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Facility Greenhouse Gas Emissions Reporting Program

Overview of Reported **2011** Emissions

April 2013



Canada

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Highlights

- For the 2011 calendar year, 539 facilities reported their greenhouse gas (GHG) emissions to Environment Canada, totalling 254 megatonnes (Mt) of carbon dioxide equivalent (CO₂ eq).¹ The main emission sources contributing to this reported total are stationary fuel combustion and industrial processes, accounting for 76% and 15% of the combined total for carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O).
- Total facility-reported emissions decreased overall by 3% (8 Mt) from a slightly revised 2010 total of 262 Mt. This decrease is largely stemming from a 12 Mt decrease in emissions from fossil-fuel electric power generation facilities, lessened by emission increases in oil and gas and manufacturing sectors, including the non-conventional oil extraction sector, natural gas pipelines and chemical manufacturers.
- Since 2005, total emissions from all reporting facilities have decreased overall by 8%. Ontario-based facilities within the Utilities and Manufacturing sectors experienced the largest declines (18 Mt and 9.5 Mt) over this 7-year period, while emission increases occurred within the Mining, Quarrying and Oil and Gas Extraction sector, largely in Alberta. The majority of other provinces show overall decreases in facility-reported totals, ranging from less than 1 Mt to 5 Mt.
- The GHG emissions data collected from facilities represent just over one-third (36%) of Canada's total GHG emissions in 2011 (702 Mt) and 57% of Canada's industrial GHG emissions.² The degree of coverage of provincial industrial emissions varies significantly from province to province, depending on the size and number of industrial facilities in each province that have emissions above the 50 kt CO₂ eq reporting threshold.

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

2 In this overview report, Canada's industrial GHG emissions include the following GHG categories from the *National Inventory Report 1990–2011: Greenhouse Gas Sources and Sinks in Canada*: Stationary Combustion Sources (except Residential), Other Transportation, Fugitive Sources, Industrial Processes and Waste.

1 Facility Greenhouse Gas Emissions Reporting Program

Environment Canada's Facility Greenhouse Gas Emissions Reporting Program (GHGRP) has completed the collection of GHG emissions information from Canadian facilities for the 2011 calendar year. Any facility with annual GHG emissions of 50 kt CO₂ eq or higher³ is required to report to the program. The reporting requirements for 2012 data scheduled to be submitted by facilities to Environment Canada this year (by June 1, 2013) are set out in the *Notice*

*with respect to reporting of greenhouse gases (GHGs) for 2012*⁴ published in the *Canada Gazette*.

The Government of Canada established the GHGRP in March 2004 to collect GHG emissions information annually from the largest emitting Canadian facilities on a mandatory basis. To date, facility-reported GHG information has been collected through Environment Canada's GHGRP for the period 2004 to 2011. This program is part of Canada's ongoing effort to develop, in collaboration with the provinces and territories, a harmonized and efficient mandatory GHG reporting system that minimizes duplication and reporting burden for both industry and governments. The program's four main objectives are: to provide Canadians with information on GHG emissions, to validate estimates presented in the National Greenhouse Gas Inventory, to support provincial and territorial requirements for GHG

3 The reporting threshold was reduced from 100 kt to 50 kt in 2009, increasing the number of facilities reporting to the program by 49% with a corresponding 4% increase in the level of emissions being reported.

4 This Notice can be viewed at www.gazette.gc.ca/rp-pr/p1/2012/2012-09-22/html/notice-avis-eng.html#d104.

emissions information, and to support the development of regulations. The data used in this overview report are current as of December 6, 2012. Subsequent company updates will be included in future data releases.

2 Analysis of Reported 2011 Greenhouse Gas Emissions Information

Please note: Unless explicitly stated otherwise, all emissions data presented in this report are expressed in carbon dioxide equivalent (CO₂ eq) units.

2.1 Reported GHG Emissions by Gas and by Source

A total of 539 facilities reported GHG emissions to Environment Canada for the 2011 calendar year, collectively emitting a total of 254 Mt of GHGs.⁵ Of these facilities, 306 reported GHG emission levels greater than 100 kt, accounting for 95% of the total reported emissions and

55 emitted GHGs in quantities higher than 1 Mt, accounting for 62% of the total reported emissions. There were 28 facilities that reported their GHG emissions for the first time, their combined emissions accounting for 0.7% of the reported total. Facilities with emissions falling below the reporting threshold of 50 kt per year can voluntarily report their GHG emissions; 46 facilities did so this year. Reported emissions from voluntary reporters are included in this report and in the dataset published by Environment Canada.

Carbon dioxide (CO₂) represented the majority of the total reported emissions (94%) while methane (CH₄) and nitrous oxide (N₂O) emissions each contributed an additional 4% and 1% respectively (Figure 1). 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%.

GHG emissions are often calculated and reported in terms of how much CO₂ would be required to produce a similar warming effect. This is called the carbon dioxide equivalent (CO₂ eq) value and is calculated by multiplying the amount of the gas by its associated global warming potential (GWP) (Table 1).⁶ For example, the GWP for CH₄ is 21,

⁶ GHGs are not equal in the effect they have on the atmosphere. Each GHG has a unique average atmospheric lifetime and heat-trapping potential. The GWPs used by the GHGRP are consistent with those used in Canada's national GHG inventory and a complete list of GWPs is found in the *Notice with respect to reporting of greenhouse gases (GHGs) for 2011*.

⁵ 1 Mt = one million tonnes or one thousand kilotonnes (kt).

Figure 1: Reported 2011 GHG emissions by gas (254 Mt CO₂ eq)

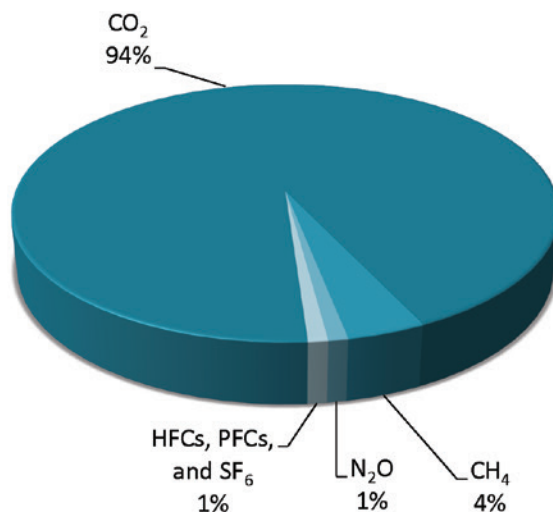
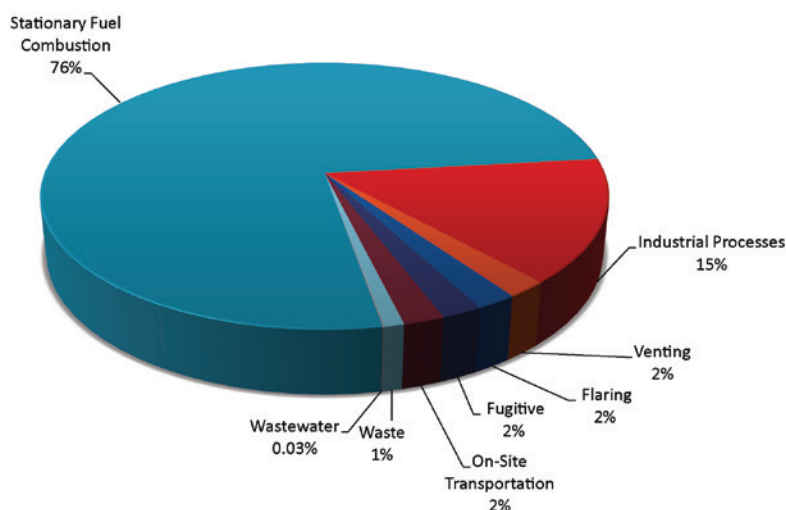


Table 1: GHGs and Global Warming Potentials (GWPs)

Greenhouse Gas	100-year GWP
Carbon dioxide (CO ₂)	1
Methane (CH ₄)	21
Nitrous oxide (N ₂ O)	310
Sulphur hexafluoride (SF ₆)	23 900
Hydrofluorocarbons (HFCs), 13 species	Ranges from 140 to 11 700
Perfluorocarbons (PFCs), 7 species	Ranges from 6 500 to 9 200

Figure 2: Reported 2011 GHG emissions by source (CO₂, CH₄ and N₂O included)

which means that each tonne of CH₄ emitted is considered to have a cumulative warming effect over the next 100 years equivalent to emitting 21 tonnes of CO₂.

When reporting their GHG emissions to the GHGRP, facilities are required to report emissions of CO₂, CH₄ and N₂O according to the following eight source categories⁷: stationary fuel combustion, industrial processes, venting, flaring, fugitive, on-site transportation, waste and wastewater. Stationary fuel combustion is the largest source of these emissions, representing 76% of the total reported emissions (Figure 2). 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 combustion from 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 15%, refer to emissions stemming from specific industrial processes involving chemical or physical reactions other than combustion. Examples of such industrial processes include mineral production (e.g. lime, cement), metal production (e.g. iron, steel, aluminium) and chemical production (e.g. adipic acid, nitric acid).

2.2 Reported GHG Emissions by Province/Territory and by Sector

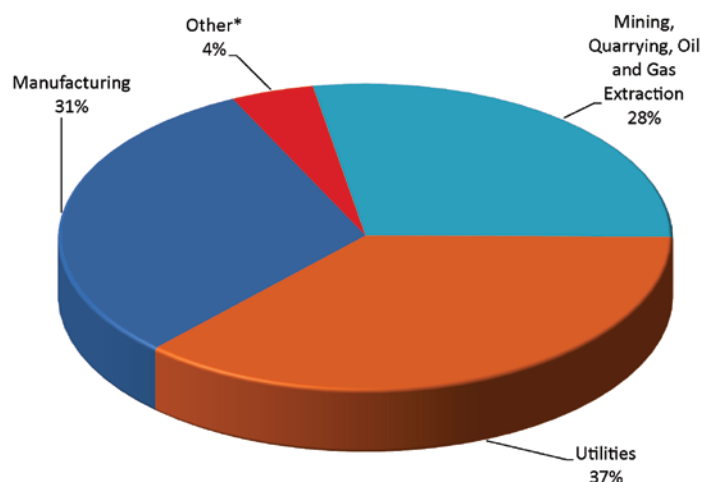
Facilities in Alberta accounted for the largest share of reported emissions, with approximately 48% of the total, followed by Ontario with 19%. Next were Saskatchewan and Quebec, which accounted for 9% and 8% of reported emissions respectively (Table 2).

⁷ Additional information on these emission source categories can be found in the *Technical Guidance on Reporting Greenhouse Gas Emissions*, available at www.ec.gc.ca/ges-ghg/default.asp?lang=En&n=90113F7F-1.

Table 2: Reported 2011 GHG emissions by province/territory

Province/Territory	Number of Facilities	Total Emissions (kt CO ₂ eq)	Percentage of Total Emissions
Newfoundland and Labrador	8	4 255	2%
Prince Edward Island	1	65	0.02%
Nova Scotia	13	9 893	4%
New Brunswick	13	7 854	3%
Quebec	78	20 199	8%
Ontario	141	49 310	19%
Manitoba	14	2 020	1%
Saskatchewan	36	22 461	9%
Alberta	160	123 271	48%
British Columbia	69	14 227	6%
Northwest Territories	4	554	0.20%
Nunavut	2	199	0.08%
Total	539	254 308	100%

Figure 3: Reported 2011 GHG emissions by industry sector (254 Mt CO₂ eq)



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

When completing a report for the GHGRP, a reporter is required to identify the main activities occurring at its facility using the North American Industry Classification System (NAICS).⁸ In 2011, three NAICS-defined industrial sectors accounted for the majority of GHG emissions: Utilities, primarily those generating electricity from fossil fuels,

representing 37% (94 Mt); Manufacturing, accounting for 31% (78 Mt); and Mining, Quarrying, and Oil and Gas Extraction, accounting for 28% (71 Mt) (Figure 3). Further breakdowns of the reported emissions from these main sectors are provided in Figure 4 to Figure 6. The remaining 4% (11 Mt) of emissions captured under "Other" were reported by various types of facilities, mainly stemming from natural gas transportation pipelines (6 Mt) and solid waste landfills (4 Mt).

Facilities reporting under the Utilities sector include electric power generating facilities, natural gas distribution

⁸ The NAICS is an industry classification system that was developed by the statistics agencies of Canada, the USA and Mexico to enable the respective national agencies to collect comparable statistical data. The NAICS is a comprehensive system encompassing 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.

Overview of the Reported 2011 Greenhouse Gas Emissions

pipelines, sewage treatment facilities, heating plants and steam generation plants.

The Manufacturing sector includes, but is not limited to, facilities engaged in cement and lime manufacturing; pulp and paper mills (within Wood Product and Paper

Manufacturing in Figure 5); petroleum refineries; chemical manufacturing; and iron, steel, aluminum and base metals (e.g. copper, nickel, zinc) production. Base metals production falls within the subsector Non-ferrous Metal (except Aluminum) Production and Processing.

Figure 4: Reported 2011 GHG emissions by subsectors of Utilities (94 Mt CO₂ eq)

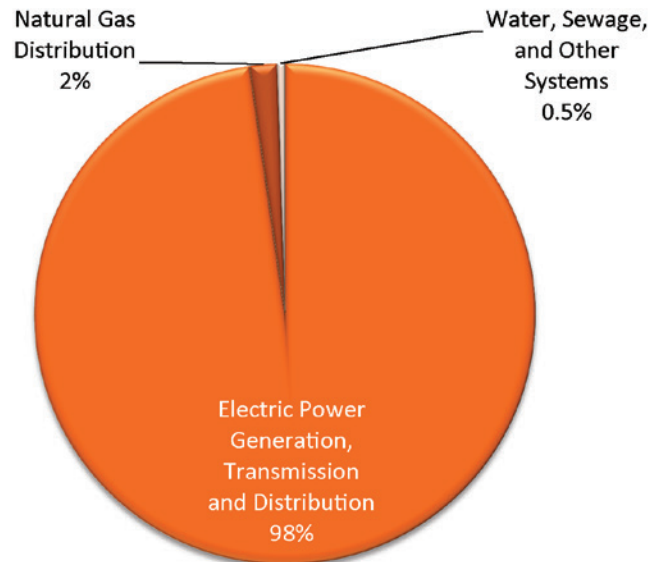
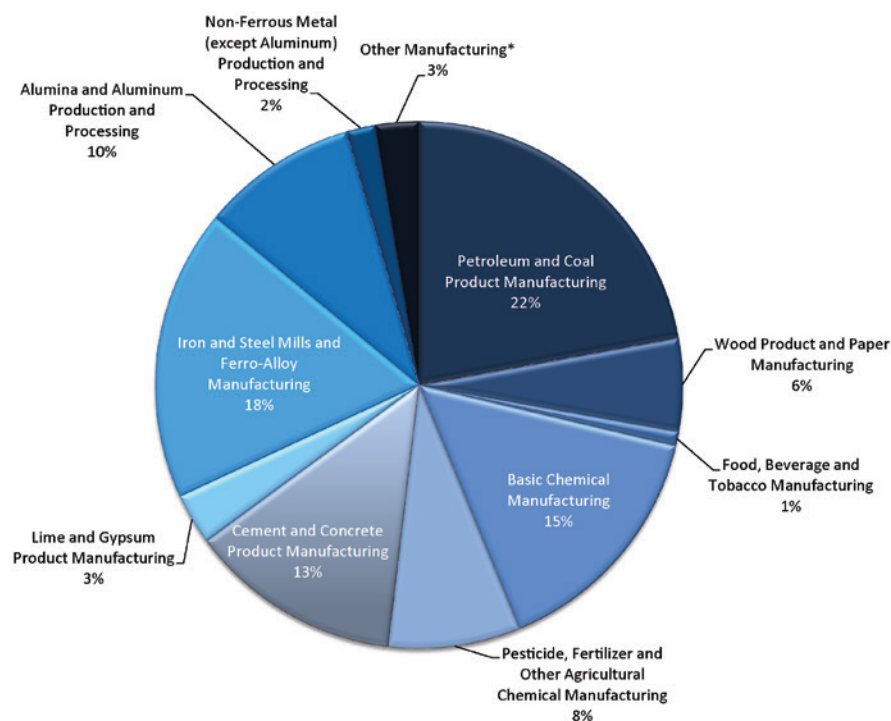


Figure 5: Reported 2011 GHG emissions by subsectors of Manufacturing (78 Mt CO₂ eq)



*"Other Manufacturing" represents other types of manufacturing including Electrical Equipment, Transportation Equipment, Furniture Manufacturing.

Figure 6: Reported 2011 GHG emissions by subsectors of Mining, Quarrying, and Oil and Gas Extraction (71 Mt CO₂ eq)

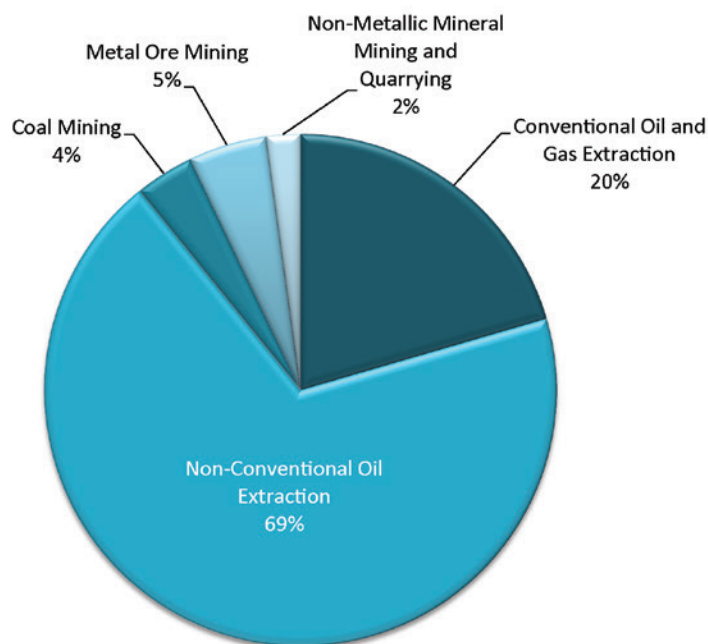
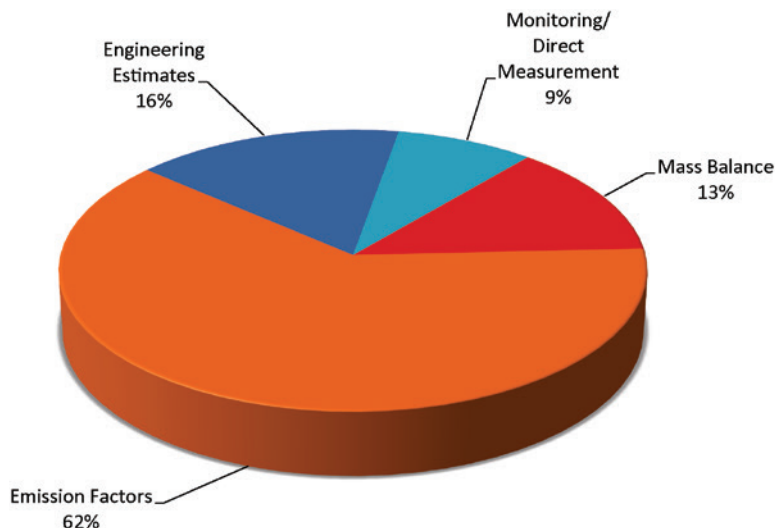


Figure 7: Types of methods used by facilities



Activities of reporting facilities within Mining, Quarrying, and Oil and Gas Extraction include: production of petroleum and natural gas using conventional extraction methods; oil sands mining, in-situ bitumen production and upgrading (falls within Non-Conventional Oil Extraction); and mining of coal, iron ore, other metals, potash and diamonds (potash and diamond mining fall within the Non-metallic Mineral Mining and Quarrying subsector).

2.3 Calculation Methodology

There are a number of methods that a facility may choose to use to calculate its GHG emissions. The methods selected by reporting facilities must be consistent with the guidelines adopted by the United National Framework Convention on Climate Change and developed by the Intergovernmental Panel on Climate Change for use in the

preparation of Canada's national GHG inventory. 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).

Overall, the methodology incorporating the use of EFs was the preferred method used by many facilities (Figure 7). 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 the burning of a specific fuel type or the production of a specific industrial product. The EFs used may be average, general or technology-specific. It should be noted that many facilities used multiple types of calculation methods to determine their emissions.

262 Mt.⁹ CO₂ emissions decreased by 3% (8 Mt), CH₄ emissions increased by 2% (0.2 Mt), and N₂O emissions decreased by 4% (0.1 Mt). Reported SF₆ emissions show the greatest percent change from 2010, with a 34% decrease in emissions (0.04 Mt). This was primarily driven by one facility, representing 98% of the overall decline in SF₆. Further changes in reported emissions include a 2% decrease (0.02 Mt) in PFCs and a 4% increase (0.02 Mt) in HFCs.

3 Short-term Change, 2010-2011

3.1 Short-term Change by Gas

Total facility-reported emissions decreased overall by 3% (8 Mt) relative to the revised 2010 reported total of

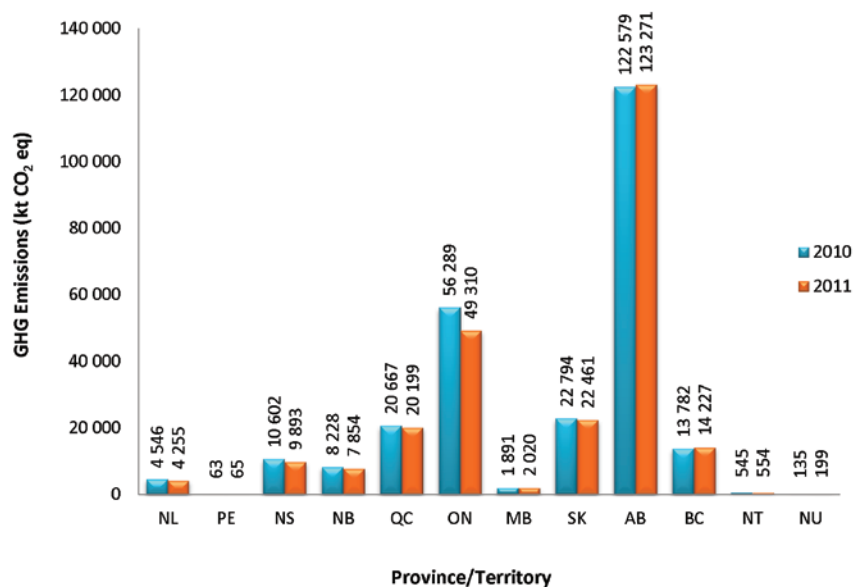
3.2 Short-term Change by Province/Territory

Between 2010 and 2011, half of the provinces/territories showed a decrease in the combined GHG emissions of all reporting facilities. Ontario experienced the largest reported decrease of 12% (7 Mt) (Figure 8). Reporting facilities located in Alberta, British Columbia, Manitoba, Nunavut, Northwest Territories, and Prince Edward Island demonstrated overall increases in combined emissions.

The net decrease of 7 Mt experienced by Ontario facilities is largely due to a decrease in emissions from fossil-fuel

⁹ A number of facilities submitted updates to GHG reports for previous years (e.g. 2010). Environment Canada includes these updates in its annual data release, resulting in some revisions to previously published data.

Figure 8: Provincial/territorial short-term change, 2010-2011



electric power generation (8 Mt), as well as a number of other small decreases in other sectors such as iron and steel mills and ferro-alloy manufacturing (0.1 Mt). The majority of other sectors show minor overall increases, with the largest increase experienced in petrochemical manufacturing (0.1 Mt).

Facilities reporting in Quebec and Saskatchewan show overall decreases in GHG emissions of 0.5 Mt and 0.3 Mt respectively. This is largely attributable to emission decreases from petroleum refineries in Quebec (88% of the total decrease) and from the fossil fuel electric power generation sector in Saskatchewan (63% of the total decrease).

The overall increase of 0.7 Mt experienced by facilities in Alberta is mainly due to an increase in non-conventional oil extraction (2 Mt), as well as slight increases in Manufacturing (0.8 Mt) and Other¹⁰ (0.1 Mt) sectors. The Utilities sector decreased its overall emissions by 2 Mt, led by fossil-fuel electric power generation facilities accounting for 87% of total decreases within the province.

British Columbia shows an overall increase in emissions of 0.4 Mt. Emission increases are observed in Mining, Quarrying, and Oil and Gas Extraction (0.6 Mt), Manufacturing (0.3 Mt) and Other¹⁰ (0.2 Mt) sectors. The overall increase was lessened by a 0.7 Mt decrease in GHG emissions by the Utilities sector.

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

3.3 Short-term Change by Sector

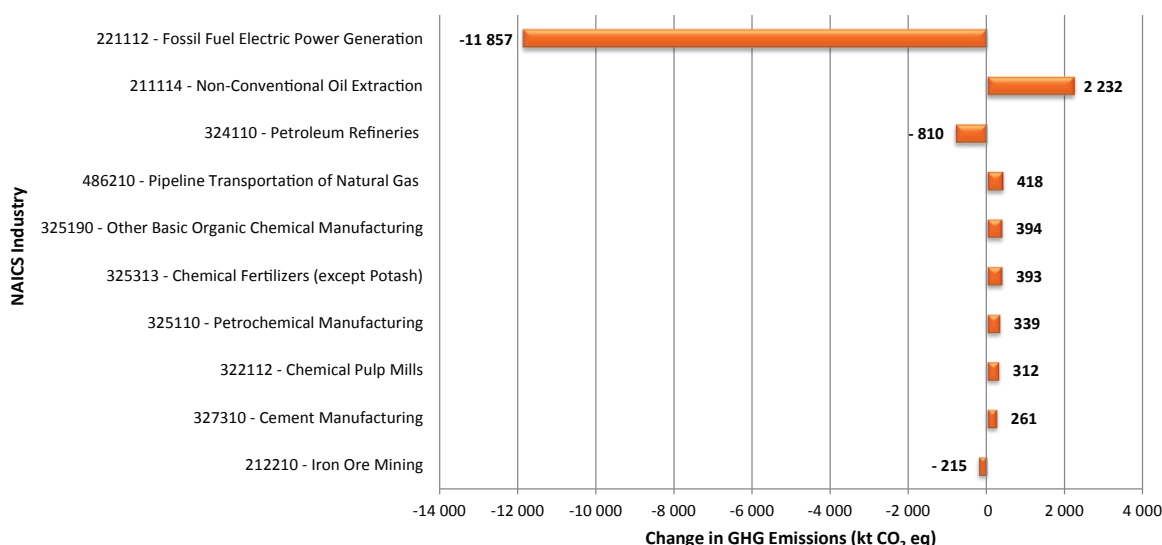
The Utilities sector was a key contributor to the overall decrease in facility-reported emissions since 2010, with a decrease of 11% (12 Mt) in emissions (Table 3). In contrast, facilities within the Mining, Quarrying, and Oil and Gas Extraction sector showed an overall increase of 4% (2.6 Mt) in emissions, while the Manufacturing sector experienced a 1% (1 Mt) increase. Facilities grouped under the "Other" category (including natural gas transportation pipelines, solid waste landfills, airports, universities, hospitals and public administration buildings) show an increase of 5% (0.5 Mt).

It should be noted that, between 2010 and 2011, there were 31 facilities that no longer reported their emissions and 28 facilities that reported their emissions for the first time. This change in the number of reporting facilities is not unexpected. A change in production levels, processes and technologies, the types of fuels used at a facility and facility start-ups/closures could all result in a change in the annual emissions reported. As a result, a facility may fall below or attain the reporting threshold of 50 kt CO₂ eq from one year to the next. This, however, did not contribute significantly to the overall change in emissions as the emissions stemming from these facilities are relatively small in magnitude. The emission changes experienced by many facilities that reported in both years can be largely attributed to changes in production levels, as indicated by facilities in their GHG reports.

Table 3: Short-term changes by NAICS¹ industry sector, 2010-2011

NAICS Industry Sector	Number of Facilities 2010	Number of Facilities 2011	2010 GHG Emissions (kt CO ₂ eq)	2011 GHG Emissions (kt CO ₂ eq)	Absolute Change in Emissions (kt CO ₂ eq)	Percent Change in Emissions
21 - Mining, Quarrying, Oil and Gas Extraction	159	160	68 464	70 977	2 513	4%
22 - Utilities	96	97	105 565	93 650	-11 915	-11%
31-33 - Manufacturing	221	223	77 364	78 438	1 074	1%
Other ²	62	61	10 726	11 242	516	5%
Total	538	539	262 119	254 308	-7 811	-3%

1. The NAICS is an industry classification system that was developed by the statistics agencies of Canada, the USA and Mexico to enable the respective national agencies to collect comparable statistical data. The NAICS is a comprehensive system encompassing 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.
2. "Other" includes various types of facilities such as natural gas transportation pipelines, solid waste landfills, airports, universities, hospitals and public administration buildings.

Figure 9: Top 10 short-term changes by NAICS industry sector, 2010-2011**Table 4: Long-term trend, 2005–2011**

	2005	2006	2007	2008	2009*	2010	2011
Number of facilities	337	345	352	351	534	538	539
GHG emissions (kt CO ₂ eq)	276 256	270 173	275 780	261 974	251 186	262 119	254 308
Annual change (%)	NA	-2%	2%	-5%	-4%	4%	-3%
Change since 2005 (%)	NA	-2%	-0.20%	-5%	-9%	-5%	-8%

* Reporting threshold changed in 2009.

Note: NA = not applicable.

The 10 industrial sectors showing the largest changes in emissions are displayed in Figure 9. Facilities within these sectors, accounting for just over 75% of the total 2011 emissions, reported an overall decrease in emissions of 9 Mt. The Fossil-Fuel Electric Power Generation sector led overall changes, with a decrease in emissions of 12 Mt. Petroleum refineries also reported a net decrease in emissions at 0.8 Mt. Facilities within Non-Conventional Oil Extraction and natural gas transportation pipelines experienced emission increases of 2 Mt and 0.4 Mt respectively.

4

Long-term Trend, 2005–2011

4.1

Summary of Total Emission Changes

Over the 2005-2011 period, total facility-reported emissions decreased by 8% (22 Mt), from 276 Mt to 254 Mt. The total number of facilities reporting increased in the same timeframe, from 337 in 2005 to 539 in 2011 (Table 4). Annual fluctuations have occurred in the number of facilities reporting over this timeframe, which is expected since emissions for some facilities may be below or above the reporting threshold in any given year, new facilities may begin operations and/or some facilities may shut down. The number of voluntary reporters may also change each year. The threshold was also reduced for the 2009 and subsequent reporting years from 100

to 50 kt, which resulted in a large increase in the number of facilities reporting their GHG emissions annually to Environment Canada. Since 2009, facilities with emissions under 100 kt have contributed annually, on average, 5% to the overall emission total.

4.2 Long-term Trend by Province/Territory

The provincial/territorial long-term change for all reporting facilities shows an overall decline in facility-reported emissions for most provinces and territories (Figure 10). The 29 Mt decline in emissions between 2005 and 2011 in Ontario is mostly due to a decrease of 18 Mt in the Utilities sector, followed by a decrease of 9.5 Mt in the Manufacturing sector. Emissions reported by facilities in New Brunswick declined by 4.8 Mt, primarily due to a 4.5 Mt decrease in emissions in the Utilities sector. Quebec and Nova Scotia also show overall decreases in emissions (2 Mt each) over the long-term, with facilities in the Manufacturing sector in Quebec and in the Utilities sector in Nova Scotia contributing the most to these provincial changes.

Alberta had a 17 Mt net increase in emissions, largely attributable to the increase in the Mining, Quarrying and Oil and Gas Extraction sector. British Columbia also

exhibited an overall emission increase of 0.5 Mt, led by facilities in Mining, Quarrying, and Oil and Gas Extraction.

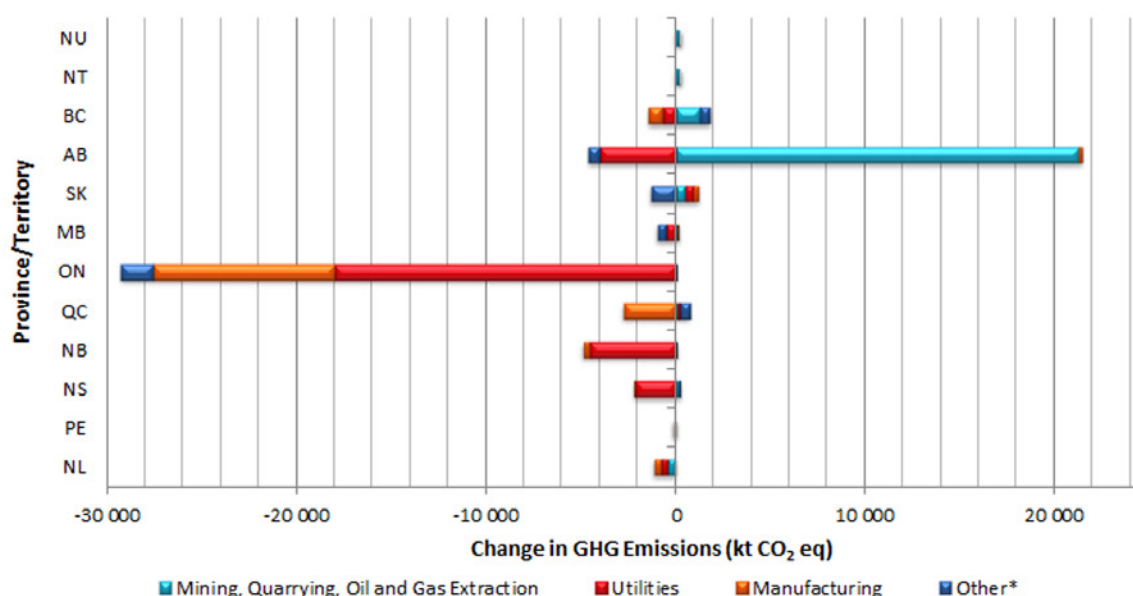
It is important to note that more facilities reported in 2011 than in 2005 due to the threshold drop in 2009, thus contributing, in part, to the observed changes in reported emissions by province/territory.

4.3 Long-term Trend by Sector

The long-term trend in reported emissions by NAICS¹¹ industry sector shows that emissions from facilities in the Utilities and Manufacturing sectors have declined overall, while emissions from Mining, Quarrying, and Oil and Gas Extraction have increased since 2005 (Figure 11). The Utilities sector exhibits significant variability that reflects the many factors affecting this sector, such as fuel costs (particularly oil and natural gas), weather, generation sources (nuclear, coal, hydro, wind), and demand by the manufacturing and residential sectors. Facilities captured

11 The NAICS is an industry classification system that was developed by the statistics agencies of Canada, the USA and Mexico to enable the respective national agencies to collect comparable statistical data. The NAICS is a comprehensive system encompassing 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 10: Provincial/territorial long-term change, 2005-2011



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

under the “Other” category (including natural gas transportation pipelines, solid waste landfills, airports, universities, hospitals and public administration buildings) exhibited an overall decline in emissions since 2005, largely dominated by the 5 Mt reduction from natural gas transportation pipelines.

One of the industry sectors illustrating the largest change in emissions from 2005 to 2011 is the fossil fuel electric power generation sector with a 32 Mt decline (Figure 12). One factor contributing to this decline in emissions is a reduction in coal-fired electric power generation in Ontario.

The non-conventional oil extraction sector (including oil sands mining, in-situ bitumen production and upgrading) shows the largest overall increase in emissions (21 Mt) since 2005, reflecting this sector’s steady growth trend over time (Table 5). Over the 2005 to 2011 period, crude bitumen and synthetic crude oil production increased by 64% and 58% respectively.¹²

Reported emissions from natural gas transportation pipelines have decreased by 5 Mt from 2005 to 2011 due to a

12 Energy Resources Conservation Board. 2012. Alberta’s Energy Reserves 2011 and Supply/Demand Outlook 2012-2021: ST98-2012. June 2012. Available online at www.ercb.ca/sts/ST98/ST98-2012.pdf

Figure 11: Long-term sectoral trend, 2005–2011

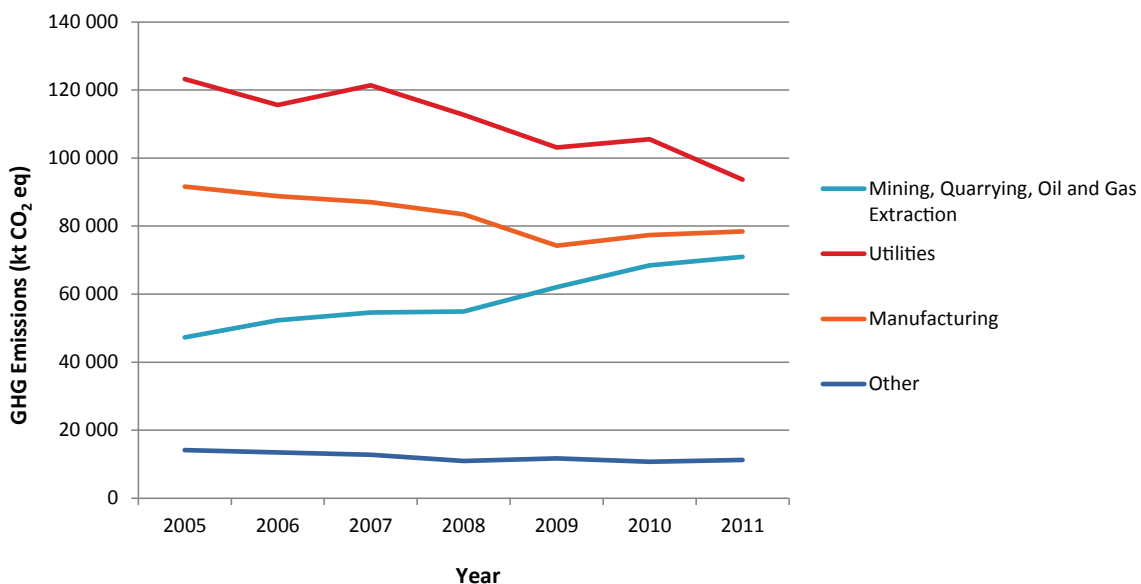


Figure 12: Top five long-term changes by NAICS industry sector, 2005–2011

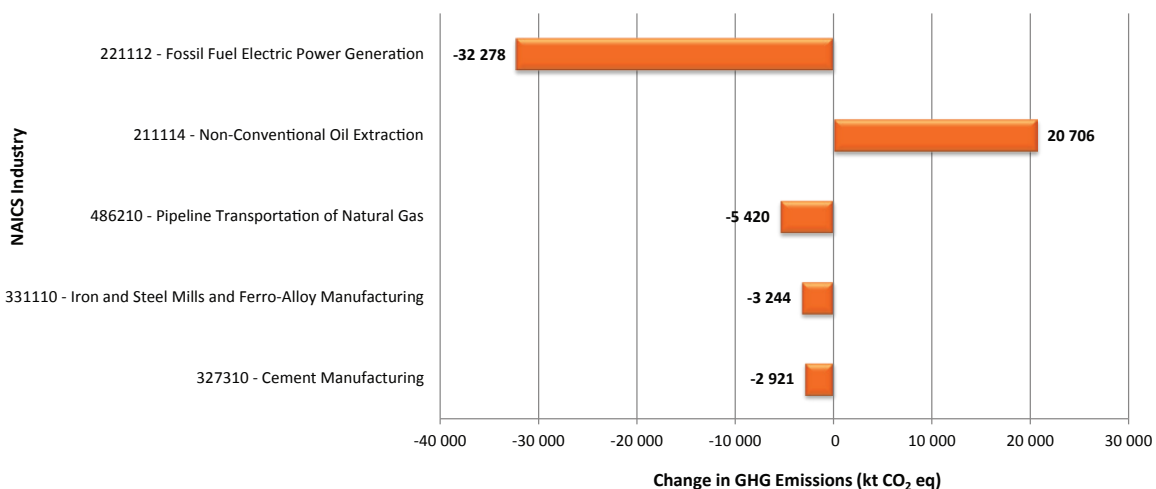


Table 5: Reported facility-level GHG emissions, 2004-2011

NAICS ^{1,2} Industry Sector	2004	2005	2006	2007	2008	2009	2010	2011
(Units: Mt CO ₂ eq)								
Total³	277	276	270	276	262	251	262	254
21 - Mining, Quarrying, and Oil and Gas Extraction	48	47	52	55	55	62	68	71
Conventional oil and gas extraction	14	14	14	13	12	15	14	15
Non-conventional oil extraction ⁴	29	28	33	35	36	42	47	49
Coal mining	1	2	2	2	2	2	3	3
Metal ore mining	3	3	3	3	3	3	4	3
Non-metallic mineral mining and quarrying	1	1	1	1	1	1	1	2
22 - Utilities	121	123	116	121	113	103	106	94
Electric power generation	120	122	115	120	112	101	103	92
Natural gas distribution	1	1	1	1	1	2	2	2
Water, sewage and other systems ⁵					0.11	1	0.44	0.47
31-33 Manufacturing	96	92	89	87	83	74	77	78
Food and beverages	0.24	0.34	0.23	0.23	0.22	1	1	1
Wood products						0.14	0.15	0.13
Paper	7	5	4	5	4	4	4	4
Petroleum and coal products	21	20	20	20	19	19	18	17
Basic chemical manufacturing	15	14	12	12	13	11	11	12
Resin, synthetic rubber, synthetic fibres and filaments	0.09	0.07				0.21	0.22	0.20
Pesticide, fertilizer, other agricultural chemicals	7	6	6	6	6	5	6	6
Cement and concrete products	13	13	13	13	12	9	10	10
Lime and gypsum product manufacturing	3	3	3	3	3	2	2	2
Iron and steel mills and ferro-alloys	18	17	17	17	17	11	14	14
Primary production of alumina and aluminum	9	9	9	9	9	8	8	8
Non-ferrous metal (except alum.) smelting and refining	4	3	3	2	2	2	1	1
Other manufacturing ⁶	1	1	1	1	0.40	1	2	2
Other⁷	12	14	13	13	11	12	11	11
Pipeline transportation of natural gas	10	12	11	10	8	7	6	6
Support activities for air transportation			0.12	0.13	0.09	0.10	0.07	0.07
Waste management and remediation services	1	2	3	3	3	4	4	4
Institutional facilities			0.02			0.38	1	1

Notes:

1. The NAICS is an industry classification system developed by the statistics agencies of Canada, USA and Mexico to enable the respective national agencies to collect comparable statistical data. The NAICS is a comprehensive system encompassing 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. A NAICS search tool is available at www23.statcan.gc.ca/imdb/p3VD.pl?Function=getVDPPage1&TVD=118464
2. Facilities required to report to the GHGRP provide a primary NAICS code that describes the main activities occurring at the facility.
3. Totals may not add up due to rounding.
4. Includes facilities engaged in oils sands mining, in-situ bitumen production and upgrading.
5. Includes sewage treatment facilities, heating and steam generation plants.
6. 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.
7. 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).

32% reduction in natural gas throughput volumes.¹³ Emissions reported by iron and steel production facilities and cement plants have also declined over the same period by 3 Mt each, attributable to reduced production levels in these sectors.

The full time series of facility-reported GHG emissions covering the period 2004 to 2011 is presented in Table 5. This summary provides a complete, up-to-date picture of total reported emissions, disaggregated by NAICS industry sectors.

5 Facility-reported Emissions and the National GHG Inventory

The total facility-reported GHG emissions for 2011 collected under the GHGRP represent just over one-third (36%) of Canada's total GHG emissions in 2011 (702 Mt) and over half (57%) of Canada's industrial GHG emissions,¹⁴ as reported in Canada's latest National Inventory Report

(NIR).¹⁵ It is important to note that 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 and to the national total from the NIR, the distribution of emissions by province is similar (Figure 13). The highest emissions are attributed to Alberta, followed by Ontario, Quebec and Saskatchewan. This pattern is reflective of the concentration of large industrial facilities in certain provinces relative to others and the relative use of fossil fuels for energy production.

While the facility-reported emissions may capture 57% of industrial GHG emissions¹⁴ nationally, the degree of coverage at the provincial level varies significantly from province to province, depending on the size and number of industrial facilities in each province that have emissions above the 50 kt CO₂ eq reporting threshold (Figure 14).

Where appropriate, the facility-reported emissions data are used by Environment 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 United Nations Framework Convention on

13 Source: Statistics Canada, CANSIM Table 129-0001.

14 In this overview report, Canada's industrial GHG emissions include the following GHG categories from the *National Inventory Report 1990–2011: Greenhouse Gas Sources and Sinks in Canada: Stationary Combustion Sources (except Residential), Other Transportation, Fugitive Sources, Industrial Processes and Waste*.

15 Canada's latest NIR, the *National Inventory Report 1990–2011: Greenhouse Gas Sources and Sinks in Canada*, is available at www.ec.gc.ca/ges-ghg/ges-ghg/default.asp?lang=En&n=68EE206C-1

Figure 13: Provincial/Territorial contribution to 2011 facility-reported (GHGRP) total and NIR total

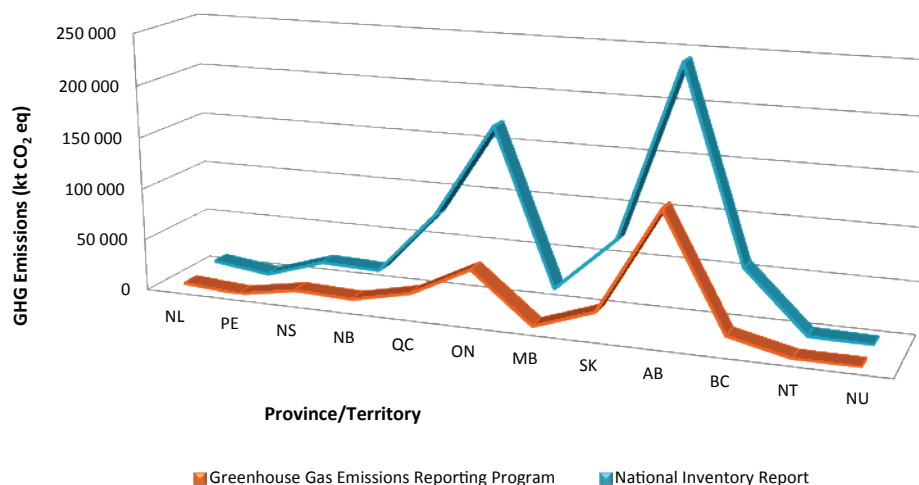
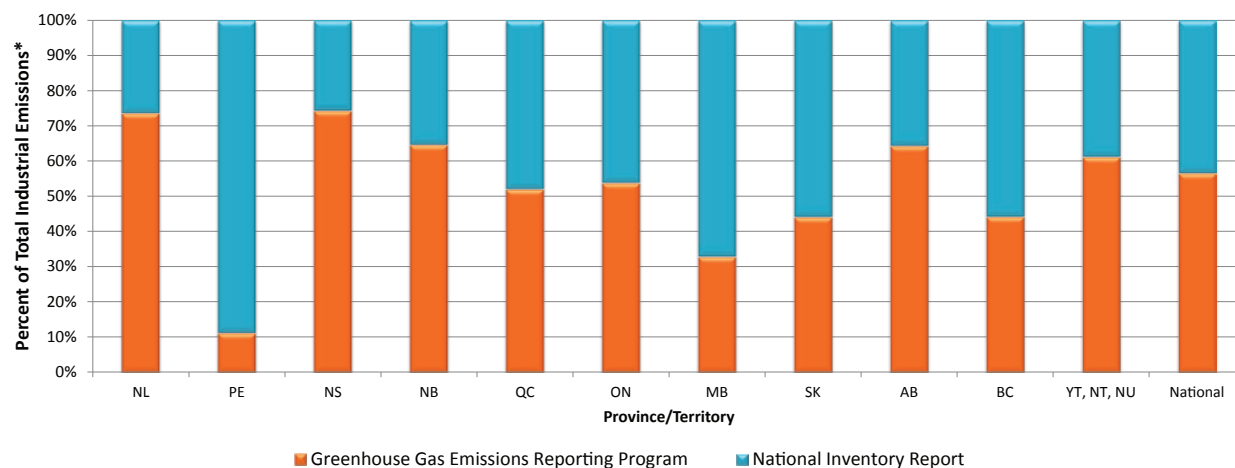


Figure 14: 2011 Facility-reported emissions as a percentage of national and provincial/territorial industrial GHG emissions* (from the NIR)



* In this overview report, Canada's industrial GHG emissions include the following GHG categories from the *National Inventory Report 1990–2011: Greenhouse Gas Sources and Sinks in Canada*: Stationary Combustion Sources (except Residential), Other Transportation, Fugitive Sources, Industrial Processes and Waste.

Climate Change. The extent to which the facility-reported GHG emissions data can be fully integrated into the NIR is dependent on the level of detail and type of data available.

must be kept for a period of three years from the date it was required to be reported to Environment Canada.

The data provided within this report are for information purposes only. Environment 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.

6 Additional Information about the GHGRP

6.1 Data Quality

Facilities that meet the GHG reporting requirements under the GHGRP must ensure that the reported data are of good quality. Facilities are required by law to submit information that is true, accurate and complete to the best of their knowledge by the annual June 1st reporting deadline. The *Canadian Environmental Protection Act, 1999* (CEPA 1999) sets out penalties for companies that fail to report or that knowingly submit false or misleading information. Reporters are required to submit a Statement of Certification, signed by an authorized official, stating that the information contained in the emission report is accurate and complete, to the best of their knowledge. 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

6.2 Public Access

The GHGRP provides public access to information from all facilities that reported GHG emissions to the program through an annual on-line publication. In addition to this summary report, the facility-level data are presented in the form of tables, a searchable database and in a downloadable format. Users can search by emissions of a specific gas or emissions of all gases, by facility name or NPRI identification number, by reporting company, by province/territory or city, or by industrial sector using the NAICS code.

To access the data or to obtain further information on the GHGRP or the National GHG Inventory program, go to:

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

6.3 Links to Other Programs

The GHGRP is a similar but distinct program from the National Pollutant Release Inventory (NPRI). Although both programs are delivered by Environment Canada under the authority of section 46 of CEPA 1999, the NPRI collects pollution data from facilities on a range of substances of concern, including criteria air contaminants, whereas the GHGRP collects GHG information from facilities. 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.

There are a number of provincial jurisdictions that 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.



Contact Us

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

Greenhouse Gas Emissions Reporting Program (GHGRP)

E-mail: ges-ghg@ec.gc.ca

Telephone: 819-994-0684

Toll free: 1-877-877-8375

Fax: 819-953-2347

Website: www.ec.gc.ca/ges-ghg/

WWW.ec.gc.ca

Additional information can be obtained at:

Environment Canada

Inquiry Centre

10 Wellington Street, 23rd Floor

Gatineau QC K1A 0H3

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

Fax: 819-994-1412

TTY: 819-994-0736

Email: enviroinfo@ec.gc.ca