

Climate Action Plan



STAKEHOLDER WORKING GROUP
ENERGY - 12/16/2020

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

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

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

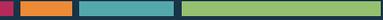


Cape Cod Climate Action Plan

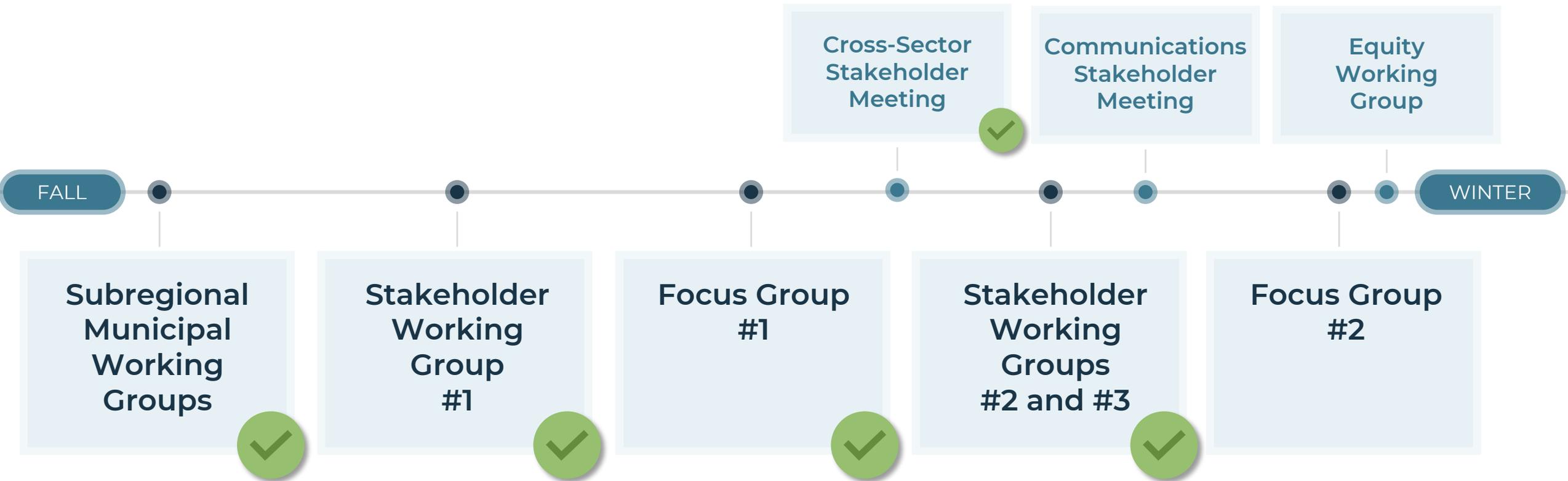
PURPOSE STATEMENT

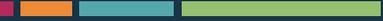
- To identify, study and monitor the causes and consequences of climate change on Cape Cod as a basis to guide and develop science-based policies, strategies and actions that governments, businesses, organizations, and individuals can pursue to:
 - improve the region's resilience to climate hazards; 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

OCTOBER

Understanding
Problems



MEETING 2

NOVEMBER

Identifying
Solutions



MEETING 3

DECEMBER

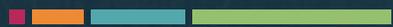
Taking
Action

CLARIFYING QUESTIONS



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 varying heights, with some showing signs of being cut or broken. The water is calm and reflects the surrounding greenery and the warm light of the sky.

Cape Cod Climate Action Plan



Updated Action Plan

5

FOCUS
AREAS

14

GOALS

44

STRATEGIES

130

ACTIONS

Refined with Stakeholder Input

CROSS-SECTOR STAKEHOLDER MEETING

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



Energy

1

GOAL

4

STRATEGIES

12

ACTIONS

STAKEHOLDER WORKING GROUPS

Meeting 2

Potential strategies and actions

Energy

Themes for discussion and suggested edits and additions

- **Renewable/cleaner energy, including solar**
 - Need to ensure affordability and fair pricing
 - Important to use what already exists
 - Decreasing available land
- **Infrastructure including EV charging (batteries and storage)**
 - Must be easy to access
 - Education and illustrating best practices
 - Ensuring alignment with existing efforts and regulatory frameworks
- **Energy conservation***
 - Identified as missing from the broader strategic framework
 - Emphasis needs to be on existing buildings; retrofitting can be expensive
 - Challenging to change existing development patterns

1. GOAL: INCREASE THE PRODUCTION AND USE OF CLEAN ENERGY

- 1.1. Strategy: Generate and increase the use of safe, reliable, and clean energy
- 1.2. Strategy: Modernize and optimize the grid
- 1.3. Strategy: Identify and utilize carbon offsets
- 1.4. Strategy: Achieve Green Communities designation in all Cape towns

1. GOAL: INCREASE THE PRODUCTION AND USE OF CLEAN ENERGY

1.1. Strategy: Generate and increase the use of safe, reliable, and clean energy

| ACTION | STEPS |
|--|--|
| 1.1.2. Use clean energy sources in municipal operations* | <ul style="list-style-type: none"> ■ Support investment in electric municipal vehicles, <i>[towns]</i> ■ Incorporate the use of solar/renewable energy into bylaws for town projects ■ Support development of emergency generators that use renewable fuels and on-site storage in case of emergencies ■ Encourage municipalities to purchase more renewable energy |
| 1.1.5. Identify safe affordable renewable energy sources | <ul style="list-style-type: none"> ■ Continue to support bulk clean power purchase agreements ■ Establish energy financing districts; offer renewable energy system financing to small commercial properties ■ Increase the mix of renewable energy options in the power supply ■ Renewable biomethane ■ Investigate potential for combined heat and power generating facilities ■ Hydroelectric power; tidal power ■ Capture methane from municipal solid waste landfills ■ Incorporate geothermal heating and cooling pumps ■ Explore potential to mine plastic from the landfills to turn into diesel fuel ■ Investigate ability to repurpose and/or recycle renewable energy components at end-of-life |

1. GOAL: INCREASE THE PRODUCTION AND USE OF CLEAN ENERGY

1.2. Strategy: Modernize and optimize the grid

| ACTION | STEPS |
|--|---|
| 1.2.1. Support expansion of electric vehicle (EV) charging network* | <ul style="list-style-type: none"> ■ Develop options for fully charged EV auto rental service* ■ Develop / support programs to reward tourists for utilizing local EV rentals* ■ Develop criteria for the placement of charging stations and the level of charging and identify locations for new or expanded EV charging infrastructure, including buses ■ Electrify all appropriate municipal vehicles, including emergency response vehicles, heavy equipment |
| 1.2.3. Understand potential demand and capacity needs, plan for grid upgrades, and work toward grid decentralization | <ul style="list-style-type: none"> ■ Identify potential offshore energy landfalls <i>[CCC, MCZM]</i> ■ Understand potential electricity demand with electrification of overall energy demand <i>[CLC, state]</i> ■ Understand capacity of existing transmission corridors, substations <i>[CLC, CCC, state]</i> ■ Understand net-metering and municipal generation capacity limits; explore remedies <i>[CLC, CCC, utility]</i> ■ Promote decentralized micro-grids, ■ Analyze the solar canopy installation potential of each town ■ Promote the use of electric equipment for homeowners (e.g. electric lawn mowers) |
| 1.2.4. Work toward managing electricity demand | <ul style="list-style-type: none"> ■ Educate public about peak demand times ■ Educate public about conservation, and utilizing technology to reduce demand (e.g., smart thermostats) ■ Promote peak load reductions <i>[CLC, state, utility]</i> |

1. GOAL: INCREASE THE PRODUCTION AND USE OF CLEAN ENERGY

1.4. Strategy: Achieve Green Communities designation in all Cape towns

| ACTION | STEPS |
|--|--|
| 1.4.1. Support efforts to pass bylaws and adopt stretch code | <ul style="list-style-type: none"><li>• Educate communities and decision makers; attend community meetings and hearings |

Questions



Discussion

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.

Cape Cod Climate Action Plan



Key Actors

GOVERNMENTAL ACTORS



Federal



State



Regional



Local

PUBLIC NGO ACTORS



Advocacy Orgs



Researchers

PRIVATE ACTORS



Businesses



Individuals



Federal

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

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

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

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



Federal



State



Regional



Local

PUBLIC NGO ACTORS



Advocacy Orgs



Researchers

PRIVATE ACTORS



Businesses



Individuals

CLARIFYING QUESTIONS



SMALL GROUPS



NGOs
Scientists/Researchers
Key Opportunities for Private Actors

BREAK



Return at 11:19

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.

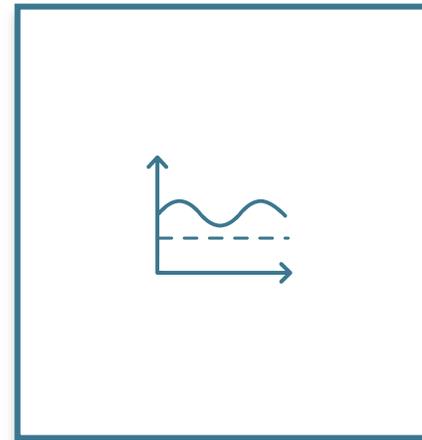
Cape Cod Climate Action Plan



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**

PERFORMANCE MEASURES – EXISTING TRACKING



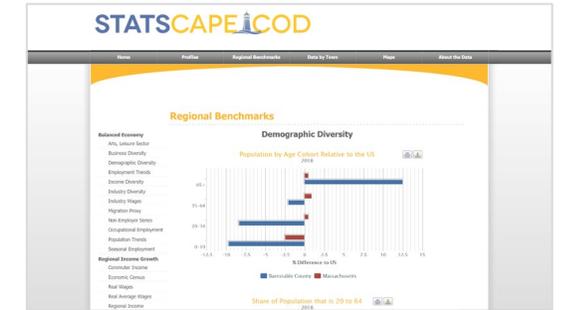
Regional Policy Plan (RPP)



Comprehensive Economic Development Strategy (CEDS)



Regional Transportation Plan (RTP)



Stats Cape Cod



Cape Cod Climate Action Plan

PURPOSE STATEMENT

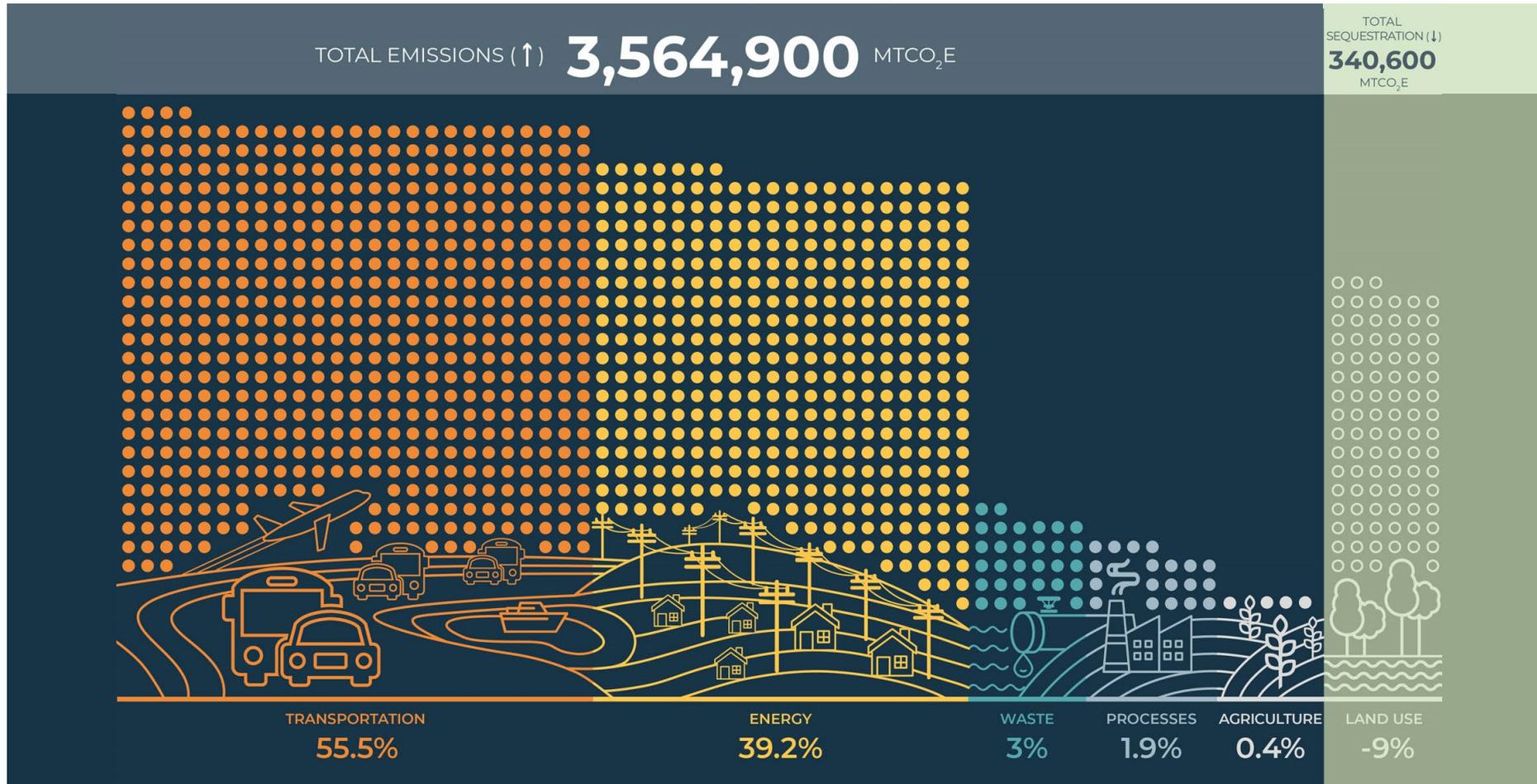
- To identify, study and monitor the causes and consequences of climate change on Cape Cod as a basis to guide and develop science-based policies, strategies and actions that governments, businesses, organizations, and individuals can pursue to:
 - improve the **region's resilience to climate hazards**; 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.

PERFORMANCE MEASURES – REGIONAL GHG EMISSIONS

TOTAL NET EMISSIONS **3,224,300** MTCO₂E

TOTAL EMISSIONS (↑) **3,564,900** MTCO₂E

TOTAL SEQUESTRATION (↓)
340,600
MTCO₂E



PERFORMANCE MEASURES – FOCUS AREAS



**Housing and
Development**



Energy



Transportation



**Natural
Resources and
Working Lands**



Community

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

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

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

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)**

PERFORMANCE MEASURES – DRAFT KEY MEASURES



% of Homes/Business Heated by Electricity



% of Electricity from Renewable Sources



% of Vehicles Powered by Electricity



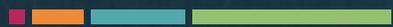
**Acres of open space preserved
(sequestration indicator)**



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

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



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

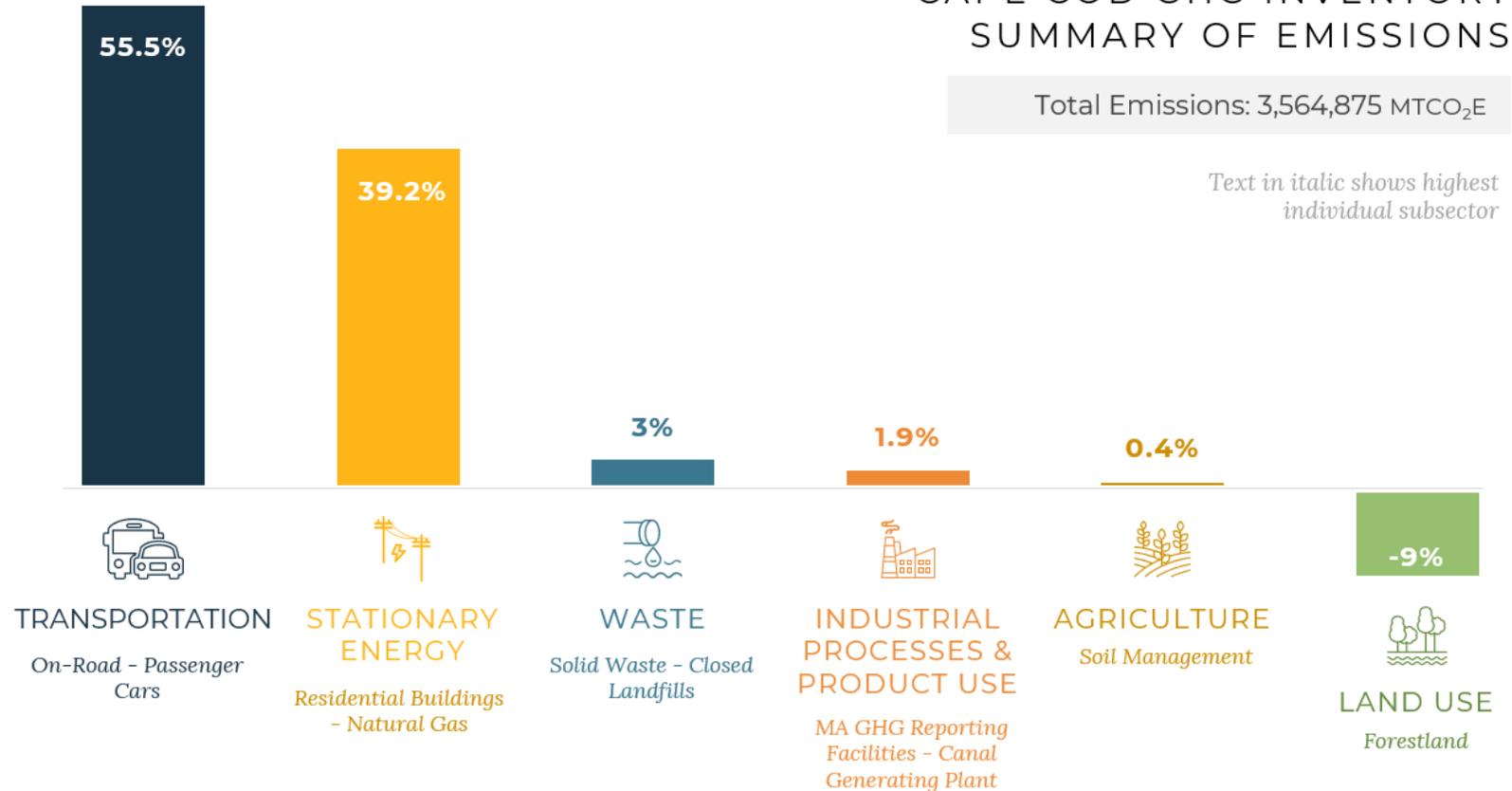


BUSINESS AS USUAL

CAPE COD GHG INVENTORY SUMMARY OF EMISSIONS

Total Emissions: 3,564,875 MTCO₂E

Text in italic shows highest individual subsector



MITIGATION
SCENARIOS



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



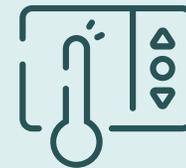
VEHICLE MILES TRAVELED



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



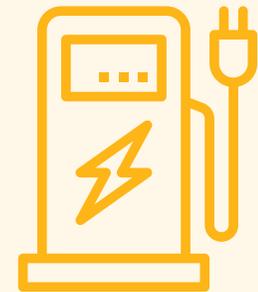
COST OF DOING NOTHING

ADAPTATION
STRATEGIES



Cost-benefit

MITIGATION
STRATEGIES



Cost-effectiveness



THANK YOU!

