University of Pittsburgh

University of Pittsburgh, Pittsburgh Campus **Greenhouse Gas Inventory Fiscal Year 2024**

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June 30, 2025

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University of Pittsburgh, Pittsburgh Campus **Greenhouse Gas Inventory**

Background

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Pitt GHG Emissions Inventory History

1) Past GHG Inventories

- **Fiscal Year 2008 -** GHG Inventory Baseline Year
- **Fiscal Years 2011, 2014, & 2017** – Triennial inventories
- **Fiscal Years 2019, 2020, 2021, 2022, 2023, & 2024** – Annual inventories starting with Fiscal Year 2019
  - Fiscal Years 2020, 2021, & 2022 were impacted by the global COVID-19 pandemic
- **Lead Authors** - Graduate Students, Civil & Environmental Engineering
- **Faculty Advisor** - Melissa M. Bilec, PhD, *Co-Director,* Mascaro Center for Sustainable Innovation; *George M. & Eva M. Bevier Professor,* Department of Civil & Environmental Engineering
- Collaborations & Internal review by University Finance & Operations
  - FY19 forward - University Sustainability staff co-author.

2) University of Pittsburgh GHG Emissions Reduction Goals

- **50% reduction by 2030 below Fiscal Year 2008**
  - Adopted in 2018
- **Carbon neutrality by 2037**
  - Adopted in 2020
  - Pitt Climate Action Plan published in 2022

Acronyms

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Acronym	Definition
AASHE	Association for the Advancement of Sustainability in Higher Education
BBP	Bellefield Boiler Plant *(Pitt purchases steam from this off-campus facility)*
CH_4	Methane
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalents
COVID-19	Coronavirus disease 2019
CSSP	Carrillo Street Steam Plant *(Pitt makes steam at this on-campus facility)*
FERA	Fuel & Energy-Related Emissions
FTE	Full Time Equivalent
FY	Fiscal Year
GHG	Greenhouse Gas
GWP	Global Warming Potential
LEED	Leadership in Energy and Environmental Design
MMBTU	Million British thermal unit
MT CO_2e	Metric tons of carbon dioxide equivalents
Pitt	University of Pittsburgh
REC	Renewable Energy Certificate (1 MWh)
SF	Square Feet
SIMAP	Sustainability Indicator Management & Analysis Platform
T&D	Transmission & Distribution

SIMAP: Inventory Data & Analysis

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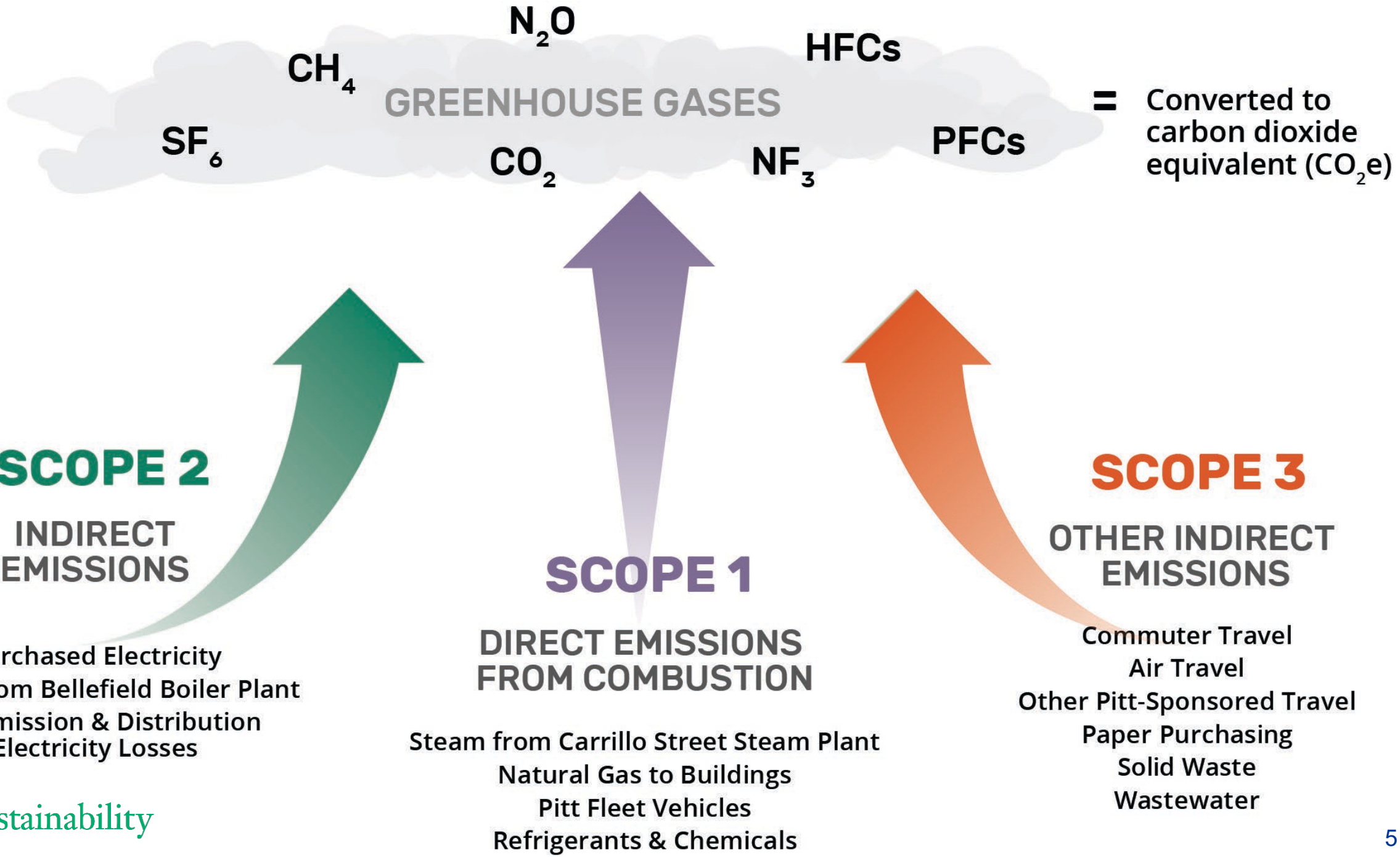
- **SIMAP (Sustainability Indicator Management & Analysis Platform)**
  - User-friendly, all-in-one carbon and nitrogen-accounting tool designed for higher education campuses.
  - Affordable, online solution to track, analyze, & enhance sustainability efforts across the entire campus.
  - Algorithms grounded in *Greenhouse Gas Protocol* standards & backed by two decades of experience with the Campus Carbon Calculator, CarbonMAP, & Nitrogen Footprint Tool.
  - UNHsimap.org/home

SIMAP
SUSTAINABILITY INDICATOR MANAGEMENT & ANALYSIS PLATFORM

- **Mission -** To assist institutions, colleges, and universities in monitoring their environmental footprints, enabling them to achieve their sustainability goals efficiently & effectively.
  - Assists users in establishing a baseline, benchmarking performance, generating reports, setting goals, analyzing year-over-year progress, & accessing resources.

- As a signatory Second Nature's Climate Leadership Commitments & reflecting best practice in higher education GHG inventorying & benchmarking, **the University of Pittsburgh uses SIMAP to publicly report our GHG emissions data.**



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Pittsburgh Campus
Greenhouse Gas Inventory

Fiscal Year 2024
RESULTS

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Executive Summary: FY24 GHG Emissions

- The University of Pittsburgh's Pittsburgh campus **FY24 GHG emissions were:**
  - **171,455 MT CO_2e**
  - 20% decrease from FY19 (pre-pandemic)
  - 18% decrease from FY22.

- Decreases occurred in on-campus & purchased steam, purchased electricity, faculty & staff commuting, directly financed air & ground travel, wastewater, and FERA.

- The largest decrease occurred Pitt-Sponsored Air Travel (Scope 3) due to data collection error correction.

- GHG emissions are **37.3% below Pitt's FY08 baseline** and **are on track** to meet the University's goal of 50% reduction by 2030.

Category		Previous Fiscal Years									Current FY
SCOPE	SOURCE CATEGORY	FY08	FY11	FY14	FY17	FY19	FY20	FY21	FY22	FY23	FY24
SCOPE 1	On-Campus Steam	-	22,200	32,981	25,623	24,978	29,627	29,644	27,532	33,417	28,205
	Other On-Campus Stationary	9,200	5,700	6,386	5,245	7,470	7,102	8,167	7,348	8,111	10,143
	Fleet Vehicles	500	700	1,273	1,388	1,992	1,629	1,506	1,364	1,472	1,474
	Refrigerants & Chemicals	800	2,300	2,192	1,266	2,240	789	644	1,450	974	3,272
	Fertilizers & Animals	-	1	2	1	1	2	1	7	5	9
TOTAL SCOPE 1 (MT CO_2e) (Direct Emissions)		10,500	30,901	42,834	33,523	36,681	39,148	39,962	37,700	43,979	43,102
SCOPE 2	Purchased Electricity	138,700	135,500	115,341	105,607	73,802	84,753	85,544	64,777	72,666	61,047
	Purchased Steam	55,100	29,400	23,404	17,238	16,892	13,247	15,954	20,310	16,193	15,705
TOTAL SCOPE 2 (MT CO2e) (Indirect Emissions)		193,800	164,900	138,745	122,845	90,694	98,000	101,498	85,087	88,859	76,752
SCOPE 3	Faculty & Staff Commuting	13,600	14,700	9,845	12,433	23,293	15,330	5,672	9,961	10,482	9,944
	Student Commuting	5,200	5,500	6,064	5,962	12,036	10,318	2,927	2,264	1,928	2,270
	Directly Financed Air Travel	24,800	33,600	23,921	24,706	36,560	10,273	4,018	10,400	29,651	6,187
	Other Directly Financed Travel	100	50	211	548	582	1,593	683	1,140	3,812	2,059
	Study Abroad Air Travel	-	1,100	775	4,578	8,816	3,489	153	626	765	971
	Solid Waste	5,700	1,400	1,437	1,522	1,454	1,793	1,413	1,445	1,607	2,094
	Wastewater	1,500	1,400	136	104	102	107	353	510	542	467
	Paper	1,600	1,500	1,949	2,441	729	509	167	214	241	252
	Food	-	-	-	-	-	-	2,861	5,141	6,803	6,938
	Transmission & Distribution Losses	16,600	13,400	7,596	5,523	4,575	5,509	5,395	4,417	4,876	4,932
	Fuel & Energy Related Activities								14,122	16,772	15,488
TOTAL SCOPE 3 (MT CO2e) (All Other Emissions)		69,100	72,650	51,934	57,817	88,147	48,919	23,642	50,238	77,481	51,602
SINKS	Compost	0	0	0	0	0	0	0	19.4	0	0
ALL ACCOUNTABLE EMISSIONS (MT CO2e)		273,400	268,451	233,513	214,185	215,522	186,068	165,101	173,006	210,319	171,455

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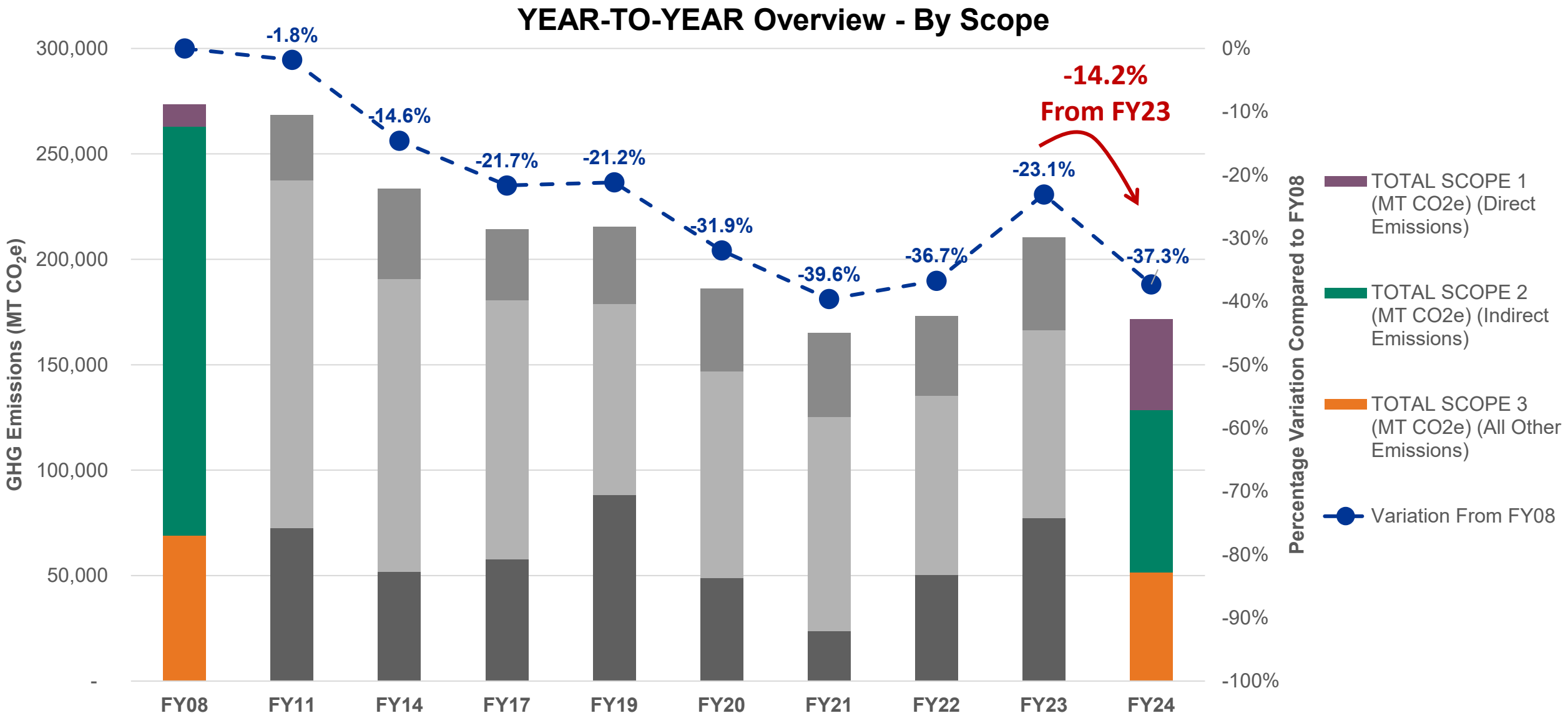
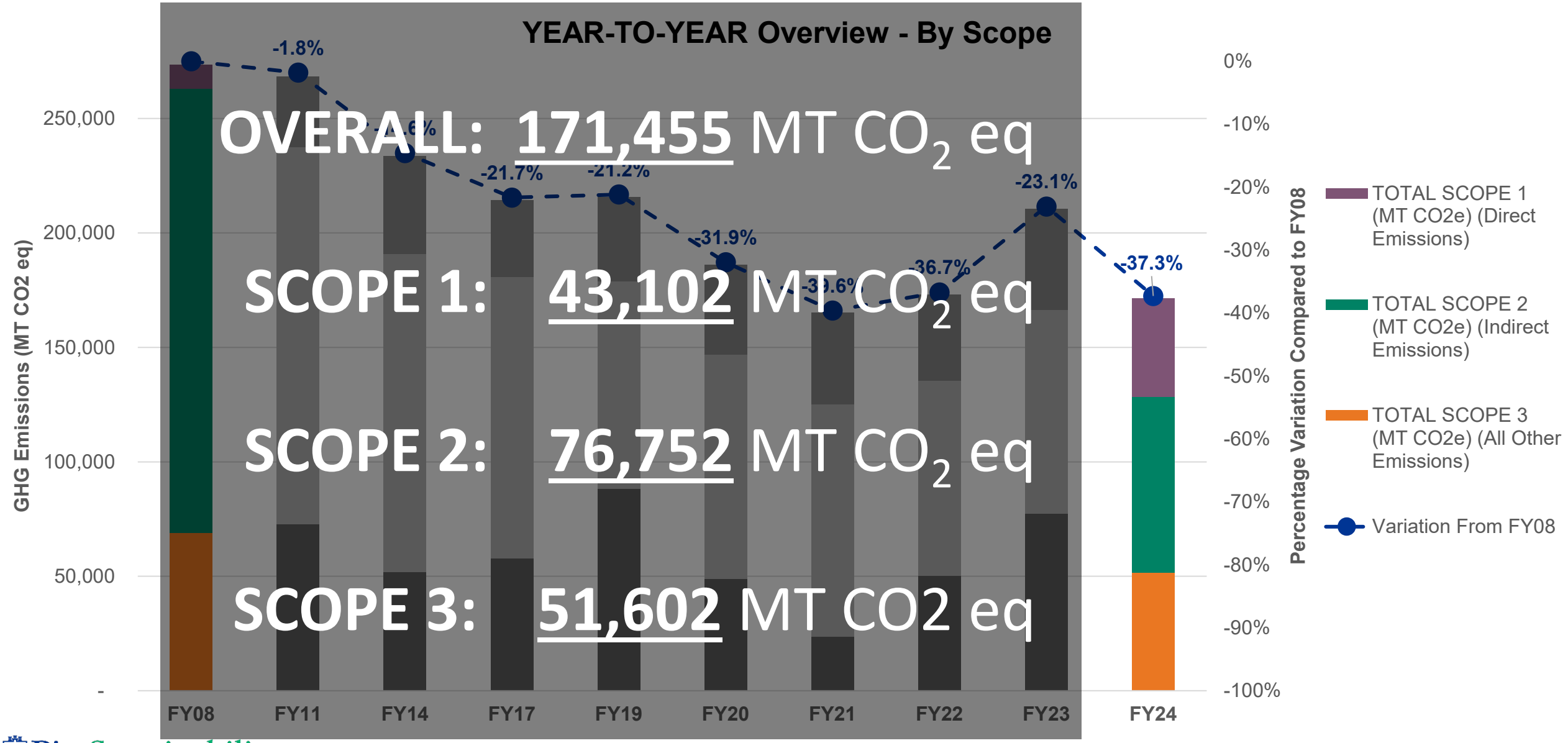
GHG Inventory Overview FY24



GHG Inventory Overview FY24

University of Pittsburgh



OVERALL: 171,455 MT CO_2 eq

SCOPE 1: 43,102 MT CO_2 eq

SCOPE 2: 76,752 MT CO_2 eq

SCOPE 3: 51,602 MT CO2 eq

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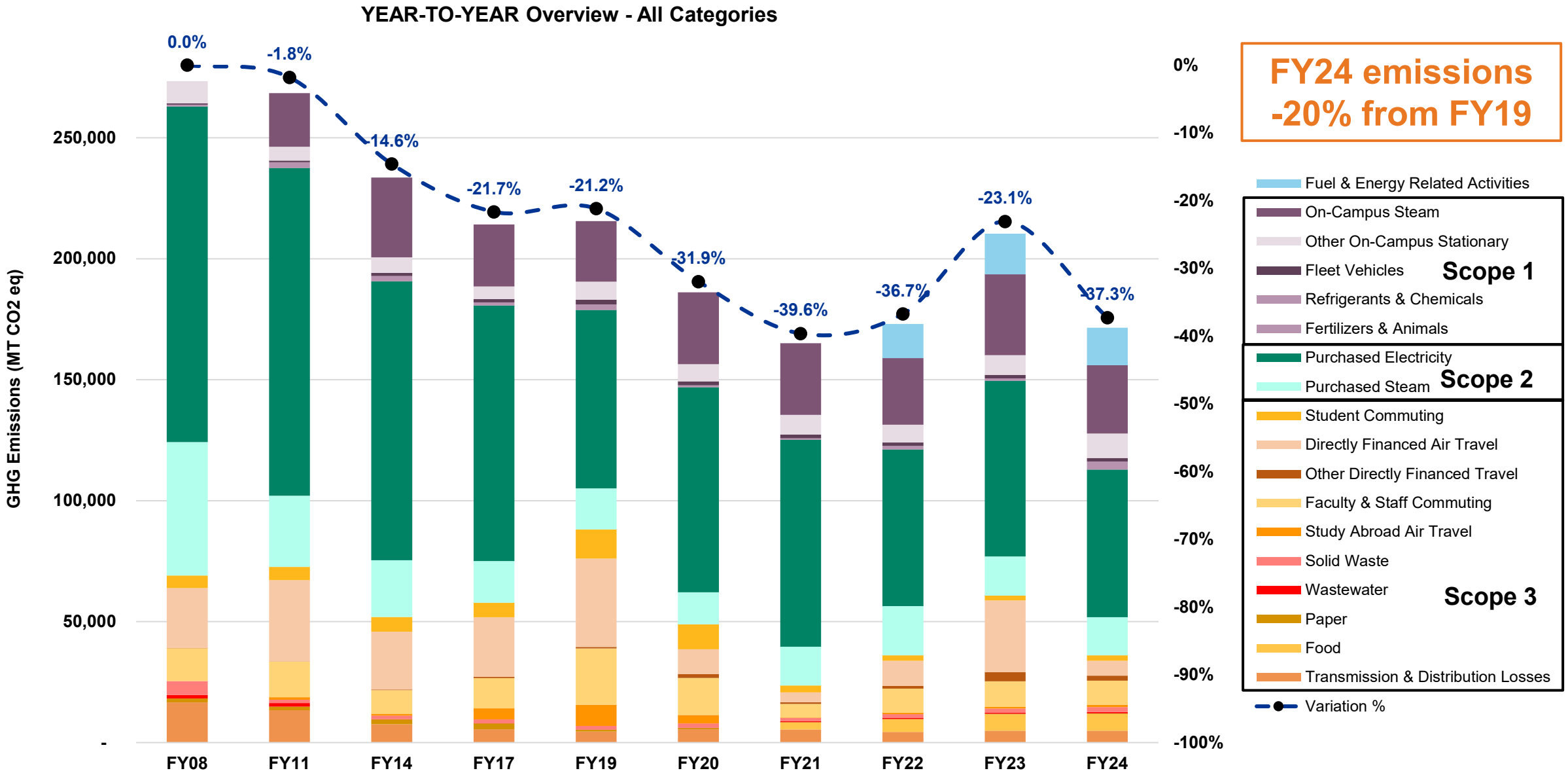
GHG Inventory Overview



Notable FY24 Changes

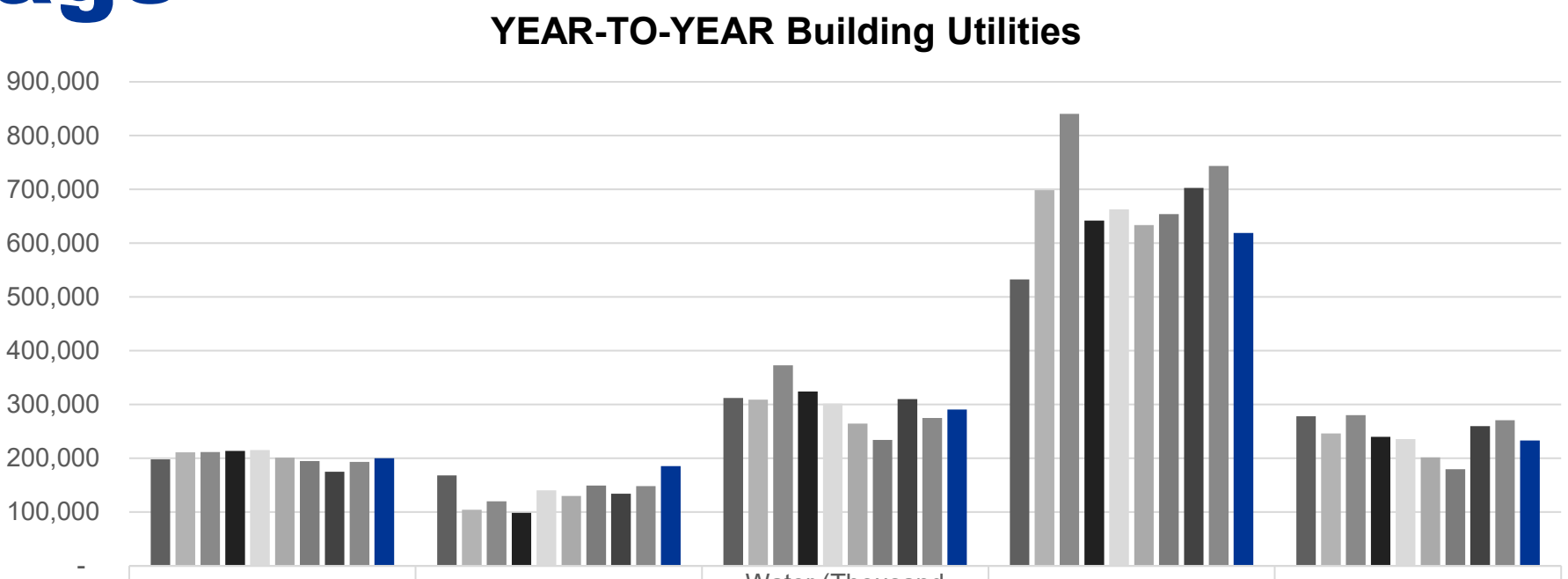
Scope	Category	Variation Compared to FY23	% of Total GHG Emissions	Potential Explanations
2	**Electricity**	-16% ↓	36%	**Gaucho Solar Activation –** The Gaucho Solar facility started producing electricity. Pitt purchases all electricity from this local solar farm, which totaled 33,071,592 kWh in FY24. Though Pitt traded Gaucho's RECs for national Green-e certified RECs (to invest in sustainable campus improvements in the built environment), the resulting 108% increase in renewable electricity over FY23 was a primary driver of reducing GHG emissions.
1 & 2	**Total Steam** (Produced & Purchased)	-11% ↓	26%	**Heating Degree Days –** Combined steam consumption decreased in part due to a 9% reduction in days that required heating in FY24.
3	**Directly Financed Air Travel**	-79% ↓	4%	**Data Collection Correction –** Due to a data collection error, directly financed air travel was double-counted in FY23, causing a marked increase in reported air travel emissions. The error was corrected in FY24 & reported air travel emissions are now more accurate.
1	**Other On-Campus Stationary** (Natural Gas)	25% ↑	6%	**Natural Gas Use –** Natural gas consumption for buildings was inexplicably up despite building square footage holding relatively steady.
1	**Refrigerants & Chemicals**	236% ↑	2%	**Maintenance with Higher GWP Refrigerants –** There was a substantial increase in refrigerant use due to large maintenance projects at the RIDC Building and Victoria Hall, for which higher GWP refrigerants (i.e., R-410A and R-134A) were required, contributing to increased emissions. Varies year to year.

University Overview: Square Footage

University of Pittsburgh

Buildings	
Fiscal Year	**Gross Square Feet**
FY 08	9,403,627
FY 11	9,650,285
FY 14	10,209,646
FY 17	10,187,967
FY 19	11,564,332
FY 20	11,645,940
FY 21	11,691,649
FY 22	11,026,502
FY 23	11,821,234
FY 24	**11,336,441**

- **484,793 SF less than FY23**
  - 4% decrease
- **1,932,814 SF more than FY08**
  - 21% increase



	Electricity (MWh)	Natural Gas (mcf)	Water (Thousand Gallons)	Steam (klb)	Sewage (1000 gal)
FY08	198,040	168,289	312,018	532,693	278,350
FY11	211,102	104,555	308,886	698,786	246,450
FY14	211,615	120,120	372,837	840,701	280,055
FY17	213,622	98,595	324,294	641,819	240,165
FY19	215,391	140,427	301,532	663,093	236,027
FY20	201,482	130,011	264,785	633,710	201,772
FY21	194,767	149,503	234,363	654,148	179,836
FY22	175,334	134,513	310,302	702,650	259,850
FY23	193,535	148,491	275,273	743,630	270,762
FY24	199,999	185,676	290,744	619,215	233,285

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FY24 Building List

University of Pittsburgh

Building	Gross Sq. Ft.
257 Oakland Avenue (Healthy Home Lab)	4,400
3343 Forbes Avenue	25,122
3401 Boulevard of the Allies (Old Quality Inn)	63,888
480 Melwood St.	44,562
530 Melwood (Motor Pool)	8,200
718 Devonshire Avenue	16,000
Allegheny Observatory	30,017
Allen Hall	58,026
Alumni Hall	162,970
Barco Law Building	139,611
Bellefield Hall	107,545
Benedum Hall	473,392
Biomedical Science Tower 3	326,000
Bouquet Gardens	152,737
Bouquet Gardens J	64,800
Bridgeside Point 2	161,669
Cathedral of Learning	599,637
Center for Bioengineering	91,123
Centre Plaza Apartments	138,600
Charles L. Cost Sports Center	82,977
Chevron Science Center	269,135

Building	Gross Sq. Ft.
Clapp Hall	85,893
College Gardens Apartments	297,510
Computer Center (RIDC)	19,355
Craig Hall	55,115
Craig Hall Garage	10,409
Crawford Hall	87,637
Darragh Street Housing	102,217
David Lawrence Hall	57,956
Eberly Hall	56,051
Eureka Building	36,607
Falk School	66,213
Fitzgerald Field House	105,045
Forbes Craig Apartments	43,554
Forbes Pavilion	87,114
Franklin Complex	50,753
Fraternity Housing Complex	82,800
Frick Fine Arts	73,088
Gardner Steel Conference Center	26,714
Heinz Chapel	18,717
Hillman Library	252,778
Hyacinth Place Apartments	25,967

Building	Gross Sq. Ft.
Information Sciences Building	76,130
Information Sciences Garage	38,499
Iroquois (SHRS)	60,000
K. Leroy Irvis Hall	127,835
Langley Hall	90,592
Life Sciences Annex	50,000
Litchfield Towers A,B,C	465,393
Lothrop Hall	241,770
Mark A. Nordenberg Hall	200,471
Mayflower Apartments	14,940
McGowan Institute for Regenerative Medicine	45,000
Mervis Hall	86,570
Music Building	21,275
Oakwood Apartments	14,886
OC Garage	106,629
O'Hara Student Center	40,000
(Old) Engineering Hall	67,859
Panther Hall	161,542
Parkvale Building	42,263
Parkvale Plaza	14,821
Petersen Events Center	430,000

FY24 Building List, Continued

Building	Gross Sq. Ft.
Petersen Sports Complex	50,415
Pitt IT Building (3512 Fifth)	12,656
Plum Borough Research Facility	41,139
Public Health Building & Crabtree	284,908
Public Health Garage	56,941
Residences on Bigelow	125,000
Ruskin Hall Apartments	120,000
Salk Hall	333,995
Salk Hall Pavilion	81,000
Schenley Quad	367,219
Sennott Square (includes vendors)	250,800
Sennott Square Garage	Included in Sennot Sq.
Soldiers & Sailors Garage	344,626
Space Research Coordination Center	41,849
Stephen Foster Memorial	27,182
Sutherland Hall	223,903
Thackeray Hall	99,147
Thaw Hall	51,379
Thomas Boulevard	192,000
Twentieth Century Club	54,340
Trees Field - Sports Dome	105,608

Building	Gross Sq. Ft.
Trees Hall	244,412
University Child Development Center	24,517
University Club	85,000
University Public Safety Building	23,200
Upper Campus Chilled Water Plant & Electrical Substation (CUB)	38,540
Van de Graaff (Nuclear Physics)	36,691
Victoria Hall	128,759
Wesley W. Posvar Hall	513,893
Wesley W. Posvar Hall Garage	203,746
William Pitt Union	178,726

FY24 GHG Inventory - Buildings Added

1) 247 Oakland Avenue (Healthy Home Lab)
2) Bridgeside Point 2
3) Pitt IT @ 3512 Fifth Avenue
4) Residences on Bigelow
5) University Hall (SF in University Club)

FY24 GHG Inventory - Buildings Omitted

1) 229 Atwood
2) Athletics Field Building
3) Langley Garage
4) Scaife Hall

FY25 GHG Inventory
Buildings to be Included

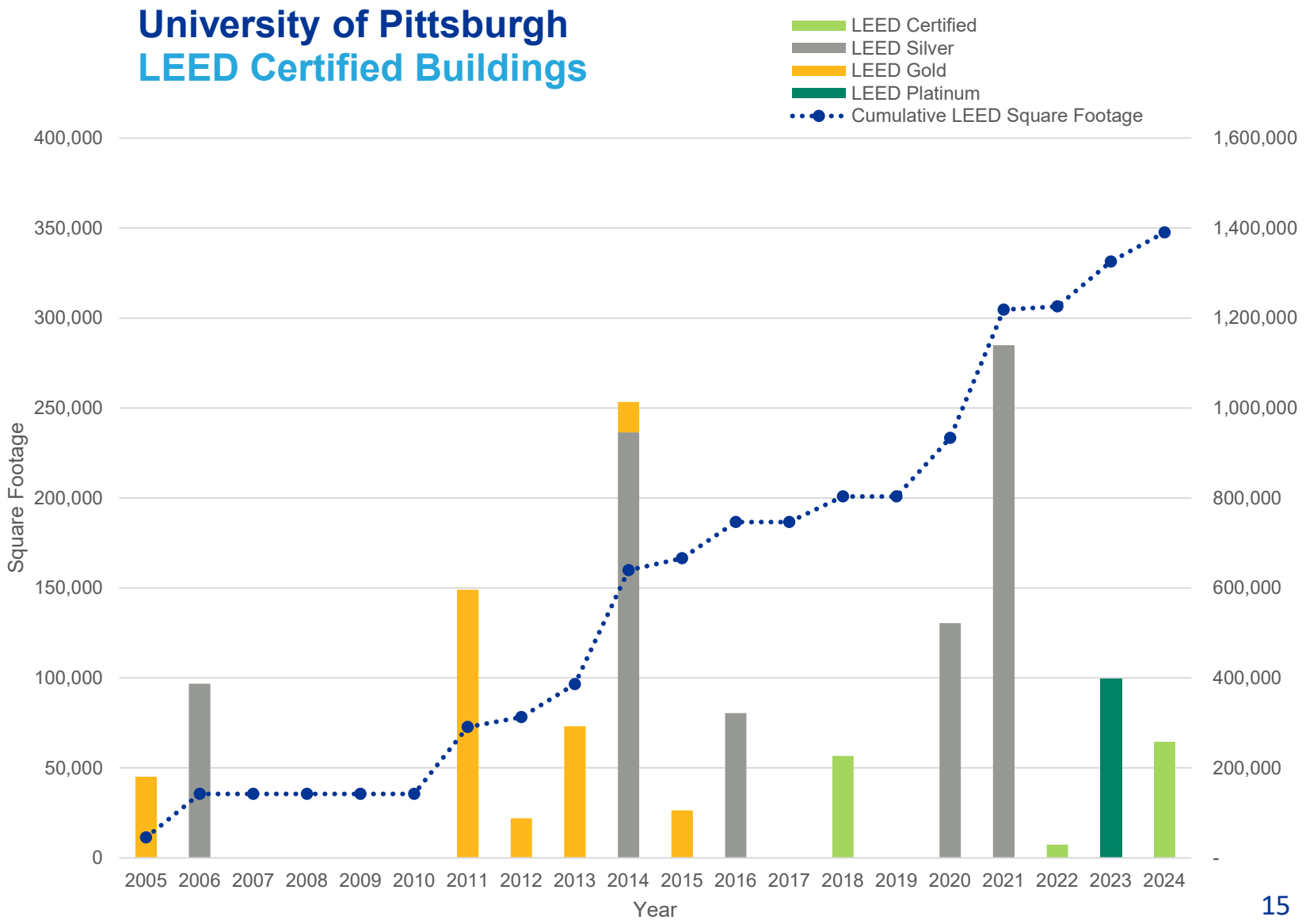
1) 229 Atwood [4,400 ft^2]
2) Athletic Fields Building [1,312 ft^2]
3) Carrillo Street Steam Plant
4) Halket & Iroquois Parking
5) Langley Parking Garage [6,904 ft^2]
6) Scaife Hall incl. Addition [700,736 ft^2]

FY25 GHG Inventory
Buildings to be Added

1) Pittsburgh Athletic Association [130,000 ft^2]
2) Shirley Apartments [16,160 ft^2]
3) Strand Building [54,003 ft^2]
4) Any other acquisitions

University Overview: LEED

LEED Certified Buildings Since 2020		
Building Name	**Certification**	**Year**
Clapp Hall Renovation	Silver	2020
Public Health Renovations	Silver	2021
Salk Hall Renovation	Platinum	2023
Peterson Sports Complex Addition	Tracking Silver	
Scaife Hall Addition & Renovation	Tracking Gold	
Hillman Library Renovation	Tracking Platinum	
Arena & Sports Performance Center	Tracking Gold	In Construction
BioForge at Hazelwood Green	Tracking Gold	In Construction
Crawford Hall Renovation	Tracking Gold	In Construction
Fifth & Halket	Tracking Gold	In Construction
Recreation & Wellness Center	Tracking Gold	In Construction



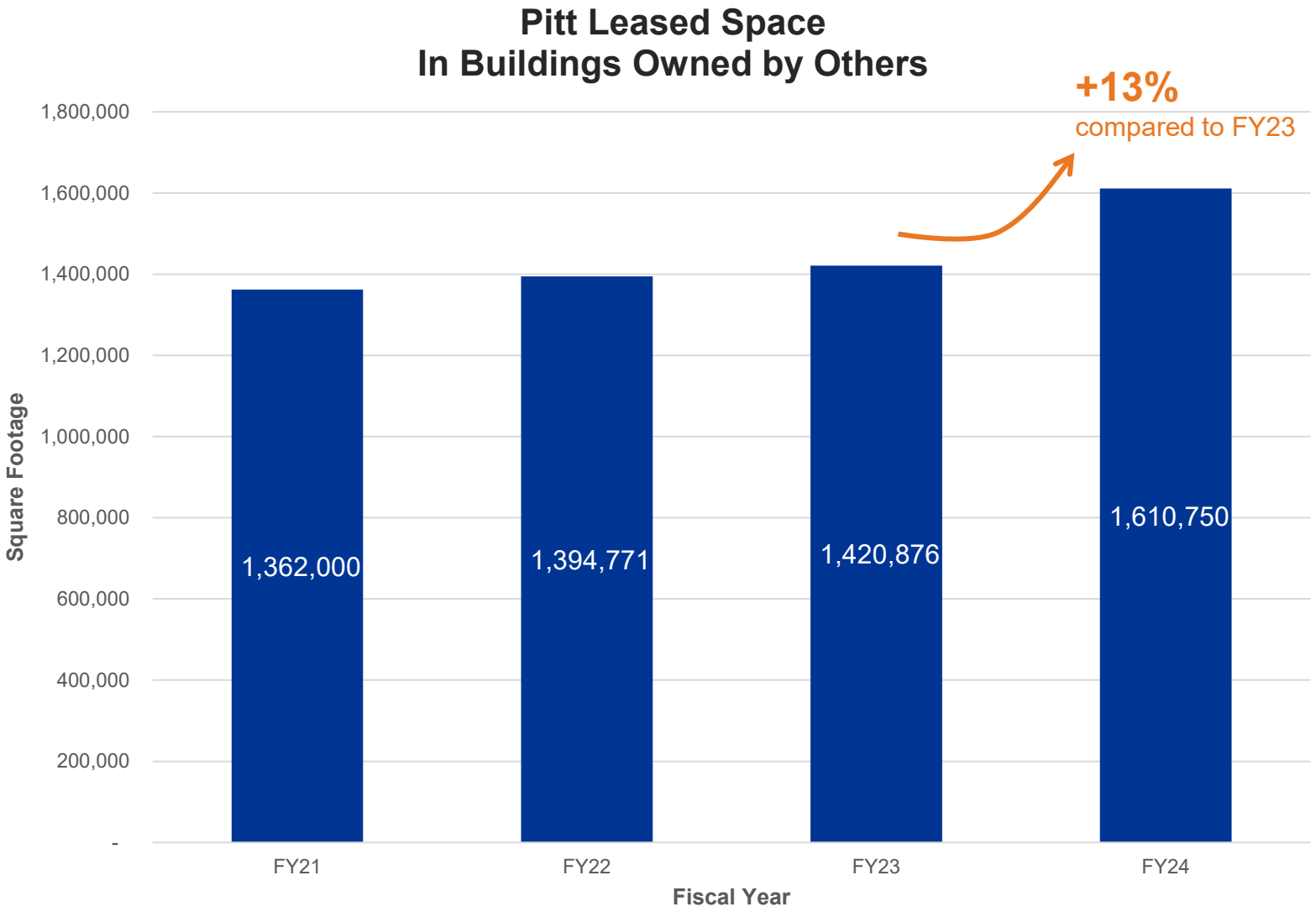
University Overview: FY24 Leased Non-Pitt Owned Buildings

Leased space is an optional Scope 3 category & NOT included in Pitt's GHG Inventory boundary; it is included here for context & trend analysis.

The University had **128 leases** covering **1,610,750 square feet** of space in in non-Pitt-owned buildings in Pennsylvania.

This leased space had an estimated **40,586 MT CO_2e** of GHG Emissions in FY24 **(equivalent to 24% of total FY24 emissions).**

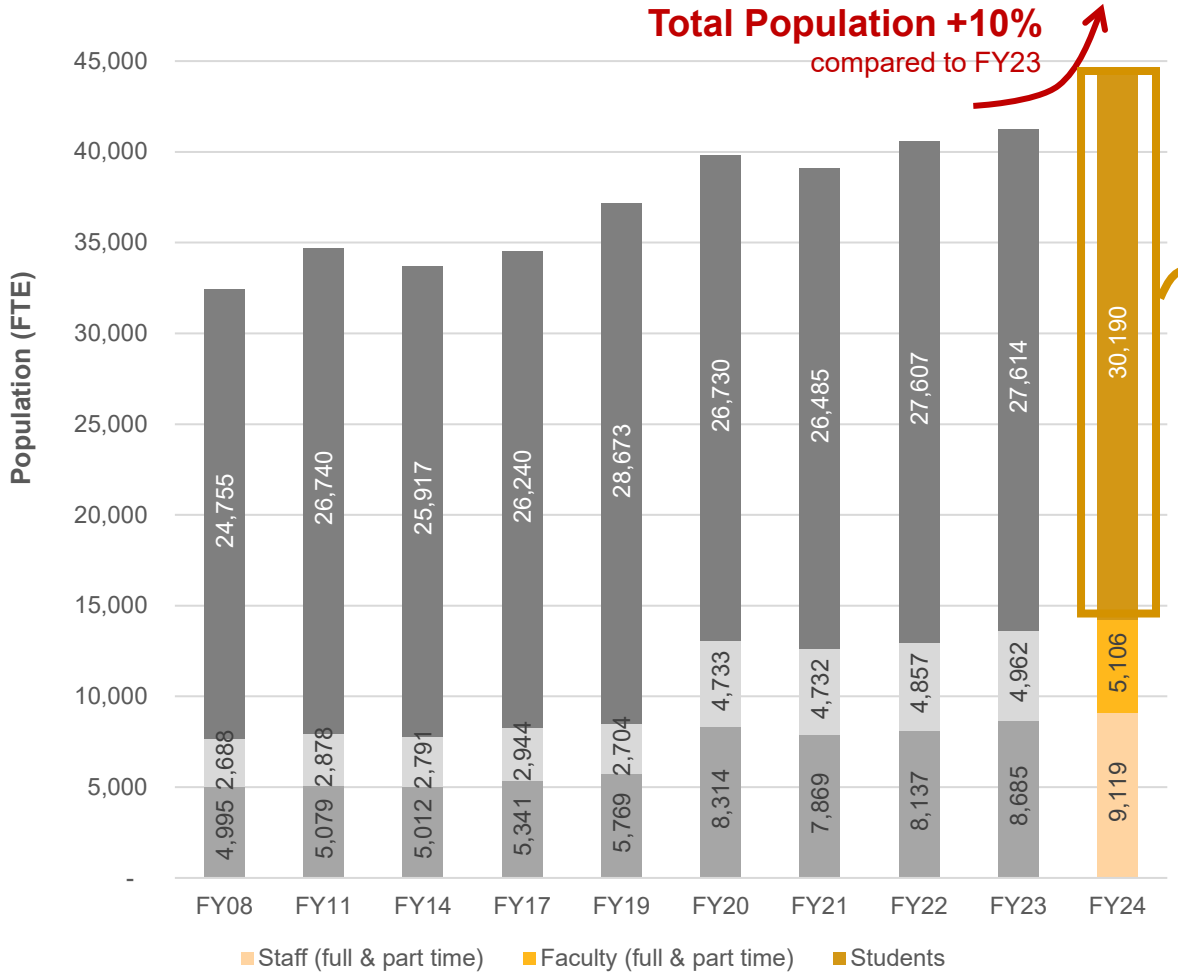
NOTE: Leased space energy use was estimated using square footage, primary space use type, & national average energy use intensity based on primary use.



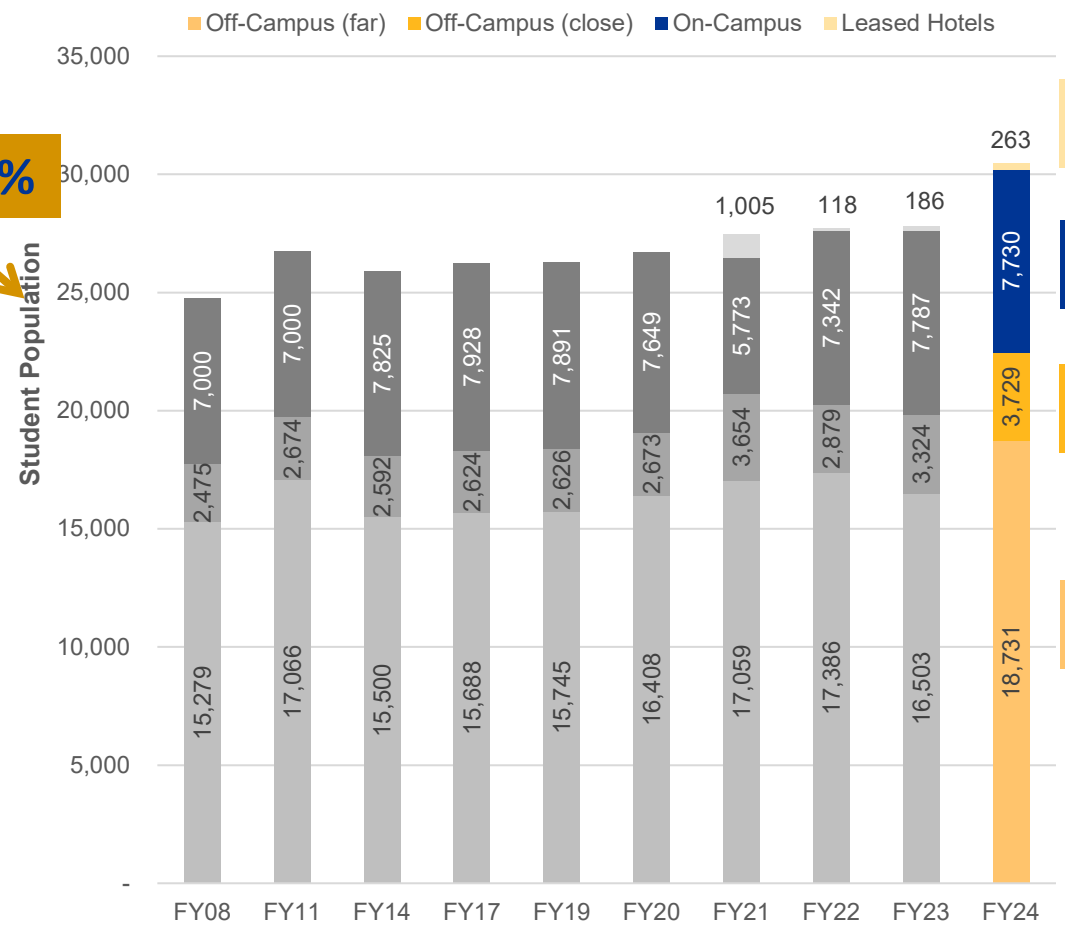
University Overview: FY24 Population & Student Housing

University of Pittsburgh

YEAR-TO-YEAR
Pitt Campus Population (FTE)



STUDENT RESIDENCE LOCATIONS



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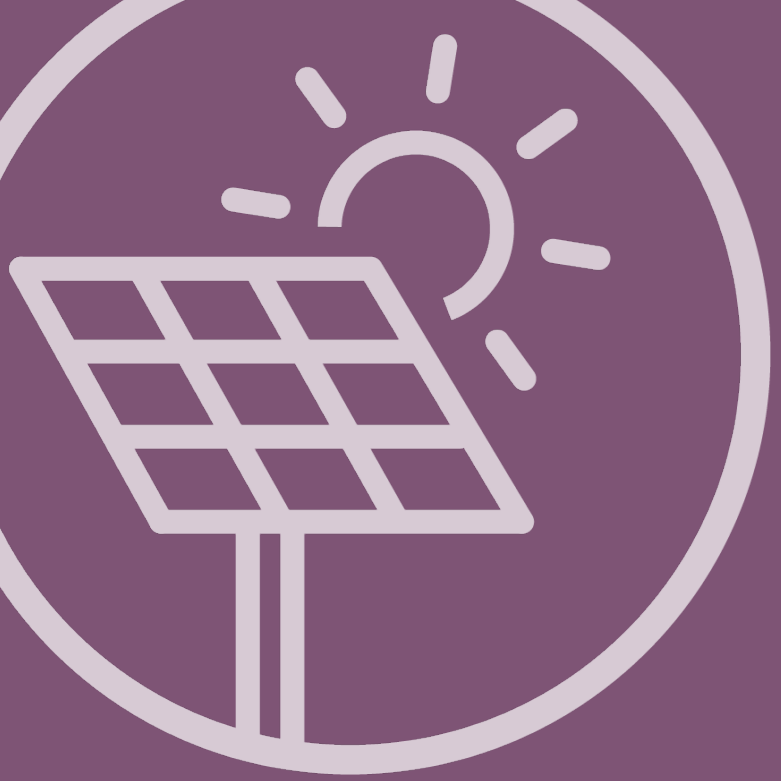


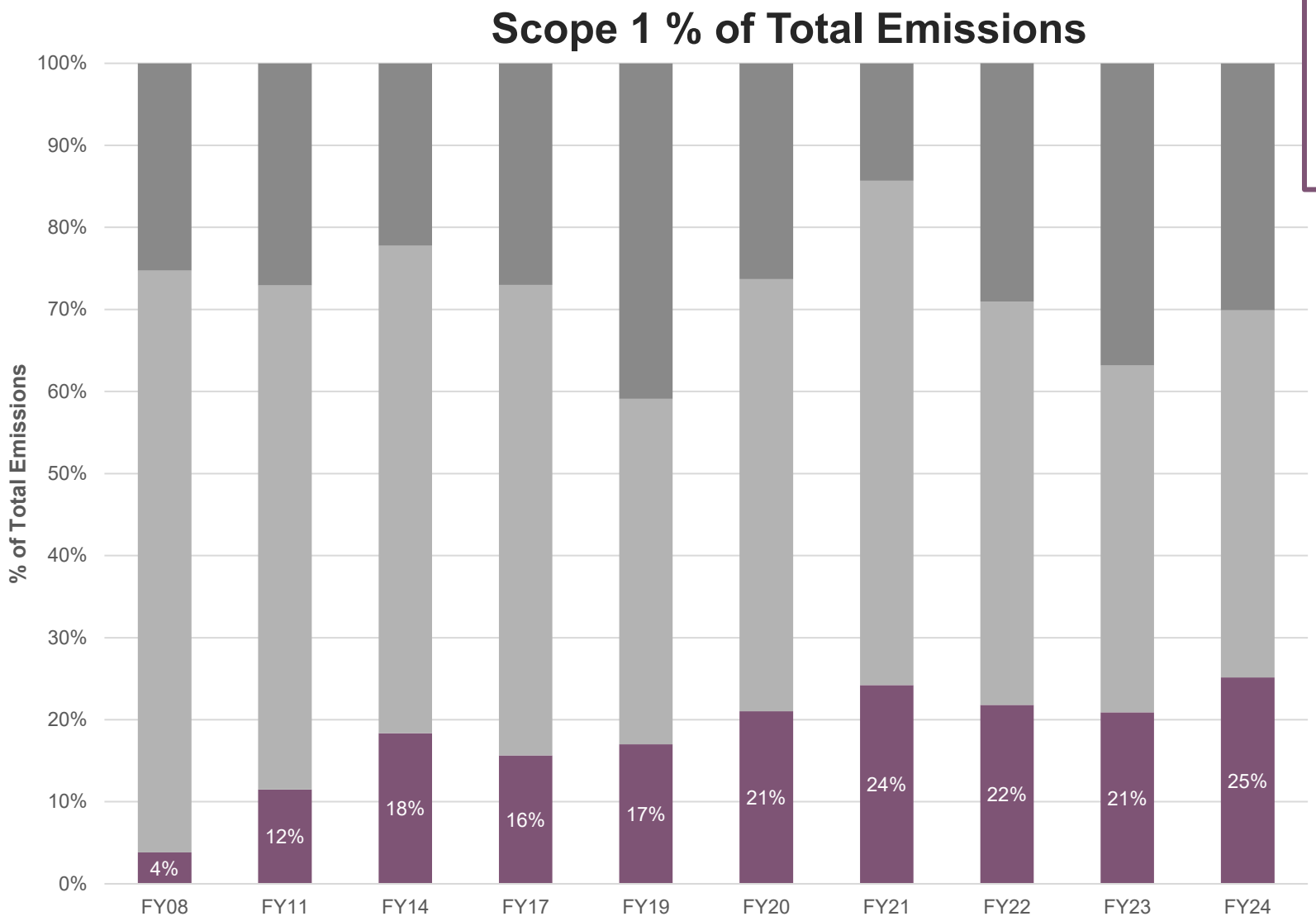
SCOPE 1

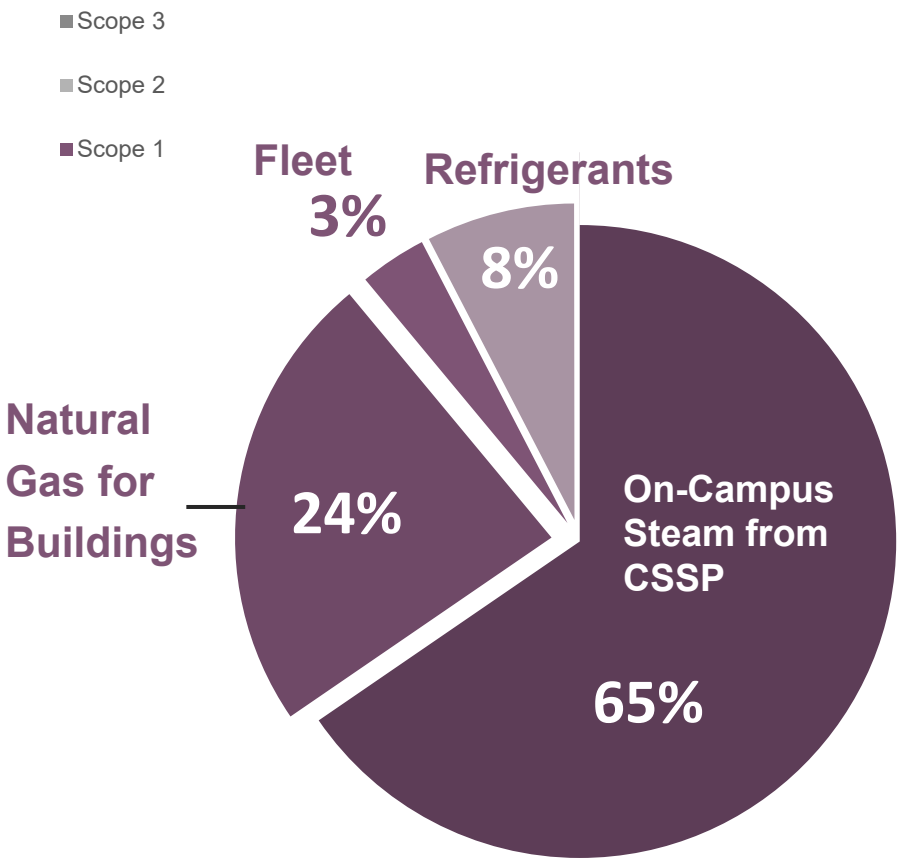
DIRECT EMISSIONS
FROM COMBUSTION

Scope 1 FY24 Trends

Scope 1 is 25% of Total Emissions [43,102 MT CO_2e]

SCOPE 1
Direct Emissions
From Combustion





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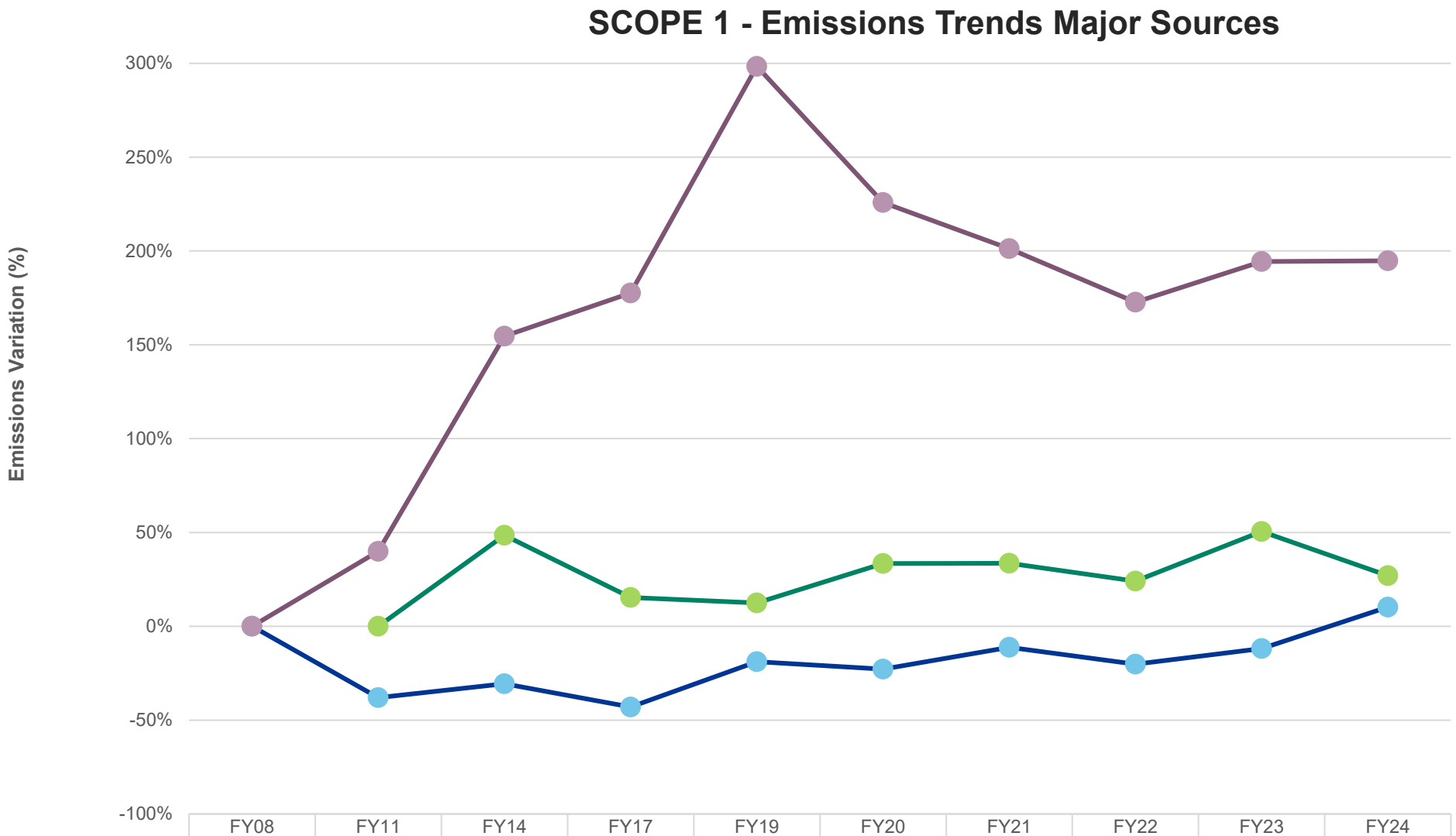
Scope 1: Major Sources FY24 Trends

SCOPE 1
Direct Emissions
From Combustion



	FY08	FY11	FY14	FY17	FY19	FY20	FY21	FY22	FY23	FY24
On Campus Steam		0%	49%	15%	13%	33%	34%	24%	50.5%	27%
Natural Gas	0%	-38%	-31%	-43%	-19%	-23%	-11%	-20%	-11.8%	10%
Fleet	0%	40%	155%	178%	298%	226%	201%	173%	194.4%	195%

Stationary Sources & Fleet are 92% of Scope 1 Emissions

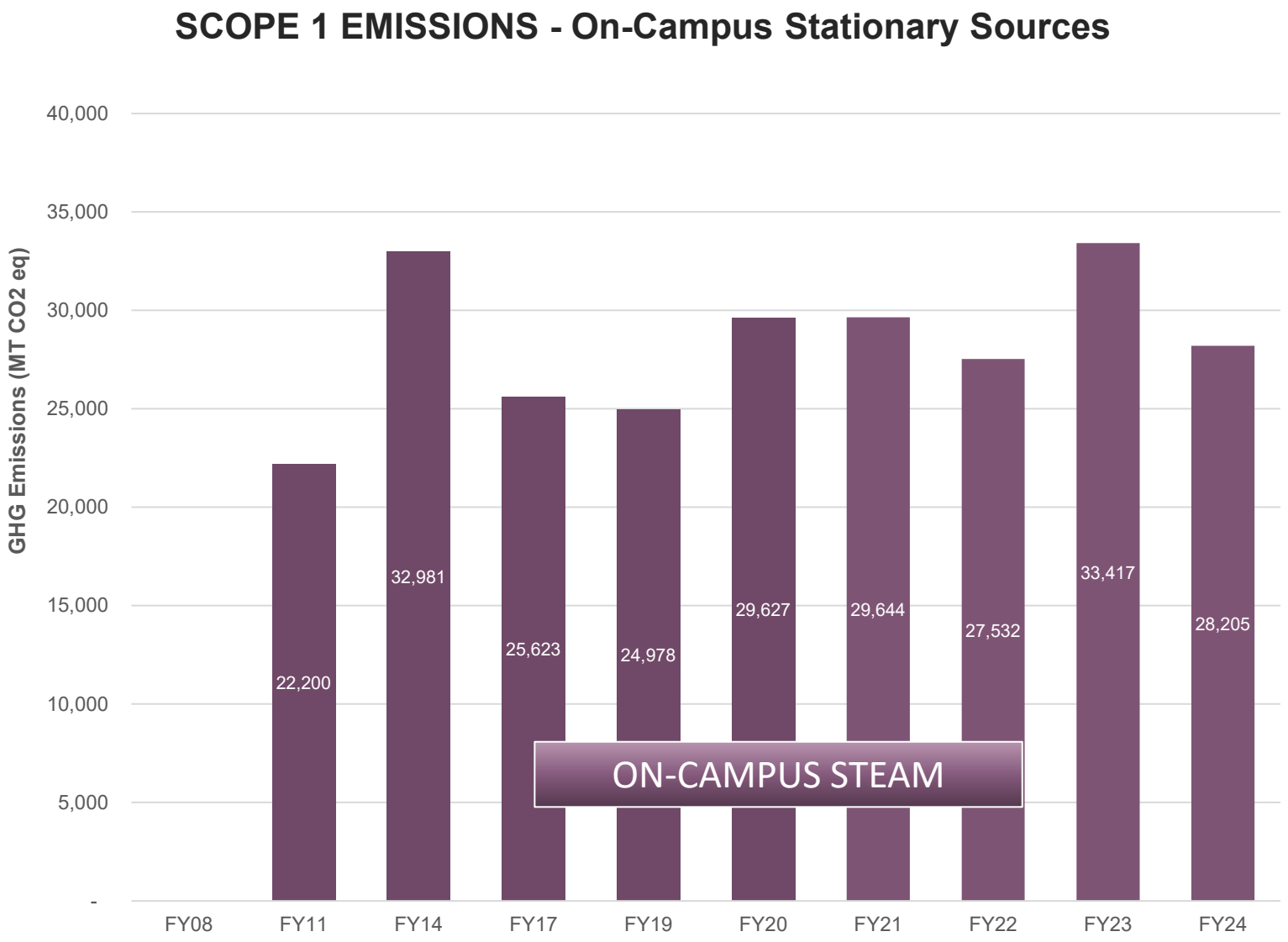
NOTES

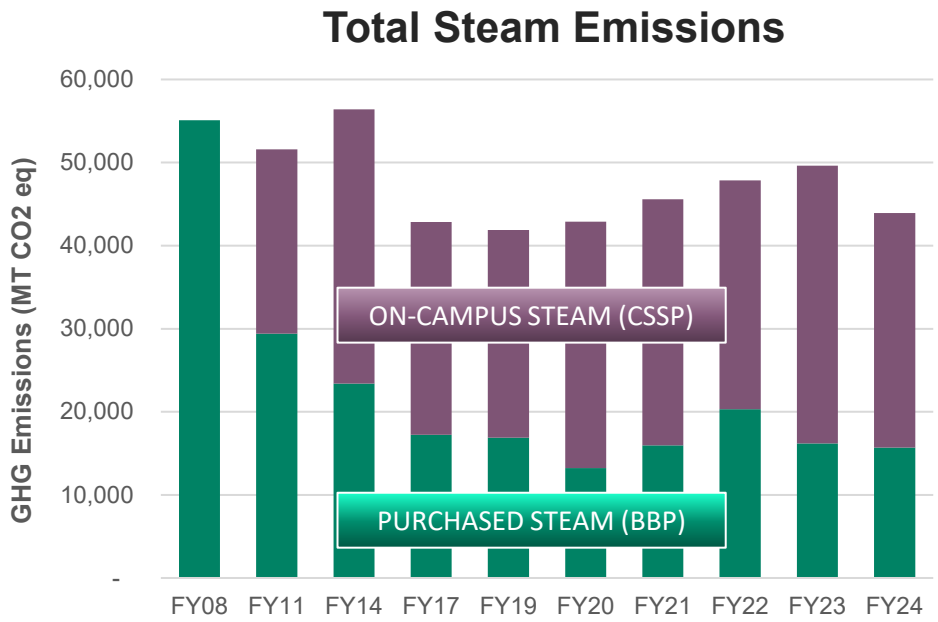
- Compared to the FY08 baseline, fleet vehicle emissions increased more than any other category.
- Pitt's steam is primarily provided by the on-campus CSSP, subsidized by purchased steam from the off-campus BBP .

Steam

On-Campus Steam is 16% of Total Emissions

Total Steam is 26% of Total Emissions





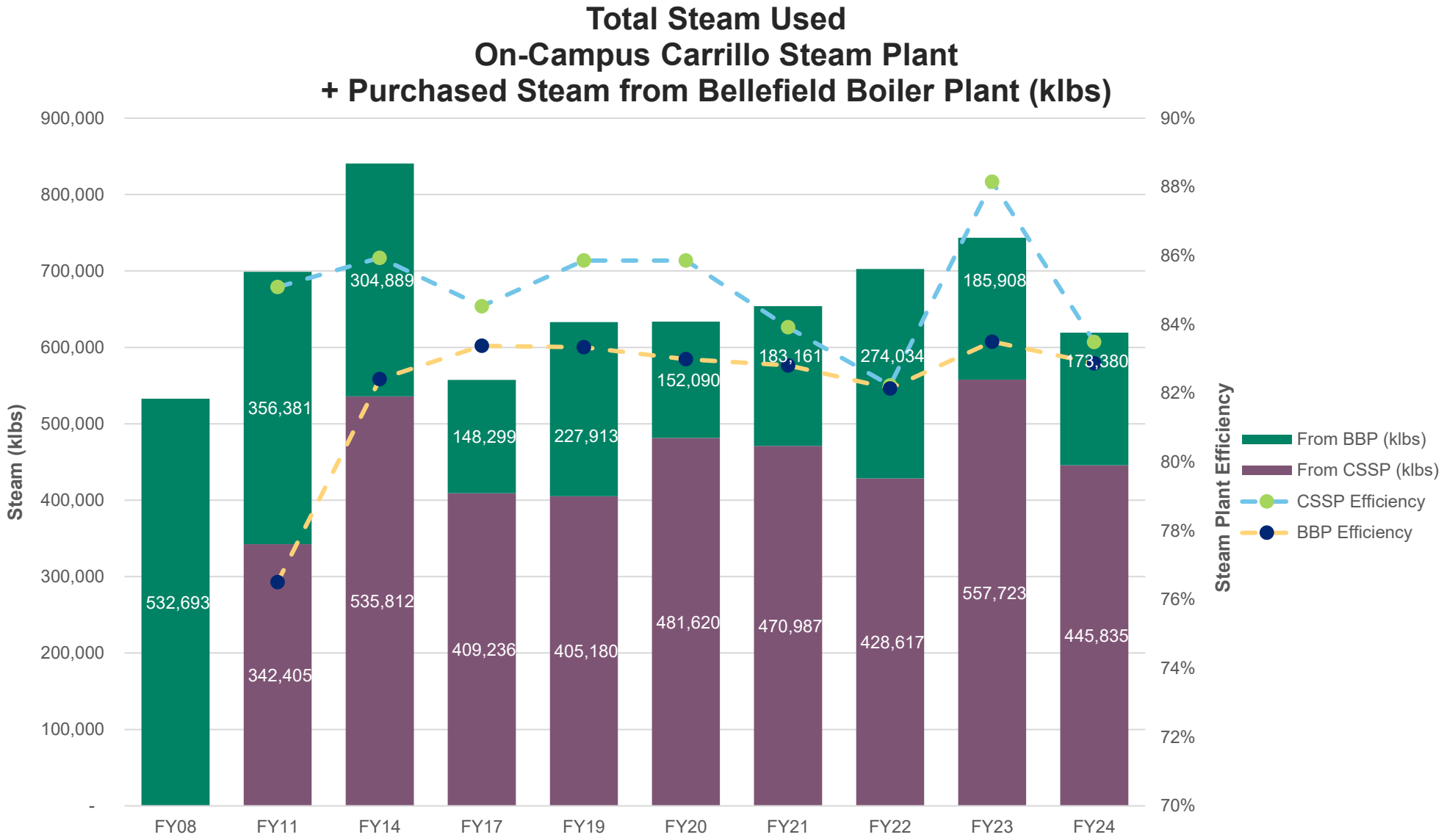
NOTES

- Pitt has Steam emissions in both Scope 1 & 2.
  - Scope 1 = On-Campus Carrillo Street Steam Plant
  - Scope 2 = Purchased from Bellefield Boiler Plant
- Left figure shows Scope 1 GHG emissions only.
- Right figure shows total steam emissions

Data Retrieved Thanks to **Lela Loving & Evan Petrack**

Steam

SCOPE 1
Direct Emissions
From Combustion



Compared to FY23, Heating Degree Days decreased 9% & building square footage decreased 4%.

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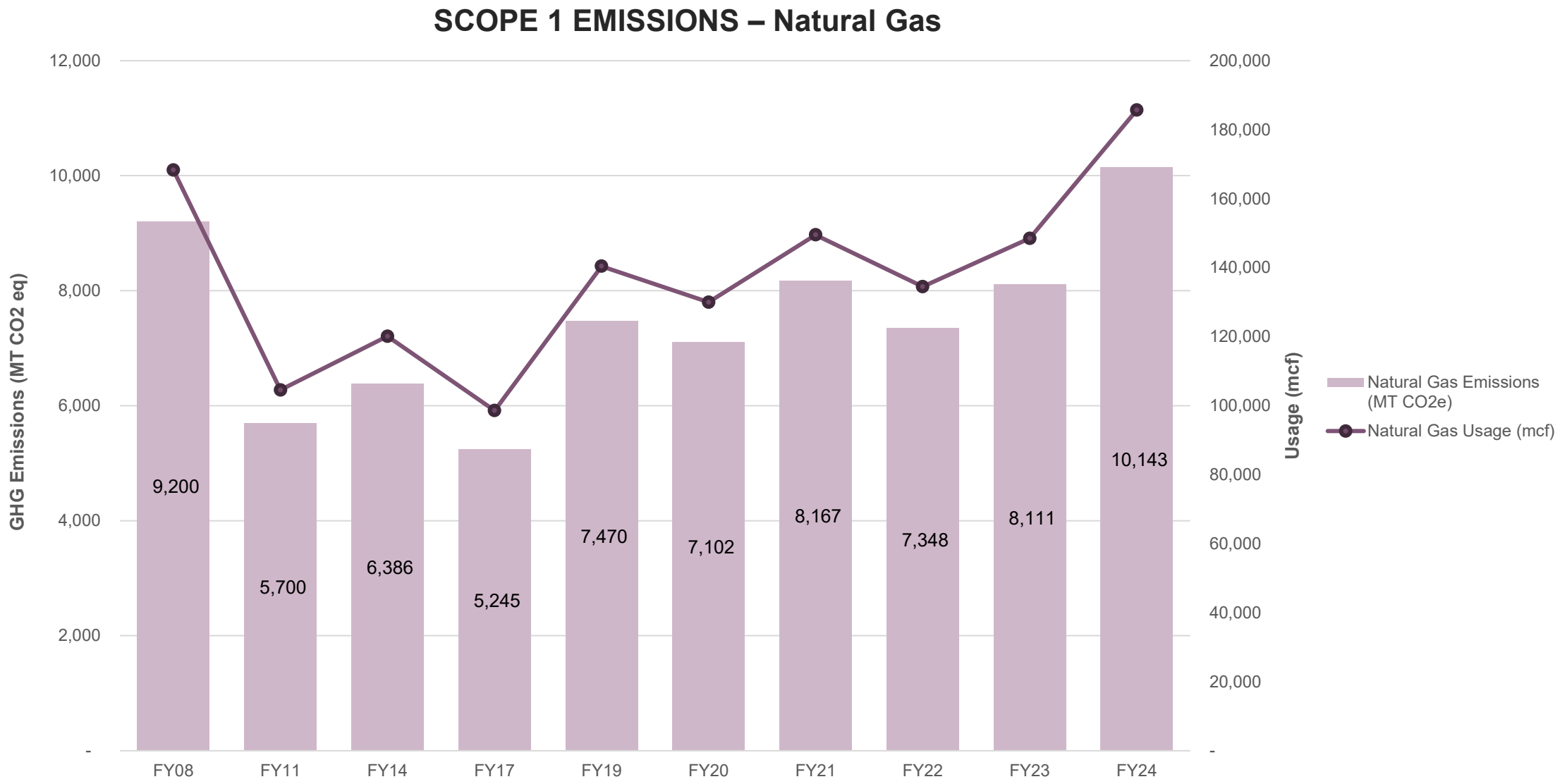
Natural Gas

6% of Total Emissions



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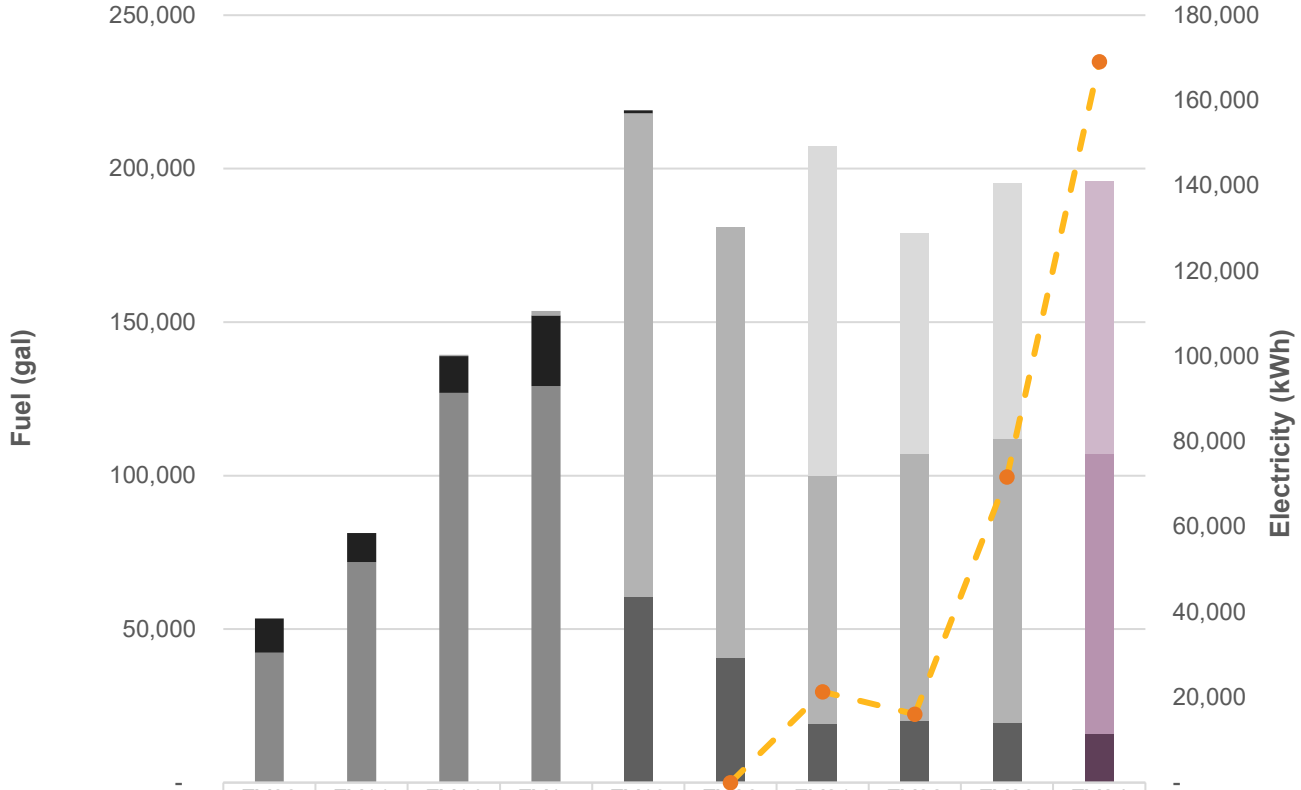
Data Retrieved Thanks to **Lela Loving & Evan Petrack**

Fleet Vehicle Fuel Use & Emissions

SCOPE 1
Direct Emissions
From Combustion

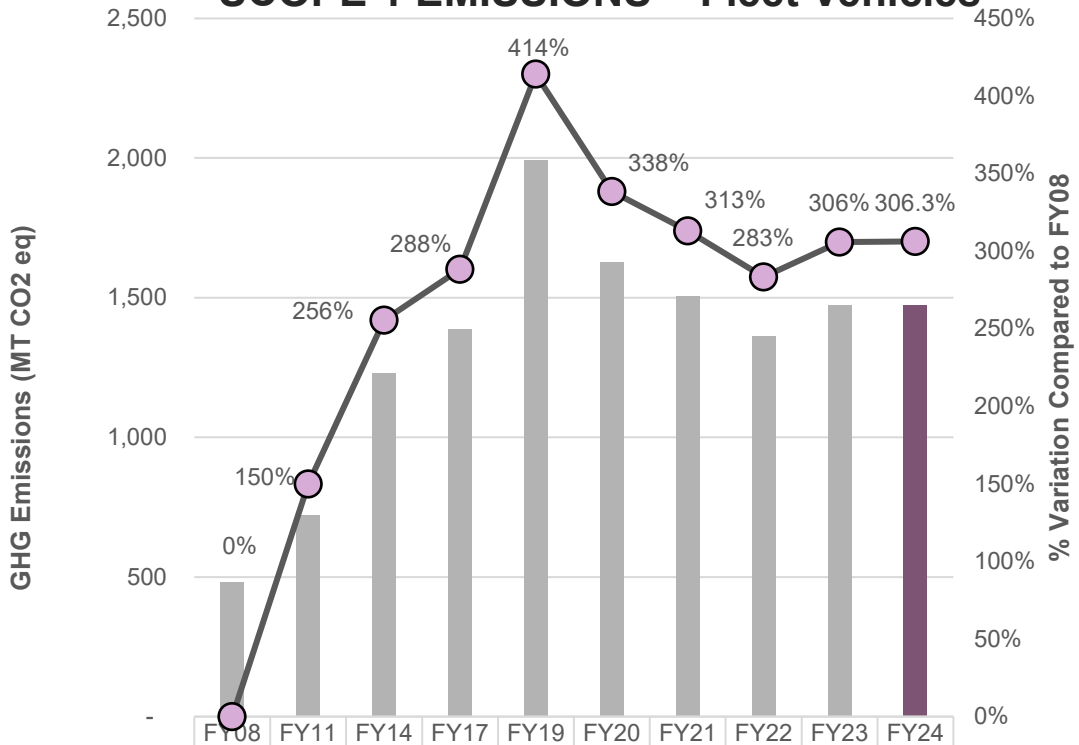
1% of Total Emissions

Year-To-Year Comparison Fleet Fuel Type



	FY08	FY11	FY14	FY17	FY19	FY20	FY21	FY22	FY23	FY24
Other (gal)	-	-	402	1,487	-	-	-	-	-	
Propane (gal)							107,326	71,752	83,276	88,873
Biodiesel (gal)	11,220	9,500	11,976	23,050	994	-	-	-	-	-
Regular (gal)	42,300	71,800	126,973	129,164	-	-	-	-	-	-
Gasoline (gal)	-	-	-	-	157,400	140,172	80,655	87,172	92,391	90,926
Diesel (gal)	-	-	-	-	60,626	40,578	19,277	20,101	19,588	16,010
Electricity (kWh)						-	21,317	16,042	71,653	169,112

SCOPE 1 EMISSIONS – Fleet Vehicles

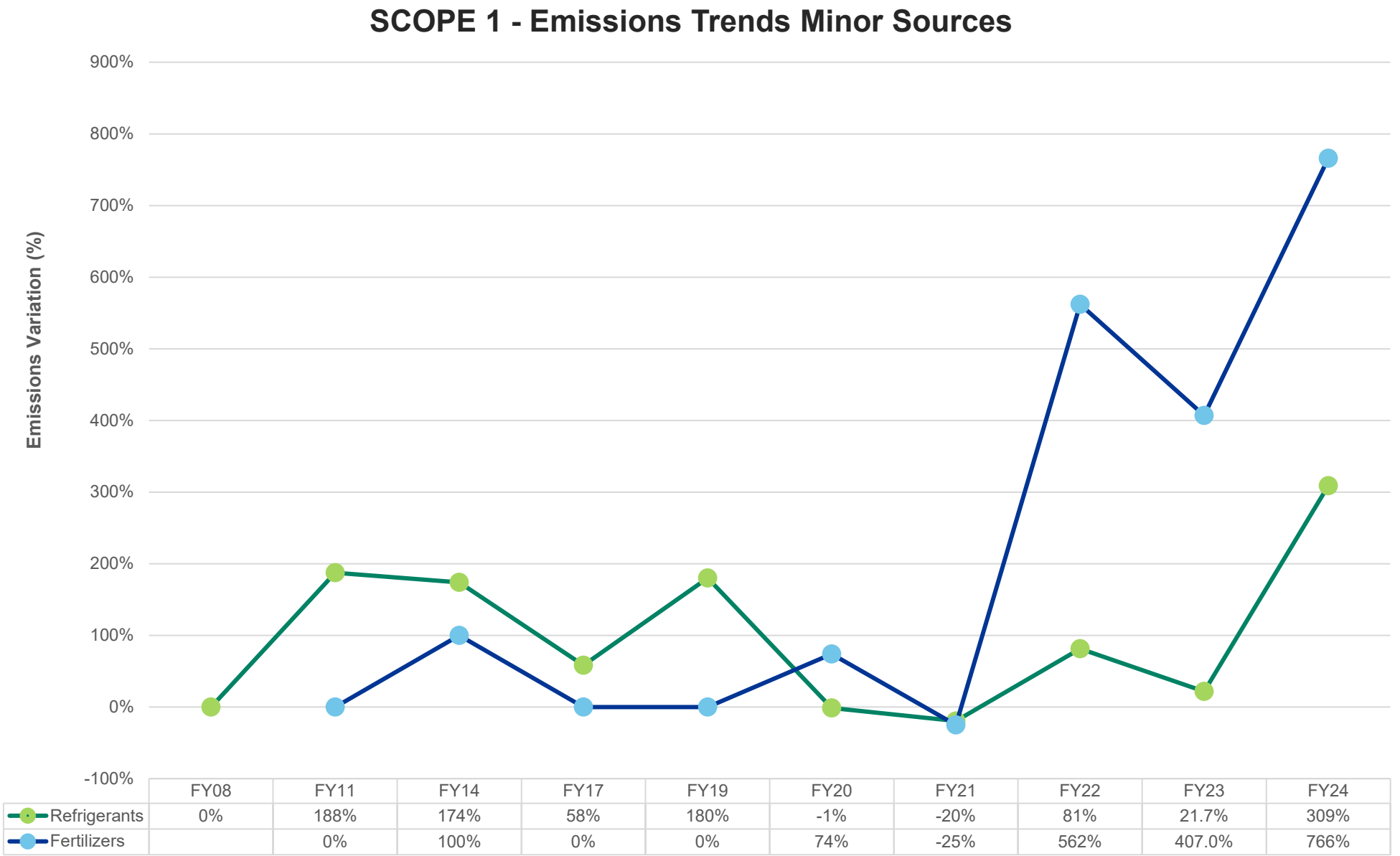


	FY08	FY11	FY14	FY17	FY19	FY20	FY21	FY22	FY23	FY24
Transport Fuels Emissions (MT CO2e)	481	722	1,230	1,388	1,992	1,629	1,506	1,364	1,472	1,474
Variation % from Baseline	0%	150%	256%	288%	414%	338%	313%	283%	306%	306.3%

NOTES

- Despite being externally contracted, University shuttles are included in this category.
- In FY21, Shuttles shifted from biodiesel to propane.

Scope 1: Minor Sources FY24 Trends



	FY08	FY11	FY14	FY17	FY19	FY20	FY21	FY22	FY23	FY24
Refrigerants	0%	188%	174%	58%	180%	-1%	-20%	81%	21.7%	309%
Fertilizers		0%	100%	0%	0%	74%	-25%	562%	407.0%	766%

Refrigerants & Fertilizers are 8% of Scope 1 Emissions

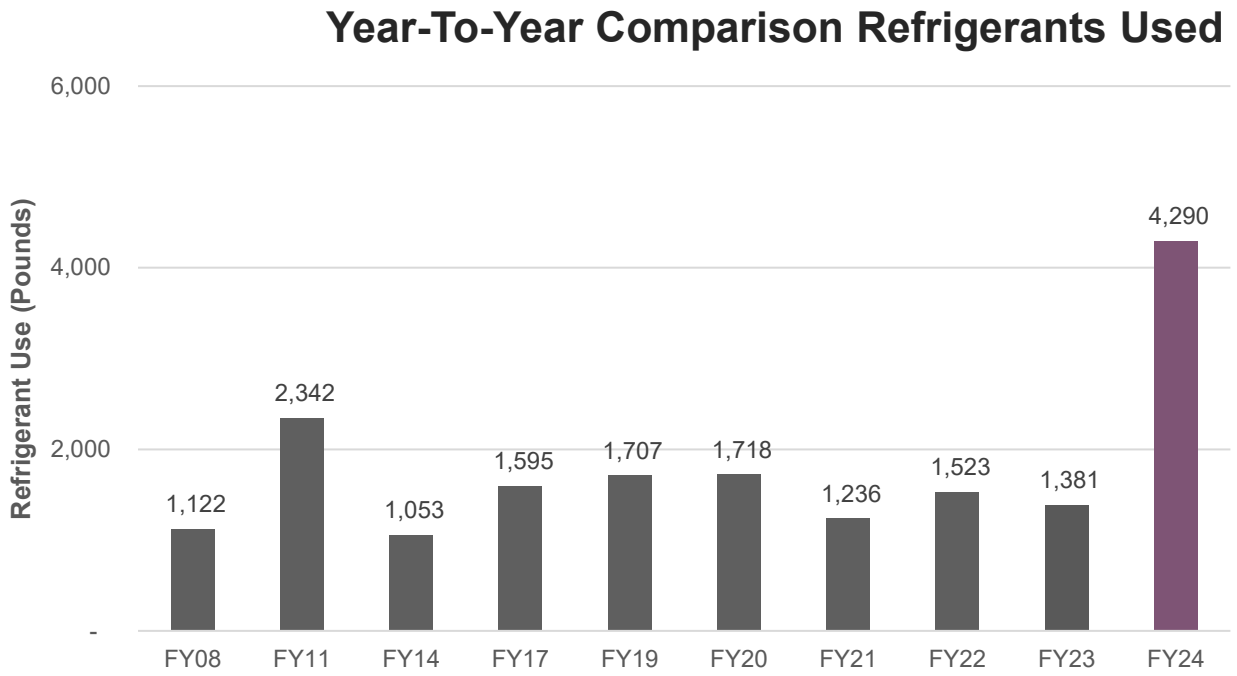
NOTES

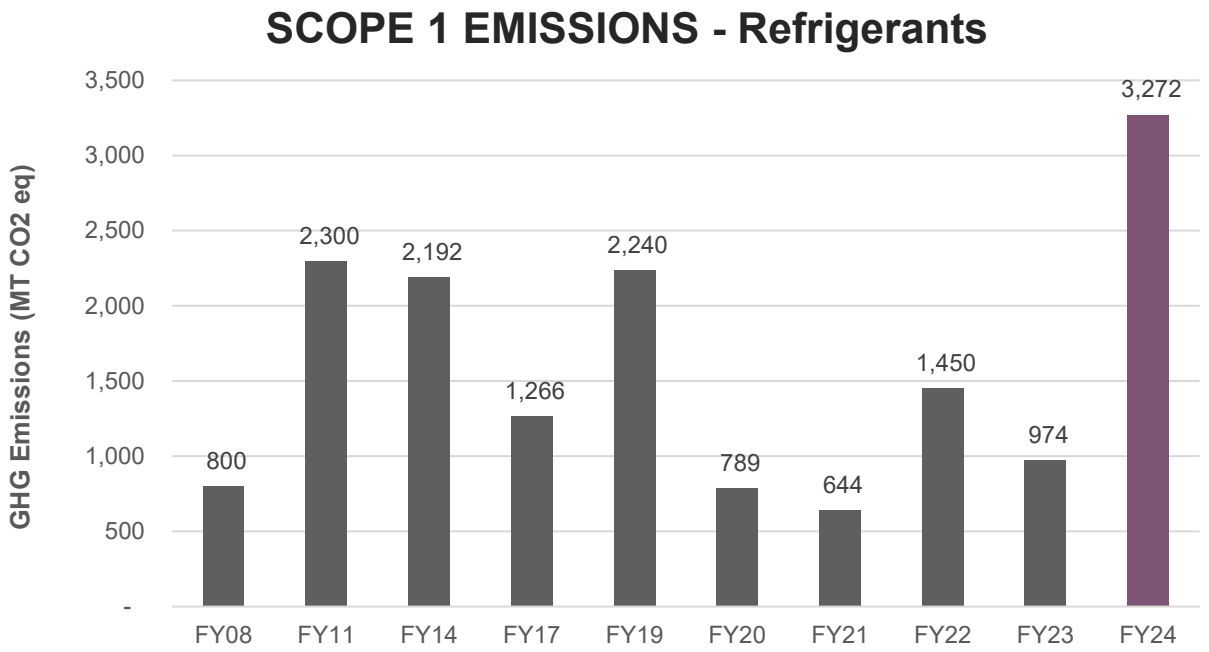
- Refrigerant use varies widely year over year.
- FY22 forward shows correction of fertilizer data entry error.

Refrigerants

2% of Total Emissions

SCOPE 1
Direct Emissions
From Combustion





NOTES

- Refrigerant use varies widely year-over-year.
- Refrigerant use & emissions increased due to 2 large maintenance projects (RIDC & Victoria).
- Since FY08, Pitt has switched to refrigerants with lower GWP.

★ Notable shifts in usage

	Refrigerants			
	Type of Refrigerant	GWP (100 yr)	FY23 (lbs used)	FY24 (lbs used)
★	**R-508A**	**13,214**	**0**	**0**
★	**R-407C**	**1,624**	**92**	**187**
★	**R-404A**	**3,943**	**39**	**122**
★	**R-134a**	**1,430**	**186**	**2,099**
★	**R-410A**	**1,924**	**328**	**800**
	R-22	1,810	286	0
	R-408A	2,430	0	20
	R-448A	1,387	0	0
	R-507	3,985	50	50
★	**R-123**	**77**	**400**	**300**

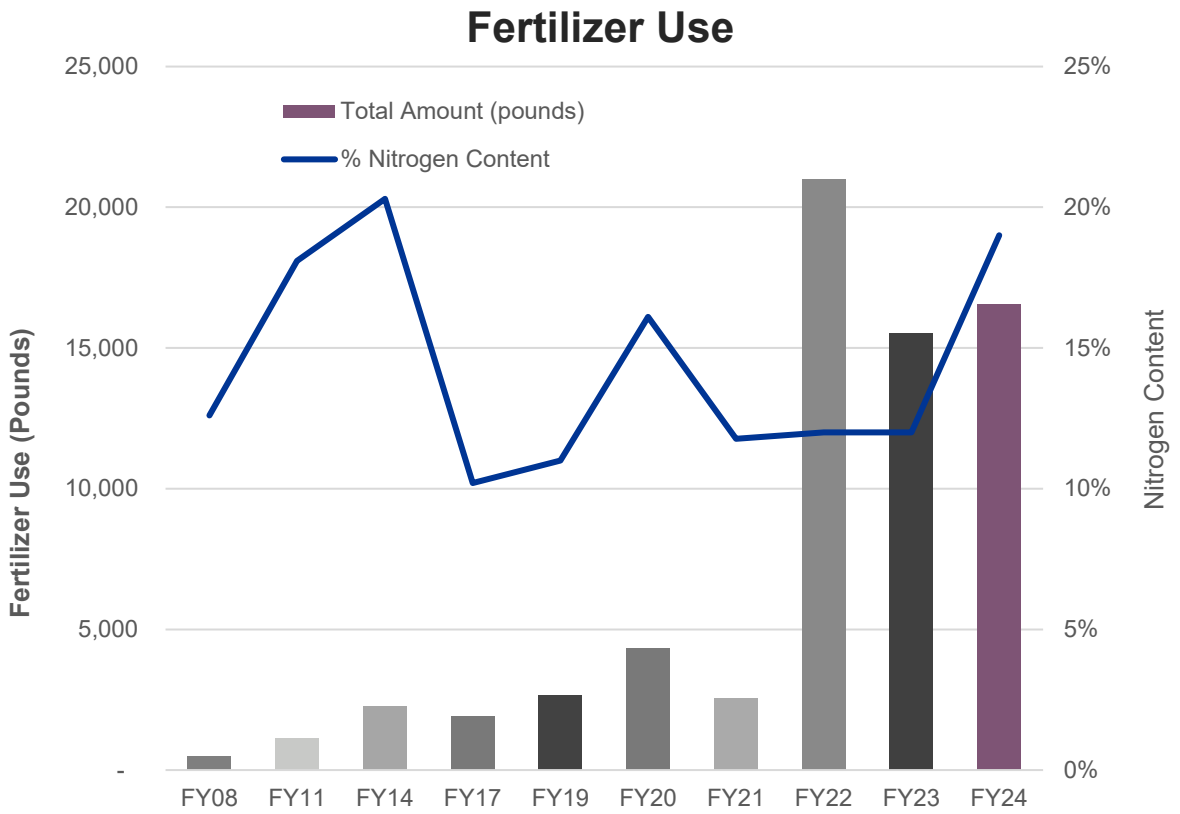
Pitt Sustainability

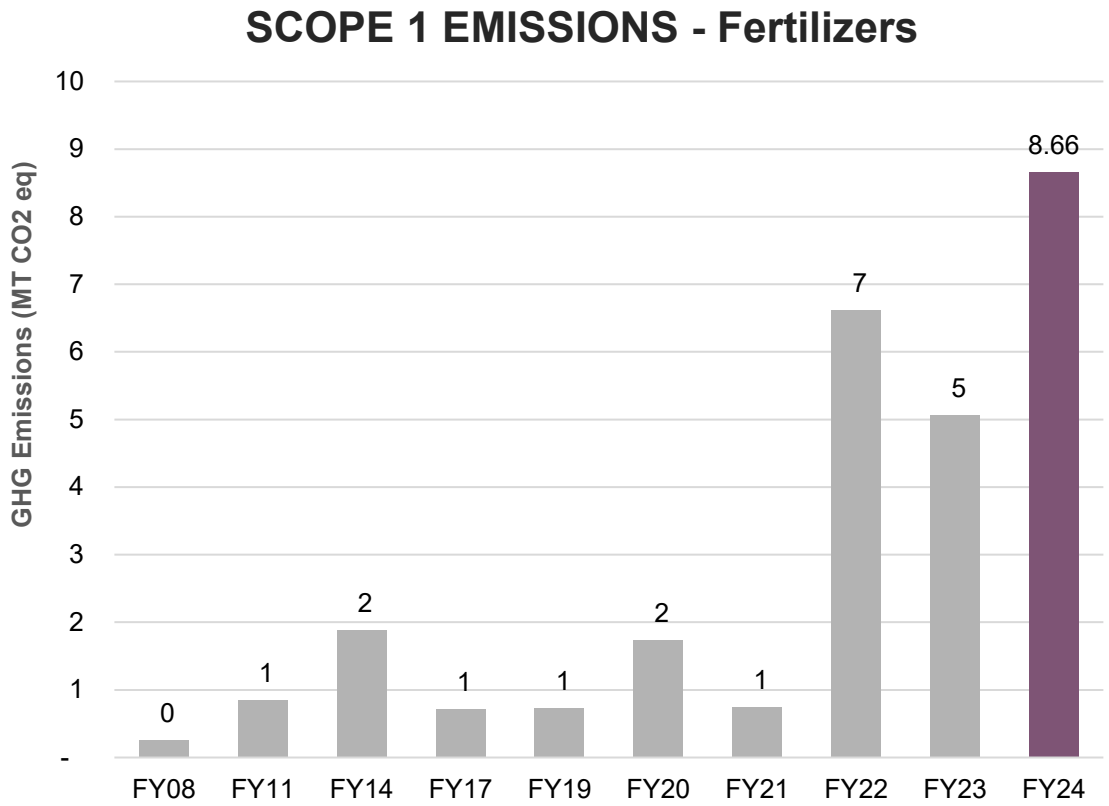
Data Retrieved Thanks to **Wayne Eakin**

Fertilizers

< 0.01% of Total Emissions

SCOPE 1
Direct Emissions
From Combustion





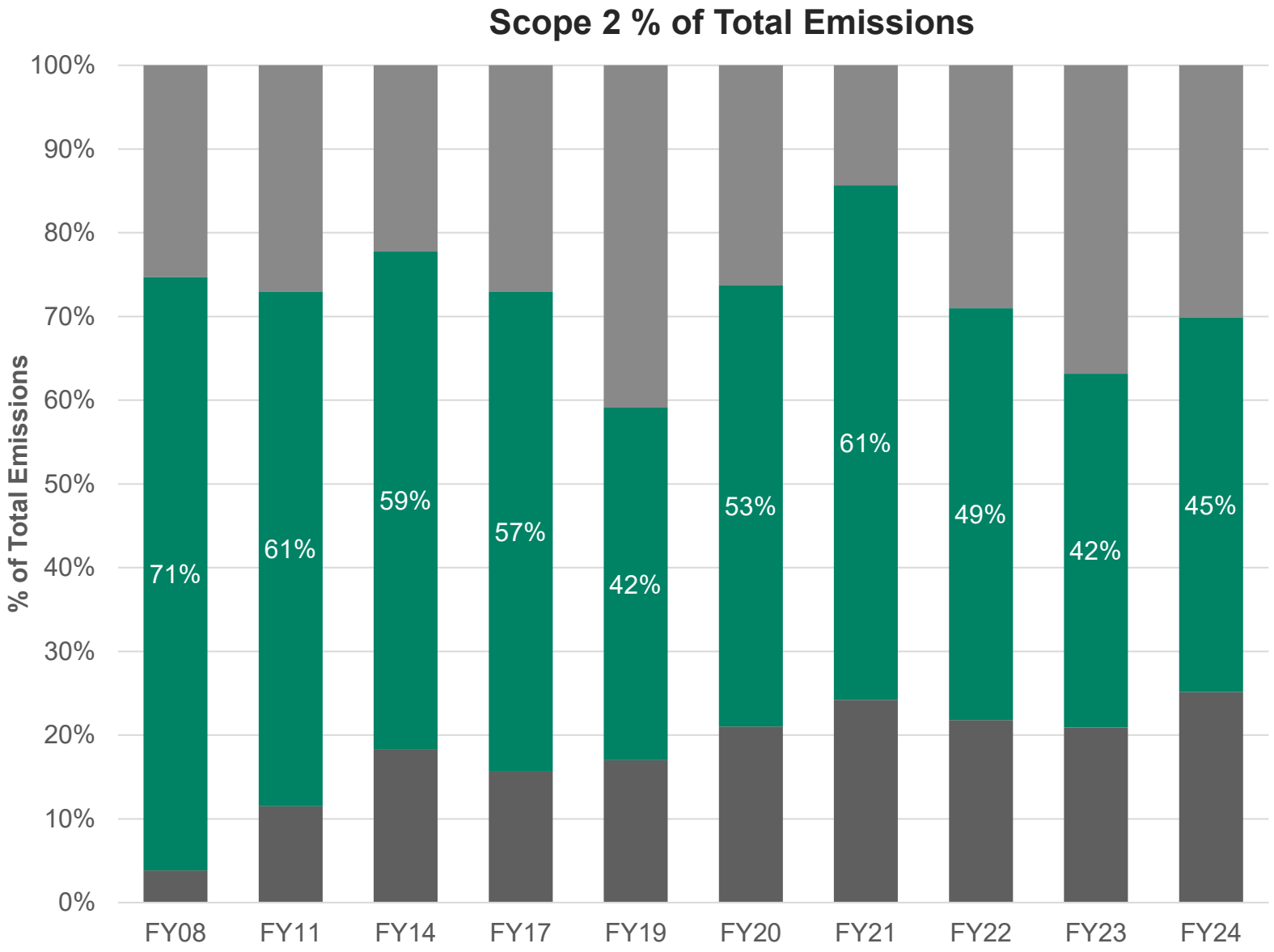
NOTES

- Less fertilizer was used in FY24 compared to FY21.
- Nitrogen content in fertilizer increased in FY24, causing emissions to increase.
- FY08 – FY21 results include a data entry error relating to nitrogen content; FY22 forward, fertilizer use & emissions appear larger due to correction of this error.

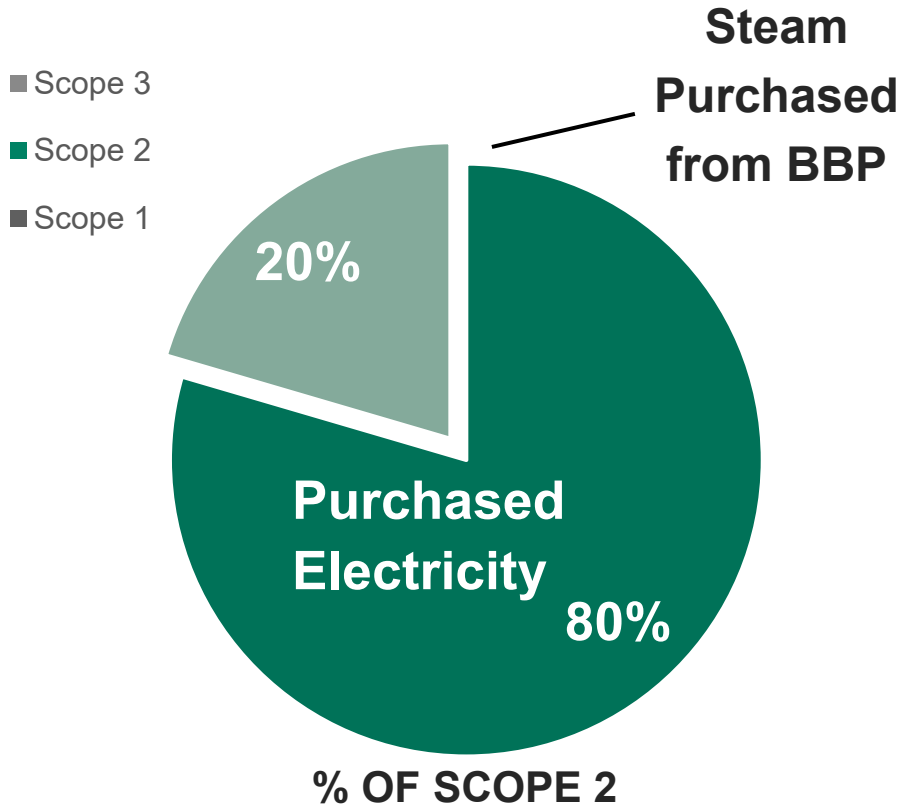
SCOPE 2

INDIRECT EMISSIONS

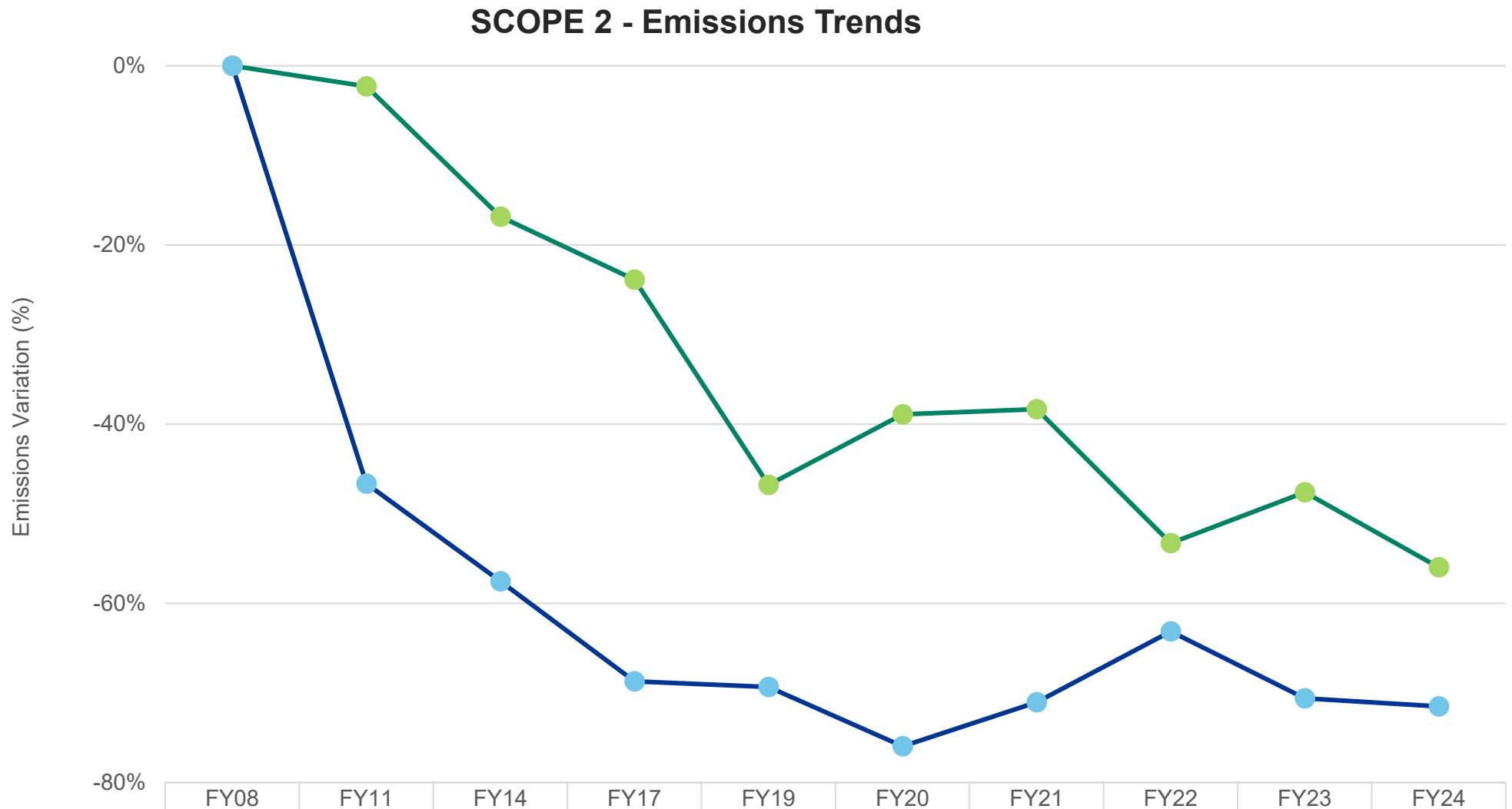
Scope 2 FY24 Trends



Scope 2 is 45% of FY24 GHG Emissions
[76,752 MT CO_2e]



Scope 2 FY24 Trends

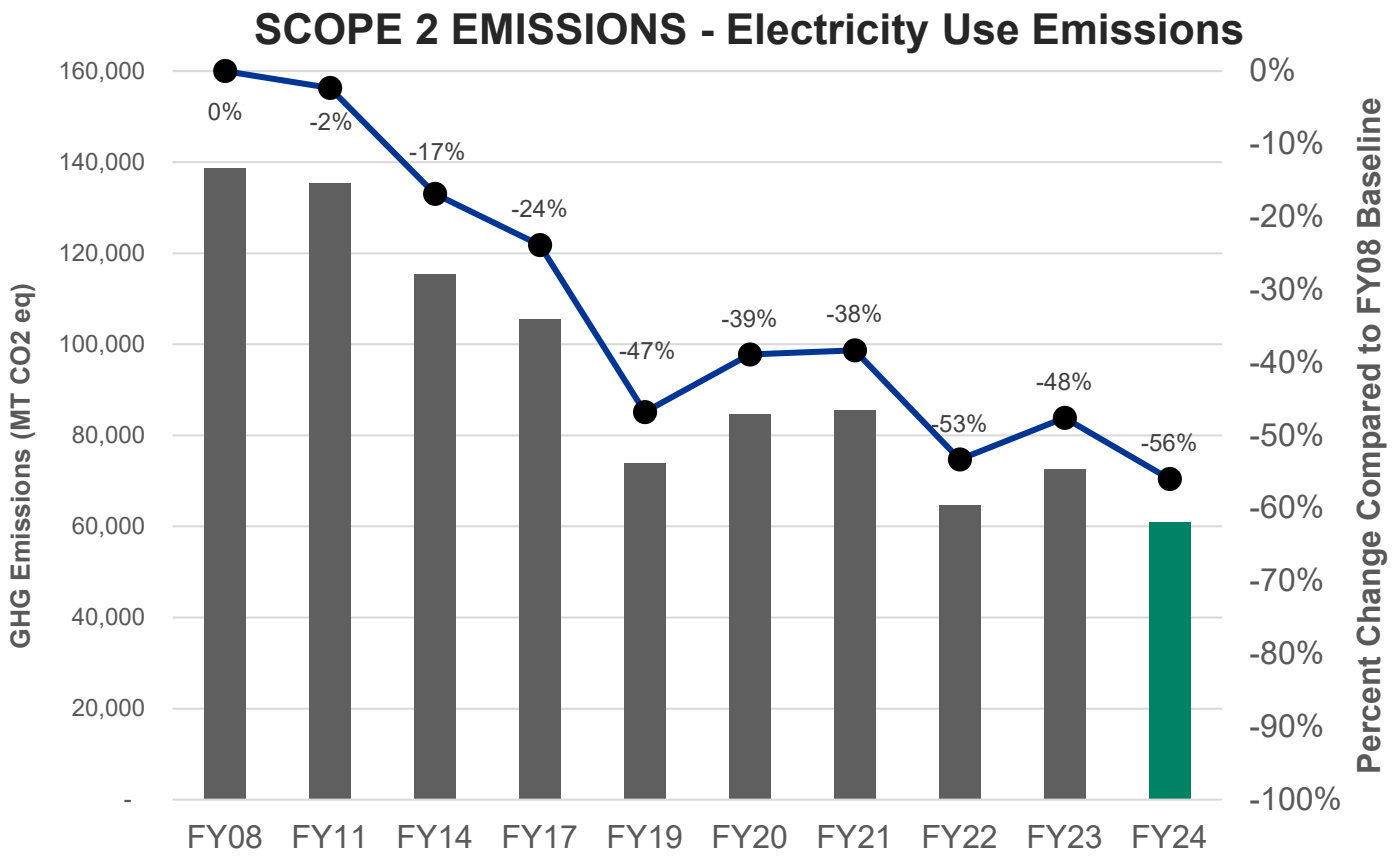


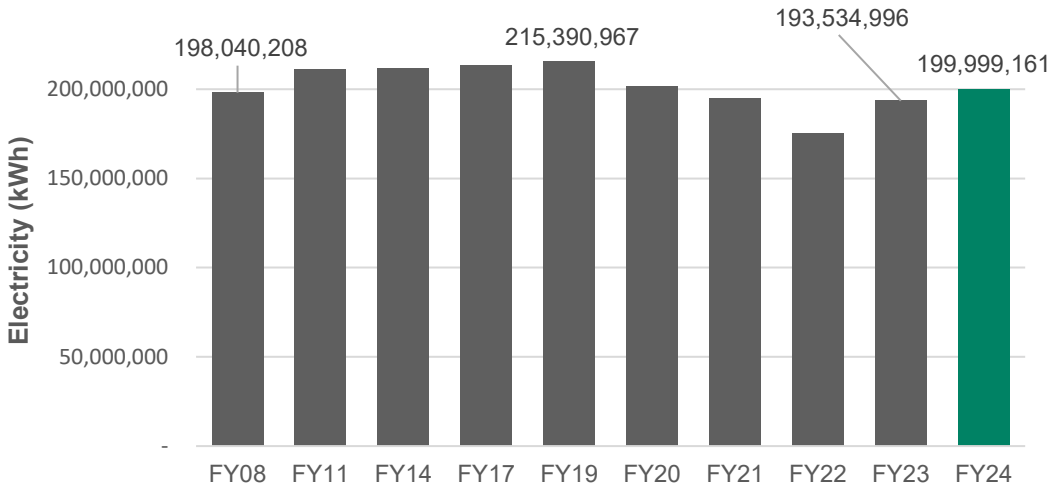
	FY08	FY11	FY14	FY17	FY19	FY20	FY21	FY22	FY23	FY24
Purchased Electricity	0%	-2%	-17%	-24%	-47%	-39%	-38%	-53%	-48%	-56%
Purchased Steam	0%	-47%	-58%	-69%	-69%	-76%	-71%	-63%	-71%	-71%

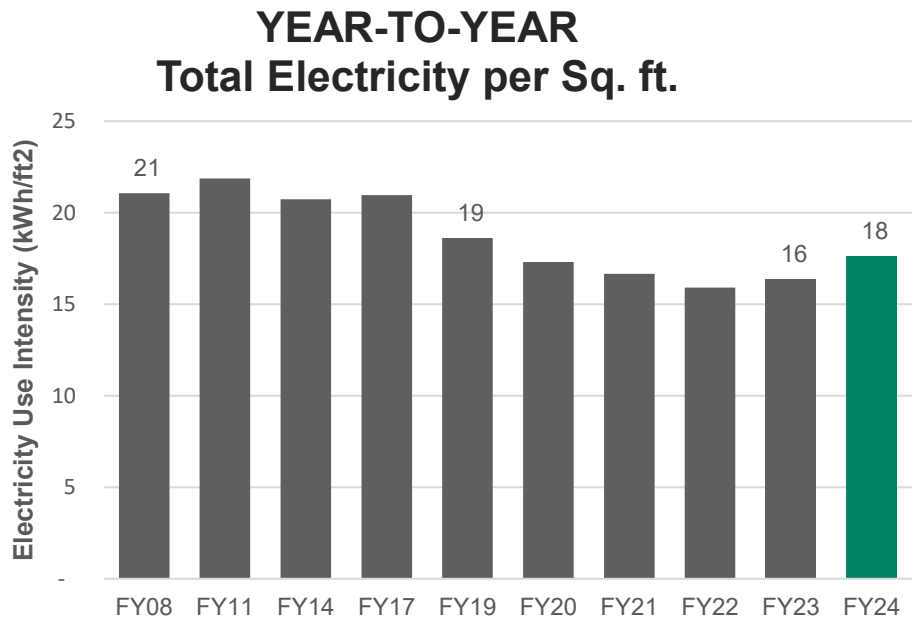
Purchased Electricity

36% of Total Emissions

SCOPE 2
Indirect Emissions





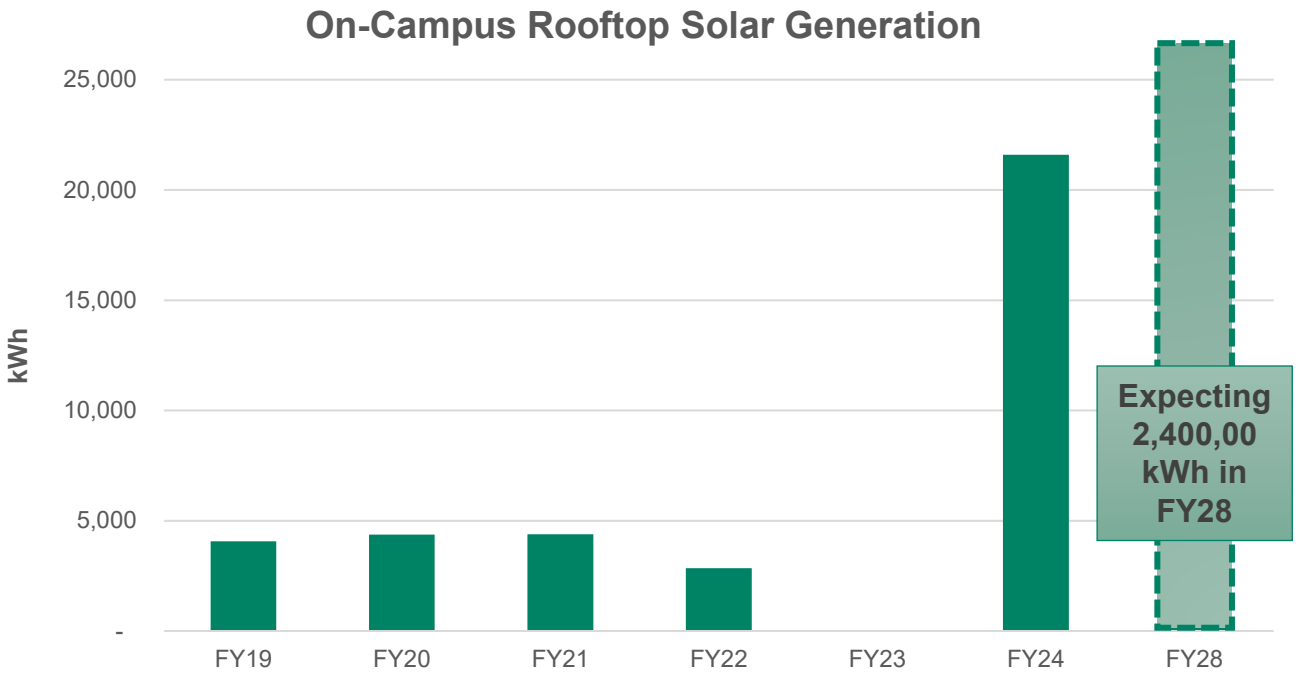


NOTES

- FY24 electricity use decreased from FY19 (pre-pandemic year) but increased from FY23.
- Despite square footage growth from FY08 to present, 56% decrease in electricity-related GHG emissions due to both building efficiency projects & renewable procurement.

On-Campus Solar & REC Procurement

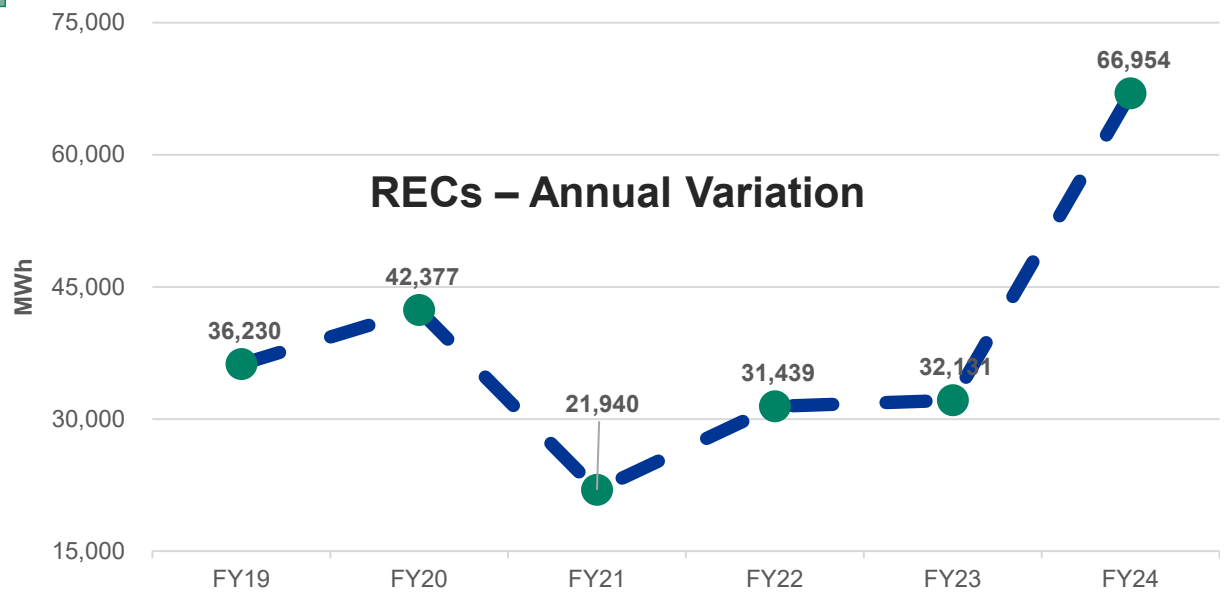
SCOPE 2
Indirect Emissions



REC Supplier	Usage (kWh)
EDF Energy Services, LLC	33,880,023
Verde Energy USA, Inc.	1,788
Green Mountain Energy Company	1,005
Total Unbundled RECs	**33,882,816**
Gaucho Solar PPA *(Traded for Green-e RECs)*	**33,071,592**
Total FY24 RECs	**66,954,408**

NOTES

- Prior to FY19, only minor REC procurement.
- In FY24, Gaucho Solar farm came online on July 1, 2023, & generated 33,071,592 kWh of electricity.
- Pitt's goal is 50% renewable electricity by 2030 & 100% by 2037.

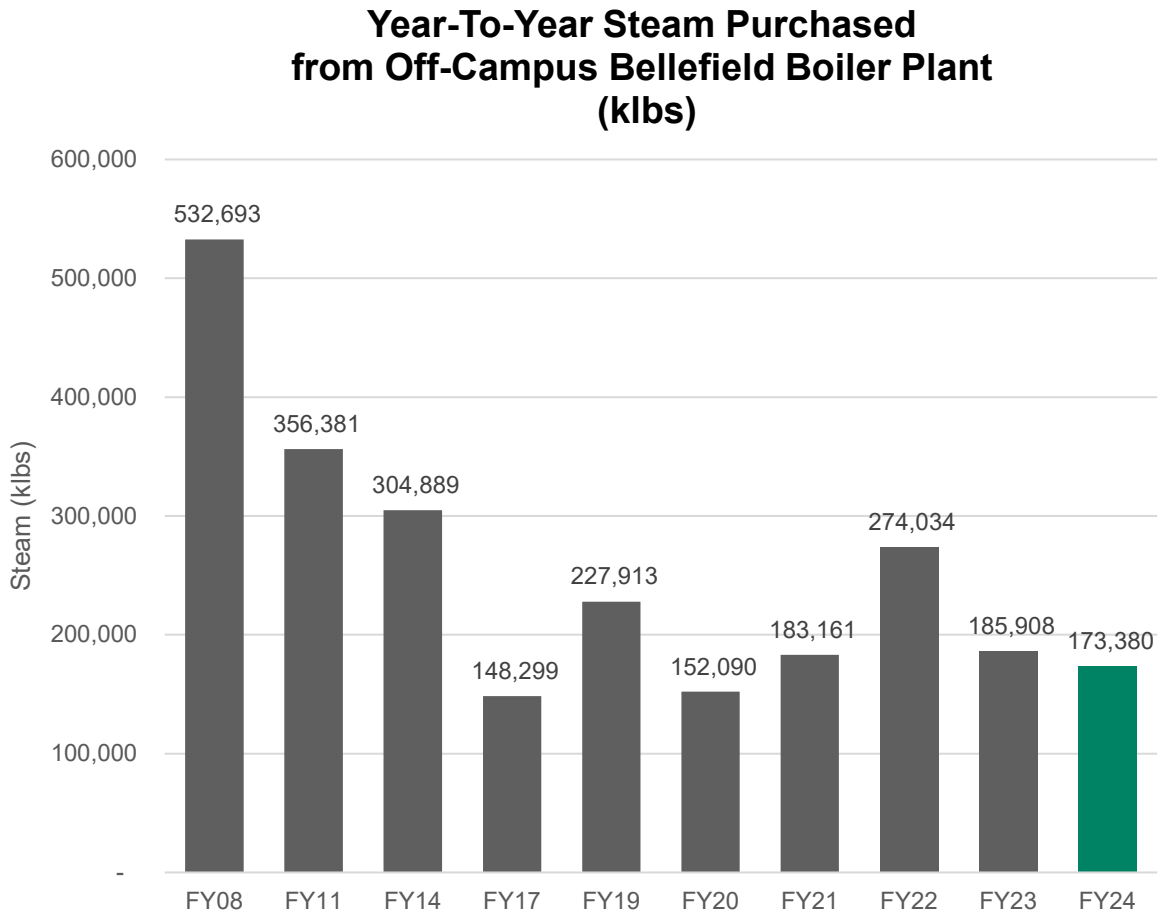


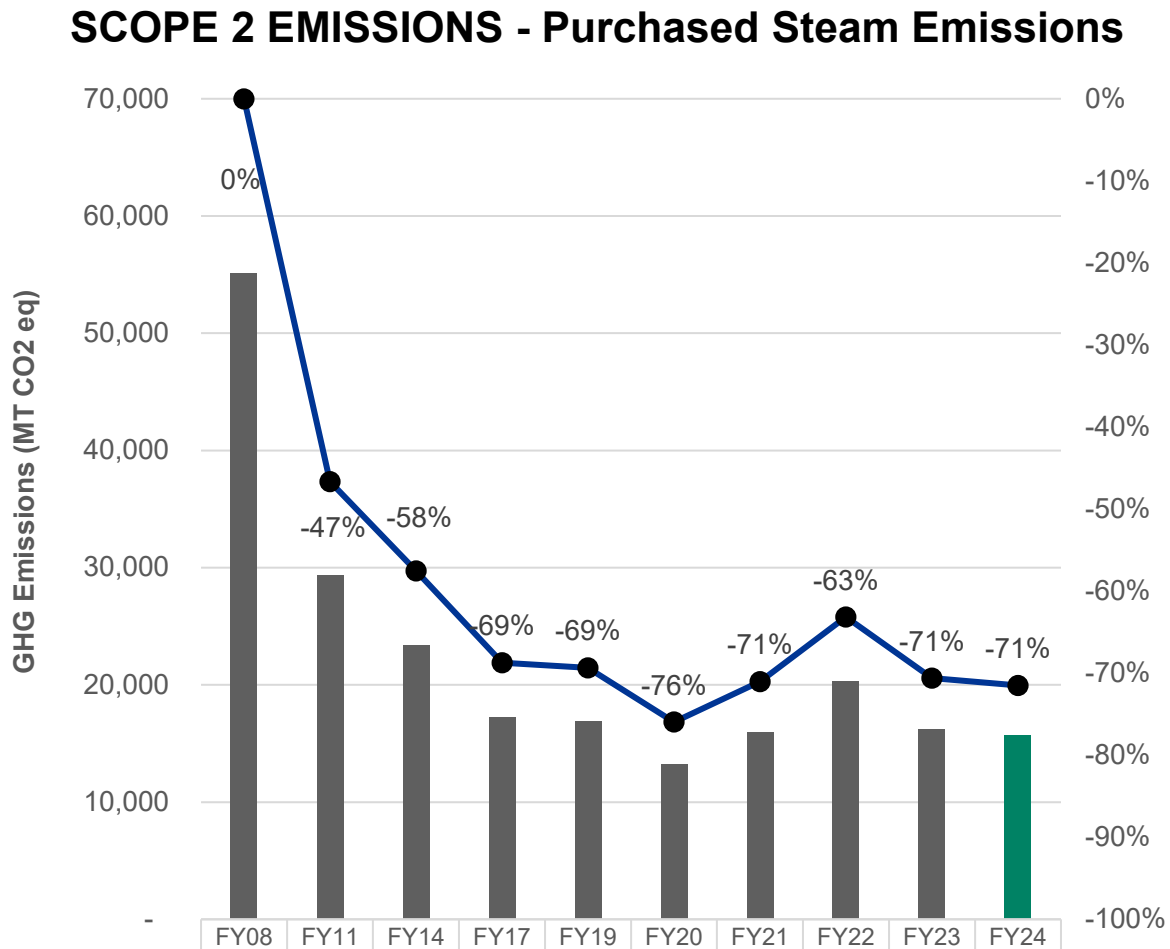
Data Retrieved Thanks to **Aurora Sharrard**

Purchased Steam & Relative Emissions

9% of Total Emissions

SCOPE 2
Indirect Emissions





	FY08	FY11	FY14	FY17	FY19	FY20	FY21	FY22	FY23	FY24
Bellefield Purchased Steam Emissions (MT CO2e)	55,100	29,400	23,404	17,238	16,892	13,247	15,954	20,310	16,193	15,705
Variation % from Baseline	0%	-47%	-58%	-69%	-69%	-76%	-71%	-63%	-71%	-71%

NOTES

- In FY24, purchased steam use & GHG emissions decreased because there were fewer heating degree days.
- Total steam use decreased (Scope 1 + 2).

SCOPE 3

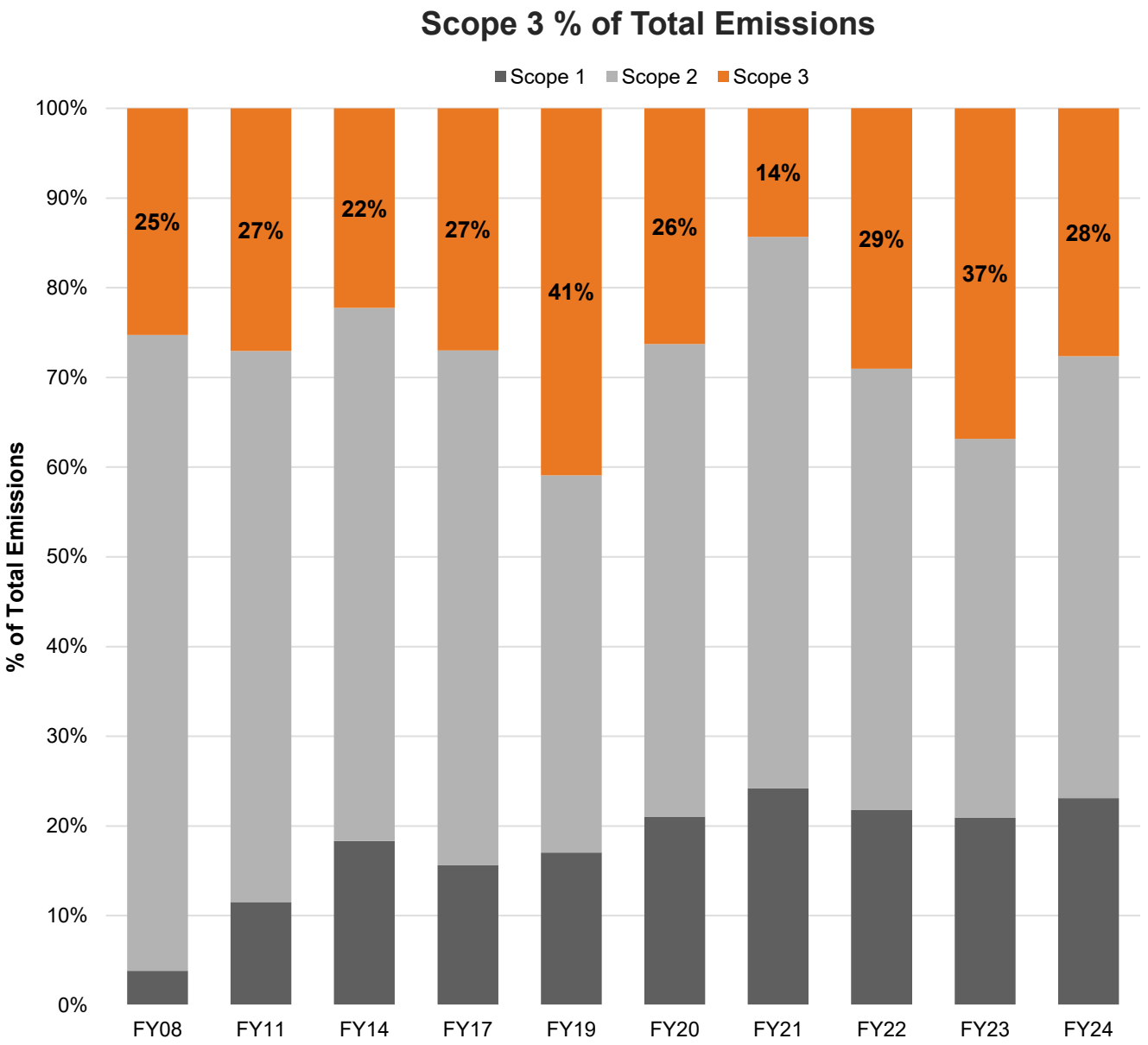
OTHER INDIRECT EMISSIONS

Pitt Sustainability

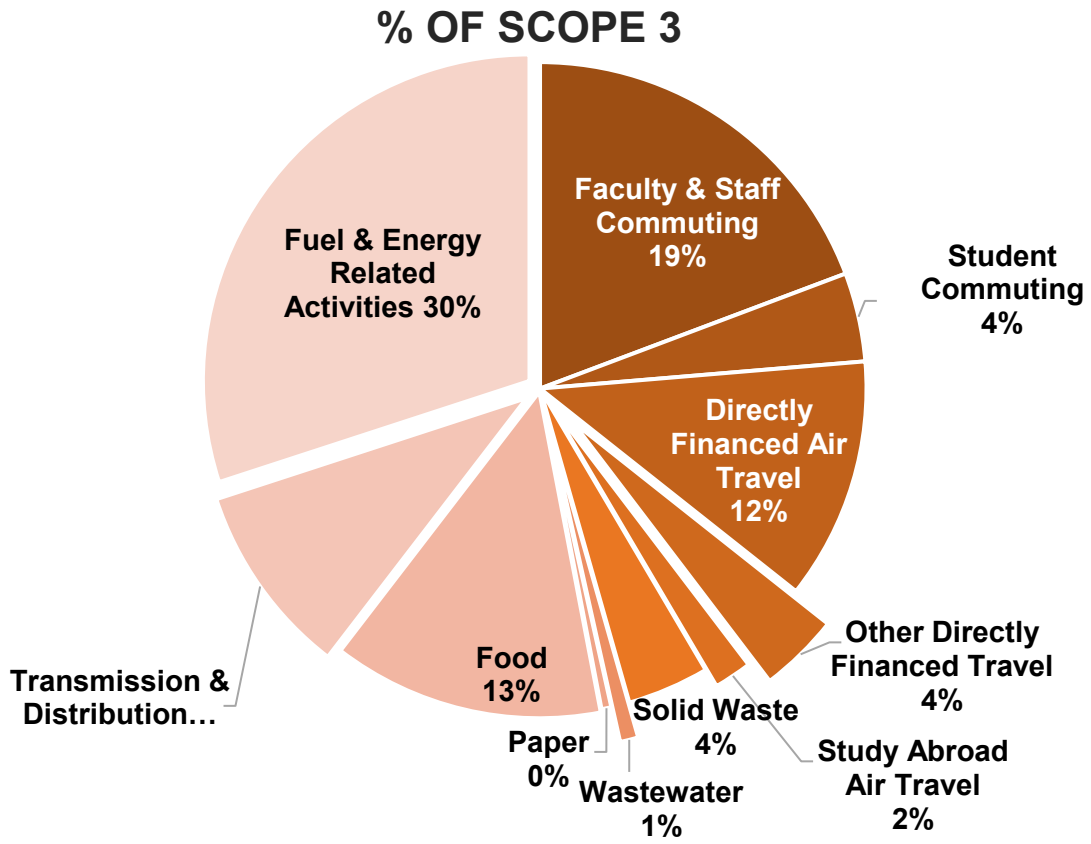
University of Pittsburgh

Fiscal Year 2024

Scope 3 FY24 Trends – Travel



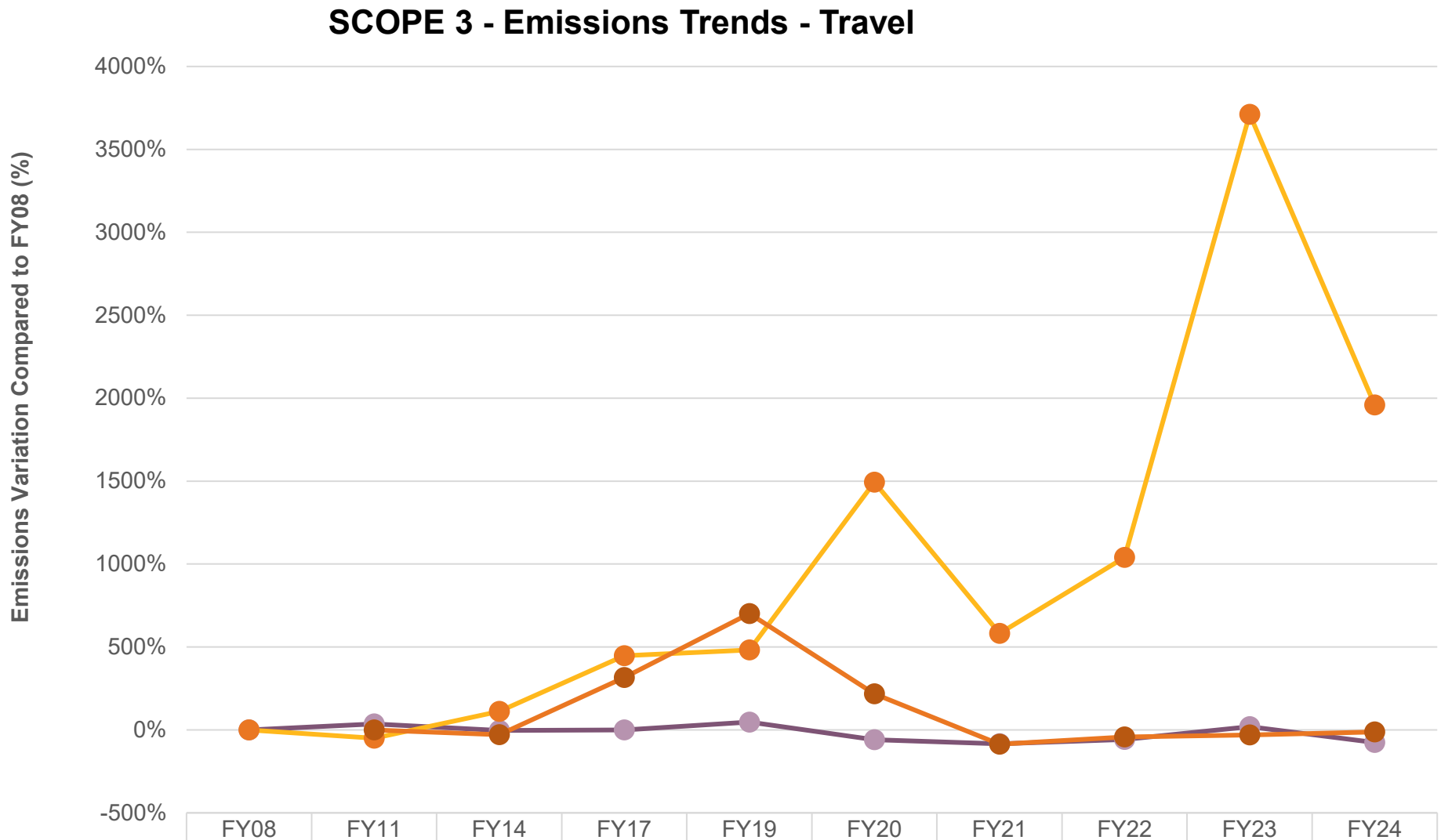
Scope 3 accounts for 28% of Total Emissions [51,602 MT CO_2e]



NOTES

- Scope 3 emissions have returned to pre-pandemic levels.
- FY24 Travel GHG emissions were influenced by a very large decrease in Directly Financed Air Travel caused by a FY23 data aberration .

Scope 3 FY24 Trends – Travel



	FY08	FY11	FY14	FY17	FY19	FY20	FY21	FY22	FY23	FY24
Directly Financed Air Travel	0%	35%	-4%	0%	47%	-59%	-84%	-58%	20%	-75%
Other Directly Financed Travel	0%	-50%	111%	448%	482%	1493%	583%	1040%	3712%	1959%
Study Abroad Air Travel		0%	-30%	316%	701%	217%	-86%	-43%	-30%	-12%

Travel is **5% of FY24 GHG Emissions** (-11% from FY23)

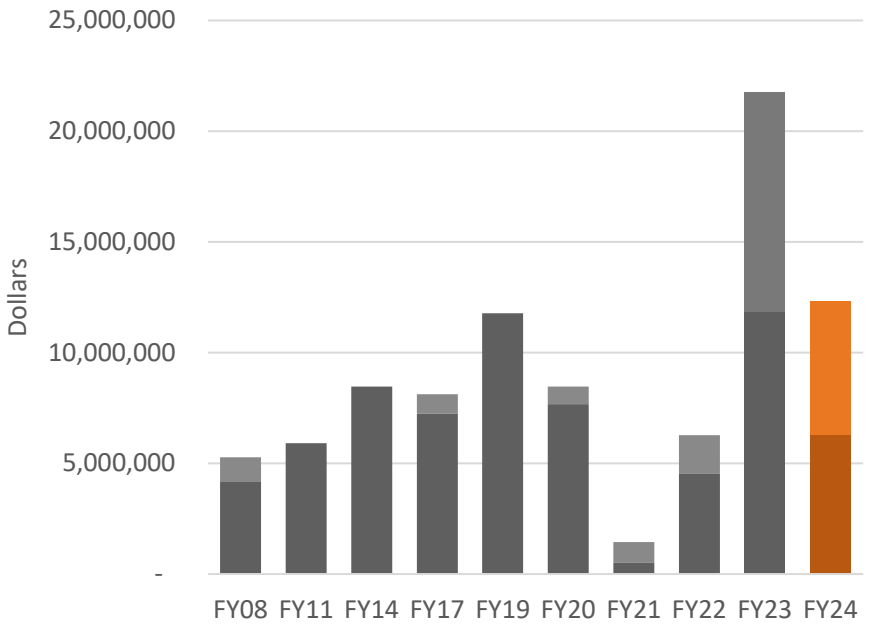
NOTE

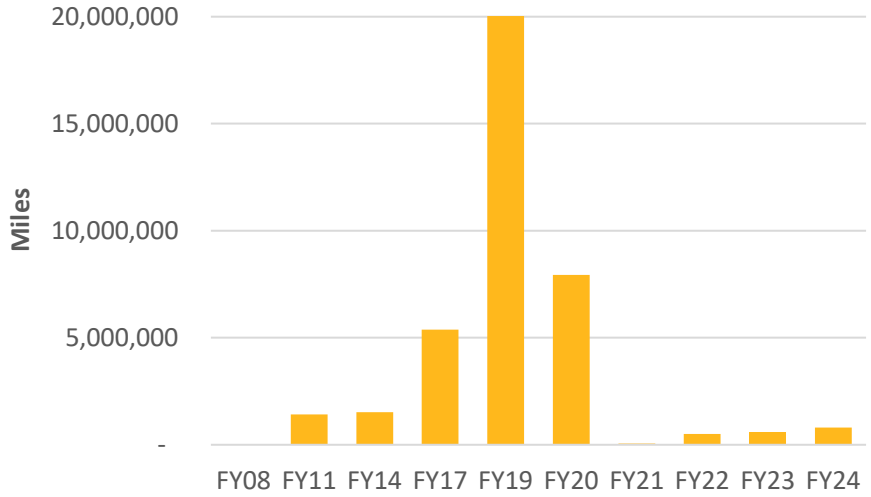
- FY20-22 Pandemic-Influenced
- FY22 & FY24 - Personal car travel reimbursement data not provided.

Directly Financed Travel & Study Abroad

SCOPE 3
Other Indirect Emissions

AIR TRAVEL





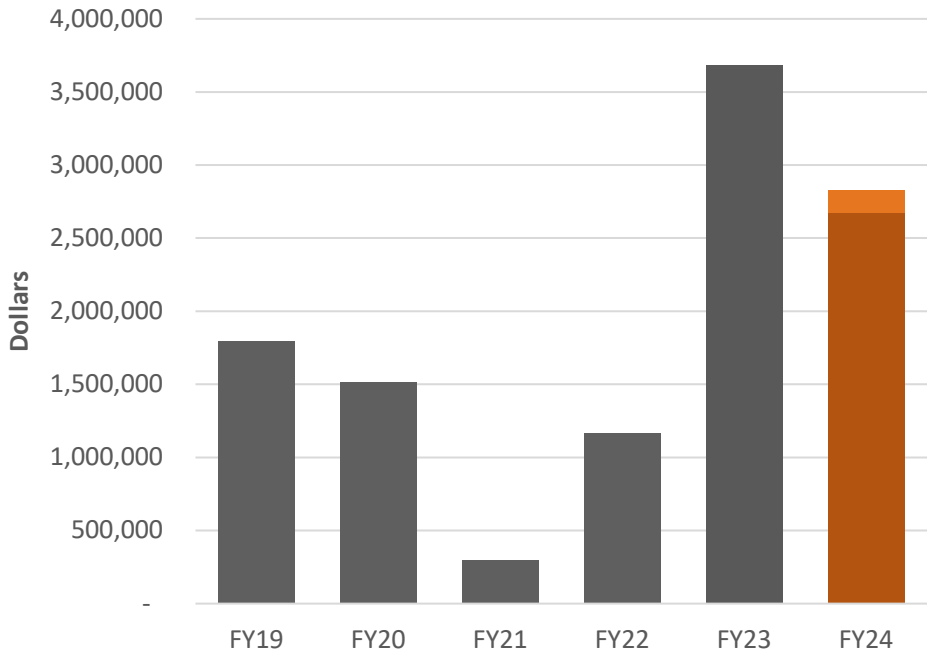
49% Athletics

51% Faculty & Staff

Study Abroad

NOTES
- Not adjusted for inflation.
- FY11, FY14, & FY19 - Athletics data not provided.
- Growth in Athletics air travel linked to increased ACC geography.

CAR TRAVEL

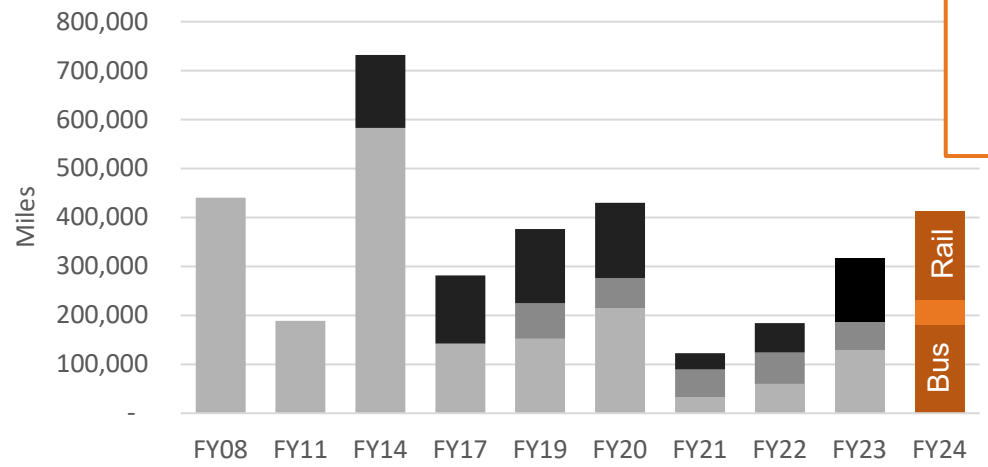


6% Athletics

94% Faculty & Staff

NOTES
- Not adjusted for inflation
- FY21 & FY22 – Pandemic-influenced
- FY22 & FY24 - Personal car travel reimbursement data not provided.

BUS & RAIL TRAVEL



Faculty & Staff

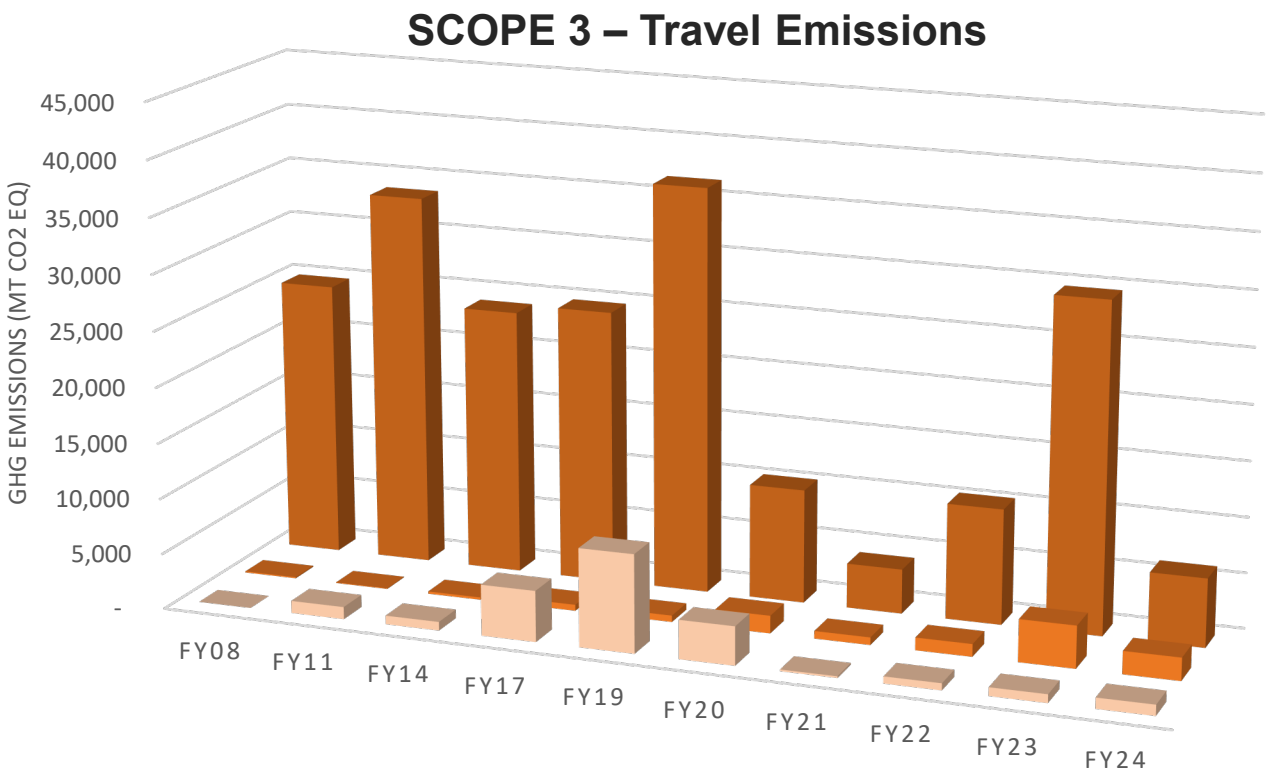
87%

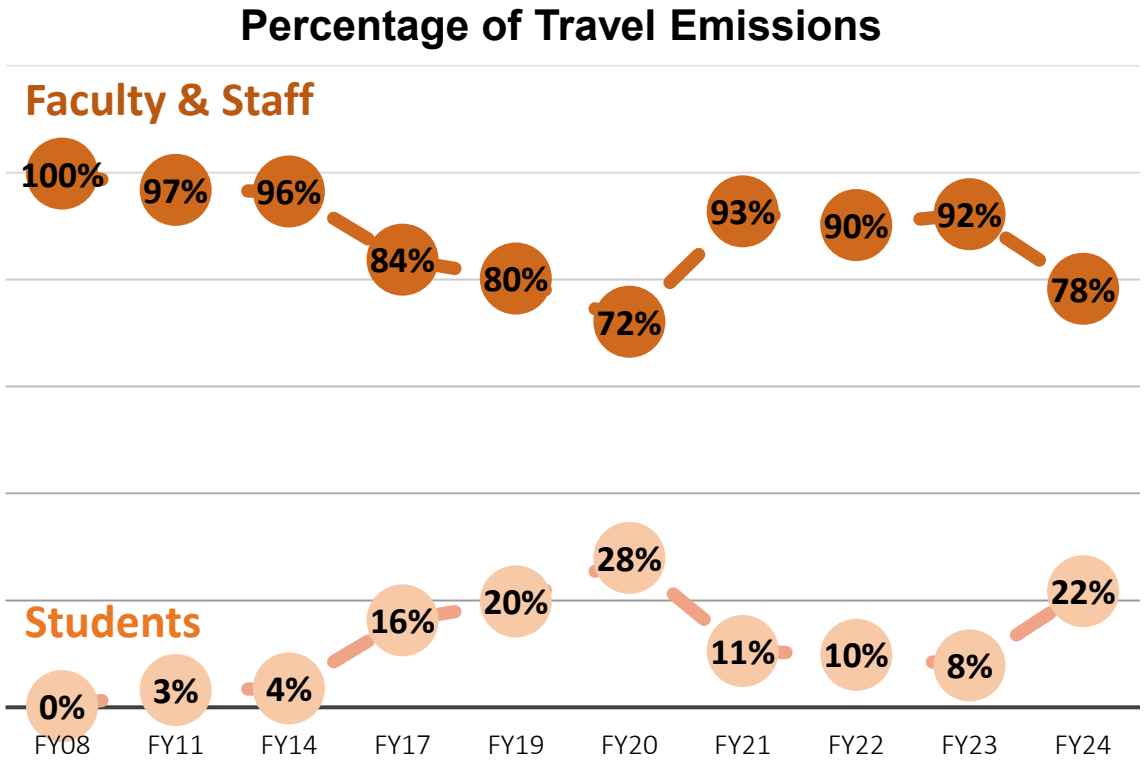
13% Athletics

Data Retrieved Thanks to **Nazir Noori, Ryan Varley, John Senter, Jason Rickel, Emily Duchene & Lauren Leonard**

Directly Financed Travel & Study Abroad

5.4% of Total Emissions

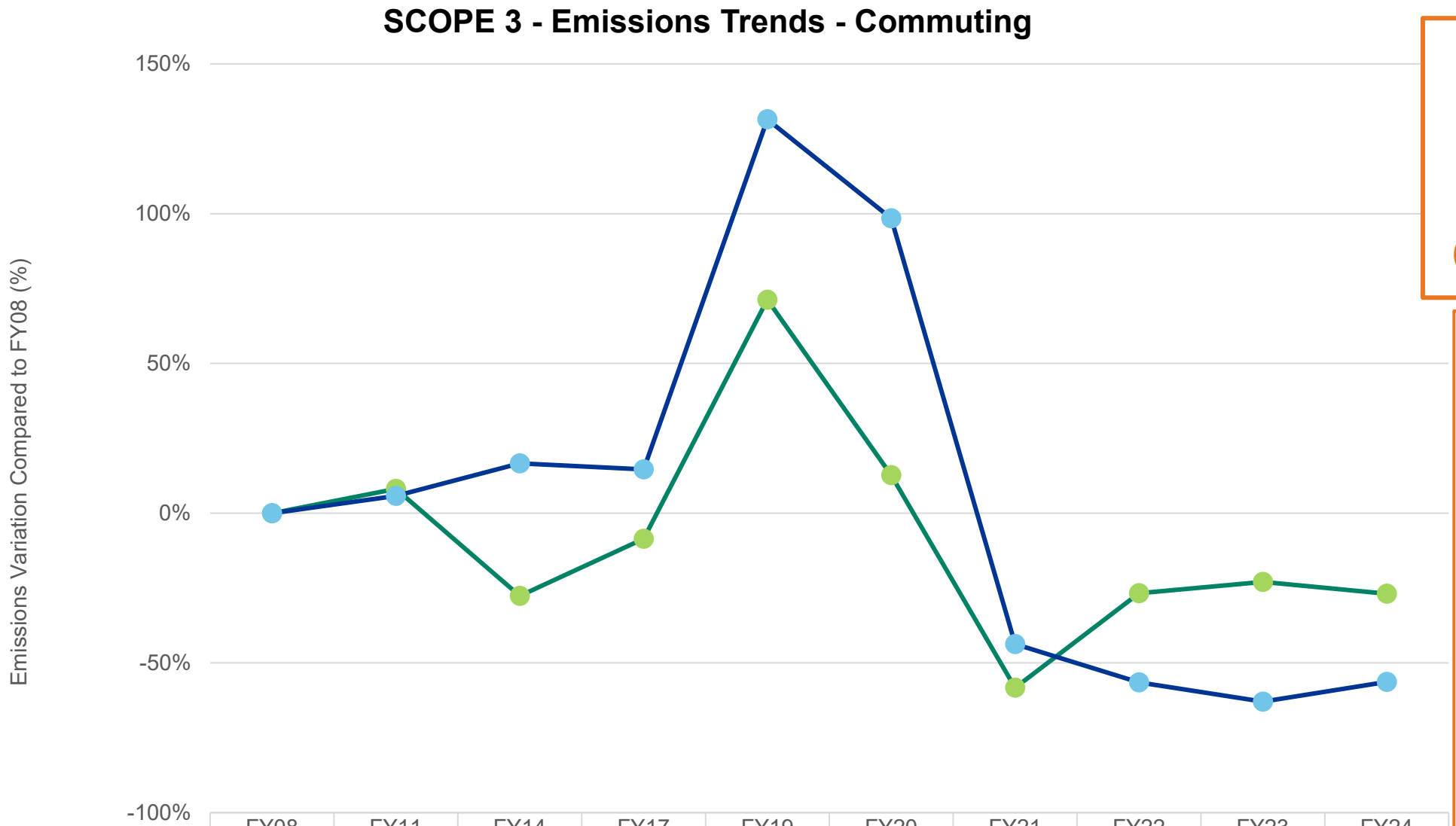




	FY08	FY11	FY14	FY17	FY19	FY20	FY21	FY22	FY23	FY24
Study Abroad	-	1,100	775	4,578	8,816	3,489	153	626	765	971
Ground Travel	100	50	211	548	582	1,593	683	1,140	3,812	2,059
Directly Financed Air Travel	24,800	33,600	23,921	24,706	36,560	10,273	4,018	10,400	29,651	6,187

Data Retrieved Thanks to **Nazir Noori, Ryan Varley, John Senter, Jason Rickel, Emily Duchene & Lauren Leonard**

Scope 3 FY24 Trends – Commuting



	FY08	FY11	FY14	FY17	FY19	FY20	FY21	FY22	FY23	FY24
Faculty & Staff Commuting	0%	8%	-28%	-9%	71%	13%	-58%	-27%	-23%	-27%
Students Commuting	0%	6%	17%	15%	131%	98%	-44%	-56%	-63%	-56%

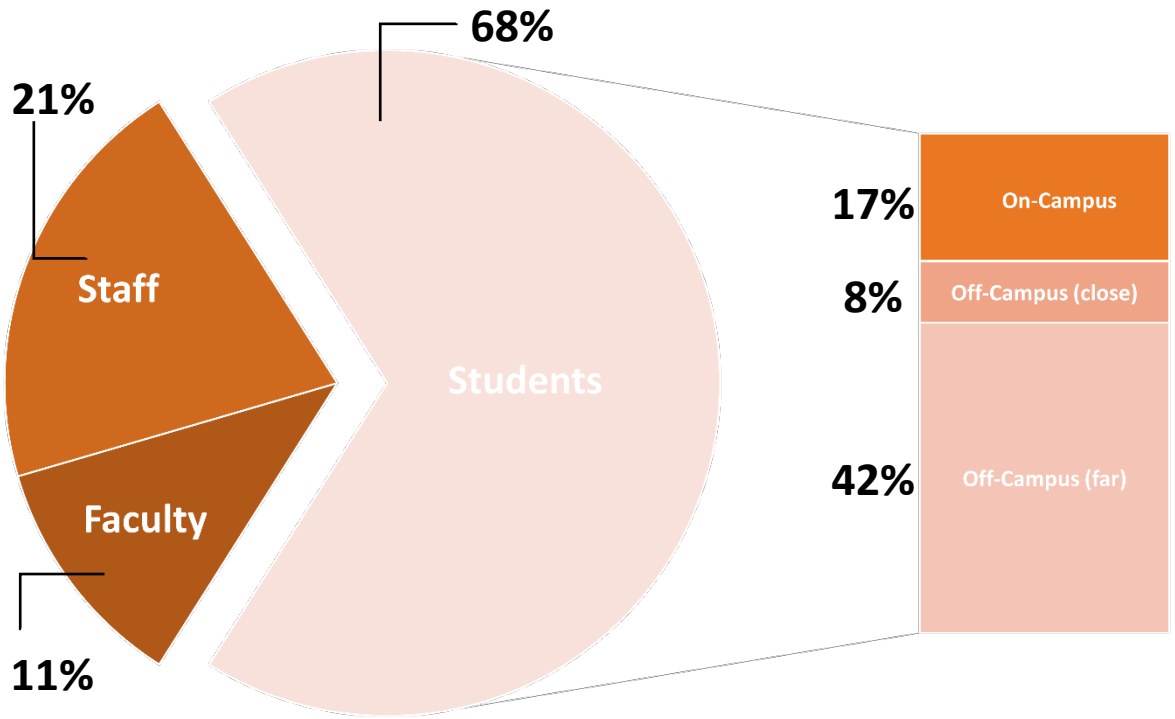
Commuting is **7% of FY24 GHG Emissions** (-2% from FY23)

NOTES

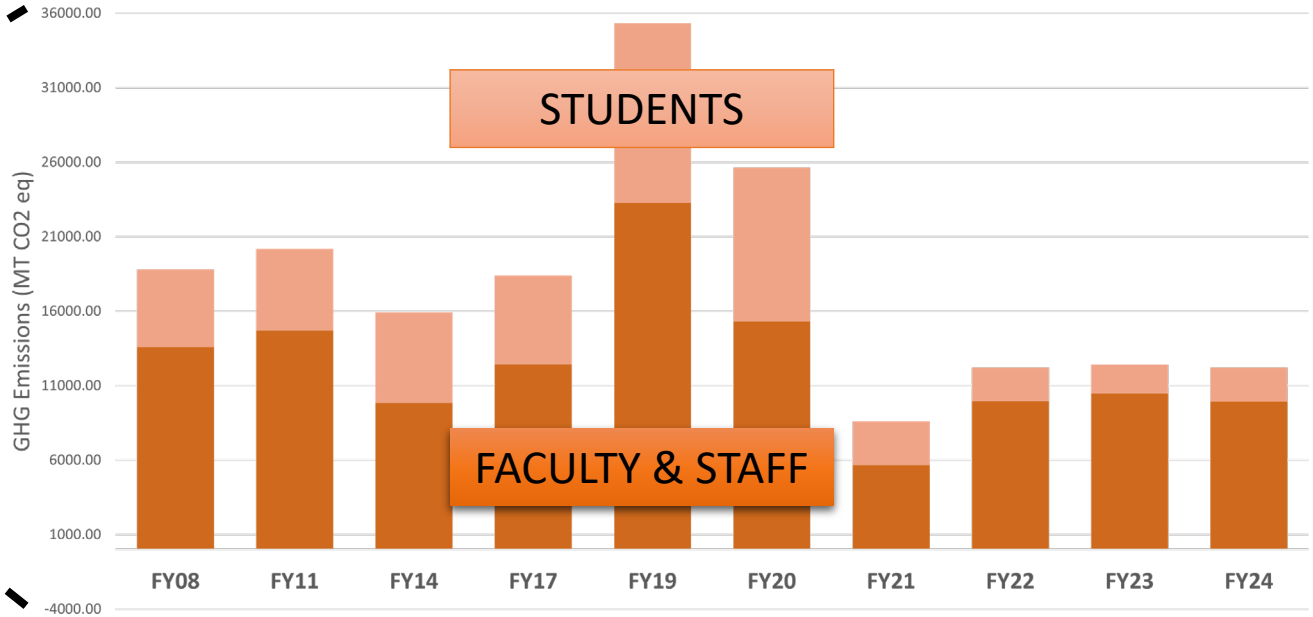
- Commuting assumptions (& thus GHG emissions) had little variation between FY22 - FY24
- Faculty & staff commuting emissions decreased slightly due to an increase in on-road electric vehicles (assumed to equal Pennsylvania average).
- Student commuting emissions increased in part due to an increase in student population, and thus students living off / further from campus.

Commuting

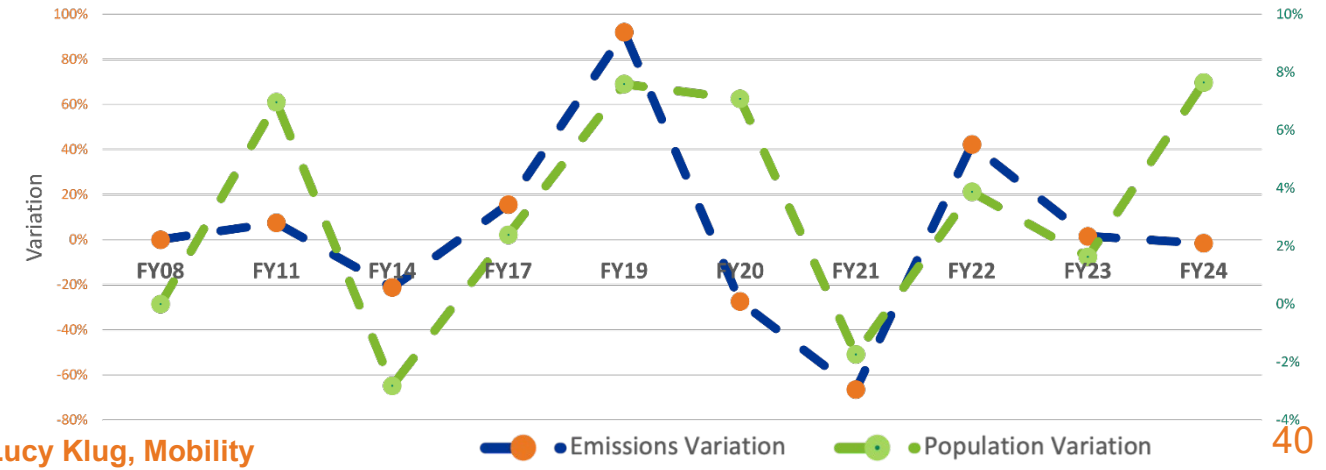
7% of Total Emissions



SCOPE 3 – Commuting Emissions



Commuting Emissions – Yearly Variations



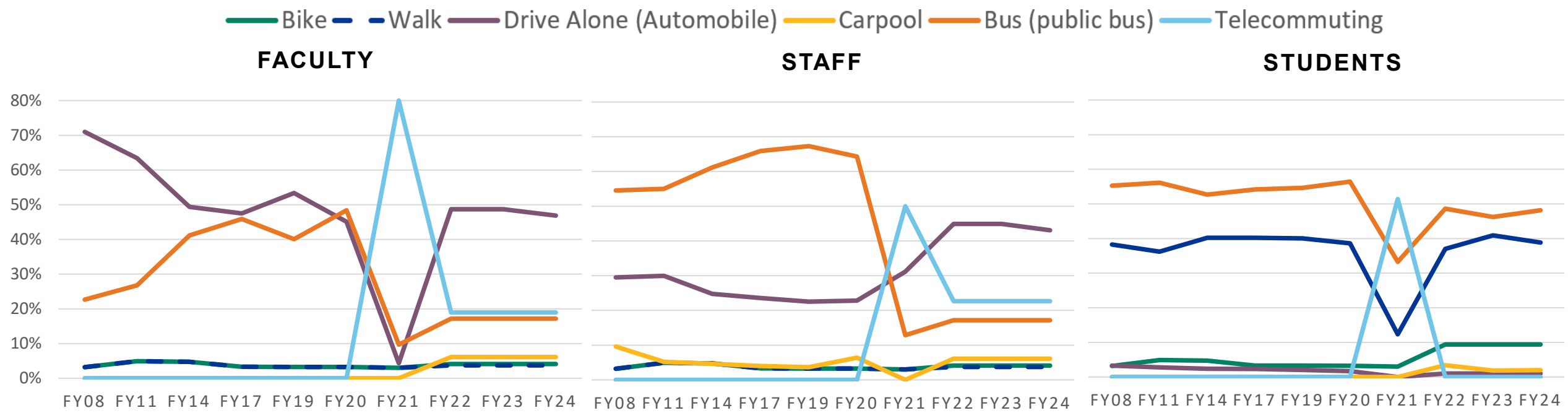
DATA NOTES

- Most commuting emissions are due to faculty & staff.
- FY24 Students = 68% of total population, but only 19% of commuting GHG emissions (assuming various residence locations)
- Since FY22, assumptions have been based on Pitt commuter survey results.
- Since FY21, formal staff flex work arrangements are reflected.

Pitt Sustainability

Data Retrieved Thanks to **Lucy Klug, Mobility**

Commuting: Trends & COVID-19 Assumptions



ASSUMPTIONS

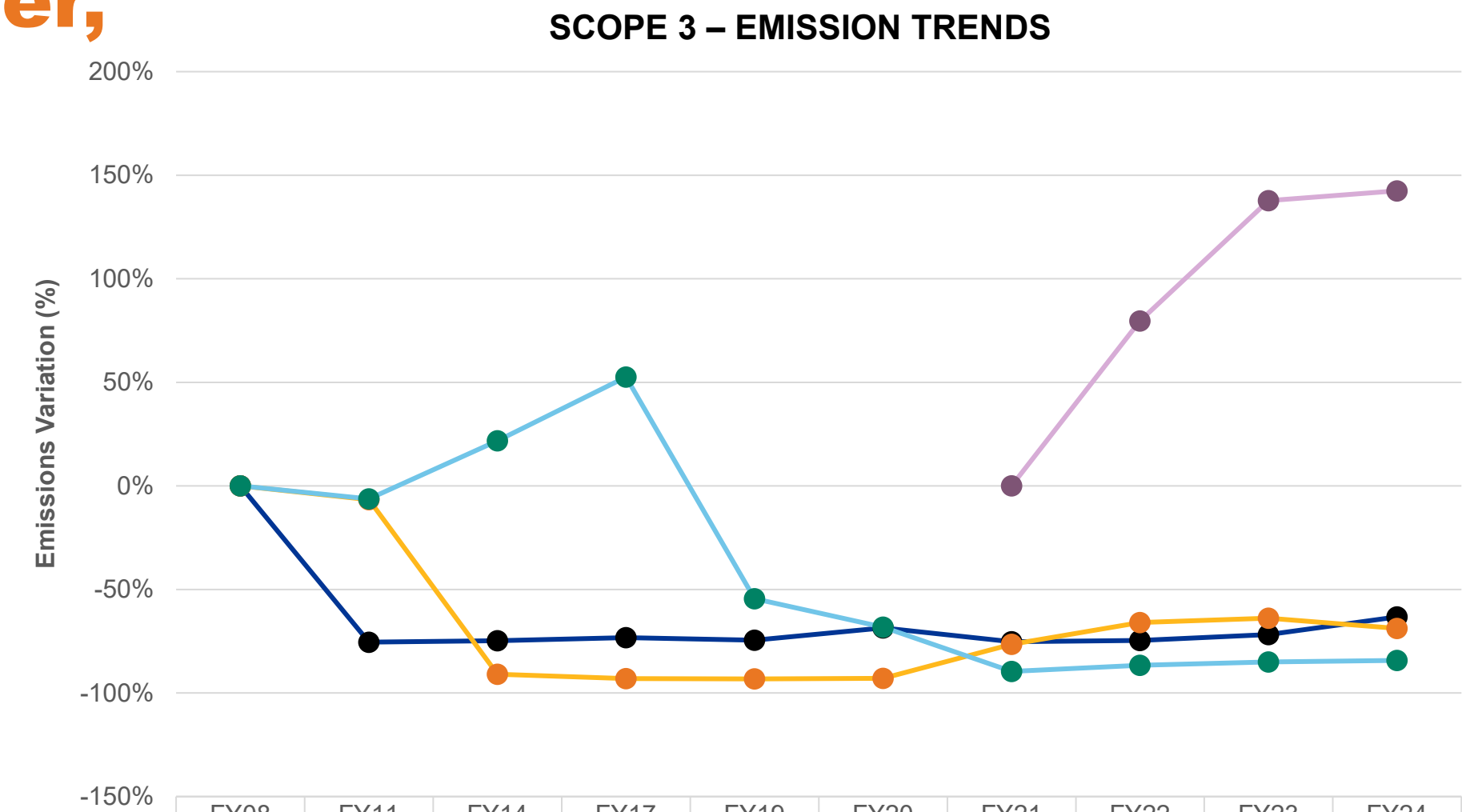
- **Telecommuting:** Staff 23%, Faculty 19%. Students 0%
- Fall 2022 Commuter Survey informed process; updated survey planned for Fall 2025
- Info on POGOH Bike Share, Incline, & Scooters added into considerations.

FY24 Transit Mode	Miles / Trip	Faculty	Staff	Students
Drive Alone *(Internal Combustion Vehicle)*	10	47%	43%	1%
Bus *(Public Transit)*	5	17%	17%	48%
Carpool	10	6%	6%	2%
Bike	4	4%	4%	9%
Walk	1	4%	4%	39%
Light Rail	1	1%	1%	1%
Telecommuting	-	19%	23%	0%
Commuter Rail	-	0%	0%	0%
Electric Vehicles	10	2%	2%	0%

Scope 3 FY24 Trends: Waste, Paper, & Food

6%
of
FY24 GHG
Emissions
(+6% from FY23)

NOTE
Since FY19, all categories have been consistent except Food, which was pandemic-influenced.

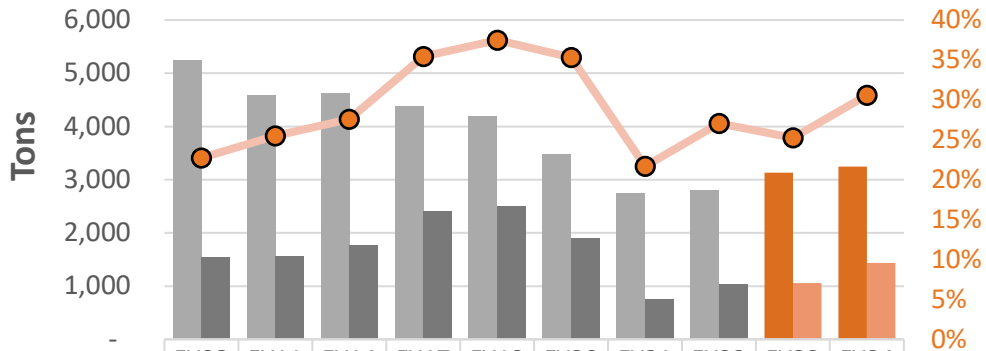


	FY08	FY11	FY14	FY17	FY19	FY20	FY21	FY22	FY23	FY24
Solid Waste	0%	-75%	-75%	-73%	-74%	-69%	-75%	-75%	-72%	-63%
Wastewater	0%	-7%	-91%	-93%	-93%	-93%	-76%	-66%	-64%	-69%
Paper	0%	-6%	22%	53%	-54%	-68%	-90%	-87%	-85%	-84%
Food							0%	80%	138%	142%

Solid Waste & Wastewater

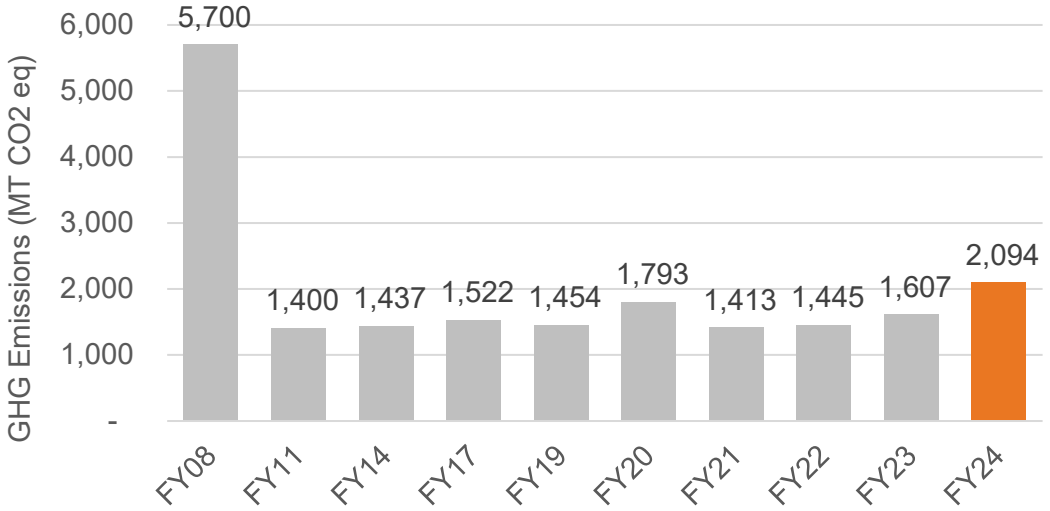
Solid Waste 1.2% of Total Emissions

Year-To-Year Solid Waste Landfilled & Recycled



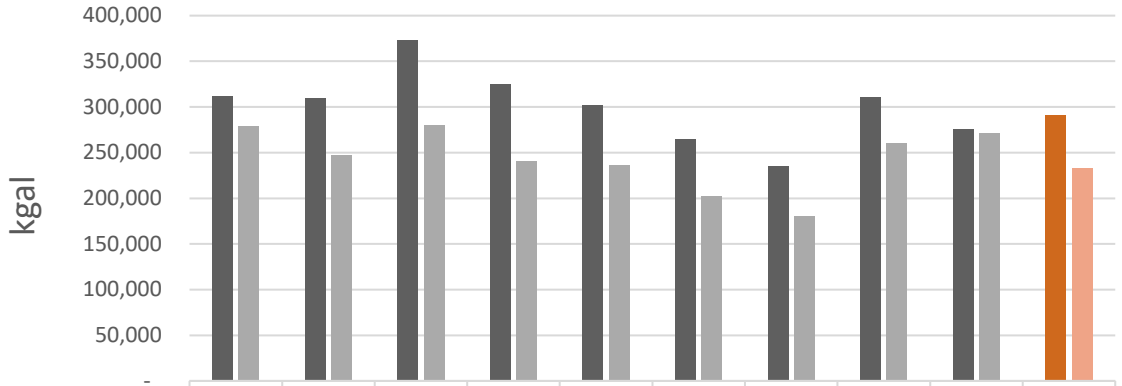
	FY08	FY11	FY14	FY17	FY19	FY20	FY21	FY22	FY23	FY24
Landfilled (tons)	5,246	4,596	4,634	4,384	4,189	3,480	2,742	2,804	3,131	3,247
Recycled (tons)	1,543	1,572	1,764	2,406	2,512	1,900	759	1,039	1,058	1,437
% of Waste Recycled	23%	25%	28%	35%	37%	35%	22%	27%	25%	31%

SCOPE 3 EMISSIONS – Solid Waste



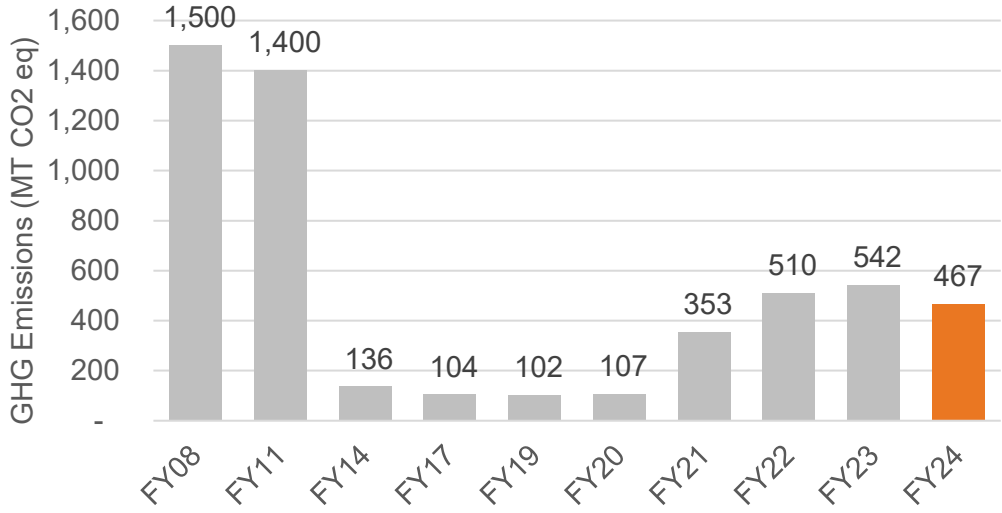
Wastewater < 0.3% of Total Emissions

Year-To-Year Comparison Water & Sewage



	FY08	FY11	FY14	FY17	FY19	FY20	FY21	FY 22	FY 23	FY24
Water (1000 gal)	312,01	308,88	372,83	324,29	301,53	264,78	234,36	310,30	275,27	290,74
Sewage (1000 gal)	278,35	246,45	280,05	240,16	236,02	201,77	179,83	259,85	270,76	233,28

SCOPE 3 EMISSIONS - Wastewater

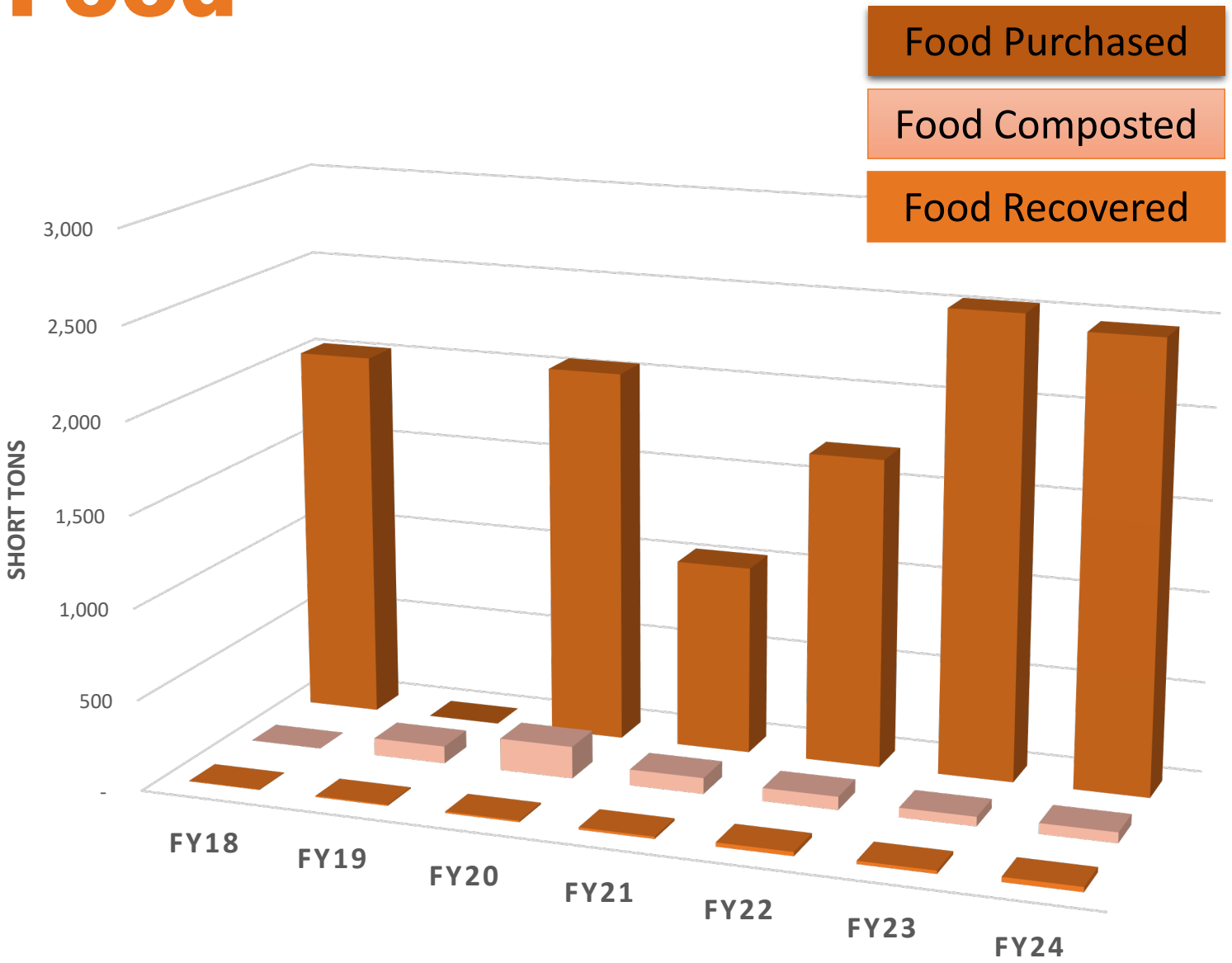


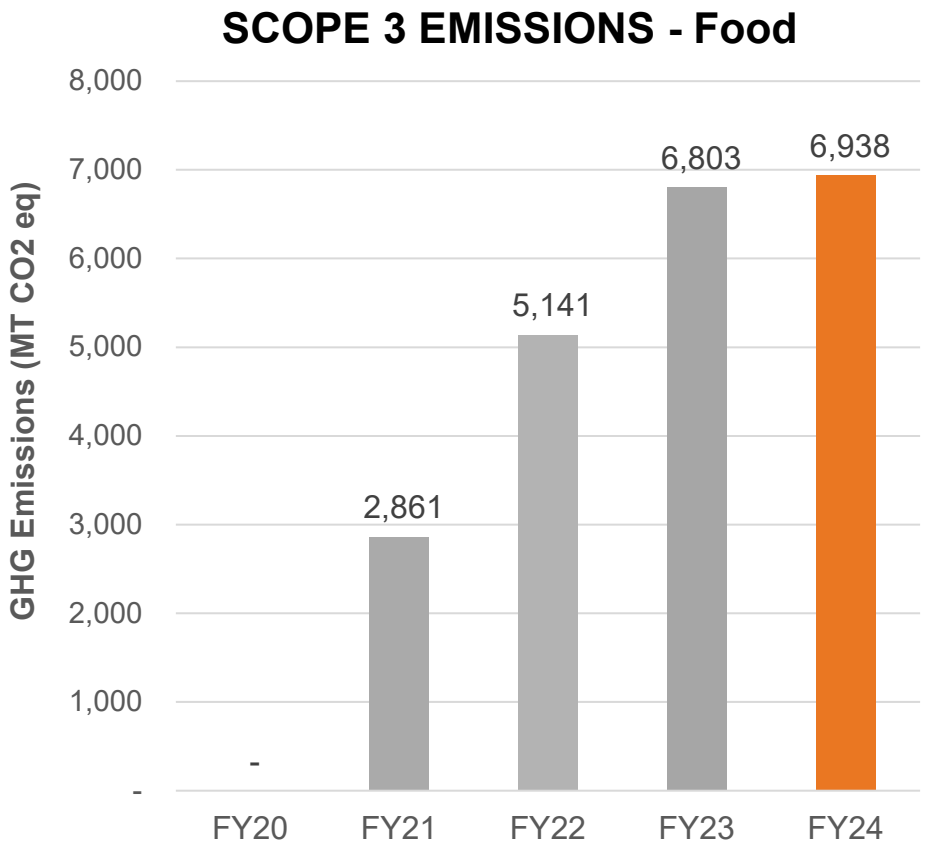
Data Retrieved Thanks to **Ernest Robinson, Lela Loving & Aurora Sharrard**

Food

4% of Total Emissions

SCOPE 3
Other Indirect Emissions





DATA NOTES

- Food emissions category added in FY21.
- FY21 & FY22 food volume served was pandemic-influenced.
- Compost activities include both food & yard waste & are not calculated as a carbon offset.

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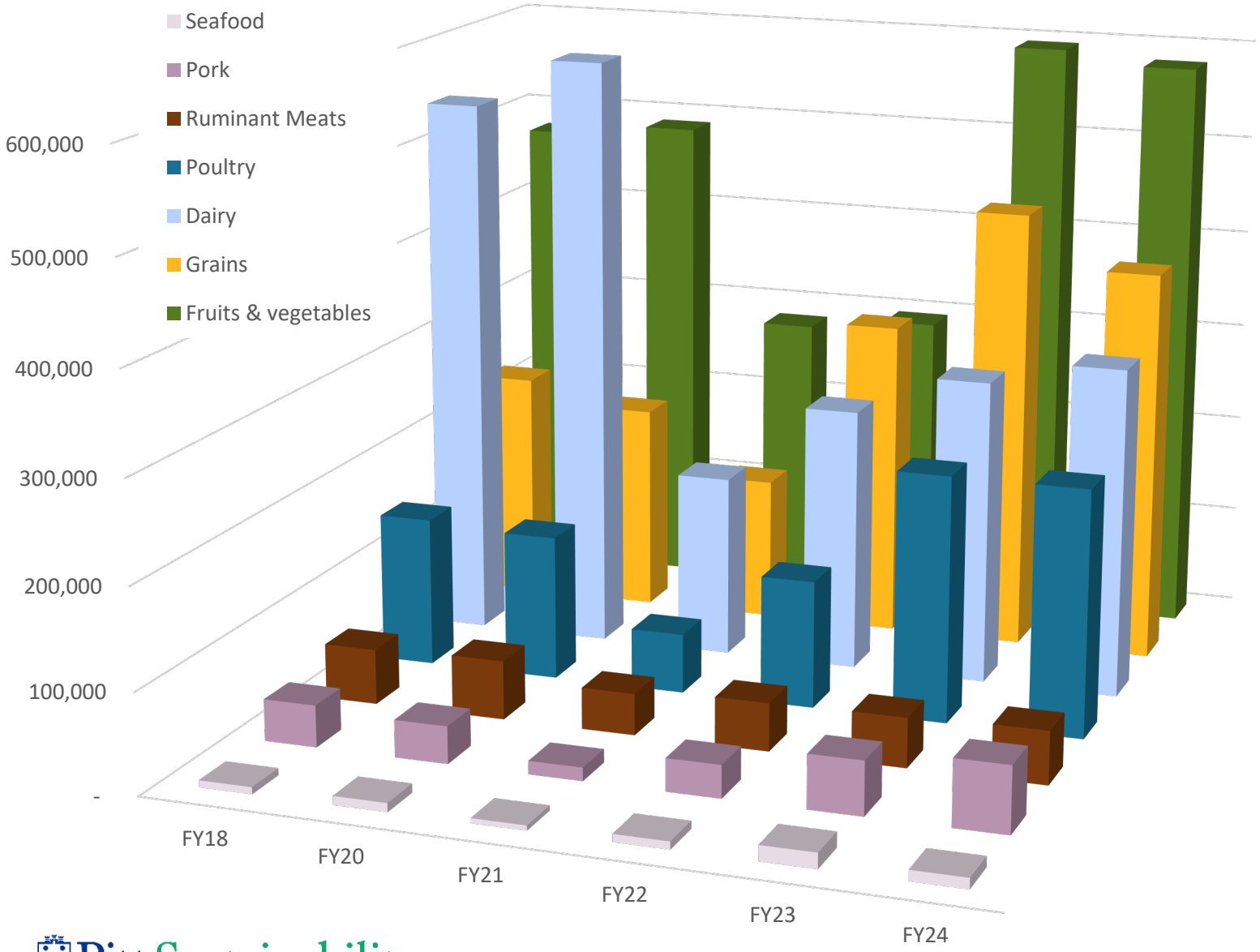
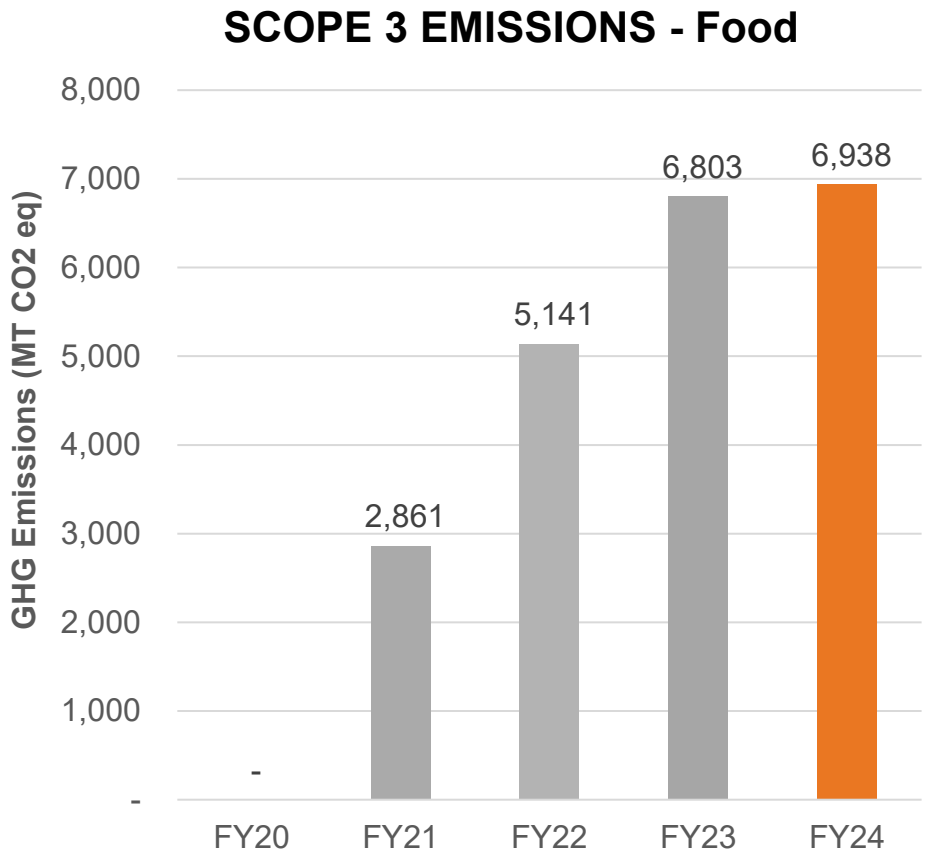
Data Retrieved Thanks to **Nick Goodfellow**

Food





DATA NOTES

- Food emissions increased despite a slight decrease in food purchased.
- More foods with higher GHG impact were purchased in FY24, including meats & dairy.

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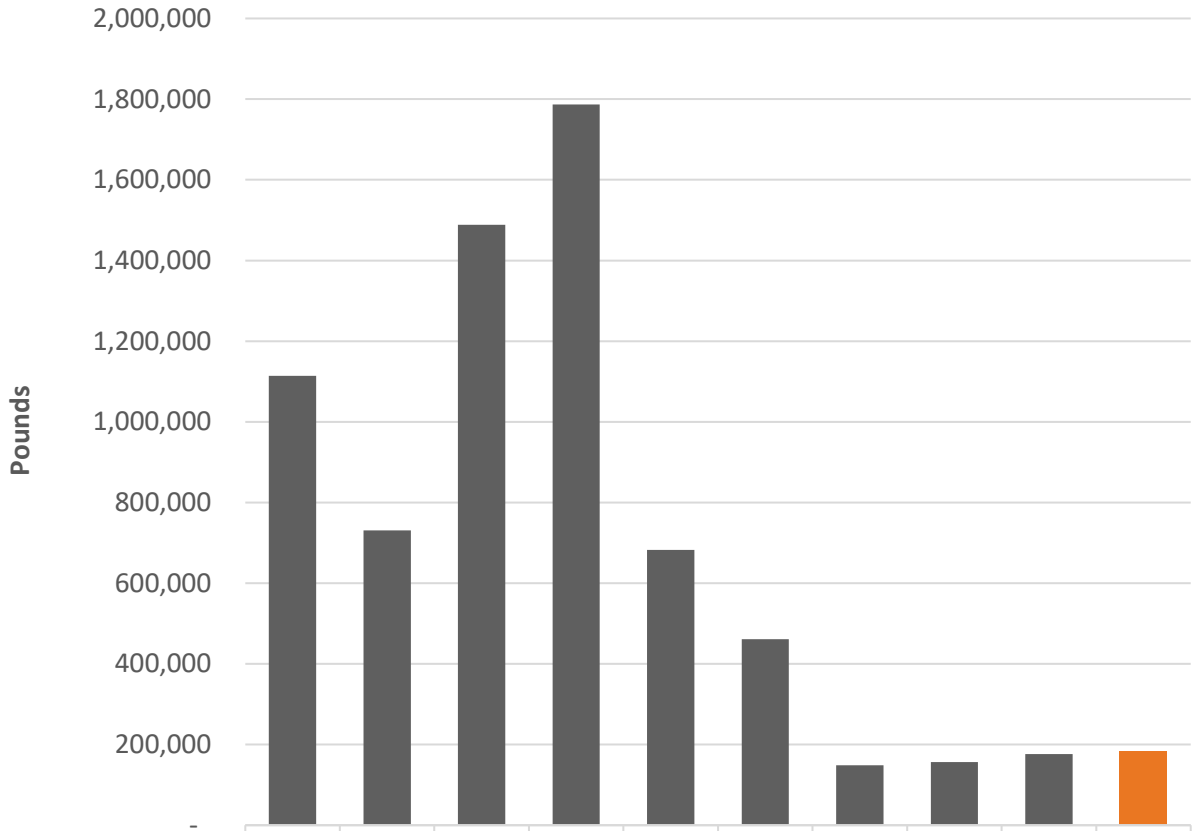
Data Retrieved Thanks to **Nick Goodfellow**

Paper

0.1% of Total Emissions

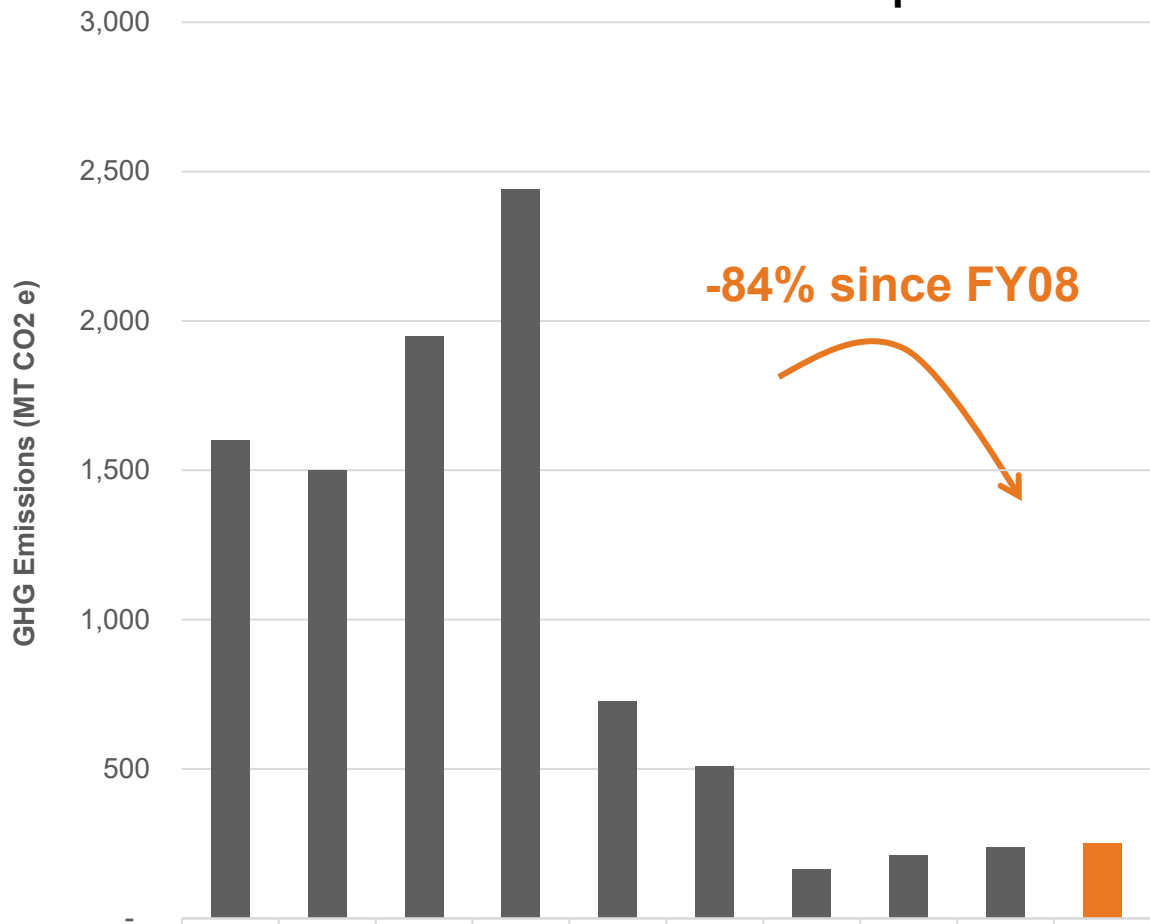
SCOPE 3
Other Indirect Emissions

Year-To-Year Comparison
Total Paper Purchased



	FY08	FY11	FY14	FY17	FY19	FY20	FY21	FY22	FY23	FY24
Total Paper (pounds)	1,113	730,7	1,488	1,787	682,8	461,4	148,8	156,3	176,1	184,1

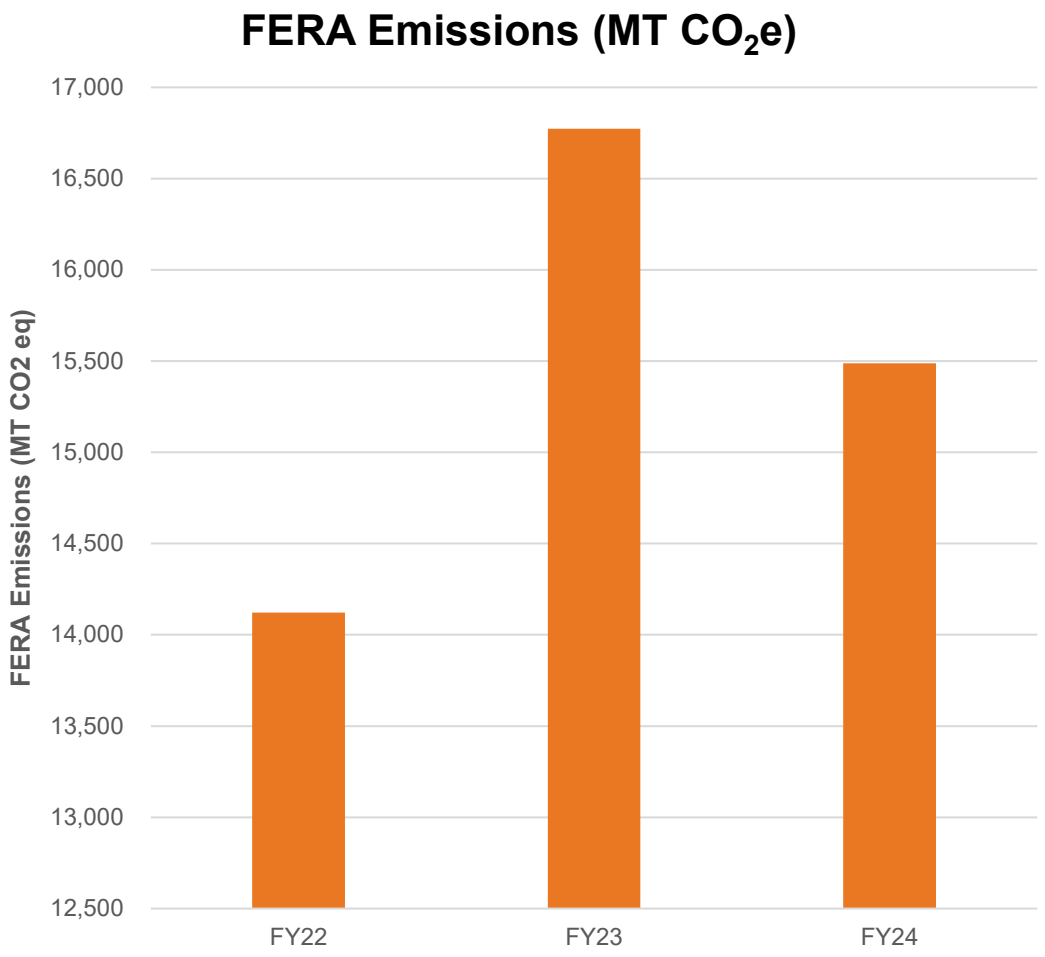
SCOPE 3 EMISSIONS - Paper



	FY08	FY11	FY14	FY17	FY19	FY20	FY21	FY22	FY23	FY24
Paper (MT CO2e)	1,600	1,500	1,949	2,441	729	509	167	214	241	252

NOTE: Reductions since FY17 due to behavior change from reducing on-campus printing (and thus paper use & associated GHG emissions).

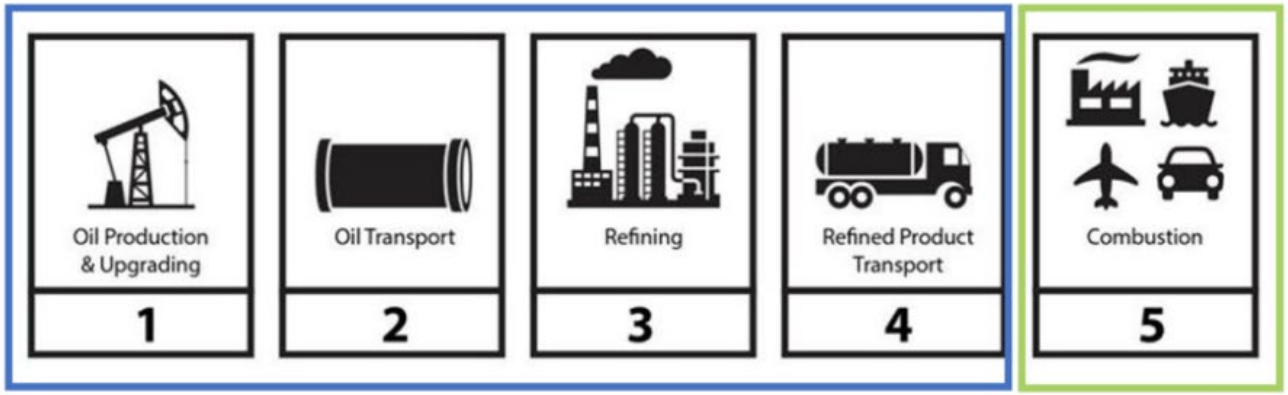
FERA: Fuel- & Energy-Related Emissions



9% of Total Emissions

- **New Scope 3 category in FY22**
- Automatically calculated by SIMAP for Scope 1 Stationary Sources & Scope 2 Purchased Electricity
- FERA accounts for all upstream emissions for Scope 1 stationary sources (e.g., direct combustion of fuel or generation of energy); for Pitt, this includes:
  - Natural gas combustion from the Carrillo Street Steam Plant
  - Gasoline, diesel, and propane fuel used for fleet vehicles, shuttles, & backup generators.
- At 9% of total GHG emissions, FERA had a significant effect on FY24 emissions, mostly due to natural gas & on-campus steam.

Figure: Lifecycle Stages Included in Scope 3 FERA vs. Scope 1.



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Scope 3: Category Inclusion Notes

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In FY22, SIMAP released updated functionalities of Scope 3 accounting.
All 15 GHG Protocol Categories are now included in the software.

	SIMAP / GHG Protocol Scope 3 Category	Second Nature Carbon Commitment Signatories Required to Report	FY24 Pitt GHG Inventory Categories	Pitt GHG Inventory History
1)	Purchased Goods & Services	Optional	• Food • Paper	• FY21 forward. • FY08 forward.
2)	Capital Goods	Optional	Not included.	-
3)	Fuel- and Energy-Related Activities	Optional	Included	FY22 forward.
4)	Upstream Transportation & Distribution	Optional	Not included.	-
5)	Waste Generated in Operations	Optional	Included	FY08 forward.
6)	Business Travel	Yes.	Included	FY08 forward.
7)	Commuting	Yes.	Included	FY08 forward.
8)	Upstream Leased Assets	Optional	• Estimated for context. • Not included in results.	Tracked since FY21; not in final results.
9)	Downstream Transportation & Distribution	Optional	Not included.	-
10)	Processing of Sold Products	Optional	Not included.	-
11)	Use of Sold Products	Optional	Not applicable.	-
12)	End-of-Life Treatment of Sold Products	Optional	Not applicable.	-
13)	Downstream Leased Assets	Optional	Included in Scope 1 & 2 if submeters on leased spaces not available/	FY08 forward.
14)	Franchises	Optional	Not applicable.	-
15)	Investments	Optional	Not included.	-

SUMMARY

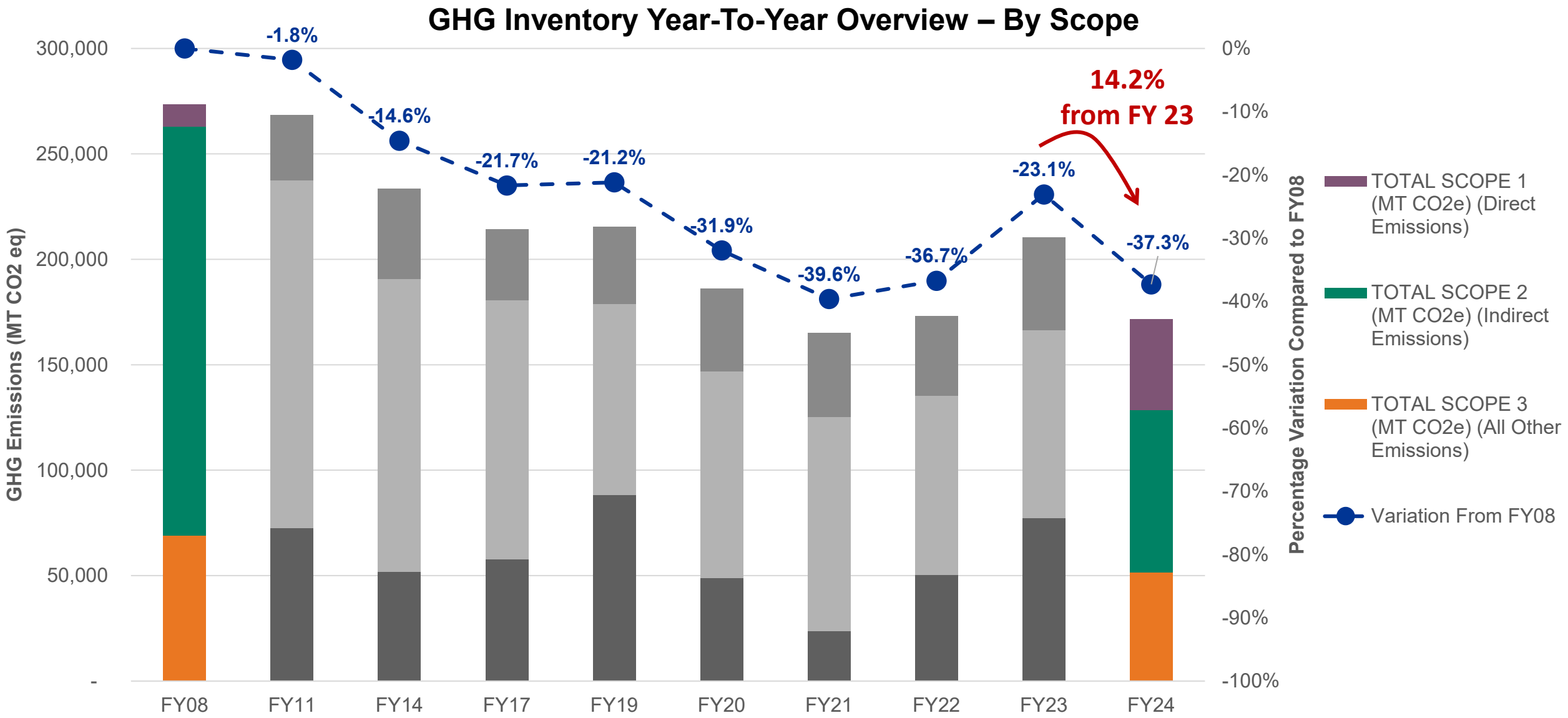
& COMPARISONS

Pitt Sustainability

University of Pittsburgh

Fiscal Year 2024

GHG Inventory Overview FY24



Total GHG Emissions -14% from Previous FY

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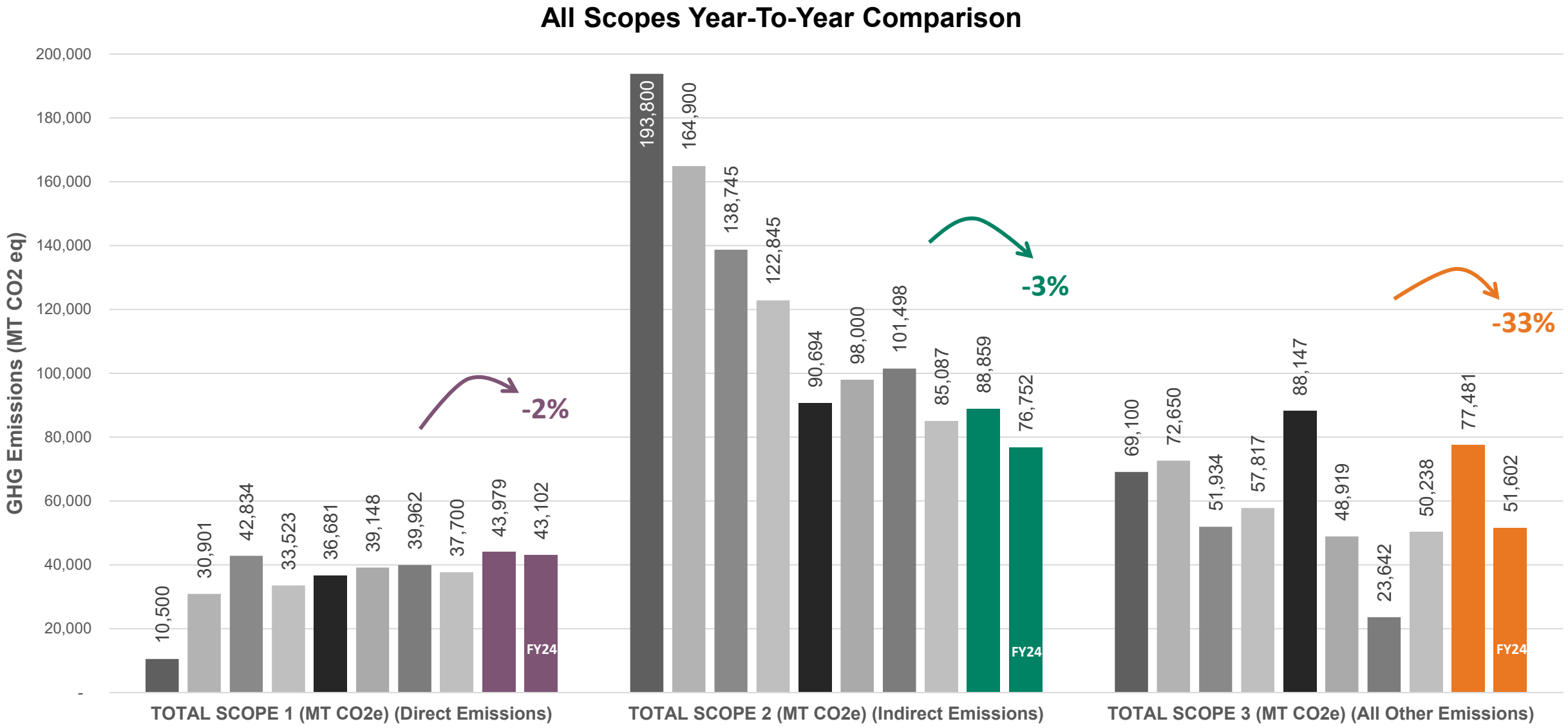

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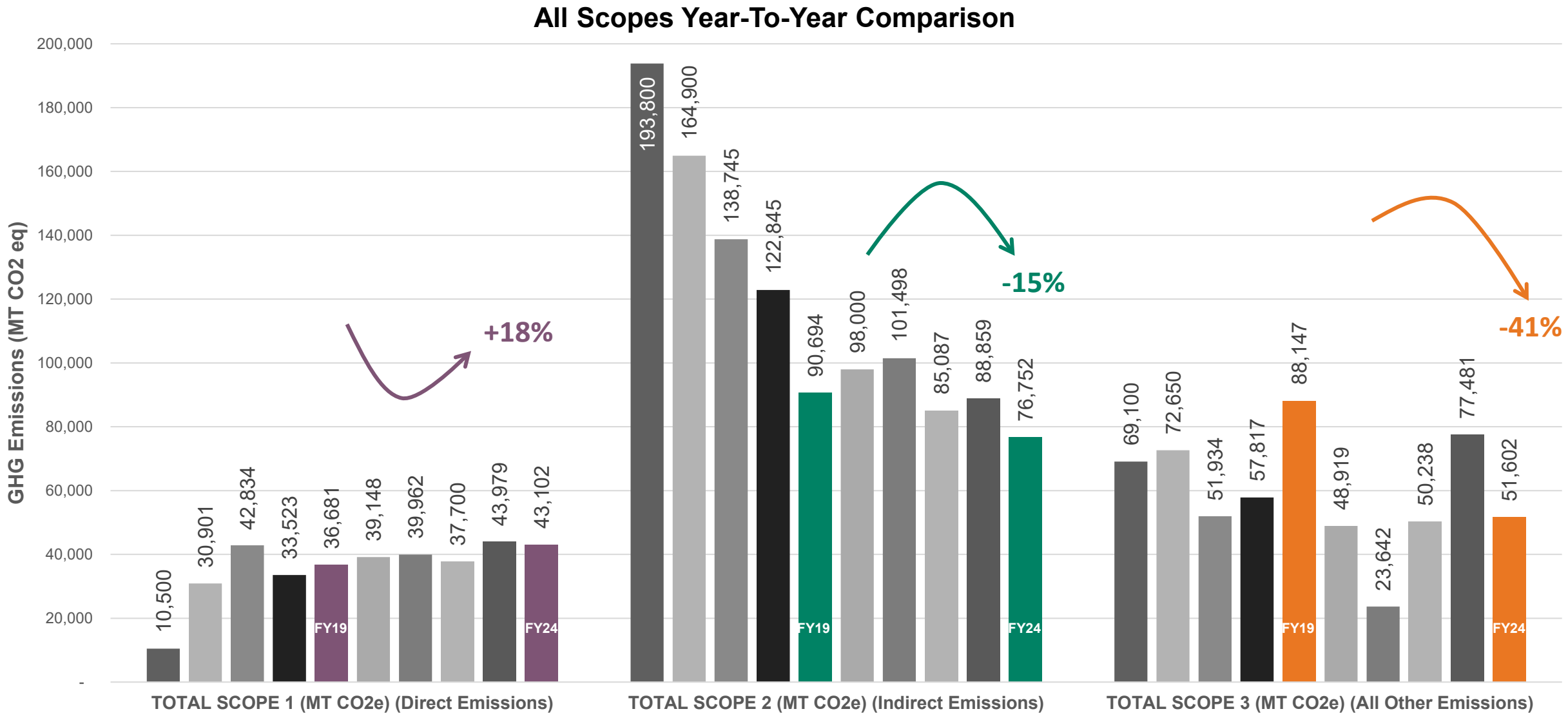
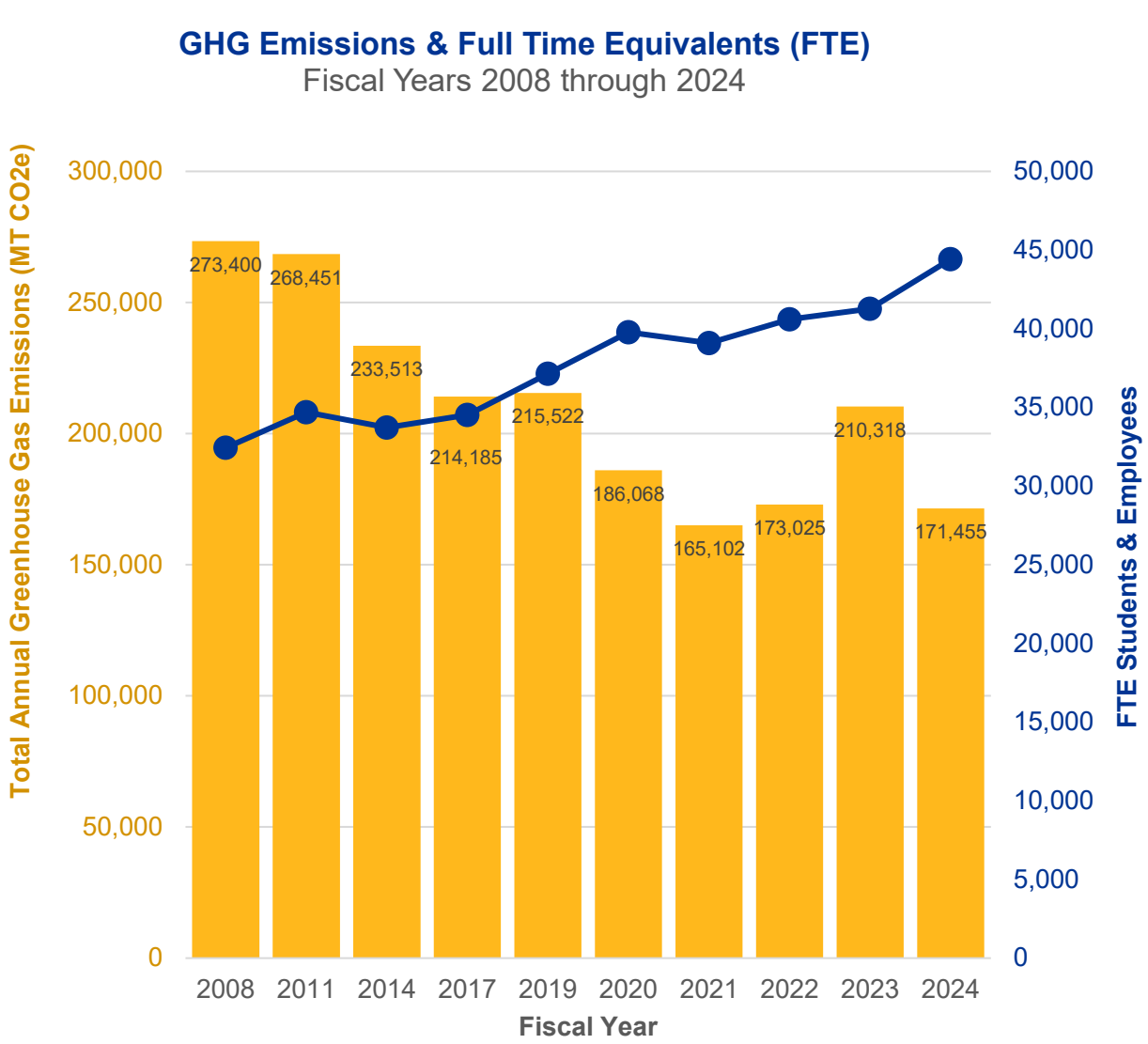
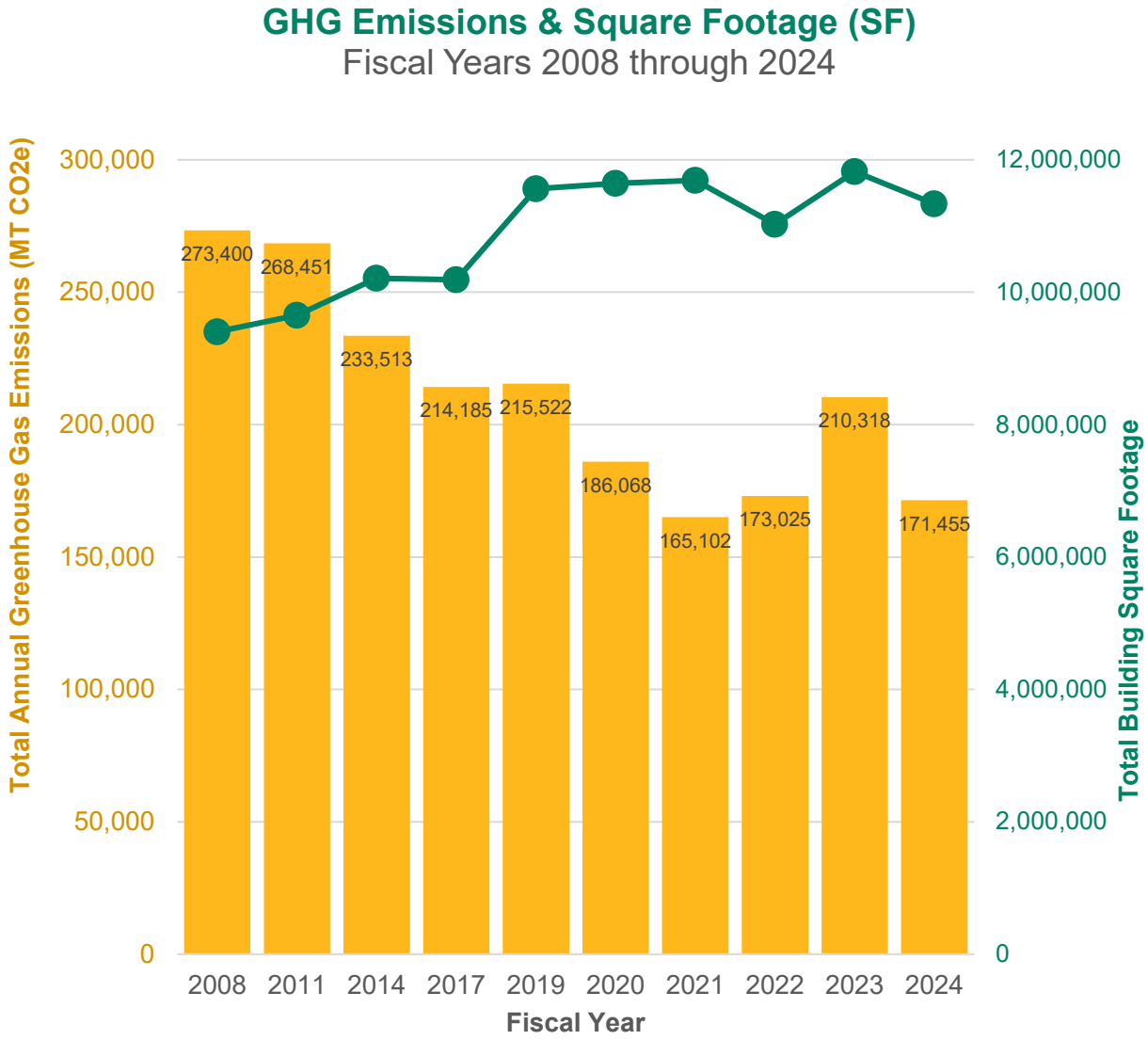
Total GHG Emissions
- 20% from FY19 (Pre COVID-19 pandemic)



GHG Emissions Normalized



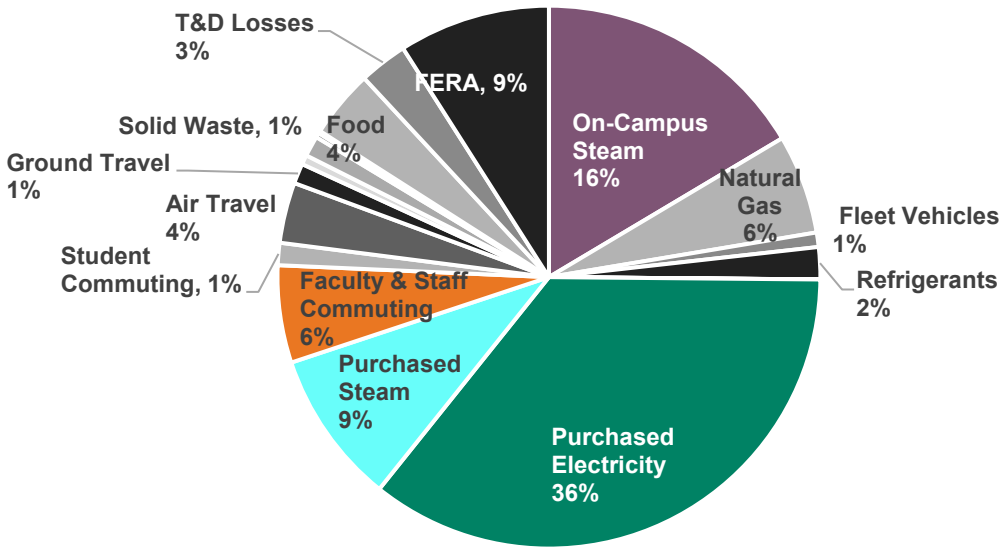


Key Takeaways: FY24 GHG Emissions

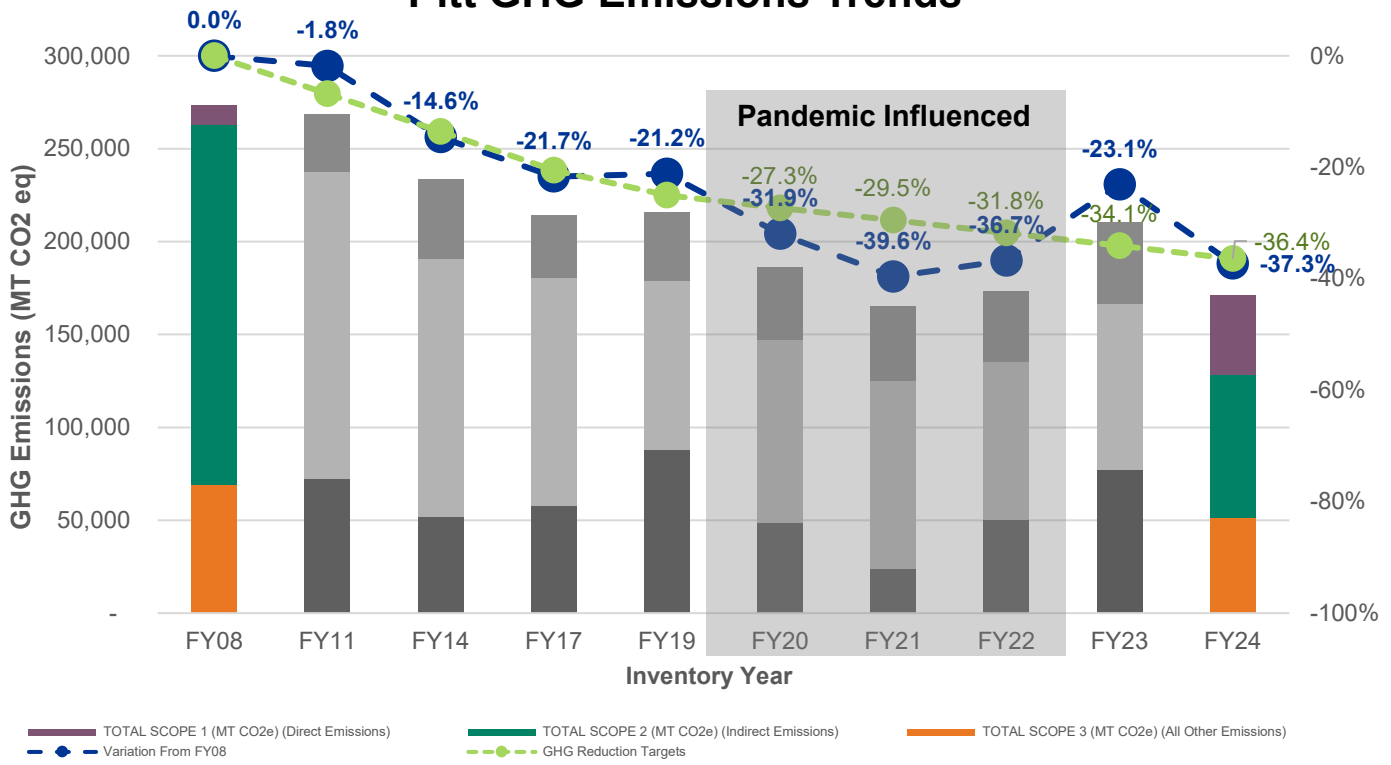
University of Pittsburgh

1) **Population Growth** – Is driving commuting emissions up & influences square footage requirements, in Pitt-owned buildings on- and off-campus, in addition to leased spaces.
2) **Energy Use by Buildings -** Is not significantly decreasing, despite the overall decrease in GHG emissions.
3) **Heating -** Natural Gas use increases need to be analyzed & controlled; an in-depth steam analysis is recommended in future years to help reduce steam use & possible GHG emissions reduction.
4) **Renewable Electricity –** Procurement is increasing in line with goals, which decreased Scope 2 emissions.
5) **<u>Future Needs to Focus On:</u>** a) Update commuter survey, b) Reduce GHG emissions from fleet vehicles, & c) Determine Athletics travel emissions reduction strategy.

FY24 GHG Emissions



Pitt GHG Emissions Trends



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Future GHG Emissions Reduction Recommendations

1) **Growth -** Pitt's continued growth in physical space & population size will outpace efforts focused on reducing GHG emissions; as a result, a redoubling of efforts will be needed across all categories. Ensure building list is accurate.

2) **Purchased Electricity -** Remains the University's largest GHG emissions category.
   a) More aggressive building energy efficiency retrofits are needed for more buildings more quickly.
   b) Energy use intensity performance goals for all existing buildings should be revisited, as should efforts to achieve them .
   c) Energy performance goals for new buildings should be as rigorous as possible.
   d) On- and off-campus renewable electricity generation projects and procurement should advance quickly.

3) **Clean Energy -** To assist with clean energy sourcing, building systems and components should shift away from natural gas & steam when possible.

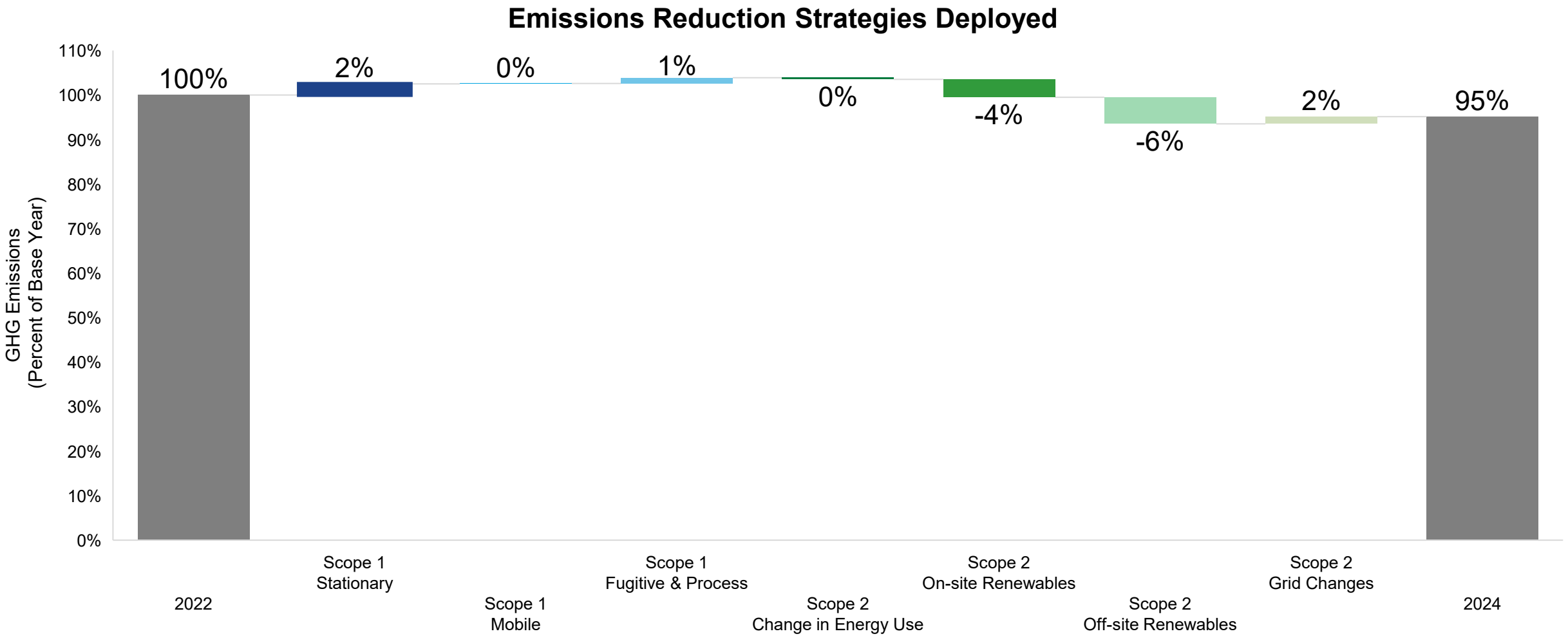
4) **Steam –** Despite steam use & emissions decreasing in FY24, steam use is still above FY08 levels and has trended upwards overall.
   a) Recommend analysis of steam use at both the steam system and building scales to facilitate future operational focus on steam use reduction.

5) **Travel –** Air travel is consistently a large contributor to overall emissions and not expected to decrease substantially in future years.
   a) Athletics air travel is expected to grow with the expansion of the ACC geography.
   b) Increased and focused engagement with the Pitt community is needed regarding avoiding air travel or shifting air travel to ground travel, along with travel carbon offsets.
   c) Ensure SIMAP air travel data is accurate to ensure precision & that all contributors are correctly accounted for.

6) **Academics -** Pitt's research & academic community offers tremendous opportunities for innovation & collaboration. Strategically tapping these resources could lead to important reductions & longer-term cultural shifts.

DOE Better Climate Challenge FY22 to FY24 Summary

(Scope 1 & 2 only)



From **U.S. DOE Better Climate Challenge**

University GHG Emissions Benchmarks

University of Pittsburgh

PEER GROUP BENCHMARKING FOR GHG EMISSIONS Sorted By Net Emissions				
Higher Education Institution	**FY**	**Net Emissions** ($MT\ CO_2e$)	**Students** ($MT\ CO_2e$ / FTE Students)	**Building Space** ($MT\ CO_2e$ / 1,000 ft^2)
Ohio State University	2022	499,253	8.8	19.5
Pennsylvania State University - University Park	2024	297,669	6.2	-
Duke University	2023	212,132	12.2	12.8
Cornell University	2023	186,654	-	-
University of Pittsburgh	**2024**	**171,455**	**5.7**	**15.1**
University of Pennsylvania	2023	156,185	5.8	9.7
Case Western Reserve	2023	135,533	11.0	13.9
University of Maryland - College Park	2023	144,664	3.8	8.7
Ohio University - Athens Campus	2023	88,393	3.8	10.8
Georgia Southern University	2023	72,787	-	-
Duquesne University	2023	60,745	7.5	-
Villanova University (Scopes 1&2)	2021	40,546	4.3	8.3
Carnegie Mellon University (Scopes 1&2)	2024	29,000	-	-
Chatham University	2018	8,031	3.89	7.3

FY24 GHG Emissions Inventory Results

Category		Previous Fiscal Years									Current FY
SCOPE	SOURCE CATEGORY	FY08	FY11	FY14	FY17	FY19	FY20	FY21	FY22	FY23	FY24
SCOPE 1	On-Campus Steam	-	22,200	32,981	25,623	24,978	29,627	29,644	27,532	33,417	28,205
	Other On-Campus Stationary	9,200	5,700	6,386	5,245	7,470	7,102	8,167	7,348	8,111	10,143
	Fleet Vehicles	500	700	1,273	1,388	1,992	1,629	1,506	1,364	1,472	1,474
	Refrigerants & Chemicals	800	2,300	2,192	1,266	2,240	789	644	1,450	974	3,272
	Fertilizers & Animals	-	1	2	1	1	2	1	7	5	9
TOTAL SCOPE 1 (MT CO_2e) (Direct Emissions)		**10,500**	**30,901**	**42,834**	**33,523**	**36,681**	**39,148**	**39,962**	**37,700**	**43,979**	**43,102**
SCOPE 2	Purchased Electricity	138,700	135,500	115,341	105,607	73,802	84,753	85,544	64,777	72,666	61,047
	Purchased Steam	55,100	29,400	23,404	17,238	16,892	13,247	15,954	20,310	16,193	15,705
TOTAL SCOPE 2 (MT CO2e) (Indirect Emissions)		**193,800**	**164,900**	**138,745**	**122,845**	**90,694**	**98,000**	**101,498**	**85,087**	**88,859**	**76,752**
SCOPE 3	Faculty & Staff Commuting	13,600	14,700	9,845	12,433	23,293	15,330	5,672	9,961	10,482	9,944
	Student Commuting	5,200	5,500	6,064	5,962	12,036	10,318	2,927	2,264	1,928	2,270
	Directly Financed Air Travel	24,800	33,600	23,921	24,706	36,560	10,273	4,018	10,400	29,651	6,187
	Other Directly Financed Travel	100	50	211	548	582	1,593	683	1,140	3,812	2,059
	Study Abroad Air Travel	-	1,100	775	4,578	8,816	3,489	153	626	765	971
	Solid Waste	5,700	1,400	1,437	1,522	1,454	1,793	1,413	1,445	1,607	2,094
	Wastewater	1,500	1,400	136	104	102	107	353	510	542	467
	Paper	1,600	1,500	1,949	2,441	729	509	167	214	241	252
	Food	-	-	-	-	-	-	2,861	5,141	6,803	6,938
	Transmission & Distribution Losses	16,600	13,400	7,596	5,523	4,575	5,509	5,395	4,417	4,876	4,932
	Fuel & Energy Related Activities								14,122	16,772	15,488
TOTAL SCOPE 3 (MT CO2e) (All Other Emissions)		**69,100**	**72,650**	**51,934**	**57,817**	**88,147**	**48,919**	**23,642**	**50,238**	**77,481**	**51,602**
SINKS	Compost	0	0	0	0	0	0	0	19.4	0	0
ALL ACCOUNTABLE EMISSIONS (MT CO2e)		**273,400**	**268,451**	**233,513**	**214,185**	**215,522**	**186,068**	**165,101**	**173,006**	**210,319**	**171,455**

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References

1) **University of Pittsburgh GHG Inventory Reports**
   - Fiscal Year 2008, 2011, 2014, 2017, 2019 through 2024
   - Sustainable.pitt.edu/Commitments-Reports/
2) **Pitt SIMAP Public GHG Emissions Disclosure**
   - UNHsimap.org/public/institution/728
3) **Greenhouse Gas Protocol**
   - GHGprotocol.org/standards-guidance
4) **Pitt Sustainability GHG Emissions Dashboard**
   - Sustainable.pitt.edu/Dashboard/

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Thank you!
Any questions?

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