College of Saint Benedict and Saint John's University

FY2023 Greenhouse Gas Emissions Inventory

From the CSB+SJU Office of Sustainability

Report Issue Date: June 2024

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1. Executive Summary. The College of Saint Benedict (CSB) and Saint John's University (SJU) Office of Sustainability conducted a comprehensive Greenhouse Gas (GHG) Inventory that includes emissions from both CSB and SJU campuses. This report details GHG emissions for Fiscal Year (FY) 2023 (July 1, 2022-June 30, 2023) in Metric Tons of Carbon Dioxide Equivalents (MTCO2e), the standard unit of measurement used to track and report GHG emissions based on their global warming potential. Data was collected, organized, and analyzed by staff in the CSB and SJU Sustainability Office.

In FY23, CSB and SJU's combined carbon footprint was 44,648.06 MTCO2e. This total includes Scopes 1, 2, and most of 3 for CSB and SJU as well as the energy-related Scope 1 and 2 emissions from Saint John's Abbey and Saint Benedict's Monastery (OSB). Figure 1 shows an overview of GHG emissions by source for the institution as a whole and table 1 is a breakdown of emissions by source with totals attributed to each of the four entities.

Because this was the first comprehensive carbon footprint conducted by the same researchers using the same methods, we cannot easily compare it to past years as GHG reports are not always clear on what is being measured and how the data is being collected. With that lack of reliability in mind, we did organize yearly carbon footprint totals (see table 2) for the years in which both CSB and SJU conducted greenhouse gas inventories to show general trends. We had the highest confidence in the FY14 GHG inventory and have used it as a baseline for comparative purposes in this report. CSB saw a 26.94% decrease while SJU saw a 10.61% increase in emissions in FY23 compared to FY14 (see table 2).

Figure 1. Percentage of total MTCO2e GHG emissions by source.

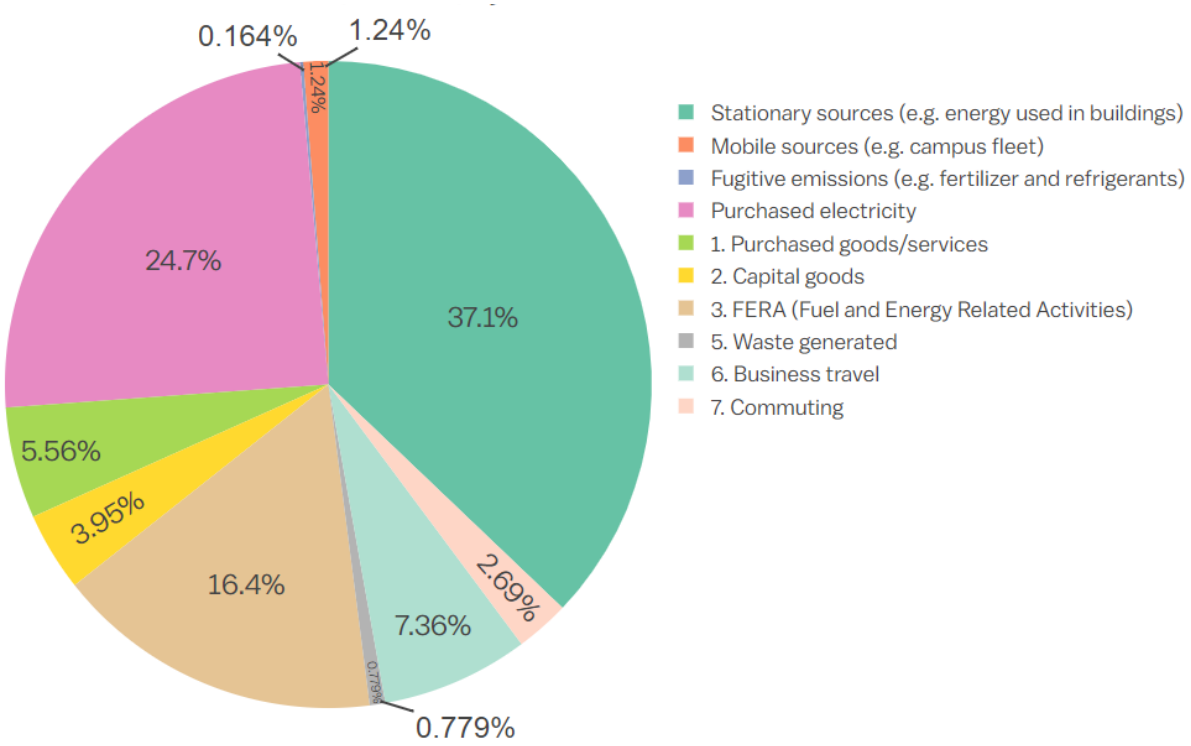


Table 1. Greenhouse gas emissions in metric tons of carbon dioxide equivalents by source.

Fiscal Year	Scope	Source	MTCO2e				
			Total	CSB	SJU	Monastery	Abbey
2023	1	Stationary sources (heat/cool)	16,574.29	4,003.38	9,194.92	599.13	2,776.86
2023	1	Mobile sources	555.72	172.88	182.34	-	200.5
2023	1	Fugitive emissions	73.37	72.63	0.74	-	-
2023	2	Purchased electricity	11,041.13	3,814.11	4,002.41	723.21	2,501.39
2023	3	1. Purchased goods and services	2,483.22	1,039.10	1,444.12	-	-
2023	3	2. Capital goods	1,764.32	870.18	894.14	-	-
2023	3	3. Fuel- and energy-related activities	7,319.22	1,829.84	3,942.08	283.04	1,264.26
2023	3	5. Waste generated in operations	347.67	173.27	129.12	11.99	33.29
2023	3	6. Business travel	3,287.74	1,508.87	1,778.87	-	-
2023	3	7. Commuting	1,201.38	530.15	671.24	-	-

Table 2. Net carbon footprint comparisons of CSB and SJU across fiscal years.

Fiscal Year	Net Emissions (MTCO2e)		Difference from Previous Year		Percent Change	
	CSB	SJU	CSB	SJU	CSB	SJU
2008	14,736.74	45,946.10	-	-	-	-
2011	17,946.94	28,525.10	3,210.20	-17,421	21.78%	-37.92%
2014	19,182.90	20,106.30	1,235.96	-8,418.80	6.89%	-29.51%
2023	14,014.40	22,239.98	-5,168.50	2,133.68	-26.94%	10.61%
*2023	15,631.75	29,016.28	-3,551.15	8,909.98	-18.51%	44.31%

*******Includes known emissions from Saint Benedict's Monastery and Saint John's Abbey as parsed out from utility bills.*

Note: Net Emissions from CSB were taken from SIMAP where emission factors are updated annually. SJU net emissions in this table were taken from previous inventory reports.

Limitations include gaps in data collection such as mileage reimbursement and some ground transport for off-campus events and activities. Emission data for Saint Benedict's Monastery and Saint John's Abbey are incomplete and future GHG inventories should work to include them as they are physically part of the CSB and SJU campuses while also organizationally connected to the colleges. Measuring the impact of carbon sinks (e.g. Saint John's Arboretum) should be included in future inventories. Comprehensive GHG inventories for all four organizations should be conducted every two years especially in the near term to gain a more complete picture of our collective carbon footprint thus our direct contribution to global climate change. As emissions levels become clearer, goals and targets can be set to prioritize action that aligns with education and Benedictine missions.

2. Introduction. A greenhouse gas inventory (or carbon footprint) is a systematic and comprehensive assessment of all sources and sinks of greenhouse gas emissions within a specified geographic, organizational, and temporal boundary. The inventory accounts for emissions of all major greenhouse gases, including carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF6).

For this GHG inventory, data input and calculations were completed using the online carbon footprint calculator, SIMAP. The Sustainability Indicator Management & Analysis Platform is a carbon and nitrogen accounting tool created by the University of New Hampshire's Sustainability Institute to track, analyze, and improve sustainability efforts in higher education settings (formerly the Campus Carbon Calculator designed by Clean Air-Cool Planet and UNH).[1] SIMAP utilizes accounting protocol algorithms that are based on the World Resources Institute Greenhouse Gas Protocol.[2] Following previous reports, this inventory will abide by reporting standards suggested in both the Greenhouse Gas Protocol and Second Nature, a climate commitment platform created to advance climate action in higher education. According to Second Nature's measuring process, "a Greenhouse Gas (GHG) inventory will provide a general diagnosis and a measuring stick to determine success or failure in your efforts to reduce GHG emissions." [3] This report serves as an evaluation necessary to communicate our institution's progress, drive climate solutions, and educate all. As charter signatories in 2007 to the American College and University Presidential Climate Commitment, CSB and SJU both pledged to be carbon neutral by 2035 with carbon footprint analyses being conducted every few years following Second Nature guidelines.

The SIMAP tool has allowed us to assess our institution's contribution to climate change by measuring greenhouse gas emissions. As stated in the SIMAP user guide, "the carbon footprint is a measure of the greenhouse gases emitted from a campus' activities. It includes all six greenhouse gases specified by the Kyoto Protocol: carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFC), and perfluorocarbons (PFC), and sulfur hexafluoride (SF6)." [4] Greenhouse gas emissions will be reported in terms of Metric Tons of Carbon Dioxide Equivalents (MTCO2e) based on their Global Warming Potential (GWP). GWP

is the measure of how much energy 1 ton of any GHG will absorb over time (set at 100 years in SIMAP), as compared with 1 ton of carbon dioxide (see table 3).

Table 3. Global Warming Potential of six Greenhouse Gases.

GHG	Symbol	GWP (100-year frame)
Carbon	CO_2	1
Methane	CH_4	28
Nitrous oxide	N_2O	265
Fluorinated gases	HFCs	4-12,400
	PFCs	6,630-11,100
	SF_6	23,500
	NF_3	16,100

From the Intergovernmental Panel on Climate Change's Sixth Assessment Report. [4]

In SIMAP, the user has the option to select various calculation sources and methods for data management. For most options, our team selected the recommended values (to learn more about data management intricacies visit the SIMAP resources page).[5] This carbon footprint reports on scopes 1, 2, and select categories of scope 3 emissions including purchased goods and services, capital goods, waste and wastewater, business travel and study abroad, and commuting. All data used in the calculation of the carbon footprint was supplied by CSB, SJU, and Order of Saint Benedict (OSB) staff. Depending on how the information was received, organization and conversion of some data was necessary to accurately input to SIMAP. All data organization, conversion, and calculation was completed by Sustainability staff.

Boundaries for this carbon footprint include organizational populations for both campuses (see table 4). Physical boundaries include building and grounds space of the campuses related to operations and activities located in St. Joseph, MN (CSB) and Collegeville, MN (SJU). At SJU, 1,346,820 square feet of building space sits on 304 acres land, and at CSB 1,292,986 square feet of building space sits on 290 acres. Physical dimensions of both campuses were provided by Facilities and Physical Plant staff. Saint John's Abbey and Saint Benedict's Monastery physical boundaries were determined by the Business Office process of allocating utilities based on space usage and square footage. Abbey and Monastery square footages are not included above. The timeframe being measured is fiscal year 2023 (July 1, 2022-June 30, 2023).

As stated above, this report details the first comprehensive carbon footprint analysis with data collected from the College of Saint Benedict as the main campus, and Saint John's University, Saint John's Abbey, and Saint Benedict's Monastery being considered "branch campuses" within the SIMAP tool. The College of Saint Benedict has GHG Inventory reports dating back to 2008, however, for the purpose of this report we will focus on emissions and trends starting in FY2014. It is important to note that the SIMAP tool is updated annually so MTCO2e included in previous

year reports might not match this year's GHG Inventory report. We will include the most up-to-date data provided by SIMAP in this report.

Table 4. Campus population numbers for FY14 and FY23**.**

Sector	FY14		FY23*	
	CSB	SJU	CSB	SJU
Students	2,005	1,896	1,492	1,767
Employees	502	506	416	471
Monastery Members	-	-	72	96
OSB Employees	-	-	37	210

*******Population data from the time of reporting (FY24) was used with the assumption that population data is similar from FY23 to FY24.*

3. Data Collection and Results. This GHG inventory details emissions from scopes 1, 2, and 3. Scope 1 emissions come directly from the institutions and are comprised of stationary combustion (building fuel and heating sources), mobile combustion (vehicles), and fugitive emissions (chemicals and refrigerants). Scope 2 emissions come indirectly from purchased electricity. Scope 3 emissions come indirectly from upstream and downstream activities that occur because of the institutions' operations. Figure 2 creates a visual representation of scope 1, 2, and 3 emissions. SIMAP also allows the user to report on carbon sinks, which includes things like composting, non-additional sequestration, and certified offset projects. Although the institution has a composting program and non-additional sequestration (Saint John's Arboretum and Monastic Woods), these were not included in the FY23 footprint. Future carbon footprint projects should attempt to measure the carbon sequestration provided by campus land-use.

Following Second Nature's critical data requirements, the institution is required to report on scope 1 stationary and mobile sources, scope 2 purchased energy, and scope 3 air travel, commuting, and food and paper purchasing data, which are all included in this GHG inventory.[3] Table 4 shows a complete list of categories that are included in this report.

Figure 2. Scope 1, 2, and 3 emissions infographic provided by U.S. Environmental Protection Agency.

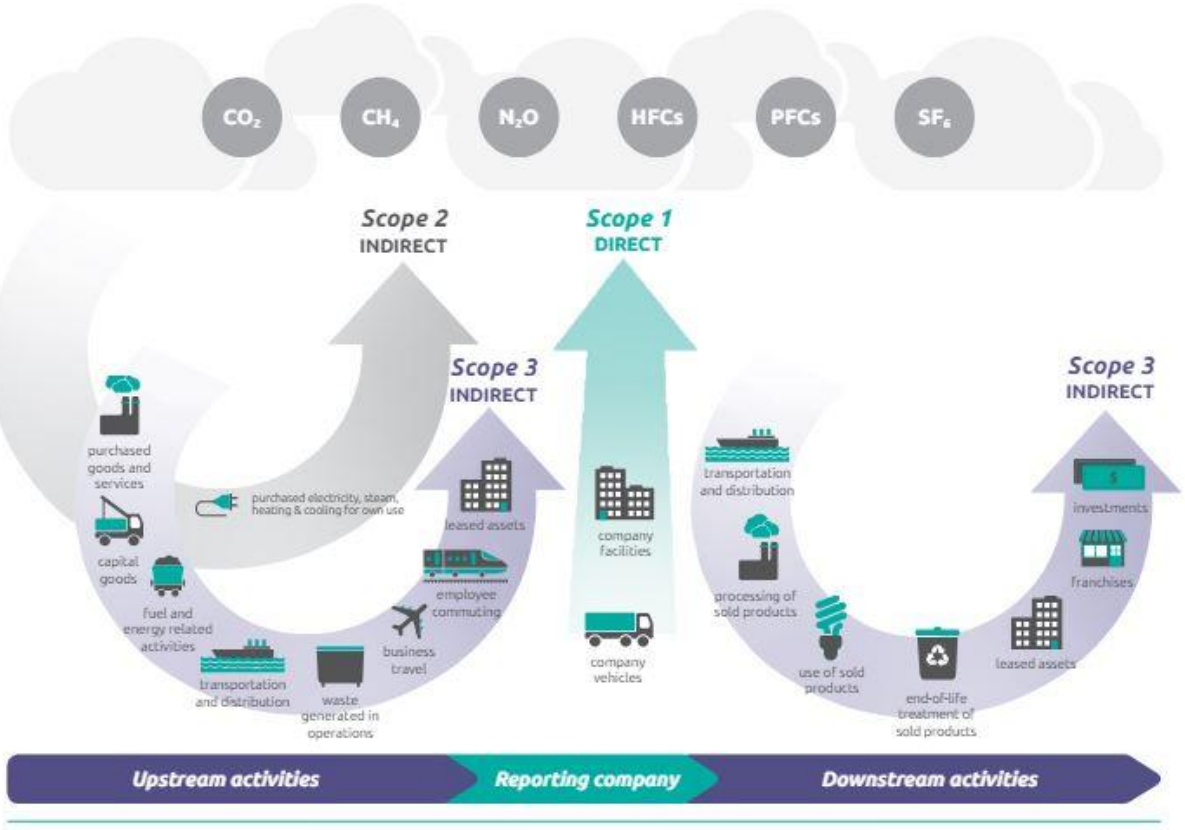
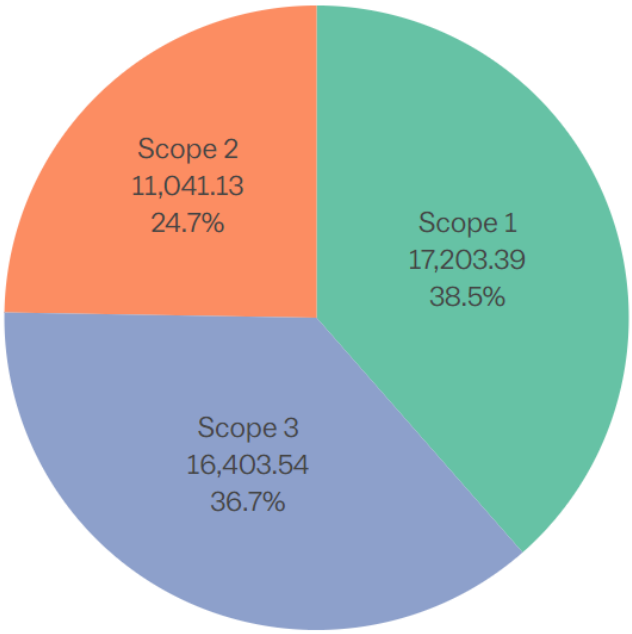


Table 4. Scope summary for CSB and SJU carbon footprint.

Scope	Category	Required Data	Units
Scope 1	Stationary Fuels	Campus fuel consumption	Therms and US Gallons
	Transport fuels	Fleet fuel Consumption	US Gallons
	Fertilizer	Amount and type	Pounds
	Refrigerants and Chemicals	Amount and type	Pounds
Scope 2	Utility Consumption	Electricity Purchases	Kilowatt-hours
	Renewable Energy	Purchase and sale data	Mega Kilowatt-hour
Scope 3	Purchased goods and services	Upstream purchase of goods and services	US Dollar (goods and services), Kilograms (food), and Reams (paper)
	Capital goods	Upstream emissions from long lasting products	US Dollar
	Waste and Wastewater	Solid waste disposed and water used	Short ton (solid waste) and US Gallon (wastewater)
	Business Travel	Air travel miles	US dollar and passenger miles
	Commuting	Faculty/Staff driving miles	Miles

Figure 3. FY23 GHG Emissions (MTCO2e) by scope for CSB, SJU, and OSB.



3.1 Scope 1 Sources.

3.1.1 Stationary Sources. The first category within scope 1 includes the fuels used to heat or cool campus buildings, the stationary sources of emissions. In FY23 the institutions emitted 16,574.29 MTCO2e from on-campus stationary sources, resulting in 37.1% of total FY23 carbon emissions. This is compared with 14,751 MTCO2e from CSB and SJU combined in FY14. This is the largest contributor to the institutions carbon footprint with most emissions coming from natural gas burned in the campus powerhouses. Smaller sources in this category include heating oil for some buildings and diesel generators used for power source redundancy. 9,194.92 MTCO2e (55.48% of total) of stationary source emissions came from SJU and 2,776.86 MTCO2e came from Saint John's Abbey. This is compared with 4,003.38 MTCO2e from CSB and 599.13 MTCO2e from Saint Benedict's Monastery. Information from this category was gathered from utility bills and CSB/SJU/OSB Business Office personnel.

The emissions produced in this category are externalities of heating and cooling our indoor campus spaces. Major reductions in this category would require a major shift in our steam and hot water production. Minor reductions are continuously being sought by efficiency upgrades, preventative maintenance, and weatherization that all contribute to reducing fuel consumption. Carbon capture and storage closer to the point of combustion (i.e. powerhouse boiler) is a new technology to explore as a decarbonization step.

3.1.2 Mobile Sources. Another direct source of scope 1 emissions comes from the combustion of fossil fuels in the institution's vehicle fleet including the inter-campus shuttle bus, the Link. Business Offices and Transportation department provided data on mobile fuel use. Information was gathered on gallons of gasoline used in fleet vehicles using either the Holiday gas cards or gas pumps at Saint John's. Emissions for the Link were calculated from fuel usage data provided by CSB Transportation. The total number of gallons of fuel used by The Link was divided by two, attributing half of the emissions to SJU and the other half to CSB. During FY14, the transportation department started using liquid propane fueled buses along with diesel fueled buses. In FY23, 52.7% of the fuel used for the Link was propane contributing to 82.82 MTCO2e, compared to 47.3% diesel contributing to 131.36 MTCO2e emissions. In total, the institutions emitted 555.72 MTCO2e (1.24% of total) via campus fleet transportation. Note in table 2 that gas usage for the Abbey is separate from SJU.

The Link buses had an FY23 carbon footprint of 214 MTCO2e. Although this is a small piece of our overall footprint, the Link is a high visibility source of emissions and everyday campus interaction. Decarbonizing the Link would demonstrate a commitment to climate action while hedging against rising fuel costs. Consideration of low-carbon transportation (electric, hydrogen) should be included in decision-making as Link buses and campus fleet vehicles are being replaced.

3.1.3 Fugitive Emissions. This category accounts for emissions from fertilizers, animal husbandry (not applicable for our institution), chemicals, and refrigerants. Emissions from fertilizer application occurs when nitrogen is oxidized upon interaction with soil bacteria releasing the potent greenhouse gas, nitrous oxide (N2O). CSB applied 5,914 lbs. of 25% nitrogen content fertilizer, which totaled 3.7 MTCO2e in emissions. The organic fertilizer applied at CSB (24 lbs.) accounted for zero emissions (because of zero nitrogen content). Fertilizer from SJU was received as the dollar amount spent in FY23. Calculations were made to determine cost per pound and amount applied per acre. The total amount of fertilizer applied at SJU in FY23 was 5,227 lbs. with a nitrogen percentage per pound of 4% resulting in a total of 0.52 MTCO2e. Using low nitrogen or organic fertilizers will reduce the emission footprint while also providing more local water quality benefits with less nitrogen runoff.

Another fugitive emission that is a small but potent contributor to the institution's carbon footprint is refrigerant gas. Refrigerant data was received via invoices that listed pounds and types of refrigerants used. CSB and SJU use hydrochlorofluorocarbon-22 (HCFC-22), hyrdofluorocarbon-14 (HFC-134a), and blended hydrofluorocarbon (R-404a). HCFC-22 (commonly known as Freon) is currently being phased out due to its ozone depleting nature. This refrigerant will likely be replaced by R-404a.[6] From the invoices received, refrigerants listed as 438A, and R-22 were categorized as HCFC-22 in SIMAP. Refrigerants are tracked by the quantity needed to recharge campus appliances assuming minor leaks are releasing emissions. In FY23 refrigerant usage emitted 69.15 MTCO2e. In total 73.37 MTCO2e came from fugitive emissions, accounting for 0.164% of the institutions total FY23 emissions. Refrigerant gases

have especially high global warming potentials (see Table 3). Legacy refrigerants stored on campus should be evaluated and properly disposed of if now obsolete. Newer technologies are providing reliable and low-emission refrigerant gases as campus appliances need replacing. Disposal of campus appliances containing refrigerant gases (refrigerators, freezers, air conditioners) should follow best practices.

3.1.4 Scope 1 Summary. Scope 1 emissions are directly released on the campuses as a result of campus operations. Scope 1 emissions totaled 17,203.39 MTCO2e, 38.5% of total FY23 emissions. Opportunities to reduce emissions is within the operational control of Facilities, Grounds, and Transportation departments by investing in decarbonization practices.

3.2 Scope 2 Sources.

3.2.1 Purchased electricity. Scope 2 emissions come from all imported energy to the institutions. The scope 2 emissions for each institution come from purchased electricity from our utilities, primarily Xcel Energy, but also Stearns Electric. Scope 2 emissions are being released upstream at the source of electricity generation but attributed to the consumer of that electricity. For purposes of this GHG inventory, our utility energy portfolio is location-based and provided through the regional grid operator, MISO. Future GHG inventories could use the more nuanced and granular market-based approach to pinpoint electricity generation sources from our utilities and their accompanying emission factors, which would provide more accurate and detailed carbon accounting.

The combined purchased electricity for CSB, SJU, Abbey, and Monastery was 24,676,305 kWh in FY23. Purchased electricity's carbon footprint totaled 11,041.13 MTCO2e, 24.7% of the total FY23 emissions. Reducing scope 2 emissions is difficult since we are dependent on our utility provider. Recent Minnesota legislation and utility pledges do appear to be making progress on decarbonizing electricity generation in the region. Producing more onsite zero-emission electricity will lessen our dependence on grid purchased power and its associated costs and emissions. Energy efficiency and conservation measures throughout operations help reduce consumption and associated costs.

Under scope 2 in SIMAP, subscribers can include their renewable energy purchases and sales, although no emissions are included for zero-emission sources such as solar and wind energy. The embodied carbon in the manufacturing and development of the energy source should be included in capital purchases during the year of installation. For the sake of this report, we simply included the total renewable energy (solar) credited to each institution. In FY23, 1,845.46 MWh was credited to Saint John's and 12 MWh to CSB with no associated emissions for either.

3.3 Scope 3 Sources

3.3.1 Purchased Goods and Services. This scope 3 category includes upstream emissions associated with the production of goods and services purchased by the institutions. This category

accounts for shorter lived materials (such as apparel, store merchandise, amazon purchases, etc.), paper purchases, and food purchases. Purchasing data in SIMAP uses algorithms from the US EPA's Environmentally Extended Input-Output (EEIO) database.[7] Tables in this database list goods and services, the release of pollutants, and environmental and economic impacts; allocating the data into 460 spending-based categories.[8]

FY23 purchasing information was received from the CSB+SJU Bookstore as a list of purchased items and corresponding dollars spent. Sustainability categorized this information using the purchasing categories in SIMAP.[9] CSB and SJU spent a total of $734,980 on book purchases that accounted for 76.44 MTCO2e in FY23. Books are purchased and brought into inventory at SJU and internally transferred to CSB's inventory. Because of this, book costs were summed up and divided attributing half to each campus. Additional campus-wide purchasing data available includes all Amazon Prime purchases made through the CSB and SJU business account. Collective Amazon purchases for FY23 totaled $889,326 and came with an estimated carbon footprint nearing 100 metric tons of carbon dioxide equivalent emissions. These purchases do not account for purchased products certified under Amazon's "Climate Pledge" that may come with a smaller carbon footprint.

Two purchasing data categories, which tend to be elevated in the higher education sector and are therefore required by Second Nature Climate Commitment signatories, include printer paper and food purchases. Paper purchases by campus Duplicating centers were collected in number of total reams and converted to weight in pounds in SIMAP. Although CSB+SJU purchased paper with recycled content, this was not accounted for in this carbon footprint. Paper purchasing between the institutions contributed 32.47 MTCO2e to our collective footprint. Paper use has declined drastically across the campuses since PaperCut software was initiated that charges extra for printing over the allotted budget. Additional digitalization has decreased the need for printed paper across campus operations.

The carbon footprint for food purchasing is the largest piece of scope 3, category 1. Food data was received as a detailed purchase data spreadsheet with food items ordered throughout the year and the associated costs. Food was then categorized into the 18 categories defined by SIMAP using the TASTE Food tool developed by Rebecca Grekin, graduate student at Stanford University. The institutions combined foodprint was 2,075.47 MTCO2e, 4.65% of FY23 emissions. Animal-based foods, beef specifically, is the largest contributor of greenhouse gas emissions of all the purchased food products. Opting for local, organic, and seasonal foods are best practices for reducing the carbon footprint of campus food services.

In all, purchased goods and services (scope 3, category 1) totaled 2,483.22 MTCO2e; 5.56% of the total carbon footprint and 15.1% of scope 3 emissions.

3.3.2 Capital goods. Like purchased goods, capital goods include upstream emissions associated with products, however the products in this category have an extended life and

therefore have different emission factors. Capital spending was received as a detailed spreadsheet listing various projects and purchases for campus in FY23, and like purchased goods, this information was re-categorized using the purchasing categories in SIMAP.[6] Categories included construction, furniture, asphalt, vehicles, machinery, etc. Projects and purchases in this category accounted for 1,764.32 MTCO2e, 3.95% of total emissions, and 10.8% of scope 3 emissions.

As defined, capital goods are long lived, durable assets that should be maintained and repaired as necessary to extend their life, thus reducing their carbon footprint as measured by a product life cycle assessment. Well maintained and stewarded assets have a reduced carbon footprint the longer they're in use and avoiding disposal and replacement.

3.3.3 Fuel and Energy Related Activities (FERA). FERA calculations for scope 1 stationary sources and scope 2 purchased electricity are built into SIMAP and automatically calculated and reflected in this section (scope 3, category 3). Fuel and Energy Related Activities are the extraction, production, and transportation of fuels and energy purchased or acquired by the institutions, including the upstream emissions associated with purchased fuels, electricity, distribution, and generation of purchased electricity.[10] These accounted for a significant portion of scope 3 and total emissions, totaling 7,319.22 MTCO2e, 16.4% of total emissions, and 44.6% of scope 3 emissions. Reducing the energy resources used in scope 1 stationary fuels and scope 2 purchased electricity will reduce FERA emissions.

Combining scope 1 stationary sources with scope 2 purchased electricity and scope 3, category 3 FERA emissions together, they collectively comprise 78.2% of the institutions total carbon footprint. Energy demand and consumption is by far the largest piece of our collective carbon footprint.

3.3.4 Waste Generated in Operations. Emissions associated with the disposal and treatment of both solid waste (landfilled and incinerated) and wastewater generated by the institutions are reported in this section (scope 3, category 4). Both Saint Ben's and Saint John's solid waste hauler was Waste Management in FY23. According to our WM representative, around half of the waste collected from each campus was sent to Elk River landfill, an energy recovery facility where methane capture and electric generation are utilized, and the other half sent to Pope-Douglas Solid Waste Facility in Alexandria that uses Refuse Derived Fuel by incinerating waste to produce energy.[11, 12] Although divided evenly, methane capture totals 214.70 MTCO2e and no emissions are associated with the RDF process as SIMAP emission factors are currently being upgraded. A similar emission factor is predicted for RDF after updates. Collectively, our institutions were estimated to have sent 5 million pounds of solid waste to landfill and incinerator in FY23.

Wastewater produces emissions as solids are broken down during the digestion process in a wastewater treatment plant. Wastewater generated at CSB is sent to the Saint Cloud

Wastewater Treatment Plant (WWTP) which uses aerobic and anerobic digestion, while Saint John's wastewater is treated on site with aerobic digestion. The Saint Cloud WWTP is a recognized facility for its innovative treatment and resource recovery process, which decreases carbon emissions throughout the process.[14] Total emissions generated in both operations totaled 347.67 MTCO2e, 0.779% of total emissions, and 2.12% of scope 3 emissions in FY23. Collectively, we sent over 66 million gallons of wastewater through treatment in FY23.

3.3.5 Business Travel. Business travel includes emissions from the transportation of employees and students for institution-related activities such as club trips, meetings, athletic events, and study abroad. Study abroad air travel was received from the Center for Global Education (CGE) in the form of miles traveled. A total of 4,845,044 passenger miles were recorded in FY23, totaling 2,103.52 MTCO2e, 12.8% of scope 3 emissions. Other business-related air travel by faculty and staff was collected from purchase card air travel receipts. Air travel has a significant impact on global emissions due to radiative forcing, a term used to describe greenhouse gases being emitted at higher altitudes that subsequently produce higher global warming effects. This is incorporated in SIMAP where the CO2 emissions factor of air travel is multiplied by the radiative forcing factor (set at the recommended value of 2.7 in SIMAP).

Business-related ground travel data was unfortunately not collected. Current record keeping for mileage reimbursement is not tracking total mileage. The new Travel Bank system for mileage reimbursement initiated in FY24 should provide the capability to track this scope 3 sub-category closer. Subsequent GHG inventories should also seek out charter bus rentals and other ground transport records to include these emissions in the footprint.

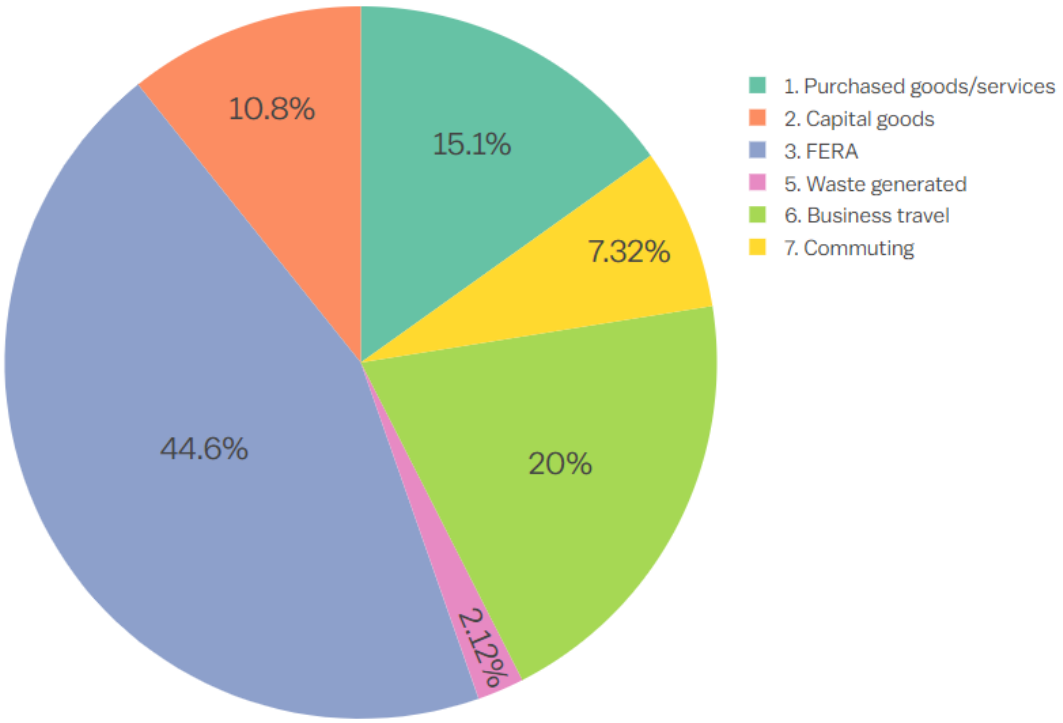
Business travel and study abroad travel emissions for the institutions totaled 3,287.74 MTCO2e, 7.36% of total emissions, and 20% of scope 3 emissions. Emissions from institution-related air travel, especially for a high impact practice like study abroad, are hard to abate in higher education. Taking small steps (i.e. flying economy class) or selecting credible carbon offsets are a couple options to help reduce this piece of the carbon footprint.

3.3.6 Commuting. Student commuting from home to campus was excluded from this year's GHG inventory as it was deemed too ambiguous and not required for Second Nature reporting. However, commuting for faculty and staff is a Second Nature requirement. Data for commuting was obtained in the form of employee zip codes with aggregated FTE per zip code. Distances between home zip code and CSB or SJU zip code were entered as straight-line, round-trip distances. Assumptions in our calculations were that staff commute approximately 46 weeks a year and faculty 32 weeks at 5 days a week, and that commuting occurred solely by a gasoline automobile. Employee commuting emissions are considered an overestimate considering some employees are now driving electric vehicles, work from home more often, carpool, or walk/bike. An employee commuter survey could assist in refining commuter data in subsequent carbon footprints. 1,201.38 MTCO2e came from faculty and staff commuting, 2.69% of total emissions,

and 7.32% of scope 3 emissions. According to our calculation methods, CSB and SJU employees logged over 5 million commuter miles in FY23.

3.3.7 Scope 3 Summary. Scope 3 accounted for 36.7% of emissions (16,403.54 MTCO2e) with a majority (7,319.22 MTCO2e, 44.6%) coming from fuel and energy related activities (see figure 4). Scope 3 emissions are the most difficult to reduce because the emissions occur beyond our organizational boundary and out of our operational control. Where appropriate we can use our purchasing power to choose low-carbon options that meet our operational needs.

Figure 4. FY23 Scope 3 GHG Emissions (MTCO2e) broken down by category



4. Conclusion and Recommendations. Although this was the first comprehensive carbon footprint for the institutions, we feel confident that we collected most of the emission sources within our organizations. We feel particularly confident in scopes 1 and 2. We feel the most effective next step would be to focus on addressing gaps in the data, informing and educating the campus community, ensuring data collection methods are refined, and beginning to establish emission goals. Analyzing FY23 data; fine tuning data collection; and researching emission reduction opportunities will be the goals for FY25, with the next GHG inventory to follow measuring the FY25 carbon footprint.

Recommendations to address gaps in the data for the next carbon footprint include:

- Determine a system for tracking student commuting.
- Refine and improve employee commuting.
- Collect business-related ground transport data such as charter bus and rental van information for athletics/group/club travel.
- Include mileage reimbursement total miles per Travel Bank data.
- Attempt to include institutional investment data and leased assets.
- Include campus carbon sinks (compost and non-additional sequestration in our greenspaces).
- Collect and include more emissions-related data from the Abbey and Monastery.
- Model MTCO2e per capita, sq foot, annual budget, etc.

Looking ahead we recognize that goals are an important first step to reducing emissions. Previous Presidential climate pledges aimed for carbon neutrality by 2035 for both CSB and SJU. Although this goal has fallen by the wayside as leadership turnover has occurred and other challenges have arisen, it is still a valid and achievable goal that aligns well with our liberal arts education and Benedictine missions. Strategic planning and investment should consider decarbonization work as new plans develop. Recent tax and financial incentives provide additional opportunities to leverage our work to decarbonize campus operations and lessen our contribution to global climate change.

Resources

1. Home | SIMAP (unhsimap.org). https://unhsimap.org/
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