

## DESCRIPTION

Greenhouse gases (GHGs) are gases that warm the atmosphere and surface of the planet, leading to changes in the Earth's climate. The conventional GHGs are carbon dioxide (CO<sub>2</sub>), nitrous oxide (N<sub>2</sub>O), methane (CH<sub>4</sub>), sulfur hexafluoride (SF<sub>6</sub>), and two classes of compounds known as hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs). Most GHG emissions are CO<sub>2</sub>, but the other GHGs have very strong warming effects. The primary source of greenhouse gases is the burning of fossil fuels used to produce energy and power motor vehicles. Animal and crop agriculture, landfills and the use of air conditioning also contribute to GHG emissions.<sup>1</sup>

Greenhouse gases play an important role in the earth's climate by trapping heat in the atmosphere. They are necessary to a degree, but excessive amounts of these gases can cause changes in temperature, precipitation, and wind patterns that are disruptive to our ecosystems. These climate changes threaten the survival of some plant and animal species and can also have negative impacts on human health through increased pollution, increased prevalence of disease, and the occurrence of significant weather events such as drought, extreme temperatures, flooding, high winds, global warming and severe storms.<sup>2</sup>

## HOW WE ARE DOING

In 2007, the Minnesota Legislature passed the Next Generation Energy Act, which set goals for renewable energy use, energy conservation and greenhouse gas emissions. These include: 15 percent reduction in GHG emissions by 2015, 30 percent reduction by 2025, and 80 percent reduction by 2050, compared to 2005 emissions. It is unlikely that these future goals will be achieved.

While greenhouse gas emissions from activities throughout the state from 2005 to 2014 decreased slightly (about 4 percent overall), and significant emissions reductions have been seen in some specific areas (especially in electricity generation where emissions decreased 17 percent from 2005 to 2014, due to reduced coal use), emissions have increased in other areas.<sup>3</sup> Transportation GHG emissions are 25 percent of the state's total GHG emissions; while newer vehicles are more efficient and more biofuels are available and replacing fossil fuels, consumers have been choosing to replace smaller cars with larger vehicles. The resulting emissions increase from these vehicles offsets other reductions. GHG emissions from the industrial sector increased since 2005, mostly due to the increasing use of low-cost natural gas.<sup>3</sup>

Mitigation efforts have prevented the increase in emissions that would have otherwise occurred without these efforts. However, without significant additional changes, Minnesota will not achieve the second Next Generation Energy Act goal — a 30 percent reduction in GHG emissions by 2025.

## BENCHMARK INDICATOR

State Statute sets goals for reducing GHG emissions in Minnesota:

- 15% below the 2005 level by 2015
- 30% below the 2005 level by 2025
- 80% below the 2005 level by 2050

## Information to note

- The primary source of greenhouse gases is the burning of fossil fuels used to produce energy and power motor vehicles.
- The Minnesota Legislature set goals for reducing GHG emissions 15% below 2005 levels by 2015, 30% by 2025 and 80% by 2050.
- Since 2008, Ramsey County has reduced energy use in its facilities by 20%.

<sup>1</sup> Climate Change Science: Causes of Climate Change. United States Environmental Protection Agency.

[https://19january2017snapshot.epa.gov/climate-change-science/causes-climate-change\\_.html](https://19january2017snapshot.epa.gov/climate-change-science/causes-climate-change_.html) Accessed December 16, 2017.

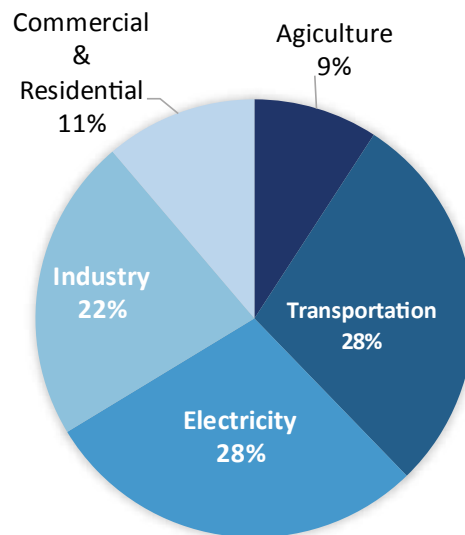
<sup>2</sup> Greenhouse gas emissions. Minnesota Compass. <http://www.mncompass.org/environment/greenhouse-gas-emissions#1-418-g>. Accessed December 16, 2017.

<sup>3</sup> Greenhouse gas emissions in Minnesota. Minnesota Pollution Control Agency. <https://www.pca.state.mn.us/air/greenhouse-gas-emissions-minnesota-0>. Accessed December 16, 2017.

## WHAT RAMSEY COUNTY GOVERNMENT IS DOING

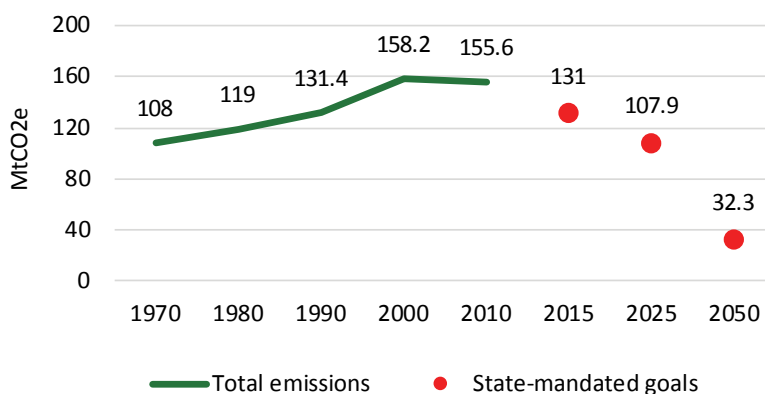
Ramsey County adopted goals for energy use reduction that more closely align with Minnesota's GHG emission reduction goals (i.e., reduce carbon emissions across county operations 30 percent by 2025 and 80 percent by 2050, compared to 2008 data). Since 2008, the county has reduced energy use in its facilities by 20 percent. Due to data gaps, it cannot be determined if the county's fleet has reduced emissions over this time. Other areas of county programs and operations contribute to GHG emissions but have not been tracked. It is anticipated that this data will be collected as it becomes available (for example, fleet operations were centralized in 2016 and a new data tracking system for liquid fuels has been implemented).

Total U.S. Greenhouse Gas Emissions  
by Economic Sector, 2016



Source: U.S. Environmental Protection Agency.<sup>4</sup>

Total Greenhouse Gas Emissions,  
Minnesota, 1970-2025



Source: Minnesota Compass.<sup>5</sup>

<sup>4</sup> Source: U.S. Environmental Protection Agency <https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions>

<sup>5</sup> Source: Minnesota Compass <http://www.mncompass.org>