Climate Action Plan

MUNICIPAL SUBREGIONAL WORKSHOP

MID CAPE - 10/14/2020

CAPE COD CLIMATE INITIATIVE

CAPE COD COMMISSION

MEETING AGENDA

Objectives

- Introduce the Cape Cod Climate Action Plan process
- Clarify existing understanding of regional hazards, vulnerabilities, and priorities, and climate adaptation and mitigation opportunities
- Identify current municipal priorities, barriers and needs, and opportunities for regional, sub-regional, and local action.

9:00-9:15	**Welcome and Introductions**
9:15-9:25	**Introduction to the Cape Cod Climate Action Plan Process**
9:25-10:00	**Climate Risks, Hazards, Vulnerabilities, and Priorities**
10:00-10:35	**Priority Municipal Adaptation and Mitigation Actions Small Group Reports**
10:35-10:50	**Break**
10:50-11:45	**Identifying Opportunities and Barriers to Implementation Small Group Reports**
11:45-12:00	**Public Comment & Next Steps**

Welcome and Introductions

Cape Cod Climate Action Plan

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

All | Global | Federal | State | Regional | Local

Local

Truro Energy Committee established — 1992

1992 — Chatham joins Community Rating System

Orleans joins Community Rating System — 1993

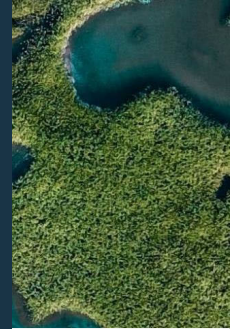
1995 — Harwich joins Community Rating System

Three Bays Preservation formed (now known as the Barnstable Clean Water Coalition) — 1996

2000 — Orleans Wind Energy Committee formed

Falmouth Energy Committee established — 2001

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 Climate Initiative

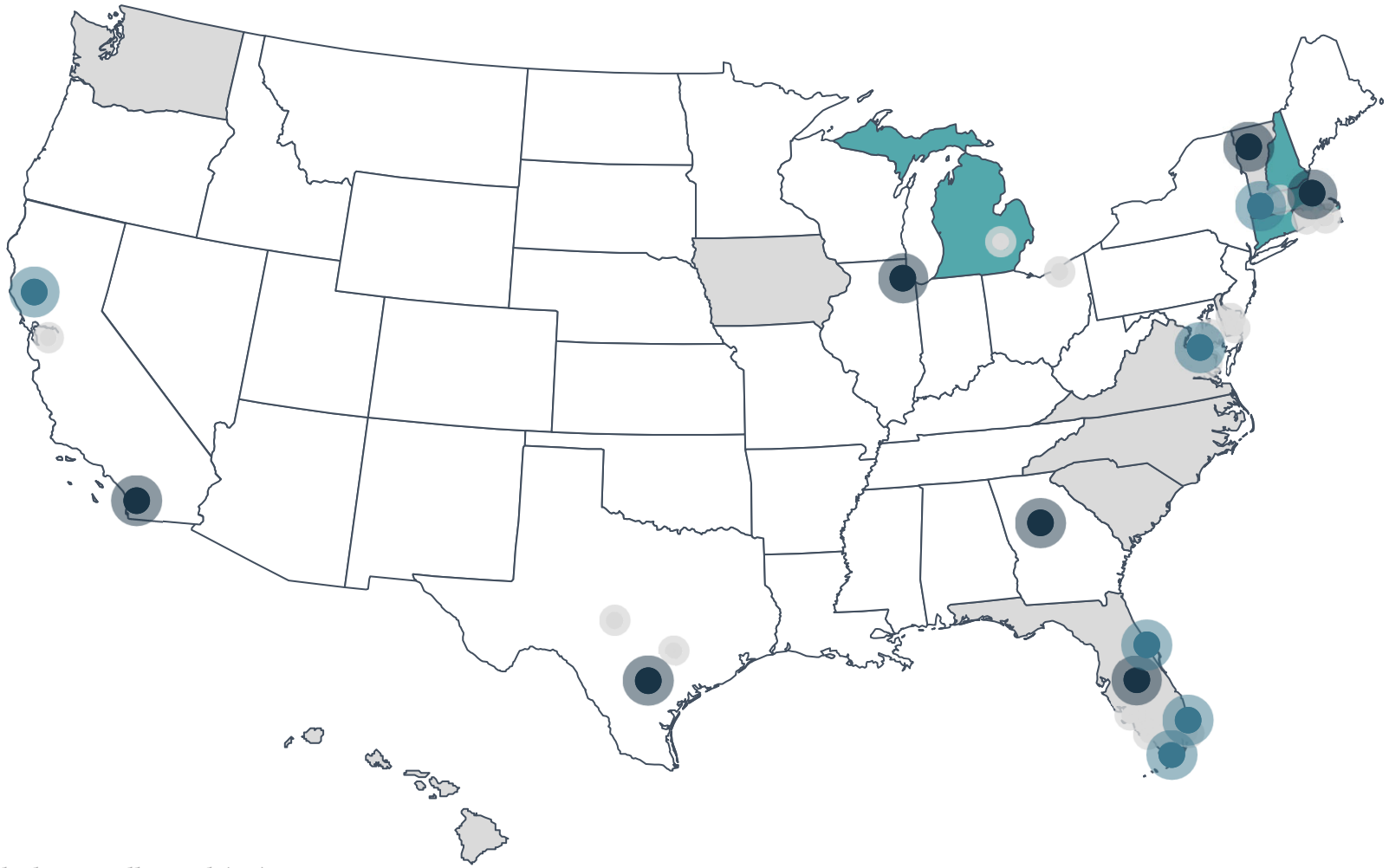
Climate change is a key challenge facing the natural, built, and community systems of Cape Cod. Cape Cod is vulnerable to climate-related hazards, such as sea level rise, storm surge and flooding, erosion, damaging winds, elevated summer temperatures, and wildfire. These hazards put vulnerable populations 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



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

Plans Reviewed

City/Town
Atlanta, GA
Boston, MA
Burlington, VT
Chicago, IL
Orlando, FL
San Antonio, TX
San Diego, CA

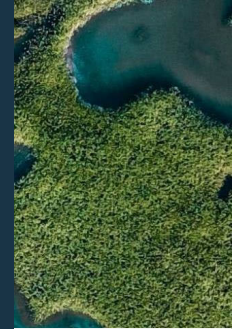
Regional
Metropolitan Washington (DC)
Monroe Co., FL
Pioneer Valley, MA
Sonoma Co., CA
Southeast FL
Volusia Co., FL

State
Connecticut
Massachusetts
Michigan
New Hampshire

Additional Plans Collected

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

Elements of a Climate Action Plan

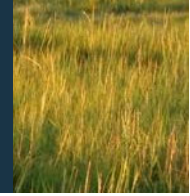


What is a Climate Action Plan?

A climate action plan is a strategic framework that details the policies, measures, and activities a community will take to reduce greenhouse gas emissions and track progress.

Common Components

- Regional and local climate risks and vulnerabilities
- Baseline greenhouse gas emissions
- Goals
- Identify adaptation and resiliency measures
- Identify policy options and mitigation actions
- Forecast impacts of mitigation actions
- Recommendations and strategy for implementation



Planning for Climate Action

- GHG Emissions Inventory
- Cape-wide Survey
- Student Climate Ambassador Program
- Mitigation and Adaptation Strategies
- Legal and Jurisdictional Analysis
- Fiscal Economic Modeling
- Stakeholder Engagement

GHG INVENTORY **SUMMARY**

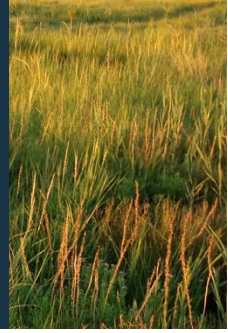
GHG Inventory sets the baseline to measure emissions going forward

Create quantifiable **performance measures**

Engage community on strategy development

Draft **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 — WINTER

- **Subregional Municipal Working Groups**
- **Stakeholder Working Groups #1 and #2**
- **Focus Group #1**
- **Stakeholder Working Group #3**
- **Focus Group #2**

QUESTIONS

DISCUSSION

CAPE COD CLIMATE INITIATIVE

CAPE COD COMMISSION

Climate Risks, Hazards, Vulnerabilities, and Priorities

MA Climate Projections

BY END OF CENTURY

CHANGES IN PRECIPITATION

- 18% increase in consecutive dry days
- 57% increase in days with > 1 in. rainfall
- 7.3 inches additional annual rainfall

RISING TEMPERATURES

- 10.8°F increase in average annual temperature
- Up to 64 fewer days/yr with min. temperatures < 32* F
- Up to 64 more > 90-degree days/year

SEA LEVEL RISE

- 4-10.5 feet along the MA coast

EXTREME WEATHER

- Increase in frequency and magnitude

Mid Cape


CAPE COD
COASTAL PLANNER
Select Shoreline Location
PLANNING LAYERS
CLEAR
Sea Level Rise
Infrastructure
Erosion
Inundation
Flood Zone
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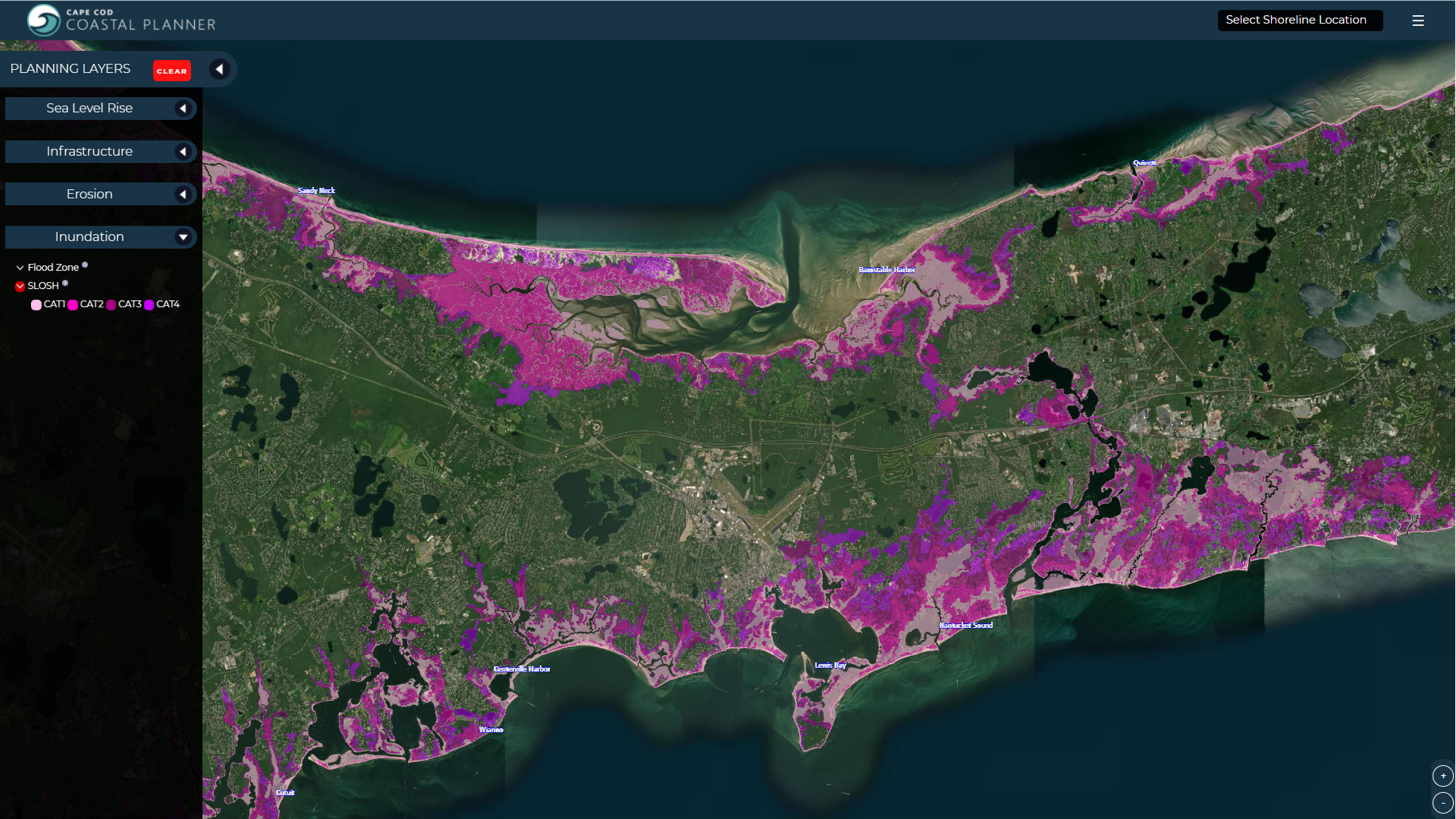
SLOSH
Sandy Neck
Barnstable Harbor
Quivett
Nantucket Sound
Lewis Bay
Centerville Harbor
Wianno
Cotuit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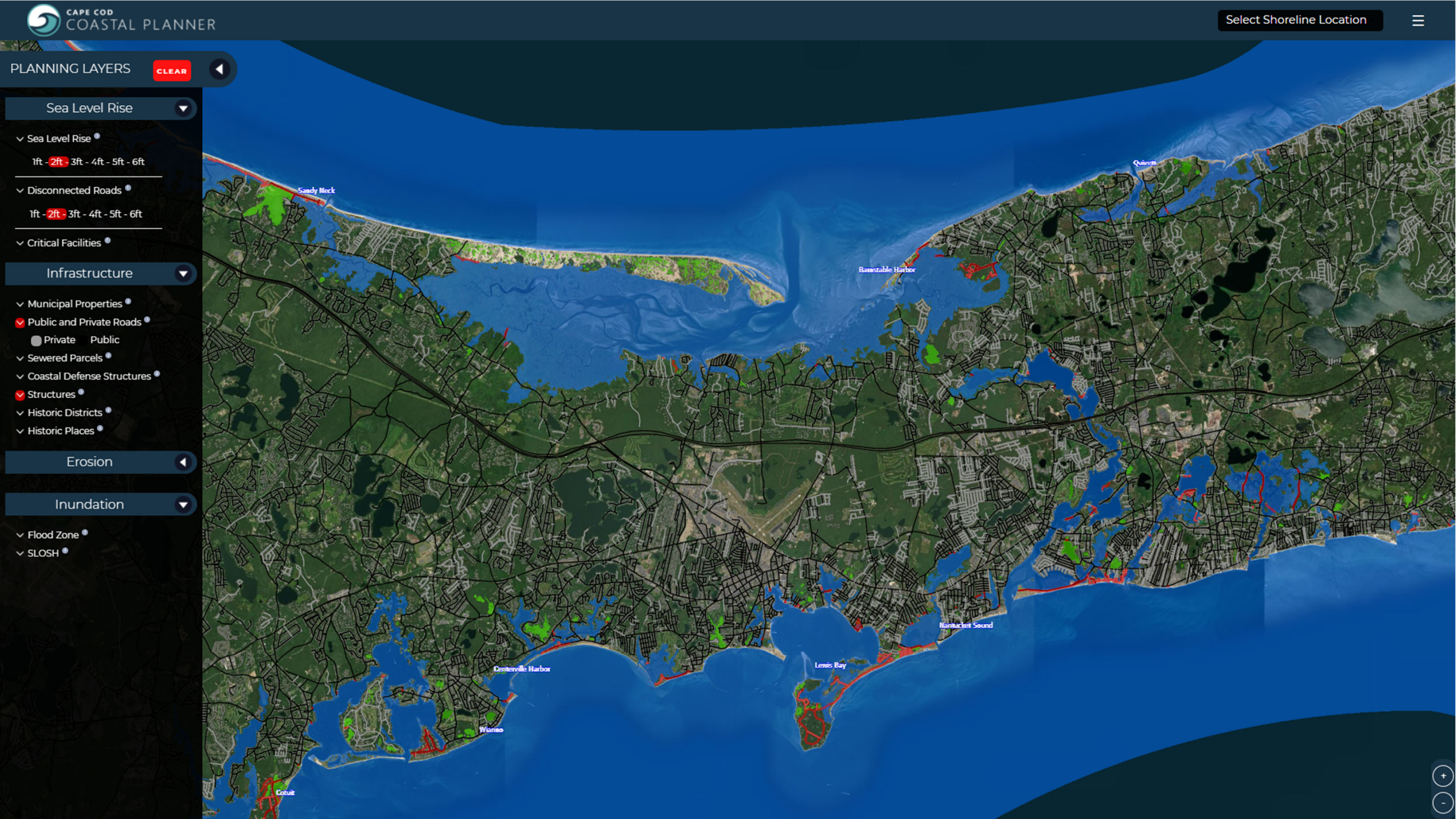
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Critical Facilities
Infrastructure
Municipal Properties
Public and Private Roads
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Coastal Defense Structures
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Historic Districts
Historic Places
Erosion
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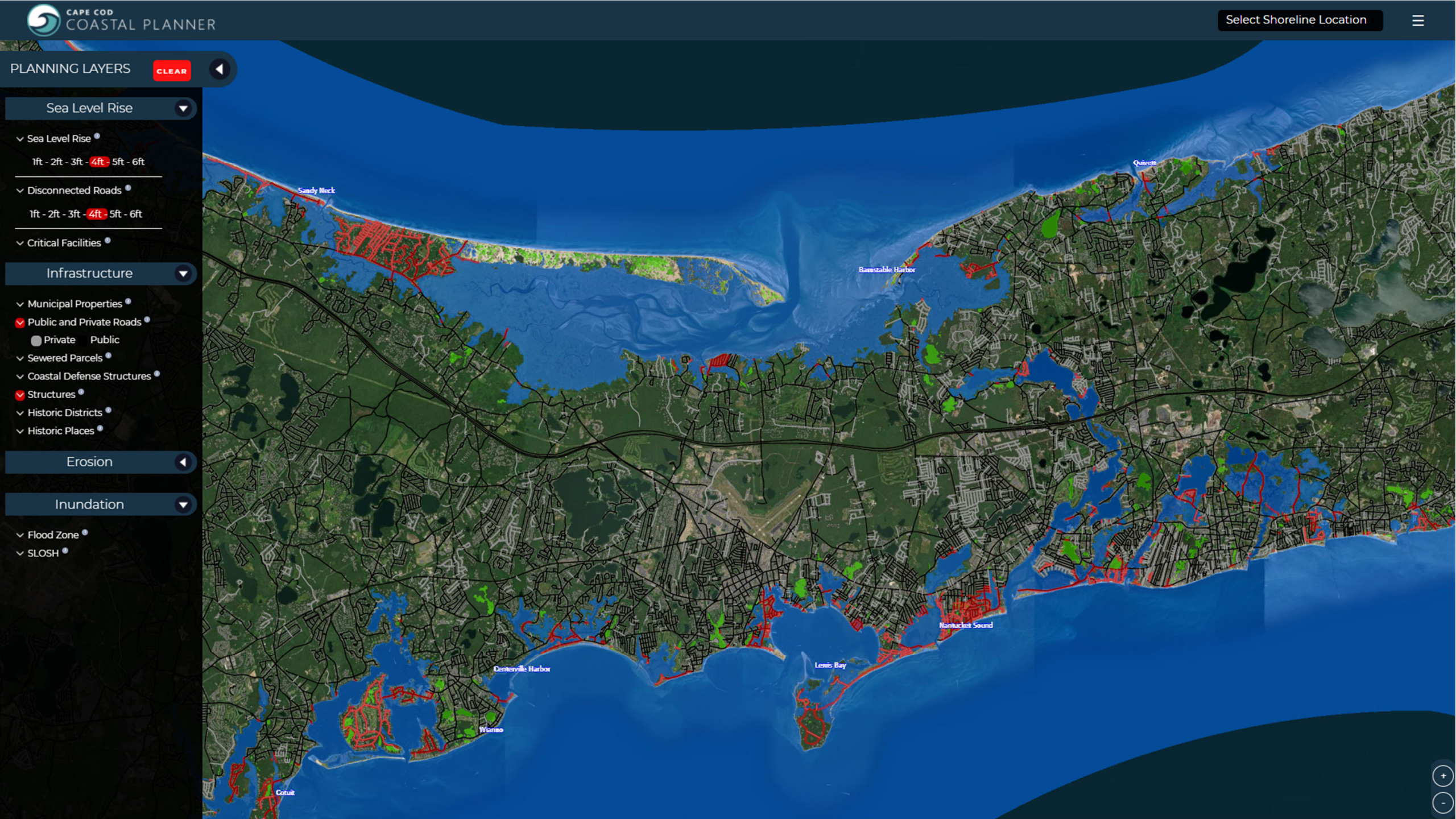
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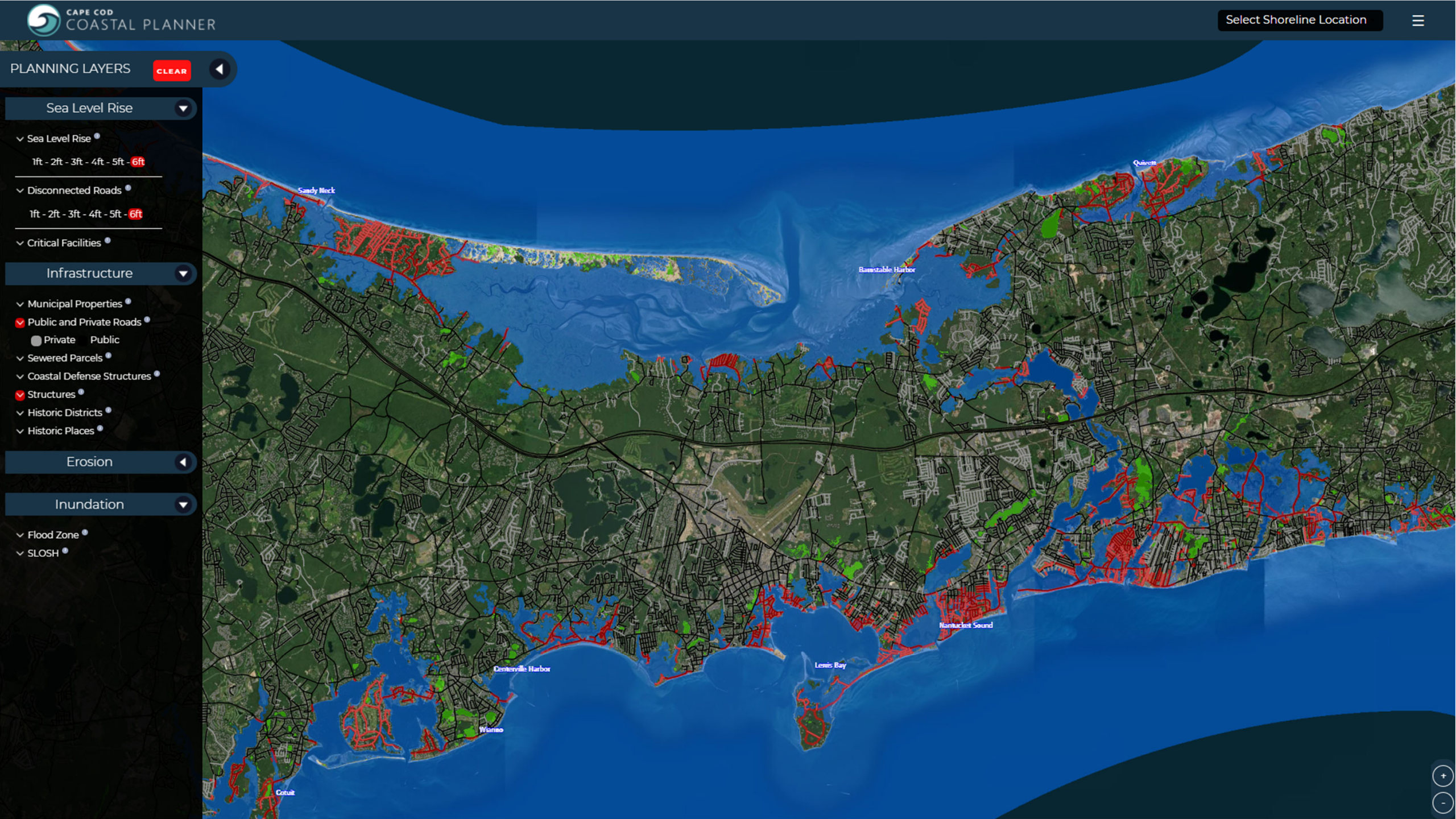
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Massachusetts Observed Climate Changes

Temperature ↑ **2.9°F**
Since 1895 (state-wide)

Growing Season ↑ **15 days**
Since 1950

Sea Level Rise ↑ **11 inches**
Since 1992 (Boston)

Heavy Precipitation ↑ **55%**
Since 1958

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

Massachusetts Climate Changes Projected by the 2090s

Temperature ↑ **7.2°F**
Average Annual; Range: 4 to 11°F

90°F Days ↑ **34**
Annual; Range: 11 to 64

Sea Level Rise ↑ **4 to 10.2 feet**
Relative to mean sea level in 2000

2" Precipitation Days ↑ **47%**
Annual

Source: Northeast Climate Adaptation Science Center

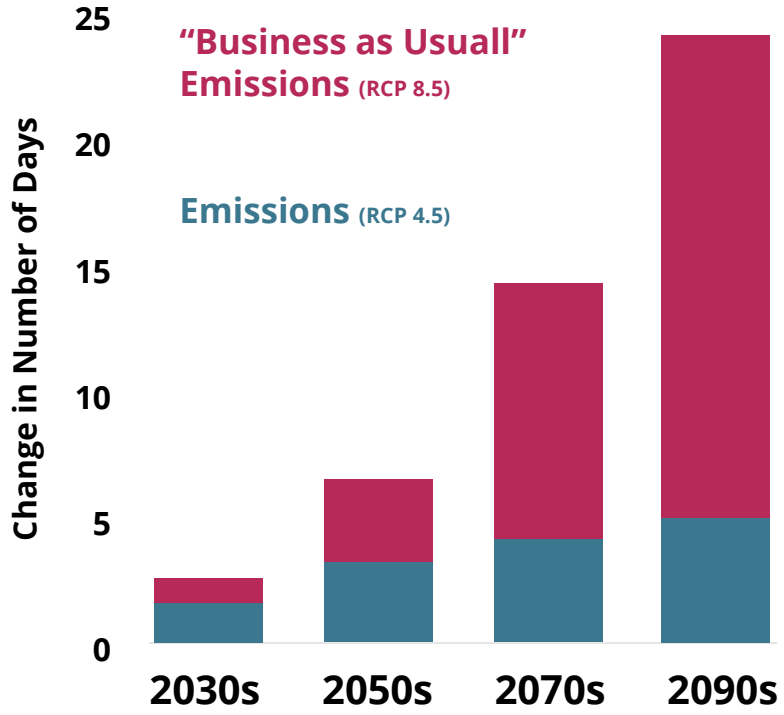
Massachusetts Climate Changes Projected by the 2090s | **Temperature**

7.2° F Average Annual

34 Annual

Summer Days Over 95°F

Massachusetts



Data courtesy A. Karmalkar, Northeast Climate Adaptation Science Center. Figure by D. Brown

More Warm Winter Days, Less Heating Demand

26.2%

By the 2090s

More Warm Summer Days, More Cooling Demand

178%

By the 2090s

Source: Northeast Climate Adaptation Science Center, ResilientMA.org, accessed 2018.

Massachusetts Climate Changes Projected by the 2090s |

resilient MA

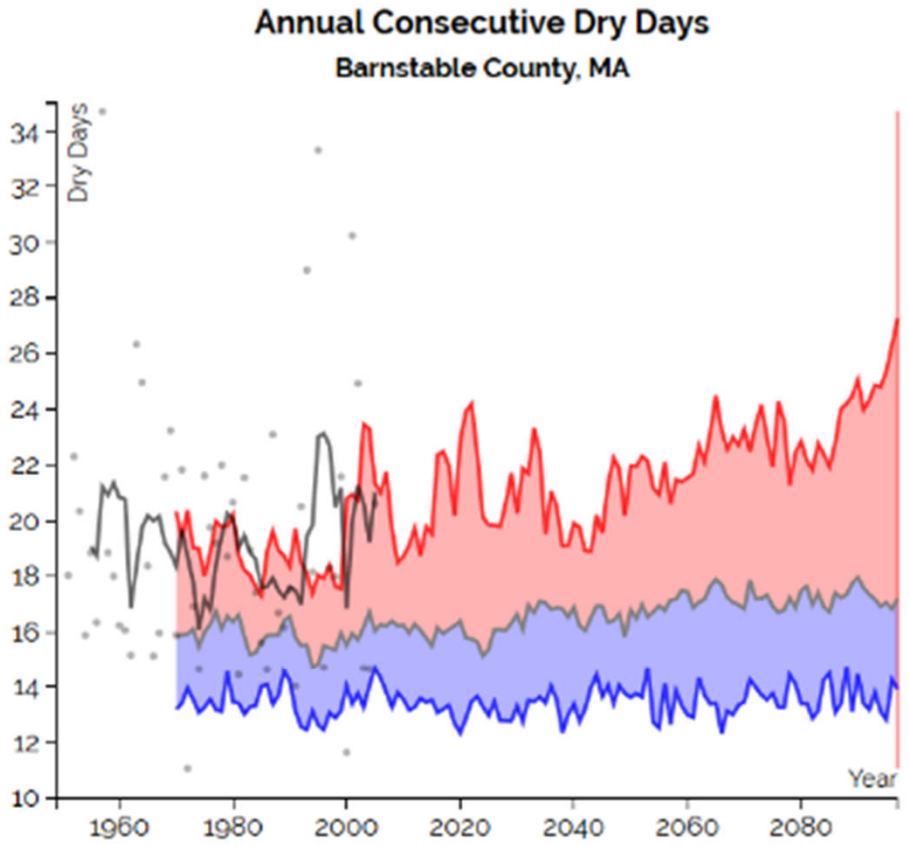
Find maps, data products, reports, articles... Search

County: Barnstable County, MA

Calculated Variable:
Consecutive Dry Days

Season: Annual

Add Chart Remove this Chart



Download Data

Observed

	days
5-yr Mean	

Modeled days 2095–2099

Max	27.27
Median	17.2
Min	13.92

Changes from 1971-2000 for:

2020 - 2049	-1.84days
2040 - 2069	-1.30days
2060 - 2089	-1.03days
2080 - 2097	-0.95days

Massachusetts Climate Changes Projected by the 2090s | **Precipitation 2”**

47% Annual

resilient MA

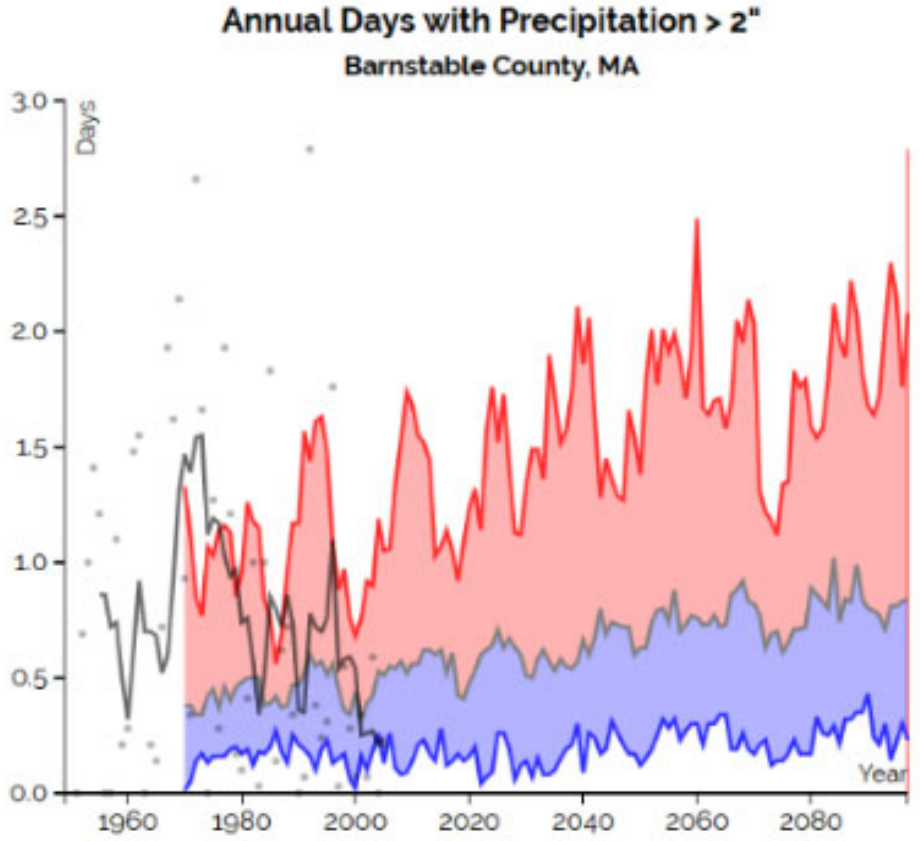
Find maps, data products, reports, articles... Search

County: Barnstable County, MA

Calculated Variable: Days with Precipitation > 2"

Season: Annual

Add Chart Remove this Chart



Download Data

Observed

days

5-yr Mean

Modeled days 2095–2099

Max	2.08
Median	0.84
Min	0.23

Changes from 1971-2000 for:

2020 - 2049	0.25days
2040 - 2069	0.37days
2060 - 2089	0.41days
2080 - 2097	0.47days

QUESTIONS

DISCUSSION

CAPE COD CLIMATE INITIATIVE

CAPE COD COMMISSION

MVP PROGRAM

Summary of Cape Cod Priorities

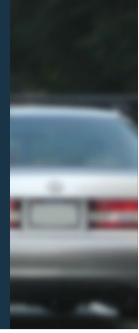
98 priorities identified by all 15 towns

MVP PROGRAM

Mid Cape Priority Summary

21 priorities identified

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

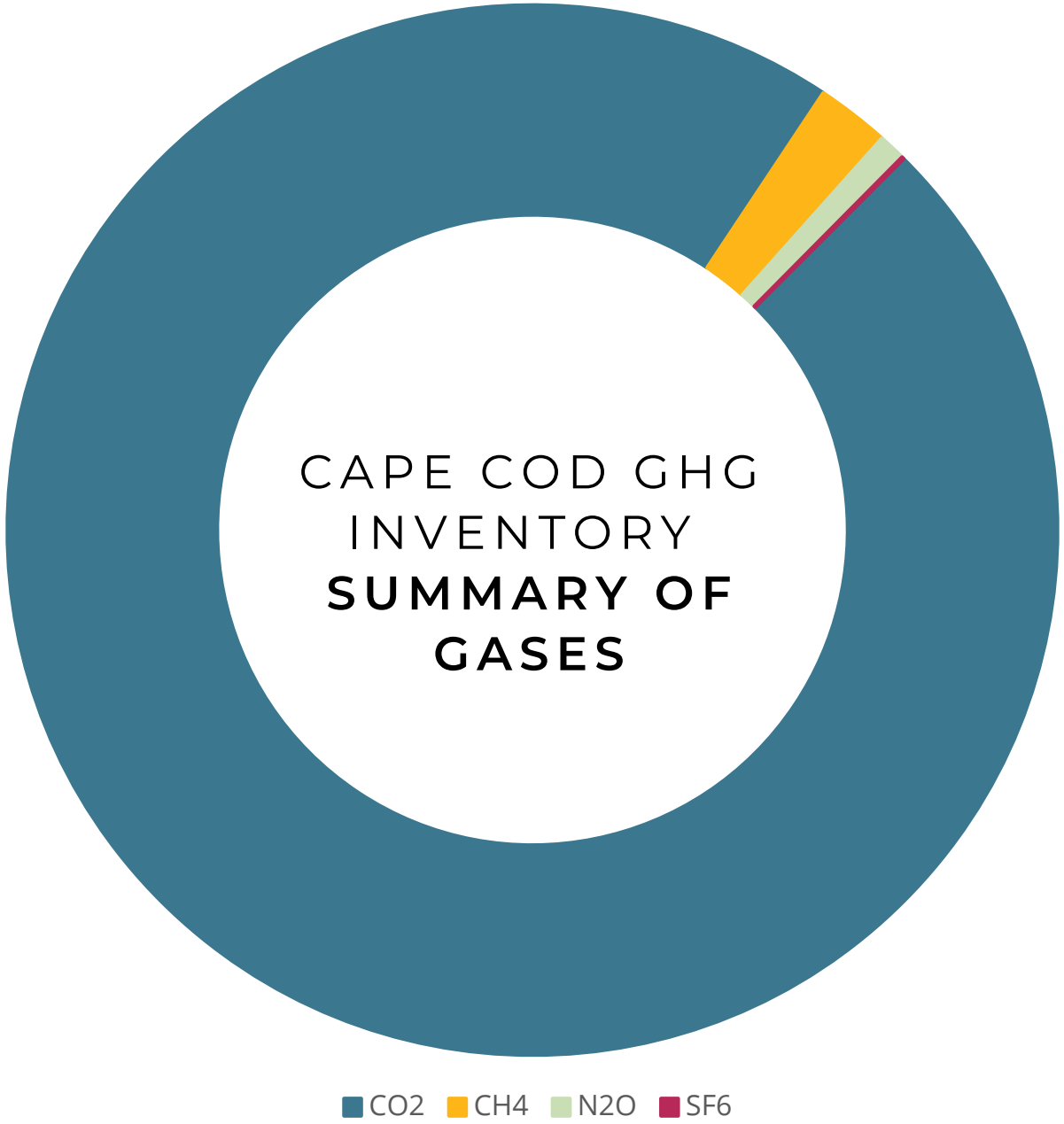
GHG INVENTORY

Scope

Production-based Emissions
from activities within Barnstable County

Consumption-based Emissions
from certain activities outside of Barnstable County

Seasonality
consider where appropriate



96.8% **Carbon dioxide** CO_2

2.2% **Methane** CH_4

0.8% **Nitrous oxide** N_2O

0.1% **Sulfur hexafluoride** SF_6

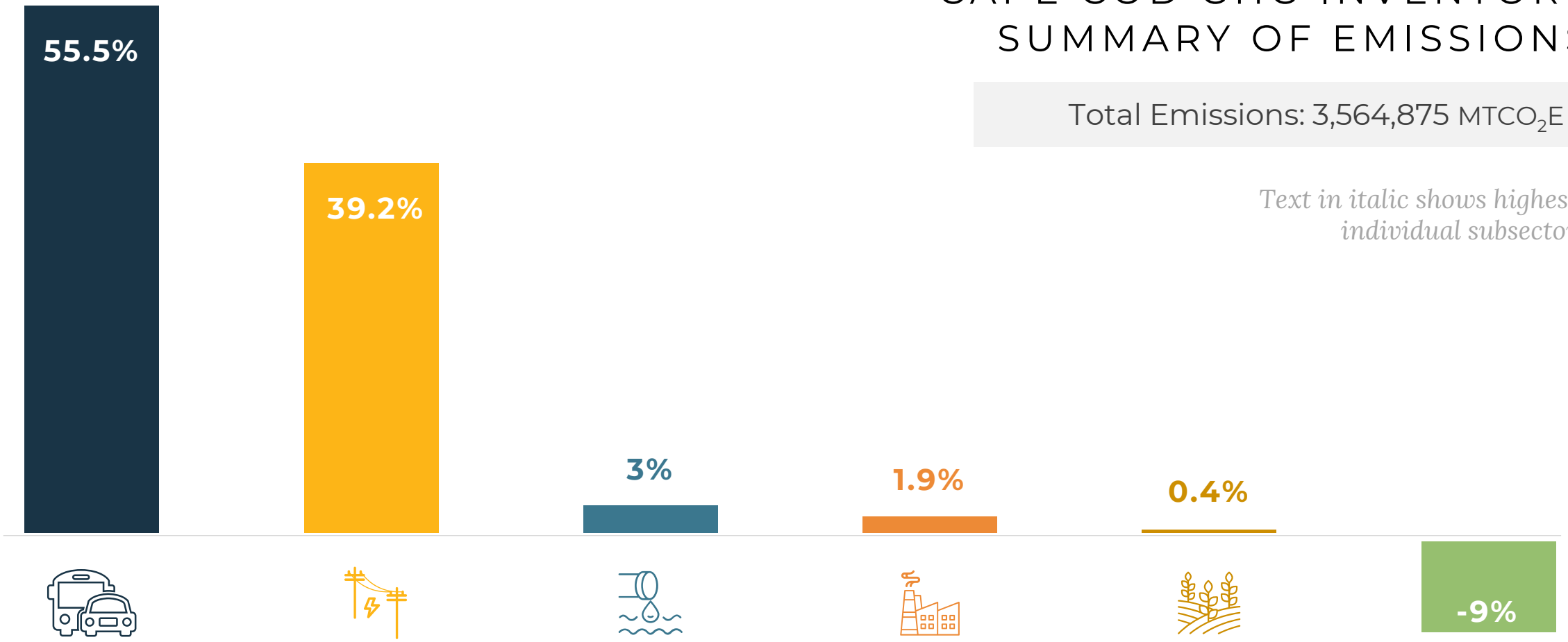
0.0% **Hydrofluorocarbons** HFCs

0.0% **Perfluorocarbons** PFCs

CAPE COD GHG INVENTORY SUMMARY OF EMISSIONS

Total Emissions: 3,564,875 $MTCO_2E$

Text in italic shows highest individual subsector



TRANSPORTATION

On-Road - Passenger Cars

STATIONARY ENERGY

Residential Buildings - Natural Gas

WASTE

Solid Waste - Closed Landfills

INDUSTRIAL PROCESSES & PRODUCT USE

MA GHG Reporting Facilities - Canal Generating Plant

AGRICULTURE

Soil Management

LAND USE

Forestland

GHG INVENTORY

Sector Ranking

Highest to Lowest Emissions

STATE

1. STATIONARY ENERGY
2. TRANSPORTATION
3. INDUSTRIAL PROCESSES & PRODUCT USE
4. WASTE
5. AGRICULTURE

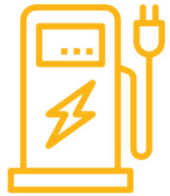
CAPE COD

1. TRANSPORTATION
2. STATIONARY ENERGY
3. WASTE
4. INDUSTRIAL PROCESSES & PRODUCT USE
5. AGRICULTURE

RESPONDING TO CLIMATE CHANGE INVOLVES **TWO POSSIBLE 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

MEANINGFUL **CLIMATE ACTION ADDRESSES ADAPTATION AND MITIGATION**

ADAPTATION

Cooling centers

Elevate roadways

Relocate buildings out of floodplains

Habitat restoration and preservation

Retrofit buildings

Tree preservation

Reduce landfill emissions

Smart growth/land use

MITIGATION

Clean energy

Energy efficiency in new construction

Reuse and recycle

Biking and transit

QUESTIONS

DISCUSSION

CAPE COD CLIMATE INITIATIVE

CAPE COD COMMISSION

Priority Municipal Adaptation and Mitigation Actions

BREAK

0:00

CAPE COD CLIMATE INITIATIVE

CAPE COD COMMISSION

BREAK

Return at 10:45

CAPE COD CLIMATE INITIATIVE

CAPE COD COMMISSION

Identifying Opportunities and Barriers to Implementation

Public Comment

Climate Action Plan

MUNICIPAL SUBREGIONAL WORKSHOP

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