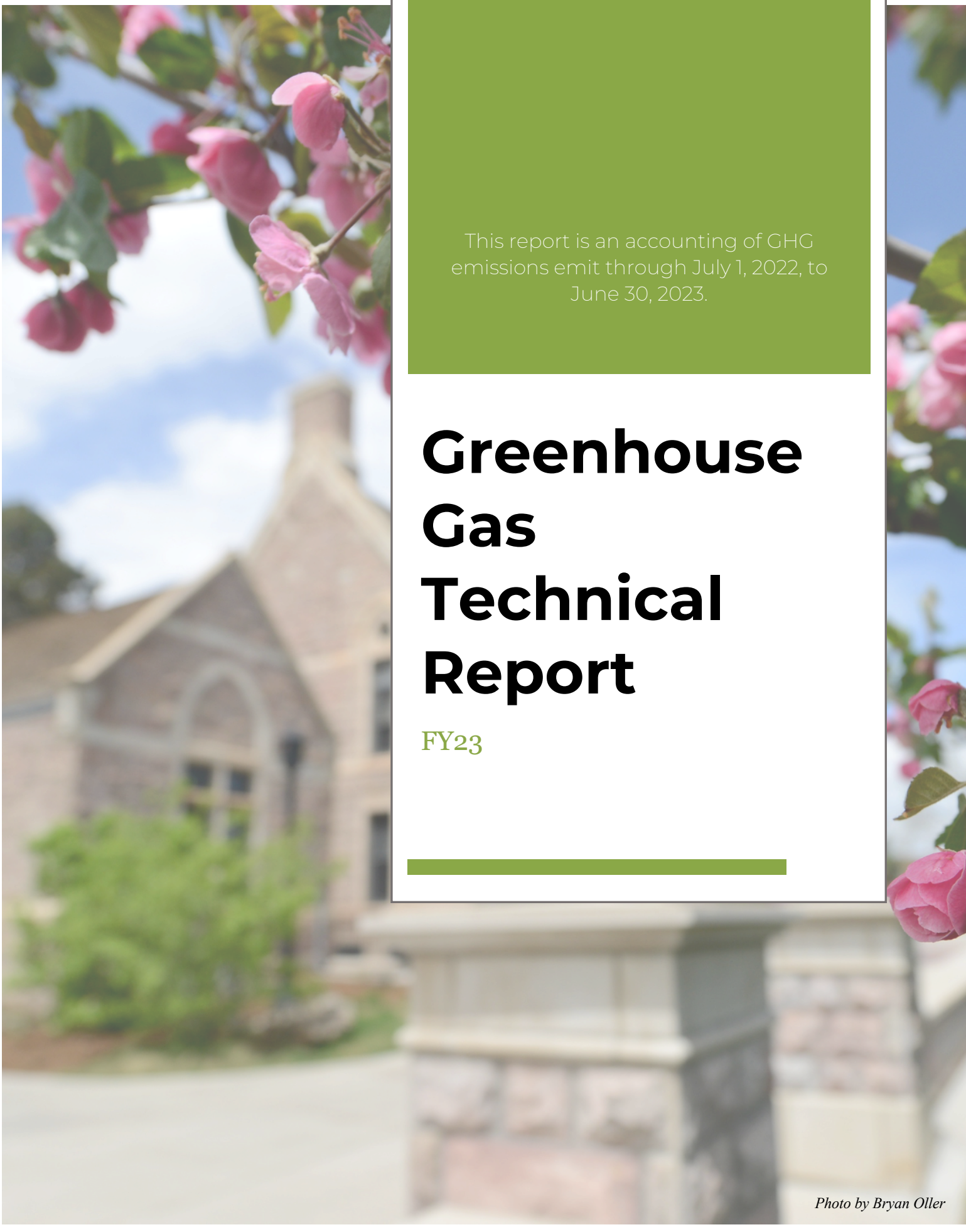

This report is an accounting of GHG emissions emit through July 1, 2022, to June 30, 2023.

Greenhouse Gas Technical Report

FY23

Photo by Bryan Oller

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Contacts Page

Ian Johnson
Director of the Office of Sustainability
Responsible for overseeing the technical report and fact checking.
Email: ijohnson@coloradocollege.edu

Mae Rohrbach
Sustainability Coordinator of the Office of Sustainability
Responsible for overseeing the technical report and the report composition.
Email: mrohrbach@coloradocollege.edu

Erin Mullins '24
Emissions Intern, focus is on Scope 2 and Institutional Data
Responsible for co-writing the report and composition.
Email: e_mullins@coloradocollege.edu

Ethan Stewart '25
Emissions Intern, focus is on Scope 1
Responsible for co-writing the report and composition.
Email: ej_stewart@coloradocollege.edu

Tam Phan '25
Emissions Intern, focus is on Scope 3
Responsible for co-writing the report and composition.
Email: t_phan@coloradocollege.edu

Office of Sustainability General Inquiry
For general questions about the office or report
Email: sustainability@coloradocollege.edu

Definitions and Terminology

General Terms and Industry Language

- **Greenhouse Gas Emissions (GHGs):** Atmospheric gasses that accumulate in the atmosphere and reflect radiant energy, trapping heat below the atmosphere that have the potential to increase the average global temperature. A rise in greenhouse gasses (GHGs) leads to increased heat retention. The primary driver of rising GHGs and increased global temperatures is human activities. Examples of GHGs include carbon dioxide (CO2), methane (CH4), water vapor (H2O), and nitrous oxide (N2O).

- **Greenhouse Gas Inventory:** A comprehensive list of the greenhouse gasses released into the atmosphere by a specific entity, like a country, region, organization, or individual. This list usually contains gasses such as carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF6). Greenhouse gas inventories are important tools for understanding and tracking emissions as well as the first step to knowing part of an organization's' or region's environmental impact.

- **Global Warming Potential (GWP):** A standard index used to compare the heat-absorbing capacity of a greenhouse gas (GHG) to carbon dioxide. This ratio indicates the potential harm caused by the gas. Methane, for example, is 28 times as potent as carbon dioxide, while nitrous oxide is 265. Both gasses contribute more significantly to global warming than carbon dioxide, as noted by the Intergovernmental Panel on Climate Change (IPCC). GWP may vary between sources because their GWPs are estimations and there are various methodologies of calculating GWP.

- **Carbon Neutrality:** A net balance of zero greenhouse gas emissions. All entities will have greenhouse gas emissions to some extent. These emissions released into the atmosphere by the entity can be balanced by negative emissions (see "Carbon Offsets") elsewhere. When those negative emissions equal the actual emission by the entity, that entity is considered to be carbon neutral, as its activities are having no net increase to atmospheric greenhouse gas levels.

- **Net Zero:** see Carbon Neutrality.

- **Carbon Offsets:** Implemented to reduce or eliminate the release of carbon dioxide and its equivalents into the atmosphere, either by capturing and storing carbon in natural materials like trees and soil (sequestration) or by changing regular practices to avoid emissions that would have otherwise happened (avoidance). Each carbon offset corresponds to the sequestration or avoidance of one metric ton of carbon dioxide equivalent (MTCO2e).

- **Renewable Energy Certificates (RECs):** RECs serve as a way to account for the production and use of renewable energy. They are obtained when renewable energy producers deliver renewable energy into a power grid. RECs can be utilized to verify that purchased electricity originates from renewable sources like wind or solar power. As RECs can be traded separately from the energy that produced them, it can be helpful to understand RECs as a way to follow the money and production of the *environmental benefits* of renewable electricity, not the electrons themselves.

- **Bundled RECs:** RECs that are sold with the accompanying power that created them. Bundled RECs are necessarily local, impacting a geographically close power grid.
- **Unbundled RECs:** RECs that are decoupled and sold separately from the renewable power that created them. When RECs are sold independently from electricity, it enables a virtual transfer of renewable energy across power grid regions that might not be geographically close.

Emissions Scopes and Measurement Parameters

- **Scope 1 (Direct Institutional):** According to the Greenhouse Gas Protocol, Scope 1 includes any "direct emissions," or those from sources controlled and/or operated by Colorado College. This includes any emissions from fuels used by on-campus stationary sources, the college's vehicle fleet, refrigerants, chemicals, and fertilizers used directly by the institution.
- **Scope 2 (Indirect Institutional):** Scope 2 is defined as "indirect-direct emissions." This refers to operations that we have direct control over, but that utilize energy purchased from a source that we do not own or operate. This could include purchased electricity or purchased heat from a municipal source. Colorado College's only source of Scope 2 emissions is purchased electricity.
- **Scope 3 (Indirect):** Scope 3 measures the indirect emissions stemming from the purchasing and operational activities of entities not owned or operated by the college. These emissions can be influenced by the actions or decisions of students, staff, faculty, and the college itself. According to the GHG Protocol, this is a voluntary scope, but is considered good practice and most would consider an emissions report incomplete without reporting material topics in Scope 3. Reporting Scope 3 emissions from commuting and air travel sources is mandatory under Second Nature's Climate Commitment. Additionally, Colorado College elects to track emissions from, student travel to and from home, college-funded business travel (i.e. - third-party ground travel), emissions from solid waste and wastewater, upstream emissions due to office paper usage, FERA and T&D losses.
    - **FERA (Fuel and Energy Related Activities):** This accounts for the upstream emissions of energy (either fuel, electricity purchased, heating, and cooling) of the end user. T&D losses can be included in this category or be listed separately. This report lists them separately, but the GHG Protocol consolidates these into FERA.
    - **T&D (Transmission and Distribution) Loss:** When electricity, steam, heating, and cooling are distributed, there are losses of energy that count toward upstream emissions. The losses are included in the GHG inventory under Scope 3. The reporting of T&D losses can change because electricity producers and energy distributors can but are not always the same company. Although, since Colorado College is not a distributor or a producer, then in this report, T&D losses fall under Scope 3.
- **Fiscal Year:** An accounting period, which may not align with the standard calendar year. This report refers to FY23, encompassing the period from July 1, 2022, to June 30, 2023.

- **Institutional Data:** This refers to the information and records that an organization collects, manages, and uses in its operations and decision-making processes. In terms of this report, the data from Colorado College can include financial records of funded travel, solid-waste, and water-waste information, for example. This is often used to compare growth and emissions.

Units

- **Kilowatt-hour (kWh):** A measurement of power that equals the equivalent of 1000 watts used continuously for one hour. It is frequently used by electric utilities to bill consumers for the energy they use.
- **Metric Tonnes of Carbon Dioxide Equivalent (MTCO2e):** The unit of measurement for GHG emissions where all regulated GHG are scaled to carbon dioxide-equivalent emissions. So one molecule of methane counts toward 28 carbon dioxide molecules. “Equivalent” is determined by the global warming potential (GWP).

Introduction

Colorado College (CC)'s Greenhouse Gas ("GHG") Technical Report is a disclosure of Colorado College's greenhouse gas emissions accounting. The college has accounted for these emissions since 2008. The inventory and report is conducted by CC's Office of Sustainability's Emissions Team. With sustainability being one of our institution's three lenses (antiracism and mental health being the other two), our report serves to communicate and summarize our environmental impact for future awareness and continued progress. The Office of Sustainability's mission is:

> ***Sustainability isn't optional at Colorado College; it's central to our community and to the examples we set through all of our work. We aspire to make Colorado College a model for sustainability at all levels - an academic community that lives its commitment to a thriving future, honoring the economic, social, and environmental narratives of our complex ecosystem.***

Colorado College achieved carbon neutrality in the calendar year 2020, but our job is far from finished. Our institution is working to continue emissions reductions as much as possible and offset emissions that cannot be reduced. This report is responsible for explaining the methodology for emissions data collection, our results from this data collection, the interpretation of our results, and a description of our carbon offsets. This report also includes an appendix for full transparency. In addition, The Office of Sustainability publishes the State of Sustainability Report compiled by the STARS Team.

Standard emissions accounting is divided into three scopes, with Scope 1 including direct emissions, Scope 2 including indirect-direct emissions, and Scope 3 including indirect emissions. The Scopes are outlined in the GHG Protocol, which serves as the global standard for emissions accounting. The GHG Protocol is the leading and most well-known methodology for emissions accounting. This makes for easy comparable data from year to year and across institutions. This report covers Colorado College's emissions for fiscal year 2023 (FY23), which is from July 1, 2022, to June 30, 2023.

The field of sustainability is an ever-changing landscape with complicated acronyms, changing regulations, and constant new evidence. The goal of this report is to find a balance between data disclosure and making a digestible report for anyone curious about Colorado College's environmental impact.

Office of Sustainability

Data Collection and Methodology

Colorado College's Office of Sustainability began its GHG Inventory in 2008. In the sixteen years since, the office has refined the process, broadened its data collection, and added confidence to areas difficult to estimate. In 2024, the Emissions Team consists of three student interns and three student volunteers. Data collection began in August 2023. Data collection generally consists of purchasing records, records kept by the college, and occasional surveys.

Colorado College uses a software called SIMAP (Sustainability Indicator Management and Analysis Platform), developed by the University of New Hampshire. SIMAP is the leading platform used by higher education to track emissions using the guidance of the GHG Protocol, the global GHG accounting methodology, and is constantly updating to adhere to the United Nations Intergovernmental Panel on Climate Change recommendations. All units reported are in metric tonnes of carbon dioxide equivalent – MTCO2e.

SIMAP
SUSTAINABILITY INDICATOR MANAGEMENT & ANALYSIS PLATFORM

In addition to data collection for greenhouse gas calculations, the college tracks information about the college's size. This includes aspects such as the college populations (number of faculty, staff, students, those living on or off campus, etc), overall college budgets, and physical spaces such as new real estate acquisitions and changes to gross square feet. This allows for a more normalization of emissions in relation to these other data points. For example, if Colorado College admits 1000 new students in a year, builds 2 more buildings, and hires more faculty and staff, then the operations would increase emissions. If emission reduction projects are working, then these may not seem effective because there was an increase in emissions. This normalization allows us to control "the growth" variable.

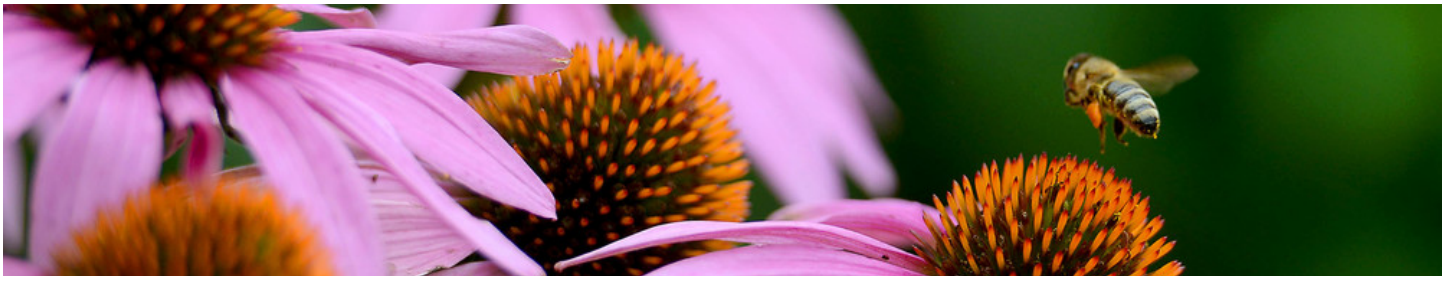

Photo by Bryan Oller

FY23 Emissions Summary

Scopes	Emissions By Scope FY23	Percent Changes FY08-FY23	Percent Changes FY22-FY23
Scope 1	7,838.23 MTCO2e	25.7%	7.71%
Scope 2	0 MTCO2e	100%*	100%*
Scope 3	15,849.10 MTCO2e	1.98%	22.3%

23,687.33 MTCO2e (total) - 23,687.33 MTCO2e (offsets) = Net Zero Emissions!

- Moderate increases in natural gas and propane usage slightly increased Scope 1 emissions
- *Scope 2 emissions are at 0 for the first time due to the purchasing of RECs at Baca and the CC Cabin, in addition to those having been purchased for the CC campus
- FY23 is CC's first full year back to normal campus operations, resulting in higher overall Scope 3 emissions

Results | Scope 1

*According to the Greenhouse Gas Protocol, Scope 1 includes any **"direct emissions,"** or those from sources **controlled, owned, and/or operated** by Colorado College. This includes any emissions from fuels used by on-campus stationary sources, refrigerants, chemicals, fertilizers, and the college's vehicle fleet. The college's fleet is made up of campus safety vehicles, vans and buses used by various departments for travel, and vehicles used by maintenance personnel.*

Compared to FY22, overall, Scope 1 emissions increased from 7,276.93 $MTCO_2e$ to 7,838.23 $MTCO_2e$ – a 561.3 $MTCO_2e$ change. Although this is a 7.71% increase from FY22 to FY23, Scope 1 emissions have been reduced by 2,704.29 $MTCO_2e$ since FY08, a 25.7% decrease.

Source	**$MTCO_2e$**
On-Campus Stationary Sources: (Distillate Oil (#1-4), LPG, and Natural Gas)	7,531.43
University Fleet (Diesel, gasoline, and propane)	262.74
Fertilizer: Synthetic	8.20
Refrigerants & Chemicals (R-410a and R-404a)	35.86

Table 1: Categories of Scope 1 Emissions and their total emissions value including carbon dioxide, methane, and nitrogen compounds into metric tonnes of carbon dioxide equivalent.

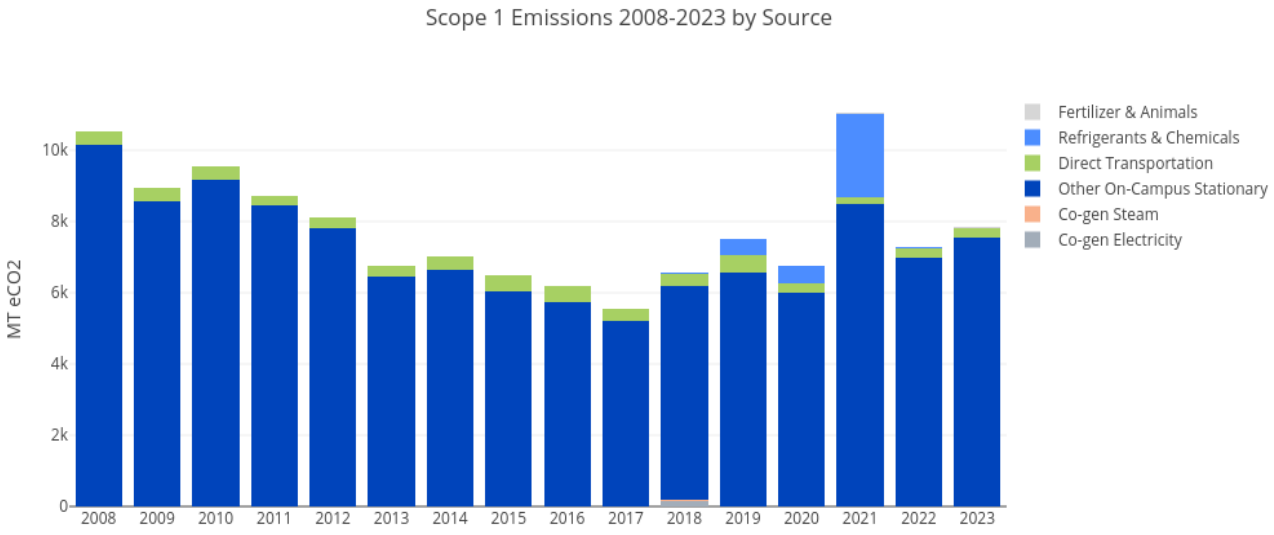

Figure 1: Total Scope 1 emissions from Fiscal Year 2008 to Fiscal Year

Figure 1 depicts Colorado College's Scope 1 emissions over time since FY08. With this data visualization, it is apparent that the increase in Scope 1 emissions from last year was relatively small, but a slight upward trend can be observed since the all-time low in Scope 1 emissions in 2017. The large spike in Scope 1 emissions in FY21 can be attributed to major refrigerant and chemical leaks, which did not occur in FY22 or FY23.

The largest source of Scope 1 emissions is on-campus stationary. On-campus stationary increased from last year as a result of moderate increases in propane and natural gas usage across campus and Baca, as well as distillate oil usage in the on-campus CoGen heating plant. Emissions from this plant are primarily from tests of emergency heating systems with fossil fuels that have a limited shelf life.

However, the school observed moderate reductions in direct transportation emissions from CC's vehicle fleet, not included in our on-campus stationary. Although we also observed small reductions in fertilizer use and chemical and refrigerant emissions, these constitute a very small portion of total Scope 1 emissions. The breakdown of the individual sources of Colorado College's emissions including those of Scope 1 can be observed in the data visualization section.

Results | Scope 2

Scope 2 is defined as "indirect-direct emissions." This refers to operations that the college has "purchased" but the burning of fuels or the creation of energy does not happen in a facility that the college owns or operates. The college has direct fiscal control and control over usage, thus "indirect-direct."

For the college, Scope 2 includes the use of purchased electricity. Electricity consumed on Colorado College's campus comes from Colorado Springs Utility. In FY23 year, Colorado College consumed 19,930,630 kWh of electricity. This includes the main campus, the Baca campus, and the CC Cabin, across three separate utility companies. In comparison to FY22, the college consumed 19,746,124 kWh, representing less than a 1% increase from the prior year and well within normal fluctuations.

Although electricity from the grid is a mix of sources, CC secures Renewable Energy Certificates (RECs) equivalent to its usage, ensuring its electricity consumption is matched by local renewable generation, predominantly solar. These RECs, primarily bundled, affirm that the college's expenditure on electricity not only supports clean energy but also invests in the local economy. Thus, the college's financial commitment to electricity directly fosters local renewable energy, embodying the principle of 'follow the money, not the electron.

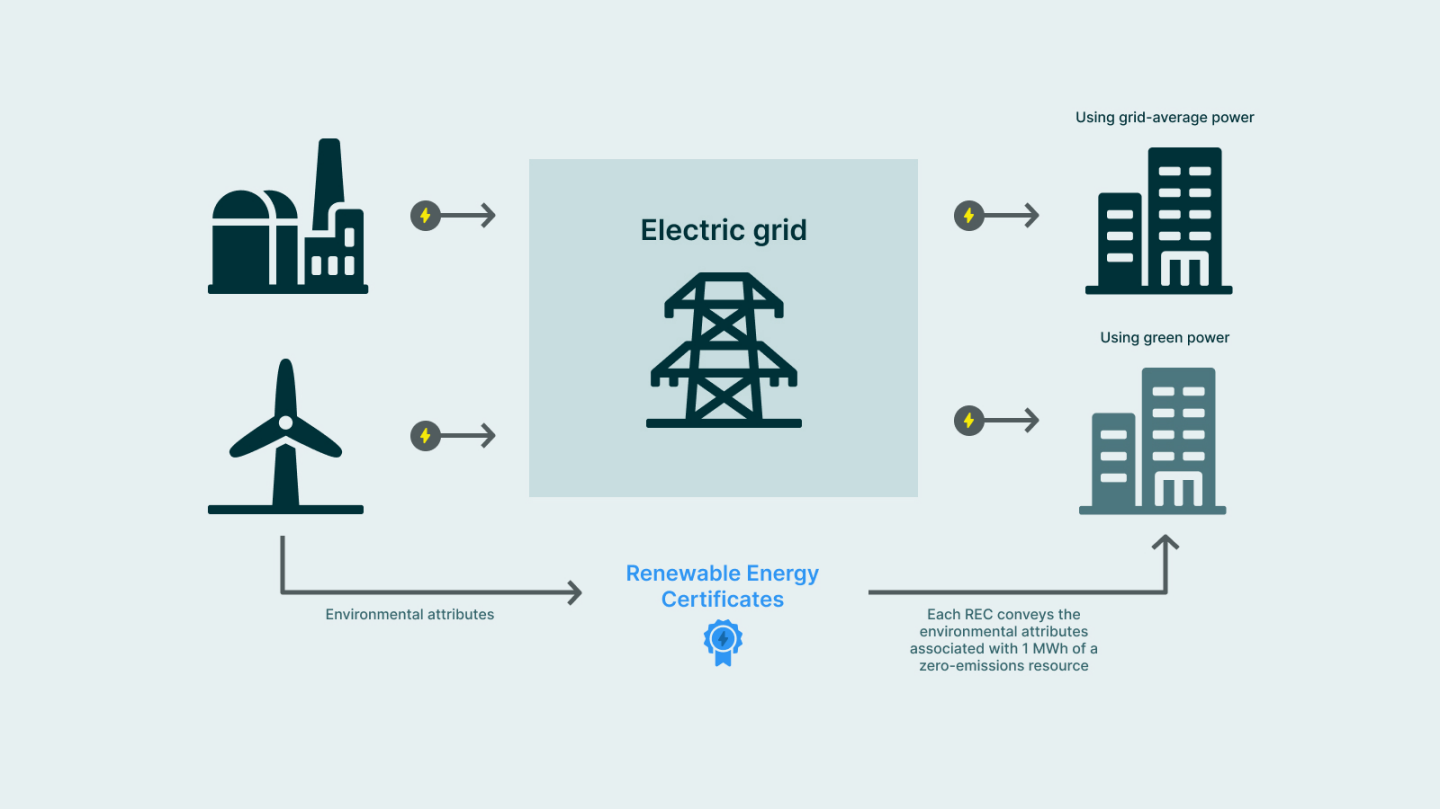

Figure 2: Image courtesy of Sustain Life: How to decarbonize your electric supply with Renewable Energy Credits and other methods (2023).

The college also receives a small number of unbundled RECs from ownership in solar gardens in Colorado Springs. These RECs are assigned to the CC Cabin and the Baca campus, which are not part of the Colorado Springs Utilities service area. A small number of unbundled RECs are also applied to various properties near the campus that have been acquired since the green power tariff closed and therefore are not currently eligible for bundled RECs through Colorado Springs Utilities. All RECs used by Colorado College are verified by Green-e to ensure that they are quality, real, and have the intended impact.

The campus does have solar panels that produce electricity on campus, but the amount that those solar panels contribute is currently unknown, as the monitoring systems have been malfunctioning for at least a portion of FY23. Last year's Emissions Team estimated that less than 5% of the college's total energy consumption was produced by on-campus solar. Because the amount of solar produced on campus is currently unknown and difficult to estimate with any degree of certainty, it is not included in this inventory.

Since one hundred percent of the college's electrical consumption is from solar generation, electricity consumption produced zero net emissions for Scope 2. As previously mentioned, the vast majority of this electricity is from bundled RECs, with a small number of unbundled RECs being assigned to the satellite campuses at the CC Cabin and the Baca campus.

Results | Scope 3

Scope 3 measures the indirect emissions stemming from the purchasing and operational activities of entities not owned or operated by the college. These emissions can be influenced by the actions or decisions of students, staff, faculty, and the college itself. According to the GHG Protocol, this is a voluntary scope, but is considered good practice and most would consider an emissions report incomplete without reporting material topics in Scope 3. Reporting Scope 3 emissions from commuting and air travel sources is mandatory under Second Nature's Climate Commitment. Additionally, Colorado College elects to track emissions from, student travel to and from home, college-funded business travel (i.e. - third-party ground travel), emissions from solid waste and wastewater, upstream emissions due to office paper usage, FERA and T&D losses.

FERA (Fuel and Energy Related Activities) accounts for the upstream emissions of energy (either fuel, electricity purchased, heating, and cooling) of the end user. T&D losses can be included in this category or be listed separately. This report lists them separately, but the GHG Protocol consolidates these into FERA.

Emission Categories	**MTCO2e**
Commuting	62.88 (faculty) 417.12 (staff)
Air travel	4,536.25
Study abroad programs	2536.76
Student travel to and from home	2885.43
College-funded car travel	1597.02
Solid waste	78.95
Wastewater	54.72
Paper usage	42.91
T&D losses	594.4
FERA	3042.66

Scope 3 emissions increased from 12,963.89 MTCO2e in FY22 to 15,849.10 MTCO2e this year (FY23). The Scope 3 emissions increased by approximately 22.3% from FY22 to FY23. Compared to our baseline year of FY08, when Scope 3 emissions were 15,541.6 MTCO2e, our emissions have increased by approximately 1.98%.
Continuing with the restoration of travel culture post-pandemic, FY23 saw a slight increase in air travel, study abroad programs, and student travel to and from home, as well as college-funded travel compared to FY22. However, emissions from staff and faculty commuting decreased, with faculty commuting notably dropping from 191.76 MTCO2e in FY22 to 62.88 MTCO2e in FY23, which represents a decrease of almost 67.21%. It is worth noting the survey was collected from a portion of the staff, which suggests that its findings might vary, and we should be cautious about generalizing these results to the entire population. The increase in Scope 3 emissions for FY23 partly results from the inclusion of FERA, which has been accounted for since FY22 and amounts to 3042.66 MTCO2e.

The landfill where Colorado College's solid waste is deposited has implemented methane recovery and flaring systems since FY22. This has reduced our landfill emissions to one-third of what they would be without these systems. Therefore, the solid waste decreased by approximately 35.38% from 122.16 MTCO2e in FY22 to 78.95 MTCO2e in FY23.

Results | Data Visualization

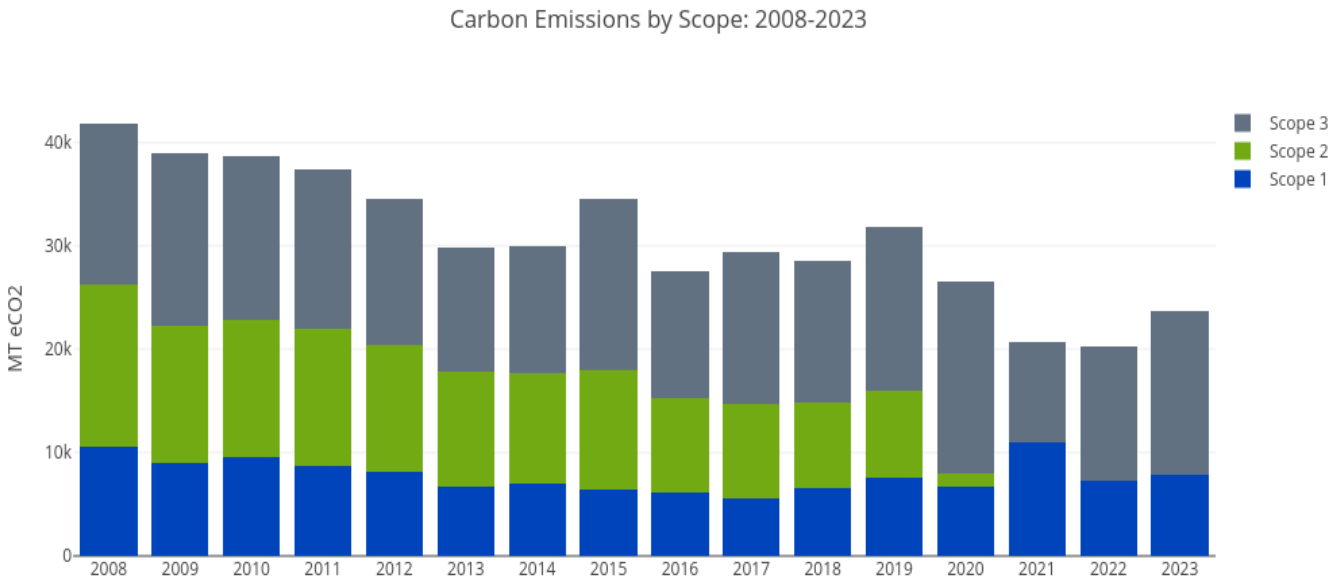

Figure 3: CC's carbon emissions broken down by scopes from FY08 to FY23.

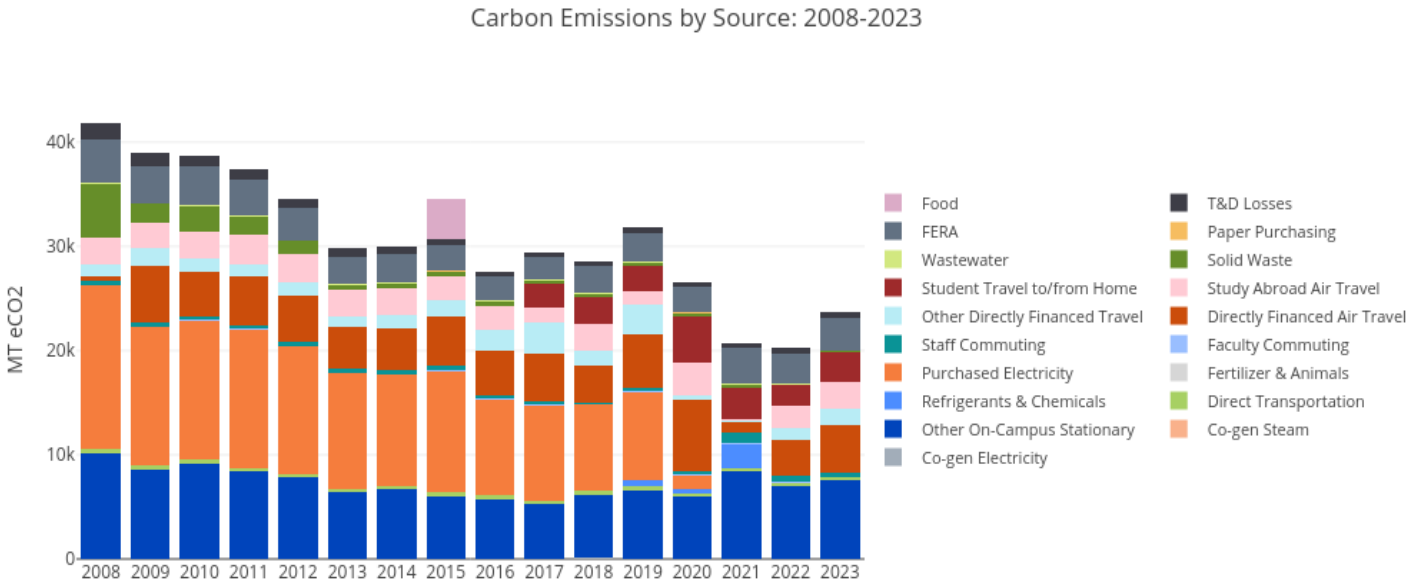

Figure 4: CC's carbon emissions broken down by source from FY08 to FY23.

Results | Data Visualization

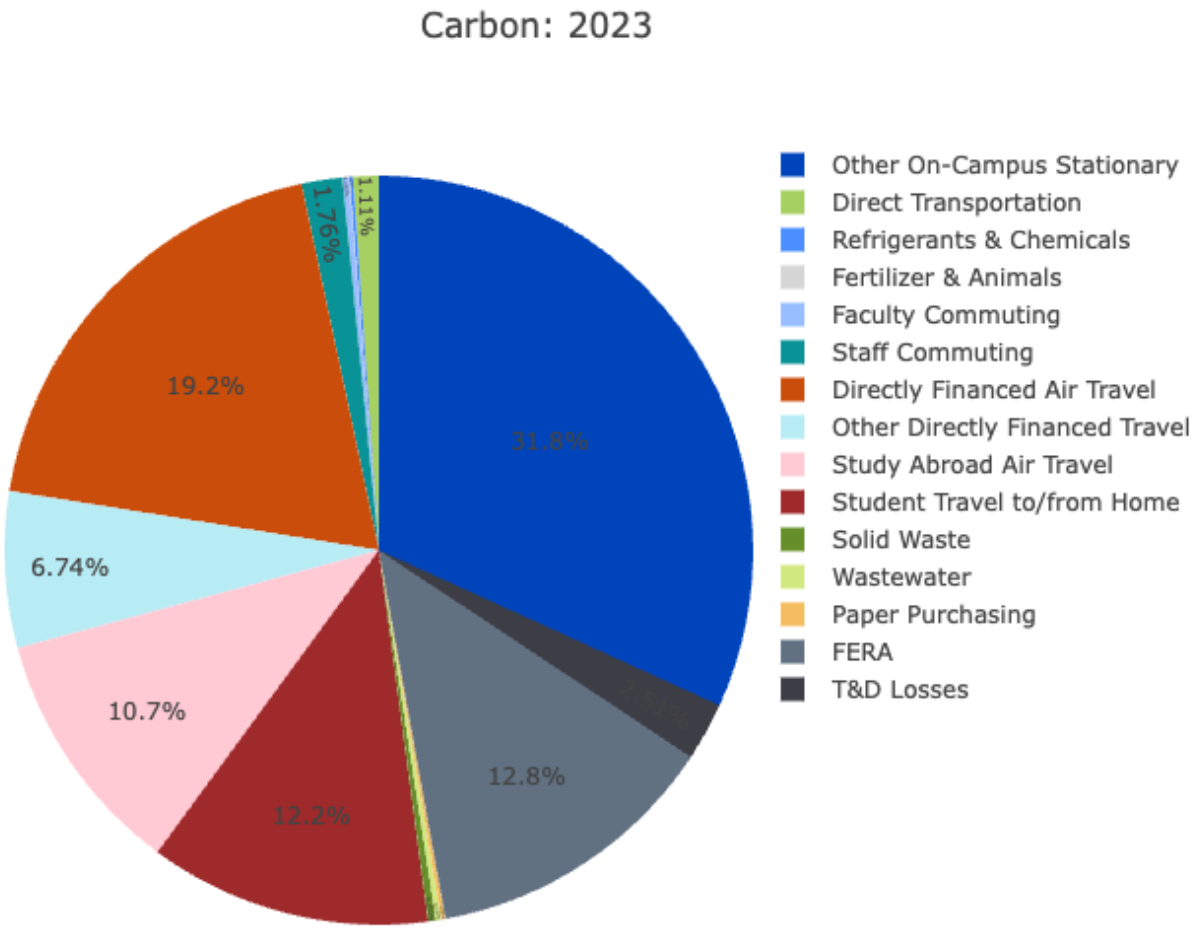

Figure 5: CC's FY23 carbon emissions broken down by source. To help visualize the respective contributions of each emissions source to CC's aggregate emissions, the figure above provides a pie-chart of our emission sources in 2023.

Results | Gross Emissions

Although Colorado College's gross emissions have increased compared to the last two years as the economy and habits have returned to normal post-pandemic, the college's efforts to decrease emissions since the baseline year have continued to be largely successful. Since Colorado College achieved carbon neutrality in 2020, carbon offsets have been purchased to offset all the residual emissions. Additionally, the college is currently investigating the feasibility of reducing residual emissions by an additional 50 percent (establishing 2020 as the new base year) and ceasing reliance on fossil fuels for normal daily operation by 2035. The downward trend in Colorado College's emissions since 2008 suggests that the institution will continue to strengthen its commitment to sustainability across campus and all its operations.

Since 2008, gross emissions have been reduced by 43.3% across all three scopes, while on-campus emissions (Scopes 1 and 2) have been reduced by 70.1% percent. These reductions have occurred despite a 21.7% increase in physical space on campus. As a result, emissions per square foot have decreased even more significantly, by 34.5% percent. Scope 3 has remained the most constant, with emissions being 1.98% higher than the baseline year in FY23. Notably, 50% of the college's residual emissions in FY23 came from travel in Scope 3, highlighting the paradox and challenges that exist with goals that often compete with one another. It is also important to recognize that since the baseline year, the greenhouse gas inventory has expanded to include new sources of Scope 3 emissions, such as student travel to and from home. Technically, this shift represents a departure in best practices established by the GHG Protocol, as any new inclusion would normally result in the establishment of a new base year for comparison. However, the college believes that this increasing clarity in emissions and addressing of these sources is part of its overall commitment to climate action, and therefore has chosen to maintain 2008 as its base year, despite the inclusion of these new emissions sources.

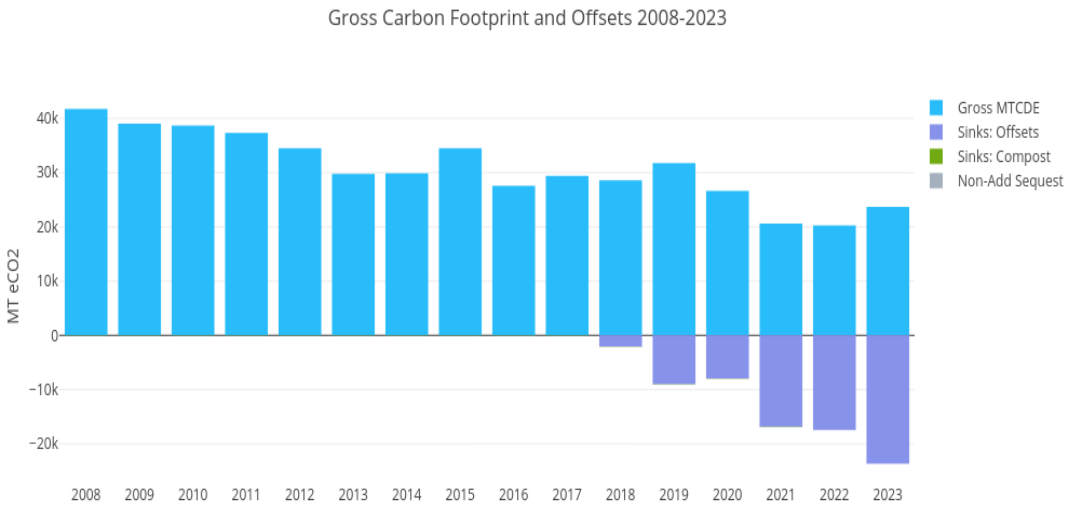

Figure 6: Gross Emissions and Offsets 2008-2023

FY23 gross emissions are 14.7% higher than in FY21 and 16.9% higher than in FY22, largely due to decreased operations and travel during the pandemic. However, gross emissions are 11.0% lower than FY20 and 25.5% lower than FY19, indicating that despite returning to normal business operations, CC is on track to continue its commitments to lowering emissions. Figure 6 above provides a visualization of the downward trend in our gross emissions as well as CC's carbon offsets.

Results | Limitations of Data and Disclosure

The Office of Sustainability strives to deliver accurate and transparent data about Colorado College's environmental impact. Data collection, especially GHG inventories, has its limitations and it is important to be transparent about assumptions, confidence, and methodology. The report has not been audited by a third party, but it is reviewed by the Director of Sustainability, who specializes in carbon accounting, and Office of Sustainability Coordinator. All data can be publicly viewed through SIMAP's and Second Nature's public reporting feature.

Scope 3, by nature, is the most out of our control and the area where the greatest assumptions are made and where the lowest confidence data is.

Surveys by nature have a bias. Two surveys are used to collect data: The Staff and Faculty Commuting survey and The Student Travel To and From Home survey. These surveys were sent out via mass email in our sustainability newsletter, using a poster campaign with a QR code, group chats via GroupMe and Microsoft Teams, email utilizing academic ListServs, and a tabling campaign in the student center. Because mass emails tend to get little response, the survey was sent to specialized groups, which inherently is a bias in our sampling methods. It is important to note that these survey methods, especially tabling, have not been used every year, making direct comparisons from year to year irresponsible.

Because Colorado College is a residential campus, all students live on or very near the compact, urban campus. For this reason, student commuting to and from class is considered a minimal source and is excluded.

In addition, survey data was scrubbed, and certain assumptions were made, particularly in the student travel survey. Unfinished responses and responses from non-students were deleted. The survey does not require the use of SSO to log in (institutional standard for logging in) to take our survey, because it is thought that it is a barrier that could prevent people from taking or finishing our survey. However, this leads to responses that must be sorted through and determinations must be made about the use and exclusion of some of the responses.

Colorado Spring Utilities bills wastewater based on the consumption of potable water, assuming that 86% of that water will be wastewater. This inventory's data collection methods function under the assumption that 86% of water consumed will be wastewater and that amount is used to calculate emissions from wastewater treatment.

Air travel for faculty and staff is measured in dollars. SIMAP uses its internal calculations to convert dollars to an emissions value. SIMAP uses the Bureau of Transportation Statistics to get their values calculating miles to dollars. The most current year is 2019 with a value of 18.88 $/mile.

Personal mileage reimbursement and Taxi/Ferri/Rental Car (ground travel) are all recorded as dollars through accounts payable. SIMAP, and thus the college's report, tracks passenger miles. Mileage is estimated though converting dollars to miles. To do so, the EPA's most recent estimates are used for the average fuel efficiency for lightweight vehicles in the United States. This year, that value is 22.9 gallons per mile on average. That value was the average for 2021 in a report published in 2023. The average gas price for 2023 using EIA's estimated value is used for the dollars to miles conversion. The estimated value for all fuel grades is $3.715. This is the same method used last year to calculate this value.

Results | FERA Disclosure

FERA (Fuel and Energy Related Activities): This accounts for the upstream emissions of energy (either fuel, electricity purchased, heating, and cooling) of the end user. T&D losses can be included in this category or be listed separately. T&D losses stand for trade and distribution losses which has to do with the distribution of electricity and inherited losses through distribution. This report lists them separately, but the GHG Protocol consolidates these into FERA.

FERA is a recent addition to the college's GHG inventory. FERA has always been an existing emission, but the capacity to include it in the inventory has only been available beginning this year. FERA comes from upstream activities associated with the production, processing, and transportation of fossil fuels. It is based on the previous recording of categories like propane, gasoline, and natural gas. As it is a new category this year, FERA can retroactively be calculated. Beginning this year, SIMAP does this automatically unless users change the settings. FERA is calculated for the fossil fuels in the college's Scope 1 emissions. Fossil fuel-related emissions in Scope 3 are not counted because FERA would be accounted for in Scope 1 emissions for the entity the college's Scope 3 emissions are originating from. For example, the FERA emissions from faculty flying from Denver to Boston on a ticket the college bought would be in the airline's Scope 1 because the airline owns and operates the plane. The airline does not produce the fuel, but they do purchase it, thus the FERA would fall in the airline's Scope 3. That would also mean that because the college bought the ticket, the emissions form the trip fall under the college's Scope 3.

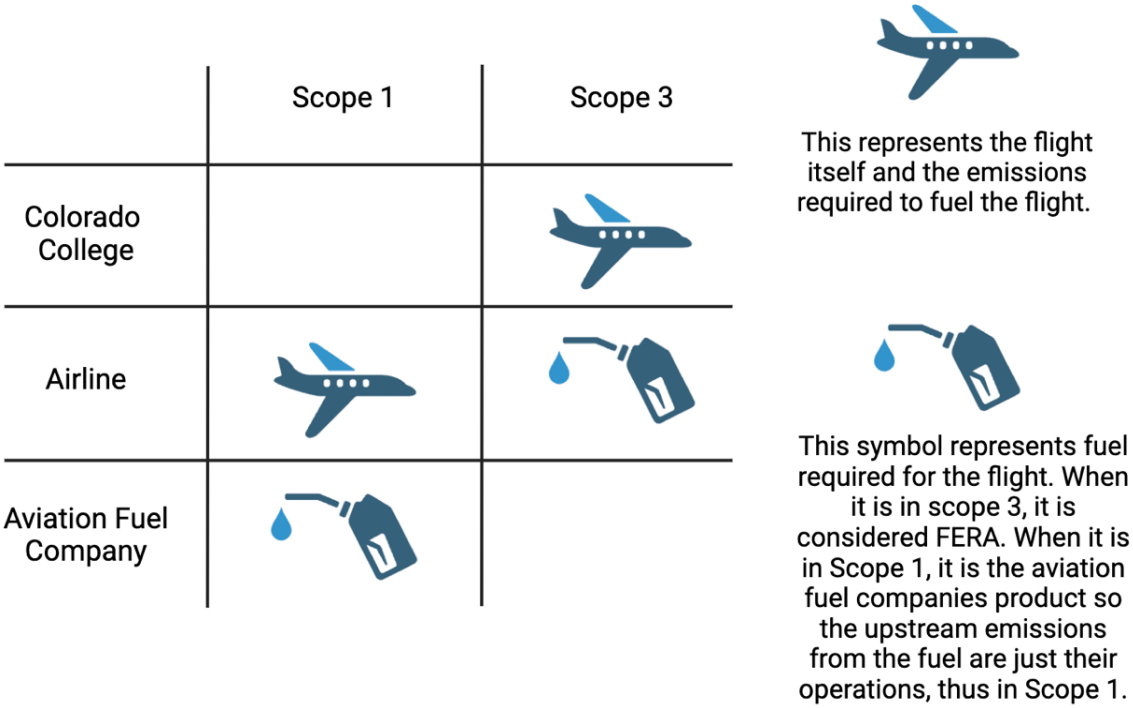

Figure 7: This figure is depicting the previous example to help explain the concept of FERA and the difference between emissions of a plane ticket vs the fuel related activities that are necessary for the flight.

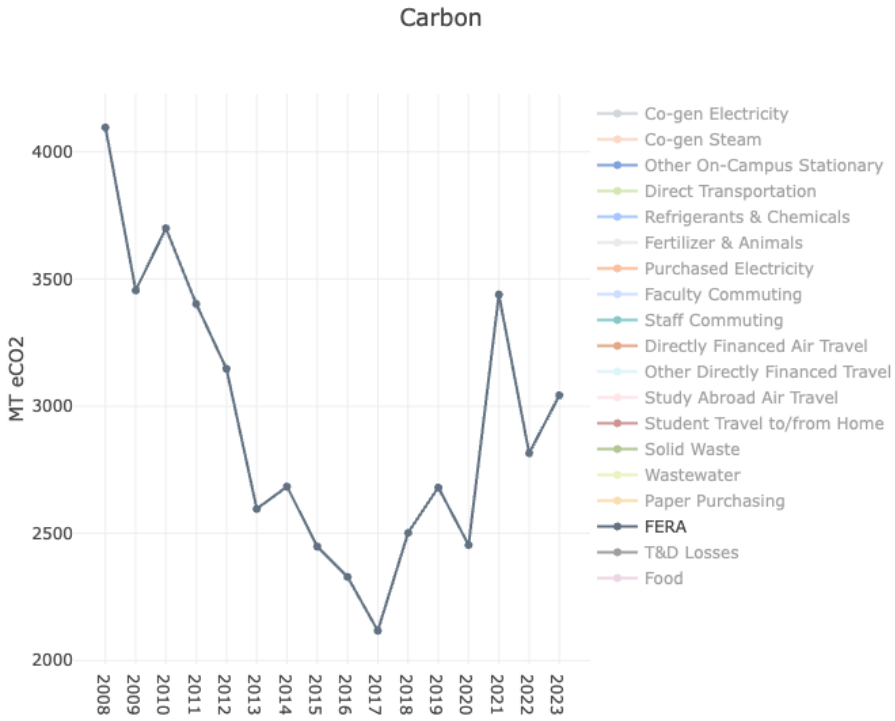

Figure 8: A graph depicting FERA values from fiscal year 2008 to 2023. FERA has been retroactively accounted for in their graph but has not been included in the College's inventory until this year. This is technically not in keeping with guidance from the WRI's Greenhouse Gas Protocol as it represents a change in base year assumptions. However, because the guidance to include FERA from Second Nature is a new inclusion this year, and because it is likely that Colorado College will be updating its base year within the coming year or two as it embarks on a new era of emissions reporting and reductions, the decision has been made not to update historical emissions at this time.

This graph and data from past years are not included in previous GHG inventories. This is the first year that FERA is being calculated for a publicly disclosed. Usually, a new baseline year is established when emissions categories are added to make for better transparency and comparability, but since the college already has plans for the future for a new baseline year, this will be disclosed separately until then. In most cases, changes to emissions inclusions have amounted to de minimus inclusions (e.g. - the inclusion of upstream emissions due to office paper purchasing in Scope 3) meaning the amount is so small that the additional will not make a notable difference in comparison. The inventory still includes them because the inventory is more accurate.

FERA, on the other hand, makes a substantial difference in the inventory. FERA emissions accounted for more than 3,000 MTCO2e additionally for just FY23. This also means that previous reports will not have the most up to data on total emissions. The total number in SIMAP and the previous reports will be different. Neither is wrong, but may be puzzling without this context. Because FERA is being added retroactively to ALL years, that means additional offsets will be used to offset from January 1st, 2020 to the current year. Colorado College will still maintain its carbon neutrality even with this change.

The field of sustainability is ever-changing, and there are a lot of grey areas with data and reporting. The Emissions Team and the Office of Sustainability believe that given all current data and the plans of the college, this is the best course of action. The office believes in defensible, transparent information.

Results | Changes from Last Year

Emissions Trends

- Fiscal year 2023 is the first post-pandemic year for Colorado College, therefore overall emissions slightly rose from the previous year.
- Overall gross emissions for FY23 are 14.7% higher than in FY21 and 16.9% higher than in FY22.
- Most of the increases occurred due to the post-pandemic re-emergence of travel, especially air travel.

Budget Changes

- The overall college budget did increase slightly by about $1.1 million since FY22.
- When adjusted for inflation, the budget shrank by roughly $300,000.

Student Population

- The student population in FY22 was 2,377 enrolled students with 1,740 students living on campus.
- For FY23, the college student population is 2,203 students with 1,750 students living on campus.
- The student population has decreased by nearly 8% while the residential population has remained unchanged.

Construction Projects

- The college has not built any new buildings from the ground up or acquired any new structures for FY23.
- The college has begun construction of new art studios where the former Honnen Ice Arena presides, which will add roughly 4,600 additional square feet to the campus.

Thoughts on the Changes that happened

- The increase in emissions from FY22 to FY23 is suspected to be due to returning to post-pandemic behaviors, including increases in business travel and study abroad.
- When looking at overall emissions, the college is still below 2020 gross levels with only a slight increase compared to 2021 and 2022.
- Speculations are based mostly on the data presented.

Carbon Offsets

Carbon Offsets: Implemented to reduce or eliminate the release of carbon dioxide and its equivalents into the atmosphere, either by capturing and storing carbon in natural materials like trees and soil (sequestration) or by changing regular practices to avoid emissions that would have otherwise happened (avoidance). Each carbon offset corresponds to the sequestration or avoidance of one metric ton of carbon dioxide equivalent (MTCO2e).

Colorado College reached carbon neutrality in 2020, but that does not mean that our operations are emissions-free. Nor does it mean that our work in this realm is done. The college strives to reduce emissions as much as possible, but financial factors, lack of technology and infrastructure, lack of operational control, and the college's primary educational mission - including study abroad - necessitate the purchase of carbon offsets for residual emissions.

Carbon offsets work by funding a project or an operation that sequesters carbon or changes the "business as usual" resulting in a change in emissions that would have otherwise been released into the atmosphere. For example, the classic example is putting up the funding to plant a forest. Forests convert carbon dioxide to organic matter when trees grow. If that project would not be possible without funding, then it can qualify as a carbon offset. The college participates in a voluntary market for carbon offsets. This means that there is no compliance requirement for the institution to offset the carbon emitted from our operations. $MTCO_2e$ are priced purely on market price – the market equilibrium to offset carbon. The college works with a third-party verifier, 3Degrees, to develop, verify, and purchase carbon offsets.

A good Carbon offset is measurable and permanent.

The carbon offsets that the college purchases are part of the Larimer County Landfill Gas Destruction Project. Landfills produce methane through decomposition. Methane has a global warming potential of twenty-eight according to the International Panel on Climate Change. That means for every single molecule of methane it will have the warming impact of twenty-eight molecules of carbon dioxide. But if methane is burned, then it is converted into carbon dioxide thus decreasing the warming potential. Because of this project, the college is changing the "business as usual" to reduce emissions entering our atmosphere.

$$CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$$

Methane + Oxygen – Combustion → Carbon Dioxide + Water Vapor

With carbon offsets and RECs, Colorado College is using its fiscal power to incentivize renewable energy and decarbonization. It is easiest to conceptualize Offsets and RECs when the financial flow of funding is followed, not the electron or the molecule.

Goals and Future Areas for Improvement

Although Colorado College has made significant progress in its sustainability and emissions goals, most notably the reduction of Scope 2 emissions to zero for the first time this year, there are several areas with room for improvement and continued growth in the coming years.

Scope 1 emissions have experienced moderate reductions since FY08, but goals in progress such as continued energy efficiency improvements and electrification of the vehicle fleet would further reduce these emissions. Scope 3 is the largest contributor to CC's overall emissions and has experienced few major reductions except for decreased travel during the pandemic. To reduce Scope 3 emissions going forward, a travel offset program is being implemented this year to decrease unnecessary travel and emissions across campus and the Office of Sustainability is continuing to foster a culture of sustainable transportation among the student body.

Colorado College's emissions reduction goals include decreasing Scope 1 emissions by an additional 25% from the 2008 baseline by 2030 and decreasing Scope 3 emissions by an additional 25% from 2008 levels by 2027. There is significant work that must be done to meet these goals, which is why the Emissions Team hopes to play a larger role going forward in facilitating conversations with stakeholders and decision makers on campus to reduce emissions. To accomplish this, efforts are being made to expedite the data collection and input processes in future years.

Conclusion

For the third consecutive year, Colorado College has sustained its carbon neutrality by completely offsetting any remaining institutional emissions. This milestone underscores the college's unwavering dedication to sustainability. Despite this accomplishment, Colorado College's efforts to reduce emissions will continue as the college aims to lessen the need for offsetting each year. It is recognized that this path requires action from the entire community, not just college leadership to raise awareness of emissions, and to promote sustainable behaviors.

The ongoing commitment to sustainability is evident in the college's progress, notably the significant decrease in overall emissions since FY08. Renewable energy certificates (RECs) ensure that all electricity consumed on campus is emission-free. Colorado College has achieved carbon neutrality since 2020 by purchasing carbon offsets for its greatly reduced residual emissions, with the Larimer County Landfill Gas Destruction Project being a key initiative in this regard, and the college playing a significant role in the development and certification of that project.

Moving forward, there is a focus on further reducing Scope 1 and Scope 3 emissions towards zero. Challenges lie ahead, particularly in reducing Scope 1 and Scope 3 emissions, which have historically increased. The college has set visionary goals, investigating the feasibility of a 50 percent reduction in 2020's emissions levels by 2035 while transitioning away from fossil fuel usage for normal daily operation. Achieving these targets will require continued efforts to promote sustainability across campus, including the adoption of renewable heating and cooling technologies, energy efficiency improvements, and sustainable transportation initiatives.

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All faculty and staff who completed the commuting survey

This report was written by the Colorado College Office of Sustainability's Emissions Interns Erin Mullins '24, Ethan Stewart '25 and Tam Phan '25.
This report was reviewed by Colorado College Office of Sustainability's volunteers Emma Nawara '24, Chris Burich '24, and Sadie Curtin-Adelman '27.
This report was reviewed and edited by Ian Johnson and Mae Rohrbach.

(Emissions Interns, from left to right: Erin Mullins '24, Ethan Stewart '25, Tam Phan '25)