

Emory Greenhouse Gas Emissions Inventory Results – FY21 Update

Executive Summary

Emory regularly evaluates its greenhouse gas (GHG) emissions, or carbon footprint, in order to monitor its efforts to reduce emissions to net-zero by 2050 through strategies that entail targeted mitigation, behavior change, clean and renewable energy sources, and new innovations. GHG emissions reporting began in FY10, with 2005 as the original baseline year, and subsequent inventories have been conducted in 2013, 2014, 2016, 2019, and 2021.

On October 13, 2021, Emory University joined Second Nature’s Presidents’ Climate Commitment, which includes 450 higher education institutions committed to achieving net-zero carbon emissions and building resilience to the impacts of climate change. A key component of this commitment is to publicly report an institution’s GHG emissions on an annual basis and report on all climate action planning efforts. Emory University has always publicly reported its GHG emissions on the Office of Sustainability Initiatives’ (OSI) website and on its Sustainability, Tracking, Assessment, and Rating System (STARS) report, however this inventory will be the first shared through the Second Nature reporting platform.

In 2019, Emory’s Sustainability Vision Committee proposed an update to Emory’s greenhouse gas emissions reduction goals to mirror the latest scientific evidence and recommendations of the United Nations Intergovernmental Panel on Climate Change. The scientific evidence shows that in order to stabilize global mean surface temperature to a 1.5-degree Celsius target or lower, net anthropogenic emissions of greenhouse gases must decrease by 45% by 2030 (from 2010 levels), and achieve economy-wide decarbonization (or net-zero) by 2050. In light of this evidence, Emory leadership approved updating Emory’s baseline inventory year to 2010, and matching its GHG emissions goals to these global targets [45% reduction by 2030 and 100% reduction by 2050]. In support of these overarching goals, Emory’s 2025 Sustainability Vision and Strategic Plan set contributing goals to:

- Invest in a portfolio of innovative greenhouse gas sequestration projects that provide resilience, research, teaching, and national leadership benefits to Emory;
- Achieve carbon neutral construction for all new construction;
- Reduce the university’s campus energy use per square foot (EUI) by 50% and total energy use by 25%;
- Develop a local carbon offset program with social justice benefits to allow students, faculty, and staff to offset university travel, commuting, and other GHG producing activities.

Results – Overall Emissions

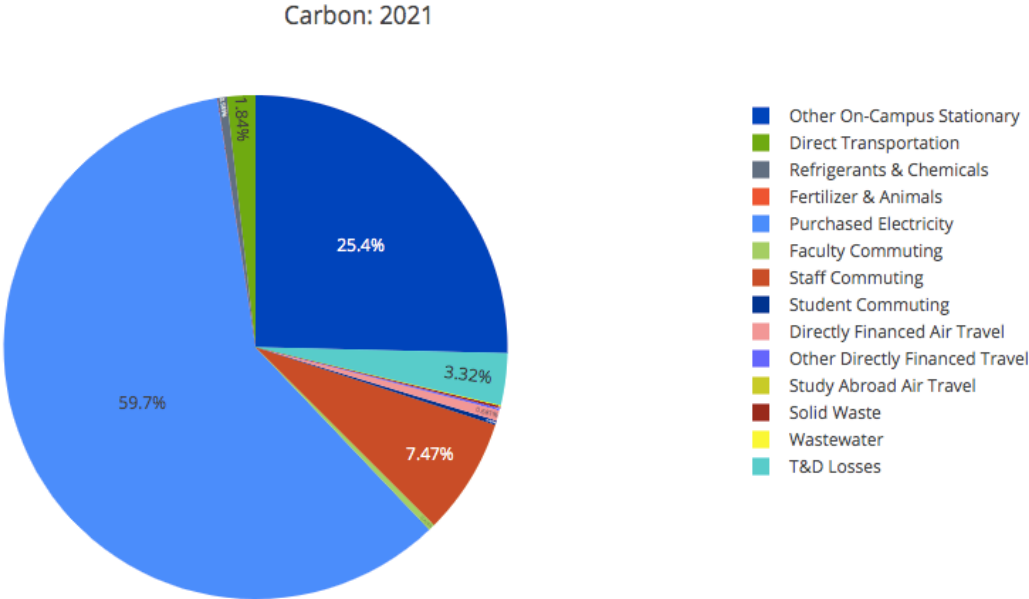
Since 2010, Emory has reduced its GHG emissions by 40.85%. Emory emitted a net quantity of 190,728 MT CO₂e¹ in FY21. This figure represents a 16.25% reduction in emissions since FY19 (227,722.17 MT CO₂e).

¹ Metric tons of carbon dioxide equivalent

Historically, Emory has seen annual GHG reductions at the same time that the university has experienced significant growth. While the reductions for FY21 are expected, they are also being impacted by COVID-19 protocols that limited university-sponsored travel, commuting to campus, and the energy demand of university facilities. These university-wide policy changes make direct comparisons between this inventory and previous inventories difficult. However, these changes in operations clearly demonstrate the profound impact university-wide policy can have on reducing Emory’s emissions in the future.

Results in this report for historic inventories may be slightly different from previous summary reports. Historically, Emory has utilized regional fuel mix emissions factors to calculate its GHG emissions. However, in accordance with Second Nature reporting standards, Emory is now utilizing market-based emissions factors which can slightly alter emissions totals. All historic GHG inventories were re-calculated with market-based emissions factors to enable direct comparisons between reports.

Figure 1. This chart shows the breakdown of Emory’s GHG emissions by input, with Purchased Electricity (Scope 2) and On-Campus Stationary Sources (Scope 1) representing the largest share of emissions.



Results – Scope 1

Scope 1 emissions are GHG emissions that occur from sources that are controlled and owned by Emory University, which includes stationary fuels, transportation fuels, fertilizers, and refrigerants. In FY21, they represented about 27.8% of Emory’s CO₂e emissions, compared with 24% in FY19 (Figure 2). However, Scope 1 emissions are comparable between FY21 (53,034 MT

CO₂e) and FY19 (54,718 MT CO₂e), with a 3.08% decrease in emissions. Since 2010, Scope 1 emissions have decreased by 25.47%. Scope 1 emissions represent a larger share of emissions in FY21 because Scope 3 emissions were significantly reduced as a result of the university's COVID-19 policies.

Results – Scope 2

Scope 2 emissions are GHG emissions from purchased electricity, steam, and water. Scope 2 emissions physically occur at the facility where electricity is generated (such as Georgia Power's production plants), but are attributable to Emory as the end user of the product. In FY21, they represented about 59.7% of Emory's CO₂e emissions, compared with 54.4% in FY19 (Figure 2). Between FY21 (113,830.79 MT CO₂e) and FY19 (123,996 MT CO₂e), Scope 2 emissions decreased by 8.2%. Since 2010, Scope 2 emissions have decreased by 40%. Scope 2 emissions represent a larger share of emissions in FY21 because Scope 3 emissions were significantly reduced as a result of the university's COVID-19 policies.

Results – Scope 3

Scope 3 emissions are indirect emissions that are directly attributable to Emory's activities, but are from sources that do not fit into the Scope 1 or 2 definitions. This includes, university-sponsored air travel, commuting, landfilled waste, and wastewater. In FY21, they represented about 12.5% of Emory's CO₂e emissions, compared with 21.5% in FY19 (Figure 2). Scope 3 emissions were greatly reduced as a result of the university's COVID-19 policies, so a direct comparison of data is difficult. Between FY21 (23,864.16 MT CO₂e) and FY19 (49,072 MT CO₂e), Scope 3 emissions decreased by 51%. Since 2010, Scope 3 emissions have decreased by 61%, however as the university resumes normal operations, Scope 3 emissions will increase and this emissions reduction will decrease. However, these results do illustrate the impact Scope 3 emissions have on Emory's GHG totals and the impact university policies can have on reducing these emissions in the future.

Figure 2. This chart shows the percentage of emissions by Scope for FY21.

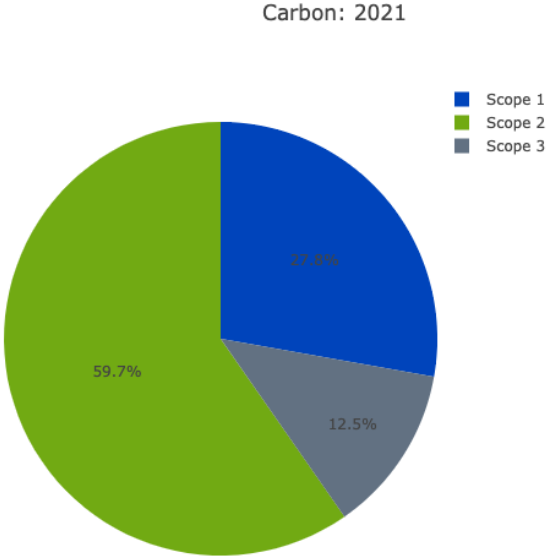
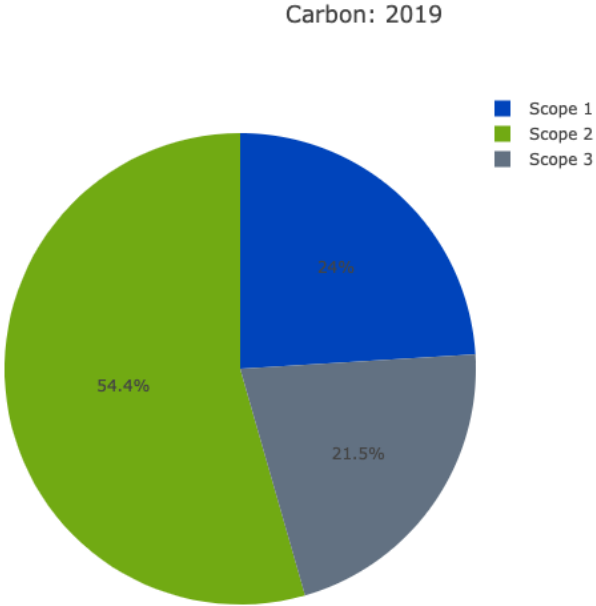


Figure 3. This chart shows the percentage of emissions by scope for FY19, visualizing the impact COVID-19 travel restrictions had on overall emissions.



Methodology

All base figures for calculations, graphs, charts, and tables in this report come from SIMAP (Sustainability Indicator Management and Analysis Platform). SIMAP was chosen for this report because it is an emissions calculator specifically purposed for higher education, and it is the GHG reporting platform used by Second Nature for the Presidents' Climate Commitments. The Office of Sustainability Initiatives uses SIMAP to benchmark each fiscal year's carbon dioxide emissions data and compare its emissions year to year. This inventory was completed by a third-party consultant with internal support from OSI staff. All data inputs, outputs, and assumptions were reviewed and approved by the Office of Institutional Research in October 2022.

Emissions Sources

CO₂ (carbon dioxide): On-Campus Stationary Sources, Transportation Fuel, Purchased Electricity, Commuting, and Air Travel

CH₄ (methane): On-Campus Stationary Sources, Transportation Fuel, Purchased Electricity, Commuting, Air Travel, Solid Waste, and Wastewater

N₂O (nitrous oxide): On-Campus Stationary Sources, Transportation Fuels, Fertilizers, Purchased Electricity, Commuting, and Air Travel

HFC (hydrofluorocarbon): Refrigerants