



Palmetto Air Quality Collaborative (PAQC)

Greenhouse Gases
and Reducing Emissions



Updated: December 4, 2023



Palmetto Air Quality Collaborative (PAQC)

- Formed by the SC Office of Resilience (SCOR) and SC Department of Health and Environmental Control (SC DHEC)
- Funded through the Climate Pollution Reduction Grant (CPRG)
 - Administered by the U.S. Environmental Protection Agency (EPA)
 - Established by Inflation Reduction Act (IRA) on August 16, 2022
- 46 states, including South Carolina, received \$3 million
- Metropolitan Statistical Areas (MSA) received \$1 million
 - Columbia MSA
 - Greenville-Spartanburg MSA
 - Charlotte MSA



Greenhouse Effect

- Solar Radiation: energy (heat) emitted by the sun mostly in the form of visible light, also called sunlight
- Infrared Radiation: weaker energy emitted by the Earth in the form of thermal heat, also called terrestrial radiation
- Greenhouse Gases (GHGs): Gases in the atmosphere that **trap heat** in Earth's system
 - Without GHGs, Earth would be uninhabitable (about 60°F cooler)
- **More GHGs in the atmosphere: less heat escapes to space and Earth gets warmer**

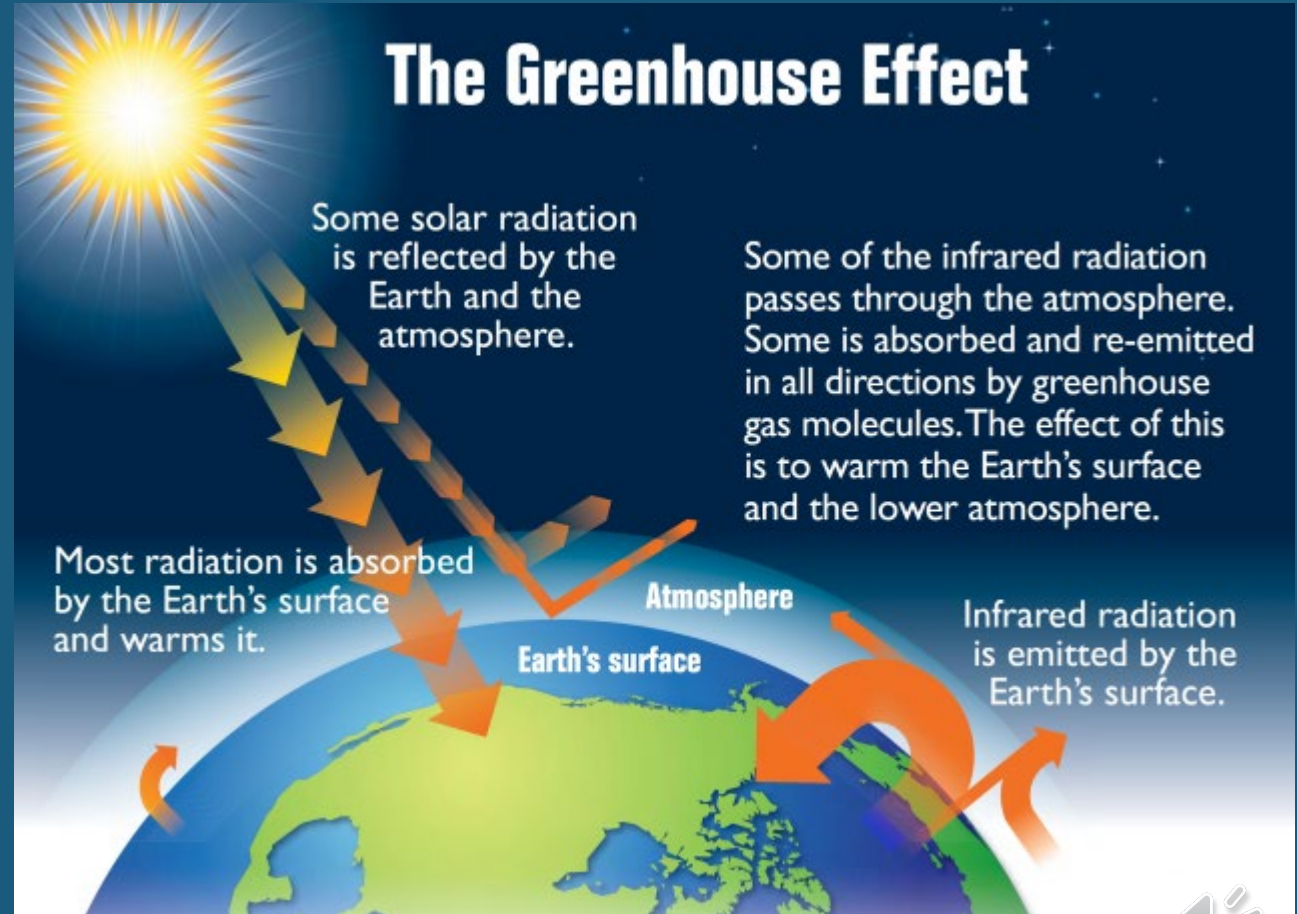


Image Credit: U.S. Environmental Protection Agency



Greenhouse Gases

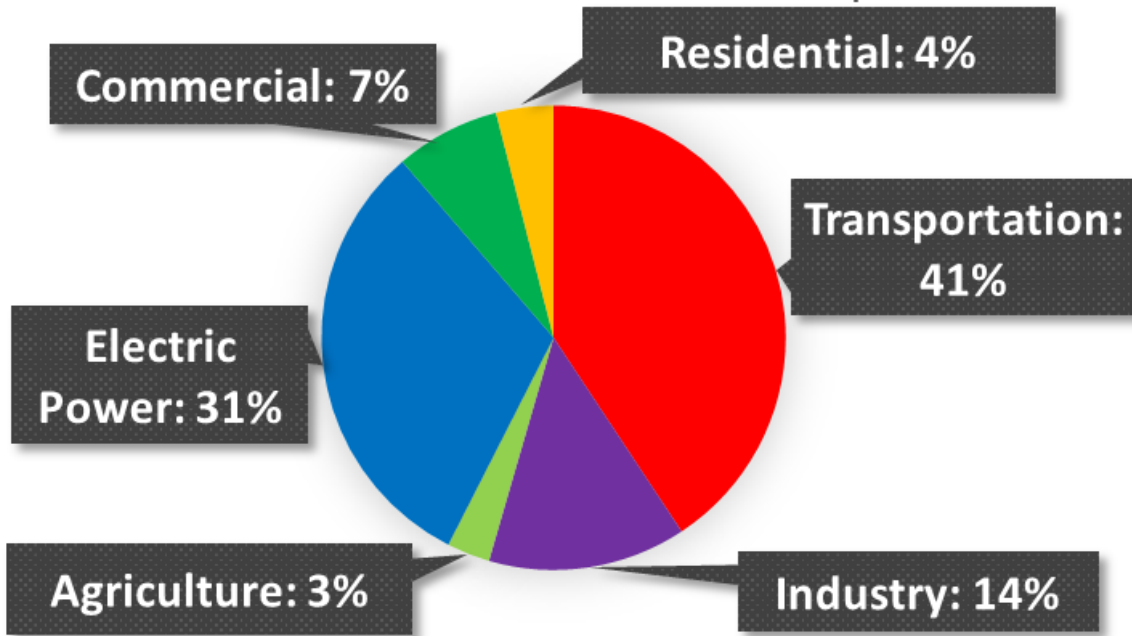
Common Name	Chemical Formula	Common Sources and Uses
Carbon Dioxide	CO ₂	Combustion (burning fossil fuels) Land cover change
Methane	CH ₄	Combustion Agriculture (livestock, rice) Waste and Landfill Decomposition
Nitrous Oxide	N ₂ O	Combustion (burning fossil fuels)
Sulphur Hexafluoride	SF ₆	Electrical Insulator (gas used to fill spaces to insulate)
Hydrofluorocarbons	HFCs	Refrigerants (coolant)
Perfluorocarbons	PFCs	Aluminum production Industrial processes



South Carolina GHG Emissions

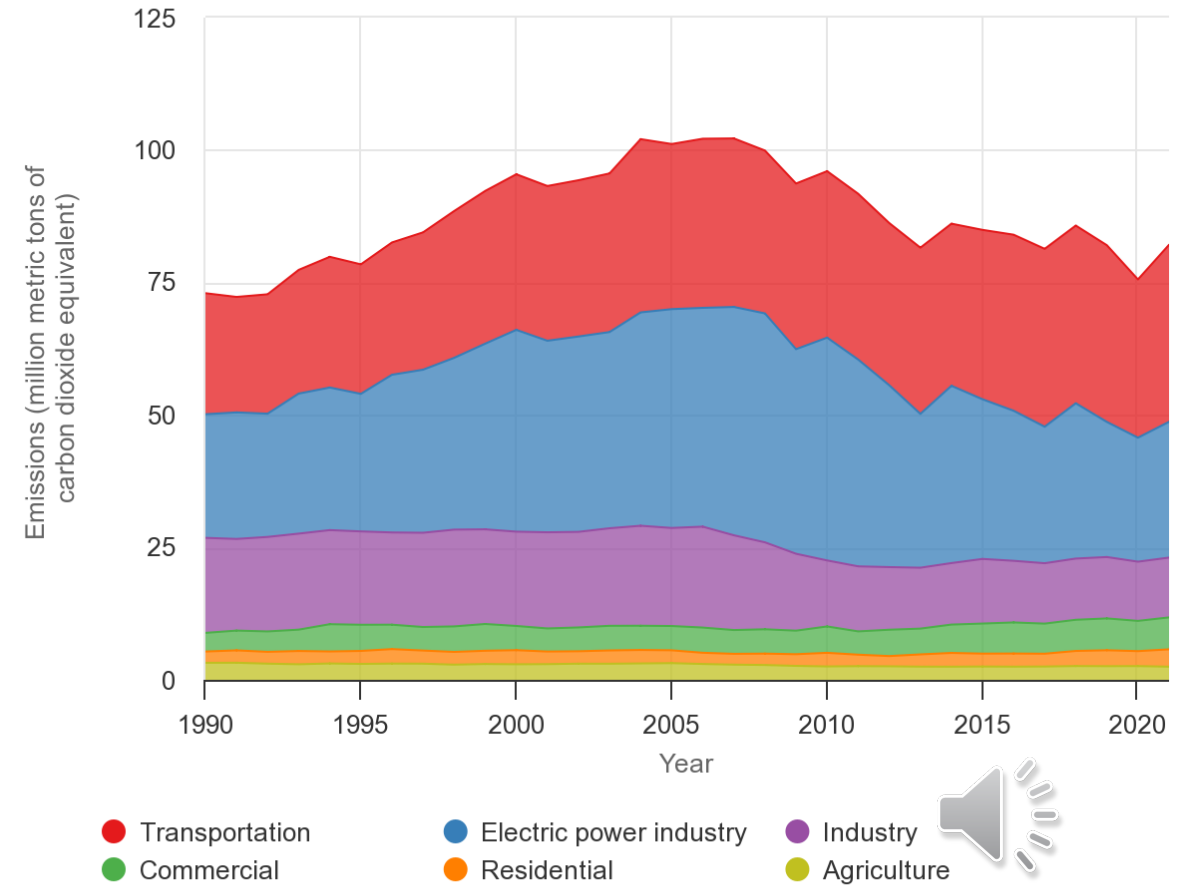
South Carolina Greenhouse Gas Emissions by Economic Sector, 2021

Emissions in million metric tons of carbon dioxide equivalent



Source: U.S. EPA's Inventory of U.S. Greenhouse Gas Emissions and Sinks by State: 1990-2021.
<https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks>

South Carolina Greenhouse Gas Emissions by Economic Sector, 1990–2021



Source: U.S. EPA's Inventory of U.S. Greenhouse Gas Emissions and Sinks by State: 1990-2021.
<https://www.epa.gov/ghgemissions/state-ghg-emissions-and-removals>

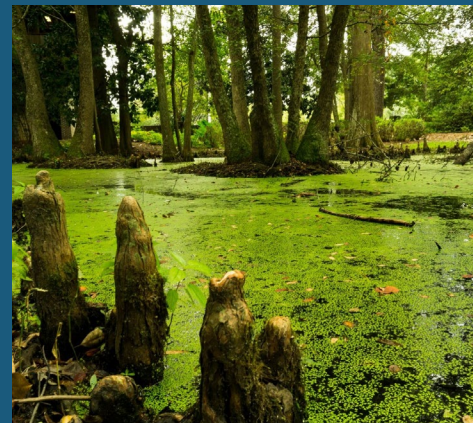
Benefits of Reducing Emissions

Provide Benefits:

- Cleaner air
- Improved public health
- Economic growth and development
- Enhanced resilience

Reduce Harm:

- Lessening of impacts from extreme weather events and natural hazards
- Deceleration of sea level rise and coastal erosion





Thank you for your interest in the PAQC!



Questions? Contact us at PAQC@scor.sc.gov

References and Additional Information:

<u>Source:</u>	<u>Link:</u>
Palmetto Air Quality Collaborative	https://scor.sc.gov/paqc
U.S. EPA: CPRG	https://www.epa.gov/inflation-reduction-act/climate-pollution-reduction-grants
U.S. EPA: Implementation Grants	https://www.epa.gov/inflation-reduction-act/about-cprg-implementation-grants
U.S. EPA: Inflation Reduction Act	https://www.epa.gov/inflation-reduction-act
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U.S. EPA: Overview of Greenhouse Gases	https://www.epa.gov/ghgemissions/overview-greenhouse-gases
U.S. EPA: Understanding Global Warming Potential	https://www.epa.gov/ghgemissions/understanding-global-warming-potentials
U.S. EPA: Climate Change Science (Image Source)	https://www.epa.gov/climatechange-science/basics-climate-change
U.S. EPA: State Inventory and Projection Tool	https://www.epa.gov/statelocalenergy/state-inventory-and-projection-tool
NASA: What is the greenhouse effect?	https://climate.nasa.gov/faq/19/what-is-the-greenhouse-effect/
NASA: Global Climate Change Evidence	https://climate.nasa.gov/evidence/
South Carolina Office of Resilience: Strategic Statewide Resilience and Risk Reduction Plan, Chapter 4 Climate Trends	https://scor.sc.gov/sites/scor/files/Documents/Chapter%204%20Climate%20Trends.pdf
U.S. Energy Information Administration (EIA): Energy and the environment explained	https://www.eia.gov/energyexplained/energy-and-the-environment/where-greenhouse-gases-come-from.php
U.S. Global Change Research Program: Fifth National Climate Assessment	https://nca2023.globalchange.gov/

