George Mason University

Climate Action Plan Town Hall

December 15th, 2021

ARUP

Agenda

Introduction

Climate science presentation – Dr. Natalie Burls

Climate vulnerability task overview

CAP process review

GHG data review & baselines

GHG reduction targets & forecasting

Next steps

Objectives

- Outline importance of latest climate science
- Understand CAP process
- Outline targets and upcoming decisions
- Engagement with wider GMU community

Climate Vulnerability Task

Climate vulnerability task overview

Assets

Buildings

Transportation

People

Hazards

Drought

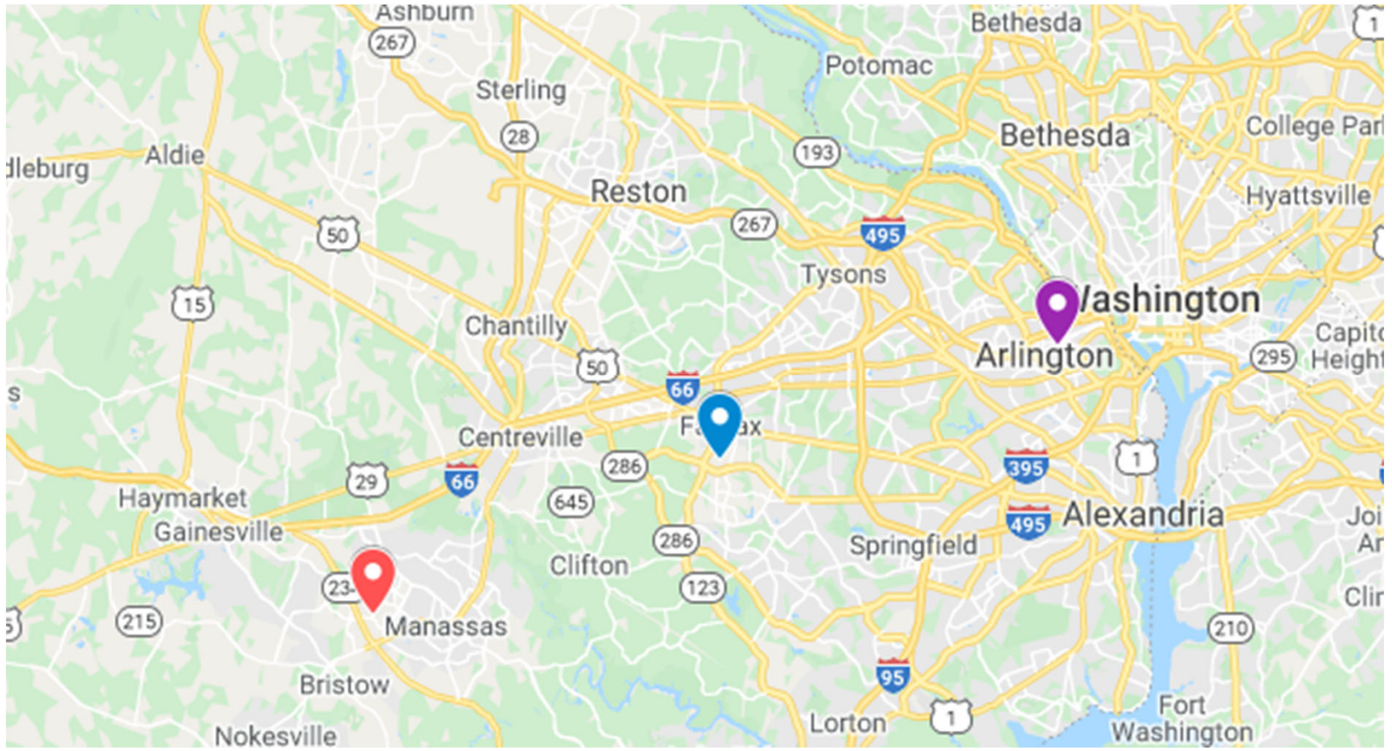
Wind

Extreme heat

Flooding

Precipitation

Extreme cold



Future climate projections

Hazard	Fairfax Campus	Manassas Campus	Arlington Campus
Sea Level Rise	FEMA area of minimal flood hazard	Major, nearby roadways are in the 100 & 500 year FEMA floodplains	FEMA area of minimal flood hazard
Precipitation	Increase in intensity and severity of rainfall events leading to more flooding during these intense events		
Extreme Heat	Projected increase in average annual temperature of 5.9°F to 62.4°F by 2050-2074	Projected increase in average annual temperature of 6.0°F to 62.4°F by 2050-2074	Projected increase in average annual temperature of 5.9°F to 63.4°F by 2050-2074
Wind	Hurricane wind speeds are projected to increase		
Drought	Droughts are expected to become more frequent and intense in the summer months		

So...what does this mean for GMU?

Flooding

- Building damage
- Impact commuting for staff, students, and teachers
- Disrupt deliveries of food
- Disrupt emergency health services
- Health risks to individuals on campus from contaminated drinking water
- Increase flood insurance rates

Precipitation

- Overwhelm drainage systems
- Flash flooding
- Overflow of combined sewer systems into roadways

Extreme heat

- Increased likelihood of heat stroke and death
- Increasing mosquito and tick-borne infections
- Increased building energy consumption

Wind

- Building damage
- Power outages

Extreme cold

- Power outages
- Disrupt commuting
- Disrupt deliveries of food

Drought

- Food supply chain disruptions
- Water shortages

CAP Process Review

Climate Action Planning Timeline

Phase I: September 2021 to April 2022

Phase II: April 2022 and forward

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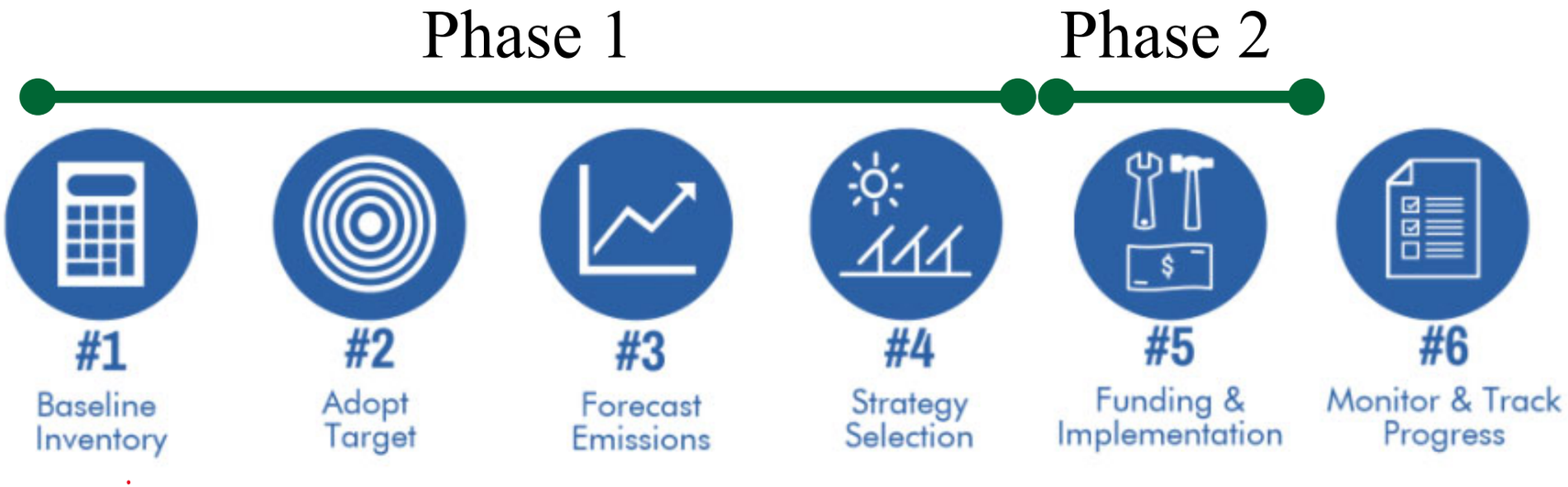
CAP Process


Phase 1
Phase 2
#1
Baseline Inventory
#2
Adopt Target
#3
Forecast Emissions
#4
Strategy Selection
#5
Funding & Implementation
#6
Monitor & Track Progress

GHG Emissions Definitions

Carbon Neutrality

Carbon neutrality is defined as having no net greenhouse gas (GHG) emissions, to be achieved by either;

a. eliminating net GHG emissions, or
b. by minimizing GHG emissions as much as possible and using carbon offsets or other measures to mitigate the remaining emissions.

Second Nature – The Presidents' Climate Leadership Commitments
https://secondnature.org/signatory-handbook/frequently-asked-questions/

Zero Emissions / Fossil Fuel-Free / Zero Operational Carbon

No burning fossil fuels on-site (scope 1) and no use of utilities generated using fossil fuels (scope 2) to result in zero emissions associated with campus energy consumption.

Net-Positive / Carbon Negative

Reduce the overall emission of CO2e by removing more CO2e from the atmosphere than campus requires for its own energy consumption.

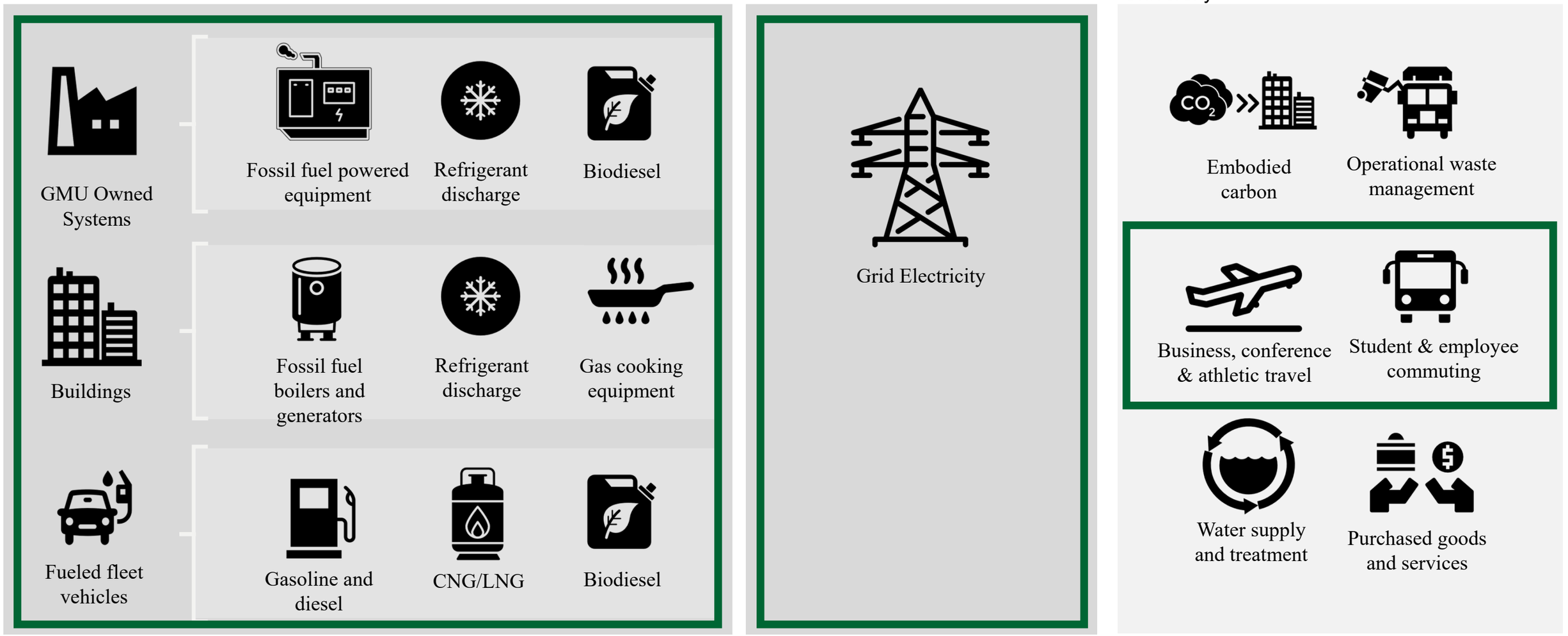
GHG Data Review & Baselines

Emission Scopes

Scope 1
Emissions from sources owned / controlled by the University

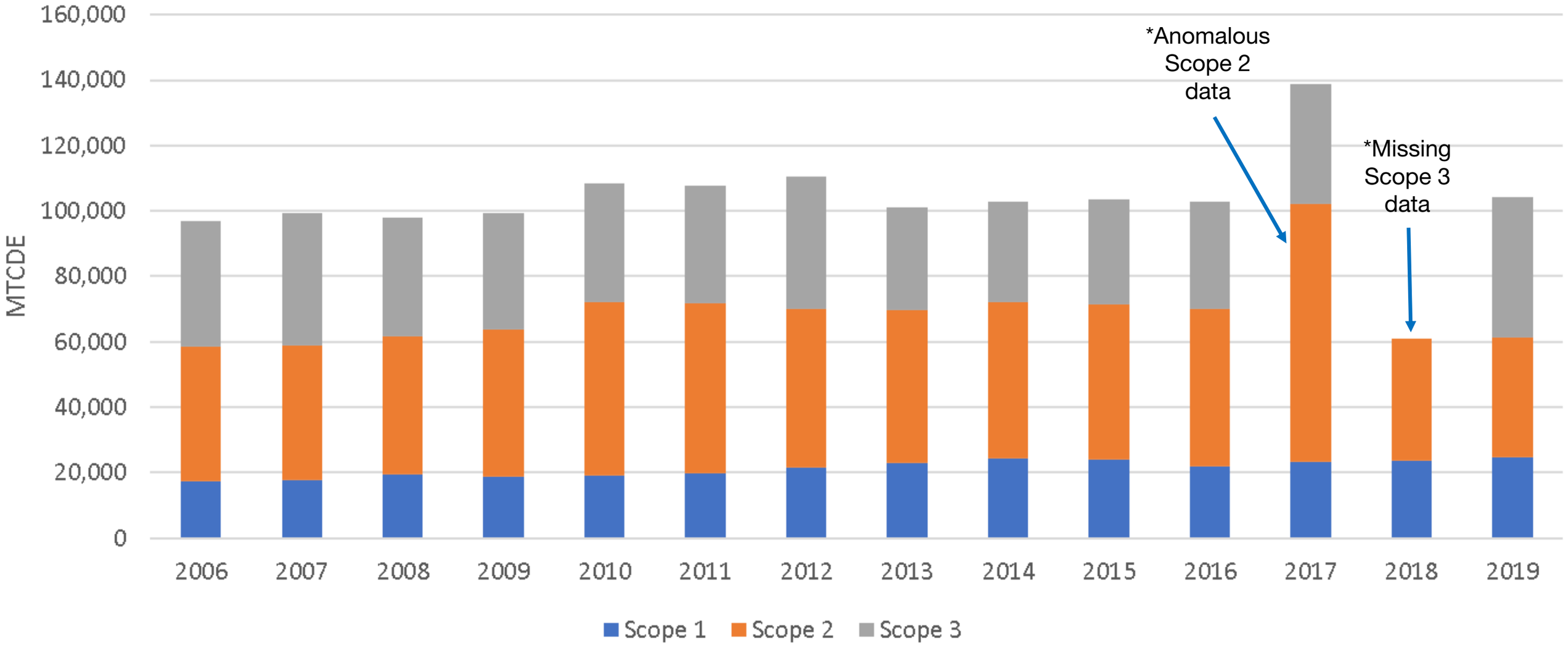
Scope 2
Indirect emissions from utilities purchased by the University

Scope 3
University emissions from activities which sources are not owned / controlled by the University

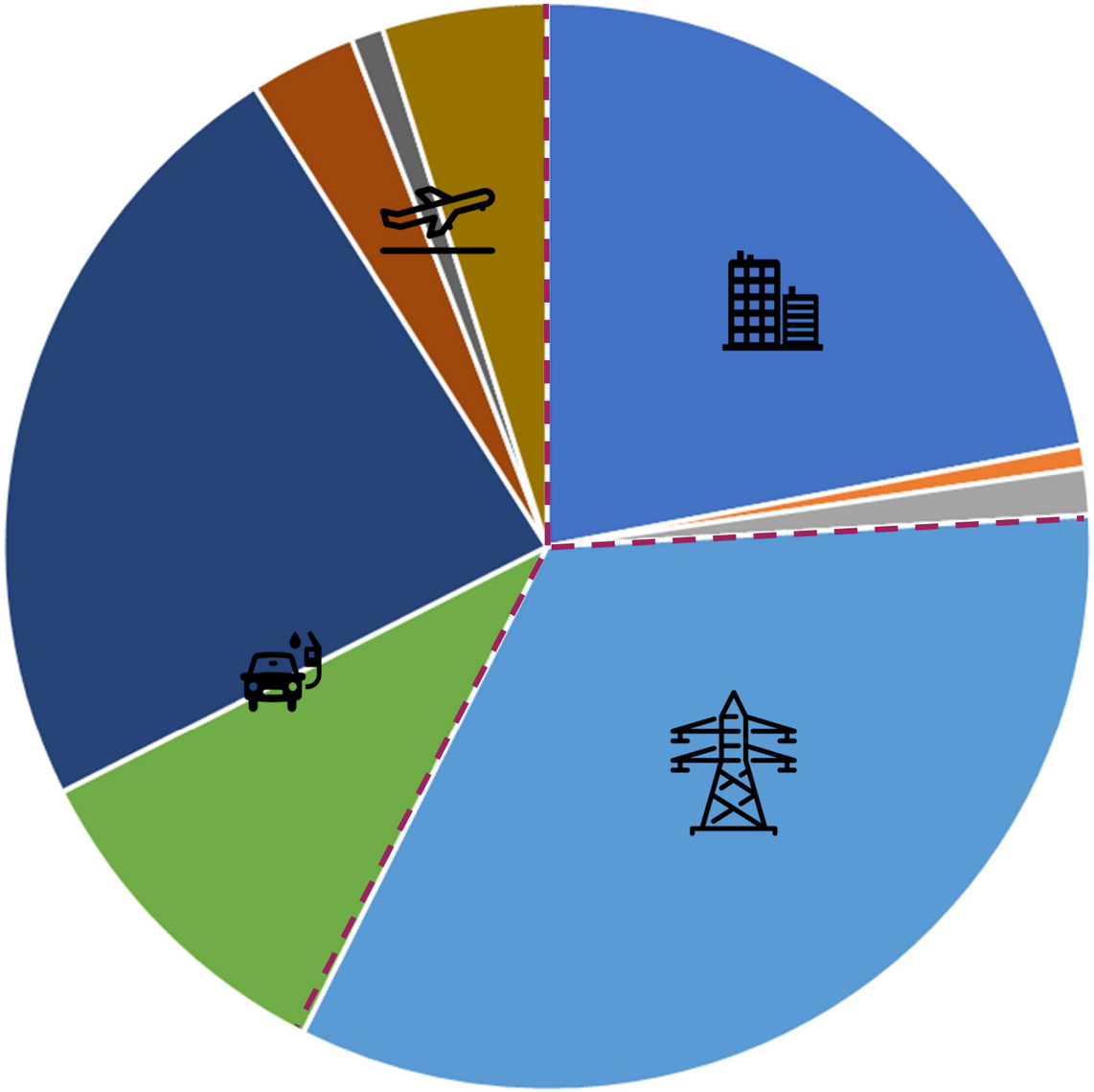


Included in Second Nature Carbon Commitment

Historical Data GHG Inventories



2019 Emissions Sources



		Emissions Source	MTCDE
Scope 1		Other On-Campus Stationary	22,373
		Direct Transportation	690
		Refrigerants & Chemicals	1,410
		Fertilizer & Animals/ Agriculture	8
Scope 2		Purchased Electricity	33,885
Scope 3		Faculty / Staff Commuting	10,290
		Student Commuting	23,818
		Directly Financed Air Travel	3,225
		Other Directly Financed Travel	974
		Study Abroad Air Travel	4,984

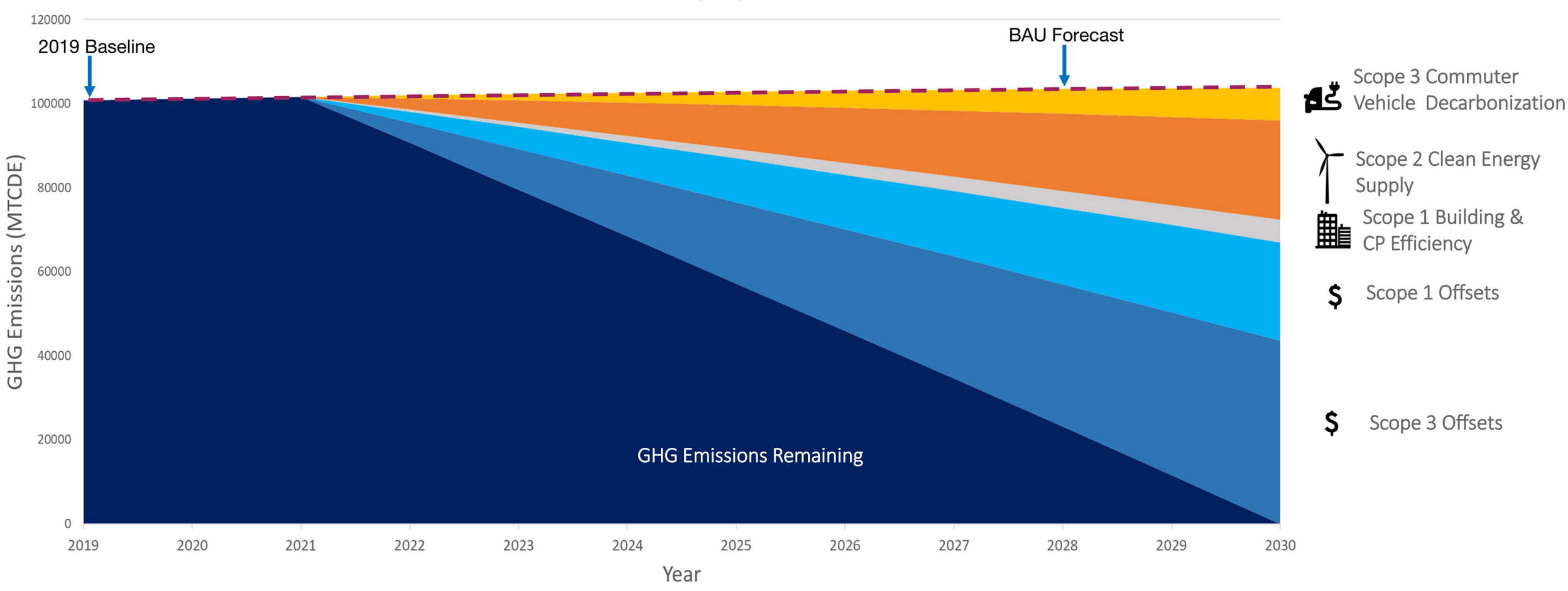
GHG Reduction Targets & Forecasts

GHG Forecasting

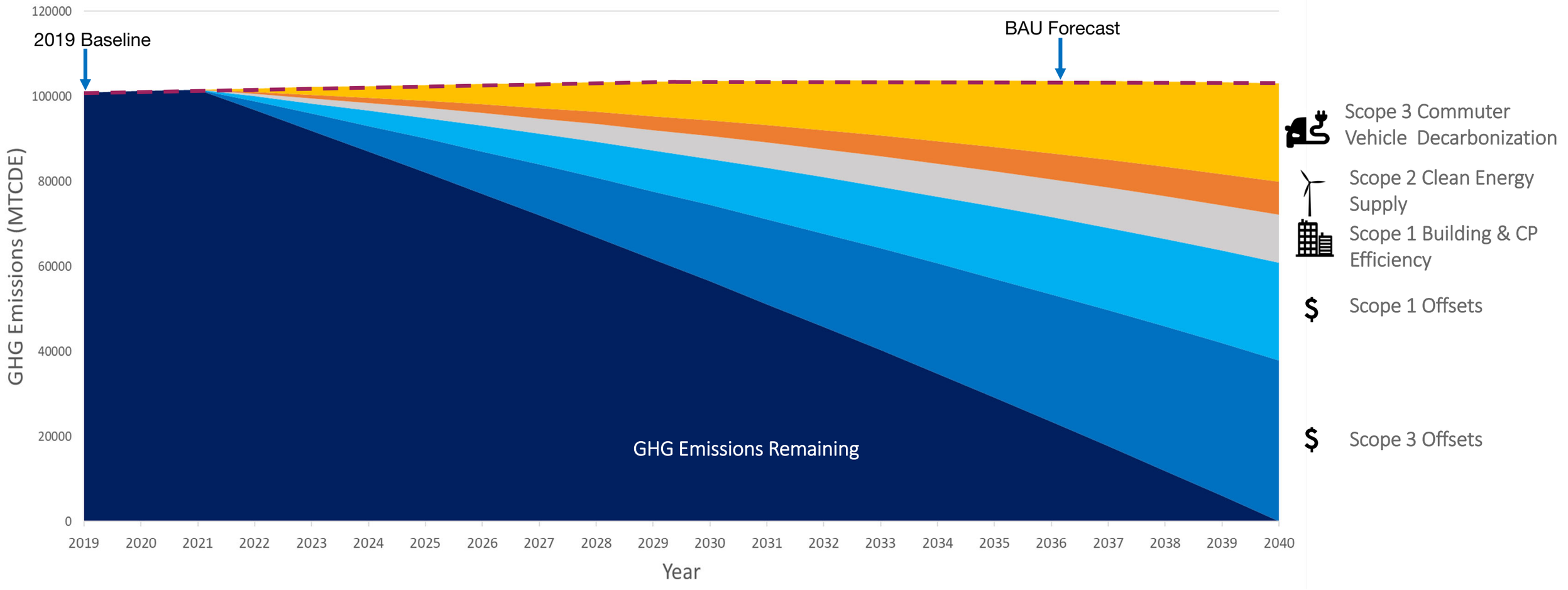
Business as usual trajectory assumptions

- Population growth – students, faculty & staff
- Building gross square footage growth
- Electric grid emissions factors – based on Renewable Portfolio Standards (RPS)
    - Future coordination with Dominion Energy

Carbon Neutrality by 2030



Carbon Neutrality by 2040



Carbon Neutrality Target Year

- Timeline needed for project implementation and budget planning (personnel and financial resources)
- Target that is ambitious, yet achievable – while responsive to climate emergency
- BAU Assumptions to be further refined:
  - Population growth – students, faculty & staff
  - Building GSF growth
  - Electric grid emissions factors – based on Renewable Portfolio Standards (RPS)

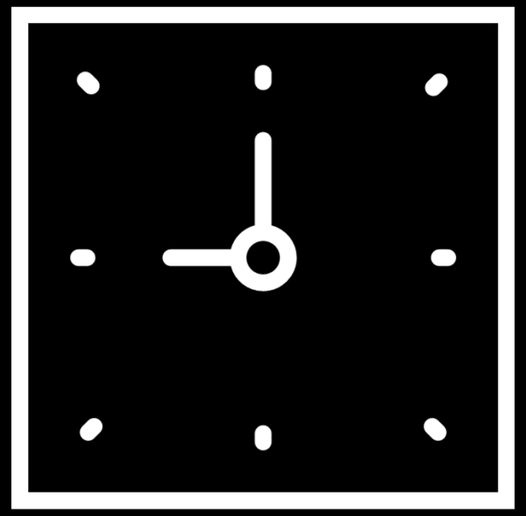
Next Steps

Upcoming Town Hall Schedule

- Wednesday, December 15th
- Friday, January 28th
- Friday, February 18th
- Wednesday, March 9th

Next Tasks

- Focused stakeholder engagement sessions Jan 2021
- Scenario projections with evaluation criteria metrics
- Strategy development
- Incorporate feedback



Thank you!