

Northwest Territories Greenhouse Gas Emission Summary Report 2015



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Increasing emissions of human-caused greenhouse gases (GHG) released into the atmosphere are affecting the earth's climate. Impacts from climate change across the Northwest Territories (NWT) are consistent with those described in reports prepared by the Intergovernmental Panel on Climate Change and the Arctic Council. Both groups concluded warming trends already evident in the North will accelerate unless global emissions of greenhouse gases are reduced. "A Greenhouse Gas Strategy for the NWT 2011 – 2015" lays out actions the Government of the Northwest Territories (GNWT) is taking to reduce greenhouse gas emissions in the NWT, and identifies actions industry and communities can take to allow the NWT to make an appropriate contribution to global reductions of greenhouse gas emissions during the coming decades.



Data in this report comes from Environment Canada's 2015 National Inventory Report on Greenhouse Gas Sources and Sinks, 1990 – 2013. In 2013, greenhouse gas emissions from the NWT are calculated to be 1,456 kilotonnes (kt) in carbon dioxide equivalents (CO₂ eq).

In 2011, the GNWT released a Greenhouse Gas Strategy for the NWT to describe actions being taken to control emissions. The Strategy also established emission targets.

The NWT greenhouse gas emission targets are:

- Stabilizing emissions at 2005 levels (1,500 kt) by 2015;
- Limiting emissions increases to 66 percent above 2005 (2,500 kt) levels by 2020; and
- Returning emissions to 2005 levels (1,500 kt) by 2030.



Revised Framework for Calculating GHG Emissions

Canada prepares a National Inventory Report (NIR) every year in accordance with emissions reporting guidelines established under the United Nations Framework Convention on Climate Change (UNFCCC). This year's edition of the NIR includes recalculations of previously reported emission estimates due to the use of the 2006 methodological guidance developed by the Intergovernmental Panel on Climate Change (IPCC) and updated global warming potentials (GWPs) from the IPCC Fourth Assessment Report. This resulted in recalculations of previous years' emissions for all jurisdictions in Canada. For the NWT, this means the 2005 baseline year previously reported to be 1,500 kt is now estimated to be 1,656 kt.

Sector-specific Emissions

Table 1 shows the NWT's GHG emissions from each sector and how they have changed from 2005 to 2013. The electricity sector alone has seen a 33 percent reduction in emissions over this time period, with the transport sector contributing a further 21 percent reduction.

Table 1:
2005 and 2013 GHG Emission Summary Comparison for Northwest Territories

Greenhouse Gas Categories	2005	2013	% Difference
	kt CO ₂ eq		
TOTAL	1,656	1,456	-12.1
Electricity	99	66	-33.3
Industry	411	420	2.2
Buildings	242	253	4.5
Transport	898	710	-20.9
Waste	6	7	4.5

Chart 1:
NWT Historical GHG Emissions 1990 - 2013

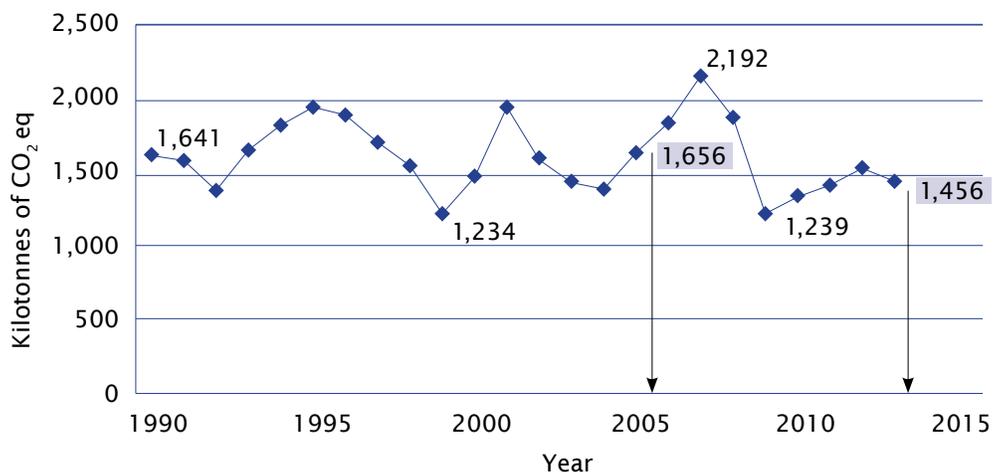


Table 2 shows the NWT's GHG emissions per capita and how they are significantly higher than the national average as indicated in Table 3.

Table 2:
Per Capita NWT GHG emissions

Year	Population	GHG Emissions kt CO ₂ eq	Per Capita (tonnes per person)
2013	43,841	1,456	33.21
2012	43,639	1,565	35.86
2011	43,501	1,433	32.94

Table 3:
Per Capita National GHG emissions

Year	Population	GHG Emissions kt CO ₂ eq	Per Capita (tonnes per person)
2013	35,154,300	726,051	20.65
2012	34,752,100	715,213	20.58
2011	34,342,800	709,222	20.65

Table 4:
GHG Emissions per NWT Gross Domestic Product (GDP)

* Millions of Chained (2007) Dollars at Market Prices

Year	GDP millions \$	GHG Emissions kt CO ₂ eq	GHG Intensity of the Economy kt CO ₂ eq per million \$
2013	3,587	1,456	0.41
2012	3,453	1,565	0.45
2011	3,374	1,433	0.42

Table 4 shows the NWT's GHG emissions per NWT Gross Domestic Product (GDP). The national average for 2013 was 0.43 kilotonnes (kt) CO₂ eq per million \$ GDP and the territorial average was 0.41 kt CO₂ eq per million \$ GDP. This indicates that the GHG intensity of the NWT economy is generally at the same level as the national average for 2013.



Highlights of the NWT's Progress on GHG Reductions

Government of the Northwest Territories GHG Reductions

The NWT Greenhouse Gas Strategy (2007), committed the GNWT to reduce greenhouse gas emissions from its operations to 10 percent below 2001 levels by 2011. The GNWT's GHG emissions from purchased fuel in 2001 were 54 kt CO₂eq (Scope 1). By 2011, the GNWT emissions were 37 kt CO₂eq (Scope 1), which is a 30 percent reduction below 2001.

The GNWT is a member of The Climate Registry and annually reports its GHG emissions associated with operations under The Climate Registry's voluntary reporting program. Since 2011, the GNWT's emissions have remained consistently low. Detailed reporting of these emission levels can be found in the Government of the Northwest Territories Corporate Greenhouse Gas Emissions Summary Report 2011 - 2013.

Biomass in Government of the Northwest Territories Buildings

Beginning in 2007, the GNWT's investment in energy improvement and alternative energy projects, such as biomass for space heating, have generated savings of over \$5.8 million. With the completion of projects currently underway, the GNWT will be on track to meet 30 percent of its total space heating load for Public Works and Services (PWS) managed assets through biomass energy.

In 2013/14, the GNWT reduced the consumption of fossil fuels by over 2.8 million litres through energy efficiency and renewable energy initiatives. **Cumulative reductions in heating oil since 2007 total 12.85 million litres, equivalent to 35,086 tonnes of GHG emissions.**



<http://www.pws.gov.nt.ca/pdf/publications/>

Medium-Large Scale Solar Projects in the NWT

The Northwest Territories Power Corporation (NTPC) and the GNWT have invested in a football-field-sized solar energy project in Fort Simpson; the largest solar photovoltaic installation in northern Canada. The solar system can generate 100 kilowatts on bright days, enough to power about 17 houses. Solar power supplements the community's diesel operations, and **reduces greenhouse gases by about 76 tonnes over a year**. The 436 panel solar array is 91 metres long and 4.2 metres wide and stands about 3 metres off the ground (about the height of a one-storey building).



NTPC, in partnership with GNWT, are now installing a solar/diesel/battery system in Colville Lake that will shut down the diesel plant for extended periods in the summer. It is anticipated that this hybrid energy solution will significantly reduce diesel use and related emissions by supplying most of the community's needs in the summer months.

<https://www.ntpc.com/smart-energy/how-to-save-energy>

Electricity

NTPC has initiated a territory-wide program to replace high pressure sodium (HPS) streetlights as they expire with the more efficient LED streetlights that last five times longer than existing streetlights. In addition to replacing existing streetlights with the LED lights as they fail, NTPC is committing to completing one to two community-wide change-outs per year; e.g., Community Government of Gameti, where 31, 100 watt high pressure sodium (HPS) streetlights were exchanged for 50 watt high efficiency LED streetlights.

<https://www.ntpc.com/smart-energy/how-to-save-energy/led-streetlights>

Wind Power

In 2014, Diavik Diamond mine's four turbine 9.2 megawatt wind farm met annual targets. For the year, diesel fuel offset was 4.9 million litres and CO₂ eq offset was 14,068 tonnes. Over the year, the facility generated 19.9 gigawatt hours, with an operational availability rating of 97.5 percent. **Renewable energy provided 11 percent of the mine's power needs.**



Peak power levels, achieved for brief periods, have surpassed 50 percent – enough wind energy to power Diavik's underground mine. The \$31 million project is Rio Tinto's first wind generation facility and the first large-scale wind farm in Canada's Northwest Territories. With the wind farm, brought on-line in September 2012, Diavik became the operator of the world's largest wind-diesel hybrid power facility.

Diavik was awarded the Canadian Wind Energy (CanWEA) 2013 Group Leadership Award.

http://www.riotinto.com/ourcommitment/features-2932_12151.aspx



Energy Efficiency

The Arctic Energy Alliance (AEA) is a not-for-profit society with a mandate “to help communities, consumers, producers, regulators and policymakers to work together to reduce the costs and environmental impacts of energy and utility services in the NWT.” Current programs with the AEA are the:

Energy Efficiency Incentive Program (EEIP)

EEIP provides rebates to homeowners and consumers who purchase new, more energy efficient models of products that they use every day.

Commercial Energy Conservation and Efficiency Program

AEA has energy experts and funds available to help businesses conserve energy and improve its energy efficiency.

Alternative Energy Technologies Program (AETP)

This program provides funding for renewable energy sources such as solar, wind and residential wood and wood pellet heating appliances. This funding is available to NWT communities, businesses and residents.

<http://aea.nt.ca/programs>

References

Government of the Northwest Territories, A Greenhouse Gas Strategy for the Northwest Territories 2011 – 2015

Environment Canada, National Inventory Report 1990 – 2013, Part 3

Environment Canada, Canada's Emissions Trends, 2013 & 2014

Government of the Northwest Territories, Corporate Greenhouse Gas Emissions Summary Report 2011 – 2013

Government of the Northwest Territories, Public Works and Services Energy Conservation Projects Annual Report 2013-2014

Northwest Territories Power Corporation website: Current Alternative Energy Projects

Rio Tinto, Diavik Diamond Mine Inc. website: Innovative and efficient wind farm delivers

Arctic Energy Alliance website: Programs

