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Canada

# Government of Canada's Greenhouse Gas Emissions Inventory

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du Canada

# Government of Canada's Greenhouse Gas Emissions Inventory

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In December 2017, the Greening Government Strategy established ambitious climate and environmental commitments for the Government of Canada's internal operations. The commitments include an ambitious target to reduce greenhouse gas (GHG) emissions from federal facilities and fleets:

- by 40% compared with 2005 levels by 2030, with an aspiration to achieve this target by 2025
- by 80% compared with 2005 levels by 2050

The federal target aims to reduce the GHG emissions generated by the Government of Canada's facilities and fleets. The target supports Canada's climate goals, which are already established:

- under the Paris Agreement on climate change
- in the Pan-Canadian Framework on Clean Growth and Climate Change
- in the Federal Sustainable Development Strategy

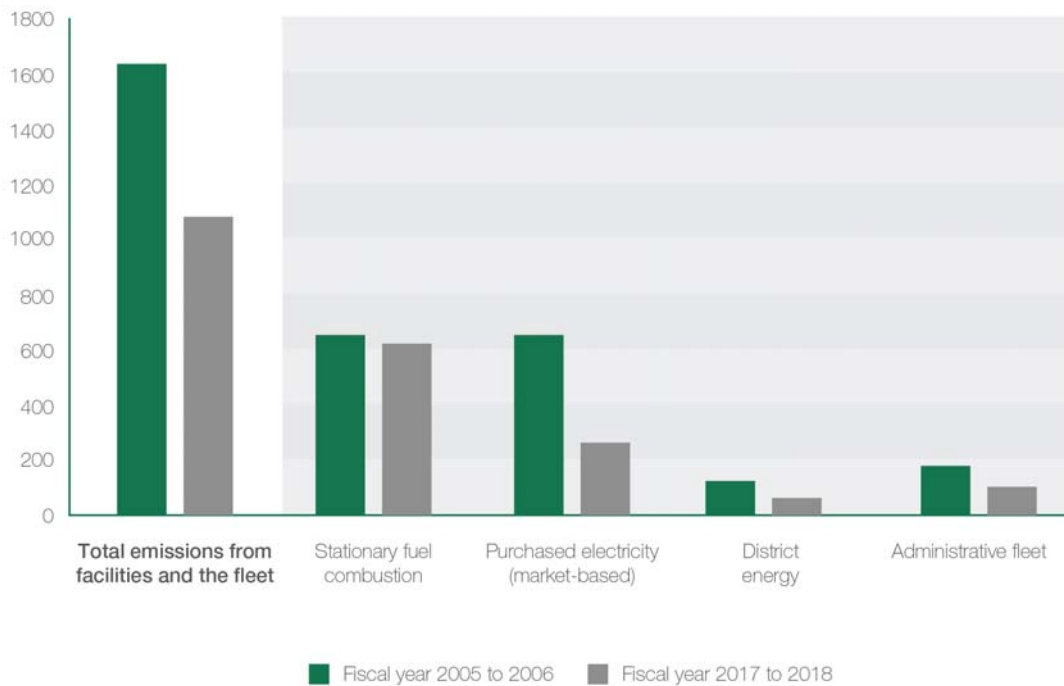
In all the tables, the emissions data in kilotonnes of carbon equivalent are rounded to the nearest one decimal.

▼ Progress

## Progress toward the federal target for reducing greenhouse gas emissions

**Figure 1: Federal greenhouse gas emissions by source for fiscal years 2005 to 2006 and 2017 to 2018**

Kilotonnes of carbon dioxide equivalent emissions



▼ Figure 1 - Text version

The bar graph shows federal greenhouse gas emissions in kilotonnes of carbon dioxide equivalent as a total and by source for fiscal years 2005 to 2006 and 2017 to 2018.

**Data for the bar graph**

**Federal greenhouse gas emissions by source for fiscal years 2005 to 2006 and 2017 to 2018**

Sources of greenhouse gas	Emissions in fiscal year 2005 to 2006 (kt CO <sub>2</sub> eq)	Emissions in fiscal year 2017 to 2018 (kt CO <sub>2</sub> eq)	Percentage change compared with fiscal year 2005 to 2006
Stationary fuel combustion	681.9	637.6	-6%
Purchased electricity	672.6	279.1	-59%

Sources of greenhouse gas	Emissions in fiscal year 2005 to 2006 (kt CO <sub>2</sub> eq)	Emissions in fiscal year 2017 to 2018 (kt CO <sub>2</sub> eq)	Percentage change compared with fiscal year 2005 to 2006
District energy	125.8	70.2	-49%
Administrative fleet	156.3	127.1	-19%
<b>Total</b>	<b>1,636.7</b>	<b>1,114.1</b>	<b>-32%</b>

## Key results

- 19 federal organizations reported greenhouse gas (GHG) emissions for fiscal year 2017 to 2018
- The emissions for fiscal year 2017 to 2018 totalled 1,114 kilotonnes (kt) of carbon dioxide equivalent (CO<sub>2</sub> eq), which represents a decrease of 523 kt CO<sub>2</sub> eq or 32% compared with fiscal year 2005 to 2006
- There were 2 major sources of GHG emissions:
  - stationary fuel combustion at federal facilities (57%)
  - purchased electricity used at federal facilities (25%)
- Other less significant sources include:
  - on-road vehicles (6%)
  - district energy used at federal facilities (6%)
  - marine vessels (4%)
  - aircraft (1%)
  - other mobile equipment (0.3%)
- In fiscal year 2017 to 2018, the top 6 emitting organizations (National Defence, Public Services and Procurement Canada, Correctional Service Canada, Agriculture and Agri-Food Canada, Transport Canada and National Research Council Canada) were responsible for 87% of the Government of Canada's targeted GHG emissions
- In fiscal year 2017 to 2018, the top 6 emitting regions (Ontario, Nova Scotia, Alberta, Quebec, Saskatchewan, and New Brunswick) were responsible for 85% of the Government of Canada's targeted GHG emissions
- GHG emissions from federal facilities in fiscal year 2017 to 2018 totalled 987 kt CO<sub>2</sub> eq, which is a reduction of 494 kt CO<sub>2</sub> eq or 33% compared with fiscal year 2005 to 2006

- Reductions in GHG emissions from federal facilities can be attributed to:
  - cleaner electricity, through:
    - a reduction in the GHG intensity of electricity purchased across Canada (249 kt CO<sub>2</sub> eq)
    - contracting mechanisms, such as renewable energy certificates, which reduced an additional 105 kt CO<sub>2</sub> eq
  - a reduction in GHG emissions from district heating (36 kt CO<sub>2</sub> eq) and cooling (20 kt CO<sub>2</sub> eq)
  - actions that led to reduced electricity use (39 kt CO<sub>2</sub> eq) and stationary fuel combustion (44 kt CO<sub>2</sub> eq), including rationalizing the portfolio and improving the energy efficiency of facilities through renovations and equipment retrofits
- In fiscal year 2017 to 2018, the federal administrative fleet generated 127 kt CO<sub>2</sub> eq, which was 19% lower than fleet emissions in fiscal year 2005 to 2006:
  - On-road vehicles were the source of most of the reduction in emissions with a 27% decrease (26 kt CO<sub>2</sub> eq) compared with fiscal year 2005 to 2006
  - The reduction was made possible through a combination of actions, including vehicle right-sizing and the purchase of more efficient vehicles
  - An additional reduction of 3 kt CO<sub>2</sub> eq compared with fiscal year 2005 to 2006 was achieved by marine vessels, aircraft and other mobile equipment

▼ More information

Visit the [Open Government portal](#) for more information about GHG emissions from federal facilities and fleets, or consult [this infographic on the inventory of federal GHG emissions for fiscal year 2017 to 2018](#).

Certain sources of GHG emissions are excluded from the federal emissions reduction target because of their important role in ensuring the national safety and security of all Canadians. Federal organizations that exclude national safety and security emissions from the reduction target are still required to:

- track and report emissions related to national safety and security
- take steps to reduce these emissions

Moving forward, the Government of Canada will gather and share information from more federal organizations and from additional sources of GHG emissions. Doing so will allow for more open, transparent and complete reporting of federal GHG emissions.

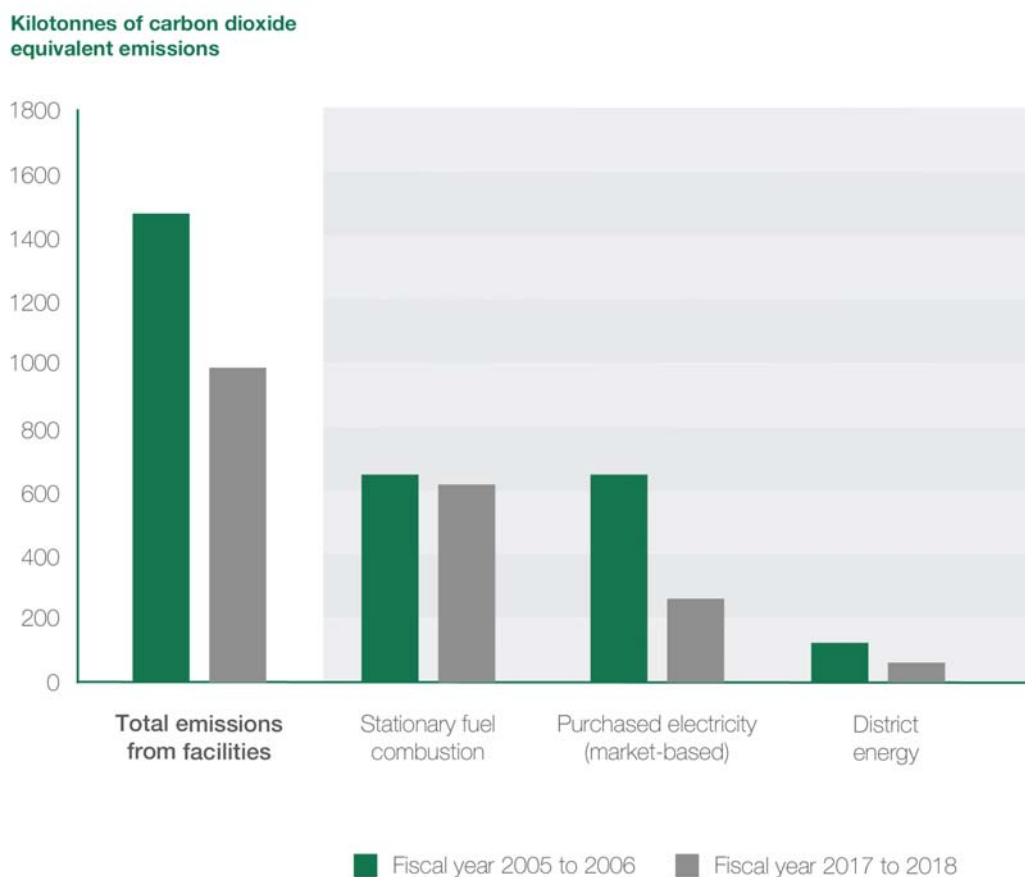
▼ Facilities

## Greenhouse gas emissions from federal facilities

The federal government has one of the largest and most diverse portfolios of facilities in the country, including:

- the symbolic buildings on Parliament Hill
- aircraft hangars on military bases
- laboratories
- correctional institutions
- office buildings and warehouses

**Figure 2: Greenhouse gas emissions from federal facilities by source for fiscal years 2005 to 2006 and 2017 to 2018**



▼ Figure 2 - Text version

The bar graph shows the greenhouse gas emissions generated by federal facilities in kilotonnes of carbon dioxide equivalent as a total and by source for fiscal years 2005 to 2006 and 2017 to 2018.

## Data for the bar graph

### Greenhouse gas emissions from federal facilities by source for fiscal years 2005 to 2006 and 2017 to 2018

Source of GHG emissions	Emissions for fiscal year 2005 to 2006 (kt CO <sub>2</sub> eq)	Emissions in for fiscal year 2017 to 2018 (kt CO <sub>2</sub> eq)	Percentage change compared with fiscal year 2005 to 2006
<b>Stationary fuel combustion</b>			
Natural gas	508.3	527.2	+4%
Light fuel oil	52.4	41.5	-21%
Heavy fuel oil	68.7	29.7	-57%
Jet fuel	26.8	20.9	-22%
Diesel	16.6	7.9	-52%
Propane	9.1	10.3	+13%
<b>Purchased electricity</b>			
Market-based	672.6	279.1	-59%
Location-based	672.6	384.2	-43%
<b>District energy</b>			
Heating	104.4	68.7	-34%
Cooling	21.4	1.5	-93%
<b>Facilities total (market)</b>	<b>1,480.4</b>	<b>987</b>	<b>-33%</b>
<b>Facilities total (location)</b>	<b>1,480.4</b>	<b>1,092.1</b>	<b>-26%</b>



## Key results

- 14 federal organizations reported greenhouse gas (GHG) emissions generated by federal facilities in fiscal year 2017 to 2018
- The emissions for fiscal year 2017 to 2018 totalled 987 kilotonnes (kt) of carbon dioxide equivalent (CO<sub>2</sub> eq), which represents a decrease of 494 kt CO<sub>2</sub> eq or 33% compared with fiscal year 2005 to 2006
- Stationary fuel combustion, primarily used to generate heat at facilities, was the source of a significant amount (65%) of GHG emissions in fiscal year 2017 to 2018, but has decreased by 6% compared with fiscal year 2005 to 2006
- Purchased electricity generated a significant amount (25%) of GHG emissions in fiscal year 2017 to 2018, but emissions from electricity have decreased by 59% compared with fiscal year 2005 to 2006.
- Reductions in GHG emissions from federal facilities compared with fiscal year 2005 to 2006 can largely be attributed to:
  - a reduction in the GHG intensity of electricity purchased across Canada, which accounted for a reduction of 249 kt CO<sub>2</sub> eq
  - contracting mechanisms, such as renewable energy certificates, which accounted for an additional reduction of 105 kt CO<sub>2</sub> eq
- The reduction in GHG emissions from district heating (36 kt CO<sub>2</sub> eq) and cooling (20 kt CO<sub>2</sub> eq) was significant, but it had a small impact on emission levels since district heating and cooling represents a smaller share of overall energy use
- The remaining 83 kt reduction in emissions can be attributed to reductions in:
  - stationary fuel combustion (44 kt CO<sub>2</sub> eq)
  - purchased electricity (39 kt CO<sub>2</sub> eq)
- Overall, the reduction was achieved through a combination of actions, including:
  - the rationalization of the government's portfolio of buildings
  - renovations for energy efficiency
  - equipment retrofits for energy efficiency

### ▼ More information

Stationary fuel combustion generates heating, cooling and electricity at federal facilities. Sources of stationary fuel combustion within facilities often include:

- boilers and furnaces to produce heat
- absorption chillers or gas-driven compression units used for cooling
- generators, turbines or co-generation equipment that produce electricity

- other equipment used in facilities, such as lab equipment and kitchen appliances

These GHG emissions are considered to be “direct” because they are generated at the facility.

Purchased electricity refers to the purchase of conventional, grid-tied electricity. GHG emissions from purchased electricity are considered to be “indirect” because the electricity is generated off-site.

Federal organizations use 2 accounting methods to calculate GHG emissions from purchased electricity:

1. The location-based method considers the average GHG intensity of the electricity grids that provide electricity, regardless of any contractual arrangements that an organization has for clean electricity. To quantify indirect emissions using the location-based method, reporting organizations use emission factors that are based on the geographic location of each facility and that correspond to the grid-average emission factor of power-generating facilities that supply power to the grid.
2. The market-based method reflects GHG emissions from sources of electricity that reporting organizations have chosen. For example, an organization may establish a contractual arrangement to procure clean electricity from specific sources through the use of clean power purchase agreements or renewable energy certificates. For all remaining electricity use at a facility that is not covered by a contractual arrangement, the appropriate grid-average emission factor based on the location of the facility will apply. Progress toward the federal GHG reduction target will be measured using the market-based methodology.

District energy represents the energy used for heating or cooling that is generated off-site. GHG emissions from district energy are also considered to be indirect because the emissions occur at the facility where heating or cooling is generated.

Visit the [Open Government portal](#) for more information on GHG emissions generated by federal facilities.

#### ▼ Fleets

## Greenhouse gas emissions generated by federal

## fleets

Operating a fleet results in the combustion of fossil fuels and the emission of greenhouse gases (GHGs). The Government of Canada has a large and diverse fleet that includes:

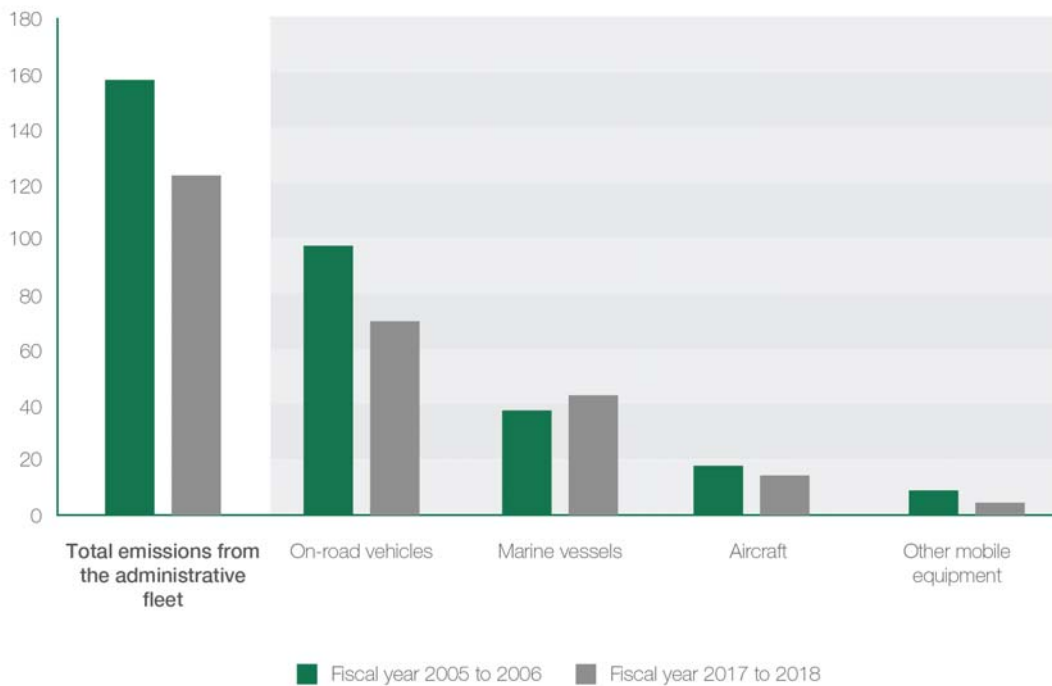
- on-road vehicles and equipment, such as:
  - cars
  - vans
  - trucks
  - other vehicles
- off-road vehicles and equipment, such as:
  - marine vessels (boats and ships)
  - aircraft
  - other mobile equipment (all-terrain vehicles, lawn mowers and generators)

Federal organizations that exclude national safety and security activities from the target to reduce GHG emissions are still required to:

- track and report GHG emissions from these activities
- take steps to reduce emissions

**Figure 3: Greenhouse gas emissions from the federal administrative fleet by source for fiscal years 2005 to 2006 and 2017 to 2018**

Kilotonnes of carbon dioxide equivalent emissions



▼ Figure 3 - Text version

The bar graph shows the greenhouse gas emissions generated by the federal administrative fleet in kilotonnes of carbon dioxide equivalent as a total and by source for fiscal years 2005 to 2006 and 2017 to 2018.

### Data for the bar graph

#### Greenhouse gas emissions from the federal administrative fleet by source for fiscal years 2005 to 2006 and 2017 to 2018

Source of greenhouse gas	Emissions for fiscal year 2005 to 2006 (kt CO <sub>2</sub> eq)	Emissions for fiscal year 2017 to 2018 (kt CO <sub>2</sub> eq)	Percentage change compared with fiscal year 2005 to 2006
On-road vehicles	96.1	70.2	-27%
Marine vessels	36.2	40.6	12%

Source of greenhouse gas	Emissions for fiscal year 2005 to 2006 (kt CO <sub>2</sub> eq)	Emissions for fiscal year 2017 to 2018 (kt CO <sub>2</sub> eq)	Percentage change compared with fiscal year 2005 to 2006
Aircraft	14.7	12.7	-13%
Other mobile equipment	9.4	3.6	-62%
<b>Total</b>	<b>156.3</b>	<b>127.1</b>	<b>-19%</b>

## Key results

- The federal administrative fleet generated approximately 11% of targeted federal GHG emissions in fiscal year 2017 to 2018
- Over half of the fleet's GHG emissions (55%) were generated by on-road vehicles, while the balance was generated by marine vessels (32%), aircraft (10%) and other mobile equipment (3%) owned by federal organizations
- In fiscal year 2017 to 2018, GHG emissions from the federal fleet were down by 19% compared with fiscal year 2005 to 2006:
  - On-road vehicles were the source of most of the fleet's emission reductions and their emissions decreased by 26 kilotonnes (kt) of carbon dioxide equivalent (CO<sub>2</sub> eq) or 27% compared with fiscal year 2005 to 2006
  - GHG emissions from federal marine vessels have increased by 5 kt CO<sub>2</sub> eq or 12% compared with fiscal year 2005 to 2006
  - GHG emissions from federal aircraft have decreased by 13% compared with fiscal year 2005 to 2006
  - GHG emissions from other mobile equipment have decreased by 62% compared with fiscal year 2005 to 2006

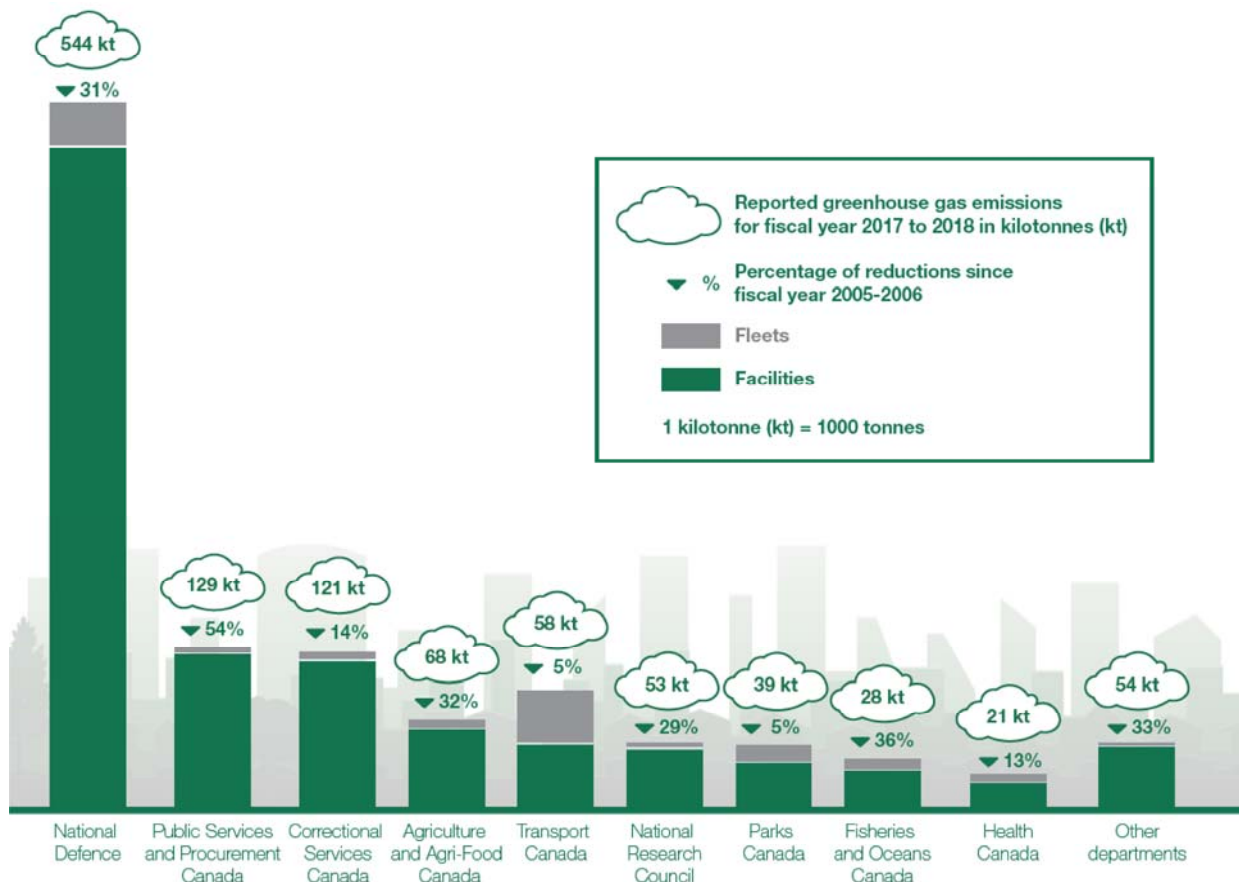
### ▼ More information

Visit the [Open Government portal](#) for more information about GHG emissions from federal fleets.

### ▼ By organization

# Trends in greenhouse gas emissions by federal organization

Figure 4: Greenhouse gas emissions by federal organization in fiscal year 2017 to 2018 and the percentage change in emissions compared with fiscal year 2005 to 2006



## ▼ Figure 4 - Text version

The bar graph shows the total greenhouse gas emissions (in kilotonnes of carbon equivalent) reported in fiscal year 2017 to 2018, by federal organization. The greenhouse gas emissions are separated by facilities or fleet. The percentage change compared with fiscal year 2005 to 2006 is also shown for each federal organization.

## Data for the bar graph

**Greenhouse gas emissions by federal organization in fiscal year 2017 to 2018 and the percentage change in emissions compared with fiscal year 2005 to 2006**

<b>Federal organization</b>	<b>Emissions from facilities for fiscal year 2017 to 2018 (kt CO<sub>2</sub> eq)</b>	<b>Emissions from fleets for fiscal year 2017 to 2018 (kt CO<sub>2</sub> eq)</b>	<b>Total emissions for fiscal year 2017 to 2018 (kt CO<sub>2</sub> eq)</b>	<b>Percentage change compared with fiscal year 2005 to 2006</b>
<b>National Defence</b>	514.6	29.9	544.5	-31%
<b>Public Services and Procurement Canada</b>	128	0.8	128.8	-54%
<b>Correctional Service Canada</b>	118	2.5	120.5	-14%
<b>Agriculture and Agri-Food Canada</b>	63.5	4.4	67.9	-32%
<b>Transport Canada</b>	3.8	53.8	57.6	-5%
<b>National Research Council Canada</b>	51.2	1.4	52.6	-29%
<b>Parks Canada</b>	25	14	38.9	-5%
<b>Fisheries and Oceans Canada</b>	21.4	6.9	28.3	-36%
<b>Health Canada</b>	18.8	2.1	20.9	-13%

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1 The Royal Canadian Mounted Police will begin reporting GHG emissions from facilities in fiscal year 2018 to 2019.

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<b>Federal organization</b>	<b>Emissions from facilities for fiscal year 2017 to 2018 (kt CO<sub>2</sub> eq)</b>	<b>Emissions from fleets for fiscal year 2017 to 2018 (kt CO<sub>2</sub> eq)</b>	<b>Total emissions for fiscal year 2017 to 2018 (kt CO<sub>2</sub> eq)</b>	<b>Percentage change compared with fiscal year 2005 to 2006</b>
<b>Natural Resources Canada</b>	18.6	0.7	19.3	-44%
<b>Environment and Climate Change Canada</b>	12.8	3.2	16	-25%
<b>Canada Border Services Agency</b>	8.3	4	12.4	1%
<b>Indigenous and Northern Affairs Canada</b>	1.8	0.4	2.3	-16%
<b>Canadian Space Agency</b>	1.3	0	1.3	-43%
<b>Royal Canadian Mounted Police <sup>1</sup></b>	0	1.1	1.1	-73%
<b>Innovation, Science and Economic Development Canada</b>	0	1.1	1.1	-44%

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<sup>1</sup> The Royal Canadian Mounted Police will begin reporting GHG emissions from facilities in fiscal year 2018 to 2019.

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<b>Federal organization</b>	<b>Emissions from facilities for fiscal year 2017 to 2018 (kt CO<sub>2</sub> eq)</b>	<b>Emissions from fleets for fiscal year 2017 to 2018 (kt CO<sub>2</sub> eq)</b>	<b>Total emissions for fiscal year 2017 to 2018 (kt CO<sub>2</sub> eq)</b>	<b>Percentage change compared with fiscal year 2005 to 2006</b>
<b>Employment and Social Development Canada</b>	0	0.3	0.3	-77%
<b>Canada Revenue Agency</b>	0	0.2	0.2	-44%
<b>Immigration, Refugees and Citizenship Canada</b>	0	0.1	0.1	-46%
<b>Total</b>	987	127.1	1114.1	-32%

1 The Royal Canadian Mounted Police will begin reporting GHG emissions from facilities in fiscal year 2018 to 2019.

## Key results

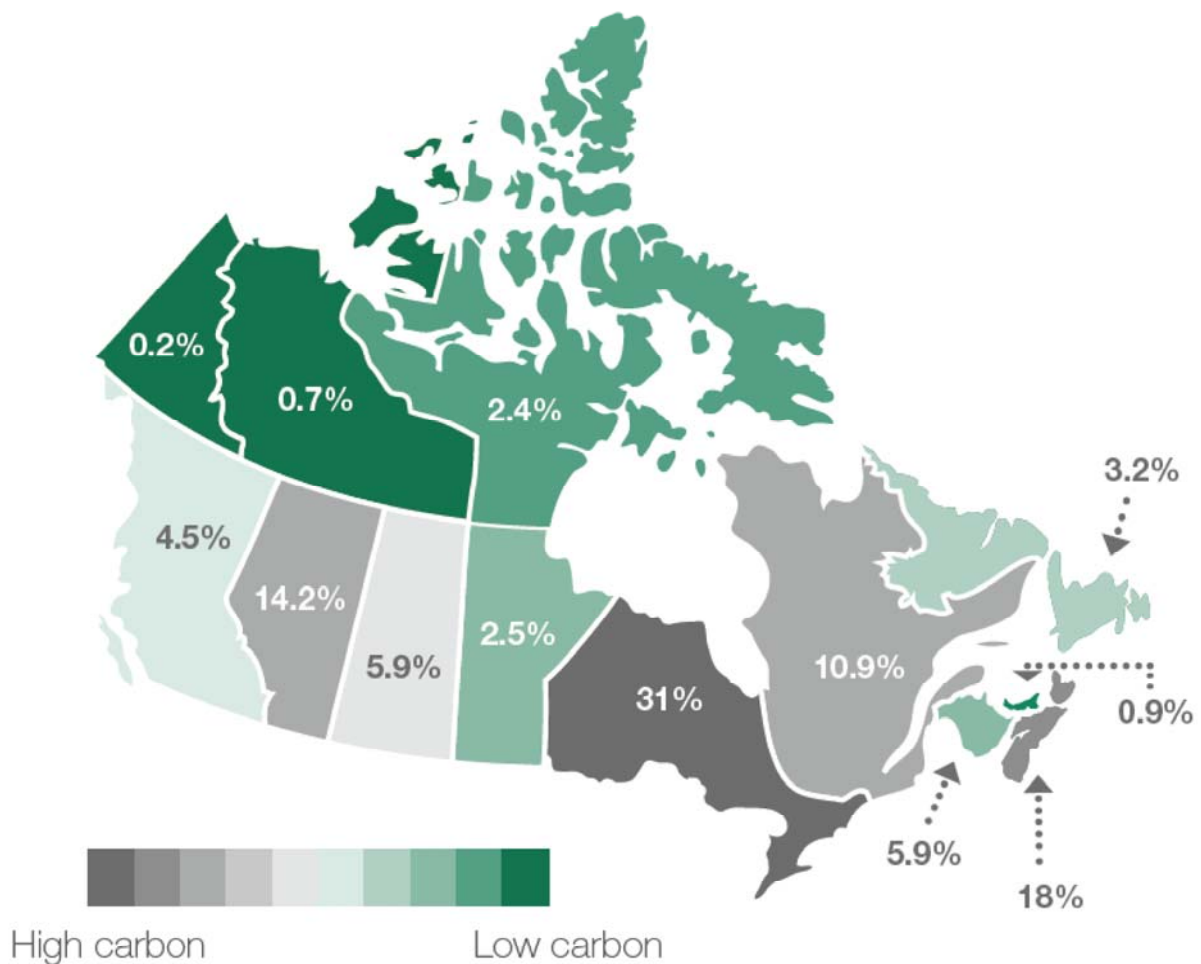
- In fiscal year 2017 to 2018, the top 6 emitting organizations (National Defence, Public Services and Procurement Canada, Correctional Service Canada, Agriculture and Agri-Food Canada, Transport Canada and National Research Council Canada) generated 87% of the Government of Canada's targeted GHG emissions

▼ By region

# Greenhouse gas emissions from federal facilities by region

Greenhouse gas (GHG) emissions from federal operations can primarily be attributed to facilities that are located in regions where federal operations use a lot of energy or where electricity grids rely on fossil fuels.

**Figure 5: Greenhouse gas emissions from federal facilities in fiscal year 2017 to 2018 by region**



▼ Figure 5 - Text version

The figure is a map of Canada that shows the regional distribution of greenhouse gas emissions from federal facilities in fiscal year 2017 to 2018.

**Data for the figure**

**Greenhouse gas emissions from federal facilities in fiscal year 2017  
to 2018 by region**

<b>Region</b>	<b>Emissions from stationary combustion (kt CO<sub>2</sub> eq)</b>	<b>Emissions from electricity (kt CO<sub>2</sub> eq)</b>	<b>Emissions from district energy (kt CO<sub>2</sub> eq)</b>	<b>Total from all sources (kt CO<sub>2</sub> eq)</b>	<b>Percentage share of total GHG emissions</b>
<b>Ontario</b>	213.4	30.8	58.3	302.5	31%
<b>Nova Scotia</b>	57.9	117.4	0.8	176.2	18%
<b>Alberta</b>	91.3	48.8	0.0	140.1	14.2%
<b>Quebec</b>	104.4	0.8	2.2	107.5	10.9%
<b>Saskatchewan</b>	19.1	34.3	5.2	58.6	5.9%
<b>New Brunswick</b>	26.1	31.7	0.7	58.5	5.9%
<b>British Columbia</b>	41.0	2.3	1.3	44.6	4.5%
<b>Newfoundland</b>	28.6	3.0	0.0	31.6	3.2%
<b>Manitoba</b>	23.5	0.2	1.3	25.1	2.5%
<b>Nunavut</b>	20.7	2.8	0.0	23.5	2.4%
<b>Prince Edward Island</b>	3.3	5.2	0.4	8.8	0.9%
<b>Northwest Territories</b>	6.3	1.1	0.0	7.4	0.7%
<b>Yukon</b>	1.9	0.2	0.0	2.1	0.2%
<b>Total</b>	<b>638</b>	<b>279</b>	<b>70</b>	<b>987</b>	<b>100%</b>

**Key results**

- In fiscal year 2017 to 2018, the top 6 regions (Ontario, Nova Scotia, Alberta, Quebec, Saskatchewan, and New Brunswick) generated 85% of the Government of Canada's targeted GHG emissions
- A significant amount of GHG emissions generated by purchased electricity comes from electricity use in regions that have high-carbon electricity grids, including Nova Scotia (42%), Alberta (17%), Saskatchewan (12%) and New Brunswick (11%)
- Breakdown of GHG emissions from natural gas used in federal facilities:
  - 40% in Ontario
  - 19% in Quebec
  - 17% in Alberta
  - 7% in British Columbia
- 44% of GHG emissions from light fuel oil came from operations in Nova Scotia, and an additional 39% of GHG emissions from light fuel oil were generated in the other Atlantic provinces and Quebec
- 80% of GHG emissions from district energy came from plants located in the National Capital Region

▼ Other sources

## Greenhouse gas emissions from national safety and security operations

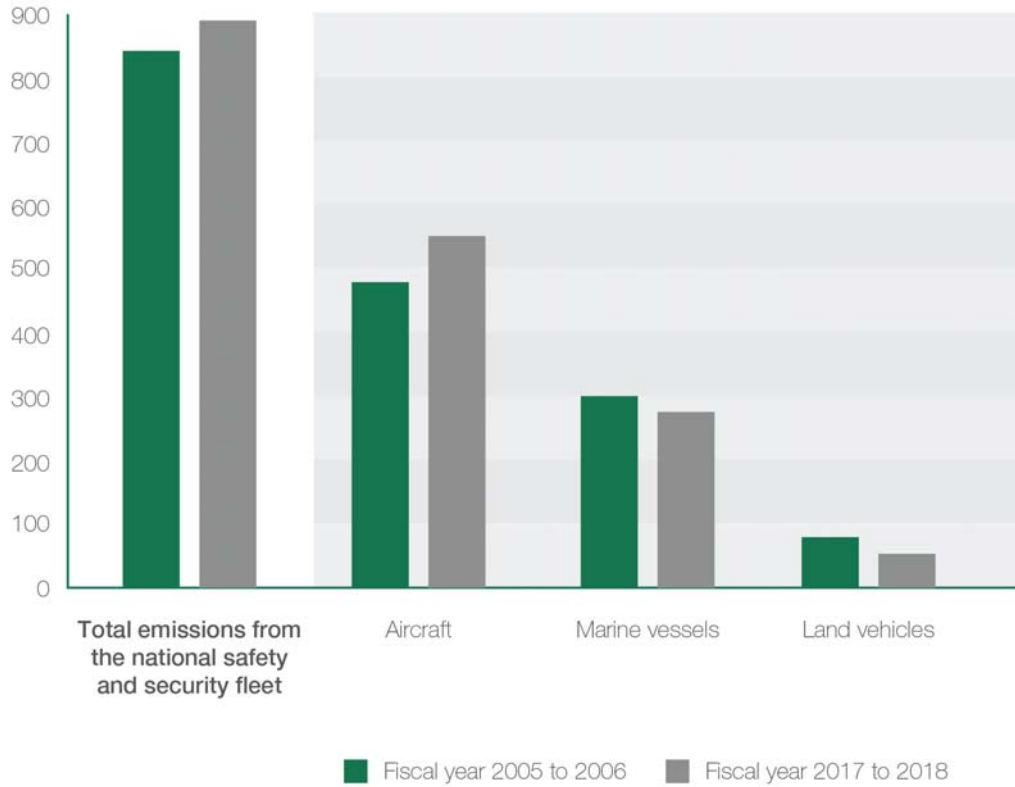
Greenhouse (GHG) emissions generated by certain activities are included in the federal GHG inventory, but they are excluded from the federal GHG reduction target. Consistent with practices in other jurisdictions, national safety and security activities such as law enforcement by the Royal Canadian Mounted Police, search and rescue by the Canadian Coast Guard, and the operation of military vehicles and equipment by the Department of National Defence are excluded from the GHG reduction target.

Federal organizations that exclude national safety and security activities from the target to reduce GHG emissions are still required to:

- track and report GHG emissions from these activities
- take steps to reduce emissions

**Figure 6: Greenhouse gas emissions from the national safety and security fleet for fiscal years 2005 to 2006 and 2017 to 2018 by fleet type**

**Kilotonnes of carbon dioxide equivalent emissions**



▼ Figure 6 - Text version

The bar graph shows the greenhouse gas emissions generated by the national safety and security fleet in kilotonnes of carbon dioxide equivalent as a total and by fleet type for fiscal years 2005 to 2006 and 2017 to 2018.

**Data for the bar graph**

**Greenhouse gas emissions from the national safety and security fleet for fiscal years 2005 to 2006 and 2017 to 2018 by fleet type**

Source of greenhouse gas emissions	Emissions for fiscal year 2005 to 2006 (kt CO <sub>2</sub> eq)	Emissions for fiscal year 2017 to 2018 (kt CO <sub>2</sub> eq)	Percentage change compared with fiscal year 2005 to 2006
Total emissions from the national safety and security fleet	850	900	106%
Aircraft	480	550	115%
Marine vessels	300	280	93%
Land vehicles	80	50	63%

<b>Source of greenhouse gas emissions</b>	<b>Emissions for fiscal year 2005 to 2006 (kt CO<sub>2</sub> eq)</b>	<b>Emissions for fiscal year 2017 to 2018 (kt CO<sub>2</sub> eq)</b>	<b>Percentage change compared with fiscal year 2005 to 2006</b>
<b>Aircraft</b>	477.8	559.9	+17%
<b>Marine</b>	303.7	271.9	-10%
<b>Land vehicles</b>	71.7	53.6	-25%
<b>Total</b>	853.2	885.4	+4%

## Key results

- In fiscal year 2017 to 2018, the federal national safety and security fleet emitted 885 kilotonnes (kt) of carbon dioxide equivalent (CO<sub>2</sub> eq)
- In fiscal year 2017 to 2018, the Department of National Defence national safety and security fleet emitted 677 kt CO<sub>2</sub> eq:
  - 81% of the emissions came from aircraft
  - 18% came from marine vessels
  - 1% came from other land vehicles
- In fiscal year 2017 to 2018, the Canadian Coast Guard national safety and security fleet emitted 154 kt CO<sub>2</sub> eq:
  - 96% of the emissions came from marine vessels
  - 4% came from aircraft
- In fiscal year 2017 to 2018, the Royal Canadian Mounted Police national safety and security fleet emitted 54 kt CO<sub>2</sub> eq:
  - 84% of the emissions came from on-road vehicles
  - 12% came from aircraft
  - 5% came from marine vessels

### ▼ More information

The Government of Canada is taking action to reduce GHG emissions from operations related to national safety and security by:

- launching the Sky's the Limit Challenge, a nationwide challenge to develop the cleanest, most affordable and most sustainable aviation fuel for the aviation sector
- requiring that federal organizations:
  - develop a strategic approach
  - continue to take actions to decarbonize their fleets by purchasing more efficient vehicles and optimizing their use

## ▼ Methodology

### **Methodology used to account for greenhouse gas emissions**

The methodology selected for quantifying greenhouse (GHG) emissions from federal operations is meant to:

- reasonably minimize uncertainty
- yield accurate and consistent results
- be technically feasible and cost-effective

Federal organizations follow the Federal Greenhouse Gas Accounting and Reporting Guidance, which provides direction on calculating and reporting GHG emissions in accordance with the Greening Government Strategy. The methodology is based on the Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard, developed by the World Resources Institute and the World Business Council for Sustainable Development. The Greenhouse Gas Protocol is an internationally accepted standard for GHG accounting at the organizational level.

Over time, additional sources of GHG may be added and adjustments to methodologies may be made in order to improve the federal government's accounting for and reporting of GHG emissions from federal operations.

### **Emission factors**

- GHG emissions are determined using activity data (for example, energy data) in conjunction with an appropriate emission factor
- Emission factors are calculated ratios that relate GHG emissions to a measure of activity at a specific emissions source

- Emission factors are usually expressed in terms of GHG emissions per unit of fuel or energy
- Emission factors used to calculate GHG emissions from federal operations are sourced from the [national inventory report: greenhouse gas sources and sinks in Canada](#), published by Environment and Climate Change Canada

## Global warming potentials

- GHGs are converted into units of carbon dioxide equivalent (CO<sub>2</sub> eq) by multiplying the emissions of each gas by its global warming potential
- Global warming potential is a factor that describes the degree of warming that results from one unit of a given GHG relative to one unit of CO<sub>2</sub>
- The global warming potential of methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O) are 28 and 265 respectively, based on the Intergovernmental Panel on Climate Change, Fifth Assessment Report, 2014

## Additional notes

- Some year-to-year changes in GHG emissions may be due to data collection gaps, methodology or error correction refinements, while others may be the result of one-time or specific events or actions (such as natural disasters or operational disruptions)
- Variations in seasonal weather conditions (for example, the effect of heating or cooling days on building energy use) also influence annual GHG emissions

### Date modified:

2019-01-03