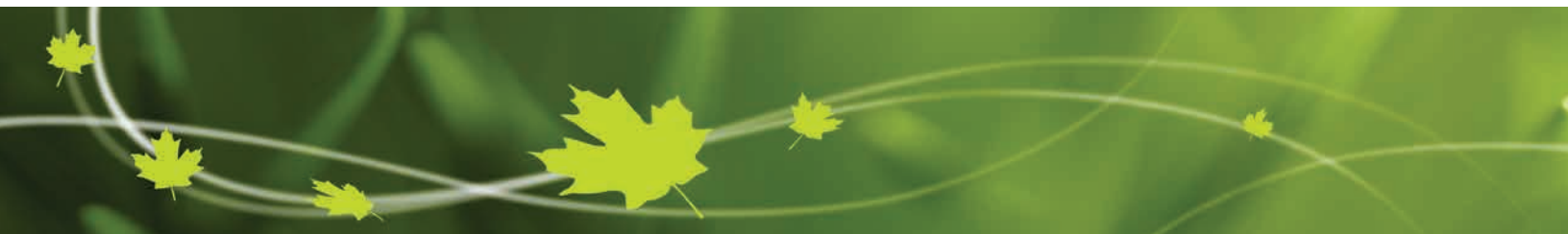




Environment and
Climate Change Canada

Environnement et
Changement climatique Canada



Facility Greenhouse Gas Emissions Reporting Program

Overview of 2014 Reported Emissions

April 2016



Canada 

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Highlights

- For the 2014 calendar year, 574 facilities reported their greenhouse gas (GHG) emissions to Environment and Climate Change Canada, totalling 264 megatonnes (Mt) of carbon dioxide equivalent (CO₂ eq). The main emission sources contributing to this reported total are stationary fuel combustion and industrial processes, accounting for 75% and 14% of the combined total for carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O).
- The reported emissions are, for the most part, evenly distributed across three sectors: (i) Utilities (34%); (ii) Mining, Quarrying, and Oil and Gas Extraction (32%); and (iii) Manufacturing (29%). Among all facilities, those engaged in electricity generation and oil/gas extraction account for 62% of the total.
- Total facility-reported emissions in 2014 remained largely unchanged from the 2013 total of 261 Mt, consistent with observations since 2010, where year-to-year changes in overall reported emissions were relatively small (i.e. 3% or less).
- From 2005 to 2014, total emissions from all reporting facilities decreased overall by 5%. Ontario based facilities in the Utilities and Manufacturing sectors experienced the largest declines (25 Mt and 10 Mt, respectively) over this 10-year period, while reported emissions increased by 37 Mt from facilities in the Mining, Quarrying, and Oil and Gas Extraction sector, largely in Alberta (33 Mt).
- The GHG emissions data collected from facilities represent just over one third (36%) of Canada's total GHG emissions in 2014 (732 Mt) and 56% of Canada's industrial GHG emissions as reported in Canada's National Inventory Report.¹ The degree of coverage of provincial and territorial industrial emissions varies significantly due to the size and number of industrial facilities in each province or territory that have emissions above the 50 kt CO₂ eq reporting threshold.

¹ In this overview report, Canada's industrial GHG emissions include those from the following GHG categories from the *National Inventory Report: Greenhouse Gas Sources and Sinks in Canada 1990–2014*: Stationary Combustion Sources (except Residential), Other Transportation, Fugitive Sources, Industrial Processes and Product Use, and Waste. The national inventory report is available on-line at https://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/8812.php

1 Greenhouse Gas Emissions Reporting Program

Environment and Climate Change Canada's Greenhouse Gas Emissions Reporting Program (GHGRP) has completed the collection of Greenhouse Gas (GHG) emissions information from Canadian facilities for the 2014 calendar year. Any facility with annual GHG emissions of 50 kilotonnes (kt) of carbon dioxide equivalent (CO₂ eq) or higher² is required to report to the program.

The Government of Canada established the GHGRP in March 2004 under the authority of section 46 of the *Canadian Environmental Protection Act, 1999* (CEPA) to collect GHG emissions information annually from the largest emitting Canadian facilities. To date, facility-reported GHG information has been collect-

ed and published through Environment and Climate Change Canada's GHGRP for the period 2004 to 2014. This program is part of Canada's ongoing effort to develop, in collaboration with Canadian provinces and territories, a harmonized and efficient mandatory GHG reporting system that minimizes duplication and reporting burden for industry and governments. Key objectives of the program are to provide Canadians with consistent information on GHG emissions, confirm industrial emission estimates presented in the National Greenhouse Gas Inventory and support regulatory initiatives. The data collected are also shared with provinces and territories. The data used in this overview report are current as of October 2, 2015. Subsequent company updates will be included in future data releases.

The federal reporting requirements for 2015 data, scheduled to be submitted by facilities to Environment and Climate Change Canada by June 1, 2016, are set out in the *Notice with respect to reporting of greenhouse gases (GHGs) for 2015*³ published in the *Canada Gazette*.

² The reporting threshold was reduced from 100 kt to 50 kt in 2009, increasing the number of facilities reporting to the program by 53%, with a corresponding 4% increase in the level of emissions being reported.

³ This Notice can be viewed online at www.ec.gc.ca/ges-ghg/default.asp?lang=En&n=F3E7B38E-1#notices.

2 Reported 2014 Greenhouse Gas Emissions

Note: Unless explicitly stated otherwise, all emissions data presented in this report are expressed in CO₂ eq units.

For the purposes of the GHGRP, a facility is defined as a contiguous facility, pipeline transportation system, or offshore installation. A contiguous facility is defined as all buildings, equipment, structures and stationary items that are located on a single site or on contiguous or adjacent sites, that are owned or operated by the same person and that function as a single integrated site; it includes wastewater collection systems that discharge treated or untreated wastewater into surface waters.³

A total of 574 facilities reported their GHG emissions to Environment and Climate Change Canada for the 2014 calendar year, collectively emitting a total of 264 megatonnes (Mt) of GHGs (Figure 1).⁴ Of these facilities, 310 reported GHG emission levels greater than 100 kt, accounting for 94% (249 Mt) of the total reported emissions, and 52 emitted GHGs in quantities higher than 1 Mt, accounting for 62% (162 Mt) of the total reported

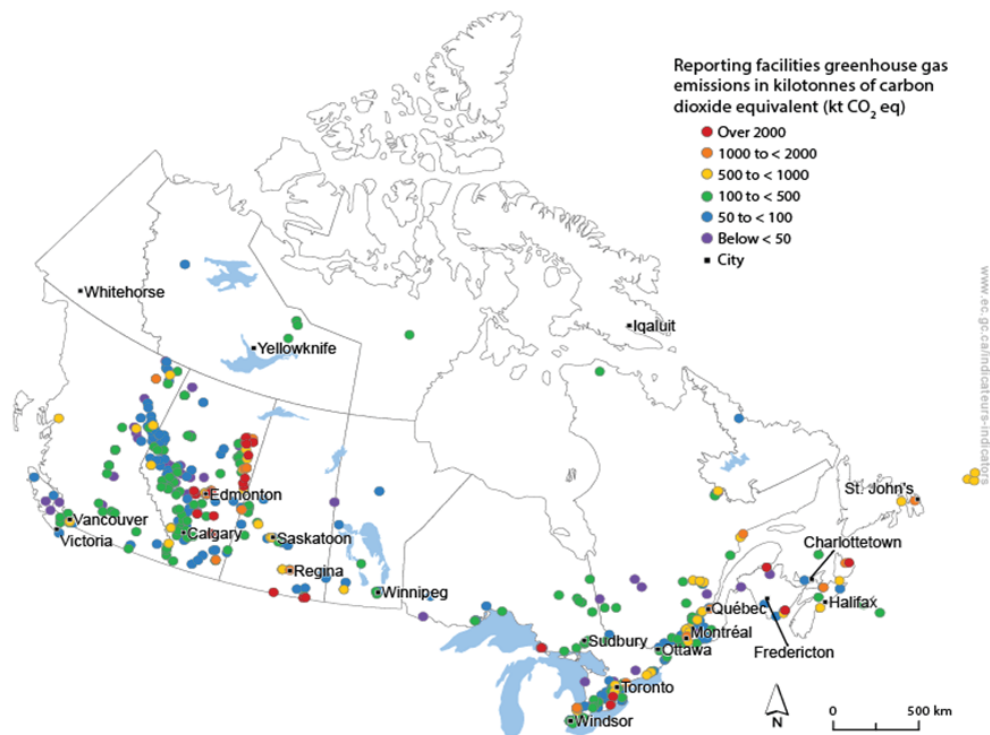
emissions (Figure 2). Thirty-three facilities reported their GHG emissions for the first time, mostly from conventional oil and gas extraction (21 facilities), totalling 2 Mt. Facilities with emissions falling below the reporting threshold of 50 kt per year can voluntarily report their GHG emissions; 82 facilities did so this year, representing 0.7% (2 Mt). Reported emissions from voluntary reporters are included in this report and in the data set published by Environment and Climate Change Canada.

2.1 Calculation Methodology

A facility may choose among a number of available methods to calculate its GHG emissions. The methods selected by reporting facilities must be consistent with the guidelines developed by the Intergovernmental Panel on Climate Change (IPCC) and adopted by the United Nations Framework Convention on Climate Change (UNFCCC) for the preparation of national GHG inventories. Reporting facilities must indicate the types of methods used to determine the quantities of emissions reported. Such methods may include monitoring or direct measurement (MDM), mass balance (MB), emission factors (EF) and/or engineering estimates (EE).

⁴ 1 Mt = 1 million tonnes or 1000 kt.

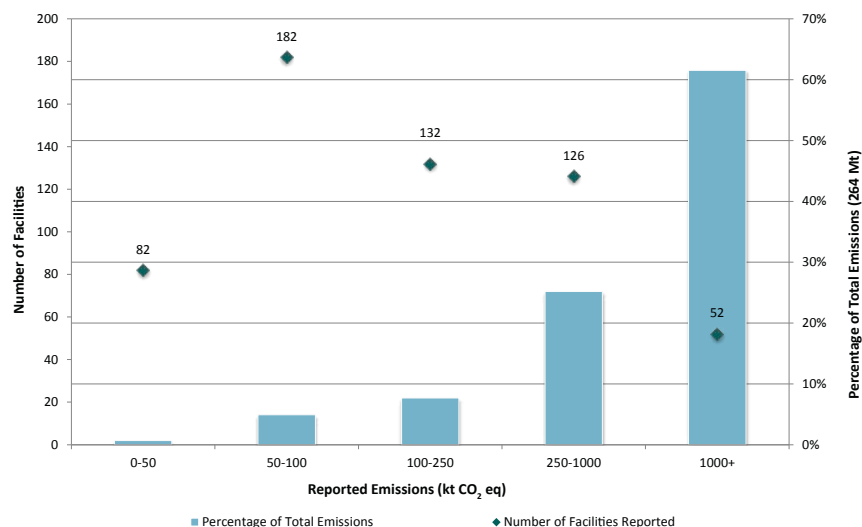
Figure 1: 2014 Facility GHG Emissions Reported to Environment and Climate Change Canada^{a, b}



^a Map excludes pipeline transportation systems.

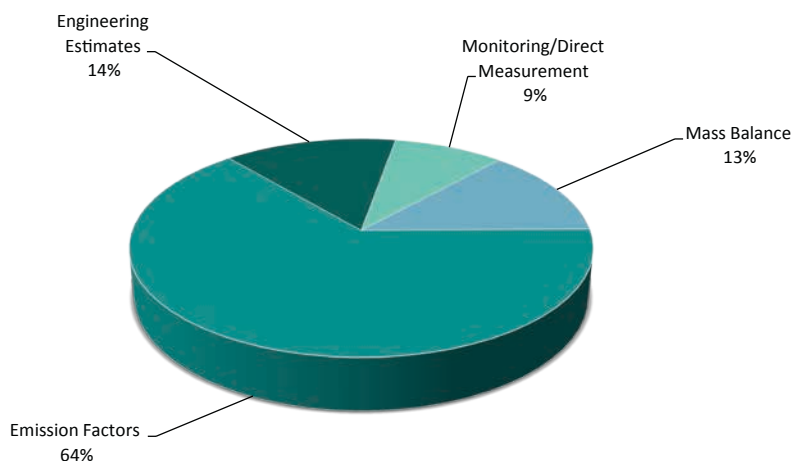
^b Map provided by the Canadian Environmental Sustainability Indicators program. Available online: <https://www.ec.gc.ca/indicateurs-indicators/default.asp?lang=en&n=31022B8E-1>.

Figure 2: Contribution of Facilities in Various Emission Ranges to Total Reported Emissions (2014)



Note: Facilities in the 0-50 kt range voluntarily reported their emissions.

Figure 3: Types of Methods Used by Facilities



Overall, methods incorporating the use of EFs were the approach preferred by most facilities (Figure 3). An EF is a measure that indicates the rate at which a GHG is released into the atmosphere due to a given activity, such as burning a specific fuel type or production of a specific industrial product. The EFs used may be general or technology-specific. Many facilities used multiple types of calculation methods to determine their emissions.

2.2 Greenhouse Gases (GHGs) and Global Warming Potentials

GHGs are not equal in their effect on the atmosphere. Each GHG has a unique average atmospheric lifetime and heat-trapping potential. GHG emissions are often calculated and reported in terms of how much CO₂ would be required to produce a similar warming effect over a specific time horizon. This is called the CO₂ eq value and is calculated by multiplying the amount of the gas by its associated global warming potential (GWP) (Table 1). Environment and Climate Change Canada uses the GWP values adopted by the UNFCCC, a complete list of which can be found in the *Notice with respect to reporting of greenhouse gases (GHGs)*

Table 1: Global Warming Potential Values for the Main Greenhouse Gases

Greenhouse Gas	100-year GWPs ^a
Carbon dioxide (CO ₂)	1
Methane (CH ₄)	25
Nitrous oxide (N ₂ O)	298
Sulphur hexafluoride (SF ₆)	22 800
Hydrofluorocarbons (HFCs), 13 species	Ranges from 92 to 14 800
Perfluorocarbons (PFCs), 7 species	Ranges from 7 390 to 12 200

^a GWPs were updated in 2013 and applied to all years.

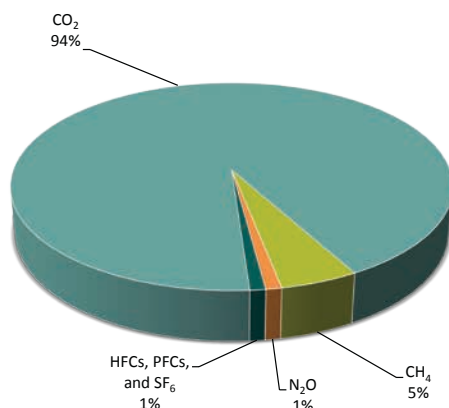
for 2014. The GWP values used by the GHGRP are consistent with those used in Canada's 2016 edition of the National Greenhouse Gas Inventory.

2.3 Reported GHG Emissions by Gas and by Source

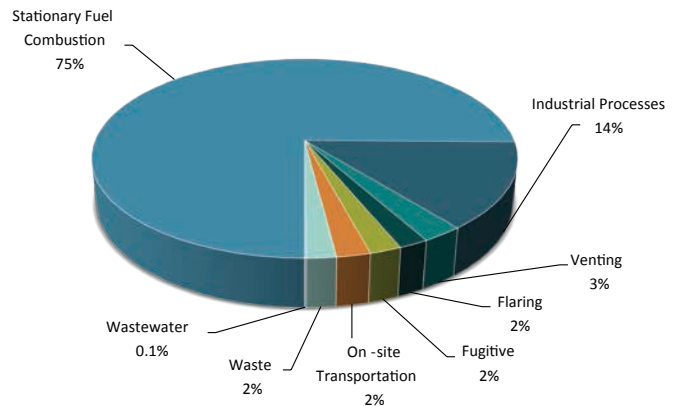
CO₂ represented the majority of the total reported emissions (94%) in 2014, while methane (CH₄) and nitrous oxide (N₂O) emissions contributed 5% and 1%, respectively (Figure 4). Facilities are also required to report emissions of hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF₆) stemming from industrial processes or industrial product use. The combined emissions of these gases accounted for the remaining 1%.

When reporting to the GHGRP, facilities are required to report emissions of CO₂, CH₄ and N₂O according to the following eight source categories:⁵ stationary fuel combustion, industrial

⁵ Additional information on these emission source categories can be found in the *Technical Guidance on Reporting Greenhouse Gas Emissions*, available online at www.ec.gc.ca/ges-ghg/default.asp?lang=En&n=47B640C5-1.

Figure 4: Reported 2014 GHG Emissions by Gas (264 Mt CO₂ eq)

Note: Totals may not add up due to rounding.

Figure 5: Reported 2014 GHG Emissions by Source (CO₂, CH₄ and N₂O Included)

Note: Totals may not add up due to rounding.

processes, venting, flaring, fugitive sources, on-site transportation, waste and wastewater. Stationary fuel combustion is the largest source of reported emissions, representing 75% of the total (Figure 5). This source includes emissions resulting from the burning of fuels for the purpose of producing energy (e.g., to generate electricity, heat or steam), but does not include sources like combustion engines in vehicles. Any waste material burned or incinerated at a facility to produce energy is also included in stationary combustion. Industrial process emissions, the second-largest source of reported emissions at 14%, refer to emissions stemming from specific industrial processes involving chemical or physical reactions other than combustion. Such reactions occur, for example, in the processes of mineral production (e.g., lime, cement), metal production (e.g., iron, steel, aluminium) and chemical production (e.g., nitric acid and ammonia production).

2.4 Reported GHG Emissions by Province/Territory

Facilities in the province of Alberta accounted for the largest share of reported emissions, with approximately 53% of the total, followed by facilities in Ontario with 16%, Saskatchewan with 9% and Quebec with 8% (Table 2). The number of facilities, the quantity and type of fuel consumed and the predominant industry largely explain this ranking.

2.5 Reported GHG Emissions by Sector

When completing a report for the GHGRP, a reporter is required to identify the main activities occurring at its facility using the

Table 2: Reported 2014 GHG Emissions by Province/Territory

	Number of Facilities	Total Emissions (kt CO ₂ eq)	Percentage of Total Emissions ^a
Newfoundland and Labrador	8	4 806	2%
Prince Edward Island	1	55	0.02%
Nova Scotia	10	7 829	3%
New Brunswick	12	7 544	3%
Quebec	84	20 008	8%
Ontario	139	43 017	16%
Manitoba	12	1 961	1%
Saskatchewan	42	23 933	9%
Alberta	182	139 266	53%
British Columbia	79	14 758	6%
Northwest Territories	4	576	0.2%
Nunavut	1	180	0.1%
Total	574	263 936	

Note:

a No facilities from Yukon reported to the GHGRP.

Totals may not add up due to rounding.

North American Industry Classification System (NAICS).⁶ In 2014, three NAICS defined industry sectors accounted for the majority of GHG emissions: the Utilities sector, represented primarily by facilities generating electricity from fossil fuels, accounting for 34% (89 Mt); the Mining, Quarrying, and Oil and Gas Extraction sector, accounting for 32% (84 Mt); and the Manufacturing sector, accounting for 29% (76 Mt) (Figure 6). Further breakdowns of the reported emissions from these main sectors are provided in Figures 7 and 8. The remaining 6% (15 Mt) of emissions captured under “Other” were reported by various types of facilities, mainly

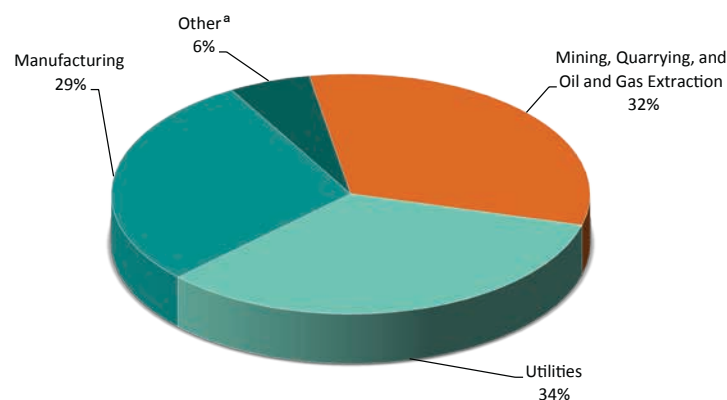
natural gas transportation pipelines (8.6 Mt) and solid waste landfills (4.8 Mt).

Activities of reporting facilities in the Mining, Quarrying, and Oil and Gas Extraction sector can be grouped into three categories, with most emissions stemming from non-conventional oil extraction (Figure 7):

1. Non-conventional oil extraction, which includes oil sands mining, in-situ bitumen production and upgrading (72%);
2. Conventional extraction of oil and natural gas (18%); and
3. Mining of metal ore (e.g. iron) (4%), coal (3%) and non-metallic minerals (e.g. potash and diamonds) (2%).

6 The NAICS is an industry classification system that was developed by the statistics agencies of Canada, the United States and Mexico to enable them to collect comparable statistical data. It is a comprehensive system that encompasses all economic activities using six-digit codes. In Canada, the NAICS consists of 20 sectors, 102 subsectors, 323 industry groups, 711 industries and 922 national industries.

Figure 6: Reported 2014 GHG Emissions by Industry Sector (264 Mt CO₂ eq)



Note:

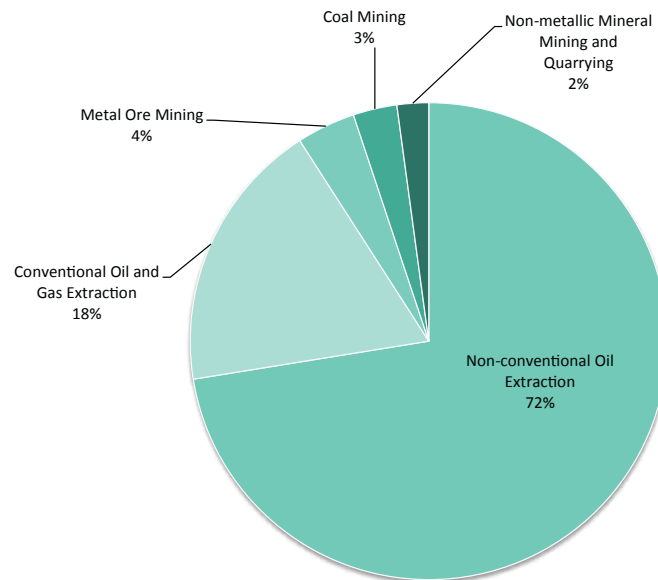
a. “Other” includes various types of facilities such as natural gas transportation pipelines, solid waste landfills, airports, universities, hospitals and public administration buildings.

Totals may not add up due to rounding.

The Manufacturing sector includes a wide range of subsectors, with facilities engaged in the following activities serving as important contributors to the reported 2014 emissions (Figure 8):

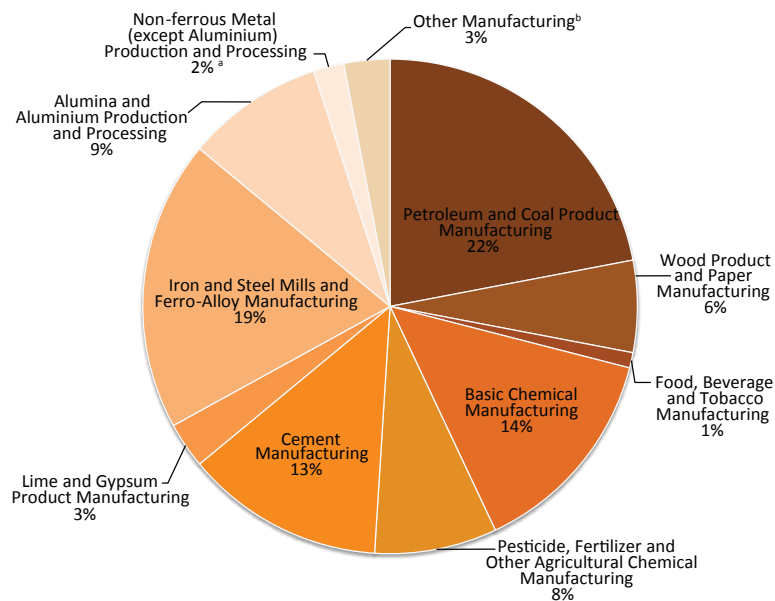
1. petroleum and coal product manufacturing (22%);
2. iron, steel and ferro-alloy manufacturing (19%);
3. basic chemical manufacturing (14%) and;
4. cement and concrete product manufacturing (13%).

Figure 7: Reported 2014 GHG Emissions by Subsectors of Mining, Quarrying, and Oil and Gas Extraction (84 Mt CO₂ eq)



Note: Totals may not add up due to rounding.

Figure 8: Reported 2014 GHG Emissions by Subsectors of Manufacturing (76 Mt CO₂ eq)



a Non-ferrous Metal (except Aluminium) Production and Processing includes the production of base metals (e.g. copper, nickel, zinc).

b "Other Manufacturing" represents other types of manufacturing, including electrical equipment, transportation equipment and furniture manufacturing.

3 Trends in Reported GHG Emissions

The number of facilities reporting GHG emissions to Environment and Climate Change Canada can change from year to year. Changes in production levels, processes and technologies, the types of fuels used at a facility, and facility start-ups/closures can all result in a change in the annual emissions reported, so that a facility may fall below or attain the reporting threshold of 50 kt CO₂ eq from one year to the next. The number of voluntary reporters may also change each year, which can affect the number of reporting facilities. The reduction in the reporting threshold (from 100 to 50 kt) that occurred in 2009 resulted in an approximately 50% increase in the number of facilities reporting their GHG emissions annually to Environment and Climate Change Canada.

Over the 2005–2014 period, the number of reporting facilities increased from 337 in 2005 to 574 in 2014 (Table 3). Since 2009, facilities with emissions under 100 kt have accounted, on average, for just over 5% of the total reported emissions. Consequently, emissions from these facilities do not contribute significantly to the observed trends in total reported emissions at the national level; however,

these facilities may affect the observed trends at the provincial/territorial levels.

3.1 Overall National-Level Trends

Over the 2005–2014 period, total facility-reported emissions decreased by 5% (14 Mt), from 278 to 264 Mt (Table 3). Total reported GHG emissions in 2014, at 264 Mt, were essentially unchanged from the 2013 total of 261 Mt,⁷ reflecting a similar trend since 2010, with the overall total remaining relatively steady with only minor inter-annual variability.

3.2 Provincial/Territorial Trends

3.2.1 Short-Term Changes

Facility-reported GHG emissions, aggregated by province and territory, are summarized in Table 4, while Figure 9 shows the

⁷ A number of facilities submitted new reports or updates to GHG reports for previous years. Environment and Climate Change Canada includes these updates in its annual data release, resulting in some revisions to previously published data.

Table 3: Total Facility-Reported GHG Emissions, 2005–2014

	2005	2006	2007	2008	2009 ^a	2010	2011	2012	2013	2014
Number of facilities	337	345	352	351	536	542	544	554	570	574
GHG emissions (kt CO ₂ eq)	277 997	271 940	277 271	263 309	253 008	263 496	255 587	259 287	260 742	263 936
Annual change (%)	NA ^b	-2.2%	2.0%	-5.0%	-3.9%	4.1%	-3.0%	1.4%	0.6%	1.2%
Change since 2005 (%)	NA	-2.2%	-0.3%	-5.3%	-9.0%	-5.2%	-8.1%	-6.7%	-6.2%	-5.1%

Note: For the complete data set, visit the website www.ec.gc.ca/ges-ghg/default.asp?lang=En&n=8044859A-1.

a Reporting threshold changed in 2009.

b NA = not applicable.

Table 4: Reported GHG Emissions by Province/Territory, 2005–2014

Province/Territory	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
<i>Units: (kt CO₂ eq)</i>										
Newfoundland and Labrador	5 398	4 975	5 448	5 291	4 392	4 560	4 267	4 417	4 481	4 806
Prince Edward Island	104	100	102	99	74	63	65	53	60	55
Nova Scotia	11 751	10 810	11 421	11 110	10 788	10 615	9 879	8 826	9 130	7 829
New Brunswick	12 654	10 234	10 910	10 287	10 121	8 231	7 854	7 050	7 508	7 544
Quebec	22 572	22 687	23 610	20 280	20 746	21 042	20 421	21 003	19 927	20 008
Ontario	78 702	71 580	74 348	67 341	49 998	56 179	49 226	50 224	45 537	43 017
Manitoba	2 908	2 521	2 484	2 362	2 142	1 890	2 020	1 889	2 038	1 961
Saskatchewan	22 611	22 118	23 002	21 936	22 460	22 862	22 475	23 509	23 728	23 933
Alberta	106 918	113 851	112 351	110 642	118 087	123 199	123 881	126 906	132 334	139 266
British Columbia	14 018	12 745	13 073	13 429	13 610	14 175	14 745	14 658	15 212	14 758
Northwest Territories	360	320	522	533	590	545	555	550	591	576
Nunavut	N/A ^a	N/A	N/A	N/A	N/A	135	199	203	196	180
Total^b	277 997	271 940	277 271	263 309	253 008	263 496	255 587	259 287	260 742	263 936

Note: For the complete data set, visit the website www.ec.gc.ca/ges-ghg/default.asp?lang=En&n=8044859A-1.

a N/A = not available.

b Totals may not add up due to rounding.

Figure 9: Provincial/Territorial Short-Term Change, 2013–2014

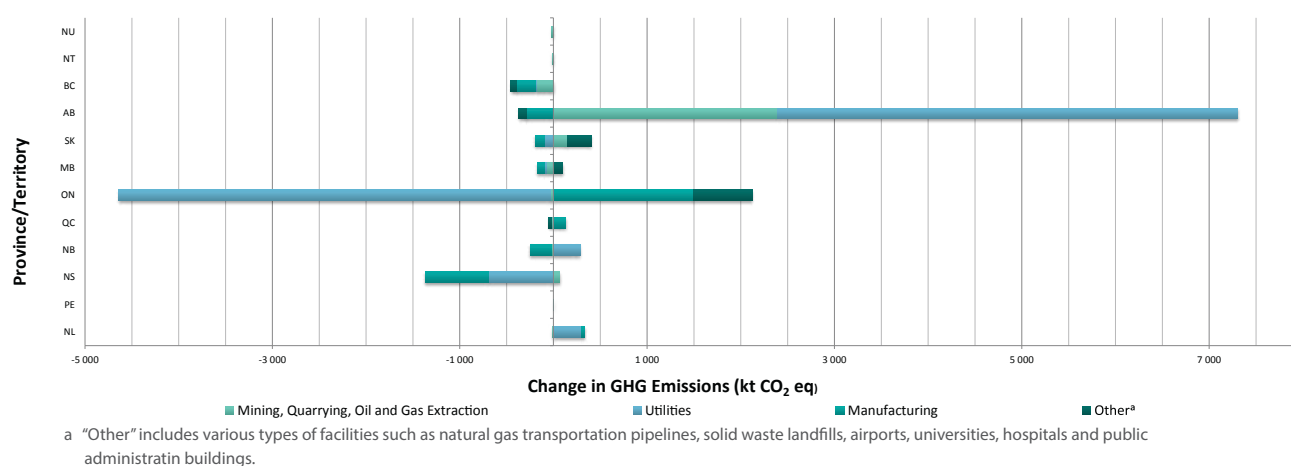
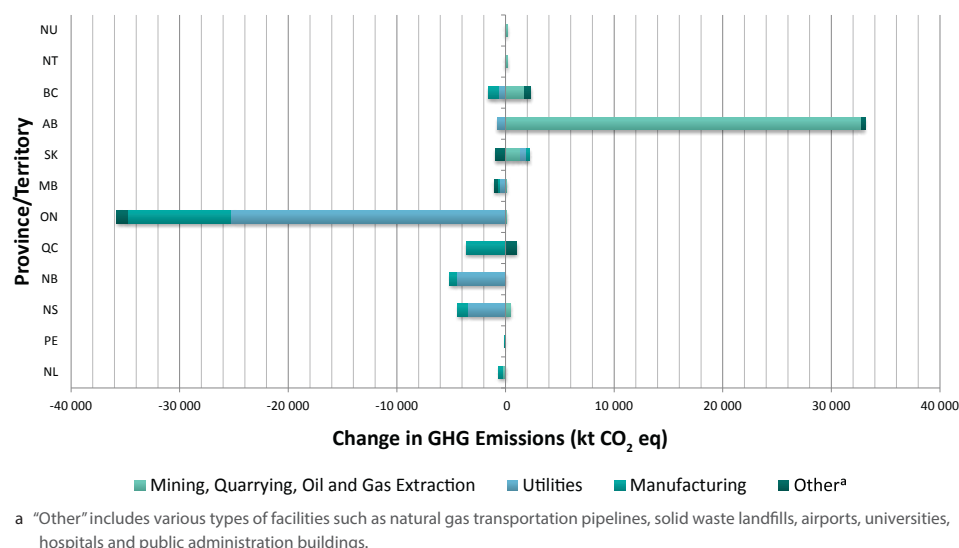


Figure 10: Provincial/Territorial Long-Term Change, 2005–2014



provincial/territorial short-term change (2013–2014). Emissions in recent years (2010–2014) showed no discernible trends for Quebec, Manitoba, New Brunswick, Newfoundland and Labrador, Saskatchewan, or British Columbia (Table 4).

Over the short term (2010–2014), emissions from Ontario-based facilities decreased by 13 Mt. The 14.8-Mt decrease in emissions from fossil fuel electric power generation in that period is largely due to the closure of coal plants.

Alberta experienced a 16-Mt increase in overall emissions since 2010, largely due to an increase in emissions from non-conventional oil extraction (13 Mt). Although there has been a decrease in emissions from fossil fuel electric power generation since 2005 (0.5 Mt), 2014 saw an increase of 5 Mt, as shown in Figure 9. This was due to the fact that a number

of coal-fired facilities expanded or became fully operational in 2014.

Over the 2005–2014 period, the overall emissions from reporting facilities in Nova Scotia gradually decreased, with the latest decrease from 2013 to 2014 (1.3 Mt) resulting mainly from emission reductions from coal-fired plants and the closure of a petroleum refinery in 2013.

3.2.2 Long-Term Trends

The provincial/territorial long-term trend (i.e., since 2005) for all reporting facilities indicates an overall decline in facility-reported emissions for seven of the provinces and territories (Figure 10).

The Utilities sector was largely responsible for this decline, with emission reductions of 25 Mt in Ontario, 4.5 Mt in New Brunswick and 3.5 Mt in Nova Scotia over this period. Ontario also saw a net decrease of 10 Mt in emissions from the Manufacturing sector, largely observed in cement, iron/steel and chemical manufacturing (e.g. halted adipic acid production in 2009). Quebec showed an overall decrease in emissions of 2.6 Mt since 2005, with aluminium production and petroleum refining facilities in the Manufacturing sector contributing the most to this provincial change. Manitoba, Newfoundland and Labrador, and Prince Edward Island had smaller decreases in emissions, ranging from 0.05 to 0.95 Mt.

Alberta had a 32-Mt net increase in emissions, while Saskatchewan exhibited a minor overall emission increase of 1.3 Mt. In both provinces, these increases were led by facilities in the Mining, Quarrying, and Oil and Gas Extraction sector. British

Columbia and the Northwest Territories showed slight overall increases in facility-reported emissions, ranging from 0.2 to 0.74 Mt.

3.3 Industry Sector Trends

The summary of facility-reported emissions by NAICS industry sector provides a picture of the types of facilities (mostly industrial operations) that report to the GHGRP in response to the annual GHG reporting requirements (Table 5). Over the 2005–2014 period, facilities engaged in oil and gas extraction and electricity generation continue to account for a significant portion of reported emissions (ranging from 59% to 63%). Their respective contribution to the total emissions has changed over this period, with electricity generation dropping from 44% to 33% and oil and gas extraction increasing from 15% to 29%.

Table 5: Reported GHG Emissions by NAICS Industry Sector, 2005–2014

NAICS ^a Industry Sector	2005	2006	2007	2008	2009 ^b	2010	2011	2012	2013	2014
Total^c	278	272	277	263	253	263	256	259	261	264
21 - Mining, Quarrying, and Oil and Gas Extraction	48	53	55	55	62	69	72	78	82	84
Conventional oil and gas extraction	14	14	13	12	15	15	15	14	15	16
Non-conventional oil extraction ^d	28	34	35	36	42	47	49	55	59	61
Coal mining	2	2	2	2	2	3	3	3	3	3
Metal ore mining	3	3	3	3	3	3	3	4	4	3
Non-metallic mineral mining and quarrying	1	1	1	1	1	1	2	2	2	2
22 - Utilities	123	116	122	113	103	106	94	90	89	89
Electric power generation	122	114	120	112	101	103	92	88	86	87
Natural gas distribution	1	1	1	1	2	2	2	2	2	2
Water, sewage and other systems ^e	0.12	0.10	N/A	0.11	0.54	0.44	0.47	0.51	0.52	0.52
31-33 Manufacturing	92	89	87	84	74	77	78	79	76	76
Food and beverages	0.34	0.23	0.23	0.22	0.65	1	1	1	1	1
Wood products	N/A	N/A	N/A	N/A	0.14	0.15	0.10	0.11	0.17	0.16
Paper	5	4	5	4	4	4	4	4	5	5
Petroleum and coal products	20	20	20	19	19	18	17	17	17	17
Basic chemical manufacturing	13	12	12	12	11	10	11	11	11	11
Resin, synthetic rubber, synthetic fibres and filaments	0.07	N/A	N/A	N/A	0.2	0.22	0.20	0.20	0.20	0.20
Pesticide, fertilizer, other agricultural chemicals	6	6	6	6	5	6	6	6	6	6
Cement and concrete products	13	13	13	12	9	10	10	11	10	10
Lime and gypsum product manufacturing	3	3	3	3	2	2	2	2	2	2
Iron and steel mills and ferro-alloys	17	17	17	17	11	14	14	15	13	14
Primary production of alumina and aluminium	10	9	9	9	8	8	8	8	8	7
Non-ferrous metal (except alum.) smelting and refining	3	3	2	2	2	2	2	2	2	2
Other manufacturing ^f	1	1	1	0.39	1.40	2	2	2	2	2
Other^g	15	14	14	12	13	12	12	13	14	15
Pipeline transportation of natural gas	12	11	10	8	7	6	7	6	8	9
Support activities for air transportation	N/A	0.12	0.13	0.09	0.10	0.07	0.07	0.06	0.05	0.06
Waste management and remediation services	3	3	3	3	5	5	5	5	5	5
Institutional facilities	N/A	0.02	N/A	N/A	0.38	0.50	0.55	0.65	0.62	0.62

Notes:

- Facilities required to report to the GHGRP provide a primary NAICS code that describes the main activities occurring at the facility.
 - The reporting threshold changed in 2009 from 100 kt to 50 kt.
 - Totals may not add up due to rounding.
 - Includes facilities engaged in oils sands mining, in-situ bitumen production and upgrading.
 - Includes sewage treatment facilities, heating and steam generation plants.
 - Not a NAICS sector but a grouping of various NAICS codes reported by facilities engaged in other types of manufacturing such as Electrical Equipment, Transportation Equipment and Furniture Manufacturing.
 - Not a NAICS sector but a grouping of various NAICS codes reported by the following types of facilities: natural gas transportation pipelines, solid waste landfills, airports and institutional facilities (universities, hospitals and public administration buildings).
- N/A = not available.

3.3.1 Short-Term Changes

Changes between 2013 and 2014 are generally consistent with observed trends since 2010, such as the sustained emission increase in the Mining, Quarrying, and Oil and Gas Extraction sector (an increase of 15 Mt over the period) (Table 5). The steady decline in total emissions from electric power generation since 2010 levelled off in 2013 and 2014, with the continued reduction of emissions from coal-fired facilities in Ontario being offset by increased emissions from similar facilities in Alberta (Figure 9).

The 10 industry subsectors showing the largest changes in emissions between 2013 and 2014 are shown in Figure 11. Facilities in these subsectors account for just over 77% of the total 2014 emissions. Non-conventional oil extraction led overall changes, with an increase in emissions of 2.2 Mt, consistent with a 1.9% increase in synthetic crude oil production and a 20% increase in crude bitumen production.⁸ Iron and steel mills and ferro-alloy manufacturing experienced a 1.5-Mt increase, attributed to a higher production of steel.⁹ Pipeline transportation of natural gas demonstrated a minor change in emissions from 2013, which reflects an increase in natural gas deliveries.

3.3.2 Long-Term Trends

The long-term trend in reported emissions by NAICS industry sector shows that, since 2005, emissions from facilities in the Utilities and Manufacturing sectors have declined overall, while emissions from the Mining, Quarrying, and Oil and Gas Extraction sector have increased (Figure 12). In the Utilities sector, emissions from fossil fuel electric power generation have fallen significantly (37 Mt) (Figure 13), largely a result of a reduction in coal-fired electricity production in Ontario and smaller contributions from Nova Scotia and New Brunswick (Figure 10). Fuel switching (i.e., from coal to natural gas, a lower carbon fuel) and increased reliance on hydro, nuclear and renewable sources of generation are also contributors to the decrease in emissions.¹⁰

The non-conventional oil extraction subsector (including oil sands mining, in-situ bitumen production and upgrading) showed the largest overall increase in emissions (33 Mt) since 2005, reflecting this sector's steady growth trend (Table 5). Over the 2005 to 2014 period, non-upgraded bitumen and synthetic crude oil production increased by 180% and 75%, respectively.⁸

Emissions from the Manufacturing sector remain well below their 2005 levels. The industry continues to rebound from the 2009 recession, which caused reduced production and plant operation slowdowns.¹¹ Although sales and prices in this sector have been

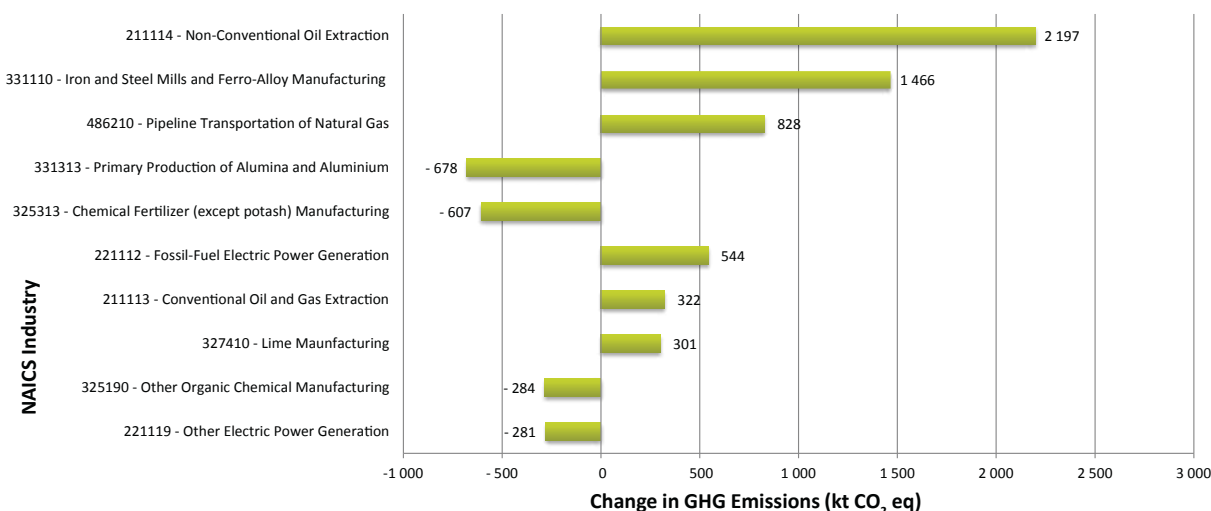
8 [AER] Alberta Energy Regulator. 2015. Alberta's Energy Reserves 2014 and Supply/Demand Outlook 2015–2024: ST98-2015. Available online at www.aer.ca/data-and-publications/statistical-reports/st98

9 Statistics Canada. Report on Energy Supply–Demand in Canada (Annual). Catalogue No. 57-003-XIB.

10 Statistics Canada CANSIM 2005–2014, Table 127-0002: Electric power generation, by class of electricity producer (annual).

11 Based on 2014 data obtained from facilities by the GHGRP.

Figure 11: Top 10 Short-Term Changes by NAICS Industry Subsector, 2013–2014



increasing in recent years, sales are still not yet at the levels seen in 2005.¹²

Natural gas transportation pipeline facilities, captured under the “Other” category, are the main contributors to emissions in this category. Between 2005 and 2010, emissions from these facilities decreased by 6 Mt, with smaller emission increases occurring in more recent years.

4 Facility-Reported Emissions and the National GHG Inventory

The total facility-reported GHG emissions for 2014 collected under the GHGRP represent just over one third (36%) of Canada’s total GHG emissions in 2014 (732 Mt) and over half (56%) of Canada’s industrial GHG emissions,¹³ as reported in

12 Statistics Canada, Manufacturing: The Year in Review, 2014. Available online at www.statcan.gc.ca/daily-quotidien/150902/dq150902a-eng.pdf.

13 In this overview report, Canada’s industrial GHG emissions include emissions from the following GHG categories from the *National Inventory Report 1990–2014: Greenhouse Gas Sources and Sinks in Canada*: Stationary Combustion Sources (except Residential), Other Transportation, Fugitive Sources, Industrial Processes and Product Use, and Waste.

Figure 12: Long-Term Sectoral Trend, 2005–2014

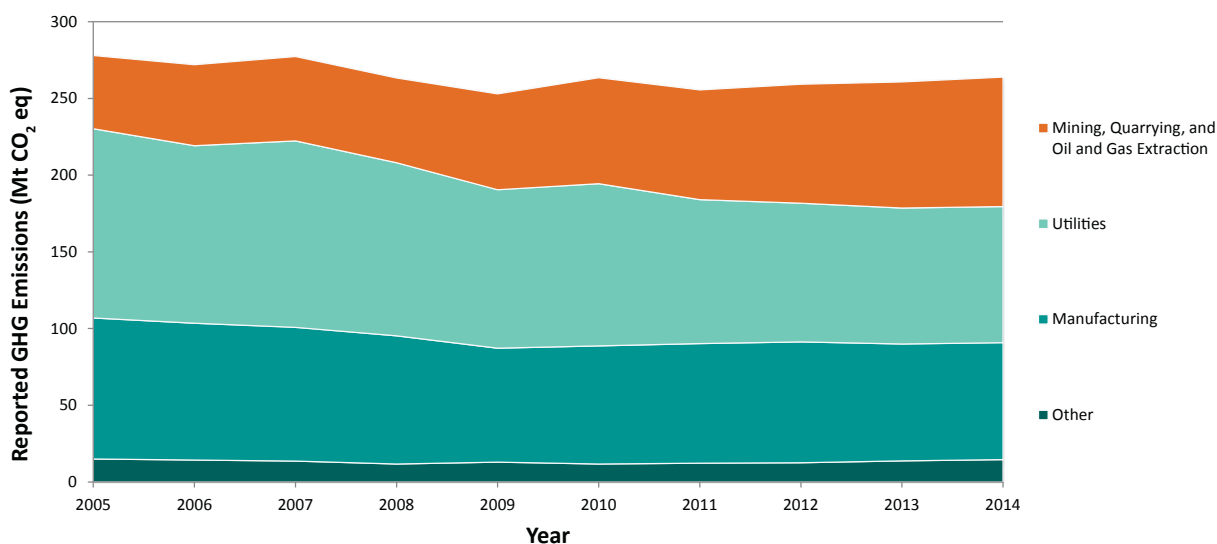
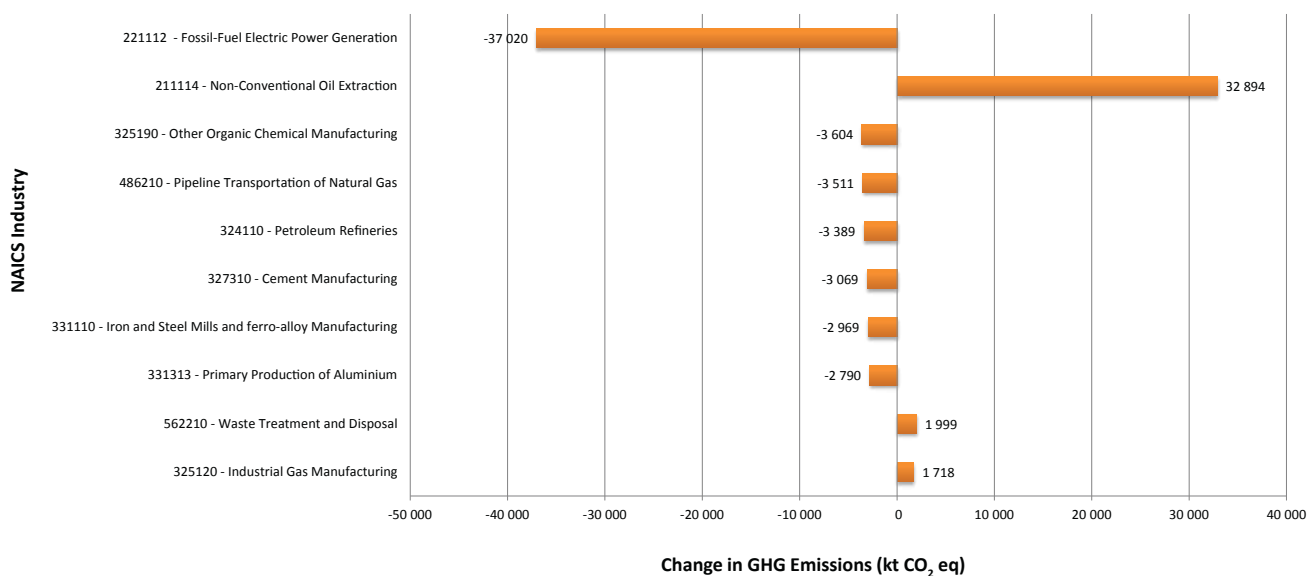


Figure 13: Top 10 Long-Term Changes by NAICS Industry Subsector, 2005–2014



Canada's latest National Inventory Report (NIR).¹⁴ The GHGRP applies to the largest GHG-emitting facilities (mostly industrial) and does not cover other sources of GHG emissions (e.g. road

transportation, agricultural sources), whereas the NIR is a complete accounting of all GHG sources and sinks in Canada.

When comparing the provincial and territorial contribution to the facility-reported total from the GHGRP with the national total from the NIR, the distribution of emissions by province shows a similar pattern (Figure 14). Alberta has the highest

14 Canada's latest NIR, the *National Inventory Report: Greenhouse Gas Sources and Sinks in Canada 1990–2014*. Available online at: www.ec.gc.ca/ges-ghg/default.asp?lang=En&n=83A34A7A-1.

Figure 14: Provincial/Territorial Contribution to 2014 Facility-Reported (GHGRP) Total and NIR Total

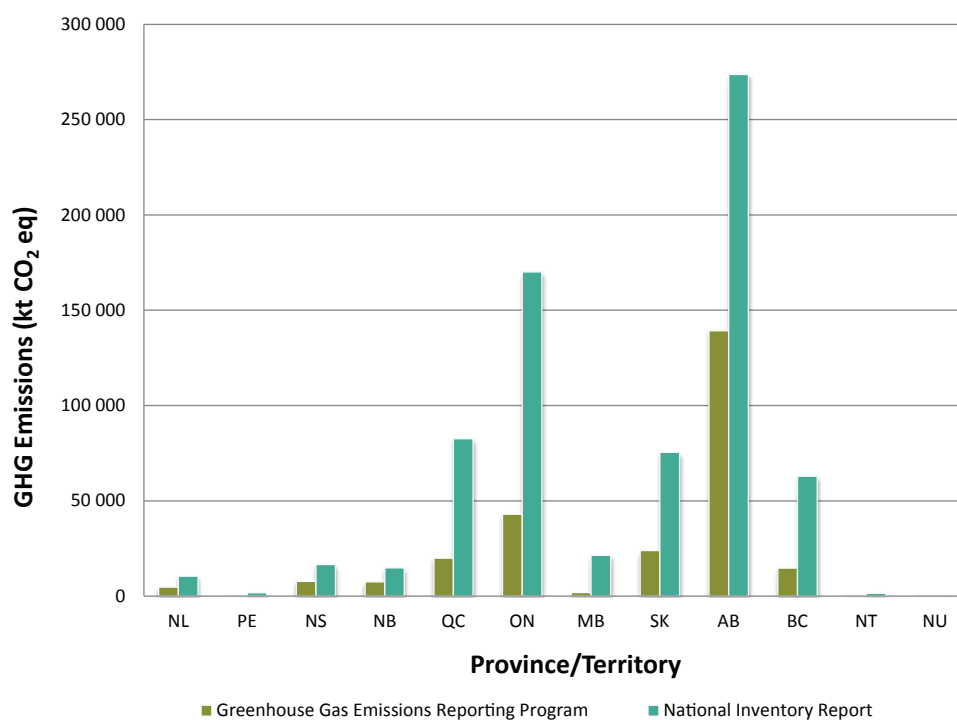
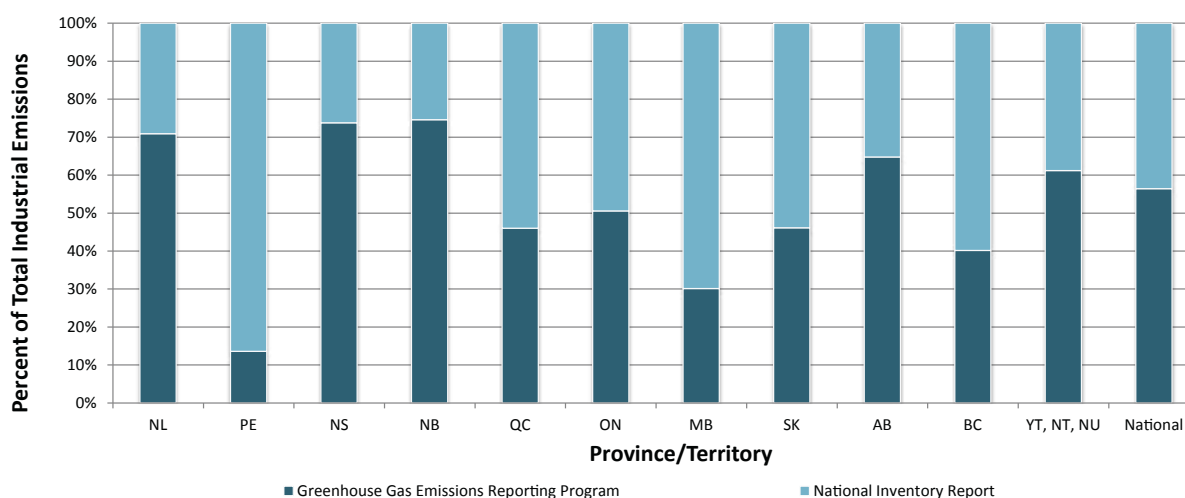


Figure 15: 2014 Facility-Reported Emissions as a Percentage of National and Provincial/Territorial Industrial GHG Emissions^a (from the NIR)



a In this overview report, Canada's industrial GHG emissions include the following GHG categories from the National Inventory Report, Greenhouse Gas Sources and Sinks in Canada 1990–2014: Stationary Combustion Sources (except Residential), Other Transportation, Fugitive Sources, Industrial Processes and Product Use, and Waste.

emissions, followed by Ontario, Quebec and Saskatchewan. This pattern of industrial emissions reflects the concentration of large industrial facilities in certain provinces relative to others and the use of fossil fuels for energy production.

Although the facility-reported emissions may capture 56% of industrial GHG emissions nationally, the degree of coverage at the provincial level varies significantly from province to province (Figure 15), due to the size and number of industrial facilities in each province that have emissions above the 50-kt CO₂ eq reporting threshold.

Where appropriate, the facility-reported emissions data are used by Environment and Climate Change Canada to confirm inventory estimates developed from national and provincial statistics in the NIR. The NIR is produced and submitted annually by Canada to the UNFCCC. The extent to which the facility-reported GHG emissions data could be fully integrated into the NIR is dependent on the level of detail and type of data available.

5 Additional Information About the GHGRP

5.1 Data Quality

Facilities that meet the GHG reporting requirements under the GHGRP must ensure that the reported data are reliable. Facilities are required by law to submit information that is true, accurate and complete to the best of their knowledge. CEPA sets out penalties for companies that fail to report or that knowingly submit false or misleading information. Reporters have a legal obligation to keep copies of the information submitted, along with any calculations, measurements and other data on which the information is based. All information must be kept for a period of three years from the date on which it was required to be reported to Environment and Climate Change Canada.

The data provided within this report are for information purposes only. Environment and Climate Change Canada conducted a number of data quality checks of the submitted data for compliance purposes and for completeness, and will continue to analyze the data, which may result in periodic updates.

5.2 Public Access

The GHGRP provides public access to information from all facilities that reported GHG emissions to the program through an annual online publication. In addition to this summary report, the facility-level data are presented in the form of tables, a searchable database and a downloadable format. Users can

search by emissions of a specific gas or emissions of all gases, by facility name or National Pollutant Release Inventory (NPRI) identification number, by reporting company, by province/territory or city, or by industry sector, using the NAICS6 code. Users can also access a Web-based mapping tool on the Canadian Environmental Sustainability Indicators website, which shows where reporting facilities are located in Canada.

To access the data or obtain further information on the GHGRP or National Greenhouse Gas Inventory program, consult the following websites:

Reported Facility GHG Data

www.ec.gc.ca/ges-ghg/default.asp?lang=En&n=8044859A-1

Reporting to the GHGRP

www.ec.gc.ca/ges-ghg/default.asp?lang=En&n=F3E7B38E-1

Canada's National GHG Inventory

www.ec.gc.ca/ges-ghg/default.asp?lang=En&n=83A34A7A-1

Canadian Environmental Sustainability Indicators

www.ec.gc.ca/indicateurs-indicators/default.asp?lang=en&n=31022B8E-1

5.3 Links to Other Programs

The GHGRP is similar to, yet distinct from, the NPRI. Although both programs are delivered by Environment and Climate Change Canada under the authority of section 46 of CEPA 1999, the NPRI collects data from facilities on pollutant releases (to air, water and land), disposals and transfers for recycling, whereas the GHGRP collects data from facilities on GHG emissions. Facilities reporting to the GHGRP are asked to report their NPRI identification number to facilitate searching and comparison of emissions from facilities that report to both programs.

A number of provincial jurisdictions also require facilities to report GHG emissions information annually under specific provincial regulations. Efforts have been undertaken to streamline the reporting process between the national and various provincial jurisdictions, resulting in the launch of a single-window reporting system to help reduce the reporting burden on industry and the overall cost to government. This single-window system allows one-time entry for information commonly required at both levels, while accommodating for requirements that are jurisdiction-specific. Provinces currently using this reporting system include Alberta, British Columbia and Ontario. The province of New Brunswick will be collecting facility data via the single-window reporting system in 2016 (for 2015 data).

6 Contact Us

If you have questions about this report or need more information about its contents, please contact the GHGRP:

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Fax: 1-819-938-5280
Website: www.ec.gc.ca/ges-ghg/default.asp?lang=En&n=040E378D-1

Additional information can be obtained at:

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Gatineau QC K1A 0H3

Telephone: 1-800-668-6767 (in Canada only) or 819-997-2800

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