

Cape Cod Climate Action Plan: Natural Resources & Working Lands

Stakeholder Meeting Summary

Meeting No. 2 (held virtually via Zoom) | November 17, 2020 | 1-4pm ET

MEETING IN BRIEF¹

On November 17, 2020, the Cape Cod Commission (Commission) held its second meeting engaging stakeholders on the topic of Natural Resources and Working Lands 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 Natural Resource and Working Lands stakeholder working group.

The objectives of the second Natural Resources and Working Lands meeting were to:

- Recap Meeting No. 1 and the 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 the proposed CAP purpose Statement, the process to date (particularly the stakeholder meetings that have happened), and the process of gathering the input towards a draft CAP plan, working group participants were split into small groups to discuss the draft framework and draft strategies and actions relevant to Natural Resources and Working Lands.

To view the full presentation slides, please click [here](#).

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 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.*

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

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 highlighted that these results would be shared with the working group once 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, vulnerabilities to future climate impacts, and to develop criteria for use in selecting among potential mitigation and adaptation strategies and actions. Meeting no. 1 discussion results were the following:

- Adaptation:
 - Intersections with the economy (e.g., fishing and shellfishing)
 - Communities working to restore oyster reefs has multiple benefits
 - Maintaining and restoring saltmarsh contributes to economy, which is so heavily reliant on the environment, and to carbon sequestration
- Mitigation:
 - Nature-based solutions and green infrastructure have multiple benefits, including carbon sequestration and helping to lower cost of water quality infrastructure; these solutions have state support and need to be better integrated into local regulations
 - There is a need for state and federal funding sources
 - Work is needed to get state agencies to allow credits for nitrogen in nature-based solutions

Finally, Ms. Senatori highlighted that the purpose of meeting no. 2 in the stakeholder 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

Commission staff 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 Natural Resources and Working Lands 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 |
| Impact | Efficiency/effectiveness of action |
| | Achievement of multiple public benefits |
| | Planning for future conditions |
| | Ability to adapt to changing conditions |
| | Measurability |
| Cost | Affordability |
| | Funding Source |
| Equity | Meeting the needs of all citizens |
| | Providing for vulnerable populations |
| | Who pays? |

Regarding these criteria, 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 two criteria related to feasibility and impact:

- Science-based and data-driven actions (Feasibility)
- Efficiency/effectiveness of action (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 in 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 Ms. Senatori's criteria review presentation. Working group member questions are bolded and answers from the Cape Cod Commission and/or CBI are italicized.

- **Last time, "equity" came out as an area everyone was concerned with, but when you combine the factors and average them this is not the case.**
 - *CBI: This happens often as a value-based consideration, how to keep this front and center? A reminder that this is not a ranking exercise, but just highlights how important certain things are to keep front and center.*
- **Similarly noting that obviously science-based and data-driven actions are the highest on the list, but how did we lose out on the equity piece? This happens very often with building these plans; we can create a million action plans with**

reliable data and ground truthing, and make sure that the impacts are equal to the cost, yet with climate change action, this has gotten us into a lot of trouble. Being over-reliant on data-based backgrounds can sometimes hinder us from actual action, and just pushing forward with all of the work that we are doing so that we do not miss out on equity. We should keep trying to keep these two things at eye-level.

- When I was trying to catch up on what has been produced, I kept running up against something that had not been mentioned, which is the social costs of carbon. I think it is relevant to [the survey]. I would like to see more discussion regarding the social costs of carbon and why there is a disconnect to decision-making. I would argue they are making “economically right” decisions, and the more economists/sociologist we can bring on board the more helpful.
- [Regarding the survey], I looked at these questions from a Natural Resources and Working Lands perspective and how it factors into a most effective solution for our group, so the outcome of the bars will be different per group.
- I was really impressed to see how all of our conversations were carried forward into the actual goals, strategies, and actions. For the Natural Resources and Working Lands working group, it is worth mentioning again that the actions we are proposing be integrated with other regional management plans/agencies. There are a lot of people doing climate adaptation work. Where we’re considering criteria, that broader regional scale should be integrated with other agencies that are working on these issues. Actions will be more impactful if others are already doing this type of work and this group, or the plan, looks at that equity portion of the actions already going on.
 - *CCC: This is a great point and well-taken. We are really trying to integrate and be aware of what else is going on. We also want to make sure some of the strategies have some level of measurability so we can identify progress down the line.*
 - *CBI: This could be an important criterion in terms of other options (i.e., a “meta-criterion”).*
- **Coordination and cross-checking are critical. Do you have on-going agreements, or cross-coordination? If not, I would make the suggestion this happens.**

REVIEW CLIMATE ACTION PLAN STRATEGIES AND ACTIONS FOR NATURAL RESOURCES AND COMMUNITY

Cape Cod Commission Natural Resources Program Manager, Heather McElroy, gave an introductory presentation to participants. She 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. She then reviewed the Natural Resources and Working Lands and Community goals and strategies, as well as overarching themes and messages that emerged from the pre-meeting survey.

The Natural Resources and Working Lands working group had 3 goals, 12 strategies, and 41 actions specific to its focus. Amongst these, those that working group members prioritized for discussion during the second meeting broadly fell into the following three categories:

- Coastal resilience
- Open space protection, preservation, and enhancement
- Land management

Following the introductory presentations, for each of these categories, working group members were then broken into 3 small groups for parallel deep dive discussions to review and discuss the specific goals, strategies, and actions connected to coastal resilience, open space, and land management.

Those of particular emphasis for the meeting are highlighted below. Working group members were specifically asked to affirm, add to, and/or amend these, 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, and if time permitted, participants were asked to preliminarily identify any key actors who might be necessary to execute successful implementation (these are noted where applicable).

For the full list of DRAFT Natural Resources and Working Land goals, strategies, and actions used for discussion, please see Appendix B.

| Category | Goal | Strategy | Actions |
|---------------------------|---|--|--|
| Coastal Resilience | Support and promote protection, preservation, and restoration of natural ecosystems | Support and promote protection, preservation, and restoration of wetlands and riparian areas | Protect, restore, and enhance salt marshes |
| | Increase carbon sequestration in the natural environment | Increase carbon storage in blue carbon ecosystems | Protect/restore wetlands (in particular salt marshes) Make room for salt marsh migration (landward) |
| Open Space | Support and promote protection, preservation, and restoration of natural ecosystems | Reduce emissions by increasing protected open space, parks, and tree canopy (and assuring local food security) | Maintain and increase parks and open spaces |

| | | | |
|------------------------|---|---|--|
| | | Support and promote protection, preservation, and restoration of habitat connectivity | Reduce landscape fragmentation and maintain/create habitat corridors |
| | | Avoid new conversion of land uses | Avoid forest conversion to non-forest land uses by preventing development sprawl |
| Land Management | Support and promote protection, preservation, and restoration of natural ecosystems | Maintain ecosystem diversity, including landscape scale preservation of pine barrens mosaic | Embrace adaptive management |
| | | Protect water quality and quantity | Incorporate natural or low impact development into designs |
| | Increase carbon sequestration in the natural environment | Increase carbon storage and sequestration in soils | Improve soil management techniques |

Coastal Resilience

Several themes emerged from across the overarching discussion of goals, strategies, actions, and steps within the coastal resilience category. The edits, additions, and amendments group members suggested were, in general, centered around education of the public regarding the value of wetlands and riparian areas, enabling saltmarsh/wetland-friendly legislation/regulation, mapping existing saltmarshes/wetlands or coalescing any work that has already taken place. Finally, specific emphasis was put on any actions or steps connecting the CAP and its components to existing efforts.

Open Space

Several themes emerged from across the overarching discussion of goals, strategies, actions, and steps within the open space category. The edits, additions, and amendments group members made were centered around education of homeowners specifically as well as the rest of the general public, more mapping of current protected/unprotected open space (e.g., Mass Wildlife’s Natural Heritage Bio Map 2), specifying any relevant regulatory changes or bylaw updates, and information sharing with respect to any existing Cape priorities regarding open space. Finally, there were several comments made regarding the importance of word choice and language for each goal, strategy, action, and step included in the database. Working group members also asked for a definition of “open space”; the Commission clarified that “permanently protected” is what is thought about as open space for the purposes of the Cape CAP.

Land Management

Several themes emerged from across the overarching discussion of goals, strategies, actions, and steps within the land management category. The edits, additions, and amendments group members made were centered around public education, cross-agency information sharing to improve cooperation and successful outcomes, as well as coalescing or completing detailed inventorying of what currently exists in an effort to understand the processes and habitats that contribute to natural adaptation. Overall, working group members expressed the desire to clarify where the actions would be helpful, and to ensure there are no detrimental effects in the wrong context.

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

- **Between carbon sequestration and invasives, which will take priority? Is there discussion regarding what we ought to be doing first?**
 - Jake: Monoculture that would create would be better to have higher diversity over the long-term.
- **We worked on dangerous fertilizers and passed something to deal with it previously. In listening to all these conversations, I think the towns need to be a bigger stakeholder in what you'd like to do as individuals because every town on the Cape is different. We need to also go in on a regional approach when looking at the action plan's goals. The towns have no specific hard boundaries, and the natural resources transcend these. Towns need to be brought in to the regional discussion, and towns need to be included in funding.**
 - *CCC: We've met with all the towns. There is a fertilizer district of critical planning concern and this was an opportunity for towns to adjust their regulations, it was not as broadly adopted as we would have liked and there were many towns who did not adopt it.*

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

- Town-level planning boards
- Southeastern MA Pine Barrens Alliance
- Trustees of Reservations

Full-Group Reflection

Following breakouts, working group members were asked to reflect on their discussions throughout the day's session. Facilitators asked participants to reflect on whether anything was particularly striking, if there were some steps that emerged as urgent short-term priorities and others that would then enable others that were longer term? Working group members expressed the need for clarification regarding how prioritization would occur, they also reiterated that regionalization would be a critical piece of the finished Cape CAP.

Several members reemphasized the overarching desire for the integration of all the different management plans that already exist, noting that where there is overlap at the state, local, and/or regional level would be a place for prioritization to occur.

Working group members also aptly highlighted the need for the development of a product that would facilitate the ability to compare actions across their potential varying impacts, and which decision-makers are required. In response, commission staff acknowledged there was work left to do to accomplish this, but, as previously mentioned, the third round of working group meetings would work to address this. The third working group meetings will go to prioritization, key actors, and what the working group would be willing to embrace with respect to implementation.

PUBLIC COMMENT

No public comment was made during this meeting.

NEXT STEPS AND WRAP UP

Commission staff provided some highlights of what was heard across the working group's discussions, specifically their understanding of the need to identify where their opportunities lie to integrate, collaborate, and coordinate with existing efforts, priorities, and organizations.

Finally, Commission staff articulated their aim for the next meeting would be to bring the database back to the Working Group and to focus on identifying the actors/areas for better integration. Commission Executive Director, Kristi Senatori, thanked working group members for their time and participation.

APPENDIX A: LIST OF PARTICIPANTS

| Participants | |
|--------------|------------|
| First Name | Last Name |
| Greg | Berman |
| Joy | Brookshire |
| Casey | Dannhauser |
| David | DeConto |
| Rick | Francolini |
| John | Frost |
| Fred | Gaechter |
| Lilli-Ann | Green |
| Jane | Harris |
| DeeDee | Holt |
| Don | Keeran |
| Jack | McCormack |
| Jake | McCumber |
| Maxine | Minkoff |
| Dennis | O'Connell |
| Brenda | Olson |
| Morgan | Peck |
| Jim | Rassman |
| Avery | Revere |
| Carole | Ridley |
| Leonard | Short |

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* | <ul style="list-style-type: none"> ■ 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* | <ul style="list-style-type: none"> ■ 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* | <ul style="list-style-type: none"> ■ Engage Boards of Selectmen and Barnstable Town Council |
| Accelerate the decarbonization of industrial uses and processes | <ul style="list-style-type: none"> ■ 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* | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ Promote climate-friendly building products |
| Ensure new residential construction is built to maximize efficiency | <ul style="list-style-type: none"> ■ Advance the design of new homes; promote Passive House principles ■ 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 land 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 | <ul style="list-style-type: none"> ■ New zoning, transfer of development rights bylaws <p><i>See also the actions and steps under the transportation strategy "Encourage more efficient land use patterns"</i></p> |

GOAL: REDUCE GHG EMISSIONS FROM WASTE MANAGEMENT SYSTEMS

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

| ACTION | STEPS |
|----------------------------------|---|
| Promote building materials reuse | <ul style="list-style-type: none"> ■ Promote the reuse of building materials and organizations whose function is collection and reuse of these materials |



Housing and Development

| | |
|--|--|
| Promote preservation of historic structures | <i>None yet identified</i> |
| Reduce plastic consumption | <i>None yet identified</i> |
| Enhance recycling programs | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ Pay as you throw programs |
| Strategy: Reduce landfill emissions | |
| ACTION | STEPS |
| Capture methane | <ul style="list-style-type: none"> ■ Reduce the regulatory barriers to capturing and converting methane to energy |
| Strategy: Improve efficiency of wastewater treatment systems | |
| ACTION | STEPS |
| Develop, approve, and fund wastewater treatment plans; collaborate with neighboring communities when appropriate | <i>None yet identified</i> |
| Improve operational efficiencies of wastewater treatment facilities | <ul style="list-style-type: none"> ■ 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 | <i>None yet identified</i> |



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 | <ul style="list-style-type: none"> ■ Communicate with state agency staff, legislative delegation about regulatory barriers |
| Develop guidance on planning for long-range sea level rise scenarios | <i>None identified yet</i> |
| Assess and correct vulnerabilities in utility infrastructure | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ Assess community shelters and critical facilities ■ Conduct Stormtide pathways analyses where not yet complete (Nantucket Sound shoreline) |

Strategy: Identify a uniform approach 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 | <ul style="list-style-type: none"> ■ Identify best practices for conservation commissions to address properties vulnerable to erosion and/or flooding |
| Develop regional sediment management plans | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ 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 | <i>None identified yet</i> |



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

Strategy: Retrofit buildings located within climate hazard areas

| | |
|--|----------------------------|
| Elevate buildings | <i>None identified yet</i> |
| Floodproof or retrofit buildings to withstand flooding | <i>None identified yet</i> |
| Support on-site renewable energy generation | <i>None identified yet</i> |

Strategy: Address vulnerabilities in the road network

| | |
|--|---|
| Improve stormwater management through culvert retrofits and other stormwater best management practices | <i>None identified yet</i> |
| Assess low-lying roads and take appropriate action | <ul style="list-style-type: none"> ■ Protect coastal land, elevate roads, utilize green solutions, or relocate |

Strategy: Relocate vulnerable buildings and structures

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|---|----------------------------|
| Move buildings and infrastructure out of the floodplain | <i>None identified yet</i> |
|---|----------------------------|

Strategy: Ensure regional policies promote long-term infrastructure resiliency

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|----------------------------|----------------------------|
| <i>None identified yet</i> | <i>None identified yet</i> |
|----------------------------|----------------------------|

GOAL: INCREASE THE PRODUCTION AND USE OF CLEAN LOCAL ENERGY

Strategy: Generate cleaner energy and greener power

| ACTION | STEPS |
|---|--|
| Facilitate renewable energy investment* | <ul style="list-style-type: none"> ■ 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* | <ul style="list-style-type: none"> ■ Support and invest in electric municipal vehicles |
| Identify new fuel sources | <ul style="list-style-type: none"> ■ 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* | <ul style="list-style-type: none"> ■ Support new renewable energy projects, appropriately sited ■ Develop and adopt model solar bylaws ■ Incentives to generate local/onsite renewable energy |
| Decarbonize industrial processes | <ul style="list-style-type: none"> ■ Ensure use of scrubbers at industrial facilities |
| Identify 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 |
| Explore potential offshore wind tech jobs, operations center on-Cape | <ul style="list-style-type: none"> ■ 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* | <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* ■ Identify locations for new or expanded EV charging infrastructure |
| Support development of storage capability/battery technology* | <ul style="list-style-type: none"> ■ 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* |

| | |
|--|---|
| | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ Calculate offsets from forests (Cape Cod woodland types), freshwater wetlands and salt marshes |
| Strategy: Achieve Green Communities designation in all Cape towns | |
| <i>None identified yet</i> | <i>None identified yet</i> |

GOAL: REDUCE EMISSIONS FROM THE TRANSPORTATION SECTOR

Strategy: Reduce vehicle miles traveled

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

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

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

Transportation

| | |
|---|---|
| Expand and improve the bicyclist and pedestrian network as alternate transportation modes | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ <i>None identified yet</i> |

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* | <ul style="list-style-type: none"> ■ 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* | <i>None identified yet</i> |
| Electrify vehicle fleets (municipal vehicles, school buses, delivery vehicles, etc.)* | <i>None identified yet</i> |
| Electrify ocean-based transport (personal watercraft, commercial fleets, improve dockside infrastructure, etc.)* | <ul style="list-style-type: none"> ■ Dockside EV infrastructure ■ Offer incentives like providing a discount on docking fees if you have an electric craft |

Strategy: Make efficiency improvements to the transportation system

| ACTION | STEPS |
|---|---|
| Address inefficient traffic signals, upgrades | <ul style="list-style-type: none"> ■ Retime/adaptive signals ■ Consider replace with roundabout ■ LED upgrades |
| Address bottleneck locations (congested roadways and intersections) | <i>None identified yet</i> |
| Upgrade LED for streetlights | <i>None identified yet</i> |



Transportation

| | |
|---|---|
| Improve the efficiency of freight movement (including waste) by all modes (on-road, rail, and waterborne) | <i>None identified yet</i> |
| Strategy: Encourage more efficient land use patterns | |
| ACTION | STEPS |
| Mix land uses where possible | <ul style="list-style-type: none"> ■ Zoning that allows commercial and residential uses in the same area |
| Promote infill and adaptive use development | <ul style="list-style-type: none"> ■ Density bonuses or increased coverage for developments that are redeveloping or infilling |
| Promote Transit Oriented Development (TOD) | <i>None identified yet</i> |
| Focus Growth in Activity Centers | <ul style="list-style-type: none"> ■ Zoning that promotes density in Community Activity Centers (but outside of Special Flood Hazard Areas) |
| Consider undevelopment where appropriate | <ul style="list-style-type: none"> ■ 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 | <i>None identified yet</i> |
| Culverts | <i>None identified yet</i> |
| Bridges | <i>None identified yet</i> |
| Evacuation routes/potentially disconnected area | <i>None identified yet</i> |

Transportation

Strategy: Design transportation infrastructure for future conditions

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



Natural Resources and Working Lands

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 | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ 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 |
| Reforestation of disturbed areas | <ul style="list-style-type: none"> ■ Identify disturbed areas suitable for reforestation and support tree-planting programs |

Strategy: Avoid new conversion of land uses*

| ACTION | STEPS |
|--|--|
| Avoid forest conversion to non-forest land uses by preventing development sprawl | <ul style="list-style-type: none"> ■ 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 |



Natural Resources and Working Lands

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 | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ Inventory existing and potential protected open space to ID natural communities protected and any lacking protection |
| Protect multiple example ecosystems to capture redundancy | <ul style="list-style-type: none"> ■ 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 | <i>None identified yet</i> |
| Embrace adaptive management | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ Consider soft engineering approaches as alternatives to hard engineering solutions during project planning, design, site plan review, and permitting |



Natural Resources and Working Lands

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 | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ 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) | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ ID bogs with wetland restoration potential and with high upland habitat connectivity value ■ Reduce or eliminate agricultural drainage improvements near wetlands |



Natural Resources and Working Lands

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 | <ul style="list-style-type: none"> ■ ID key sites for connectivity improvements ■ Plan, design and build for future conditions |
| Reduce landscape fragmentation and maintain/create habitat corridors | <ul style="list-style-type: none"> ■ ID opportunities to connect existing open space parcels and acquire/protect these connections |

Strategy: Protect water quality and quantity

| ACTION | STEPS |
|--|--|
| Restore natural hydrology | <ul style="list-style-type: none"> ■ Remove remnant hydrological modifications |
| Incorporate natural or low impact development into designs | <ul style="list-style-type: none"> ■ Direct runoff into natural features ■ Use low impact designs such as permeable paving |
| Protect drinking water supply | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ 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 |



Natural Resources and Working Lands

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

Strategy: Enhance carbon storage/sequestration in forests

| ACTION | STEPS |
|--|--|
| Protect and restore trees and forests | <ul style="list-style-type: none"> ■ 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* | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ Forest thinning ■ Establish and maintain fuel breaks ■ Prescribed fires |

Strategy: Increase carbon storage in blue carbon ecosystems

| ACTION | STEPS |
|--|----------------------------|
| Protect/restore wetlands (in particular salt marshes)* | <i>None identified yet</i> |
| Make room for salt marsh migration (landward) | <i>None identified yet</i> |
| Consider seaweed aquaculture as a decarbonization method | <i>None identified yet</i> |



Natural Resources and Working Lands

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 | <ul style="list-style-type: none"> ■ 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 through 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 | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ Maintain or restore natural ecosystems ■ Promote biological diversity across the landscape ■ Enhance landscape connectivity |
| Alter agriculture management to accommodate expected future conditions | <ul style="list-style-type: none"> ■ 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 |



Natural Resources and Working Lands

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) | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ 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 | <i>None identified yet</i> |
| Protect harbor and fishing access infrastructure | <ul style="list-style-type: none"> ■ Zoning changes to protect maritime access and industries |

Strategy: Promote local and regional recognition of the importance of natural resources and working lands to mitigate the impacts of climate 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 | <i>None identified yet</i> |

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

Strategy: Increase education and communications about climate change mitigation options

| ACTION | STEPS |
|---|--|
| Identify the legal framework that towns and other actors must work within (consider how to reach vulnerable populations) | <ul style="list-style-type: none"> ■ Identify how information flows through neighborhoods, how to reach vulnerable populations |
| Provide guidance for communities that help prioritize actions to reduce greenhouse gas emissions | <i>None identified yet</i> |
| Improve communication between municipalities | <i>None identified yet</i> |
| Develop curriculum and hands-on programming for students of all ages to become informed about climate change and the actions available to address it* | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ Vendor fairs, lectures, peer influence (climate influencers) |
| Identify individual actions or lifestyle choices that individuals can take; provide that information as guidance | <ul style="list-style-type: none"> ■ Utilize the Climate Action Networks to distribute information |
| Identify and distribute a GHG calculator to assess emissions associated with personal travel, consumption choices, etc. | <i>None identified yet</i> |

Strategy: Increase education and communications about climate change adaptation options

| ACTION | STEPS |
|----------------------------|----------------------------|
| <i>None identified yet</i> | <i>None identified yet</i> |

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 | <i>None identified yet</i> |
| Adopt a new performance measure in the RPP that tracks progress on greenhouse gas emissions | <i>None identified yet</i> |
| 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 | <i>None identified yet</i> |
| Amend existing technical guidance to advance net or near zero construction methods and elements, including solar considerations* | <i>None identified yet</i> |
| Develop technical guidance to support the new RPP goal and objectives | <ul style="list-style-type: none"> ■ 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 |
|----------------------------|----------------------------|
| <i>None identified yet</i> | <i>None identified yet</i> |

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) | <ul style="list-style-type: none"> ■ Develop model bylaws, regulations, and policies to assist local governments |
| Create and fund new staff positions within municipal government to advance climate change actions | <i>None identified yet</i> |
| Provide grant-writing assistance | <i>None identified yet</i> |

GOAL: INCREASE DATA COLLECTION AND ACCESS

Strategy: Identify more granular, town-specific data of GHG emissions

| ACTION | STEPS |
|---|----------------------------|
| Request legislative change to mandate provision of fuel use data at municipal level | <i>None identified yet</i> |

GOAL: ENSURE THE HEALTH, SAFETY, AND EQUITABILITY OF MITIGATION AND ADAPTATION SOLUTIONS

Strategy: Assess opportunities for green economy to create jobs with livable wages

| ACTION | STEPS |
|----------------------------|----------------------------|
| <i>None identified yet</i> | <i>None identified yet</i> |

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) | <i>None identified yet</i> |

Strategy: Foster collaborations between the public and private sectors*

| ACTION | STEPS |
|---|----------------------------|
| Identify opportunities for strategic partnerships to advance common goals or objectives | <i>None identified yet</i> |