

Climate Action Plan



STAKEHOLDER WORKING GROUP
TRANSPORTATION - 10/19/2020

MEETING AGENDA

Objectives

- Orient the committee to the task and each other
- Discuss what is known today about this sector's contributions to greenhouse gasses and vulnerabilities to future climate impacts
- Develop criteria for use in selecting among potential strategies and actions

9:00-9:10 Welcome and Introductions

9:10-9:20 Introduction to the Cape Cod Climate Action Plan Process

9:20-10:00 **Adaptation** – What We Know Today About Hazards and Vulnerabilities

Small Group Reports

10:00-10:45 **Mitigation** – What We Know Today About Regional Greenhouse Gas Emissions

Small Group Reports

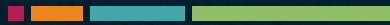
10:45-11:00 Break

11:00-11:30 Developing and Prioritizing Criteria for Climate Action Strategies

11:30-12:00 Public Comment & Next Steps

A photograph of a marsh landscape with tall, green grasses and a small body of water. The scene is captured in a soft, golden light, likely during sunrise or sunset. The grasses are dense and reach up to the water level. The water is calm and reflects the surrounding greenery and the warm light of the sky.

Cape Cod Climate Action Plan Process





CAPE COD CLIMATE INITIATIVE

A community-focused, information-based effort to inform a strategic framework and collaborative approach to address the region's contributions to and threats from climate change.



CAPE COD CLIMATE INITIATIVE

COMMUNITY MEETING SERIES

Feedback obtained helped to better understand actions taken to date, structure a stakeholder process, and identify priorities for development of the **climate action plan**.



Community Climate Meetings

OCTOBER 2019

Chatham • Wellfleet • Yarmouth • Mashpee



Climate Initiative Focus Groups

JANUARY 2020

Young Professionals and Educators • Municipal Staff • Environmental Groups • Town Energy Committees • Sustainable Economic Development Pillar



2018 Regional Policy Plan Climate Change Actions



GREENHOUSE GAS EMISSIONS INVENTORY

Regional baseline of
greenhouse gas emissions



EV CHARGING STATION SITING ANALYSIS

Potential electric vehicle
charging station locations



SOLAR SCREENING TOOL

Sites for utility scale solar
or energy storage



CAPE COD
COMMISSION

Search Site



OUR WORK ▾

RESOURCE LIBRARY

ABOUT US ▾

CALENDAR

MEETING NOTICES

Cape Cod Climate Initiative

Home > Work > Cape Cod Climate Initiative

Climate change is a key challenge facing the natural, built, and community systems of Cape Cod. Cape Cod is vulnerable to climate-related hazards, such as sea level rise, storm surge and flooding, erosion, damaging winds, elevated summer temperatures, and wildfire. These hazards put vulnerable populations at risk and can cause loss of life, damage buildings and infrastructure, impair coastal environments, and otherwise impact a community's economic, social, and environmental well-being, including impacting how Cape Cod's ecosystems function.

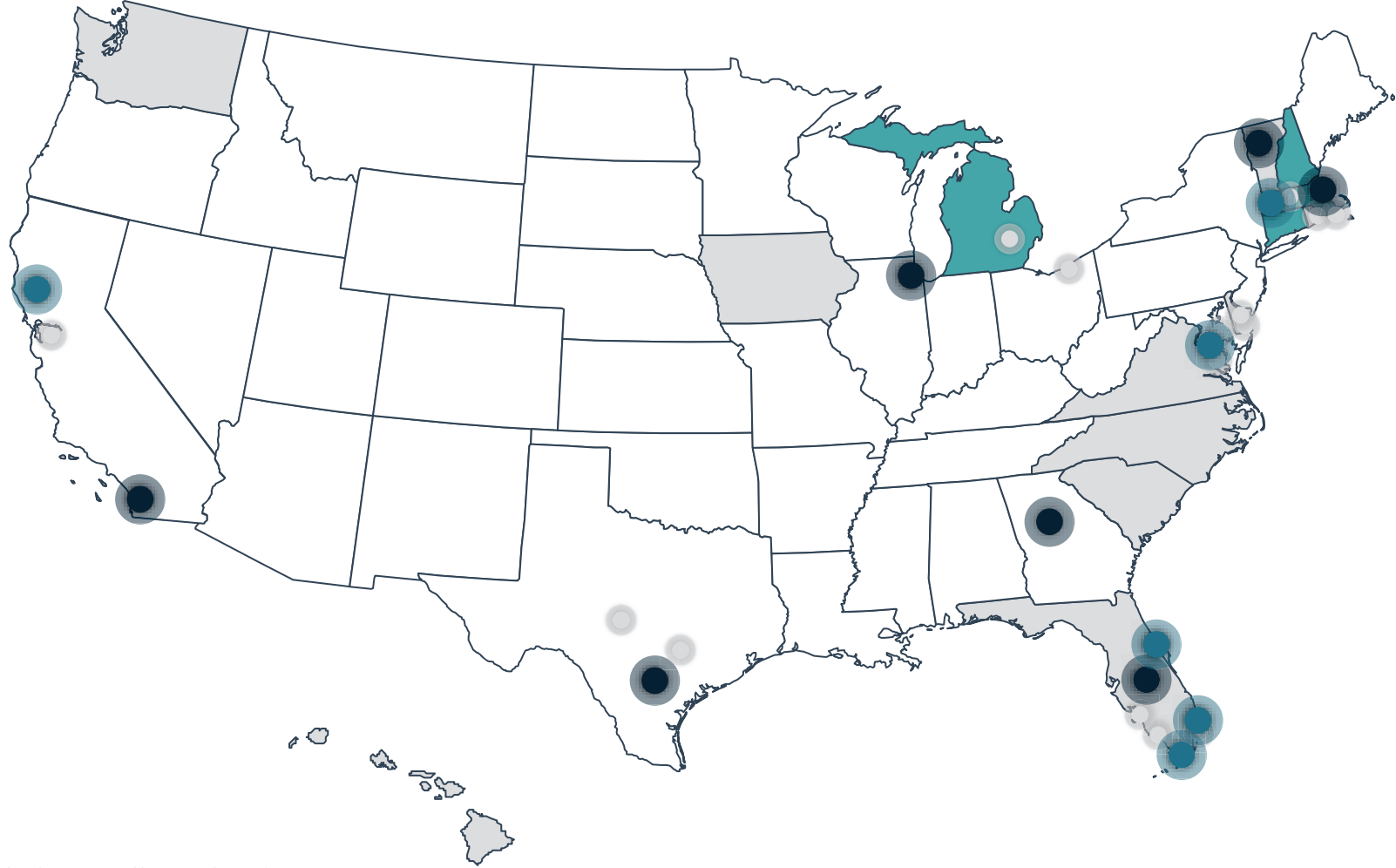
Mitigating the causes of climate change and adapting to its effects on Cape Cod involves regional planning and policy decisions with both environmental and economic considerations.






Stakeholders

If you are interested in participating, [please complete this form](#). The Cape Cod Commission is seeking

CLIMATE ACTION PLAN LITERATURE REVIEW



Plans Reviewed

- 
City/Town
 Atlanta, GA
 Boston, MA
 Burlington, VT
 Chicago, IL
 Orlando, FL
 San Antonio, TX
 San Diego, CA
- 
Regional
 Metropolitan Washington (DC)
 Monroe Co., FL
 Pioneer Valley, MA
 Sonoma Co., CA
 Southeast FL
 Volusia Co., FL
- 
State
 Connecticut
 Massachusetts
 Michigan
 New Hampshire

Additional Plans Collected

- City/Town - 11
- Regional - 3
- State - 10
- Other - 5

Total Plans Collected (46)
 Plans Selected for Review (17)

CAPE COD CLIMATE ACTION PLAN





Cape Cod Climate Action Plan

Subregional Municipal Working Groups to better understand local goals, capacity, and needs relative to climate action

FALL

Subregional
Municipal
Working
Groups

Stakeholder
Working
Groups
#1 and #2

Focus Group
#1

Stakeholder
Working
Group #3

Focus Group
#2

WINTER



Working Group Meeting Series



MEETING 1

OCTOBER

Understanding
Problems

MEETING 2

NOVEMBER

Identifying
Solutions

MEETING 3

DECEMBER

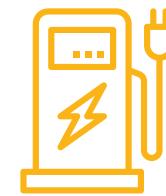
Taking
Action

RESPONDING TO CLIMATE CHANGE INVOLVES **TWO APPROACHES**



ADAPTATION

Adjustments in human and natural systems that moderate harm or take advantage of beneficial opportunities



MITIGATION

Limiting or preventing greenhouse gas emissions and enhancing activities that remove these gases from the atmosphere

QUESTIONS



DISCUSSION

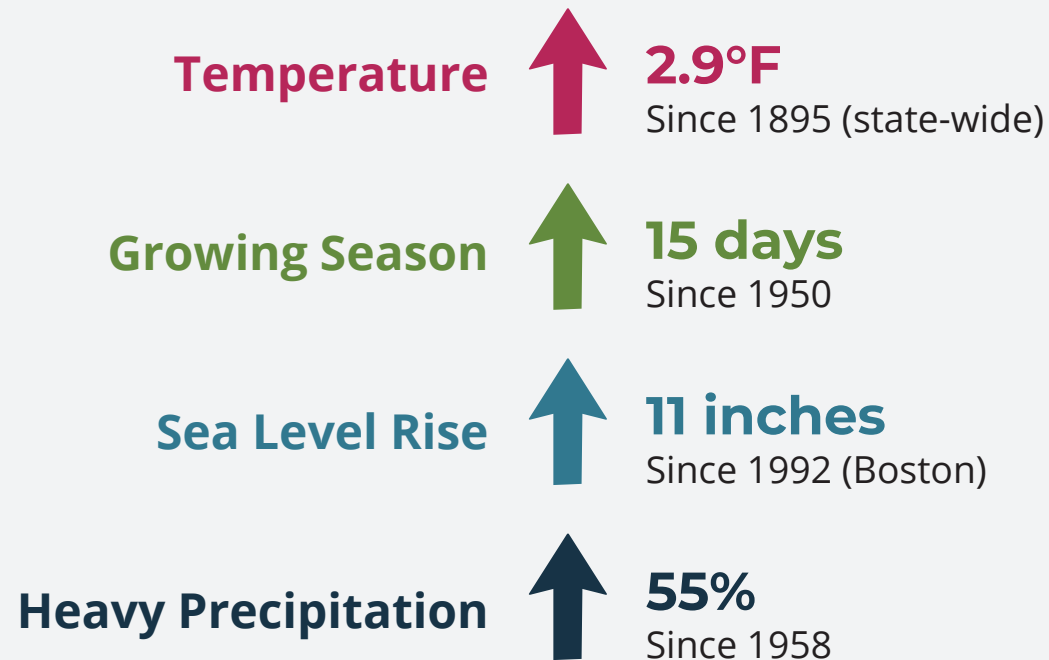


Adaptation



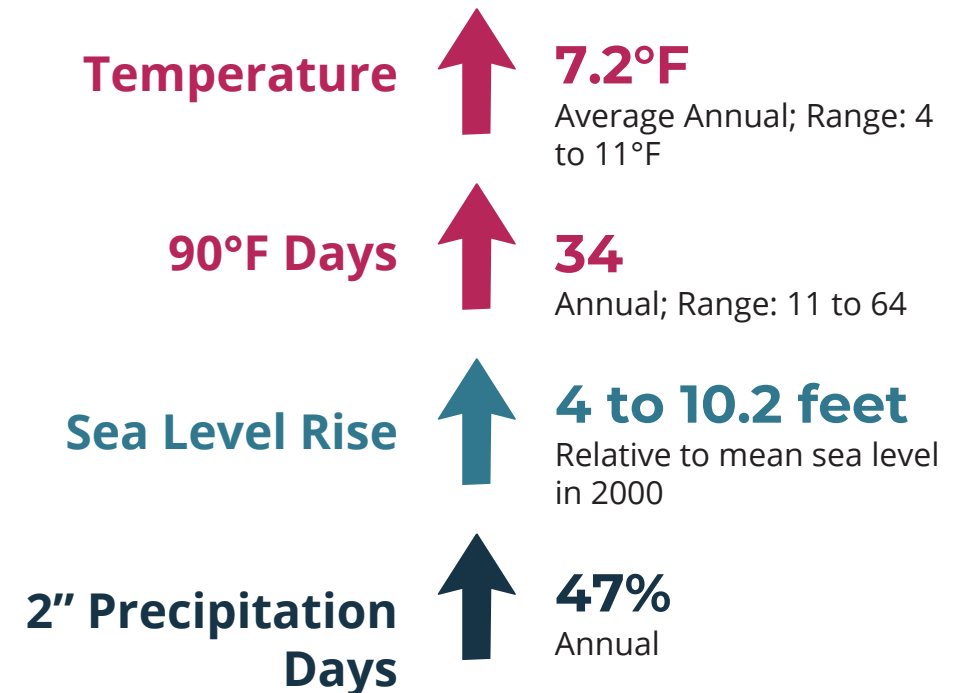
**What We Know Today About
Hazards and Vulnerabilities**

Massachusetts Observed Climate Changes



Source: Climate Science Special Report, 2017; NOAA NCEI nClimDiv; NOAA Ocean Service

Massachusetts Climate Changes Projected by the 2090s



Source: Northeast Climate Adaptation Science Center

PLANNING LAYERS

CLEAR



Sea Level Rise



Infrastructure



Erosion



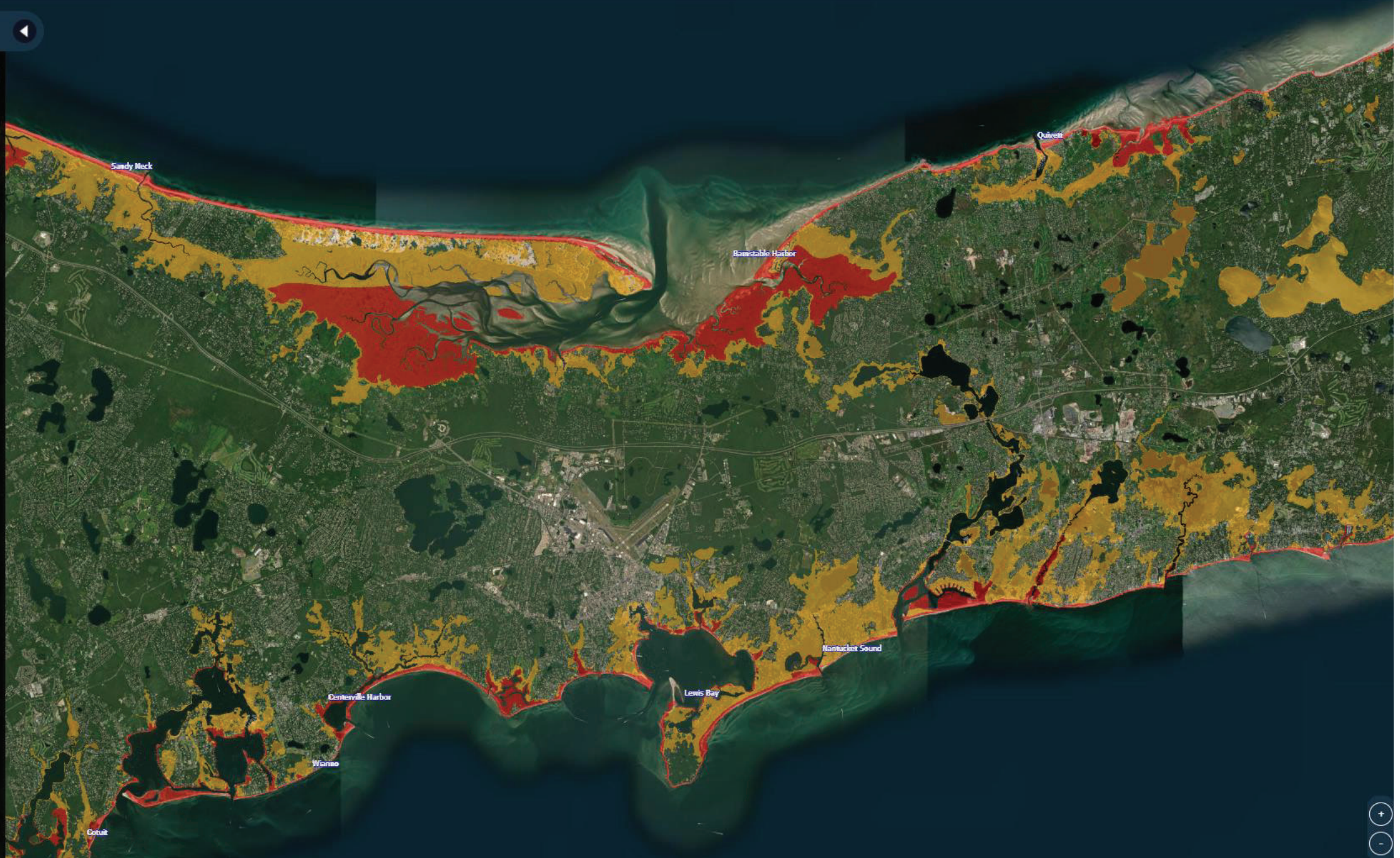
Inundation



Flood Zone

A AE AO VE

SLOSH



PLANNING LAYERS

CLEAR



Sea Level Rise



Infrastructure



Erosion



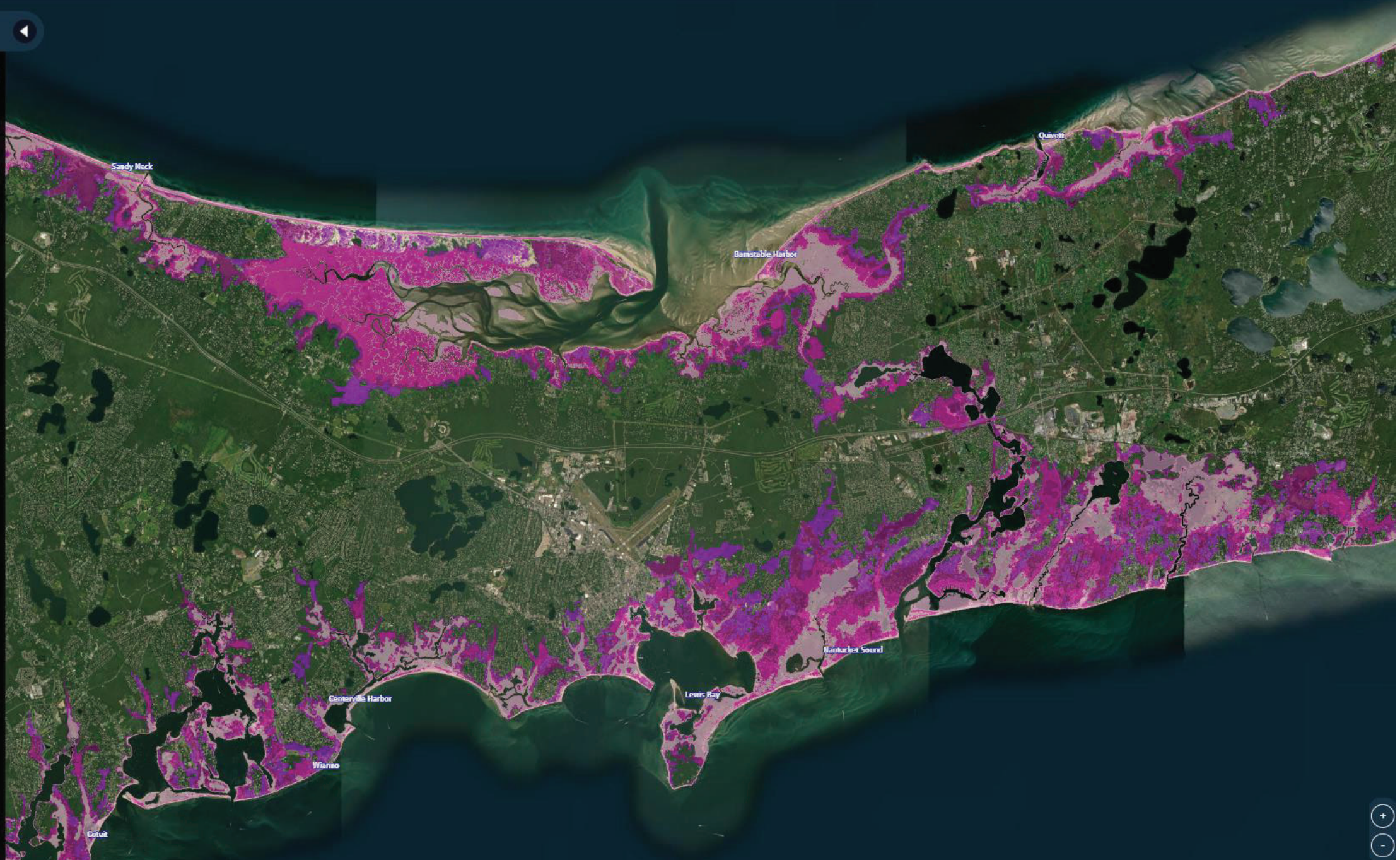
Inundation



✓ Flood Zone

✓ SLOSH

CAT1 CAT2 CAT3 CAT4



PLANNING LAYERS

CLEAR



Sea Level Rise

Sea Level Rise

1ft - 2ft - 3ft - 4ft - 5ft - 6ft

Disconnected Roads

1ft - 2ft - 3ft - 4ft - 5ft - 6ft

Critical Facilities

Infrastructure

Municipal Properties

Public and Private Roads

Private Public

Sewered Parcels

Coastal Defense Structures

Structures

Historic Districts

Historic Places

Erosion

Inundation

Flood Zone

SLOSH



PLANNING LAYERS

CLEAR



Sea Level Rise

- Sea Level Rise
- 1ft - 2ft - 3ft - 4ft - 5ft - 6ft

- Disconnected Roads
- 1ft - 2ft - 3ft - 4ft - 5ft - 6ft

- Critical Facilities

Infrastructure

- Municipal Properties
- Public and Private Roads
- Private Public
- Sewered Parcels
- Coastal Defense Structures
- Structures
- Historic Districts
- Historic Places

Erosion

Inundation

- Flood Zone
- SLOSH



PLANNING LAYERS

CLEAR



Sea Level Rise

Sea Level Rise

1ft - 2ft - 3ft - 4ft - 5ft - 6ft

Disconnected Roads

1ft - 2ft - 3ft - 4ft - 5ft - 6ft

Critical Facilities

Infrastructure

Municipal Properties

Public and Private Roads

Private Public

Sewered Parcels

Coastal Defense Structures

Structures

Historic Districts

Historic Places

Erosion

Inundation

Flood Zone

SLOSH





Climate Effects - Transportation

- Flood events can be a nuisance, force detours, and create emergency response issues for isolated areas
- Flood events can undermine or wash out culverts and bridges
- MassDOT has estimated that 80% of state culverts are undersized
- Increased precipitation will require redesign of drainage infrastructure
- Damaged transportation networks can affect mobility, tourism, and the local economy
- Rising temperatures impact public transit system operations

**Based on your
experience, is
there anything
you would add?**



ADAPTATION

Adjustments in human and natural systems that moderate harm or take advantage of beneficial opportunities

EXAMPLES

Elevate, modify, or abandon roadways and bridges

Relocate buildings and other infrastructure out of floodplains

Redesign and replace undersized culverts and drainage infrastructure

QUESTIONS



DISCUSSION



Mitigation



**What We Know Today About
Regional Greenhouse Gas Emissions**



GHG Inventory

What is a Greenhouse Gas Inventory?

a comprehensive accounting of total greenhouse gas emissions for all man-made sources.

Cape Cod Greenhouse Gas Inventory

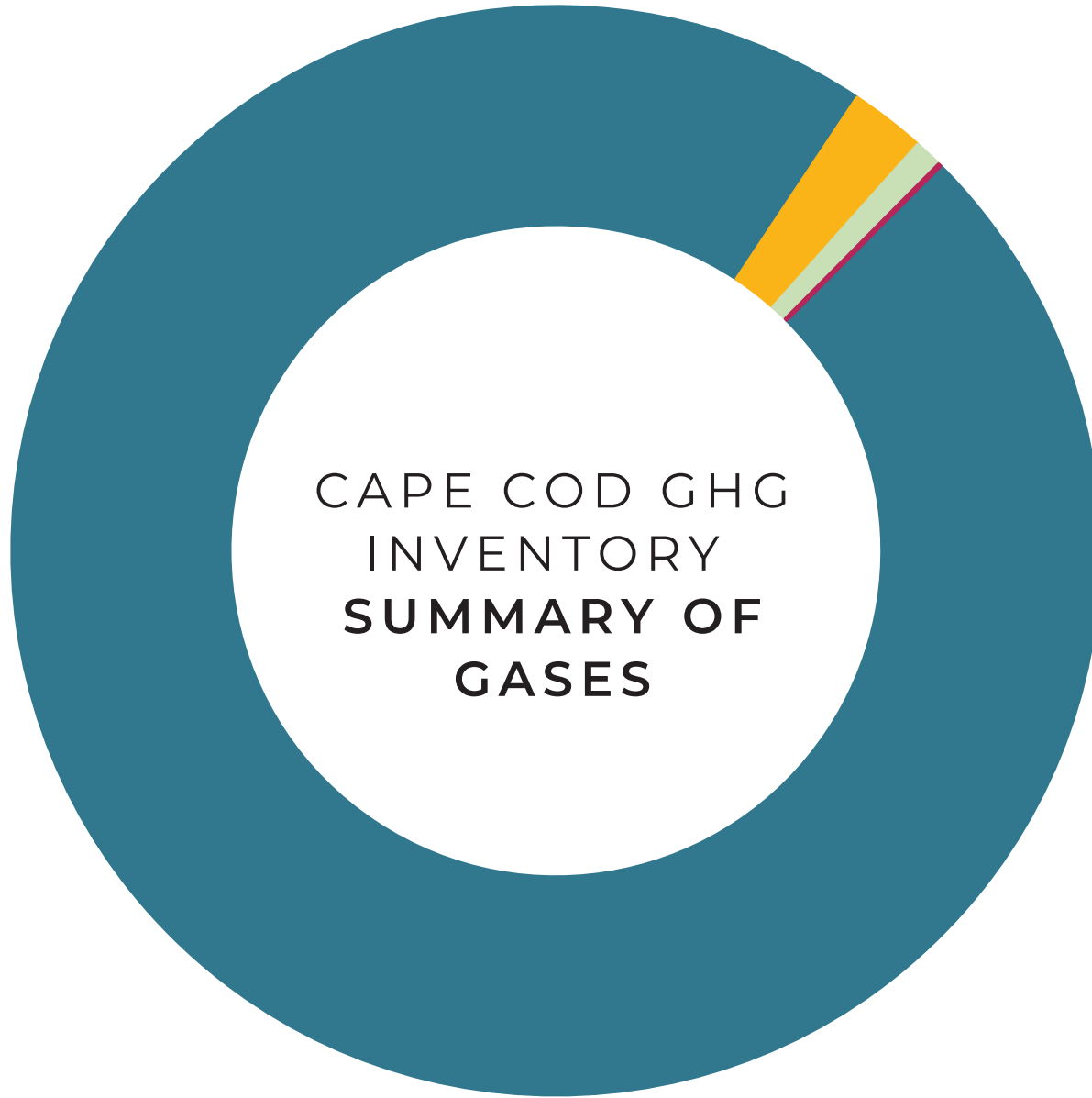
Calculate a greenhouse gas inventory that provides a complete picture of greenhouse gas emissions from Cape Cod

Establish an accounting method that is comparable and reproducible so we can measure emissions going forward

Identify high emissions sectors

Develop detailed inventory specific to our region

CAPE COD GHG
INVENTORY
SUMMARY OF
GASES



- 96.8% **Carbon dioxide** CO₂
- 2.2% **Methane** CH₄
- 0.8% **Nitrous oxide** N₂O
- 0.1% **Sulfur hexafluoride** SF₆
- 0.0% **Hydrofluorocarbons** HFCs
- 0.0% **Perfluorocarbons** PFCs

■ CO2 ■ CH4 ■ N2O ■ SF6

| GHG INVENTORY EMISSIONS SECTORS

6

SECTORS

19

SUB-SECTORS

60

SUB-SECTOR
CATEGORIES

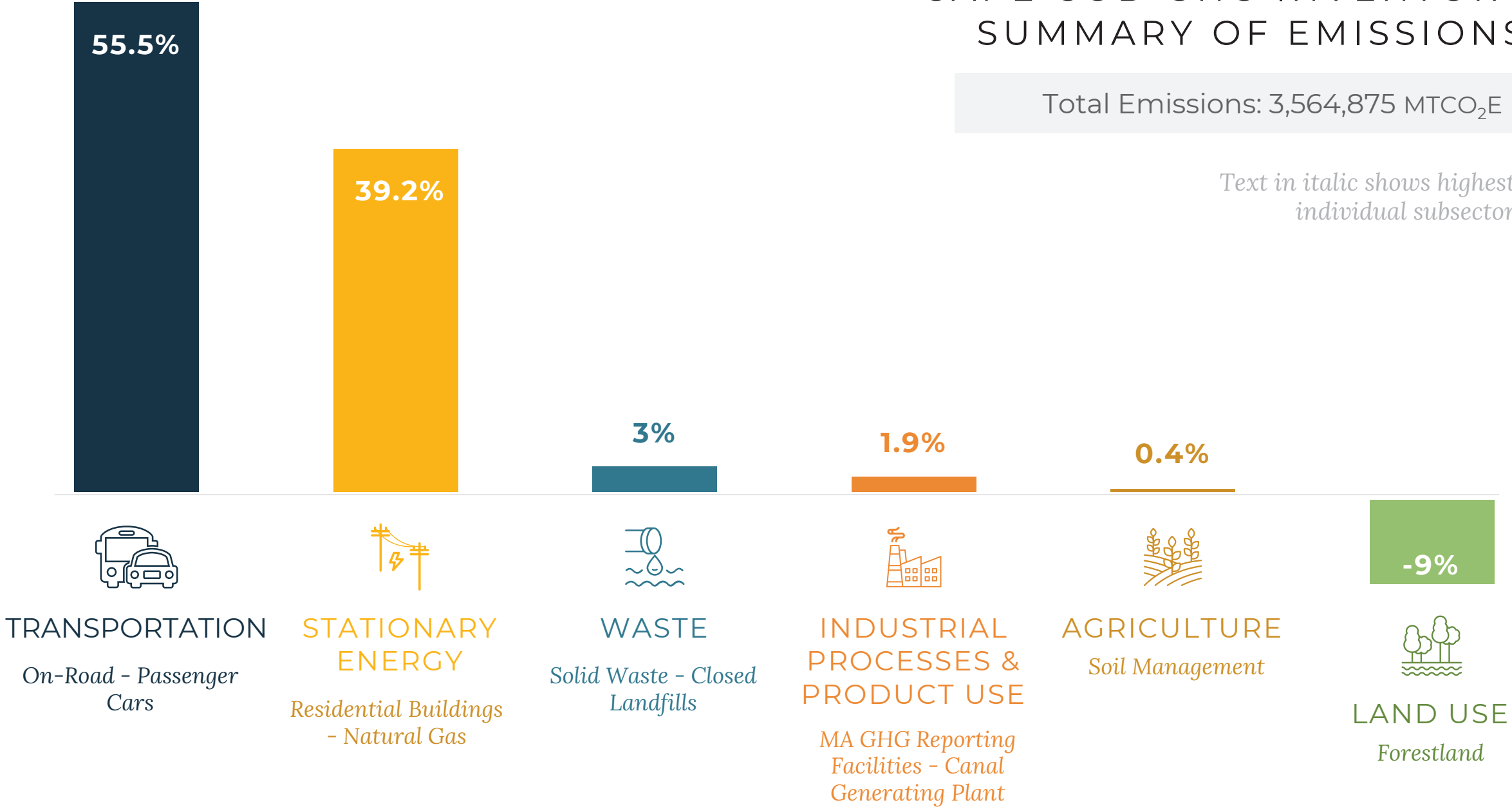
Every sub-sector category has a specific calculation, required data, and data source



CAPE COD GHG INVENTORY SUMMARY OF EMISSIONS

Total Emissions: 3,564,875 MTCO₂E

Text in italic shows highest individual subsector



GHG INVENTORY

Sector Ranking

Highest to Lowest Emissions



STATE



STATIONARY ENERGY



TRANSPORTATION



INDUSTRIAL PROCESSES & PRODUCT USE



WASTE



AGRICULTURE



CAPE COD



TRANSPORTATION



STATIONARY ENERGY



WASTE



INDUSTRIAL PROCESSES & PRODUCT USE



AGRICULTURE



Transportation



Production



Consumption



Seasonality

On-road: **1,549,771**

Passenger	991,271
Light duty	348,199
Heavy duty	193,095
Motorcycles	17,206



CAPE COD
EMISSIONS

43%



MA STATE
EMISSIONS

40%



Transportation



Production



Consumption



Seasonality

Public transportation: 60,161

CCRTA buses	3,772
Mashpee Wampanoag	89
SSA buses	587
Peter Pan	3,766
P&B	2,506
Ferries	49,441



CAPE COD
EMISSIONS

0.7%

*of on-road emissions
(excluding ferries)*



Transportation



Production



Consumption



Seasonality



Air:

19,614

Commercial 19,614



Rail:

918

Cape Flyer 244

Cape Coastal and
Mass Coastal 674



CAPE COD
EMISSIONS

0.5%

(aviation)



MA STATE
EMISSIONS

6%

(aviation)



Transportation



Production



Consumption



Seasonality



Off-road:

359,781

Agriculture	158
Aviation support:	299
Construction	64,366
Commercial/Industrial ...	146,725
Lawn and Garden	61,464
Pleasure craft	72,846
Off-road vehicles	6,617
JBCC	7,305



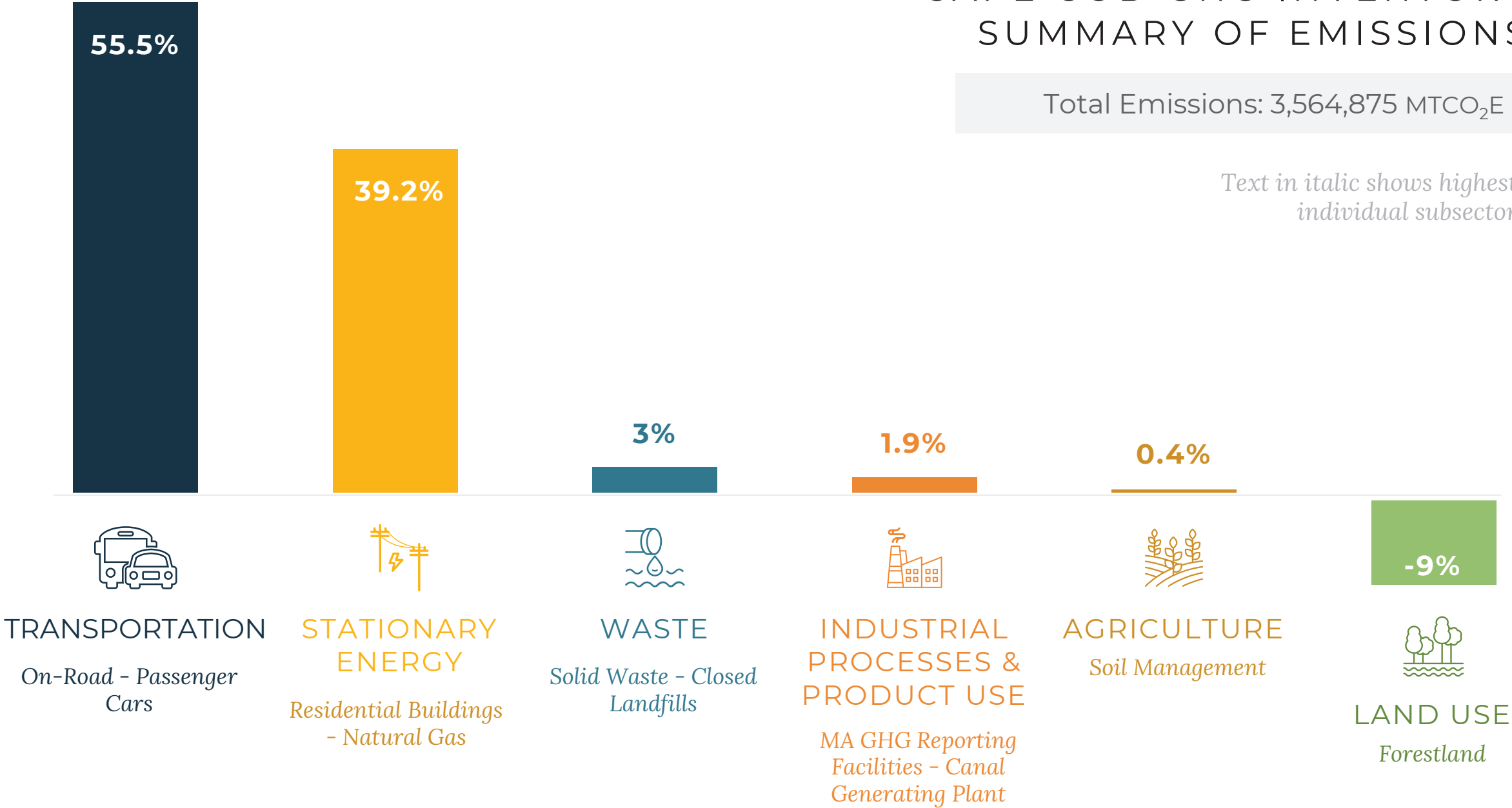
CAPE COD
EMISSIONS

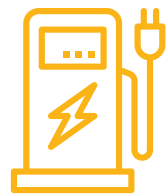
10%

CAPE COD GHG INVENTORY SUMMARY OF EMISSIONS

Total Emissions: 3,564,875 MTCO₂E

Text in italic shows highest individual subsector





MITIGATION

Limiting or preventing greenhouse gas emissions and enhancing activities that remove these gases from the atmosphere

EXAMPLES

Support work from home

Facilitate EV adoption

Promote biking and transit

Waste management transportation

Promote walkable villages

QUESTIONS



DISCUSSION

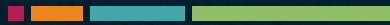
BREAK



Return at 11:05



Developing and Prioritizing Criteria for Actions



MEANINGFUL CLIMATE ACTION ADDRESSES ADAPTATION AND MITIGATION

ADAPTATION

Elevate, modify, or abandon roadways and bridges

Relocate buildings and other infrastructure out of floodplains

Redesign and replace undersized culverts and drainage infrastructure

Restore tidal flow to salt marshes

Safe routes to school

Smart growth/land use

MITIGATION

Support work from home

Facilitate EV adoption

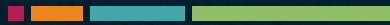
Promote biking and transit

Waste management transportation

Promote walkable villages



Public Comment and Next Steps



Climate Action Plan



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