University of Pittsburgh Bradford Campus

Greenhouse Gas Inventory

Fiscal Years 2019 & 2022

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This report presents the greenhouse gas inventory results for University of Pittsburgh's Bradford Campus for fiscal years (FY) 2019 and 2022. The University's fiscal year starts on July 1 and ends on June 30 of the year for which it is named (i.e., FY19 is July 1, 2018, through June 30, 2019).

The authors thank all University of Pittsburgh (Pitt) employees from both the Bradford and Pittsburgh campuses who provided valuable information, data, review, and information regarding their sustainable practices that allowed us to complete this first greenhouse gas inventory for the Bradford campus. In addition, we sincerely thank Jacqueline M. Bosworth from Pitt-Bradford Facilities Management.

Acronyms

CO_2 – Carbon dioxide
CO_2e – Carbon dioxide equivalents
COVID-19 – Coronavirus disease 2019
FTE – Full Time Equivalent
GHG – Greenhouse Gas
GWP – Global Warming Potential
LEED – Leadership in Energy & Environmental Design green building rating system
MMBtu – Million British thermal unit
MT CO_2e – Metric tons of carbon dioxide equivalents
Pitt – University of Pittsburgh
Pitt-Bradford – University of Pittsburgh at Bradford campus
REC – Renewable Energy Certificate
SIMAP – Sustainability Indicator Management & Analysis Platform

Executive Summary

The University of Pittsburgh at Bradford's commitment to sustainability is evident in this comprehensive greenhouse gas (GHG) emissions analysis covering fiscal years (FY) 2019 and 2022. Pitt-Bradford's overall GHG emissions were 8,442 metric tons of carbon dioxide equivalents (MT CO_2e) for FY19 and 7,874 MT CO_2e for FY22 (showcasing a 6.7% decrease in GHG emissions between FY19 and FY22).

The Scope 1 emissions categories include fleet vehicles, on-site electricity production, natural gas use in buildings, refrigerants, and fertilizer. Given Pitt-Bradford's cooling-dominated climate, natural gas use for buildings dominates Pitt-Bradford's Scope 1 emissions, contributing 2,479 MT CO_2e in FY19 and 2,665 MT CO_2e in FY22 (29.4% and 33.8% of total emissions, respectively). GHG reduction strategies include implementing more building energy efficiency projects, expanding rooftop solar electricity production, using refrigerants with lower global warming potential, and reducing nitrogen percentages in fertilizer.

In assessing Scope 2 results, purchased electricity is the primary contributor to Pitt-Bradford's GHG emissions, contributing a total of 2,974 MT CO_2e in FY19 and 2,733 MT CO_2e in FY22 (35.2% and 34.7% of totals, respectively). Following on progress underway at the Pittsburgh campus, Pitt-Bradford can future reduce its GHG emissions from purchased electricity by increasing building energy efficiency, adding additional on-campus renewable energy sources, purchasing renewable electricity, and integrating sustainability into campus planning.

Pitt-Bradford's Scope 3 analysis includes student and employee commuting, University-sponsored travel, study abroad, solid waste, wastewater, paper usage, electricity transmission and distribution losses, and fuel & energy-related emissions (FERA). FERA is the largest Scope 3 emissions category (11.9% of total GHG emissions in FY19 and 13.7% in FY22 – directly related to campus energy use). Employee and student commuting combined contributed 1,088 MT CO_2e in FY19 and 899 MT CO_2e in FY22 (12.9% and 11.4% of total emissions, respectively). Due to the pandemic, GHG emissions from all University-sponsored travel were down between FY19 and FY22; sustainable transportation campaigns for both local and national travel should be enhanced.

Comparatively, Pitt-Bradford's emissions were 4% of the University of Pittsburgh's Pittsburgh campus in FY19 and 4.6% in FY22. However, when normalized by full-time equivalent (FTE) student, Pitt-Bradford's FY19 had 6.85 MT CO_2e / FTE student and 6.17 MT CO_2e / FTE student in FY22. Compared to the Pittsburgh campus's FY19 emissions of 7.5 3 MT CO_2e / FTE and 6.3 MT CO_2e / FTE student in FY22, respectively, Pitt-Bradford has a similar normalized carbon footprint.

Introduction & Background

Located throughout the Commonwealth of Pennsylvania, the University of Pittsburgh has five campuses, including its primary campus in Pittsburgh and four regional campuses in Bradford, Greensburg, Johnstown, and Titusville.

In the face of global climate change, the University of Pittsburgh ("Pitt") has been tracking the greenhouse gas (GHG) emissions for its Pittsburgh campus for 15 years, with the first Pittsburgh campus GHG Inventory dating back to fiscal year (FY) 2008.

Pitt's GHG Inventory process involves quantifying, categorizing, and analyzing the trends of these emissions, whose increase in the Earth's atmosphere is the cause of global climate change. Understanding the sources and quantities of GHGs attributed to university activity across Pitt's campuses is a crucial process that informs future efforts to reduce GHG emissions.

To date, eight GHG Inventories have been completed for the University's Pittsburgh campus, dating back to FY08, which is that campus's baseline year. These published inventories have demonstrated a 36.7% reduction in GHG emissions for the Pittsburgh campus between FY08 and FY22,[1] keeping the University in line to reach its goals of reducing GHG emissions 50% below its baseline by 2030 and reaching carbon neutrality by 2037.[2,3,4]

This report is entirely focused on the GHG emissions from the University of Pittsburgh's Bradford campus in the City of Bradford and Bradford Township, McKean County, Pennsylvania ("Pitt-Bradford"). It creates a baseline GHG emissions inventory year for the Bradford campus (FY 19) and will help inform consideration of how to officially apply and/or adapt these goals to the Bradford campus.[5] GHG Inventories for the other three University regional campuses are under consideration.

GHG Inventory Process

To complete this first Pitt-Bradford GHG Inventory, the authors gathered data relating to relevant campus activities and employed a GHG emissions analysis tool to ensure calculations were performed in line with international standard.[6] For context, results are also compared with the University's Pittsburgh Campus.

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[1] Geremicca, F. et al. (2023). University Of Pittsburgh Greenhouse Gas Inventory, Pittsburgh Campus, Fiscal Year 2022. sustainable.pitt.edu/wp-content/uploads/2023/12/UPitt-FY22-GHG-Inventory-FINAL-12-12-23.pdf

[2] The University's carbon reduction goals are set in the 2018 *Pitt Sustainability Plan* and the 2022 *Pitt Climate Action Plan* (PittCAP).

[3] University of Pittsburgh. (2018). *Pitt Sustainability Plan.* January 2018. sustainable.pitt.edu/pitt-sustainability-plan/

[4] University of Pittsburgh. (2012). *Pitt Climate Action Plan: Our Pathway to Neutral.* March 2022. sustainable.pitt.edu/wp-content/uploads/2023/03/Pitt-Climate-Action-Plan-FINAL-March-2022.pdf

[5] The 2018 *Pitt Sustainability Plan* has 68 goals, which conceptually apply across all campuses, but are differently implemented in each location; while some Pitt Sustainability goals are related to GHG emissions, many are not. Pitt-Bradford has made many sustainability strides, only some of which are acknowledged in this report.

[6] World Business Council for Sustainable Development & World Resources Institute. (2023). *Greenhouse Gas Protocol & Guidance*. ghgprotocol.org

Boundaries

Understanding the boundaries of a GHG Inventory is crucial. Organizational, spatial, temporal, and scope boundaries are summarized below:

Organizational Boundary – This GHG Inventory is entirely focused on the greenhouse gas emissions from the University of Pittsburgh's Bradford campus in Bradford, Pennsylvania. The GHG Inventory considers GHG emissions from physical assets, financial purchasing, students, employees, waste, and travel for Pitt-Bradford-related activities. Pitt-Bradford had 1,232 FTE students, 89 FTE faculty, 136 FTE staff members in FY19 and ,1,277 FTE students, 82 FTE Faculty, and 111 FTE Staff in FY22.[7,8] In addition, it is noteworthy that Bradford's student population is approximately 4.6% of the Pittsburgh campus population, offering valuable insights into the overall boundary proportions.

- **Spatial Boundary** - This Pitt-Bradford inventory encompasses all GHG emissions from the University of Pittsburgh's Bradford 491-acre campus, including emissions from buildings, grounds, fleet vehicles, commuting, and paper purchasing. Pitt-Bradford buildings include student residence halls, classrooms, dining facilities, and other buildings and green spaces owned and operated by the University accounting for a total of 729,684 square feet (417,955 square feet for educational and general buildings and 311,729 square feet of housing); buildings and grounds not owned or operated by the Pitt-Bradford regional campus were not included.

- **Temporal Boundary** – To avoid double-counting, all Pitt GHG Inventories have single year time boundaries that start and end with the University's fiscal year, which starts on July 1 and ends on June 30 of the year for which it is named (i.e., FY19 is July 1, 2018, through June 30, 2019). This report includes GHG emissions associated with Pitt-Bradford for Fiscal Year 2019 (FY19) and Fiscal Year 2022 (FY22).

Scopes

Reflecting global GHG emissions calculation protocols, this GHG Inventory categorizes Pitt-Bradford's GHG emission into three scopes:

1) **Scope 1** – GHG emissions directly from Pitt-Bradford, including fuels combusted in university-owned buildings, vehicles, and power plants.

2) **Scope 2** - Indirect emissions from off-campus utility usage, including purchased electricity and heating and/or cooling.

3) **Scope 3** - Other indirect emissions induced by Pitt-Bradford, including commuter and University sponsored travel, wastewater and waste generation, and paper use. Data informing some Scope 3 emissions categories was estimated, as delineated below.

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[7] University of Pittsburgh, Office of Institutional Research. *Fact Book 2019,* ir.pitt.edu/sites/default/files/Fact-Book-2019.pdf

[8] University of Pittsburgh, Office of Institutional Research. *Fact Book 2021,* ir.pitt.edu/sites/default/files/Fact-Book-2021.pdf

Calculations

As a signatory to Second Nature's Carbon Commitment,[9] the University of Pittsburgh reports GHG emissions according to the international *GHG Protocol*, which standardizes GHG emissions accounting and reporting.[10] As a higher education institution, Pitt reports GHG emissions through SIMAP (Sustainability Indicator and Management Platform), a standardized emissions reporting tool used by many higher education institutions.[11]

SIMAP is a software that organizes emissions-related data in higher education categories of interest; applies common, regularly updated, and relevant emissions factors to calculate associated GHG emissions for categories across the three emissions scopes; and reports aggregated GHG emissions with the standard unit of metric tons of carbon dioxide equivalents (MT CO_2e), which accounts for GHGs that contribute to climate change, but have different global warming potential (i.e., common GHGs include "water vapor, carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), halogenated fluorocarbons (HCFCs), ozone (O_3), per fluorinated carbons (PFCs), and hydrofluorocarbons (HFCs))."[12]

Resulting GHG emissions for Pitt-Bradford provide a baseline for future inventories, identify areas of potential future GHG emissions reduction, and are also benchmarked against the University's Pittsburgh campus for context and comparison.

GHG Inventory Results

Data was collected for the Pitt-Bradford FY19 and FY22 GHG inventories by reaching out to various University staff members at both the Bradford and Pittsburgh campuses. Information requested crossed all potential GHG emissions categories, including, but not limited to, utility bills, commuting details, parking permits, athletic travel, purchasing specifics, etc.

[9] Second Nature. (2023). "The Presidents' Climate Leadership Commitments." secondnature.org/signatory-handbook/the-commitments.
[10] World Resources Institute. (2004). *Greenhouse Gas Protocol*. ghgprotocol.org.
[11] University of New Hampshire. (2023). *SIMAP:* Sustainability Indicator Management and Analysis Platform. unhsimap.org.
[12] University of New Hampshire. (2023). *"SIMAP: Glossary."* unhsimap.org/cmap/resources/glossary.

All Calculated Emissions

All accountable GHG emissions for Pitt-Bradford are provided for FY19 and FY22 in Table 1.

Table 1 – Pitt-Bradford All Accountable GHG Emissions, Fiscal Years 2019 & 2022 (MT CO_2e)

Scope	Source Category	FY19 (MT CO_2e)	FY22 (MT CO_2e)	Notes
1	Agriculture / Fertilizer	3.1	3.4	Data obtained
1	Fleet Vehicles	68	34	Data obtained
1	Refrigerants	253	0	Data obtained
1	Natural Gas to Buildings	2,479	2,665	Data obtained
2	Electricity (Purchased)	2,974	2,733	Data obtained
3	Electricity T&D Losses	160	153	SIMAP Calculation
3	Fuel & Energy-Related Emissions	1,004	1,079	SIMAP Calculation
3	Air Travel (Pitt-Bradford Sponsored)	27	27	Cost data obtained
3	Travel (Other Pitt-Bradford Sponsored)	182	161	Cost data obtained
3	Study Abroad	126	52	Mileage data obtained
3	Commuter Travel (Employees)	565	481	Assumptions
3	Commuter Travel (Students)	523	418	Assumptions
3	Solid Waste	21	23	Data obtained
3	Wastewater	26	30	Data obtained
3	Paper	31	14	Data obtained
3	Carbon Offsets	0	0	N/A
By Scope		**FY19**	**FY22**	
	Scope 1 (Direct Emissions)	2,803	2,703	Calculated by SIMAP
	Scope 2 (Indirect Emissions)	2,974	2,733	Calculated by SIMAP
	Scope 3 (All Other Emissions)	2,665	2,438	Calculated by SIMAP
	ALL ACCOUNTABLE EMISSIONS (MT CO_2e)	**8,442**	**7,874**	

Figures 1 and 2 below illustrate the distribution of Pitt-Bradford's FY19 and FY22 GHG emissions by category, respectively. Figures 3 and 4 compare Pitt-Bradford's FY19 and FY22 GHG emissions to each other by scope and category, respectively.

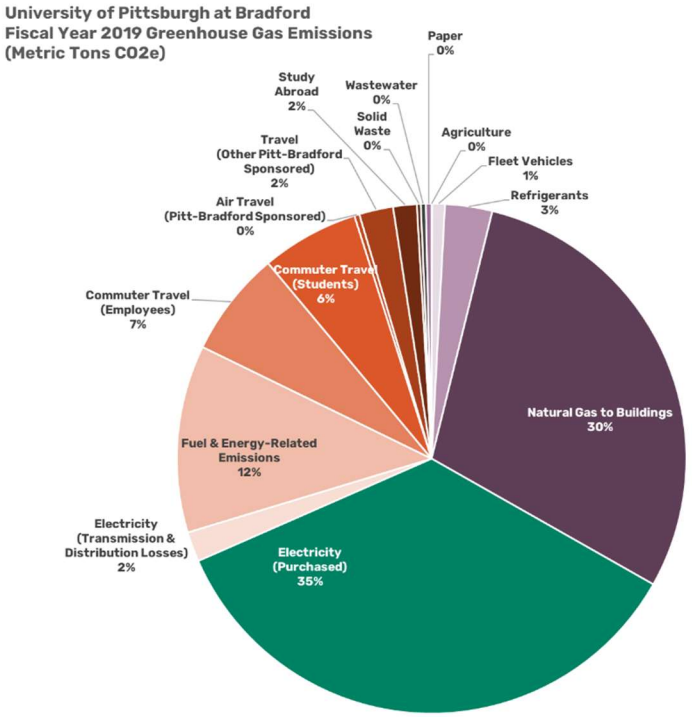

Figure 1- Pitt-Bradford FY19 GHG Emissions by Category (8,442 MT CO_2e)

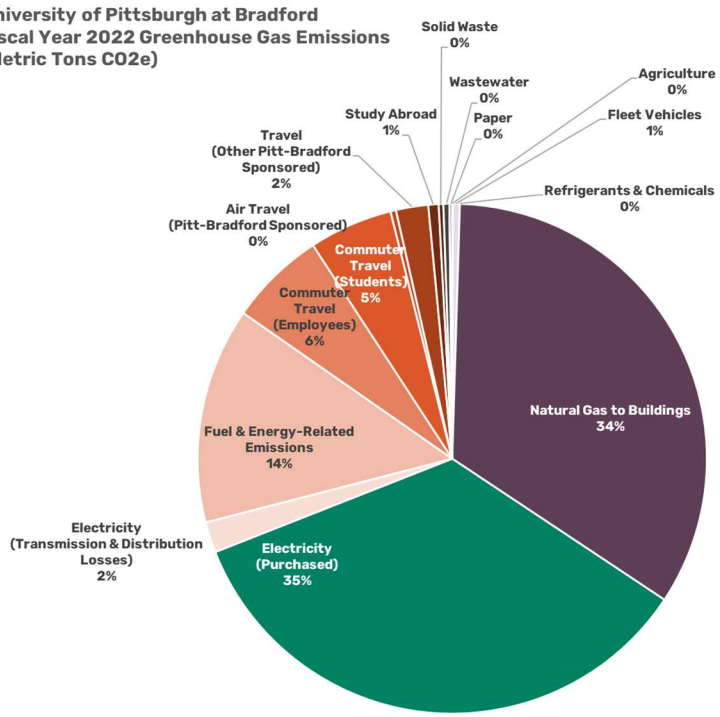

Figure 2 - Pitt-Bradford FY22 GHG Emissions by Category (7,874 MT CO_2e)

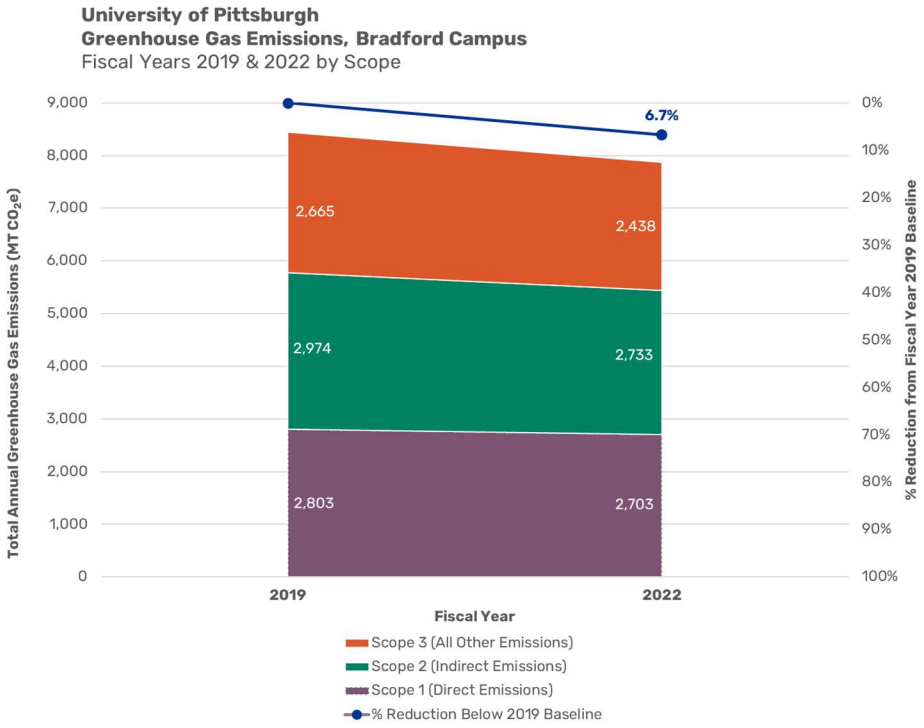

Figure 3 - Pitt-Bradford FY19 & FY22 GHG Emissions by Scope

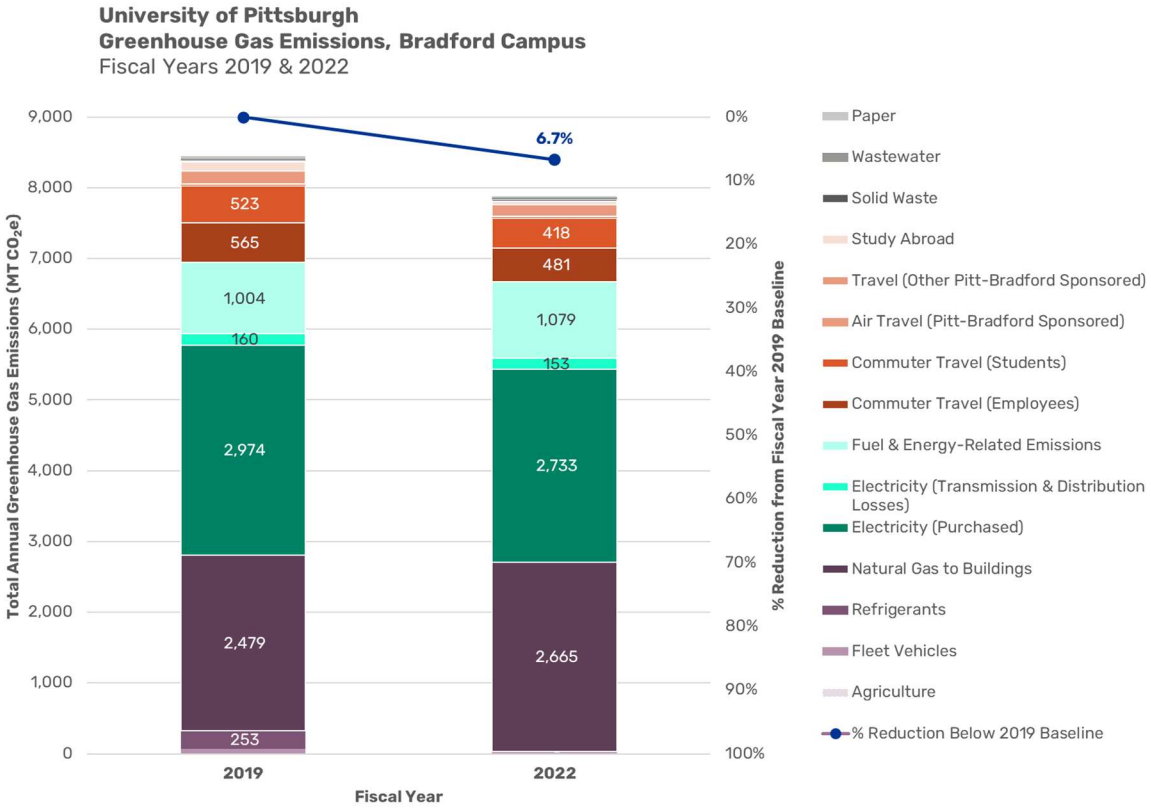

Figure 4 – Pitt-Bradford FY19 & FY22 GHG Emissions by Category

Scope 1 Emissions

In acquiring and analyzing provided data, scrutiny was applied to five distinct Scope 1 categories for Pitt-Bradford (listed in order of GHG emissions magnitude):

1) Natural gas use in buildings
2) On-site renewable electricity production
3) Refrigerants
4) Fleet vehicles
5) Agriculture / fertilizer

Additional Scope 1 categories that do not apply to Pitt-Bradford include Animals and On-Campus District Energy (Steam and Chilled Water).

Natural Gas Use in Buildings – During FY19, Pitt-Bradford utilized 46,702 MMBTU of natural gas, contributing to 2,479 MT CO_2e (29.4% of total FY19 GHG emissions). In FY22, natural gas usage increased to 50,207 MMBTU and contributed 2,665 MT CO_2e (33.8% of total GHG emissions). There was an increase in natural gas usage (and thus emissions) from FY19 to FY22; additionally, this category is the second largest contributor to overall GHG emissions. Reducing campus-wide natural gas use through building heating and cooking efficiency projects will be pivotal in further lowering Pitt-Bradford's GHG emissions.

On-Site Electricity Production- In both FY19 and FY22, Pitt-Bradford had an operating rooftop solar array on the Richard E. and Ruth McDowell Sport and Fitness Center. In FY19, the array produced 2,687 kWh, which is 0.03% of total Pitt-Bradford FY19 electricity usage (Scope 2, Purchased Electricity). In FY22, the McDowell solar array produced 2,360 kWh of electricity (0.03% of the campus total in FY22). A new rooftop solar array that came online in FY23 on the George P. Duke Engineering & Information Technologies Building will help grow this category in future years.

Refrigerants – In FY19, Pitt-Bradford utilized 225 pounds of refrigerants, contributing to 253 MT CO_2e (3% of total FY19 GHG emissions). In FY22, no refrigerants were required; however, as Pittsburgh campus inventories have shown, campus refrigerant use can be a highly variable category. Continued focus on choosing refrigerants with lower global warming potential (GWP) is recommended.

Fleet Vehicles – In FY19, Pitt-Bradford's 11 fleet vehicles and groundskeeping equipment used 7,893 gallons of gasoline, which contributed 68 MT CO_2e. In FY22, the campus's 10 fleet vehicles and groundskeeping equipment consumed 3,992 gallons of gasoline, which contributed 34 MT CO_2e. Shifting Pitt-Bradford fleet vehicles to more efficient and electric vehicles will help reduce and eventually eliminate direct emissions from this category. Shifting groundskeeping equipment to electricity will also help reduce emissions.

Fertilizer – Pitt-Bradford has 38 acres of lawn space. During FY19, the Pitt-Bradford campus utilized 7,100 pounds of fertilizer with nitrogen contents ranging from 15% to 30%; this usage contributed 3.1 MT CO_2e. FY22 campus fertilizer usage grew to 7,700 pounds, with the same nitrogen content range, which contributed 3.4 MT CO_2e. This category is a negligible contributor to campus-wide GHG emissions.

Scope 1 Recommendations

1) **Building Energy Efficiency:** Conduct regular energy audits of campus buildings to identify areas for energy efficiency improvements. Implement energy-saving practices including upgraded insulation; energy-efficient windows; upgraded heating, cooling, and ventilation systems; more efficient and electric cooking appliances; electrifying equipment; and smart building technologies. These efforts and others can contribute to reducing natural gas consumption and overall energy use.

2) **Renewable Energy:** In addition to the rooftop solar array installed on the George P. Duke Engineering and Information Technologies Building in 2023, investigate the feasibility of and install additional renewable energy sources on or near the Pitt-Bradford campus. Solar, wind, and/or geothermal systems will help diversify campus energy sources, decrease reliance on natural gas, and reduce related Scope 3 energy losses.

3) **Refrigeration:** When upgrading systems, consider refrigeration that uses natural and/or lower global warming potential refrigerants. Regularly assess and upgrade refrigeration equipment to take advantage of potential efficiency gains.

4) **Fleet Vehicles:** Pitt-Bradford should explore more efficient and electric fleet vehicles and groundskeeping equipment. In 2023, Pitt-Bradford installed 4 electric vehicle charging stations (2 plugs each), which supports both fleet electrification and commuter electric vehicles.

5) **Landscaping:** Continue reducing fertilizer usage through sustainable landscaping practices and lower nitrogen fertilizers. Explore organic fertilizers, soil amendments, and water conservation techniques to maintain landscaping aesthetics while minimizing environmental impact.

Scope 2 Results

As Pitt-Bradford does not create or purchase steam or chilled water, all Scope 2 GHG emissions are related to Purchased Electricity. In both FY19 and FY22, electricity consumption was the largest significant contributor to Pitt-Bradford's GHG emissions, followed by natural gas for buildings.

In FY19, electricity usage totaled to 9,382,221 kWh, resulting in 2,974 MT CO_2e (35.2% of total FY19 GHG emissions). In FY22, electricity consumption decreased slightly to 9,189,211 kWh, contributing 2,733 MT CO_2e (34.7 % of total FY22 GHG emissions).

Different from the Pittsburgh campus, Pitt-Bradford's Purchased Electricity GHG emissions factors are linked to eGrid region RFC-East (RFCE), which features a distinct energy source mix. Specifically, the RFCE electrical grid includes power generated by 48.7% natural gas, 36% nuclear, 10.3% coal, 1.4% hydro, 1% wind , and 1% biomass. [13] Solar energy and other fossil fuels each make up less than 1%; oil and other unknown fuels are 0.1% and 0%, respectively.

[13] U.S. Environmental Protection Agency. (2023). Power Profiler: RFCE. https://www.epa.gov/egrid/power-profiler#/RFCE. Accessed 20 December 2023.

Pitt-Bradford did not purchase any bundled or unbundled renewable electricity or renewable electricity credits (RECs) in either FY19 or FY22.

Scope 2 Recommendations

1) **Integrate Sustainability into Campus Planning:** Integrate sustainability considerations into future campus development and planning. Prioritize the incorporation of energy-efficient infrastructure, electrification, and renewable energy solutions in new construction and roofing projects.

2) **Energy Efficiency Measures:** Implement energy-efficient technologies and practices across campus buildings to optimize electricity usage. These efforts should consider lighting and controls upgrades, energy-efficient and electric appliances, and energy conservation initiatives.

3) **Renewable Energy Sources:** Explore and invest in renewable electricity sources on-campus or nearby, including solar and/or wind power, which can help mitigate reliance on carbon-based energy sources. Implementation of additional on-site renewable energy infrastructure will also help reduce overall campus energy use and associated Scope 3 energy losses from purchased electricity.

4) **Purchase Renewable Electricity:** Consider acquiring renewable energy credits (RECs) to offset the environmental impact of purchased electricity. RECs contribute to the development of renewable energy projects, indirectly supporting sustainable energy practices.

Scope 3 Data

Higher education institutions like Pitt-Bradford can consider a diverse array of Scope 3 GHG emissions categories. For these FY19 and FY22 Pitt-Bradford GHG Inventories, the following eight Scope 3 categories were included:

1) Electricity transmission & distribution losses
2) Fuel- and energy-related activities
3) Employee commuting
4) Student commuting
5) University-sponsored business travel (air and ground)
6) Study abroad
7) Solid waste
8) Wastewater
9) Paper purchased

Food purchasing data for Pitt-Bradford not available and, therefore, excluded from the FY19 and FY22 analyses; effort should be made to include it in future inventories.

Electricity Transmission & Distribution Losses – This category examines the environmental impact associated with the transmission and distribution (T&D) of electricity, considering factors such as electrical line and energy conversion losses. It is calculated by SIMAP.

In FY19, Pitt-Bradford's electricity T&D losses were 160 MT CO_2e and153 MT CO_2e in FY22 (1.9% of GHG emissions in both years). The change in this category is directly related to electricity consumption (Scope 2); it can be further reduced in the future as on-campus renewable electricity production grows.

Fuel- and Energy-Related Activities – The FERA category includes emissions related to the production and transportation of fuels not already included in Scope 1 or Scope 2. It is calculated by SIMAP and consists of the four factors below:

A) Upstream emissions of purchased fuels
B) Upstream emissions of purchased electricity
C) Transmission and distribution (T&D) losses
D) Generation of purchased electricity sold to end users

In FY19, Pitt-Bradford's GHG emissions from FERA were 1,004 MT CO_2e (11.9% of total FY19 GHG emissions) and in FY22 they were 1,079 MT CO_2e (13.7% of total FY22 GHG emissions). The change in this category is directly related to natural gas and electricity consumption.

Commuting – Due to the absence of a Pitt-Bradford specific commuter survey, a multitude of assumptions regarding student, faculty, and staff commuting to Pitt-Bradford were made, as summarized below.

1) **Student Commuting**
    a) ***Students Living On-Campus*** – Using Pitt-Bradford population data summarized above and in Employee and student commuting emissions were calculated in SIMAP using the commute mode splits and FY19 and FY22 FTE population counts in Table 2.
    b) all students living on-campus were assumed to walk or bike to class
    c) ***Students Living Off-Campus*** –
        i) Pitt-Bradford students and employees can ride local Area Transit Authority (ATA) buses at no cost during the Fall & Spring terms; three routes run adjacent to campus, which has one transit stop. In FY19, the Pitt-Bradford community took 11,882 ATA transit trips (equivalent to 40 FTE academic year commuters) and in FY22 they took 8,143 trips (equivalent to 34 FTE academic year commuters). For this inventory, all transit rides were assumed to be 3 miles each and taken by students living off-campus.
        ii) All other students living off-campus were assumed to drive alone to campus 30 weeks a year over 18 miles.
    d) All students were assumed to commute to campus for only the Fall and Spring semesters (30 weeks of each fiscal year).
2) **Faculty Commuting** – Pitt-Bradford had 89 full-time equivalent (FTE) faculty in FY19 and 82 in FY22. Using data provided by Pitt IT, the average Pitt-Bradford employee commute is 18 miles. In the absence of any commuter survey data from Pitt-Bradford, 100% of faculty are assumed to commute by single-occupancy automobile 10 times a week for 30 weeks a year (Fall and Spring semester only).
3) **Staff Commuting** – Pitt-Bradford had 136 full-time equivalent (FTE) staff employees in FY19 and 111 in FY22. Using an 18-mile average commute and in the absence of any

commuter survey data from Pitt-Bradford, 100% of staff were assumed to commute by single-occupancy automobile 10 times a week for 49 weeks a year.

Employee and student commuting emissions were calculated in SIMAP using the commute mode splits and FY19 and FY22 FTE population counts in Table 2.

Table 2 – Pitt-Bradford Commuting Assumptions, FY19 & FY22

	FY19				FY22			
	Staff (FTE)	Faculty (FTE)	Students Living On-Campus	Students Living Off-Campus	Staff (FTE)	Faculty (FTE)	Students Living On-Campus	Students Living Off-Campus
FTE	**136**	**89**	**912**	**320**	**111**	**82**	**1,009**	**268**
% Drive Alone	100	100	0	87.5	100	100	0	87.3
% Walk or Bike	0	0	100	0	0	0	100	0
% Bus	0	0	0	12.5	0	0	0	12.7
% Carpool	0	0	0	0	0	0	0	0

* No Pitt-Bradford employees or students were assumed to drive electric vehicles.

In FY19, employee commuting contributed 565 MT CO_2e (6.6% of total FY19 GHG emissions). FY22 employee commuting emissions were 481 MT CO_2e (6.1% of total FY22 GHG emissions).

In FY19, GHG emissions from student commuting were 523 MT CO_2e (6.2% of total FY19 GHG emissions). FY22 student commuting GHG emissions were 418 MT CO_2e (5.3% of total FY22 GHG emissions).

Pitt-Bradford Sponsored Travel – Pitt-Bradford Sponsored Travel encompasses both ground and air travel for employees, students, and athletes, including both business and athletic endeavors for FY19 and FY22.

University-wide air travel expenses were $42,553 in FY19 and $11,896 in FY22; SIMAP automatically converts air expenditures to mileage. Using SIMAP calculation methods, the GHG emissions resulting from this air travel was 27 MT CO_2e in both FY19 and FY22 (0.3% of total GHG emissions in both years.).

University-wide ground travel expenses were $52,233 in FY19 and $29,871 in FY22. Additionally, Pitt-Bradford Athletics teams logged 21,996 miles in ground travel in FY20 (which was used as a proxy year for FY19) and 28,671 ground travel miles in FY22 Athletic ground travel. Resulting combined FY19 GHG emission from ground travel was 182 MT CO_2e and 161 MT CO_2e in FY22 (2.1% and 2.0% of total each year, respectively).

Study Abroad – In FY19, across 13 study abroad opportunities, Pitt-Bradford students traveled a total of 291,300 air miles, contributing 126 MT CO_2e. In FY22, across 7 study abroad opportunities, students traveled a total of 118,800 air miles, contributing 52 MT CO_2e. Study abroad was 1.5 and 0.7% of total GHG emissions each year, respectively.

Solid Waste - In FY19, the Pitt-Bradford campus landfilled 133.6 short tons of solid waste, contributing 21 MT CO_2e (0.2% of total FY19 GHG emissions). In FY22, solid waste landfilled increased to 148.7 short tons, resulting in 23 MT CO_2e (0.3% of total FY22 GHG emissions).

Continued efforts focused on materials use reduction and diversion from landfill should be included at Pitt-Bradford, which recycled 29.3 tons of materials in FY19 and 19 tons in FY22.

Wastewater – Similar to the approach taken at the Pittsburgh campus, wastewater at Pitt-Bradford is presumed to be equivalent to the amount of water consumed within campus buildings; this calculation thus relies on water consumption data provided by Pitt-Bradford Facilities Management.

In FY19, Pitt-Bradford utilized 13,492 thousand gallons of water, resulting in the production of 26 MT CO_2e (or 0.3% of total FY19 GHG emissions). In FY22, water consumption increased to 15,282,000 gallons, contributing to 30 MT CO_2e (or 0.4% of total FY22 emissions).

Paper Purchased - During FY19, Pitt-Bradford procured 3,200 reams of Boise Uncoated Freesheet with 0% recycled content and 1,300 reams of TreeZero (now referred as TreeFree) carbon neutral paper made from sugarcane waste. This cumulative paper usage resulted in the generation of 31 MT CO_2e (or 0.4% of the total FY19 GHG emissions). In FY22, Pitt-Bradford significantly reduced its environmental impact from paper by purchasing 1,600 reams of TreeZero paper and 400 reams of Boise Aspen 30% recycled content paper, which contributed to 14 MT CO_2e (or 0.17% of the total FY22 GHG emissions).

The noteworthy reduction in paper-related emissions from FY19 to FY22 reflects Pitt-Bradford's commendable commitment to sustainable procurement practices, emphasizing the significance of continued efforts in minimizing the environmental footprint associated with paper usage.

Scope 3 Recommendations

1) **Energy Use Reduction:** Reducing overall Scope 1 and 2 energy use will accordingly reduce Scope 3 energy-related emissions.

2) **Commuter Details :** Do a deeper assessment of Pitt-Bradford commuting patterns for both employees and students.

3) **Sustainable Transportation Campaigns:** Launch awareness campaigns promoting and track adoption of sustainable commuting options via shared and active modes, including incentivizing the use of public transportation, carpooling, and electric vehicles for employees and students.

4) **Flexible Work:** Track utilization of flexible work schedules and telecommuting options to reduce the frequency of employee commuting.

5) **Business & Athletic Travel Options:** Raise awareness about business and athletic travel options that have lower emissions, including attending conferences and speaking engagements virtually; investigating train, bus, and carpooling options for closer destinations; flying direct when possible; and buying carbon offsets to cover flights as budgets allow.

6) **Food:** Serve plant-based and -forward dining and catering options; include data from Pitt-Bradford dining provider in next GHG inventory.

7) **Print Reduction & Paper Type:** Continue to promote the adoption of digital alternatives, reducing reliance on paper. Continue to purchase carbon neutral and recycled content paper when available.

8) **Waste Reduction Initiatives:** Implement comprehensive waste reduction campaigns, emphasizing material avoidance, reuse, recycling, and composting.

9) **Water Reduction Initiatives:** Reduce water use campus-wide via efficiency upgrades.

On both the Pittsburgh and Bradford campuses, purchased electricity is the primary contributor of GHG emissions. For Bradford, purchased electricity contributed 35.2% of FY19 emissions; for the Pittsburgh campus, 34.2% of GHG emissions were electricity related in FY19. In FY22, 34.7% of Bradford's GHG emissions were from electricity, compared with 37.4% of the Pittsburgh campus's GHG emissions. The Pittsburgh campus has had a growing number of procured renewable electricity projects.

Forested Acres (Non-Additional Carbon Sequestration)

With 573 acres of landscape, including quite a large number of forested acres. Pitt-Bradford has copious land-based carbon assets. However, non-additional carbon sequestration from Pitt-Bradford's forested land was not included in this report because details on pre- and post-fiscal year management was not available to determine additionality.

Per current SIMAP recommendations, carbon storage resulting from campus property "cannot be subtracted because it is not reducing emissions--it is keeping additional carbon from being released into the atmosphere. [However,] There is value in quantifying this as a measure of the additional amount of carbon that would be released to the atmosphere if the land were managed differently."[14]

Analysis

Upon inventorying Pitt-Bradford's GHG emissions for FY19 and FY22, a comparison with the Pittsburgh campus was performed. The Pittsburgh campus's FY19 GHG emissions were 210,001 MT CO_2e in FY19 and 173,005 MT CO_2e in FY22. Given its lower campus population, Pitt-Bradford's FY19 GHG emissions were 8,442 MT CO2e and FY22 emissions were 7,874 MT CO_2e; Pitt-Bradford's GHG emissions were 4% of the Pittsburgh campus's GHG emissions in FY19 and 4.6% in FY22.

Given the disparate campus sizes, normalizing GHG emissions by Full-Time Equivalent (FTE) students yields insightful comparisons. When normalized by full-time equivalent (FTE) student, Pitt-Bradford had 6.85 MT CO_2e / FTE student in FY19 and 6.17 MT CO_2e / FTE student in FY22. The University's Pittsburgh campus had 7.5 MT CO_2e / FTE and 6.3 MT CO_2e / FTE student in FY19 and FY22, respectively. Regardless of size, both the Bradford and Pittsburgh campus have similar normalized carbon footprints.

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[14] University of New Hampshire. (2024). "Sinks: Non-Additional Sequestration." https://unhsimap.org/cmap/inventory/0/non-additional-sequestration. Accessed 12 February 2024.

Bradford's GHG emissions were from electricity, compared with 37.4% of the Pittsburgh campus's GHG emissions. The Pittsburgh campus has had a growing number of procured renewable electricity.

Recommendations

Results from these first two Pitt-Bradford GHG Inventories represent the first step in measuring GHG emissions for both Pitt-Bradford and the University of Pittsburgh's regional campuses. Beyond creating an imperative baseline GHG emissions inventory for the Bradford campus, these inventories will help inform consideration of how to officially apply and/or adapt the University of Pittsburgh's existing GHG emissions reduction targets and carbon neutrality goals to the Bradford campus.

With GHG Inventories being completed for the Pittsburgh campus annually, the Pitt-Bradford GHG Inventory process should be repeated at least every three years moving forward, if not more frequently. Additionally, baseline GHG Inventories should be created for the University's regional campuses in Greensburg, Johnstown, and Titusville – and updated regularly thereafter.

Additionally, the University should continue to focus on reducing GHG emissions from major sources across all campuses, with specific focus on the largest GHG emissions categories of electricity, natural gas use in buildings, and commuting. Adoption of related Pitt Sustainability initiatives to the Bradford campus should include building energy and water efficiency projects, renewable electricity production and procurement, carpooling and transit incentives, and electric vehicle charging stations. Continuing existing practices, all significant new construction projects should pursue LEED certification and include the University's aggressive energy and water use intensity performance goals.

Future Pitt-Bradford GHG inventories should evaluate future opportunities for organically sequestering carbon through integrated forest management and/or afforestation of some portion of this acreage. Any efforts in this regard should reflect international *GHG Protocol* best practices regarding forest carbon sequestration[15] and consider emerging U.S. standards, including, but not limited to Improved Forest Management standards currently in development by Second Nature's Offset Network.[16]

[15] World Resources Institute, ICLEI–Local Governments for Sustainability, and C40 Cities Climate Leadership Group. (2022). "Global Protocol for Community-Scale Greenhouse Gas Inventories: Supplemental Guidance for Forests and Trees." ghgprotocol.org/gpc-supplemental-guidance-forests-and-trees. Accessed 12 February 2024.

[16] The Offset Network. (2024). "NEW: Project Type Focus Initiatives: Improved Forest Management." Second Nature. offsetnetwork.secondnature.org/project-type-focus. Accessed 12 February 2024.