

Cape Cod Climate Action Plan: Transportation Stakeholder Meeting Summary

Virtual Meeting No. 2 | November 18, 2020 | 1-4pm ET

MEETING IN BRIEF¹

On November 18, 2020, the Cape Cod Commission (Commission) held its second meeting engaging stakeholders on the topic of Transportation on Cape Cod to contribute to the development of a Cape Cod Climate Action Plan (CAP).

This meeting was the second of three planned meetings with the Transportation stakeholder working group.

The objectives of this second Transportation meeting were to:

- Recap Meeting No. 1 and progress to date on the CAP process
- Review and confirm criteria for use in selecting potential strategies and actions
- Evaluate potential strategies and actions to include in the CAP

This working group will help the Commission develop a plan that addresses the region's contributions to and threats from climate change. After hearing presentations from Commission staff reviewing proposed CAP purpose statement, the process to date, particularly the stakeholder consultations that have happened, and the process of gathering the input towards draft CAP plan by the third meeting, working group participants were split into small groups to discuss the draft framework and draft strategies and actions relevant to Transportation.

To view the full presentation slides, please click <u>here</u>.

¹For additional detail, please visit the Cape Climate Initiative website: <u>https://www.capecodcommission.org/our-work/climate-change/</u>



MEETING NO. 1 RECAP AND REFLECTION ON PROCESS TO DATE

Commission Executive Director, Kristy Senatori, opened her presentation by providing the working group with the following DRAFT purpose statement for the Cape CAP:

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.

Ms. Senatori reiterated the various components of the CAP process for the working group noting that there were several pieces that were taking place in parallel with stakeholder engagement, namely the economic impacts modeling and jurisdictional analysis. She noted that these results would be shared with the working group when they were available.

Ms. Senatori then moved to review the stakeholder engagement timeline for the working group members and highlighted the objectives and outcomes of the first meeting. Meeting No. 1 objectives were to discuss what was known about sector contributions to greenhouse gases and vulnerabilities to future climate impacts, and to develop criteria for use in selecting among potential mitigation and adaptation strategies and actions. Some of the results of meeting no. 1 discussions were the following:

- <u>Adaptation</u>:
 - Who's going to bear the costs?
 - Communicating the cost of doing nothing
 - Need public to understand impacts and need for funding roadway improvements
- <u>Mitigation</u>:
 - Working to provide the most efficient transit
 - Costs related to electric vehicles adoption is still high initially even if they are cost-effective in the long run
 - Electrifying fleet vehicles, including transit vehicles, is a part of the solution but comes with unique challenges

She also noted that the importance of education and outreach was also highlighted both at the government and individual levels. Finally, Ms. Senatori highlighted that the purpose of meeting no. 2 in this working group series was to begin identifying solutions. Working group members were provided with the opportunity to share key reflections since the first meeting. No clarifying questions were asked, and participants indicated they were eager to begin discussion.



CRITERIA REVIEW

Cape Cod Commission Transportation Program Manager, Steven Tupper, presented the criteria developed from feedback gathered during all four round 1 working group meetings (i.e., Natural Resources & Working Lands, Energy, Housing & Development, and Transportation). During this second meeting of the Transportation working group, members were asked to discuss how these criteria could be used to prioritize among actions developed, what the expectations were for using the criteria, and the possibility of linking them to ongoing studies or initiatives that are part of the CAP development process.

The proposed prioritization criteria compiled from all four of the first working group meetings are the following:

Feasibility	Science-based and data-driven actions
	Responsive to context
	Clarity/ease of implementation pathway
	Efficiency/effectiveness of action
	Achievement of multiple public benefits
Impact	Planning for future conditions
	Ability to adapt to changing conditions
	Measurability
Cost	Affordability
Cost	Funding Source
	Meeting the needs of all citizens
Equity	Providing for vulnerable populations
	Who pays?

Regarding these, working group members were polled on the following question to gauge which criteria were receiving the most focus in the moment: *from among these criteria, which three seem the most important to you?*

The results of this poll were used to spark discussion amongst the working group members about the implementation of these criteria. For this meeting, the most energy was concentrated around three criteria related to feasibility and impact:

- Efficiency/effectiveness of action (Impact)
- Science-based and data-driven actions (Feasibility)
- Achievement of multiple public benefits (Impact)

Following this brief polling exercise, working group members were invited to offer their reactions, comments, and questions. Commission staff reiterated that the CAP process



regarding prioritization criteria was still the brainstorming and idea collection phase. Moreover, that the discovery of a clear path was ongoing.

Below are working group member questions and comments that followed Mr. Tupper's criteria review presentation. Working group member questions are bolded, and answers from the Cape Cod Commission and/or CBI are italicized.

• I understand that construction and agriculture are large contributors to emissions. That may not be the case on the Cape, but I think it's significant nation-wide.

REVIEW CLIMATE ACTION PLAN STRATEGIES AND ACTIONS FOR TRANSPORTATION

Cape Cod Commission Transportation Program Manager, Steven Tupper, gave an introductory presentation to participants on CAP the identified goals, strategies, actions, and steps for the Transportation focus area. He provided an overview of the entire draft framework, noting the work has been broken down into 5 focus areas, 14 goals, 44 strategies, and 131 actions. He then reviewed the Transportation and goals and strategies, as well as overarching themes and messages that emerged from the pre-meeting survey.

The Transportation working group had 2 goals, 7 strategies, and 30 actions specific to its focus. Amongst these, those that working group members prioritized for discussion during the second meeting broadly fell into the following two categories:

- Reducing vehicle miles and enhancing alternative transportation
- Electrification of the transportation system

Discussion #1: Reducing vehicle miles and enhancing alternative transportation

Ahead of the first breakout group discussion, Mr. Tupper presented the strategies and actions identified in the pre-meeting survey as priorities for further discussion by group members in the first category: reducing vehicle miles and enhancing alternative transportation. CBI facilitator Stacie Smith then reviewed specific survey comments relevant to those strategies and actions.

Below are working group member questions and comments that followed Mr. Tupper's presentation. Working group member questions are bolded and answers from the Cape Cod Commission are italicized.

• How does accessibility of Cape Cod fit into CAP? How will the Commission's planning efforts address the question of bridge construction (during and after), and what it will mean for those accessing the Cape?

CAPE COD

- Commission: With regards to planning around bridge construction, an important consideration is that major infrastructure projects will hopefully last for 100 years. The Commission wants to think about the regional vision for a multimodal transportation system for travel on and off the Cape before, during, and after construction of the bridge.
- The bridge may have a more nuanced impact on emissions than expected. A question to answer is whether the bridge's increased capacity will lead to more traffic and an increase in congestion (idling) and gas, or if the increased capacity will decrease congestion so much that it acts as an offset to current emissions. The cleaner personal transportation becomes, the lower the emissions from vehicle travel on the bridge will be, too.
- Alternative modes of transportation on and off the Cape will need to be considered more than they are today. There Bridge construction will offer opportunities for alternative modes to gain popularity. Commuter rail extension are being pursued in Bourne, but the pandemic has delayed the progress of those efforts. Technological advances could also help to create more viable alternative transportation methods of accessing the Cape.
- Commission: This discussion is highlighting things that the Commission wants to continue to discuss as the canal bridge planning process progresses. It will be important for the Cape to understand key questions to ask as we make investment decisions. Please note that there is a meeting tomorrow afternoon on the potential on bringing rail to our region.

Following the introductory presentation, working group members were then broken into 2 small groups for parallel deep dive discussions to review and discuss the specific goals, strategies, and actions connected to reducing vehicle miles and enhancing alternative transportation. Those of particular emphasis for the meeting are highlighted below.

For the full list of DRAFT Transportation and Community goals, strategies, actions, and steps used for discussion, please see Appendix B.

Goal	Strategy	Actions
Reduce emissions from the transportation sector	Reduce vehicle miles traveled	Explore pricing mechanisms that incentivize GHG reduction strategies and funds other strategies



	- Enhance public transportation,	Improved coordination between modes
		Expand passenger rail service
	bicycling, walking, and shared transportation options	Expand and improve the bicyclist and pedestrian network as alternate transportation modes
		Consider new water transportation options
	Encourage more efficient land use	Promote Transit Oriented Development (TOD)
		Focus Growth in Activity Centers
patterns	Consider undevelopment where appropriate	

Working group members were specifically asked to affirm, add to, and/or amend the above, in particular, to elaborate and brainstorm around the "steps" that might be required to implement the strategies and actions to *achieve* the respective goals. Additionally, participants were asked to preliminarily identify any key actors who would be necessary to execute successful implementation. Below is a brief synthesis of the results of this conversation.

Reduce Vehicle Miles and Enhance Alternative Transportation

Several key inputs emerged from across the discussion of goals, strategies, actions, and steps within the reduce vehicle miles and enhance alternative transportation category. The edits, additions, and amendments group members suggested highlighted the need for



promotion of existing alternative transportation options; incentivizing virtual civic and business engagements, even after the pandemic has ended; and improving the existing public transit network (e.g., subsidizing transit, improved parking for buses and public transit, electrifying municipal fleets, etc.). Group members proposed adding an additional strategy concerning idling policies, which would include enforcing state idling laws, conducting public outreach and education campaigns, and encourage greater use of school buses for schools. Looking at the strategy of promoting Transit Oriented Development, members noted the importance of expanding rail service, ferry connections, and reducing the number of cars driving to lots to catch buses – members commented that transit officials should be at the table early for all new development conversations.

A theme raised throughout the discussion by multiple members was the public education and outreach efforts that will be necessary to communicate the actions to and benefits of reducing vehicle miles traveled and enhancing alternative transportation (e.g., communicating safety protocols with more shared streets, promoting the economic development benefits of increasingly connected bike and pedestrian infrastructure around activity centers, promoting the health benefits of more recreational alternative transportation, etc.).

Working group members identified the following key actors for further exploration:

- Car manufacturers and sellers
- Public transit officials
- Business community
- Town officials

Discussion #2: Electrifying the Transportation Sector

To set the stage for the second breakout group discussion, Mr. Tupper presented the strategies and actions identified in the pre-meeting survey as priorities for further discussion by group members in the second category: electrifying the transportation sector. CBI facilitator Stacie Smith then reviewed specific survey comments relevant to those strategies and actions.

Below are working group member questions and comments that followed Mr. Tupper's presentation. Working group member questions are bolded and answers from the Cape Cod Commission are italicized.

• Storage of energy is an important component to the discussion of EVs. Existing regulations do not allow us to transfer energy from batteries into EV chargers to charge cars. In a storm event in California, the EVs were locked down the last 2-3 years as the system would go down. If our poles come down through a resiliency event on the Cape, there is a good chance that electrification gets knocked down.



- CBI: Adaptation to resiliency events is an important part of this conversation. The Energy Working Group is also thinking about how batteries fit into this conversation.
- At some point, we should be looking at how much electricity is required to support a full transition to EV infrastructure, including how much it costs individual owners. If the Cape transitioned to 100% EV usage, we need to have an idea of how fantastic that would be and the potential issues that would arise.
 - It is a near-zero marginal cost if you are powering EVs through renewables. The challenge is capturing the renewable energy and keeping it on Cape or Cape Cod becoming an exporter of clean energy and reaping the economic benefits. Right now, it seems that renewable energy captured is heading to Boston and NYC.
 - In Sweden, transitioning to EVs resulted in much more car driving. I don't want to see a Cape Cod that has twice the congestion once we've all gone electric.
- My last breakout group discussed the incredible reduction of fossil fuel burn that is taking place during COVID-19. By holding this working group meeting virtually, we are likely saving 30 gallons of gas. Anywhere in the CAP where we talk about electrification, we need to note that actions like holding a Zoom meeting is also a form of electrifying transportation. We should be noting that nuance and incentivizing those opportunities. For example, the Commission could come out and decide to hold 90% of its meetings virtually, even after COVID. From the standpoint of convincing people, we need to stress that electrification of transportation includes electrification of end destination/uses.
 - *CBI: There might be a strategy about getting people out of those cars and another about electrifying cars. We will be trying to thread all those strategies together towards one purpose.*

Following the introductory presentation, working group members were then broken into 2 small groups for parallel deep dive discussions to review and discuss the specific goals, strategies, and actions connected to electrifying the transportation sector. Those of particular emphasis for the meeting are highlighted below. (*For the full list of DRAFT Transportation and Community goals, strategies, actions, and steps used for discussion, please see Appendix B.*)

Goal	Strategy	Actions
Reduce emissions from the transportation sector	Accelerate the electrification of the transportation system	Support investments in EV infrastructure and programs that incentivize EV adoption, including for Cape visitors*



	Electrify public transit vehicles
	Electrify vehicle fleets (municipal vehicles, school buses, delivery vehicles, etc.)
	Electrify ocean-based transport (personal watercraft, commercial fleets, improve dockside infrastructure, etc.)
Make efficiency improvements to the transportation system	Improve the efficiency of freight movement (including waste) by all modes (on-road, rail, and waterborne)

Working group members were specifically asked to affirm, add to, and/or amend the above, in particular, to elaborate and brainstorm around the "steps" that might be required to implement the strategies and actions to *achieve* the respective goals. Additionally, participants were asked to preliminarily identify any key actors who would be necessary to execute successful implementation. Below is a brief synthesis of the results of this conversation.

Electrification of the Transportation System

Several themes emerged from across the overarching discussion of goals, strategies, actions, and steps within the electrification of the transportation system category. The edits, additions, and amendments group members highlighted the importance of data collection and public communication in order to advance electrification efforts -education and outreach (e.g., EV car shows) underpin the effectiveness of implementation, and data collection and tracking (e.g., tracking of EV car sales) will be essential for measuring progress. Regarding supporting both private and public transit electrification, members named the importance of encouraging the purchase of a variety of different types of EV (e.g., private cars, RTA transit fleets, police cars, tourist transit trollies, etc.) and establishing EV charging stations. In addition to the transport of people on the Cape, members also spoke to improving the efficiency of freight movement by all modes with suggested incentives for deliveries made by EVs. Beyond transitioning to EV, members also highlighted the need to ensure that the electricity powering EVs comes from renewable energy sources, like solar, and that Cape residents and organizations have the capacity to store that renewable energy.



Working group members identified the following key actors for further exploration:

- Car manufacturers and sellers
- Public transit officials
- Aviation industry stakeholders
- Municipal policymakers

REVIEW CLIMATE ACTION PLAN STRATEGIES AND ACTIONS FOR COMMUNITY

Cape Cod Commission Transportation Program Manager, Steven Tupper, gave an introductory presentation on the Community goals/strategies/actions around communication, data, policies, and partnerships that might support the transportation strategies and actions. The Community focus area has 5 goals, 9 strategies, and 18 actions specific to its focus. Mr. Tupper highlighted the role of the Community goals in helping accelerate and ensure the health, safety, and equitability of other CAP focus area strategies through improved public education and communication, increased data collection and access, and formation of strategic partnerships and collaborative efforts.

CBI facilitator Stacie Smith then reviewed specific survey comments relevant to the presented Community strategies and actions, noting additional proposed actions or steps from members; focus on policy advocacy at local, regional, state, and federal levels; partnerships with relevant organizations, companies, and trusted local leaders; and linking the Transportation goals, strategies, actions, and steps to the creation of new jobs on Cape Cod.

Following the introductory presentation, working group members then participated in a full-group discussion to review and discuss the goals, strategies, and actions connected to Community. Below is a brief synthesis of the results of this conversation.

- **Power of partnerships and collaboration:** There is a high-level of collaboration that already exists between transit leaders. When talking about partnerships, if transportation leaders are all on the same page and putting their money where their mouth is, it sends a great message. The Commission also has forward-thinking people in each Cape community to rely on to recognize opportunities to move forward on climate issues. Beyond the public sector and individual engagement, it will also be essential for the Commission to effectively engage the private sector, like car companies and banks.
 - Commission: The Commission is currently working with the Chamber of Commerce, realtors, home builders, etc. The Cape Cod Climate Change Collaborative is also a focus group, which includes Cape Cod Five Bank.
- **Document participation:** If the Commission documented the participation they have received (and will receive) in the CAP process from residents and organizations, it will help foster the integration of work life, personal life, and civic



engagement. Doing so over social networks will also help draw attention to the efforts.

- **Reminder of present impacts:** Discussions about climate impacts often focus on the future, but the Cape needs to talk about present impacts and how much climate is costing us today. It's easier to sell a shift in climate strategy when people understand the costs.
- **Municipal staff capacity:** For the strategy "Increase capacity within municipal staffs; provide outside technical assistance," the Commission should not that it will be difficult to create and fund new positions, but it could be supported by grants or investments from the private sector.
- **Commission support on funding:** The Commission is in a unique position to see various funding opportunities that smaller groups may miss. The Commission could create a position to help find and raise money through grants so that the CAP steps could be implemented.

PUBLIC COMMENT

No public comment was made during this meeting.

NEXT STEPS AND WRAP UP

Commission Executive Director Kristy Senatori presented on next steps, articulating that their aim for the next meeting on December 18, 2020, would be to bring the database back to the Working Group and to focus on identifying the actors/areas for better integration. She also highlighted the Student Climate Ambassador Program, which will be kicking off shortly, outlining and the application process and encouraging members to reach out to any interested students they may know to apply.

Following the request for outreach about the Student Climate Ambassador Program, CBI facilitator Stacie Smith named a few additional steps for members to take between meetings, as requested at the beginning of the meeting. She advised that members go out and talk with their constituents to get their feedback on the draft goals, strategies, actions, and steps, and ask their constituents: "What steps they are taking or working on regarding adaptation and mitigation around climate impacts in transportation? What would it take for them to consider alternatives?"

Ms. Senatori thanked members for their time and participation and closed the call.



APPENDIX A: LIST OF PARTICIPANTS

Participants		
First Name	Last Name	
Guy	Busa	
Tom	Cahir	
Paul	Cleary	
Bob	Davis	
Grove	Harris	
Lauren	McKean	
Jim	Wolf	
Bill	Holcombe	
Rosemary	Carey	
Amy	Graves	
Ed	DeWitt	



APPENDIX B: CAPE COD CLIMATE ACTION PLAN GOALS, STRATEGIES, ACTIONS AND STEPS DRAFT

(See next page for handout made available to stakeholders)



Cape Cod Climate Action Plan Goals, Strategies, Actions and Steps DRAFT

The Cape Cod Climate Action Plan will include goals, strategies, actions, and steps to be taken in implementing the plan. The following list represents a first draft based on literature review, stakeholder input and efforts of the Cape Cod Climate Change Collaborative (which are denoted with *).



GOAL: REDUCE GHG EMISSIONS FROM THE BUILT ENVIRONMENT

Strategy: Strive towards Net Zero Energy Buildings; reduce energy consumption in non-residential structures

ACTION	STEPS
Ensure new commercial, industrial, and publicly funded construction is built to maximize energy efficiency*	 All Cape communities adopt the Mass stretch building code; includes 3-year updates consistent with requirements of the Green Communities Act Building energy efficiency bylaws/ordinances to establish bench marking, retro-commissioning, and energy audits for new buildings Institute a renewable fuel standard for heating systems Require that new buildings are EV and PV ready Establish new procurement rules for new construction
Retrofit existing commercial, industrial, municipal and other public buildings*	 Subsidize energy efficient equipment; includes deep retrofits of HVAC, moisture management, appliances Promote smart temperature controls in all municipal (commercial, industrial) buildings* Encourage towns to develop solar PV projects Subsidize energy conservation measures; reducing air leaks, adding insulation, switching to efficient lighting and appliances "Lead by example" in publicly funded buildings Cool roofs, sub-metering Require progressively tighter GHG emissions standards for heating systems
Expand the <i>Solarize Our Town</i> program to all Cape communities*	Engage Boards of Selectmen and Barnstable Town Council
Accelerate the decarbonization of industrial uses and processes	 Transition to cleaner heating and cooling systems



GOAL: REDUCE GHG EMISSIONS FROM THE BUILT ENVIRONMENT (CONT.)

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

ACTION	STEPS
Retrofit existing residential buildings/houses*	 Utilize incentives, rebates, and MassSave to weatherize and improve energy efficiency of residential buildings Replace oil, propane, and gas energy systems with electric heat pumps Address unique considerations of historic homes, both their ability to electrify, and community character concerns
Support Home Energy Scorecards	Promote climate-friendly building products
Ensure new residential construction is	 Advance the design of new homes; promote Passive House principles
built to maximize efficiency	 Support training of architects, contractors, builders, building code enforcement officials Support Cape communities in adopting the Mass stretch building code; includes 3-yr updates consistent with requirements of the Green Communities Act
Strategy: Promote efficient lar	nd use policies that protect the nature and character of the region
ACTION	STEPS
Advance sound land use policies within the Regional Policy Plan (RPP) that promote development within activity centers and reduce sprawl, encourage and reward re-development, and discourage new clearing of forested lands	New zoning, transfer of development rights bylaws See also the actions and steps under the transportation strategy "Encourage more efficient land use patterns"
GOAL: REDUCE GHG EMI	ISSIONS FROM WASTE MANAGEMENT SYSTEMS
Strategy: Increase diversion of term	waste from landfills in the short-term; eliminate sending waste to landfills in the long-
ACTION	STEPS
Promote building materials reuse	 Promote the reuse of building materials and organizations whose function is collection and reuse of these materials



Promote preservation of historic structures	None yet identified
Reduce plastic consumption	None yet identified
Enhance recycling programs	 Educate and/or enforce recycling bylaws Create partnerships between non-profits and municipalities to advance recycling (e.g. Take Care Cape Cod)
Explore regional waste management and collection agreements	Pay as you throw programs
Strategy: Reduce landfill emiss	sions
ACTION	STEPS
Capture methane	 Reduce the regulatory barriers to capturing and converting methane to energy
Strategy: Improve efficiency of	f wastewater treatment systems
ACTION	STEPS
Develop, approve, and fund wastewater treatment plans; collaborate with neighboring communities when appropriate	None yet identified
Improve operational efficiencies of wastewater treatment facilities	 Utilize U.S. Dept. of Energy's Sustainable Wastewater Infrastructure of the Future (SWIFt) Initiative to improve WWTF energy use; toolkit available
Maintain good maintenance practices of plants	None yet identified



GOAL: IMPROVE AND ADVANCE THE RESILIENCE OF THE BUILT ENVIRONMENT

Strategy: Address vulnerabilities in public infrastructure

ACTION	STEPS
Explore remedies to state regulatory barriers that delay or prevent solutions to resiliency problems	 Communicate with state agency staff, legislative delegation about regulatory barriers
Develop guidance on planning for long- range sea level rise scenarios	None identified yet
Assess and correct vulnerabilities in utility infrastructure	 Address threats to the electricity distribution network from wildfire, storms, and flooding Address threats to wastewater collection facilities from flooding
Conduct vulnerability assessments of municipal facilities	 Assess community shelters and critical facilities Conduct Stormtide pathways analyses where not yet complete (Nantucket Sound shoreline)
Strategy: Identify a uniform ap	proach to managing development in coastal resource areas region-wide
Adopt uniform regulations region-wide to limit new development and redevelopment in the floodplain and vulnerable areas	 Identify best practices for conservation commissions to address properties vulnerable to erosion and/or flooding
Develop regional sediment management plans	 Consider nature-based alternatives to address the sediment transport dynamics at vulnerable locations
Look at remedies to the challenges of private property ownership in coastal hazard areas	 Investigate legal remedies to coastal private property ownership/management Protect properties using green or nature-based solutions, or buy-out and "undevelop" with willing owners
Consider a coastal District of Critical Planning Concern	None identified yet



GOAL: IMPROVE AND ADVANCE THE RESILIENCE OF THE BUILT ENVIRONMENT (CONT.)

Strategy: Retrofit buildings located within climate hazard areas

Elevate buildings	None identified yet
Floodproof or retrofit buildings to withstand flooding	None identified yet
Support on-site renewable energy generation	None identified yet
Strategy: Address vulnerabilitie	es in the road network
Improve stormwater management through culvert retrofits and other stormwater best management practices	None identified yet
Assess low-lying roads and take appropriate action	 Protect coastal land, elevate roads, utilize green solutions, or relocate
Strategy: Relocate vulnerable l	buildings and structures
Move buildings and infrastructure out of the floodplain	None identified yet
Strategy: Ensure regional polic	cies promote long-term infrastructure resiliency
None identified yet	None identified yet

GOAL: INCREASE THE PRODUCTION AND USE OF CLEAN LOCAL ENERGY

Strategy: Generate cleaner energy and greener power

ACTION	STEPS
Facilitate renewable energy investment*	 Encourage community partners to finance and install renewable systems on private facilities Train workers in solar installations and servicing
Use clean energy sources in municipal operations*	 Support and invest in electric municipal vehicles
Identify new fuel sources	 Renewable biomethane Investigate potential for combined heat and power generating facilities Hydroelectric power; tidal power
Encourage community solar and solar car ports that limit new clearing and loss of sequestered carbon*	 Support new renewable energy projects, appropriately sited Develop and adopt model solar bylaws Incentives to generate local/onsite renewable energy
Decarbonize industrial processes	Ensure use of scrubbers at industrial facilities
ldentify affordable renewable energy sources	 Continue to support bulk clean power purchase agreements Establish energy financing districts; offer renewable energy system financing to small commercial properties
Explore potential offshore wind tech jobs, operations center on-Cape	Need for workers to service more easterly offshore wind lease areas, with access from Cape Cod

Strategy: Modernize and optimize the grid

ACTION	STEPS
Support expansion of electric vehicle (EV) charging network*	 Develop options for fully charged EV auto rental service* Develop / support programs to reward tourists for utilizing local EV rentals* Identify locations for new or expanded EV charging infrastructure
Support development of storage capability/battery technology*	 Promote customer adoption of small-scale storage* Support efforts to demonstrate warranty battery safety and educate planning/permitting agencies* Work to ensure that the electric distribution company, Eversource, does not prevent customers from owning and installing battery storage*

Energy	
	 Encourage towns and other municipal organizations to develop storage to pair with their existing solar in order to levelize their electric usage* Utilize EV rental depot for battery storage deployment at utility scaling*
Understand potential demand and capacity needs and plan for grid upgrades	 Identify potential offshore energy landfalls Understand potential electricity demand with electrification of overall energy demand Understand capacity of existing transmission corridors, substations

Strategy: Identify and utilize carbon offsets

ACTION	STEPS
Identify and calculate GHG emissions that are permanently reduced, avoided, or removed (sequestered) from the atmosphere	 Calculate offsets from forests (Cape Cod woodland types), freshwater wetlands and salt marshes
Strategy: Achieve Green Communities designation in all Cape towns	
None identified yet	None identified yet

GOAL: REDUCE EMISSIONS FROM THE TRANSPORTATION SECTOR

Strategy: Reduce vehicle miles traveled

ACTION	STEPS
Improve broadband access across Cape Cod	None identified yet
Support work from home policies	None identified yet
Explore pricing mechanisms that incentivize GHG reduction strategies and funds other strategies	None identified yet

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

ACTION	STEPS
Encourage carpooling and ridesharing*	None identified yet
Expansion and improvements of park and ride facilities	None identified yet
Improved coordination between modes	None identified yet
Reduce parking standards/requirements	None identified yet
Improve and expand the public transit network	 Expanding routes Expanding service days/hours Increase frequency on busy routes Focus on predictability/reliability
Expand passenger rail service	 Expanded passenger rail Consider local/light rail service (intra-Cape)

🛱 Transportation			
Expand and improve the bicyclist and pedestrian network as alternate transportation modes	 Encourage adoption of Complete Streets policies Bike share and rental programs Bicycle infrastructure (including lighting, end-of-trip facilities) Retrofitting existing roads to better accommodate non-motorists Encourage responsible use of electric bicycles Support safe routes to schools efforts 		
Consider new water transportation options	None identified yet		
Strategy: Accelerate the electr	Strategy: Accelerate the electrification of the transportation system*		
ACTION	STEPS		
Support investments in EV infrastructure and programs that incentivize EV adoption, including for Cape visitors*	 Develop programs to reward tourists for utilizing local EV rentals Zoning – encourage EV stations in new/redevelopment Support renewable energy production/battery storage/charging at transportation terminals Additional public EV charging station Support financing options for EV purchases/EV infrastructure 		
Electrify public transit vehicles*	None identified yet		
Electrify vehicle fleets (municipal vehicles, school buses, delivery vehicles, etc.)*	None identified yet		
Electrify ocean-based transport (personal watercraft, commercial fleets, improve dockside infrastructure, etc.)*	 Dockside EV infrastructure Offer incentives like providing a discount on docking fees if you have an electric craft 		
Strategy: Make efficiency impr	Strategy: Make efficiency improvements to the transportation system		
ACTION	STEPS		
Address inefficient traffic signals, upgrades	 Retime/adaptive signals Consider replace with roundabout LED upgrades 		
Address bottleneck locations (congested roadways and intersections)	None identified yet		
Upgrade LED for streetlights	None identified yet		

➡ Transportation

Improve the efficiency of freightNone identified yetmovement (including waste) by allmodes (on-road, rail, and waterborne)

Strategy: Encourage more efficient land use patterns

ACTION	STEPS
Mix land uses where possible	 Zoning that allows commercial and residential uses in the same area
Promote infill and adaptive use development	 Density bonuses or increased coverage for developments that are redeveloping or infilling
Promote Transit Oriented Development (TOD)	None identified yet
Focus Growth in Activity Centers	 Zoning that promotes density in Community Activity Centers (but outside of Special Flood Hazard Areas)
Consider undevelopment where appropriate	 Zoning that promotes compact multifamily development in walkable areas Buy-out program for vulnerable properties Zoning that minimizes impervious surfaces (allows multi-story buildings) that allows for more natural area for sequestration

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

Strategy: Adapt critical transportation infrastructure for climate change impacts

ACTION	STEPS
Low-lying roads – elevate, relocate, or abandon	None identified yet
Culverts	None identified yet
Bridges	None identified yet
Evacuation routes/potentially disconnected area	None identified yet

Strategy: Design transportation infrastructure for future conditions

ACTION	STEPS
Redesign for future precipitation/storm patterns	None identified yet
Planning for the impact of increased temperature/heat events	None identified yet

GOAL: SUPPORT AND PROMOTE PROTECTION, PRESERVATION, AND RESTORATION OF NATURAL ECOSYSTEMS

Strategy: Reduce emissions by increasing protected open space, parks, and tree canopy (and assuring local food security)*

ACTION	STEPS
Maintain and increase parks and open spaces	 Quantify carbon sequestration by forests and wetlands Work with towns and land trusts to increase protected open space Develop new sources of funding for open space and park land acquisitions and maintenance
Urban reforestation. Plant trees or increase urban tree canopy Reforestation of disturbed areas	 Identify shade-starved areas and support tree planting programs Strategic planting of trees to provide building shading or cooling benefits Creation of parks and green spaces on abandoned or underutilized spaces Work with towns and land trusts to increase parks in activity centers Work with towns and non-profits to increase tree canopy in activity centers Integration of trees as part of LID or stormwater runoff projects Identify disturbed areas suitable for reforestation and support tree-planting programs
Strategy: Avoid new conversio	
ACTION	STEPS
Avoid forest conversion to non-forest land uses by preventing development sprawl	 TDR bylaws, other changes to zoning to enable this vision Promote compact mixed-use development downtown and in activity centers (where infrastructure can support it) Create incentives to build and infill in activity centers and away from natural areas Invest in infill development, support local and regional policies that make redevelopment more affordable than new development

GOAL: SUPPORT AND PROMOTE PROTECTION, PRESERVATION, AND RESTORATION OF NATURAL ECOSYSTEMS (CONT.)

Strategy: Maintain ecosystem diversity, including landscape scale preservation of pine barrens mosaic

ACTION	STEPS
Limit ecosystem stressors by reducing threats such as habitat conversion and fragmentation (i.e. development), invasive species, and airborne and waterborne pollutants	 Prevent the introduction and establishment of invasive species and control existing damaging invasive species Increase monitoring for invasive species (especially at pathways for infestation - trailheads, roads) Control invasive species through physical or chemical treatments Clean equipment prior to activities Education on invasive species identification and notification protocols
Protect ecosystems of sufficient size	 Expand the boundaries of existing open space ID opportunities to acquire/protect lands adjacent to existing open space
Protect ecosystems across a range of environmental settings	 Inventory existing and potential protected open space to ID natural communities protected and any lacking protection
Protect multiple example ecosystems to capture redundancy	 Inventory existing and potential protected open space to ID natural communities protected and those requiring additional examples protected
Maintain large-scale ecosystem processes and prevent habitat isolation	None identified yet
Embrace adaptive management	 Preserve options for natural adaptation Expect and plan for species losses and gains (i.e. changes in species assemblages) Favor or restore native species that are expected to be adapted to future conditions Establish or encourage new mixes of native species that may be a suitable combination under future conditions Manage for species with wide moisture and temperature tolerances Prompt revegetation of sites following severe disturbance Allow for areas of natural regeneration to test for future-adapted species Support monitoring Public funding and progressive, flexible, and climate-responsive regulations
Use nature-based adaptation solutions	 Consider soft engineering approaches as alternatives to hard engineering solutions during project planning, design, site plan review, and permitting

GOAL: SUPPORT AND PROMOTE PROTECTION, PRESERVATION, AND RESTORATION OF NATURAL ECOSYSTEMS (CONT.)

Strategy: Maintain ecosystem diversity, including landscape scale preservation of pine barrens mosaic (cont.)

ACTION	STEPS	
Develop a unified vision or regional plan for collaborative conservation of natural resources	 Use State Wildlife Action Plan, BioMap2, Pine Barrens Green Infrastructure Map, and Mass Wildlife Climate Action Tool as resources for protection and restoration Improved, better integrated, and increasingly coordinated monitoring systems would be helpful to detect, track, and attribute species and habitat shifts to climate change over spatiotemporal scale. 	
Remove/reduce environmental review/permitting barriers to restoration projects	 Review/revise state and local regulations Funding coordination Increase technical support Expand public outreach and education 	
Strategy: Support and promote protection, preservation, and restoration of wetlands and riparian areas		
ACTION	STEPS	
Protect, restore, and enhance riparian areas (river and associated wetland buffers)	 Restore native communities and ecosystem components (e.g. natural groundcover, litter layer, coarse woody debris) in riparian areas Plant/restore a diversity of tree and plant species Educate property owners on importance of natural buffers, native species Reclaim developed sites and restore or reforest riparian areas 	
Protect, restore, and enhance freshwater wetlands, including ponds and lakes	 Update Ponds and Lakes Atlas Widen existing buffers to wetlands Protect/restore vegetation around ponds Avoid chemical/fertilizer use around waterbodies Avoid/reduce sources of land-based pollutant and nutrient loads 	
Protect, restore, and enhance salt marshes	ID salt marshes that have greatest landward migration potential and facilitate salt marsh migration	
Support continued operation of active cranberry bogs while also preparing for retirement of bogs	 ID bogs with wetland restoration potential and with high upland habitat connectivity value Reduce or eliminate agricultural drainage improvements near wetlands 	

GOAL: SUPPORT AND PROMOTE PROTECTION, PRESERVATION, AND RESTORATION OF NATURAL ECOSYSTEMS (CONT.)

Strategy: Support and promote protection, preservation, and restoration of habitat connectivity

ACTION	STEPS
Construct, retrofit, or replace crossing structures for wildlife passage	 ID key sites for connectivity improvements Plan, design and build for future conditions
Reduce landscape fragmentation and maintain/create habitat corridors	ID opportunities to connect existing open space parcels and acquire/protect these connections

Strategy: Protect water quality and quantity

ACTION	STEPS
Restore natural hydrology	 Remove remnant hydrological modifications
Incorporate natural or low impact development into designs	 Direct runoff into natural features Use low impact designs such as permeable paving
Protect drinking water supply	 Protect/acquire lands in Zone IIs Limit development activities in Zone IIs
Plan for and design "shovel-ready" projects that achieve restoration and water quality goals	 Align planning, design, permitting, and construction of water quality restoration projects

GOAL: INCREASE CARBON SEQUESTRATION IN THE NATURAL ENVIRONMENT

Strategy: Increase carbon storage and sequestration in soils

ACTION	STEPS
Improve soil management techniques	 Minimize soil disturbance by avoiding or reducing grading for development or tillage for planting, weed control, or other purposes Avoid/reduce fertilizer and pesticide use Use fertilizers, pesticides and other soil amendments more efficiently Use compost Use soil cover (mulch, cover crop) to conserve soil moisture and reduce soil temperatures Incorporate ruminant grazing Reduce topsoil erosion



GOAL: INCREASE CARBON SEQUESTRATION IN THE NATURAL ENVIRONMENT (CONT.)

Strategy: Enhance carbon storage/sequestration in forests

ACTION	STEPS
Protect and restore trees and forests	 Maintain vegetation or revegetate disturbed areas Retain large diameter trees ID areas with high carbon stocks and prioritize protection of these
Keep natural lands intact*	 Set high fees for conversion of intact landscapes Protect forested land through deed/conservation restrictions Prioritize large, unfragmented forest patches for avoidance of disturbance or protection ID and reforest lands that have been deforested
Support forest management to protect healthy forests and reduce wildfire threat and severity	 Forest thinning Establish and maintain fuel breaks Prescribed fires
Strategy: Increase carbon stor	age in blue carbon ecosystems
ACTION	STEPS
Protect/restore wetlands (in particular salt marshes)*	None identified yet
Make room for salt marsh migration (landward)	None identified yet
Consider seaweed aquaculture as a decarbonization method	None identified yet

GOAL: PROTECT THE ABILITY OF WORKING LANDS AND WATERS TO PROVIDE ESSENTIAL SOCIAL AND ECONOMIC SERVICES WHILE PROTECTING THE ENVIRONMENT

Strategy: Support sustainable and resilient working lands

ACTION	STEPS
Increase agriculture activities	 Incentivize local food production Address Community Supported Agriculture (CSAs) disappearing - labor challenges Update farmland current use taxation program (Ch61A) to further support agricultural activities Support local food production though infrastructure and policy (e.g. right to farm bylaws) ID areas/parcels with prime agriculture soil and encourage/zone it for agriculture
Protect water quality and quantity from agricultural activities	 Reassess nutrient applications and ensure that use of organic materials, fertilizers, amendments, and all sources of nutrients is matched to changing climate conditions Reassess pesticide risk and ensure that all pesticide applications consider changing climate conditions Avoid/reduce irrigation or increase irrigation efficiencies
Reduce crop stressors	 Enhance use of integrated pest management Use of varieties and species resistant to heat, drought, flash floods, pests, and diseases Altering crop rotations Monitor for and eradicate noxious weeds
Reduce risks from warmer and drier conditions by adjusting agricultural practices	 Adjust timing of planting and other operations to account for longer growing season and altered conditions
Manage farms and fields as part of a larger ecosystem, promoting biological diversity through the landscape	 Maintain or restore natural ecosystems Promote biological diversity across the landscape Enhance landscape connectivity
Alter agriculture management to accommodate expected future conditions	 Diversification - add additional farming activities or new commodities Switch to commodities expected to be better suited to future conditions (e.g. new cultivars/species that match a changing climate, more water-efficient crops) Add and/or remove lands to agricultural production as lands become more or less suitable for agriculture Upgrade to more energy efficient equipment and/or integrate on-farm renewable energy generation

GOAL: PROTECT THE ABILITY OF WORKING LANDS AND WATERS TO PROVIDE ESSENTIAL SOCIAL AND ECONOMIC SERVICES WHILE PROTECTING THE ENVIRONMENT (CONT.)

Strategy: Support the fishing industry through transitions created by climate change

ACTION	STEPS
Increase the public's demand for "emerging" seafood varieties (e.g. dogfish, shellfish varieties)	 Assist with marketing and educating the public on alternative seafood products (e.g. dogfish, shellfish varieties)
Expand research, data access, and forecasting of fisheries trends	 Support research into local ocean acidification trends Keep tabs on ocean acidification and impacts on shellfish Data access to support long-range planning and capital projects
Restore native shellfishing areas	None identified yet
Protect harbor and fishing access infrastructure	 Zoning changes to protect maritime access and industries
Strategy: Promote local and re mitigate the impacts of climat	gional recognition of the importance of natural resources and working lands to te change
ACTION	STEPS
Adopt municipal statements or policies about the contribution of natural resources and working lands to mitigate the effects and causes of climate change	None identified yet

GOAL: IMPROVE BROAD PUBLIC KNOWLEDGE AND UNDERSTANDING OF CLIMATE CHANGE IMPACTS AND PROGRAMS

Strategy: Increase education and communications about climate change mitigation options

Community

ACTION	STEPS
Identify the legal framework that towns and other actors must work within (consider how to reach vulnerable populations)	 Identify how information flows through neighborhoods, how to reach vulnerable populations
Provide guidance for communities that help prioritize actions to reduce greenhouse gas emissions	None identified yet
Improve communication between municipalities	None identified yet
Develop curriculum and hands-on programming for students of all ages to become informed about climate change and the actions available to address it*	 Engage students and faculty (high school and college) in the development of curriculum. Include department of education to change curriculum. Widely distribute the Climate Action Plan in print and other media; include town halls, libraries, bookstores, Chambers of Commerce, etc.
Provide information about the impact that eating a plant-based diet can have on personal greenhouse gas emissions	 Vendor fairs, lectures, peer influence (climate influencers)
Identify individual actions or lifestyle choices that individuals can take; provide that information as guidance	 Utilize the Climate Action Networks to distribute information
Identify and distribute a GHG calculator to assess emissions associated with personal travel, consumption choices, etc.	None identified yet
Strategy: Increase education and communications about climate change adaptation options	
ACTION	STEPS
None identified yet	None identified yet

GOAL: ACCELERATE ADOPTION OF EMISSIONS REDUCTION STRATEGIES AND ACTIONS ACROSS REGIONAL AND LOCAL GOVERNMENTS

Strategy: Where suitable, identify and adopt regional goals and policies that help advance mitigation strategies and actions

ACTION	STEPS
Adopt a goal in the Regional Policy Plan (RPP) to advance the Commonwealth's greenhouse gas reduction goals	None identified yet
Adopt a new performance measure in the RPP that tracks progress on greenhouse gas emissions	None identified yet
Adopt objectives in the RPP to promote low carbon transportation alternatives, low carbon technologies for building heating and cooling, to promote carbon sequestration through land use practices, and to promote low carbon energy generation	None identified yet
Amend existing technical guidance to advance net or near zero construction methods and elements, including solar considerations*	None identified yet
Develop technical guidance to support the new RPP goal and objectives	 Develop technical guidance on Net or Near- Zero construction; alternate fuel sources and HVAC systems; Electric vehicles including transit; bike and pedestrian networks; means for preventing the reduction of, and promoting new carbon sequestration
Strategy: Create mandates for municipal mitigation actions	
ACTION	STEPS
None identified yet	None identified yet



Strategy: Increase capacity within municipal staffs; provide outside technical assistance

ACTION	STEPS	
Increase technical assistance capacity within regional organizations to support local governments (develop model bylaws, regulations, and policies)	 Develop model bylaws, regulations, and policies to assist local governments 	
Create and fund new staff positions within municipal government to advance climate change actions	None identified yet	
Provide grant-writing assistance	None identified yet	
Strategy: Identify more granul	ar, town-specific data of GHG emissions STEPS	
Request legislative change to mandate provision of fuel use data at municipal level	None identified yet	
provision of fuel use data at municipal level	None identified yet	
provision of fuel use data at municipal level GOAL: ENSURE THE HEA SOLUTIONS		
provision of fuel use data at municipal level GOAL: ENSURE THE HEA SOLUTIONS	LTH, SAFETY, AND EQUITABILITY OF MITIGATION AND ADAPTATION	



GOAL: ESTABLISH STRATEGIC PARTNERSHIPS TO ADVANCE SHARED GOALS

Strategy: Foster collaborations between levels of government

ACTION	STEPS
Look at opportunities to combine road retrofits with new utility installations (e.g. wastewater when addressing sea level rise or flooding)	None identified yet
Strategy: Foster collaborations between the public and private sectors*	
ACTION	STEPS
Identify opportunities for strategic partnerships to advance common goals or objectives	None identified yet