Alaska Greenhouse Gas Emissions Inventory 1990-2015

Alaska Department of Environmental Conservation, Division of Air Quality

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Report Overview

Alaska's greenhouse gas (GHG) emissions from anthropogenic (human-caused) sources within Alaska from 1990 through 2015 has been quantified using data obtained from the Environmental Protection Agency (EPA) and the State of Alaska. Emissions are segregated by economic sector for the six Kyoto Protocol GHGs: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), sulfur hexafluoride (SF_6), hydrofluorocarbons (HFC), perfluorocarbons (PFC).

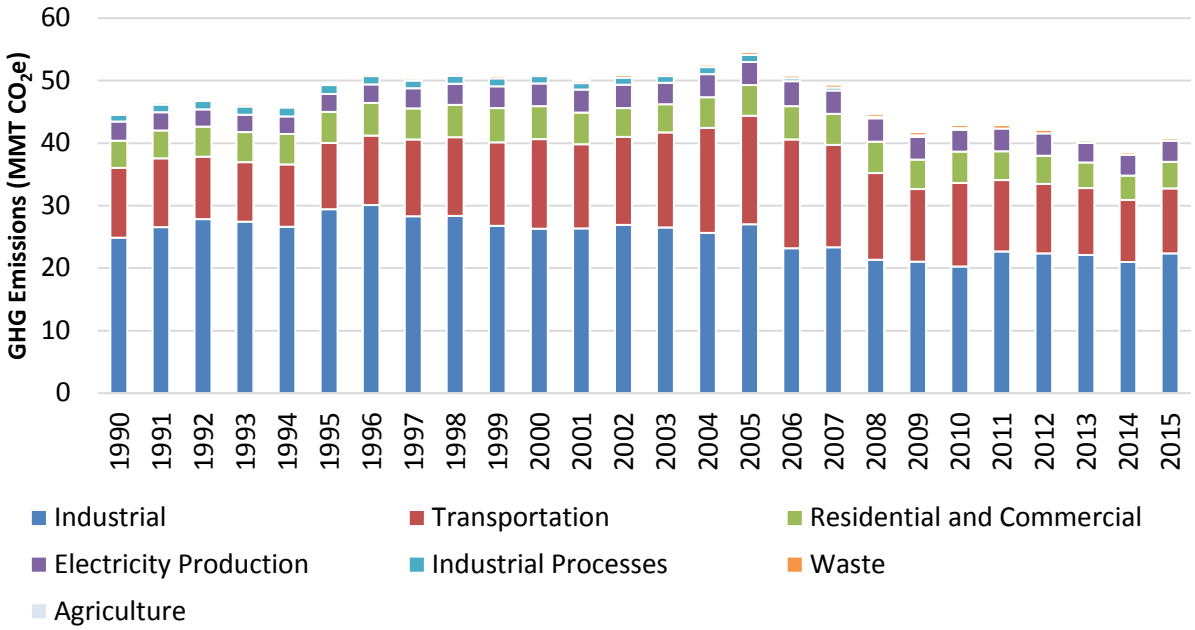
Alaska's GHG emissions comprise about 0.63% of nationwide GHG emissions and 0.09% of global GHG emissions. Alaska ranks 40th in the nation in terms of total GHG emissions but ranks fourth highest in the nation on a per capita basis due to a low population and large oil and gas industry.

From approximately 1995 through 2003, GHG emissions were quite stable at approximately 50 million metric tons (MMT) of carbon dioxide equivalents (CO_2e)[1] and peaked in 2005. Between 1990 and 2015, total gross GHG emissions of CO_2e have decreased by approximately 8%.

The industrial sector, including the oil and gas industries, produces the most GHG emissions in Alaska on an annual basis, followed by the transportation, residential and commercial, and the electrical generation sectors. Waste, agriculture, and industrial process sectors each produce relatively small quantities of GHG in Alaska (less than 1% for each sector). Emission increases have been identified in agriculture, electrical generation, waste and residential and commercial sectors, but the increases are small. Emissions from the major emitters (point sources) has remained relatively the same since 2010.

[1] Carbon dioxide equivalent (CO_2e) is a measure used to compare the emissions from various greenhouse gases based upon their global warming potential.

Exhibit A: 1990 – 2015 Alaska Gross Annual Greenhouse Gas Emissions



The primary focus of the report is on gross emissions from anthropogenic source, however net emissions information is also included when data exists. Net emissions of CO_2e take into account both the emissions from the anthropogenic sectors as well as subtracting emission sinks. Estimation of the benefits of emissions sinks is based on the EPA data and State input of wildfire acreage and vegetation. The EPA data for carbon sinks are calculated for the Southcentral and Southeast coastal areas of Alaska; however, the EPA is working with state and federal agencies in Alaska to update carbon sinks for the Interior and other regions of the State. The State provides information to the EPA for wildfire emissions by acreage and vegetation for the entire state. In this report, net emissions do not include GHG emissions resulting from thawing permafrost.

Alaska trends follow national trends reported by Environmental Protection Agency in their "Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2015" (April 2017) (See Exhibit B.) The overall Alaska pattern for the largest contributing economic sectors have remained stable over the three Alaska GHG reports. The EPA tools used to calculate GHG emissions are updated as emission factors and other variables change. The Alaska Department of Environmental Conservation will continue to incorporate updated information as it becomes available into future emissions inventories.

Exhibit B: U.S. and Alaska Gross GHG Emissions (MMT)

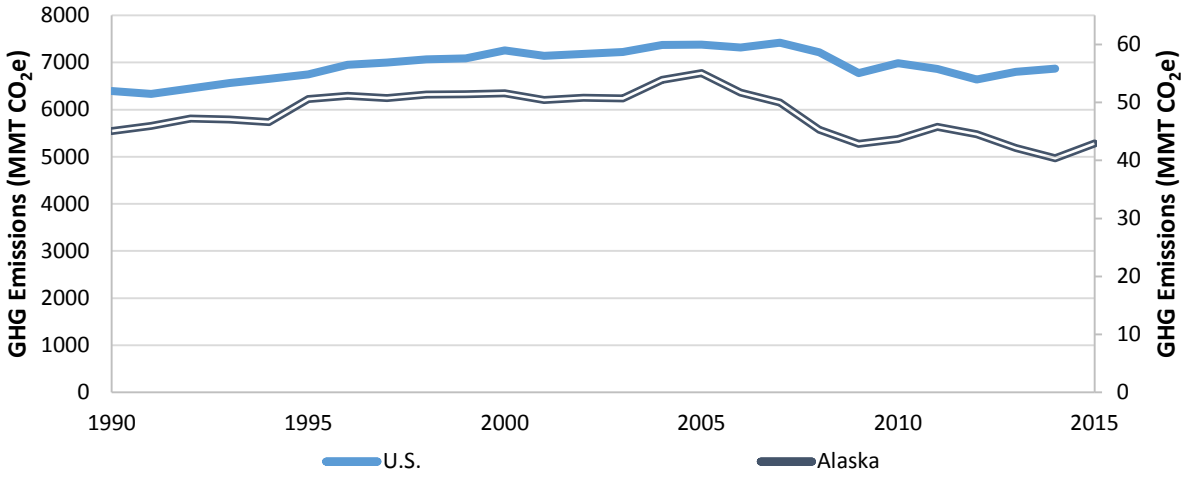


Exhibit B: U.S. GHG emissions are represented by the left vertical y-axis label. Alaska GHG emissions are represented by the right hand vertical y-axis. More information on U.S. GHG emissions can be found on the EPA's website: https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks

"Alaska Greenhouse Gas Emissions Inventory 1990-2015" and previous versions of the report are posted on the ADEC website: http://dec.alaska.gov/air/anpms/projects-reports/greenhouse-gas-inventory

View or download the EPA's "Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2015" (April 2017): https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2015

The Alaska Climate Change Strategy can be found at: http://climatechange.gov.alaska.gov/