DEM
RHODE ISLAND

JUNE 2024

2021 RHODE ISLAND GREENHOUSE GAS INVENTORY

AN ASSESSMENT OF RHODE ISLAND'S PROGRESS TOWARDS THE ACT ON CLIMATE

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Power plant on Providence River.

Introduction

The *2021 Rhode Island Greenhouse Gas Inventory* is produced by the Department of Environmental Management (DEM) to assess the state's annual contribution to global climate change. The metrics presented in this evaluation are the primary scientific tool used by the Rhode Island Executive Climate Change Coordinating Council (EC4) to assess statewide progress towards the Act on Climate's greenhouse gas (GHG) emission reduction mandates (R.I. General Laws § 42-6.2-2). The inventory is an estimate of economy-wide emissions sources and sinks and is recalculated every year based on the best available science and data. Methodologies evolve year-to-year, and emissions estimates from previous inventories should not be used as a direct comparison since adjustments have been made. Refer to the Technical Appendix for a full explanation on applicable adjustments to the 1990 baseline and subsequent year's data. Please note, the economic sector formerly known as "Industry" has been separated into **Industrial Heating** and **Industrial Processes and Product Use** to better showcase the role building heating plays in Rhode Island's emissions and to follow Intergovernmental Panel on Climate Change (IPCC) reporting guidelines.

KEY FINDINGS

- Rhode Island emitted 9.82 million metric tons of carbon dioxide equivalent ($MMTCO_2e$) in 2021
- The state's emissions increased by 8.9% from pandemic-impacted 2020 levels
- Emissions decreased by 14.4% since 1990, but were 35.7% above the Act on Climate's 2030 mandate

Short-Term Trends

TRANSPORTATION

At 37.7% (3.98 $MMTCO_2e$), the majority of Rhode Island's emissions continue to stem from transportation. Gasoline- and- diesel-powered passenger vehicles represented 84.6% of transportation emissions and were responsible for 31.9% of the Rhode Island's overall emissions in 2021. As the electricity consumption sector decarbonizes, transportation emissions continue to occupy a larger share of statewide emissions. In 2021, transportation emissions rebounded as pandemic-related social and economic restrictions eased. Aviation emissions increased 241.1%, likely attributable to a 78% increase in passenger traffic at Rhode Island T.F. Green International Airport from 2020 levels.[1] Highway vehicle emissions slightly increased by 0.8% and non-road source emissions from marine craft, rail, and construction equipment increased by 10.5%. DEM customized EPA's Motor Vehicle Emissions Simulator (MOVES) model with state-specific vehicle miles traveled (VMT) data provided by the Rhode Island Division of Statewide Planning to robustly estimate highway vehicle emissions. As with past inventories, DEM continued to report aircraft emissions from the Rhode Island Airport Corporation for aviation and leveraged fuel sale data from the Energy Information Administration (EIA) to estimate non-road source emissions.

RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL HEATING

Emissions from residential heating comprised 20.4% (2.15 $MMTCO_2e$) of total emissions in 2021, the state's second largest individual sector. Residential heating is sometimes referred to as part of the "buildings" sector, which also includes commercial and industrial heating. Natural gas-, oil-, and propane-fired space heating, water heating, and cooking equipment are the most common sources of residential heating emissions in Rhode Island. Emissions from wood burning stoves are also included in this sector.[2] Residential heating emissions increased 12.5% in 2021, mainly due to New England experiencing a slightly colder and snowier winter compared to 2020. Winter weather and residential heating fuel consumption are strongly correlated through heating degree days (HDDs).[3] In 2021, the coldest months of January, February, and December accumulated 5.8% more HDDs than the same three months in 2020.[4] Annually, 2021 accumulated 40 less HDDs than 2020, a consequence of the Providence area's warmest year on record.[5]

Combined emissions from residential, commercial, and industrial heating were 3.65 $MMTCO_2e$ in 2021.

ELECTRICITY CONSUMPTION

In 2021, Rhode Island's third largest source of emissions was from electricity consumption, which contributed 1.95 $MMTCO_2e$, or 18.4% of total emissions. Electricity consumption emissions originate from power plants connected to the New England electric grid that serve Rhode Island customers. Between 2020 and 2021, electricity consumption emissions increased by 12.5%. Competitive markets and state laws determine where renewable and non-renewable electricity is counted. Each New England state has a renewable energy goal that incrementally covers the amount of electricity used each year with renewables. As adjacent states claim higher quantities of existing renewable energy for their own consumption, less is available to each state. Since 2019, significant amounts of nuclear energy that was previously divided amongst each New England state has been claimed by individual states for climate goals or have retired from operation. The non-renewable electricity consumed in Rhode Island has thus become more carbon intensive, increasing emissions from this sector.

Rhode Island's commitment to the 100% Renewable Energy Standard (RES)[7] has resulted in the state procuring large quantities of renewable energy, especially from offshore wind projects. The state's electricity consumption emissions will decrease as these resources begin to generate power. However, this decrease will not be steady. DEM expects annual fluctuations in electricity consumption emissions prior to reaching 100% renewable energy in 2033 based on New England's fleet of power plants and other states' ability to procure renewable energy. See the Technical Appendix for details on electricity consumption emissions calculations and the impact of biogenic emissions.[2]

OTHER SECTORS

Industrial processes and product use (IPPU) emissions constituted 5.4% of 2021's total emissions (0.57 $MMTCO_2e$). In Rhode Island, hydrofluorocarbon (HFC) leaks from refrigeration, air conditioning, and aerosols contribute 99% of all IPPU emissions. Fugitive methane leaks from Rhode Island's natural gas distribution system emitted 0.26 $MMTCO_2e$ in 2021, a slight decrease of 2% from 2020 levels. National Grid, former operator of the state's gas distribution system, replaced 52 miles of leak-prone gas mains and 1,848 gas services as part of its annual Gas Infrastructure, Safety, and Reliability Plan for 2021.[8] The waste sector (1.1% of total) includes emissions from decaying organic matter at the Central Landfill in Johnston and the 19 wastewater treatment facilities throughout Rhode Island. Emissions from agriculture (0.2% of total) represent methane emissions from livestock and nitrous oxide emissions from fertilizer applied to soil. Carbon dioxide sequestered by natural and working lands, formerly referred to as "land use, land use change, and forestry", offset 7.4% of gross emissions in 2021.

Long-Term Trends

Rhode Island's commitment to climate change mitigation and investment in renewable energy sources, along with regional economic trends, have decreased emissions substantially since 1990.

LARGEST SECTOR TRENDS

Transportation emissions declined 14.5%

Electricity consumption emissions declined 30.9%

Residential heating emissions declined 9.7%

The implementation of the RES, conversion to more efficient heating fuels, and technological advances in landfill gas collection are examples of significant strides taken towards net-zero emissions. Fugitive methane leaks from natural gas distribution also continue to decline (-21.0%) as antiquated cast iron and unprotected steel gas mains and services are replaced with plastic or protected steel counterparts. Conversely, the widespread replacement of ozone-depleting substances with high global warming potential HFCs have magnified IPPU emissions by 0.49 $MMTCO_2e$ since 1990. Emissions from hard-to-decarbonize marine craft, rail, and construction equipment have collectively increased by 20.4%. Rhode Island's natural and working lands continue to be converted to developed lands. Consequentially, the state's ability to naturally sequester carbon dioxide has shrunk by 14% in the last 31 years.

Conclusion

As expected, Rhode Island's emissions rebounded from pandemic-era restrictions in 2021. Transportation emissions increased by 5.4% as air, road, and rail travel largely resumed. Despite the Providence area's warmest year on record, combined emissions from residential, commercial, and industrial heating increased by 11.3% since 2020. At 9.82 $MMTCO_2e$, statewide emissions in 2021 were 14.4% below 1990 levels. While Rhode Island has made significant progress, the state must reduce emissions by 35.7% (3.51 $MMTCO_2e$) to achieve the Act on Climate's statutory requirement of *45% below 1990 levels by 2030*. Significant decarbonization of transportation, heating, and electricity consumption is instrumental to sustain long-term climate goals.

The attached Technical Appendix details methodology updates implemented since October 2023. DEM is committed to scientifically evaluating Rhode Island's path towards net-zero emissions and will tentatively publish the *2022 Rhode Island Greenhouse Gas Inventory* no later than spring 2025. For more information, visit https://dem.ri.gov/ghg-inventory. Sign up for climate change-related updates via email from the Rhode Island Executive Climate Change Coordinating Council.

HISTORICAL RHODE ISLAND GREENHOUSE GAS EMISSIONS

All Units in Million Metric Tons Carbon Dioxide Equivalent ($MMTCO_2e$)

Sector	1990* Emissions ($MMTCO_2e$)	2010 Emissions ($MMTCO_2e$)	2018 Emissions ($MMTCO_2e$)	2019 Emissions ($MMTCO_2e$)	2020 Emissions ($MMTCO_2e$)	2021 Emissions ($MMTCO_2e$)
Energy	**11.91**	**11.51**	**10.38**	**9.64**	**9.06**	**9.84**
Transportation	*4.65*	*4.84*	*4.53*	*4.27*	*3.78*	*3.98*
Aviation	0.33	0.26	0.32	0.28	0.06	0.20
Highway Vehicles	3.98	4.06	3.83	3.60	3.34	3.37
Non-Road Sources	0.35	0.51	0.37	0.38	0.38	0.42
Electricity Consumption	*2.82**	*2.64*	*1.66*	*1.48*	*1.73*	*1.95*
Residential Heating	*2.38*	*2.25*	*2.33*	*2.09*	*1.91*	*2.15*
Commercial Heating	*1.13*	*0.92*	*0.98*	*0.94*	*0.80*	*0.94*
Industrial Heating	*0.61*	*0.55*	*0.61*	*0.60*	*0.57*	*0.56*
Natural Gas Distribution	*0.33*	*0.31*	*0.27*	*0.27*	*0.26*	*0.26*
Industrial Processes and Product Use	**0.09**	**0.38**	**0.51**	**0.49**	**0.55**	**0.57**
Agriculture	**0.05**	**0.05**	**0.05**	**0.03**	**0.03**	**0.02**
Waste	**0.28**	**0.35**	**0.21**	**0.23**	**0.12**	**0.12**
Solid Waste Disposal	*0.18*	*0.25*	*0.11*	*0.13*	*0.02*	*0.02*
Wastewater Treatment and Discharge	*0.10*	*0.10*	*0.10*	*0.10*	*0.11*	*0.11*
TOTAL GROSS EMISSIONS	**12.32**	**12.30**	**11.16**	**10.39**	**9.76**	**10.55**
Natural and Working Lands	*-0.85*	*-0.76*	*-0.77*	*-0.76*	*-0.74*	*-0.73*
TOTAL NET EMISSIONS	**11.47**	**11.54**	**10.39**	**9.64**	**9.02**	**9.82**

*1990 has been adjusted as done in the *2016 Rhode Island Greenhouse Gas Emissions Reduction Plan*
For the complete dataset, visit: https://dem.ri.gov/ghg-inventory

Technical Appendix

The Department of Environmental Management (DEM) strives to incorporate contemporary climate science into the *Rhode Island Greenhouse Gas Inventory* whenever possible. The *2006 IPCC Guidelines for National Greenhouse Gas Inventories* and its refinements, internationally recognized as the gold standard for greenhouse gas (GHG) accounting[9], is the default framework DEM utilizes unless otherwise instructed to by the Rhode Island Executive Climate Change Coordinating Council (EC4). The Technical Appendix serves as a hub to inform interested readers of methodology changes and updates DEM has adopted since the 2020 inventory was released in October 2023.

ADJUSTMENTS TO HISTORICAL EMISSIONS ESTIMATES

In October 2023, DEM opened a 14-day public comment period on Proposed Methodology Improvements for the 1990 Baseline. In addition to updating the inventory's 1990 baseline for the first time in a decade, DEM also solicited feedback about applying relevant methodology updates to the 1990 baseline and subsequent years on an as-needed basis in the future. DEM started this practice with the *2021 Rhode Island Greenhouse Gas Inventory*. Since the inventory's timeseries is now recalculated each year to incorporate relevant changes in emissions factors, new datasets, and updated global warming potentials, past inventories should not be used as a direct comparison. The following table showcases numerical adjustments to years 1990 and 2020 and their comparison to 2021. It is important to note that similar adjustments have been applied to all historical emissions estimates, where applicable. The complete 1990-2021 emissions dataset can be found at https://dem.ri.gov/ghg-inventory.

WHAT'S NEW?

- 2010-2020: Corrected electricity consumption estimates, see page 9.
- 1990-1994: Added steel production estimates, see page 10.
- 1990-2021: Recalculated ozone depleting substance substitute estimates with the IPCC's *Fifth Assessment Report* 100-year global warming potentials to align with all other sectors, see page 11.
- 1990-2021: Incorporated new natural and working land estimates from the U.S. Forest Service and adjusted solid waste estimates from Environmental Protection Agency's new State Inventory Tool. See "Notes About Federal Datasets and Emissions Factors", page 11.

HIGHLIGHTED ADJUSTMENTS TO THE 1990 BASELINE AND 2020 INVENTORY

All Units in Million Metric Tons Carbon Dioxide Equivalent ($MMTCO_2e$)

Sector	1990 Previous	1990 New	2020 Previous	2020 New	2021 New
Energy	**11.91**	**11.91**	**9.37**	**9.06**	**9.84**
Transportation	*4.65*	*4.65*	*3.77*	*3.78*	*3.98*
Aviation	0.33	0.33	0.06	0.06	0.20
Highway Vehicles	3.98	3.98	3.34	3.34	3.37
Non-Road Sources	0.35	0.35	0.37	0.38	0.42
Electricity Consumption	*2.82*	*2.82*	*2.04*	*1.73*	*1.95*
Residential Heating	*2.38*	*2.38*	*1.91*	*1.91*	*2.15*
Commercial Heating	*1.13*	*1.13*	*0.80*	*0.80*	*0.94*
Industrial Heating	*0.61*	*0.61*	*0.57*	*0.57*	*0.56*
Natural Gas Distribution	*0.33*	*0.33*	*0.26*	*0.26*	*0.26*
Industrial Processes and Product Use	**0.07**	**0.09**	**0.40**	**0.55**	**0.57**
Agriculture	**0.05**	**0.05**	**0.03**	**0.03**	**0.02**
Waste	**0.34**	**0.28**	**0.12**	**0.12**	**0.12**
Solid Waste Disposal	*0.24*	*0.18*	*0.02*	*0.02*	*0.02*
Wastewater Treatment and Discharge	*0.10*	*0.10*	*0.10*	*0.11*	*0.11*
TOTAL GROSS EMISSIONS	**12.37**	**12.32**	**9.92**	**9.76**	**10.55**
Natural and Working Lands	*-0.81*	*-0.85*	*-0.68*	*-0.74*	*-0.73*
TOTAL NET EMISSIONS	**11.56**	**11.47**	**9.24**	**9.02**	**9.82**

DETAILS ON ELECTRICITY CONSUMPTION EMISSIONS CALCULATIONS

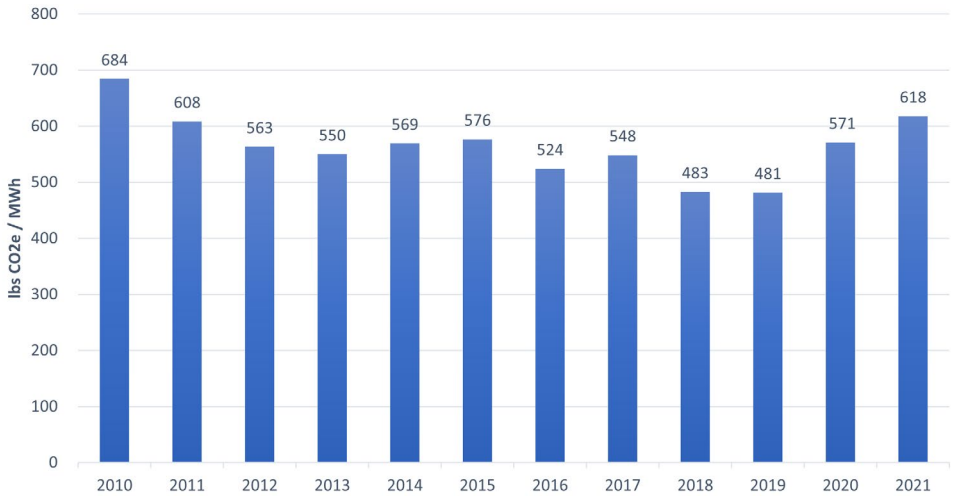
Annual Fluctuations in Emissions Factors

The *Rhode Island Greenhouse Gas Inventory* uses a unique methodology to estimate electricity consumption emissions[6] between 2010 and 2021 to capture the effects of the Renewable Energy Standard (RES)[7]. Rhode Island's electric load covered by Renewable Energy Certificates (RECs) are subtracted from the state's total electric load to obtain the electric load from the "system residual mix". To determine Rhode Island's electricity consumption emissions, DEM calculates an emissions factor for the system residual mix that considers the carbon intensity of New England's power plants. When coal- and oil-fired power plants retire, this emissions factor decreases. For example, 1,535 MWh of oil- and-coal electricity generation was removed from the system residual mix when the Brayton Point Power Station in Somerset, Massachusetts retired in May 2017. Resultingly, the system residual mix's emissions factor decreased from 548 lbs CO_2e/MWh to 483 lbs CO_2e/MWh. When renewable energy that was formerly part of the system residual mix is claimed by a state, its absence increases the system residual mix's emissions factor. Since 2019, large quantities of renewable energy that was formerly part of the system residual mix have been converted to RECs claimed by other New England states. This increased the system residual mix's emissions factor from 481 lbs CO_2e/MWh in 2019 to 571 lbs CO_2e/MWh in 2020 and 618 lbs CO_2e/MWh in 2021. Annual fluctuations in this metric can greatly impact Rhode Island's electricity consumption emissions.

Correction to Previous Calculations

Originally developed by the Massachusetts Department of Environmental Protection, DEM's electricity consumption methodology was revamped with the *2019 Rhode Island Greenhouse Gas Inventory* in conjunction with the Connecticut Department of Energy and Environmental Protection. The methodology synthesizes vast amounts of data from the New England Power Pool Generation Information System (NEPOOL GIS) to count every REC settled in Rhode Island. The complete NEPOOL GIS dataset, collectively over half a million lines, is analyzed with Microsoft Excel. In December 2023, DEM discovered a calculation error that incorrectly omitted all RECs, except wind, from the final emissions tabulation. As a result, non-biogenic electricity consumption emissions between 2010 and 2020 presented in the *2020 Rhode Island Greenhouse Gas Inventory* were overestimated by approximately 15%. DEM corrected this error for all applicable years and now collaborates with the Rhode Island Public Utilities Commission to quantitively and qualitatively validate all RECs claimed by Rhode Island.

2010-2021 SYSTEM RESIDUAL MIX EMISSIONS FACTORS



Carbon Dioxide Emissions from Biogenically-Sourced Electricity

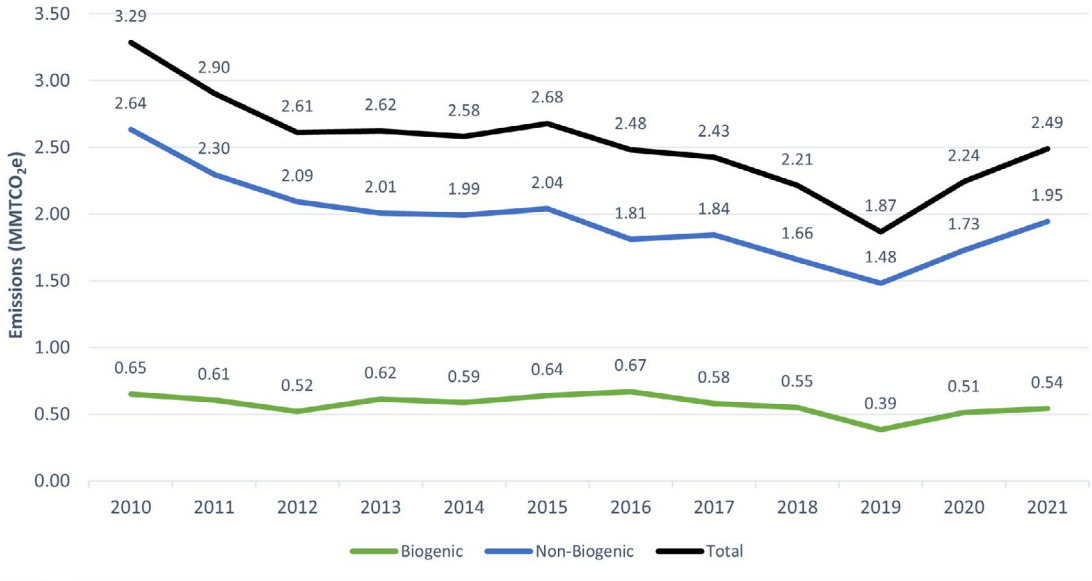
The *Rhode Island 2022 Climate Update* assumes carbon dioxide (CO_2) emissions from biogenic sources to be CO_2e-neutral, which builds upon the federal government's reporting convention to separately report biogenic emissions sources from anthropogenic emissions sources.[15] Thus, the *Rhode Island Greenhouse Gas Inventory* treats biogenic CO_2 from all sectors, including electricity consumption, as CO_2e-neutral for purposes of assessing compliance with the Act on Climate. DEM disaggregates the electricity consumption sector between biogenic and non-biogenic sources to display the impact biogenic emissions would have if counted at the point of combustion. Biogenic fuel sources include biogas, biomass, digester gas, landfill gas, and wood energy sources. Non-biogenic fuel sources include coal, kerosene, petroleum, natural gas, and trash-to-energy. In 2021, Rhode Island's CO_2 emissions from biogas, biomass, digester gas, and landfill gas were 0.54 $MMTCO_2e$.

STEEL PRODUCTION

DEM contracted with the Northeast States for Coordinated Air Use Management (NESCAUM) to compile the first *Rhode Island Greenhouse Gas Inventory* in 2013.[10] GHG emissions tracking by subnational governments was still fairly new 11 years ago, and NESCAUM heavily relied on nationally apportioned activity data provided by the Environmental Protection Agency (EPA). NESCAUM omitted emissions from steel production due to lack of reliable data in EPA's State Inventory Tool (SIT). Today, DEM recognizes this was an inaccurate omission since Rhode Island hosted an active steel mill until 1994.

Ocean State Steel (OSS) produced steel billets with two electric arc furnaces in East Providence. At the time, OSS was Rhode Island's single largest source of air pollution. The facility was the last remaining steel mill in New England when it permanently closed in July 1994. In 1990, which is identified by the Act on Climate as the baseline year for measuring progress, OSS operated at full capacity. All previous inventories accounted for OSS's natural gas consumption emissions in the industrial heating sector, but not the process-related carbon dioxide (CO_2) emissions from steel production. To continuously improve the inventory, OSS's steel production data was obtained from DEM's Office of Air Resources' file archives. CO_2

2010-2021 ELECTRICITY CONSUMPTION EMISSIONS



emissions from the annual tons of steel produced was estimated with EPA's SIT, which provides an emission factor for electric arc furnaces:

- 1990: 124,884 metric tons of steel = 0.010 $MMTCO_2e$
- 1991: 139,561 metric tons of steel = 0.011 $MMTCO_2e$
- 1992: 128,677 metric tons of steel = 0.010 $MMTCO_2e$
- 1993: 206,623 metric tons of steel = 0.017 $MMTCO_2e$
- 1994: 44,092 metric tons of steel = 0.004 $MMTCO_2e$

The addition of steel production to the inventory results in an incremental change in emissions through 1994. Specifically, OSS's CO_2 emissions from steel production now account for 11.7% of the industrial processes and product use (IPPU) sector in 1990. This improvement fills an important gap in the 1990 baseline and subsequent years to ensure Rhode Island's historical emissions are accurately tabulated.

OZONE DEPLETING SUBSTANCE SUBSTITUTE GLOBAL WARMING POTENTIALS

Hydrofluorocarbons (HFCs) are ozone depleting substance (ODS) substitutes mainly used in refrigeration, air conditioning, and aerosols. HFCs replaced ozone layer-degrading chlorofluorocarbons (CFCs) that were phased out by the Montreal Protocol in 1987. HFCs were widely adopted by supermarkets, cold storage warehouses, and manufacturers of air conditioners and aerosols as a cost-effective alternative to CFCs. However, HFCs are thousands of times more powerful GHGs than CO_2. In 2022, the United States ratified the Kigali Amendment to phase down the use of HFCs. Rhode Island, as part of the U.S. Climate Alliance, took further action to reduce HFC emissions and implemented the P*rohibition of Hydrofluorocarbons in Specific End-Uses regulation* in 2021 to prohibit certain HFC and HFC blends.[11]

The *Rhode Island Greenhouse Gas Inventory* leverages EPA's SIT to estimate HFC, perfluorocarbon (PFC), and nitrogen trifluoride (NF_3) emissions as part of the IPPU sector. SIT mirrors the *U.S. Inventory of Greenhouse Gas Emissions and Sinks*, which estimates HFC, PFC, and NF_3 emissions by state. EPA calculates state-level HFC emissions by apportioning national HFC emissions estimates to states based on population. Additionally, EPA applies adjustments to account for regional differences in air conditioning use. The *2021 Rhode Island Greenhouse Gas Inventory* updates HFC, PFC, and NF_3 emissions back to 1990 with global warming potentials (GWPs) from the Intergovernmental Panel on Climate Change's (IPCC) *Fifth Assessment Report*.[12] ODS substitute emissions from previous inventories are incrementally different since HFC, PFC, and NF_3 emissions were converted to carbon dioxide equivalent (CO_2e) with GWPs from the IPCC's *Fourth Assessment Report*.[13]

NOTE ABOUT FEDERAL DATASETS AND EMISSION FACTORS

The *Rhode Island Greenhouse Gas Inventory* leverages numerous datasets from federal agencies that have the bandwidth and resources to gather information on a state-size scale. DEM obtains original data from EPA, the National Oceanic and Atmospheric Administration, the Energy Information Administration (EIA), the U.S. Forest Service and the U.S. Department of Transportation to inform various sectors of the inventory. Additionally, EPA and EIA develop emission factors that are used to calculate emissions in SIT and DEM's custom electricity consumption methodology. Many datasets are simultaneously used in EPA's *Inventory of U.S. Greenhouse Gas Emissions and Sinks*, which is submitted to the United Nations under the Paris Agreement.[14] Since Rhode Island's inventory closely mirrors the national inventory, data and methodologies from federal agencies are improved year-to-year. DEM closely tracks improvements made to the national inventory that also effect Rhode Island's inventory. When necessary, DEM will highlight significant changes in the Technical Appendix to the *Rhode Island Greenhouse Gas Inventory.*

End Notes

1. The Rhode Island Airport Corporation Board of Directors reviews passenger data for Rhode Island T.F. Green International Airport collected by the U.S. Department of Transportation.
2. Carbon dioxide (CO_2) from the combustion of organic energy resources is considered biogenic in origin and is treated as CO_2e-neutral for purposes of compliance with the Act on Climate.
3. Degree days are the difference between the daily mean temperature and 65°F. If the daily mean temperature is below 65°F, then heating degree days (HDDs) are calculated. Conversely, if the daily mean temperature is above 65°F, then cooling degree days (CDDs) are calculated. Winters with greater amounts of HDDs correlate with higher residential and commercial heating emissions.
4. NOAA National Weather Service, U.S. Federal Aviation Administration, U.S. Department of Defense, NOAA National Centers for Environmental Information (2021): 5-Minute Surface Weather Observations from the Automated Surface Observing Systems (ASOS) Network.
5. The Providence area has a reliable climate record back to November 1, 1904.
6. Electricity consumption is the only sector of the ***Rhode Island Greenhouse Gas Inventory*** that includes emissions from outside of Rhode Island's geographic borders. This deviation from international GHG reporting conventions was unanimously approved by the EC4 on May 11, 2016.
7. Rhode Island General Laws § 39-26-4.
8. Public Utilities Commission Docket No. 4996 – The Narragansett Electric Co. d/b/a National Grid. Gas Infrastructure, Safety, and Reliability (ISR) Plan for FY 2021 (filed 12/20/19).
9. IPCC 2006, 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Prepared by the National Greenhouse Gas Inventories Programme, Eggleston H.S., Buendia L., Miwa K., Ngara T. and Tanabe K. (eds). Published: IGES, Japan.
10. See the 2010 ***Rhode Island Greenhouse Gas Inventory***.
11. See the Prohibition of Hydrofluorocarbons in Specific End-Uses (250-RICR-120-05-53) regulation.
12. IPCC, 2014: Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp.
13. IPCC, 2007: Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, Pachauri, R.K and Reisinger, A. (eds.)]. IPCC, Geneva, Switzerland, 104 pp.
14. See United Nations Framework Convention on Climate Change reporting requirements.
15. See section 3.1 of the White House Council on Environmental Quality's ***Federal Greenhouse Gas Accounting and Reporting Guidance***.

RECOMMENDED CITATION:

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