

# Climate Action Plan



STAKEHOLDER WORKING GROUP  
HOUSING AND DEVELOPMENT - 12/16/2020

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## Meeting Objectives

- Recap Meeting 2 and progress to date
- Review revisions to strategies, actions, and steps to include in the Cape Cod Climate Action Plan
- Identify and discuss potential actors to lead on key actions and steps, in light of the legal and jurisdictional analysis
- Identify and discuss appropriate performance measures for assessing progress on our actions.
- Discuss next steps

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## Meeting Agenda

**9:00** Welcome and Introductions

**9:10** Recap and Reflect on the Process to Date

**9:15** Review Updated Action Plan

**10:00** Identify Key Actors

**Small Groups**

**11:10** Break

**11:20** Identify Performance Measures

**11:40** Public Comment & Next Steps

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# MEETING GROUND RULES

- Attend all meetings and participate actively in discussions.
- Come prepared having read any draft materials in advance of our meetings and having responded to any facilitator's requests.
- Engage in respectful and constructive dialogue with other participants and seek creative solutions that respond to the interests of your own, as well as others', viewpoints.
- Represent and articulate the diverse range of interests and concerns of the constituencies you represent.
- Seek input from constituents, friends and neighbors, and keep them informed about the discussions and proceedings of the meetings.

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



Stakeholder Process Update



# Cape Cod Climate Action Plan

## PURPOSE STATEMENT

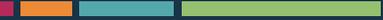
- To identify, study and monitor the causes and consequences of climate change on Cape Cod as a basis to guide and develop science-based policies, strategies and actions that governments, businesses, organizations, and individuals can pursue to:
  - improve the region's resilience to climate hazards; and
  - mitigate climate change on Cape Cod through reducing net regional greenhouse gas emissions in support of the framework and targets established by the Commonwealth.





# Cape Cod Climate Action Plan





# Working Group Meeting Series

## MEETING 1

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OCTOBER

Understanding  
Problems



## MEETING 2

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NOVEMBER

Identifying  
Solutions



## MEETING 3

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DECEMBER

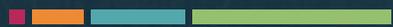
Taking  
Action

# CLARIFYING QUESTIONS



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# Cape Cod Climate Action Plan



Updated Action Plan

5

FOCUS  
AREAS

14

GOALS

44

STRATEGIES

130

ACTIONS

*Refined with Stakeholder Input*

## STAKEHOLDER WORKING GROUPS

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### Meeting 2

Potential strategies and actions

### **Housing & Development**

*Themes for discussion and suggested edits and additions*

#### **Retrofitting Buildings and Infrastructure**

- Need to focus on existing development, potential for retrofitting to create jobs
- Consideration of community character with retrofits, for both historic and non-historic buildings
- Need to improve the resilience of utilities (e.g., putting utility wires underground)

#### **Policies & Regulations for Future Development**

- Need for town technical assistance to adopt new regulations
- Education and communications around the need for new zoning is critical in getting it adopted
- Ownership along the coast is mostly private, and incentives are needed to encourage development outside vulnerable areas

## CROSS-SECTOR STAKEHOLDER MEETING

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*December 10th*

### **Objective**

Identify opportunities for advancing climate actions that support multiple regional priorities

- Make existing incentives to improve energy efficiency more accessible to all residents
- Balance provision of home efficiency data for homebuyers with financial impacts to sellers
- Recoup energy savings for affordable housing projects
- Build in efficiency measures as priorities in publicly funded projects, not expendable options, to serve as examples for others
- Develop strategies for coordinating solar projects with design and community character considerations
- Identify opportunities to ease regulatory barriers for solar projects where appropriate
- Communicate competing values and highlight importance of shifting values and tradeoffs



# Housing and Development

3

GOALS

12

STRATEGIES

33

ACTIONS

## **1. GOAL: REDUCE GHG EMISSIONS FROM THE BUILT ENVIRONMENT**

1.1. Strive towards Net Zero Energy Buildings; reduce energy consumption in non-residential structures

1.2. Strive towards Net Zero Energy Buildings; reduce energy consumption in residential buildings

1.3. Promote efficient land use policies and development patterns that protect the nature and character of the region

## **2. GOAL: REDUCE GHG EMISSIONS FROM WASTE MANAGEMENT SYSTEMS**

2.1. Increase diversion of waste from landfills in the short-term; eliminate sending waste to landfills in the long-term

2.2. Reduce landfill emissions

2.3. Improve efficiency of wastewater treatment systems

## **3. GOAL: IMPROVE AND ADVANCE THE RESILIENCE OF THE BUILT ENVIRONMENT**

3.1. Address vulnerabilities in public infrastructure

3.2. Identify a uniform approach to managing development in coastal resource areas region-wide

3.3. Retrofit buildings located within climate hazard areas

3.4. Address vulnerabilities in the road network

3.5. Relocate vulnerable buildings and structures

3.6. Ensure regional policies promote long-term infrastructure resiliency

## 1. GOAL: REDUCE GHG EMISSIONS FROM THE BUILT ENVIRONMENT

### 1.2. Strategy: Strive towards Net Zero Energy Buildings; reduce energy consumption in residential buildings

ACTION	STEPS
1.2.1. Retrofit existing residential buildings/houses*	<ul style="list-style-type: none"> <li>■ Promote incentives, rebates, and MassSave to weatherize and improve energy efficiency of residential buildings</li> <li>■ Incentivize replacement of oil, propane, and gas energy systems with electric heat pumps powered by green energy</li> <li>■ Address unique considerations of historic homes, including the ability to electrify and weatherize</li> <li>■ Address community character concerns associated with renewable energy installations, including engaging historic commissions</li> </ul>
1.2.2. Support energy and efficiency data collection for homebuyers	<ul style="list-style-type: none"> <li>■ Promote climate-friendly building products <i>[businesses]</i></li> <li>■ Encourage benchmark standards that require certain building performance</li> <li>■ Require reporting of retrofits and renewable energy installations for homebuyer information</li> <li>■ Consider means to include home energy scorecards in building transactions</li> </ul>
1.2.3. Ensure new residential construction is built to maximize efficiency	<ul style="list-style-type: none"> <li>■ Advance the design of new homes; promote Passive House principles</li> <li>■ Support training of architects, contractors, builders, building code enforcement officials</li> <li>■ Support Cape communities in adopting the Mass stretch building code; includes 3-yr updates consistent with requirements of the Green Communities Act <i>[Cape CANs]</i></li> </ul>

## 1. GOAL: REDUCE GHG EMISSIONS FROM THE BUILT ENVIRONMENT

### 1.3. Strategy: Promote efficient land use policies and development patterns that protect the nature and character of the region

ACTION	STEPS
1.3.1. Encourage a mix of land uses where possible	<ul style="list-style-type: none"> <li>■ Encourage zoning that allows commercial and residential uses in the same area</li> <li>■ Encourage zoning that promotes compact multifamily development in walkable areas</li> <li>■ Educate the community about new zoning</li> </ul>
1.3.2. Promote infill and adaptive reuse	<ul style="list-style-type: none"> <li>■ Develop new zoning, transfer of development rights bylaws for new construction, redevelopment and the existing built environment</li> <li>■ Provide density bonuses or increased coverage for developments that are redeveloping or infilling</li> </ul>
1.3.3. Focus growth in Activity Centers	<ul style="list-style-type: none"> <li>■ Utilize zoning tools, such as form-based code, to promote infill and development in Community Activity Centers, where infrastructure already exists, but outside of Special Flood Hazard Areas</li> <li>■ Encourage trails around development</li> <li>■ Adopt zoning that minimizes impervious surfaces, allows multi-story buildings, and allows for more natural area for carbon sequestration</li> </ul>

**3. GOAL: IMPROVE AND ADVANCE THE RESILIENCE OF THE BUILT ENVIRONMENT**

**3.2. Strategy: Identify a uniform approach to managing development in coastal resource areas region-wide**

ACTION	STEPS
3.2.1. Adopt uniform regulations region-wide to limit new development and redevelopment in the floodplain and vulnerable areas	<ul style="list-style-type: none"> <li>■ Identify best practices for conservation commissions to address properties vulnerable to erosion and/or flooding</li> <li>■ Explore methods to reduce new development in flood hazard areas</li> <li>■ Identify means to protect public access to the coast as vulnerable areas become increasingly accessible only to those with means</li> <li>■ Draft and adopt floodplain bylaws to address development and redevelopment in vulnerable areas</li> </ul>
3.2.2. Develop regional sediment management plans	<ul style="list-style-type: none"> <li>■ Consider nature-based alternatives to address the sediment transport dynamics at vulnerable locations <i>[county, Center for Coastal Studies, MCZM, engineering consultants]</i></li> </ul>
3.2.3. Look at remedies to the challenges of private property ownership in coastal hazard areas	<ul style="list-style-type: none"> <li>■ Investigate legal remedies to coastal private property ownership/management, <i>[county, state]</i></li> <li>■ Protect properties using green or nature-based solutions, or buy-out and "undevelop" with willing owners <i>[towns, state]</i></li> </ul>
3.2.4. Consider a coastal District of Critical Planning Concern	<ul style="list-style-type: none"> <li>■ Explore local interest in and support for uniform coastal development regulations <i>[CCC, towns]</i></li> </ul>

### 3. GOAL: IMPROVE AND ADVANCE THE RESILIENCE OF THE BUILT ENVIRONMENT

#### 3.4. Strategy: Address vulnerabilities in the road network

ACTION	STEPS
3.4.1. Improve stormwater management through culvert retrofits and other stormwater best management practices	<ul style="list-style-type: none"> <li>■ Update stormwater management design protocols (design for increased rainfall) <i>[DEP]</i></li> <li>■ Coordinate with MassDOT on State highway and roadway projects, resolve areas of overlapping authority <i>[CCC, towns, MassDOT]</i></li> </ul>
3.4.2. Assess low-lying and key roads and take appropriate action	<ul style="list-style-type: none"> <li>■ Protect coastal land, elevate roads, utilize green solutions, or relocate</li> <li>■ Consider regional access routes and impacts from storms (including utility lines over regional roadways such as the Mid-Cape Highway)</li> </ul>

#### 3.5. Strategy: Relocate vulnerable buildings and structures

ACTION	STEPS
3.5.1. Move buildings and infrastructure out of the floodplain	<ul style="list-style-type: none"> <li>■ Identify buildings in the most vulnerable locations <i>[County, towns]</i></li> <li>■ Identify locations for relocation <i>[County, towns]</i></li> <li>■ Establish a buy-out program for vulnerable properties <i>[state, towns]</i></li> <li>■ Relocate and repurpose structures in vulnerable areas</li> </ul>

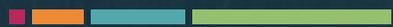
# Questions



# Discussion

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# Cape Cod Climate Action Plan



Key Actors

## GOVERNMENTAL ACTORS

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**Federal**



**State**



**Regional**



**Local**

## PUBLIC NGO ACTORS

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**Advocacy Orgs**



**Researchers**

## PRIVATE ACTORS

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**Businesses**



**Individuals**



## Federal

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Governmental  
Actors and  
Example Actions

### EXAMPLES

- **Establish Efficiency Standards for Appliances**
- **Set Renewable Fuel & Fuel Efficiency Standards**
  - Local/other subdivisions of government may not adopt more stringent fuel efficiency standards
- **Provide Financial Incentives**
  - Fed. Income tax Credit - up to \$7500/purchase of new all electric/plug in vehicles



## State

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Governmental  
Actors and  
Example Actions

### EXAMPLES

- **Establish GHG Reduction Targets**
  - “Net Zero” by 2050 - Global Warming Solutions Act (GWSA)
  - Obligations to implement GWSA rest with state agencies and a limited number of industries
- **Address GHG Emissions through Project Review**
  - Massachusetts Environmental Policy Act - Projects must quantify emissions; identify measures to avoid, minimize and mitigate; evaluate alternatives to lower emissions; and quantify emissions and energy savings of mitigation measures.
- **Establish Energy Efficiency Provisions through Building Code**
  - Municipalities may adopt more stringent “Stretch Code”



## Regional

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### Governmental Actors and Example Actions

#### EXAMPLES

- **Adopt goals and policies that support the Commonwealth's targets**
- **Adopt enhanced GHG emissions and climate impact modeling and reporting requirements for development project applicants**
- **Support municipal efforts to adopt zoning, development-related bylaws and other local regulations that minimize GHG emissions**
- **Support adoption of the Stretch Energy Code at the local level**
- **Identify opportunities for County government to implement GHG reduction measures with respect to County-owned capital facilities and assets**
- **Provide technical assistance for municipalities and private sector to undertake GHG emissions reduction measures**



## Local

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### Governmental Actors and Example Actions

#### EXAMPLES

- **Adopt goals and policies that support the Commonwealth's targets**
  - Often non-binding format versus creating a law with enforceable targets
- **Become a designated Green Community**
  - Adopt the "Stretch Code"
  - Allow as-of-right siting for renewable/alternative energy generating, R&D or manufacturing in designated areas
  - Calculate municipal energy use, create a baseline, and adopt a plan to reduce energy use by 20% within five years;
  - Purchase fuel-efficient vehicles for municipal use, to the extent commercially available and practicable
- **Prioritize emissions reductions through project review**
  - Adopt local regulations, such as requiring project to demonstrate compliance with "LEED" green building rating systems and to complete a Climate Resiliency checklist

## GOVERNMENTAL ACTORS

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Federal



State



Regional



Local

## PUBLIC NGO ACTORS

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Advocacy Orgs



Researchers

## PRIVATE ACTORS

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Businesses



Individuals

# CLARIFYING QUESTIONS



# SMALL GROUPS



NGOs  
Key Opportunities for Private Actors

# BREAK



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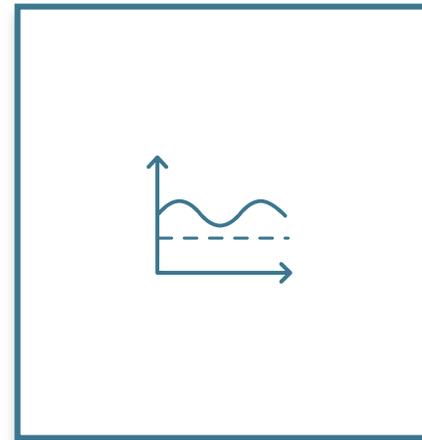
# Cape Cod Climate Action Plan



Performance Measures

# PERFORMANCE MEASURES – PRINCIPLES

- Measuring long-term progress while tracking shorter-term implementation
- Informed by the GHG inventory
- Measurable over time
- Linked to other regional plans and initiatives



**GHG Inventory**  
sets the baseline to  
measure emissions  
going forward



Create quantifiable  
**performance  
measures**



# Cape Cod Climate Action Plan

## PURPOSE STATEMENT

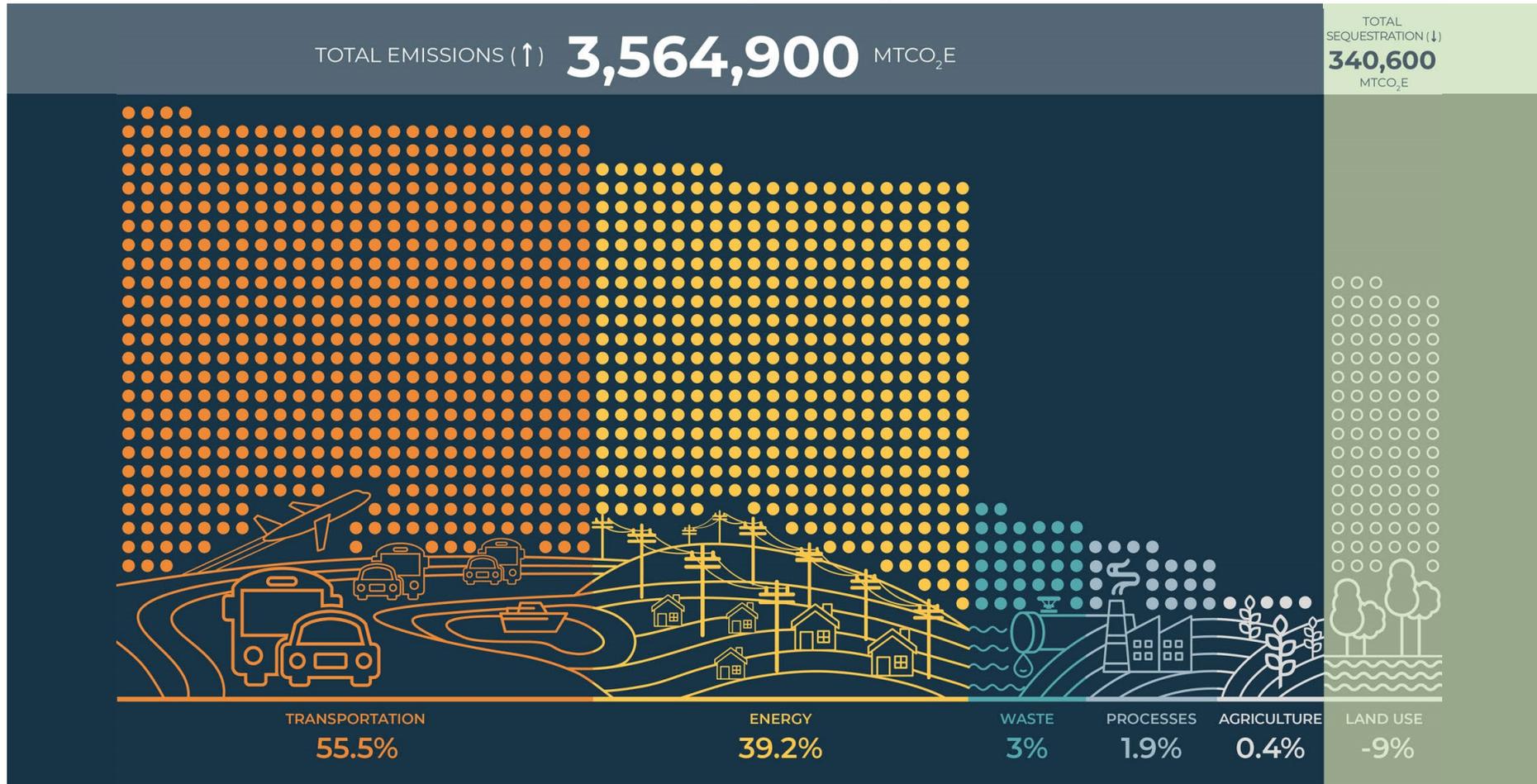
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  - improve the **region's resilience to climate hazards**; and
  - mitigate climate change on Cape Cod through reducing **net regional greenhouse gas emissions** in support of the framework and targets established by the Commonwealth.

# PERFORMANCE MEASURES – REGIONAL GHG EMISSIONS

TOTAL NET EMISSIONS **3,224,300** MTCO<sub>2</sub>E

TOTAL EMISSIONS (↑) **3,564,900** MTCO<sub>2</sub>E

TOTAL SEQUESTRATION (↓)  
**340,600**  
MTCO<sub>2</sub>E



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# PERFORMANCE MEASURES – FOCUS AREAS



**Housing and  
Development**



**Energy**



**Transportation**



**Natural  
Resources and  
Working Lands**



**Community**

# PERFORMANCE MEASURES – EXISTING TRACKING



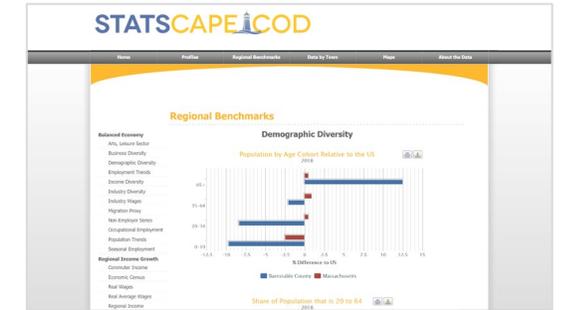
Regional Policy Plan (RPP)



Comprehensive Economic Development Strategy (CEDS)



Regional Transportation Plan (RTP)



Stats Cape Cod

## GOAL

Reduce emissions from the transportation sector

## PERFORMANCE MEASURES

Percent of vehicles powered by electricity

- Percent of new vehicle purchases that are EVs **(New)**
- Number of EVs
- Number of EVs in municipal fleets
- EV charging stations

Reduction in vehicle miles traveled

- Percent of trips by transit, bicycling, and walking
- Public transit ridership
- Population within a ½ mile of fixed route transit service
- Miles of sidewalks, multiuse paths, and bike lanes
- Parcels connected to the sidewalk network
- Percent of signalized intersections with pedestrian signal heads
- Homes/businesses connected to broadband **(New)**

## GOAL

Improve the resilience of the transportation system to the impacts of climate change

## PERFORMANCE MEASURES

Indicators of resiliency of built environment

- Low lying road segments remediated **(New)**
- Culverts replaced **(New)**
- Stormwater projects implemented **(New)**

## GOAL

Increase the production and use of clean energy

## PERFORMANCE MEASURES

Percent of electricity from green sources

- Percent of electricity from non-utility scale, distributed sources
- MW of solar energy generation on Cape Cod (non-roof generation) **(New)**

## GOAL

Support and promote protection, preservation, and restoration of natural ecosystems

## PERFORMANCE MEASURES

Indicators of conservation and resiliency of the natural environment

- Acres of BioMap 2 Core Habitat and Critical Natural Landscapes protected
- Number of green infrastructure projects designed and/or implemented **(New)**
- Funding secured for restoration projects **(New)**

## GOAL

Increase carbon sequestration in the natural environment

## PERFORMANCE MEASURES

Indicators of natural sequestration ability

- Acres of open space preserved
- Number new parks created **(New)**
- Acres of upland habitat restored **(New)**
- Acres of salt marsh restored or allowed to migrate **(New)**

## GOAL

Protect the ability of working lands and waters to provide essential social and economic services while protecting the environment

## PERFORMANCE MEASURES

Indicators of resiliency of built environment

- Acres of agricultural lands **(New)**
- Number of farmers markets **(New)**
- Acres of aquaculture lease areas **(New)**
- Harbors with commercial fishing activity **(New)**
- Number of active fishing boats on Cape Cod

## GOAL

Reduce GHG emissions from the built environment

## PERFORMANCE MEASURES

Percent of homes/businesses heated by electricity

- New construction with electric heat **(New)**
- Homes/businesses converted to heat pumps **(New)**

Percent of homes/businesses with improved energy efficiency

- Homes/businesses receiving weatherization assistance **(New)**
- Number of new homes/businesses receiving a specific HERS rating **(New)**

Smart/Green Development Indicators

- Housing density in community Activity Centers
- Ratio of new development inside and outside of Community Activity Centers
- Number of housing units located within ½ mile of transit
- Number of Communities with Complete Streets Programs
- New zoning adopted that supports mixed use and/or multifamily development **(New)**

## GOAL

Reduce GHG emissions from waste management systems

## PERFORMANCE MEASURES

Tons of waste per capita sent shipped off-Cape to:

- Landfill
- Incinerator
- Recycling **(New)**

## GOAL

Improve and advance the resilience of the built environment

## PERFORMANCE MEASURES

Indicators of resiliency of built environment

- Number of up-to-date Hazard Mitigation Plans **(New)**
- Number of homes/businesses in the floodplain
- Number of new developed lots and expansion of footprints in the floodplain
- Land developed and land protected within FEMA A and V zones
- Number of homes/businesses with resiliency measures in place **(New)**
- Number of green infrastructure projects **(New)**
- Miles of utilities placed underground

# PERFORMANCE MEASURES – DRAFT KEY MEASURES



**% of Homes/Business Heated by Electricity**



**% of Electricity from Renewable Sources**



**% of Vehicles Powered by Electricity**



**Acres of open space preserved  
(sequestration indicator)**



**Equity Considerations/  
Balance with other Regional Priorities**

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# Cape Cod Climate Action Plan



Next Steps



ECONOMIC IMPACTS  
OF CLIMATE HAZARDS



Fiscal impacts of what the region  
might face due to climate change



SEA LEVEL RISE &  
STORM SURGE  
IMPACTS

COASTAL  
EROSION  
IMPACTS



WATER  
QUALITY  
IMPACTS



PUBLIC HEALTH  
IMPACTS

PRECIPITATION  
IMPACTS



FISHERIES,  
AQUACULTURE, &  
AGRICULTURE IMPACTS



## MITIGATION SCENARIOS



4 scenarios for comparison

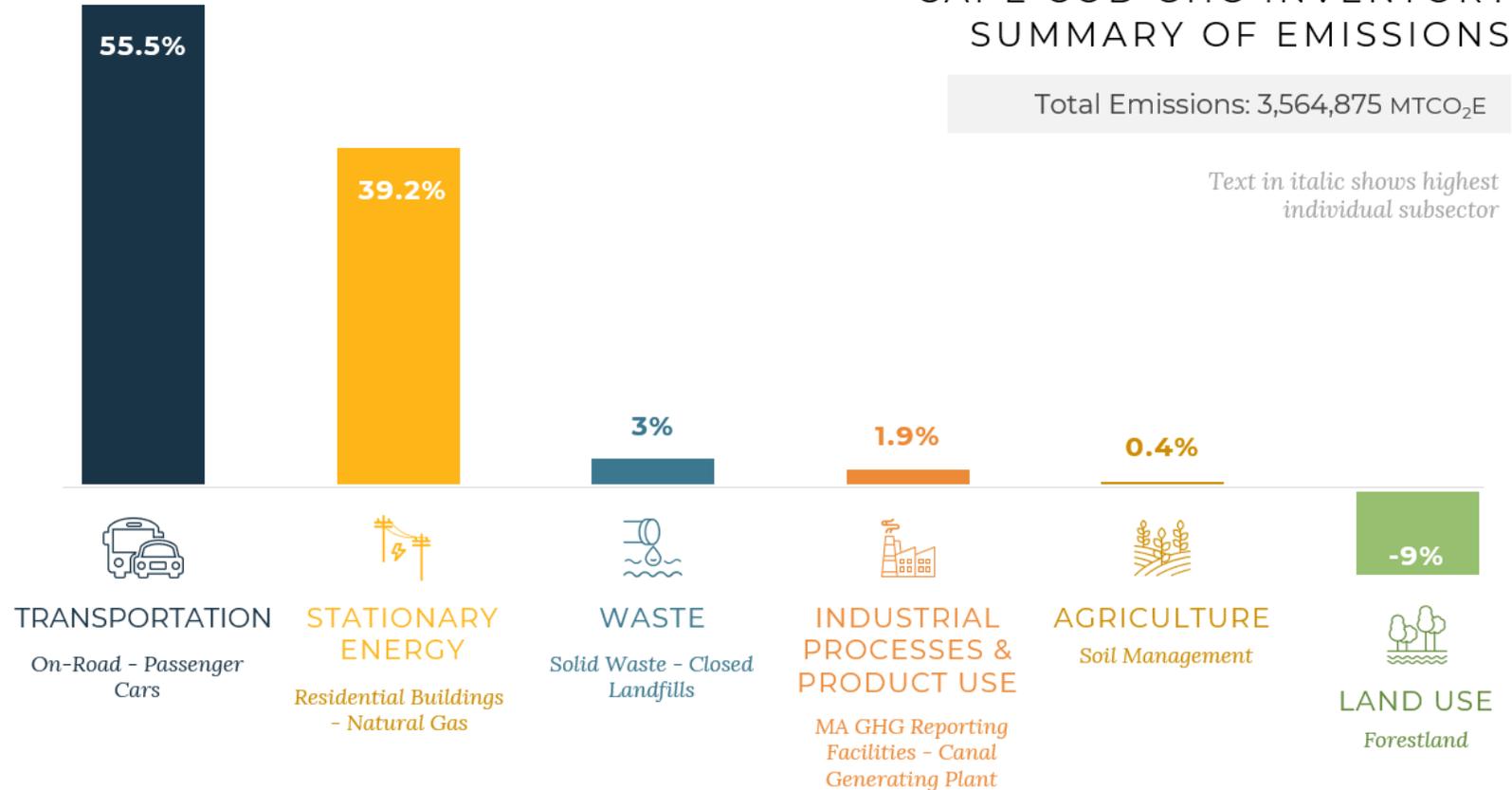


## BUSINESS AS USUAL

### CAPE COD GHG INVENTORY SUMMARY OF EMISSIONS

Total Emissions: 3,564,875 MTCO<sub>2</sub>E

*Text in italic shows highest individual subsector*



MITIGATION  
SCENARIOS

2

4 scenarios for comparison



BUSINESS AS USUAL



ELECTRIFICATION



EFFICIENCY +  
ELECTRIFICATION



SEASONAL TO YEAR-ROUND  
SHIFT

MITIGATION SCENARIOS METRICS



Comparison of mitigation scenarios

EMISSIONS COMPARISONS



EV MARKET SHARE



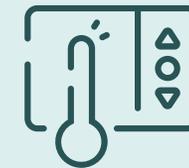
VEHICLE MILES TRAVELED



ENERGY CONSUMPTION

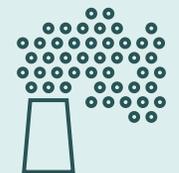


HOMES WEATHERIZED



HEAT PUMPS

CRITERIA POLLUTANTS



ECONOMIC IMPACTS  
OF CLIMATE ACTION  
STRATEGIES



Potential costs and benefits and cost-effectiveness of climate action strategies



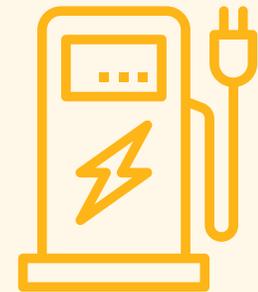
COST OF DOING NOTHING

ADAPTATION  
STRATEGIES



Cost-benefit

MITIGATION  
STRATEGIES



Cost-effectiveness

# CAPE COD CLIMATE ACTION PLAN



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# Next Steps

Communications Stakeholder Meeting

Focus Group #2

Equity Working Group

Climate Ambassadors Program Begins

Finalize Draft Climate Action Plan

Public Comment Period on Draft Plan

# THANK YOU!

