Colorado State University Greenhouse Gas Report for FY23

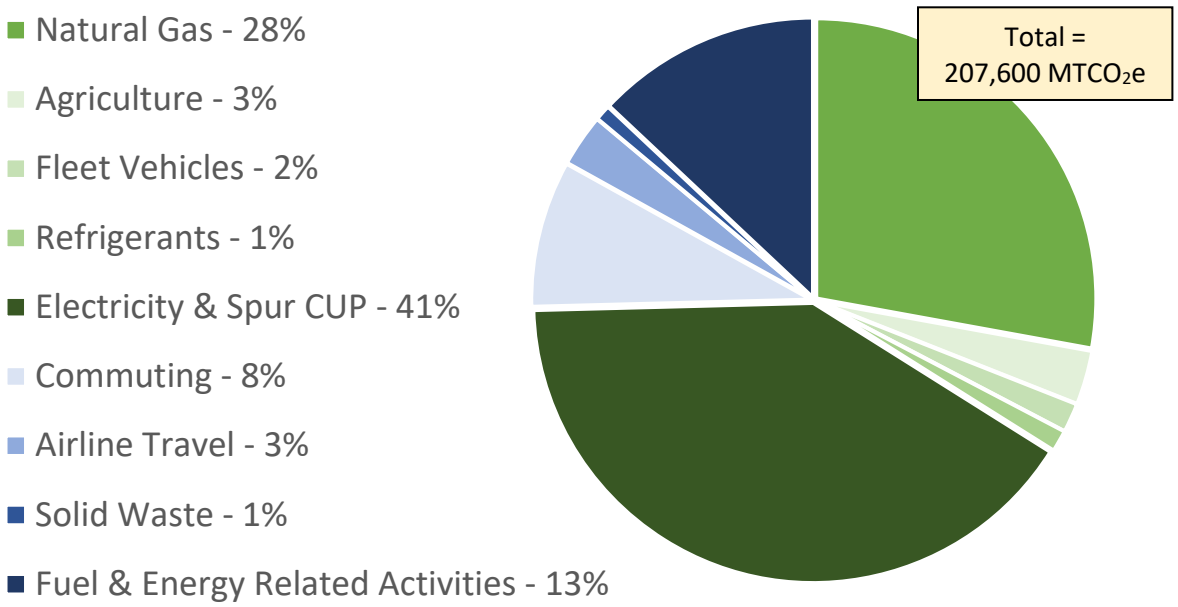
What is a greenhouse gas inventory? And how is Colorado State doing?

Organizations use greenhouse gas (GHG) inventories to measure the environmental impacts of their operations. Most of an organization's activities are accounted for, and the global warming potential of each gas is then converted into equivalent units of CO_2 (carbon dioxide). Results are typically presented in metric tons of carbon dioxide equivalent ($MTCO_2e$)

Most higher education institutions complete an annual GHG inventory, as do many major businesses, cities, counties, and states. Each sector follows defined protocols to gather and report data. CSU follows criteria unique to higher education, which enables CSU to compare emissions within the higher education sector and consistently track progress over time. A GHG inventory tells a lot about an organization's operational impacts, and highlights areas that need the greatest focus to reduce GHG emissions.

Measuring impacts at CSU

CSU's FY23 GHG inventory summarized in nine categories:



What surprises you about CSU's emissions? Did you notice purchased electricity is the largest portion of our footprint, or that solid waste is the smallest – why is that? Why are electricity and natural gas so BIG? …it is our buildings – and all the fossil-based fuels used to operate them.

If you want to help CSU reduce its GHG footprint – help reduce the amount of electricity we consume! Until the electricity we purchase comes from 100% renewable sources, reducing the amount of electricity we consume has the largest direct impact to our carbon footprint. Reducing electricity consumption allows each of us to help make a difference every day.

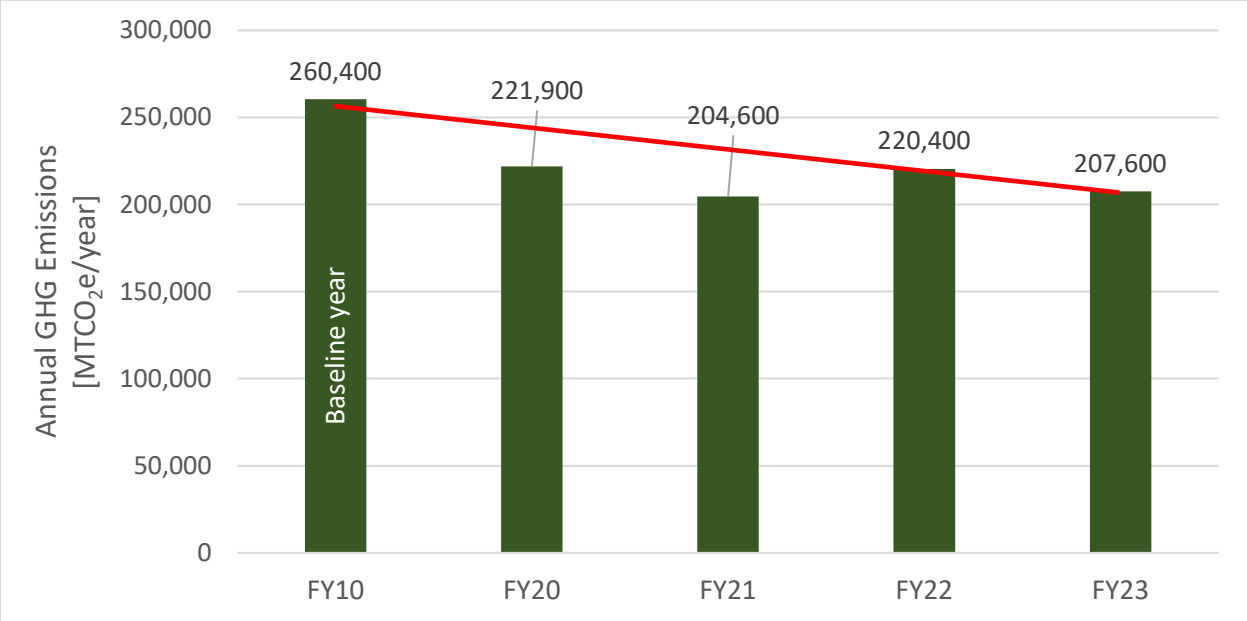
The FY23 inventory is presented as a pie chart above and as a table below – the categories and impacts are the same.

CSU's FY23 GHG inventory summarized in nine categories:

Category	Scope	FY23 $MTCO_2e$	Percent
Electricity & Spur CUP	2	84,500	41%
Natural Gas	1	57,900	28%
Commuting	3	17,600	8%
Airline Travel	3	6,300	3%
Agriculture	1	6,500	3%
Fleet Vehicles	1	3,500	2%
Refrigerants	1	2,600	1%
Solid Waste	3	1,900	<1%
Fuel & Energy Related Activities*	3	27,000	13%
Credits (Compost)	N/A	-200	<<1%
Total		**207,600**	**100%**

**FERA – Fuel & Energy Related Activities*
Emissions by category in metric tons of CO_2 equivalents ($MTCO_2e$), percent contribution, and scope.

How are we doing over time?



CSU's GHG Emissions Trend – 19% Reduction since FY10 (with estimated FERA FY10-FY22)

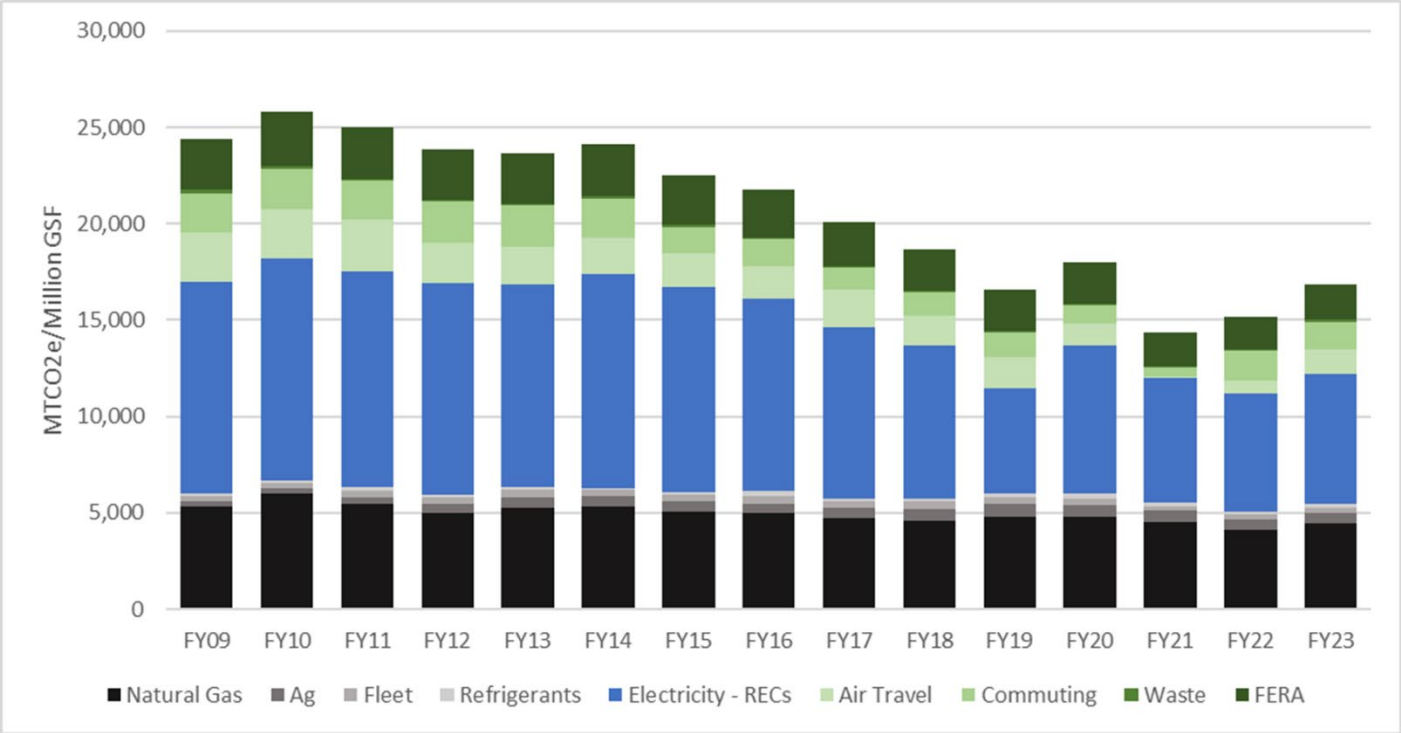
In FY23, CSU began incorporating Fuel & Energy Related Activities (FERA) into its GHG Inventory. This is consistent with updated GHG protocols and marks an enhancement in reporting. FERA accounts for the upstream effects of fuel and electricity usage, covering aspects like methane leakage, extraction, production, transportation, and transmission and distribution losses in the electric grid. The inclusion of FERA accounts for 13% of CSU's FY23 emissions profile and offers a more comprehensive view of environmental impact. This integration reflects the university's commitment to a deeper understanding and mitigation of its contribution to climate change.

CSU's first GHG emissions inventory began with FY06; however, FY10 is the baseline year to which others are compared, aligning with CSU's first adopted Climate Action Plan. Overview:

- 232,200 $MTCO_2e$ – FY10, baseline which future inventories are measured against
    - 260,400 $MTCO_2e$ – FY10 baseline year when including estimated FERA
- 198,700 $MTCO_2e$ – FY19 (with estimated FERA), down 23% from baseline. This sizeable reduction was mostly attributed to a large purchase of renewable energy credits – RECs
- 204,600 $MTCO_2e$ – FY21 (with estimated FERA), down 20% from baseline. This atypical year was significantly impacted by the COVID-19 global pandemic, reflected in large decreases in emissions from airline travel and commuting
- 220,400 $MTCO_2e$ – FY22 (with estimated FERA), only down 14% from baseline. Increases mainly due to airline travel and commuting returns to pre-pandemic level
- 207,600 $MTCO_2e$ – FY23 down 19% from baseline year. In FY23 the electricity emissions factor went up, and the university saw an increase in natural gas consumption. However, two new methodologies impacted emissions. While the official inclusion of FERA, added 13% to total emissions, and a change in the calculation of air travel impacts resulted in a significant decrease to those related emissions. See note below*

Consider GHG emissions trends per campus gross square footage

(Including estimated historic FERA contribution)



CSU's GHG Emissions Trend – by category – per gross square foot

The graph above represents an overall downward trend in greenhouse gas emissions per gross square foot (GSF) at Colorado State University from FY10 to FY23. This reduction in GHG intensity has been achieved while at the same time the university has grown in square footage and student population. With approximately 70% of emissions coming directly from building energy use, this graph reflects the effectiveness of improvements in energy efficiency and conservation in our buildings, efficiency in new construction, and the addition of more on-site solar electricity.

CSU adopted its first Climate Action Plan (CAP) in 2010 to chart the course to reduce emissions. The plan is revised every few years. In 2021, CSU adopted a new goal of carbon neutrality by 2040. The current CAP, completed mid-2022, reflects this updated goal by outlining strategies for emission reductions in the key emission categories. View the 2022 Climate Action Plan Update here or visit the Facilities Management Sustainability Reports Page to see previous versions of the CAP and past GHG Inventories.

For questions related to the GHG inventory, the data collection, input activity, or formal output, please contact Stacey.Baumgarn@colostate.edu – Sustainability & Energy Management, CSU Facilities Management.

For reference, see the summary output of the FY23 GHG Inventory as it would have appeared when using the prior Excel-based inventory tool below:

FY23 – GHG Summary – Colorado State University		
Scope	Source / Category	Total Emissions $MTCO_2e$
Scope 1	Stationary Fuels – Natural Gas, Propane	57,900
	Fleet Fuels	3,500
	Refrigerants	2,600
	Agriculture – Animals & Fertilizers	6,500
Scope 2	Purchased Electricity	84,500
Scope 3	Faculty Commuting	1,100
	Staff Commuting	3,700
	Student Commuting	12,800
	Directly Financed Air Travel	6,300
	Solid Waste	1,900
	Scope 3 Transmission & Distribution Losses	3,700
	Fuel & Energy Related Activities (FERA)	23,300
Offsets	Additional Offsets (composting)	-200
	Non-Additional Offsets – already subtracted from Electricity Use	0
	Scope 1 total	70,500
	Scope 2 total	84,500
	Scope 3 total	52,800
	Total All Scopes	207,800
	Total Offsets	-200
	FY23 Net Emissions	**207,600**

Note: This FY23 inventory summary was updated / revised in Nov. 2025. The FY25 inventory reflected the adoption of a change in the methodology for calculating emissions from air travel, which should have been applied since this FY23 inventory – the new, improved method does result in lower emissions in this category.