

2018 Rhode Island Greenhouse Gas Emissions Inventory

Analysis of Changes in GHG Emissions 2017 - 2018

In 2018 total greenhouse gas (GHG) emissions in Rhode Island grew 8.18% since 2017. This recent uptick carries the state’s emissions 1.76% above the 1990 baseline, which is not in line with the substantial reductions needed to meet the 2021 Act on Climate mandatory emissions reduction goals. Since 1990, half of all inventoried sectors’ emissions have decreased. Between 2017 and 2018 GHG emissions increased in each economic sector, with the most significant changes in residential heating, transportation, and industrial processes. Electric power, the second largest GHG emissions sector, only increased 0.97%. High levels of uncertainty can occur between inventory years based on available data. Rhode Island, similar to many states, inventories GHG emissions three years after the measured year occurs. In December 2022, a detailed analysis of the state’s 2019 inventory will be released as the *2019 Triennial Greenhouse Gas Summary*. Methodology and emissions estimates will be discussed thoroughly in the triennial summary.

Total GHG Emissions		
1990	2017	2018
12.48 MMTCO ₂ e	11.74 MMTCO ₂ e	12.70 MMTCO ₂ e

Our State Isn’t Alone

Neighboring New England states experienced similar increases in greenhouse gas emissions since 2017. The Connecticut Department of Energy and Environmental Protection (CTDEEP) reported a 2.7% increase in their 2018 GHG inventory, which exceeds their 2020 statutory goal by 2.9%². Additionally, the Massachusetts Department of Environmental Protection (MassDEP) noted a 0.68% increase in GHG emissions from 2017 to 2018³. Nearby Connecticut and Massachusetts, with similar climate and economies, recorded higher greenhouse gas emissions in 2018. Hence, Rhode Island’s higher GHG emissions in 2018 are not unique.

Emissions from Residential Heating

Greenhouse gas emissions from the residential heating sector increased by 0.46 MMTCO₂e (million metric tons carbon dioxide equivalent) in 2018. This sector has decreased 2.00%⁵ since 1990. Since the residential heating sector is intimately tied to changes in local climate, heating degree days⁴ (HDDs) are helpful for evaluating the impact of temperature on GHG emissions. In Rhode Island there were 5,428 HDDs in 2017¹ and 5,639 HDDs in 2018¹. Since 2018 had 211 more HDDs than 2017, it can be inferred that 2018 was a colder year. Because 2018 was a colder year, it is expected the amount of fuel used to heat a home increased alongside GHG emissions. Although this is a helpful metric, HDDs do not directly correlate with GHG emissions. From 2017 to 2018 there was a 24.43%⁵ increase in emissions, but only a 3.89% increase in

¹Data courtesy of the Northeast Regional Climate Center (NRCC)

²2018 Connecticut Greenhouse Gas Emissions Inventory courtesy of CTDEEP

³GHG Emissions and Mitigation Policies courtesy of MassDEP

⁴A heating degree day represents the recorded daily temperature’s deviation from the mean daily temperature.

HDDs. Factors such as the percentage of biofuel blended into heating fuel and the price of heating fuel also influence residential heating sector GHG emissions.

Emissions from Highway Vehicles

The entire transportation sector is estimated to have emitted 0.29 MMT more CO₂e in 2018 than in 2017. EPA’s State Inventory Tool (SIT) was used to calculate emissions for all sub-sectors (except highway vehicles) in 2017. In 2017, the MOtor Vehicle Emissions Simulator (MOVES) model was used to determine emissions from highway vehicles. The MOVES model is very sophisticated and incorporates eight state-specific data inputs. However, in 2018 the SIT was used to calculate *all* sub-sectors (including highway vehicles). MOVES was not used in 2018 because no input files were available for Rhode Island. The 6.89%⁵ increase in transportation sector emissions between 2017 and 2018 was likely attributed to nationally apportioned data for highway vehicles. Emissions from on-road diesel vehicles jumped from 0.77 MMTCO₂e in 2017 to 1.09 MMTCO₂e in 2018, an increase of 41.56%⁵. RIDEM is confident that increased emissions in the transportation sector were mainly caused by the use of less-precise SIT data instead of MOVES data.

Emissions from Industrial Processes

Between 2017 and 2018, greenhouse gas emissions from the industrial sector rose from 1.12 MMTCO₂e to 1.19 MMTCO₂e, an increase of 5.71%⁵. The industrial sector is comprised of industrial heating and industrial processes. The industrial heating sub-sector only increased 1.60%⁵, while the industrial processes sub-sector climbed 10.00%⁵. Ozone-depleting substances (ODS), which include hydrofluorocarbons (HFCs) and other high global warming potential substances, emitted 0.54 MMTCO₂e in 2018. ODS are estimated through the SIT, which apportions a national value to Rhode Island based on population. The national emissions estimate of ODS ballooned between 2017 and 2018 due to a small increase in the state’s population. ICF, EPA’s subcontractor for the SIT, confirmed the SIT module for ODS was updated in 2018. The small change in Rhode Island’s apportioned ODS value was responsible for both the 10.00%⁵ increase in the industrial processes sub-sector and the 5.71%⁵ overall increase in the industrial sector. To combat emissions from ODS, Rhode Island implemented the “Prohibition of Hydrofluorocarbons in Specific End-Uses” regulation effective August 1, 2021. The regulation prohibits manufacturers from selling products that contain high GWP HFCs in the state.

Further Investment is Needed

The 2021 Act on Climate creates one of the most ambitious climate goals in the nation: net-zero emissions by 2050. The state’s recent rise in GHG emissions further demonstrates the need to invest in renewable energy, electric transportation, and protected land. The state will publish its *2022 Update to the 2016 Greenhouse Gas Reduction Plan* in December 2022. For more information on Rhode Island’s climate actions, visit www.climatechange.ri.gov. Additionally, information on Rhode Island’s GHG emissions inventory can be found at www.dem.ri.gov/programs/air/ghg-emissions-inventory.php

Change from 1990 - 2018			
Sector	MMTCO ₂ e	%	Trend
Transportation	-0.52	-10.39%	↓
Commercial Heating	-0.17	-14.75%	↓
Residential Heating	-0.05	-2.00%	↓

⁵ All economic sector percent changes are calculated through raw SIT output, not rounded MMTCO₂e totals.