

Climate Action Plan



STAKEHOLDER WORKING GROUP
TRANSPORTATION - 12/18/2020

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

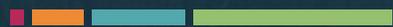
- 9:00** Welcome and Introductions
- 9:10** Recap and Reflect on the Process to Date
- 9:15** Review Updated Action Plan
- 10:00** Identify Key Actors
- 11:10** Break
- 11:20** Identify Performance Measures
- 11:40** Public Comment & Next Steps

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

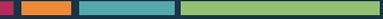


Cape Cod Climate Action Plan

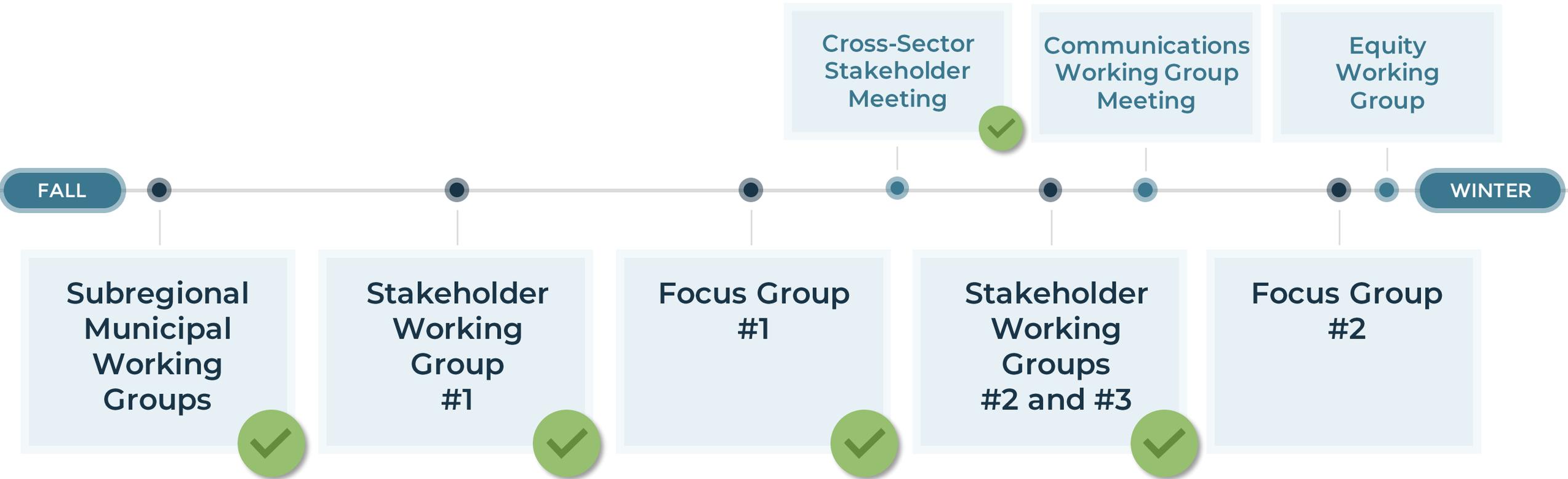
PURPOSE STATEMENT

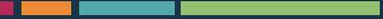
- To identify, study and monitor the causes and consequences of climate change on Cape Cod as a basis to guide and develop science-based policies, strategies and actions that governments, businesses, organizations, and individuals can pursue to:
 - improve the region's resilience to climate hazards;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

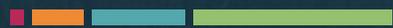
Taking
Action

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 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



Updated Action Plan

5

FOCUS
AREAS

14

GOALS

44

STRATEGIES

130

ACTIONS

Refined with Stakeholder Input



Transportation

2

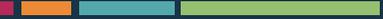
GOALS

7

STRATEGIES

27

ACTIONS



Cape Cod Climate Action Plan

STAKEHOLDER WORKING GROUPS

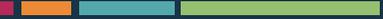
Meeting 2

Potential strategies and actions

Transportation

Themes for discussion and suggested edits and additions

- **Reducing vehicle miles and enhancing alternative transportation**
 - Promote existing alternative transportation options
 - Improve existing public transit network (e.g., subsidize transit, improve parking for buses)
 - Add strategy on idling policies
- **Electrification of the transportation system**
 - Encourage the purchase of a variety of different types of EV (e.g., private cars, RTA transit fleets, police cars, tourist transit trollies)
 - Ensure access to EV charging stations
 - Incentivize freight deliveries made by EVs



Cape Cod Climate Action Plan

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

1. GOAL: REDUCE EMISSIONS FROM THE TRANSPORTATION SECTOR

- 1.1. Strategy: Reduce vehicle miles traveled
- 1.2. Strategy: Enhance public transportation, bicycling, walking, and shared transportation options*
- 1.3. Strategy: Accelerate the electrification of the transportation system*
- 1.4. Strategy: Make efficiency improvements to the transportation system
- 1.5. Strategy: Encourage more efficient land use patterns

2. GOAL: IMPROVE THE RESILIENCE OF THE TRANSPORTATION SYSTEM TO THE IMPACTS OF CLIMATE CHANGE

- 2.1. Strategy: Adapt critical transportation infrastructure for climate change impacts
- 2.2. Strategy: Design transportation infrastructure for future conditions

1. GOAL: REDUCE EMISSIONS FROM THE TRANSPORTATION SECTOR

1.1. Strategy: Reduce vehicle miles traveled

ACTION	STEPS
1.1.1. Improve broadband access across Cape Cod	<i>None identified yet [Open Cape]</i>
1.1.2. Support work from home policies	<i>None identified yet [private sector, towns, CCC]</i>
1.1.3. Support virtual civic and business meetings	<ul style="list-style-type: none"> ▪ Incentivize businesses and towns to hold meetings virtually [towns, CCC] ▪ Support legislation to waive requirement for in-person majority present for committee and board meetings
1.1.4. Explore pricing mechanisms that incentivize GHG reduction strategies and fund other strategies	<i>None identified yet [CCC]</i>

| TRANSPORTATION KEY CHANGES

1. GOAL: REDUCE EMISSIONS FROM THE TRANSPORTATION SECTOR

1.2. Strategy: Enhance public transportation, bicycling, walking, and shared transportation options*

ACTION	STEPS
1.2.1. Encourage carpooling and ridesharing*	<i>None identified yet</i>
1.2.2. Expansion and improvements of park and ride facilities	<i>None identified yet [state, CCC, towns]</i>
1.2.3. Improved coordination between modes	<i>None identified yet [CCRTA, other transit providers, CCC]</i>
1.2.4. Reduce parking standards/requirements	<i>None identified yet [towns]</i>
1.2.5. Improve and expand the public transit network	<ul style="list-style-type: none"> ■ Promote existing services <i>[CCRTA, CCC, towns]</i> ■ Expanding routes <i>[CCRTA]</i> ■ Expanding service days/hours <i>[CCRTA]</i> ■ Increase frequency on busy routes <i>[CCRTA]</i> ■ Improve predictability/reliability <i>[CCRTA]</i> ■ Provide free or greatly subsidized transit service to encourage increased use <i>[CCRTA, state, towns, CCC]</i> ■ Encourage use of electric vehicles for ride share ■ Encourage the use of cleaner fuels for fleet vehicle including school buses <i>[towns]</i>
1.2.6. Expand passenger rail service	<ul style="list-style-type: none"> ■ Expanded passenger rail service <i>[CCRTA, CCC]</i> ■ Consider local/light rail service (intra-Cape) <i>[CCRTA, CCC]</i>

1. GOAL: REDUCE EMISSIONS FROM THE TRANSPORTATION SECTOR

1.2. Strategy: Enhance public transportation, bicycling, walking, and shared transportation options* (cont.)

ACTION	STEPS
<p>1.2.7. Expand and improve the bicyclist and pedestrian network as alternate transportation modes</p>	<ul style="list-style-type: none"> ■ Encourage adoption of Complete Streets policies <i>[towns]</i> ■ Retrofit existing roads to accommodate non-motorists <i>[state, towns]</i> ■ Educate public about sharing roads for multiple transportation modes <i>[CCC, towns, state]</i> ■ Support bicycle share and rental programs ■ Expand bicycle infrastructure (including bicycle rack, fix-its station, lighting, and safe connections) <i>[CCC, towns, state]</i> ■ Encourage responsible use of electric bicycles <i>[CCC, towns, state, CCNS]</i> ■ Support safe routes to schools efforts <i>[CCC, towns, state]</i>
<p>1.2.8. Consider new water transportation options</p>	<p><i>None identified yet</i></p>

1. GOAL: REDUCE EMISSIONS FROM THE TRANSPORTATION SECTOR

1.3. Strategy: Accelerate the electrification of the transportation system*

ACTION	STEPS
<p>1.3.1. Support investments in EV infrastructure and programs that incentivize EV adoption, for Cape residents and visitors*</p>	<ul style="list-style-type: none"> ■ Identify opportunities for and support the development of additional public EV charging stations <i>[CVEC, CCC, towns, state]</i> ■ Update zoning to encourage EV spaces and charging stations in new/redevelopment <i>[towns]</i> ■ Develop programs to reward utilizing local EV rentals <i>[private sector, chambers of commerce]</i> ■ Support renewable energy production/battery storage/charging at transportation terminals and parking lots where people park for extended periods <i>[CCC, towns, state]</i> ■ Explore barriers to expanded battery storage ■ Promote electrification of municipal fleets <i>[CCC, towns]</i> ■ Support financing options for EV purchases/EV infrastructure ■ Support car shows promoting EVs and education and outreach to promote EV usage <i>[dealerships, CCC, towns, state]</i> ■ Work with private auto companies and dealerships to promote EVs <i>[dealerships, CCC, towns, state]</i> ■ Consider adaptability to future technologies (ex. hydrogen power)

1. GOAL: REDUCE EMISSIONS FROM THE TRANSPORTATION SECTOR

1.3. Strategy: Accelerate the electrification of the transportation system* (cont.)

ACTION	STEPS
1.3.2. Electrify public transit vehicles*	<ul style="list-style-type: none"> ■ Conduct an electric bus feasibility study <i>[CCRTA, other agencies with buses, CCC]</i> ■ Advance electric bus pilot programs <i>[CCRTA, other agencies with buses]</i> ■ Where feasible, support the purchase of electric buses <i>[CCRTA, other agencies with buses]</i>
1.3.3. Electrify vehicle fleets (municipal vehicles, school buses, police vehicles, delivery vehicles, etc.)*	<ul style="list-style-type: none"> ■ Conduct feasibility study of the conversion potential of vehicle fleets <i>[CCC, towns, state]</i> ■ Prioritize fleets for conversion <i>[CCC, towns, state]</i> ■ Support towns in the conversion of municipal vehicle fleets <i>[CCC, towns, state]</i>
1.3.4. Electrify ocean-based transport (personal watercraft, commercial fleets, improve dockside infrastructure, etc.)*	<ul style="list-style-type: none"> ■ Dockside EV infrastructure ■ Support incentives for electric watercraft

1. GOAL: REDUCE EMISSIONS FROM THE TRANSPORTATION SECTOR

1.4. Strategy: Make efficiency improvements to the transportation system

ACTION	STEPS
1.4.1. Address inefficient traffic signals, upgrades	<ul style="list-style-type: none"> ■ Retime signal and, where appropriate, install adaptive signals <i>[towns, state]</i> ■ Consider replacing with roundabout <i>[towns, state]</i> ■ LED upgrades <i>[towns, state]</i>
1.4.2. Address bottleneck locations (congested roadways and intersections)	<ul style="list-style-type: none"> ■ Identify and implement solutions for bottleneck locations identified in the Cape Cod Congestion Management Plan <i>[CCC, towns, state]</i>
1.4.3. Support idling policies	<ul style="list-style-type: none"> ■ Enforce state idling laws, Towns ■ Provide outreach and awareness on the effects of idling, Towns, CCC
1.4.4. Improve the efficiency of freight movement (including waste) by all modes (on-road, rail, and waterborne)	<ul style="list-style-type: none"> ■ Incentivize freight movement by the mode with the lowest emissions generation ■ Consider incentives for deliveries made by EVs

1.5. Strategy: Encourage more efficient land use patterns

ACTION	STEPS
<i>See Housing & Development Strategy 1.3</i>	
1.5.1. Promote Transit Oriented Development (TOD)	<ul style="list-style-type: none"> ■ Encourage smart growth and smart development ■ Expand rail service ■ Prioritize bicycle and pedestrian improvements that provide connections to TOD

2. GOAL: IMPROVE THE RESILIENCE OF THE TRANSPORTATION SYSTEM TO THE IMPACTS OF CLIMATE CHANGE

2.1. Strategy: Adapt critical transportation infrastructure for climate change impacts

ACTION	STEPS
2.1.1. Low-lying roads – elevate, relocate, or abandon	<i>None identified yet</i>
2.1.2. Identify and address deficient culverts and bridges	<i>None identified yet</i>
2.1.3. Evacuation routes/potentially disconnected area	<i>None identified yet</i>

2.2. Strategy: Design transportation infrastructure for future conditions

ACTION	STEPS
2.2.1. Redesign for future precipitation/storm patterns	<i>None identified yet</i>
2.2.2. Planning for the impact of increased temperature/heat events	<i>None identified yet</i>

- **How can the region significantly increase the share of trips by transit?**
 - Access to transit (RTA, car shares, bike shares, sidewalk connections, etc.)
 - Enhancements to transit service to make it attract to more individuals
 - Fares/equity considerations
- **What actions can be taken specifically at the local and regional level to accelerate the adoption of electric vehicles and how would these actions impact equity?**
- **What actions can be taken at the local and regional level to reduce vehicle miles traveled? Do these actions have income-related equity issues?**

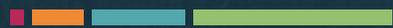
Questions



Discussion



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

GOVERNMENTAL ACTORS



Federal



State



Regional



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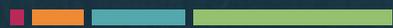
BREAK



Please return at 11:21

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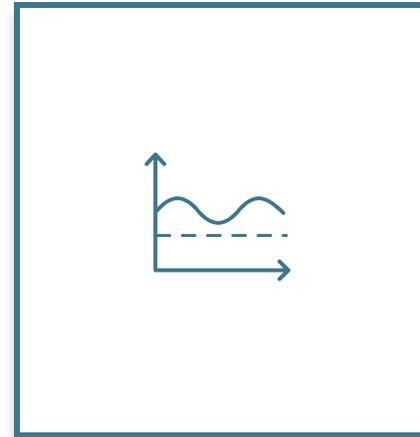
Cape Cod Climate Action Plan



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**

PERFORMANCE MEASURES - EXISTING TRACKING



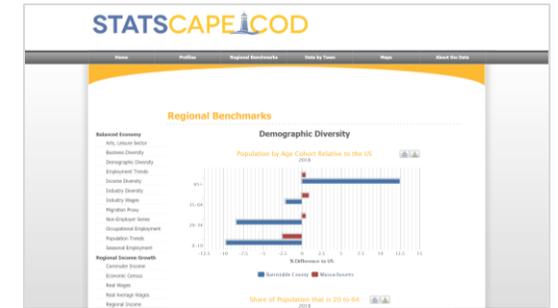
Regional Policy Plan (RPP)



Comprehensive Economic Development Strategy (CEDS)



Regional Transportation Plan (RTP)



Stats Cape Cod



Cape Cod Climate Action Plan

PURPOSE STATEMENT

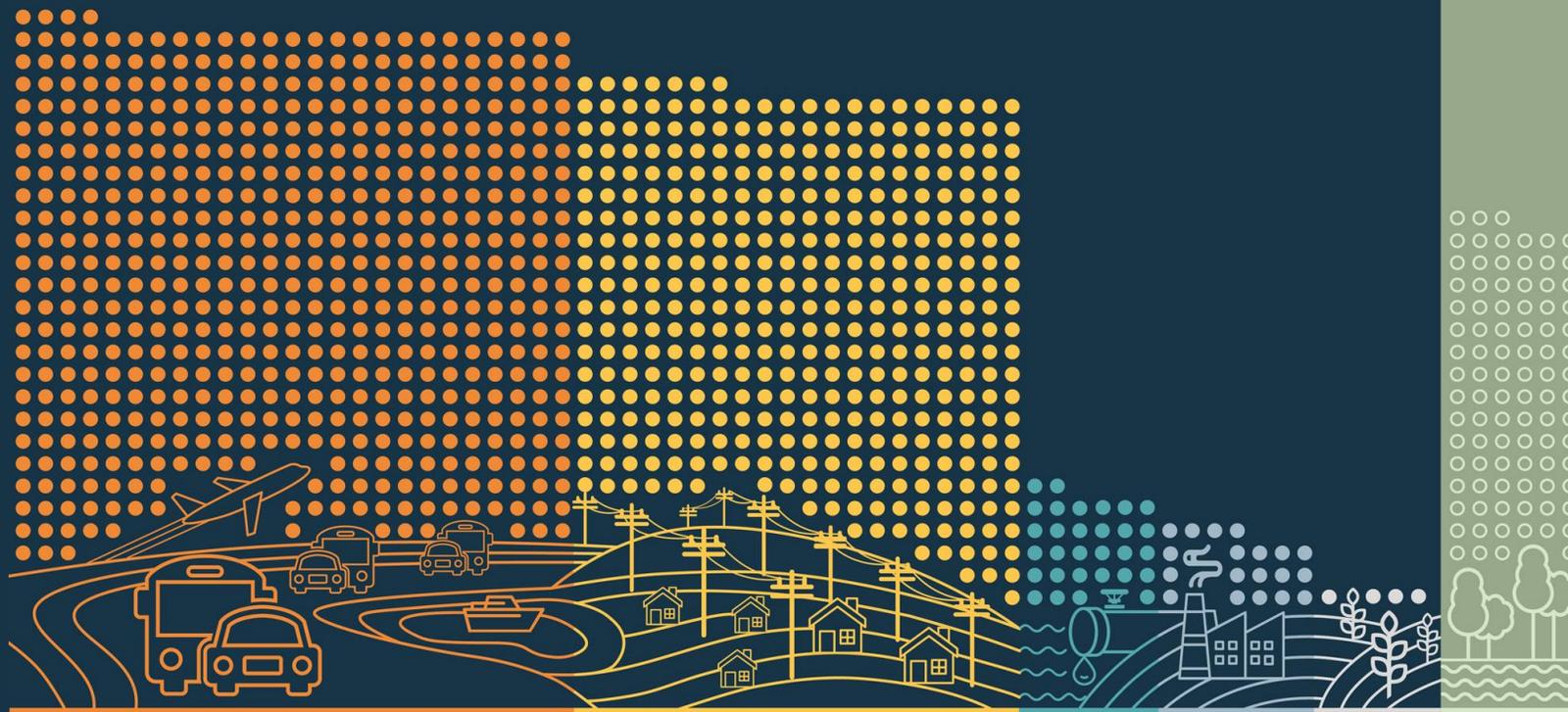
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PERFORMANCE MEASURES - REGIONAL GHG EMISSIONS

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

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

TOTAL SEQUESTRATION (↓)
340,600
MTCO₂E



TRANSPORTATION
55.5%

ENERGY
39.2%

WASTE
3%

PROCESSES
1.9%

AGRICULTURE
0.4%

LAND USE
-9%

PERFORMANCE MEASURES - FOCUS AREAS



**Housing and
Development**



Energy



Transportation



**Natural
Resources and
Working Lands**



Community

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)**

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 1/2 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 1/2 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)**

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

1

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

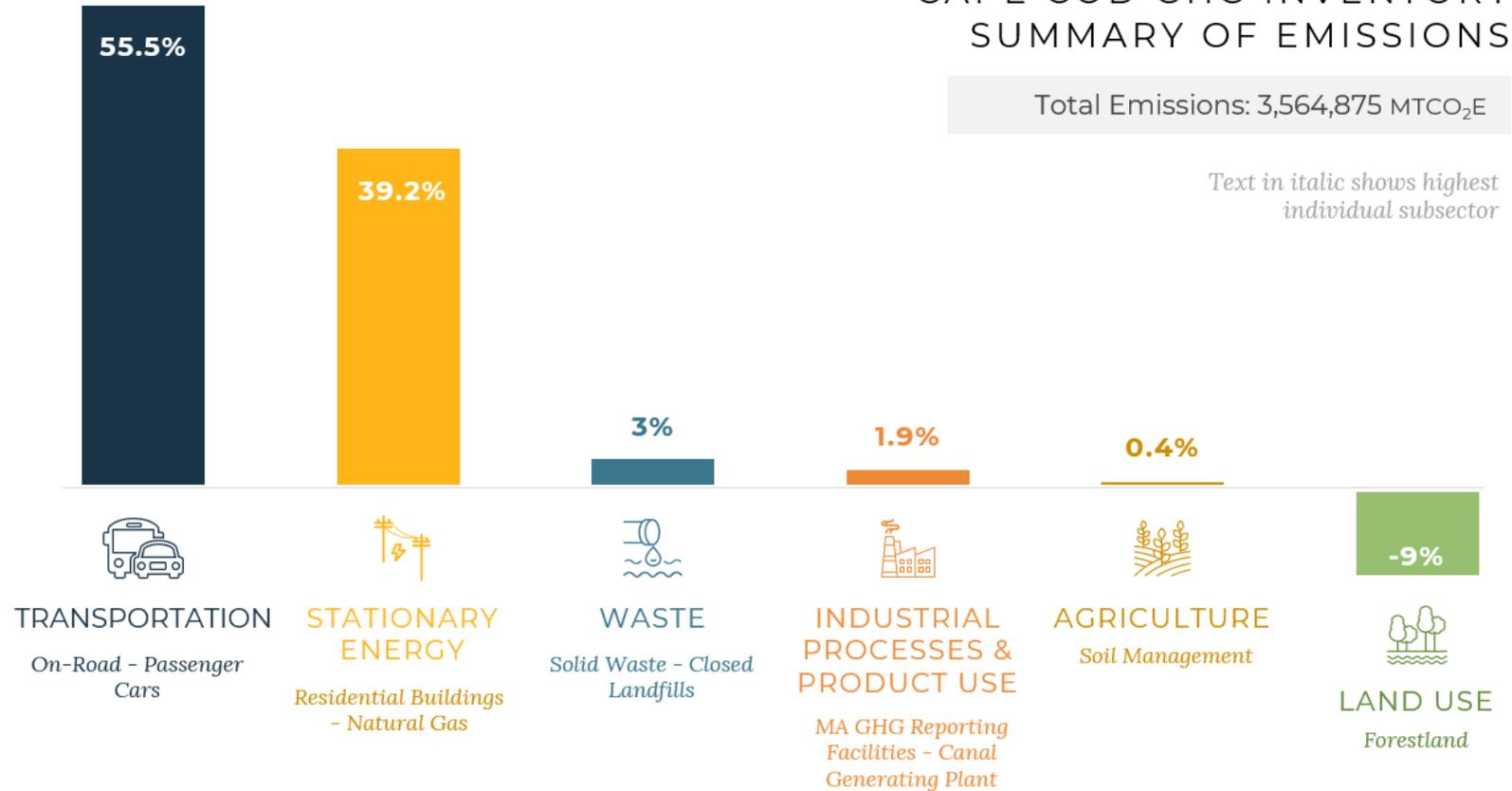


BUSINESS AS USUAL

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



HOMES WEATHERIZED

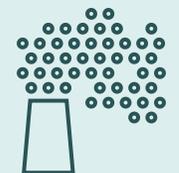


HEAT PUMPS

ENERGY CONSUMPTION



CRITERIA POLLUTANTS



ECONOMIC IMPACTS
OF CLIMATE ACTION
STRATEGIES



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



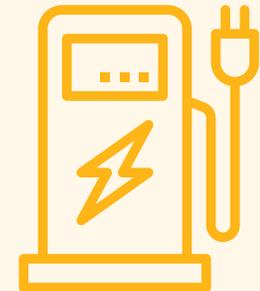
COST OF DOING NOTHING

ADAPTATION
STRATEGIES



Cost-benefit

MITIGATION
STRATEGIES



Cost-effectiveness



THANK YOU!

