

Cape Cod Climate Action Plan: Housing & Development Stakeholder Meeting Summary

Virtual Meeting No. 2 | November 19, 2020 | 1-4pm ET

MEETING IN BRIEF¹

On November 19, 2020, the Cape Cod Commission (Commission) held its second meeting engaging stakeholders on the topic of Housing & Development 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 Housing & Development stakeholder working group.

The objectives of this second Housing & Development 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 the CAP purpose Statement, the process to date, particularly the stakeholder engagements that have happened, and the process of gathering the input towards the draft CAP plan, working group members were split into small groups to discuss the draft framework and draft strategies and actions relevant to Housing & Development. Members then reconvened for a full-group discussion of the draft goals, strategies, actions and steps relevant to the Community focus area.

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

MEETING NO. 1 RECAP & REFLECTION ON PROCESS TO DATE

Cape Cod Commission Deputy Director, Erin Perry, opened her presentation by providing the working group with the following purpose statement for the 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:

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

- *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. Perry 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. Perry 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:

- Adaptation:
 - Ensure that affordable housing isn't developed in vulnerable locations
 - People with fewer resources will have more difficulty with repairs and insurance relevant to flooding and natural disasters
 - Better standards for buildings in the floodplain are good but could increase the cost of development
 - A conflict of interest between towns' climate planning to address vulnerabilities and the desires and need for a strong tourism industry that relies on beach access
- Mitigation:
 - Need to ensure efforts to develop more efficient housing aren't counterproductive to producing affordable housing
 - Transportation improvements are critical, including new and increased public transit and bicycle facilities, and shifts to EVs
 - Increased density of development can reduce sprawl and could provide greater sequestration opportunities through land conservation

She also noted the importance of education and outreach to help individuals understand their impact and vulnerabilities and actions they can take. Finally, Ms. Perry 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.

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

- **Did the Commission include questions about willingness to pay in the Cape-wide survey? That data could help inform the economic analysis the Commission is also completing.**
 - *Commission: The Commission did incorporate questions that address the issue of willingness to pay. It is important to note that, as this is a public-facing survey, the questions have slightly less technical, more accessible language. There is a question in the survey specifically about monetary contributions.*
- **There has been a lot of work around the world in island nations and other countries with documented data about various mitigation and adaptation strategies, and the Commission should be reviewing that data before completing the economic analysis. Knowing the actual effectiveness of strategies will be important for conducting an economic analysis.**
 - *Commission: The Commission will continue to research and update the literature reviews that were completed as one of the first steps of the CAP process. The CAP is intended to be driven by data; the Commission will be making updates and adjustments to its knowledge and thinking based on what strategies and approaches work well.*
 - **I would recommend that the Commission look into the University of Cambridge database on climate mitigation and cost effectiveness as a helpful additional resource.**

CRITERIA REVIEW

Cape Cod Commission Deputy Director, Erin Perry, presented the criteria developed from feedback gathered during all four round 1 working group meetings (e.g., Natural Resources & Working Lands, Energy, Housing & Development, and Transportation). During this second meeting of the Housing & Development 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, 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)
- Ability to adapt to changing conditions (Impact)

Following this brief polling exercise, working group members were invited to offer their reactions, comments, and questions. Commission staff reiterated that developing the prioritization criteria was still in the brainstorming and idea collection phase. Moreover, that the discovery of a clear path was ongoing.

No clarifying questions were asked, and participants indicated they were eager to begin discussion.

REVIEW CLIMATE ACTION PLAN STRATEGIES AND ACTIONS FOR TRANSPORTATION

Cape Cod Commission Staff, Chloe Schaefer, gave an introductory presentation to participants on the identified goals, strategies, actions, and steps for the Housing & Development focus area. 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 Housing & Development and goals and strategies, as well as overarching themes and messages that emerged from the pre-meeting survey.

The Housing & Development focus area had 3 goals, 12 strategies, and 31 actions. Amongst these, those that working group members prioritized for discussion during the second meeting broadly fell into the following two categories:

- Retrofitting buildings and infrastructure
- Policies & Regulations for Future Development

Discussion #1: Retrofitting buildings and infrastructure

Ahead of the first breakout group discussion, Ms. Schaefer presented the strategies and actions identified in the pre-meeting survey as priorities for further discussion by group members in the first category: retrofitting buildings and infrastructure. CBI facilitator Ona Ferguson then reviewed specific survey comments relevant to those strategies and actions. No clarifying questions were asked.

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 retrofitting buildings and infrastructure. Those of particular emphasis for the meeting are highlighted below.

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

Goal	Strategy	Actions
Reduce GHG emissions from the built environment	Strive towards Net Zero Energy Buildings; reduce energy consumption in non-residential structures	Retrofit existing commercial, industrial, municipal and other public buildings
	Strive towards Net Zero Energy Buildings; reduce energy consumption in residential buildings	Retrofit existing residential buildings/houses
Improve and advance the resilience of the built environment	Address vulnerabilities in public infrastructure	Assess and correct vulnerabilities in utility infrastructure
		Conduct vulnerability assessments of municipal facilities

	Address vulnerabilities in the road network	Improve stormwater management through culvert retrofits and other stormwater best management practices
	Relocate vulnerable buildings and structure	Move buildings and infrastructure out of the floodplain

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.

Retrofitting buildings and infrastructure

Several key inputs emerged from across the discussion of goals, strategies, actions, and steps within the retrofitting buildings and infrastructure category. The edits, additions, and amendments group members suggested highlighted the need to further clarify the language used in the framework and placing the actions and steps on a temporal scale to make the framework both more understandable and actionable. Members also raised that a large component of successful implementation will be changing human behaviors, which could be bolstered by incentives (e.g., incentives to implement effective home energy scorecards, state reimbursements or incentives for retrofits of publicly funded buildings, etc.) and clarity of which jurisdiction certain steps fall under.

When talking about retrofitting buildings, members from both groups raised the importance of including green roofs in the framework’s steps. Speaking to retrofitting historic homes specifically, members commented that there may need to be some reframing of what comprises community character on the Cape. Members also suggested that, with regards to retrofitting, energy creation should be included in the concept of energy efficiency, not just energy saving. Members noted that municipalities will need to make improvements in their hazard mitigation plans, stormwater management design practices, and assess the cost of addressing threats to the electricity distribution network from wildfires, storms, and flooding. When asked about relocating vulnerable buildings and structures out of the floodplain, members suggested a “triage” approach, assessing which buildings are in the most vulnerable areas to determine how to best take action.

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

- Private sector
- Utility companies
- MassDOT

Discussion #2: Policies & Regulations for Future Development

To set the stage for the second breakout group discussion, Ms. Schaefer presented the strategies and actions identified in the pre-meeting survey as priorities for further discussion by group members in the second category: policies and regulations for future development. CBI facilitator Ona Ferguson then reviewed specific survey comments relevant to those strategies and actions. No clarifying questions were asked.

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 policies and regulations for future development. 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 GHG emissions from the built environment	Promote efficient land use policies that protect the nature and character of the region	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
Improve and advance the resilience of the built environment	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

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.

Policies & Regulations for Future Development

Several themes emerged from across the overarching discussion of goals, strategies, actions, and steps within the policies and regulations for future development category. The edits, additions, and amendments from group members highlighted the need for the framework to be as directive as possible, with clear, cogent language and identification of relevant actors, as towns will need support and targeted technical assistance and incentives to adopt many of these steps and actions. Members noted that, beyond the audience of the towns, there will need to be strong communication with residents about new zoning practices – their impact and their importance to the resilience of the Cape. Members raised a few key challenges around adopting uniform regulations region-wide to limit new development and redevelopment in the floodplain and vulnerable areas:

- *Insurance*: Subsidies provided through flood insurance promote development and redevelopment in vulnerable areas. This practice needs to stop to incentivize building outside these areas.
- *Private ownership*: Coasts in New England are largely controlled by private landowners. There could be a shift in approach where the coasts are thought of as part of the commons. High-risk areas will still be desirable places to live due to their proximity to the water. If the government does not regulate development/redevelopment, it will likely result in those with the means to build there, reducing public access to those coastal areas.

When asked about zoning and promoting sound land use policies, members suggested that zoning needs to focus on redevelopment and the existing built environment, not so much on new development. Members also suggested identifying and closing loopholes in existing regulations that allow for the continuation of risky or less-resilient behavior. It was also noted that single-family zoning is not always appropriate to support affordable housing efforts. To best inform plans and regulations, members suggested the creation of a set of values and goals at the town level that towns buy into. Members in both groups highlighted the employment of form-based codes/zoning in areas to promote infill and development in activity centers.

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

- Private landowners
- Zoning boards
- Insurance agencies – National Flood Insurance Program and private insurance companies

REVIEW CLIMATE ACTION PLAN STRATEGIES AND ACTIONS FOR COMMUNITY

Ms. Schaefer gave an introductory presentation on the Community goals/strategies/actions around communication, data, policies, and partnerships that might support the housing and development strategies and actions. The Community focus area has 5 goals, 9 strategies, and 18 actions specific to its focus. Ms. Schaefer highlighted the role of the

Community goals in helping accelerate other CAP focus area strategies through improved public education and communication, increased data collection and access, and formation of strategic partnerships and collaborative efforts.

She then reviewed specific survey comments relevant to the presented Community strategies and actions, noting that members generally approved of the Community framework but named the need for more specificity, the importance of working at the county level and connecting communities, and that there should be a strategy added that addresses making affordable housing safer from climate hazards.

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 where the group went around the virtual table and each member was asked to share their thoughts. Below is a brief synthesis of key themes from this conversation.

- **Importance of communication:** A significant obstacle to these Community goals is that many people do not realize that our community needs to change. An important consideration for communications is identifying the audiences, the learners. It will be important to focus communication and education efforts on both adaptation and mitigation, as both are essential for progress. Communications around CAP also need to take a more experiential and immersive form than just a flyer.
- **Collaboration across different levels of government:** It will be important to pursue adoption of the goals and strategies at various scales – regional, community, neighborhood, and individual. It will be important to scale up from the individual level. It will also be essential to identify different town contexts for actions – towns should be able to adopt strategies that best fit the contexts of their communities. One benefit of collaboration is that town staff may not have the resources to have an impact separately, but collaboration could increase their capacity to make progress.
- **Benefits of green economy:** The green economy will open doors for good wages, good jobs, and reduced GHG emissions. The economic impact is a way to sell the CAP to the public, and buy-in from communities will be essential for implementation. One suggestion would be to cooperate regionally and design programs in coordination with the Cape Light Compact that has control of all of the energy efficiency money generated through our rates.
- **Education of the next generation:** In addition to looking at what we are teaching adults about the CAP, we need to look at what we are teaching our kids and how we raise them to be good stewards of the Cape and prepared to address climate change.
- **Increased data collection and access:** The world has changed through the internet, with people wanting to access data in a way that they can understand (e.g.,

non-GIS data). In that context, one member suggested that the Commission could improve communication and outreach efforts with more available and understandable data and data visualizations. Another member cautioned that relying on data to motivate action may not prove successful – it will require other, complementary efforts.

- **Setting time scales:** It will be important for the Commission to assign time scales within the CAP framework so that community members understand the sequencing of actions and steps, what can be done now, and that this is an emergency situation that requires urgent action.

PUBLIC COMMENT

- **My comment is a solicitation of an opinion from Paul Niedzwiecki [working group member]. One of the things I'm considering as a member of the Commission's Climate Subcommittee is to change the Regional Policy Plan (RPP) to include the state's goals for GHG emissions, which is likely to be 50% reduction by 2030 and net zero by 2050. And then, to ask everyone who comes to the Commission as an applicant what their plan is to meet those goals, and use that as one of the evaluation criteria.**
 - *Paul Niedzwiecki: I would be careful with making the RPP do too much. It serves to provide guidance to towns and to be used when the Commission meets in a quasi-judicial role. When something gets plucked into the review of a DRI [Development of Regional Impact], that can become perilous to the Commission moving forward. In the past, when challenges have stood out as separate and distinctive, the Cape tries to address them in different plans. Even if that were possible and would survive a regional challenge, that approach is not really moving the dial. A separate climate action plan should be in agreement with state standards, and the Commission should be able to work with towns about decisions to be made. A lot can be adopted at the local level. I would close by saying that, when I came to the Commission in 2007, we had three communities that were ready to leave. If the commission were to do a DCPC [District of Critical Planning Concern] and try to override local zoning, that would be the end of the Commission, in my opinion. There are ways where the Commission can be very effective, but it's not in a brute regulatory fashion. The more we can align with the state goals, the better off we will be.*
- **I have three great grandchildren. I think about them all the time when you talk about climate change. One personal action I can take is showing my recently purchased EV around and talking about it. I think that will have an effect on my family. That's all I can do at my age.**

NEXT STEPS & WRAP UP

Cape Cod Commission Deputy Director, Erin Perry, presented on next steps, articulating that their aim for the next meeting on December 16, 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 the application process and encouraging members to reach out to any interested students they may know to apply. Ms. Perry thanked members for their time and participation and closed the call.

APPENDIX A: LIST OF PARTICIPANTS

Participants	
First Name	Last Name
Matt	Dudley
Ward	Ghory
Andrew	Gottlieb
Liz	Hartsgrove
Bette	Hecox-Lea
Shannon	Hulst
Maxine	Minkoff
Paul	Niedzwiecki
Matt	Patrick
Ann	Robinson
Kimberley	Pearson
Noelle	Pina
Sharon	Rooney

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

Move buildings and infrastructure out of the floodplain	<i>None identified yet</i>
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Strategy: Ensure regional policies promote long-term infrastructure resiliency

<i>None identified yet</i>	<i>None identified yet</i>
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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>