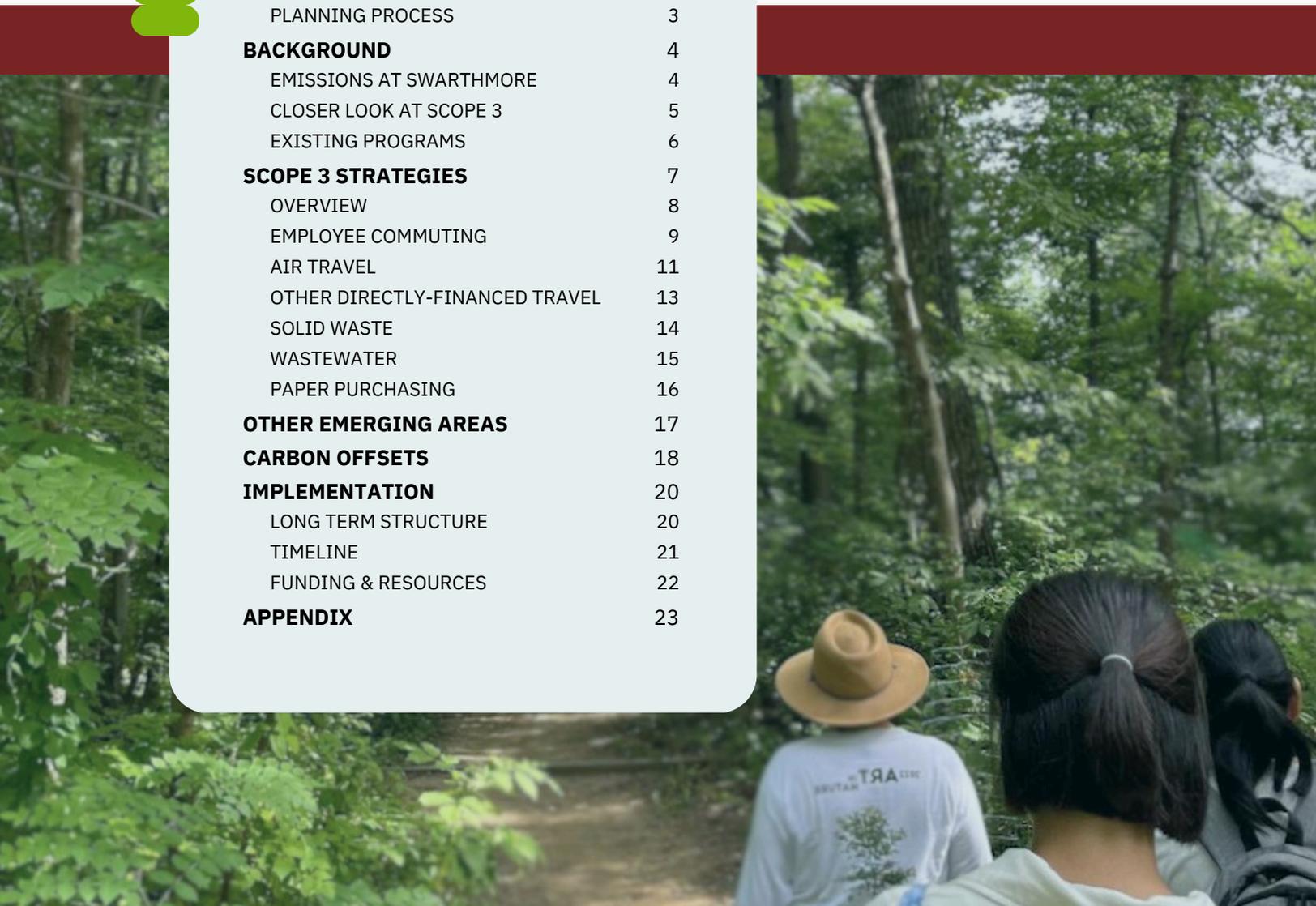




TO ZERO TOGETHER

ONGOING AND EMERGING STRATEGIES FOR SCOPE 3 EMISSIONS AT SWARTHMORE COLLEGE

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EXECUTIVE SUMMARY

As a signatory of the Presidents' Climate Commitment, the College is committed to achieving carbon neutrality no later than 2035. Through the College's energy plan, **To Zero By Thirty-Five** (20X35), we expect to reduce Scope 1 and 2 emissions by 98% by transitioning to a geoexchange system coupled with renewable energy. The remaining sources of emissions fall into what is known as Scope 3: emissions that are not directly controlled by the institution but are considered critical to the College's mission and operations. In order to achieve carbon neutrality by 2035, the College will need to implement **strategies to reduce Scope 3 emissions** as much as possible, and offset those we cannot.

To this end, the Office of Sustainability has spent the last few years exploring the College's Scope 3 sources for opportunities to reduce or offset these emissions. These efforts have led to initiatives like the **air travel carbon fee** adopted in 2022, as well as multiple President's Sustainability Research Fellow projects. Now, the Carbon Charge Working Group (CCWG), led by the Office of Sustainability, has taken steps to lay out a comprehensive approach to address Scope 3 emissions.

Every Scope 3 source comes with unique challenges, opportunities, and co-benefits for reduction. This is reflected in the strategies, which **build upon ongoing efforts** and **provide direction** for future initiatives, research, or planning efforts. As these strategies develop over a multi-year timeline, implementation will depend on the continued collaboration among the Office of Sustainability and several campus partners. This plan also outlines structures that can respond to evolving needs for funding and resources, and support long term implementation.

As evident throughout this plan, addressing Scope 3 emissions often calls for expanding educational resources, encouraging behavior change, and an overall shifting of campus culture. When considering Scope 3 emissions in this way, the goal of reaching carbon neutrality becomes much more than getting to zero by 2035, it's getting **to zero together**.





VISION

By 2035, Swarthmore College's Scope 3 emissions will be reduced as much as possible through strategies that are tailored to campus needs, and any remaining emissions will be accounted for through an intentional, transparent approach to offsets.

GOALS

- Outline strategies for reducing Scope 3 emissions, including the timelines, steps and co-benefits related to these strategies.
- For those emissions that will need to be offset, develop our long term carbon offset approach.
- Support the College community in gaining a greater understanding of individual and departmental impact and responsibility to Scope 3 emissions.

PLANNING PROCESS

The Office of Sustainability led this process with the Carbon Charge Working Group (CCWG) and sought to develop a plan that:

- Deepens understanding of the capacity for the College to reduce Scope 3 emissions.
- Is inclusive and fosters shared responsibility for Scope 3 emissions reductions.
- Draws upon knowledge and experience of peer institutions.
- Explores creative and innovative opportunities that also offer co-benefits beyond emissions reduction.

In the fall of 2022, the CCWG began to map out challenges and opportunities for strategies to address Scope 3 emissions. The Office of Sustainability's climate action manager led the group through several rounds of clarification and improvement. In the spring of 2023, several other campus partners were included in the process to further refine the strategies. Throughout the summer 2023, the Office of Sustainability continued to gather input and work towards finalizing a comprehensive plan for pathways to addressing Scope 3 emissions. In the fall of 2023, the CCWG continued to gather stakeholder feedback and reconvened to finalize the strategies and identify next steps for implementation. Going into 2024, the Office of Sustainability began to move forward with the final version of the plan to guide future Scope 3 emissions reductions efforts.



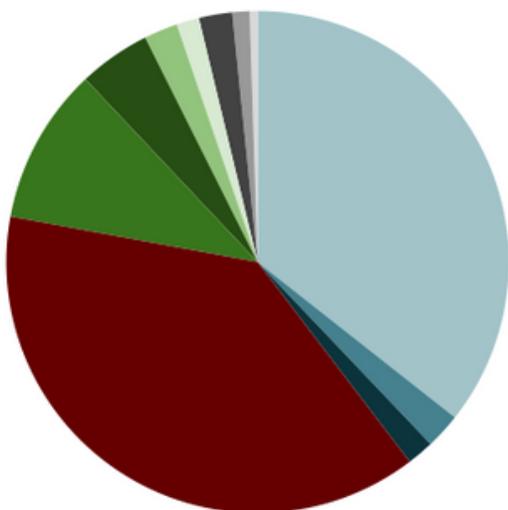
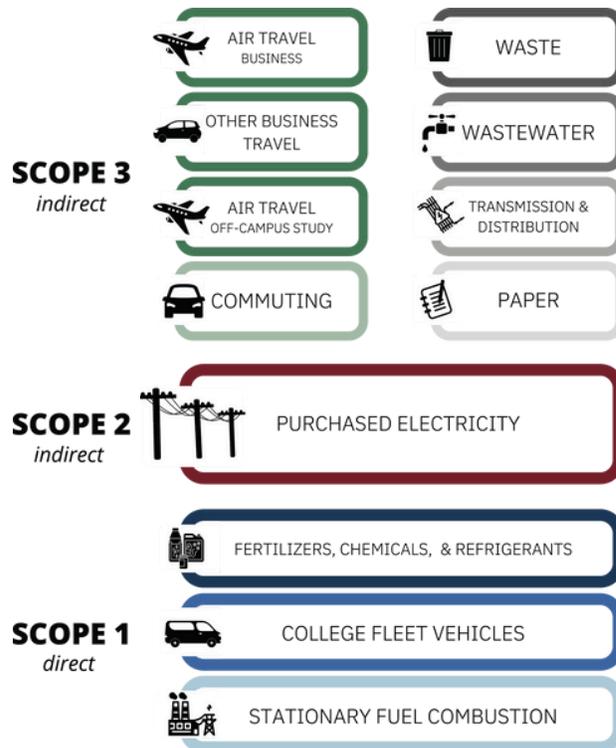


BACKGROUND

EMISSIONS AT SWARTHMORE

The College currently tracks and reports on **several emissions sources** categorized as Scope 1, Scope 2 and Scope 3 emissions. Through the [Sustainability Indicator Management & Analysis Platform \(SIMAP\)](#) – a widely-recognized online tool originally developed by the University of New Hampshire (UNH) which is based on the [Greenhouse Gas Protocol](#) – the College is able to calculate and track emissions data.

Scope 1 emissions are those directly controlled and produced by College operations, including emissions attributed to on-site natural gas combustion for heating, fuel used by fleet vehicles, fertilizers used by Grounds, and other refrigerants or chemicals used on campus. Emissions that fall into Scope 2 are those associated with off-site electricity purchased by the College.



- On-Campus Stationary
- Refrigerants, Chemicals, and Fertilizers
- Fleet Vehicles
- Purchased Electricity
- Employee Commuting
- Air Travel - Business
- Air Travel - Off-Campus Study
- Other Travel - Business
- T&D Losses
- Paper
- Waste and Wastewater

Scope 3 emissions are indirect emissions still central to the operations of the College, including a number of categories. As a signatory to the [American College & University Presidents' Climate Commitment](#) (now known as the Carbon Leadership Commitment), Swarthmore College is required to track and report on Scope 1 & 2 categories, as well as a number of Scope 3 categories (commuting, air travel [including both directly financed and study abroad air travel]). However, as colleges and universities strive to be at the forefront of developing emissions tracking and climate leadership, many have decided to include additional Scope 3 categories in GHG reporting, including Swarthmore. Furthermore, GHG calculation methodology continues to evolve rapidly to include additional Scope 3 categories that are not currently tracked and reported by Swarthmore College.

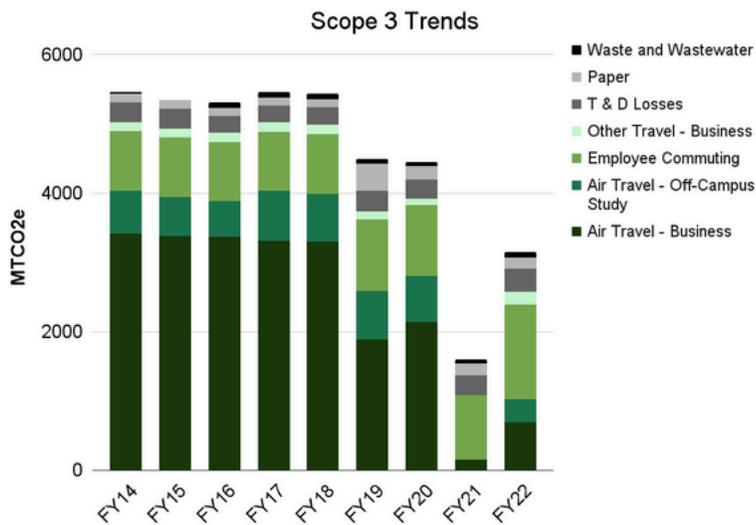


A CLOSER LOOK AT SCOPE 3

At Swarthmore College, **Scope 3 emissions** include: Employee Commuting, Directly Financed Air Travel, Other Directly Financed Travel, Study Abroad Air Travel, Solid Waste, Wastewater, Paper Purchasing, and Transmission & Distribution Losses. According to the most recent Greenhouse Gas Inventory (for FY22), Scope 3 emissions made up approximately 21% of the College’s overall emissions. Historically, they make up about 30% of College emissions (32.1% in FY20).

Each Scope 3 source contributes a different amount of emissions to the overall inventory. We can look at current trends, as well as trends prior to the start of the COVID-19 pandemic, to better understand our potential to reduce these emissions. (Note: Over FY2020, the College adjusted calculation methodology to give a more accurate picture of air travel and employee commuting.)

Emissions from each Scope 3 source are calculated annually using regularly updated methodology and emissions factors in SIMAP. Understanding how each source contributes to emissions is important to developing strategies that effectively reduce these emissions.



| Scope 3 Emissions Source | FY22 | |
|------------------------------|----------------|--------------|
| | MTCO2e | % total GHGI |
| Employee Commuting | 1358.85 | 9.01% |
| Directly Financed Travel | 190.15 | 1.26% |
| Directly Financed Air Travel | 695.91 | 4.62% |
| Study Abroad Air Travel | 331.68 | 2.20% |
| T & D Losses | 327.77 | 2.17% |
| Paper | 169.76 | 1.13% |
| Waste | 6.67 | 0.04% |
| Wastewater | 70.93 | 0.47% |
| Total | 3151.72 | 20.9% |

Scope 3 emissions are often difficult to reduce to zero. The College will need to continue to identify reduction strategies that are specific to each emission source. In this plan, the Scope 3 sources above have been organized into the following categories*:

- **Employee commuting**
- **Air Travel** (directly-financed and study abroad)
- **Other Directly-Financed Travel**
- **Solid waste**
- **Wastewater**
- **Paper purchasing**

*Transmission and distribution losses (T&D) losses is an energy-related emissions category that is not included in scope 1 or 2 for the end-user of the energy (i.e. the College). T&D Losses are expected to be reduced to zero once the College executes a PPA and begins receiving 100% renewable energy.



LEVERAGING EXISTING PROGRAMS

Many of the strategies outlined in this plan **build upon existing initiatives** and steps that have been taken to reduce emissions from Scope 3 sources.

Carbon Charge Program

As part of the Carbon Charge Program, an internal carbon fee is levied on departments based on energy usage and related carbon emissions. The fund created by this fee is used to support energy efficiency projects, as well as the research, planning, and implementation of strategies to reduce emissions - especially those outside of the energy plan. In 2022, this program grew to include the air travel carbon fee which creates funding to support reduction and offsetting of air travel emissions.

Carbon Charge Working Group

At the heart of these efforts to develop and implement strategies to address Scope 3 emissions is the Carbon Charge Working Group. Chaired by the Office of Sustainability climate action manager and made up of staff, faculty, and students, this working group regularly supports student research efforts and development of programs as they relate to emission reductions and carbon pricing, such as the air travel carbon fee.

To Zero by Thirty-Five

Though targeted at Scope 1 and 2 emissions, the College's energy plan will also effectively eliminate some Scope 3 sources that are associated with the upstream/downstream emissions from energy and electricity purchases. These include "Transmission & Distribution Losses" and "Fuel- and Energy-related Activities", which are outlined in the Appendix.

Goal of Zero Waste by 2035

The Zero Waste plan outlines several strategies to increase diversion and reduce per capita waste on campus. Emissions related to waste are calculated based on the tons of waste sent to the Convanta incinerator in Chester. By diverting more waste away from the trash and reducing overall waste on campus, we can expect emissions from waste to decrease as well.

Student Research

Students have played a key role in advancing Scope 3 emissions solutions through the President's Sustainability Research Fellowship, the Green Advisors program, and sustainability internships. Topics that students have supported include electric vehicles, embodied carbon, sustainable travel guidelines, carbon offsets, zero waste, and carbon pricing.

Ultimately, this plan seeks to highlight and build upon ongoing success while recommending additional areas of focus. Many of the strategies in this document **reference these programs, goals and campus partners.**



SCOPE 3 STRATEGIES

UNIQUE TO SWARTHMORE

The following sections outline considerations for policies, communications campaigns, incentives/disincentives, or infrastructure projects that would support reductions in Scope 3 areas. While there are numerous possible ways to reduce emissions in many of these areas, some were eliminated through the planning process due to lack of impact or feasibility within the context of Swarthmore College. The set of strategies outlined here have been identified as the ones **most effective** for the College to pursue.

CO-BENEFITS

In addition to reducing emissions, many strategies to address Scope 3 emissions have additional **co-benefits**. Co-benefits are the impacts that a strategy has beyond lower greenhouse gas emissions. While difficult to quantify, many of these strategies have benefits that extend to wellbeing, employee satisfaction, academic integration, leadership opportunities, reduced pollution, and water conservation.



OVERVIEW

Potential GHG Impact: Percentage of the College’s total GHGI, as of FY2022.

Timeline: Estimated time until full implementation

Progress: Ongoing (significant research and/or progress) or Emerging (not started yet or some initial research and/or progress made)

| | Strategies | Timeline | Progress | Potential GHG Impact |
|--------------------------------|--|----------|----------|----------------------|
| Employee commuting | A.1 - Support for Electric Vehicle Commuters | 6-10 yrs | Ongoing | 9% of total GHGI |
| | A.2 - Educational Resources for EV Commuters | 1-2 yrs | Ongoing | |
| | A.3 - Financial Options to Support SEPTA Commuters | 1-2 yrs | Emerging | |
| | A.4 - Evaluate Other Ways to Support Alternative Commuting | 3-5 yrs | Emerging | |
| Air Travel | B.1 - Sustainable Travel Guidelines to Support Staff & Faculty | 1-2 yrs | Ongoing | 6.8% of total GHGI |
| | B.2 - Evaluate and Enhance Air Travel Carbon Fee Program | 3-5 yrs | Ongoing | |
| | B.3 - Low-Emissions Options and Emissions Impact When Booking | 1-2 yrs | Emerging | |
| | B.4 - Understand Student Air Travel Habits and Encourage Low-Emissions Options | 1-2 yrs | Emerging | |
| Other directly-financed travel | C.1 - Sustainable Travel Guidelines to Support Staff and Faculty | 1-2 yrs | Ongoing | 1.3% of total GHGI |
| | C.2 - Sustainable Options for High-Travel Departments (Athletics, Admissions, Advancement, etc.) | 3-5 yrs | Emerging | |
| Waste | D.1 - Support Goal of Zero Waste by 2035 | 6-10 yrs | Ongoing | 0.04% of total GHGI |
| | D.2 - Improve Data for Quantifying Waste Emissions | 3-5 yrs | Emerging | |
| Wastewater | E.1 - Evaluate and Encourage Water Efficiency Initiatives | 6-10 yrs | Emerging | 0.5% of total GHGI |
| | E.2 - Investigate Resilience of Water Resources to Climate Impacts | 3-5 yrs | Emerging | |
| Paper Purchasing | F.1 - Centralized Printers and Print-Release Systems | 1-2 yrs | Ongoing | 1.1% of total GHGI |
| | F.2 - Sustainability Standards at Print Services | 1-2yrs | Emerging | |
| | F.3 - Digital Textbooks | 3-5 yrs | Ongoing | |
| | F.4 - Recycled Content Paper | 3-5 yrs | Ongoing | |

EMPLOYEE COMMUTING

HOW EMISSIONS ARE CALCULATED:

Emissions from employee commuting are calculated based on the results of the annual employee commuting survey, which gives us a sample distribution of mode types across all commutes and the average mileage per one-way trip to/from campus per mode type. By projecting the sample distribution to the College's FTE, we can estimate the number of one-way trips to/from campus per mode type (the commuting mode split) and associated mileage. Emissions factors are applied to the mileage from each mode type in order to create a whole picture of emissions from commuting. Employee commuting is typically a difficult area to reduce emissions as it relies heavily on individual needs, preferences, and behaviors.

BASELINE DATA:

9.0% of GHGI

16 charging ports on campus as of 2023

Estimated 5% of employees commute with an EV

ONGOING STRATEGIES

A.1 - Support for Electric Vehicle Commuters

Implementation Partners: Office of Sustainability, Campus Services, One Card Services, Facilities

Both research completed by PSRF Ryan Jin '24 and the 2023 Staff & Faculty Commuting Survey indicated that there is a continued need to understand increased adoption and use of electric vehicles on campus in the future. The College will build upon this work to develop a long term plan to meet expected electric vehicle (EV) demand and encourage EV use for commuting. This will include using industry research, statistical models and campus surveys to project EV adoption among campus commuters. Additionally, the College will explore consultant partnerships to assist with developing estimated timelines and cost models for expanding charging station infrastructure to meet projected needs.

A.2 - Educational Resources for EV Commuters

Implementation Partners: Sustainability, Communications, Campus Services, Human Resources

One of the common themes identified in the 2023 commuting survey was the interest in support to overcome challenges to purchasing and charging an electric vehicle. To this end, tailored resources that provide faculty and staff with information about electric vehicles, including cost and environmental impacts, relevant tax credits, and charging infrastructure considerations, are seen as a viable place to start in encouraging EV adoption. The Office of Sustainability will collaborate with College Communications and relevant departments to design these resources and incorporate them into existing engagement and employee resources.

EMERGING STRATEGIES

A.3 - Financial Options to Support SEPTA Commuters

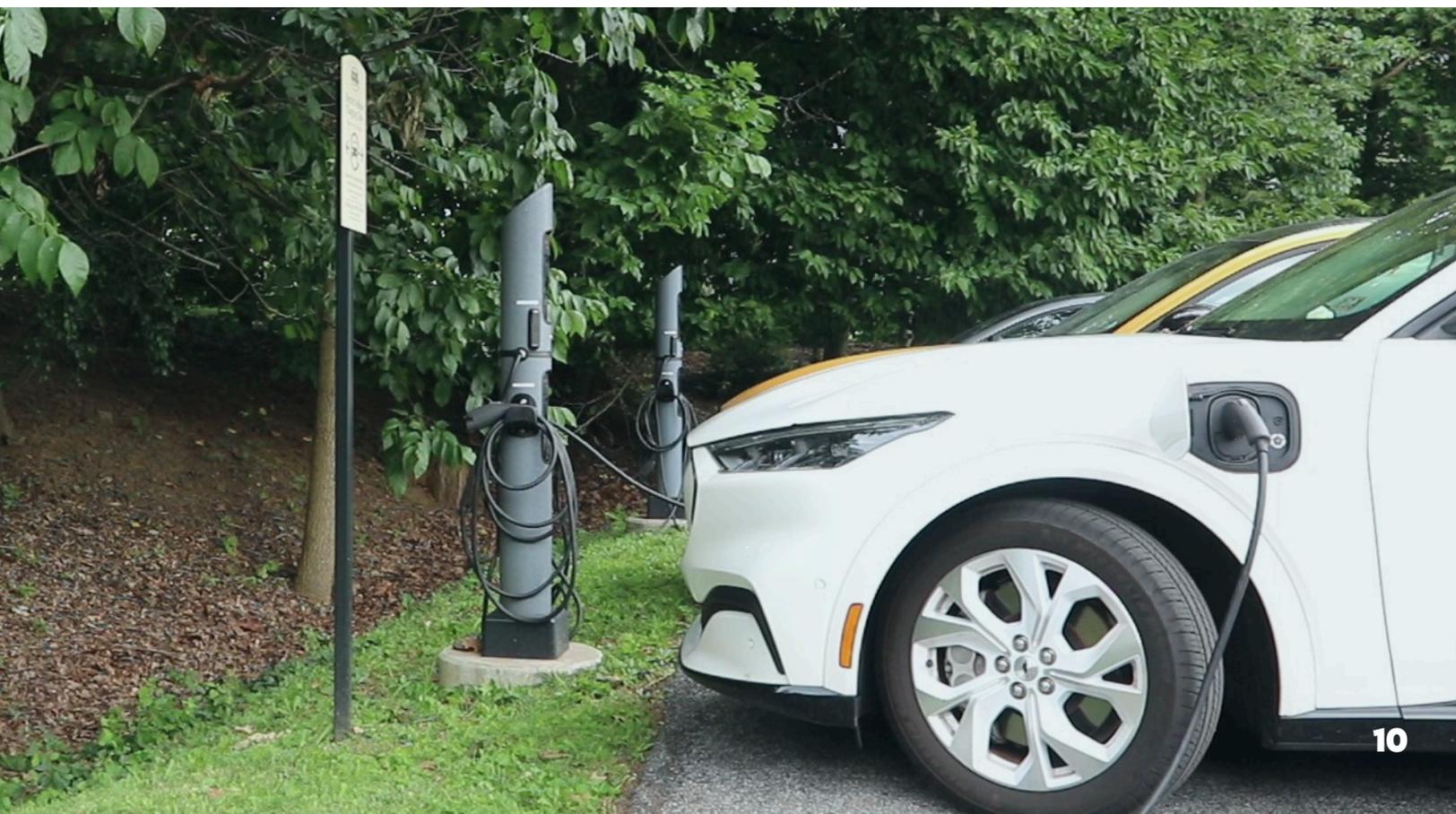
Implementation Partners: Office of Sustainability, Finance, Campus Services, Institutional Research

The 2023 commuting survey also indicated that a portion of College employees are interested in financial incentives to support an increased use of public transit (regional rail, subway, bus, etc.) for commuting. Following the launch of free SEPTA passes for students in Fall 2023, the College will use a campus-wide survey to better understand the specific needs of staff and faculty in order to develop an effective subsidy or other program type for SEPTA use. If implemented, the Office of Sustainability would work with campus partners on regular communications around the program to encourage and track use.

A.4 - Evaluate Other Ways to Support Alternative Commuting

Implementation Partners: Office of Sustainability, Institutional Research, Human Resources

Beyond a SEPTA program, responses to the 2023 commuting survey indicated general interest in support for alternative transportation choices for commuting. By continuing to highlight existing policies such as the College's hybrid work policy, and investigating other possible incentives, policies, or resources, we can aim to further reduce emissions from commuting. The Office of Sustainability will continue to work with campus partners to explore possibilities and identify feasible opportunities to support staff and faculty who are seeking alternatives to single-occupancy vehicles for commuting.



AIR TRAVEL

HOW EMISSIONS ARE CALCULATED:

Air travel makes up a significant portion of the College's Scope 3 emissions. Emissions from off-campus study air travel are calculated based on the mileage reports provided by Key Travel, our travel agency partner for this type of travel. Emissions from other directly-financed air travel have been based on extensive analysis of travel expense data. In the future, Chrome River expense reports will provide a more accurate picture of air travel emissions. In order to continue to support professional and academic opportunities, it is not likely that these emissions would be completely reduced to zero in the near future. With the implementation of the air travel carbon fee for FY23, there is a funding source to offset these emissions and increased incentive to reduce them as much as possible.

BASELINE DATA:

6.8% of GHGI

4.6% from business air travel

2.2% from student off-campus air travel

Air travel carbon fee pilot implemented in 2022

ONGOING STRATEGIES

B.1 - Sustainable Travel Guidelines to Support Staff & Faculty

Implementation Partners: Sustainability, Purchasing Office, Communications

In 2022, the Office of Sustainability developed the 2022 Sustainable Travel Guidelines that are on the Office of Sustainability website and within the Business Travel and Expense Policy. The Office of Sustainability will collaborate with the Purchasing Office to more fully integrate the guidelines into purchasing policies and campus communications, in order to encourage more direct and low-emissions options as well as elevate the air travel carbon fee program. As travel habits or opportunities change, the Office of Sustainability should revisit these guidelines every few years.

B.2 - Evaluate and Enhance Air Travel Carbon Fee Program

Implementation Partners: Sustainability, Carbon Charge Working Group, Budget, Purchasing, Provost

In 2022, the College launched the air travel carbon fee program for FY23. In its pilot year, the Office of Sustainability worked closely with the Budget Office to enhance the implementation and communications of the program. Currently, the fee is based on comprehensive analysis of travel expense data from the previous calendar year and is applied to departmental operating budgets. This program provides a funding source for the College to offset air travel that cannot yet be avoided. As we seek to get a better picture of our air travel impact through the use of Chrome River and as emissions standards shift in the airline industry, there is an opportunity for the College to continue to evaluate the program structure and communications. With support from the Office of Sustainability and PSRF research, the Carbon Charge Working Group will refine the application of the fee to accurately reflect air travel purchasing data.



ONGOING STRATEGIES

B.3 - Low-Emissions Options and Emissions Impact When Booking

Implementation Partners: Sustainability, Purchasing

The College currently officially works with two travel agencies for air travel - Key Travel (off-campus study) and Avenue Two (a portion of other air travel). Key Travel provides emissions impact reports on a fiscal year basis, but Avenue Two doesn't currently have this capacity. There is an opportunity to improve our understanding of emissions impact from air travel and incorporate it into decision-making when booking. Supported by the Office of Sustainability, the Purchasing Office and Global Engagement Office will continue to work within these partnerships to identify ways to increase education around the emissions impact of flights and encourage low-emission flight options when possible. This work will also support efforts to improve tracking of emissions associated with College air travel.

B.4 - Understand Student Air Travel Habits and Explore Options for Reducing Emissions

Implementation Partners: Global Engagement Office, Office of Sustainability

It is not clear where emissions impact fits into decision-making for students who are choosing off-campus study opportunities, if at all. The emissions impact reports provided by Key Travel only give us a look at the air travel data after it has been booked. To better understand the decision-making process for students before choosing programs or booking flight options, the Global Engagement Office (previously known as the Off-Campus Study Office) will work with the Office of Sustainability to develop a baseline review of current student air travel habits. This will help support effective communication with students to encourage students to take direct trips, combine trips and reduce multi-country trips as they are able.

OTHER DIRECTLY-FINANCED TRAVEL

HOW EMISSIONS ARE CALCULATED:

Other directly-financed travel includes any official travel outside of flights, which in the case of Swarthmore is primarily ground travel (train, bus, rental, rideshare, etc.). The emissions impact from this type of travel is calculated from a combination of extensive analysis of travel expense data (most departments), travel schedules (Athletics), and other funding reports (Lang Center). While emissions related to other directly financed travel are significantly lower, the College can look to reduce these emissions through encouraging low-carbon alternatives or other incentives to reduce official travel needs altogether.

BASELINE DATA:

1.3% of GHGI

ONGOING STRATEGIES

C.1 - Sustainable Travel Guidelines to Support Staff and Faculty

Implementation Partners: Sustainability, Purchasing Office, Communications

Building upon Strategy B.1, the Office of Sustainability will collaborate with the Purchasing Office to more fully integrate the sustainable travel guidelines into purchasing policies and campus communications, including information about non-flight travel (train, bus, rideshare, etc.). It could serve to support staff and faculty who are interested in better understanding the emissions impact of different options and encourage reductions or alternatives as possible.

EMERGING STRATEGIES

C.2 - Sustainable Options for High-Travel Departments (Athletics, Admissions, Advancement, etc.)

Implementation Partners: Sustainability, Carbon Charge Working Group, Budget, Purchasing, Provost

Departments that regularly book more travel than others, such as Athletics, Admissions and Advancement, give us an opportunity to better understand decision-making and what resources could support those responsible for booking and coordinating travel. The Office of Sustainability will continue to engage with high-travel departments to better understand opportunities and challenges. We can then work with these departments to develop strategies and communications that encourage sustainable options (mass transit, electric or low-emission vehicles, etc.) for directly-financed travel.



SOLID WASTE

HOW EMISSIONS ARE CALCULATED:

Emissions from solid waste are calculated for the annual greenhouse gas inventory based on the number of tons that go into the trash stream, which are sent to the Covanta incinerator in Chester. Because the emissions associated with this method of disposal (waste-to-energy) are technically considered low, solid waste typically makes up a very small portion of the College's reported emissions. By continuing to support goals and initiatives outlined in the Zero Waste Plan, the College could see these emissions lowered even further. Additionally, waste offers a unique area of campus engagement as a highly visible aspect of sustainability.

BASELINE DATA:

0.04% of GHGI

Goal of 90% diversion by 2035

Goal of 25% reduction in per capita waste by 2035

ONGOING STRATEGIES

D.1 - Support Goal of Zero Waste by 2035

Implementation Partners: Office of Sustainability, Zero Waste Working Group

In 2022, the College adopted the Zero Waste Plan, which included a goal for 90% diversion by 2035 and reducing per capita waste by 25%. This would mean that the campus is reducing overall waste, as well as diverting the majority of our waste from the trash and preventing it from being sent to incineration. By reducing the tons that are sent to the Covanta incinerator, we can also achieve emissions reductions in this area. The Office of Sustainability will continue to collaborate with EVS, Facilities, Dining and other campus partners to implement strategies outlined in the Zero Waste Plan.

EMERGING STRATEGIES

D.2 - Improve Data for Quantifying Waste Emissions

Implementation Partners: Office of Sustainability, Zero Waste Working Group

The Office of Sustainability will also work with our waste consultant to further investigate the emissions impact of waste as calculation methodology improves.

WASTEWATER

HOW EMISSIONS ARE CALCULATED:

Wastewater emissions are calculated based on the number of gallons sent to a wastewater treatment system. To calculate how many gallons of wastewater are produced on campus, we subtract any water used for irrigation or cooling tower make-up (i.e. water that does not go down the drain) from total water usage on campus. In order to reduce the emissions associated with wastewater, the College must seek to reduce total water usage on campus, or find additional ways to divert greywater.

BASELINE DATA:

0.5% of GHGI

25-35 million gallons per year

ONGOING STRATEGIES

E.1 - Evaluate and Encourage Water Efficiency Initiatives

Implementation Partners: Office of Sustainability, Facilities

In addition to the College's ongoing commitment to sustainable stormwater management practices that maintain water quality of runoff to Crum Creek, there is opportunity for the College to continue to enhance water conservation and efficiency on campus. Previous and current initiatives led by Facilities, Grounds and other campus groups include replacing inefficient water fixtures, installing rainwater cisterns, and maintaining water conservation standards in retrofits and new construction.

EMERGING STRATEGIES

E.2 - Investigate Resilience of Water Resources to Climate Impacts

Implementation Partners: Office of Sustainability, Facilities

As potential climate impacts become more pressing in the future, the College should seek to further investigate the resilience of regional water resources and identify strategies to increase educational and operational efforts to increase water conservation on campus.



PAPER PURCHASING

HOW EMISSIONS ARE CALCULATED:

Paper emissions are calculated based on types of paper and the amount purchased. Paper types with higher recycled content have lower associated emissions. To reduce paper emissions, the College will need to decrease overall paper purchasing and/or increase the amount of recycled content papers being purchased.

BASELINE DATA:

1.1% of GHGI

Over 100,000 lbs of paper purchased annually

~40% of paper purchased in FY22 had recycled content

ONGOING STRATEGIES

F.1 - Centralized Printers and Print-Release Systems

Implementation Partners: ITS, Campus Services, Office of Sustainability, Communications

To support sustainable printing practices and reduce unnecessary or accidental printing, the College will continue to pursue several strategies led by Information Technology Services and Print Services. This includes work to reduce individual printers, increase centralized printers through the new Canon lease contract, and piloting print release software at centralized printers.

EMERGING STRATEGIES

F.2 - Sustainability Standards at Print Services

Implementation Partners: Campus Bookstore, Office of Sustainability, Communications

Print Services is working to provide more in-house printing in an effort to reduce cost and excessive printing that often occurs through 3rd-party orders. With more control over the printing process for non-standard printing projects (posters, signs, etc.) there is opportunity to promote layouts and printing decisions that maximize dimensions and limit waste.

F.3 - Digital Textbooks

Implementation Partners: Campus Bookstore, Office of Sustainability, Communications

The Campus Bookstore is working to move the campus to providing digital textbook options as much as possible, which has the potential to support sustainability and accessibility efforts.

F.4 - Recycled Content Paper

Implementation Partners: Print Services, ITS, Office of Sustainability

To further reduce emissions attributed to paper use, the Office of Sustainability will also collaborate with Print Services and ITS to evaluate and pilot recycled content paper options for printing needs on campus.



OTHER EMERGING AREAS

Best practices for tracking and calculating Scope 3 emissions continue to evolve, including for Scope 3 categories that the College does not currently include in its greenhouse gas inventory. It is unclear whether these **additional categories** will be included in carbon neutrality commitments in the future but it is likely that colleges and universities will continue to strive to be leaders in this space. These Scope 3 sources represent opportunities for the College to implement and model best practices. These additional categories also represent significant **experiential educational opportunities** for student research and campus-based projects.

With this in mind, some of the potential additional categories that are starting to emerge in carbon neutrality conversations across colleges and universities have been noted below:

Purchased Goods & Services

This category includes all upstream emissions from university purchased goods and services that are not covered by other Scope 3 categories (such as business travel). There are different methods to calculate these emissions including estimates based on total spend amounts or gathering emissions data from suppliers to develop emissions numbers based on specific purchases. While more difficult to track, this category actually makes up a significant portion of Scope 3 emissions.

Food & Dining

Subcategory of purchased goods and services focused on food and dining-related procurement. Many schools choose to focus on this category because purchases may be more easily identified and because of the increasing awareness of emissions related to the food & dining sector. However, tracking purchases has proven to be the main barrier at many schools, including Swarthmore. Several PSRFs have approached this topic from different angles in recent years, indicating some growing momentum in this area.

Embodied Carbon

While not currently a defined category in the GHG Protocol, embodied carbon and/or construction-related emissions is an area that colleges and universities may be able to seek reductions. Sources in this category might include raw material extraction, manufacturing, material transport, and onsite installation. The College's existing implementation of Life-Cycle Analysis tool and recent PSRF project (Alice Du '24) focused on Embodied Carbon, put the College in a good position to explore this area further.

Additional categories that are currently being tracked by some schools or have been identified as possible areas for Higher ed to consider include: **Other college-sponsored student travel to/from campus** (e.g. summer-funded research and other opportunities), **Upstream transportation** (from direct suppliers), and **Capital goods** (final products with extended life, not captured in purchased goods & services).



CARBON OFFSETS

In achieving carbon neutrality, the College's first priority is to **reduce** greenhouse gas emissions as much as possible. However, there will be a percentage of emissions that cannot be eliminated, due to necessary campus operations and use. To address these emissions, the College should consider the source, quality, and co-benefits of offset projects in order to outline an approach that aligns with Swarthmore's values.

To this end, the Office of Sustainability is working with the Carbon Charge Working group to develop a framework for carbon offsets that includes the underlying values and minimum project requirements to guide decisions.

Swarthmore College has taken steps over the last few years to develop an understanding of the offset market and the needs/interests of the campus community when it comes to offset projects. In 2021, Olivia Stoetzer '23, completed a year-long PSRF project on the topic of carbon offsets at Swarthmore College. Stoetzer facilitated benchmarking interviews with 9 peer institutions including Williams College and Dickinson College, and completed a white paper based on extensive research. She also conducted community conversations and drafted recommendations for criteria and governance in choosing offset projects for Swarthmore.

The College currently purchases some carbon offsets from Climate Vault, founded by Swarthmore alumni Michael Greenstone '91 and Andrew Dailey '91. After Climate Vault approached Swarthmore College in 2020 to become an early supporter, the Carbon Charge Working group met with them several times to develop and vet an initial partnership proposal for 2021. Climate Vault uses regulated compliance markets to purchase and "vault" CO2 allowances, thereby preventing major emitters in those markets from utilizing them to emit carbon dioxide into the atmosphere. Climate Vault also offers the opportunity to invest funds from offset purchases into carbon removal projects. Swarthmore does not currently participate at this level.

RECOMMENDATIONS FOR OFFSETS

The following recommendations build upon the research and work outlined above:

- Prioritize continuing to work with Climate Vault for a portion of offsets while considering additional project types that have low-to-medium risk and prioritize co-benefits. The Office of Sustainability should continue to engage with cross-campus collaborations, such as through Second Nature or the Offset Network, to help vet and select projects.
- As part of the continued partnership with Climate Vault, here are some possible next steps:
 - As air travel fee funds allow, continue to account for air travel emissions through Climate Vault. This may inform the price of the air travel fee as the program evolves.
 - Review any updates from Climate Vault regarding carbon reduction technologies to evaluate whether the College would want to be further involved.



- Maintain a percentage of offsets from Climate Vault annually, while considering other project options to create a diverse offset portfolio.
- Since offset project type, price, and availability will change over time, the College should set up a decision-making structure for offset purchases. This process should be formalized in the next few years and launched by 2025.
- To support transparency and education around offsets, a public-facing description of the College's approach to offsets, clarifying scope, priorities, & limitations should be developed.
- The annual cost to offset all of the College's Scope 3 emissions (not including fleet vehicles or fertilizers) is projected to be \$16,617-\$22,680 through voluntary market offsets or \$81,961 through 100% Climate Vault offsets (as of FY23 prices). It should be noted that this is an optimistic estimate, as offset prices are expected to increase as demand increases and regulations develop in the next 10 years. The College should consider innovative new programs to source funding for offsets beyond the full implementation of 20X35, which will dramatically reduce the emissions on which the Carbon Charge fund is based. This could be undertaken by the Carbon Charge Working Group as a way to evolve the Carbon Charge Program.
- In the long term, Swarthmore College may also consider developing its own offset projects. While this is unlikely to produce a significant amount of carbon credits, there are additional educational and research benefits. Universities and colleges are also starting to pursue these projects more and more, which may lead to lower financial and time barriers as verification is streamlined on this scale.





IMPLEMENTATION

Many of the strategies outlined in this document are **already underway**, with a range of progress made in research and/or implementation. This can be attributed to the widespread support across several different departments and offices for sustainability initiatives that target greenhouse gas emissions. Programs like the Carbon Charge program and the President's Sustainability Research Fellowship have led to highly-applicable research findings and built momentum for the exploration of different initiatives.

LONG TERM STRUCTURE

The Office of Sustainability has historically served as a strong facilitator of research and implementation of initiatives related to reducing emissions. This is bolstered by a high degree of buy-in across departments and offices. For this reason, many of the strategy goals outlined in this plan will likely continue to move forward without the need for further approval. However, individual outcomes such as new initiatives or funding structures that are developed as strategies progress will likely need additional approval from College leadership. Additionally, it is critical for long-term effectiveness that diverse campus partners continue to be involved and help adapt strategies as needed. To achieve the balance of forward momentum while meeting potential approval needs, **this plan will be formalized through the following steps:**

- Consider expanding the role of the Carbon Charge Working Group to include broader implementation of carbon neutrality strategies. Revised scope could include:
 - Continue to support management of the Carbon Charge program, as well as consider how the structure might change over time as the budget reflects changing energy use from 20X35 implementation.
 - Support the implementation of scope 3 reduction strategies, including funding considerations and carbon offsets.
 - Regularly revisit scope 3 strategies to adapt as new opportunities or challenges arise.
- Share an initial high-level update with college leadership, including Ecosphere Executive committee and staff to the President's Office, to support understanding of our plan to address scope 3 emissions.
 - Framing will focus on challenges and areas where additional support will be needed.
- Develop a public-facing annual reporting process to support long term awareness and buy-in. This could be folded into the existing Greenhouse Gas Emissions report and/or into a 20X35 campaign.



FUNDING AND RESOURCES

Progress toward many of these strategies has been supported by existing capacity and resources, as well as funding through the PSRF fund and the Carbon Charge fund. Many will be moved forward by continued staff capacity and do not necessarily need additional funding for successful implementation. However, with the implementation of the 20X35 energy plan, energy use will change on campus and consequently affect the Carbon Charge fund amount. Since the Carbon Charge fund is based on annual energy & electricity emissions, we can expect that this budget will slightly increase in the next couple of years as electric and energy use increases, and then dramatically decrease as the geexchange system coupled with renewable energy is implemented (first decrease in 2027, then again by 2035).

The CCWG will need to examine the following considerations to ensure long-term success of scope 3 strategies and carbon offset procurement:

- Continue to support existing capacity in staff and budget resources, while evaluating what other resources may be needed in the future.
- Maximize existing Carbon Charge Fee funds towards reductions first, so there are less emissions to offset past 2035.
- Continue to evaluate the air travel carbon fee (unaffected by changes in energy use), including the fee price and structure for different flight types.
- Develop understanding of future funding needs for carbon offsets, including scale of offsets needed and regulatory and industry trends that may influence costs and availability in both short term and long term.



APPENDIX

A.1

2022-2023 CARBON CHARGE WORKING GROUP MEMBERS

- Andrew Feick, Associate Vice President for Sustainable Facilities Operations and Capital Planning
- Elizabeth Drake, Director of Sustainability
- Hannah Ulloa, Climate Action Manager
- Chris Kane, Strategic Sourcing Manager
- Ernest Wright, Budget Director
- Patricia Martin, Director for Off-Campus Study
- Nicole Dianzumba, Senior Assistant Dean of Admissions, Director of Diversity And Outreach
- Nikki Senecal, Associate Director of Donor Relations
- Ryan Jin '24, Student
- Olivia Stoetzer '23, Student
- Alexander Flowers '21, Sustainability and Engaged Scholarship Fellow

2023-2024 CARBON CHARGE WORKING GROUP MEMBERS

- Andrew Feick, Associate Vice President for Sustainable Facilities Operations and Capital Planning
- Elizabeth Drake, Director of Sustainability
- Hannah Ulloa, Climate Action Manager
- Chris Kane, Director of Procurement
- Ernest Wright, Budget Director
- Lauren Owens, Director of Operations, Global Engagement Office
- Nicole Dianzumba, Senior Assistant Dean of Admissions, Director of Diversity And Outreach
- Alan Riddle, Director, Swarthmore Fund Leadership Programs
- Ryan Jin '24, Student
- Oviya Kumaran '24, Student

A.2

OTHER SCOPE 3 CATEGORIES:

TRANSMISSION & DISTRIBUTION LOSSES

Transmission and distribution (T&D) losses is an energy-related emissions category that is not included in scope 1 or 2 for the end-user of the energy (i.e. the College). T&D Losses are expected to be reduced to zero once the College is able to execute a VPPA and begin receiving 100% renewable energy, deprioritizing the need to reduce or offset these emissions.

FUEL- AND ENERGY-RELATED ACTIVITIES

In 2023, the SIMAP tool was updated to include additional FERA (Fuel- and energy-related activities), which reflects all upstream emissions associated with on-site fuel use. T&D losses for electricity are included in this category, but the recent update incorporates all upstream scope 3 emissions associated with on-site stationary fuel usage. These scope 3 emissions are now automatically calculated for any scope 1 stationary fuels. At this time, the College is not including this category in the campus greenhouse gas inventory, as these emissions are also expected to be eliminated once the College fully transitions to renewable energy. In the future, as calculation methodology improves, the SIMAP tool will be expanded to include FERA emissions from fleet vehicle fuels and from scope 2 purchased electricity.