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Needs updating

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What is Climate Change

The international climatology community has presented definitive evidence that the earth has experienced 30+ years of an increase in the average land and sea temperatures. A decade of change in the average temperature is accepted as the definition of climate change. Since the current change is an increase in the average temperature, it is accepted to be, by definition, global warming. In this context, the scientific community sees climate change and global warming as synonymous. The numerous potential causes of climate change, whether warming or cooling, fit into two general categories: natural and human caused.

In Truro, climate change means poorer air and water quality, warmer air and water temperatures, sea level rise, loss of natural habitat and animals, drought, flooding, wildfire risk, and impacts on health and the local economy.

What Causes Climate Change

Greenhouse gas emissions are the greatest source of climate change and global warming and come from the combustion of fossil fuels (oil, coal, and natural gas) that we use for heating, electricity, manufacturing, and travel. Carbon dioxide accounts for approximately 82% of all greenhouse gases, while methane, nitrous oxide, and fluorinated gases make up the rest. Greenhouse gas emissions stay in the Earth's atmosphere. As the sun heats the Earth, some of that heat is absorbed and some is released back into the atmosphere.

Climate change occurs because greenhouse gases -- particularly carbon dioxide -- absorb and radiate heat causing the Earth to warm up. Per National Oceanic and Atmospheric Administration (NOAA), emissions have increased by 41 percent from 1990 to 2017.

Impact

As the greenhouse gases trap heat, the atmosphere and oceans warm up. Warming causes more evaporation and precipitation, but not evenly. Some areas of the Earth face flooding, while others face drought. Storms may become more frequent and more intense. As average temperatures increase, glaciers and ice packs melt. This, in turn, causes sea level to rise.

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Greenhouse gas emissions and the resulting warming temperatures impact all of us. For example:

- Heat waves, heavy downpours, and stronger storms compromise buildings, roads, agriculture, fisheries, and ecosystems.
- Sea level rise erodes our coastlines, an important source of income for Cape Cod.
- Hotter temperatures and air and water pollution affect our health and the health of plants and animals living in the land and ocean.

Effects of Climate Change in Truro

Increasing Land & Water Temperatures

- Risk to human health
- Risk to health of local flora and fauna
- Loss of native fish and shellfish
- Damage to infrastructure: roads, power lines, communications, etc.
- Damage to farms and crops

More Violent Storms

- Property damage
- Risk to human safety
- Risk to local flora and fauna
- Loss of beaches and beach parking (revenue)
- Damage to infrastructure: roads, power lines, communications, etc.
- Damage to farms and crops

Drought

- Risk to human health
- Risk to local flora and fauna health
- Damage to farms and crops
- Increased risk of fires
- Risk to fresh water supply

Sea Level Rise

- Risk to property (loss of tax revenues)

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- Risk to fresh water supply (intrusion of salt water)
- Risk to local flora and fauna habitat
- Damage farms and crops
- Risk to infrastructure: roads, power lines, etc.

Responding to Climate Change in Truro: A Climate Action Plan

Goals

The goals of the Climate Action Plan are:

- Assess where Truro is vulnerable (at risk) to the impacts of climate change and
- Develop plans that address those vulnerabilities

in order to assure a viable future for Truro.

Adaptation & Mitigation

In general, there are two ways to address vulnerabilities: adaptation and mitigation. *Adaptation* means adjusting to the impacts of climate change; for example, moving a shorefront home back from beaches and dunes that are eroding. *Mitigation* means preventing or reducing the impacts of climate change, such as eliminating the use of fossil fuels.

Who Does the Work

Addressing the effects of climate change in Truro requires a collaborative effort between Truro's municipal staff, elected officials, boards and committees, residents, and business owners.

Effective climate leadership requires the integration of climate change mitigation and adaptation into daily operations, decision-making, and planning for our municipality. This means the Select Board must be committed to taking the lead on implementation of this approach and the integration of climate change

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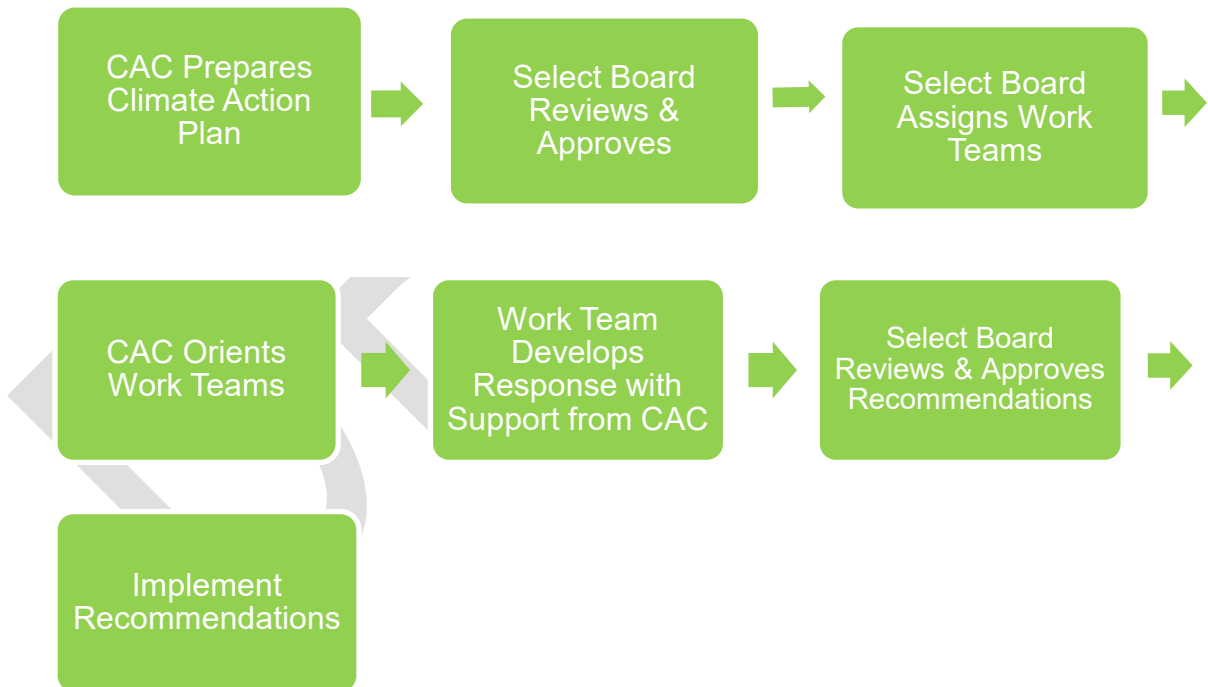
mitigation and adaptation throughout all Town Departments, boards, and committees. This aligns with the Select Board's:

Values: Openness and Transparency, Collaboration, Sustainability

Goals: Use long term and strategic planning to guarantee the future health and well-being of our community.

Objectives: #10 The Select Board will provide support to and collaborate with the Climate Action Committee and the Energy Committee on the goals of creating a Climate Action Plan for the Town of Truro, and researching the hiring of a Climate Action Agent, as well as to work with the Climate Action Committee to develop a policy memorandum that facilitates and guides progress in all relevant areas toward a "Net Zero Truro" by 2050 and will ask for updates at least twice per year.


Work Process



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Fix formatting

The final output of each work team is the recommendation and plan captured in the form below.

	Climate Assessment/ Recommended Action
Goal:	
Assigned to:	
Methodology (how to achieve the goal):	
Resources Required (people and data):	
Benefits to Truro:	
Cost of Doing Nothing:	

Fix formatting



Goal #1: Reduce GHG Emissions from New and Existing Buildings

Greenhouse gas emissions in Truro are largely generated from the use of fossil fuels. Fossil fuels in buildings – gasoline, propane, and oil – are used to heat buildings, heat water, and cook. Migrating to electric heating and cooking as well as reducing heat and cooling loss from buildings help reduce emissions.

Goal #2: Reduce Emissions from Transportation

In Truro, most greenhouse gas emissions come from heating and cooking with fossil fuels and transportation (cars, trucks, and buses).

Actions:	Assigned to:
<ol style="list-style-type: none">1. Improve broadband access to reduce travel2. Support work from home policies3. Encourage carpooling and ride sharing4. Assess park-and-ride facility5. Expand and improve the bicyclist and pedestrian paths as alternate transportation modes6. Assess EV infrastructure and promote programs that incentivize EV adoption7. Electrify municipal vehicles and schoolbuses8. Promote EVs for residents and businesses	Cable & Internet Advisory Committee CAC Bike & Walkways Committee DPW

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Goal #3: Reduce GHG Emissions from Waste Management

The EPA estimates food waste is the single most common material in landfills and incinerated in the U.S. Food contributes to 24 percent of landfill waste and 22 percent of combusted municipal solid waste.

Solid waste contributes to greenhouse gases through the emission of nitrous

Actions:	Assigned to:
<ol style="list-style-type: none"> 1. Adopt the Massachusetts opt-in stretch code for Green Communities via warrant article in 2023 Annual Town Meeting. 2. Promote energy assessments for all buildings 3. Promote migrating to green energy 	EC and CAC CAC CAC
Actions:	Assigned to:
<ol style="list-style-type: none"> 1. Promote building materials reuse 2. Reduce waste, including plastics and food 3. Enhance recycling programs 4. Educate on recycling 5. Educate on composting 	CAC? DPW?

oxide from solid waste combustion facilities.

Goal #4: Assess and Improve the Resilience of Buildings and Utilities

Sea level rise and increasing temperatures and severe weather threaten the stability of homes, commercial buildings, municipal buildings, roads, electric service, and cable services.

Actions:	Assigned to:
<ol style="list-style-type: none"> 1. Assess vulnerabilities in utility infrastructure 2. Conduct vulnerability assessments of municipal facilities 3. Participate in regional sediment management plans 	CAC? DPW? Conservation? Health?

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<ol style="list-style-type: none"> 4. Recommend options for private property ownership in coastal hazard areas 5. Improve stormwater management through culvert retrofits and other stormwater best management practices 6. Assess low-lying roads and take appropriate action 7. Assess best practices to protect the aquifer 8. Eliminate cesspools and reduce wastewater 	
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Goal #5: Protect, Preserve, and Restore Natural Ecosystems

Preserving the natural ecosystem whenever feasible will help reduce greenhouse gases by sequestering carbon, protect habitat for wildlife, shellfish, and fin fish, and provide a healthier environment for Truro’s residents and visitors.

Actions:	Assigned to:
<ol style="list-style-type: none"> 1. Maintain and increase parks and open spaces 2. Quantify carbon sequestration by forests and wetlands in order to identify opportunities for adaptation and/or mitigation. 3. Identify shade-starved areas and support and strategic planting of trees to provide building shading and cooling 4. Reforestation of disturbed areas 5. Support forest management to protect healthy forests and reduce wildfire threat and severity 	

Note: I deleted goal #7 re: protect agriculture & aquaculture. Could add it back as a research action.

Goal #6: Improve Public Knowledge of Climate Change

Assessing and responding to climate change is the responsibility of the entire Truro community: homeowners, business owners, and the municipality. However,

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climate science, technology, and government programs are rapidly evolving. Increasing everyone's understanding of climate change will enable all of Truro's constituents to implement the best methods of preserving Truro.

Actions:	Assigned to:
<ol style="list-style-type: none"> 1. Develop curriculum and hands-on programming for students of all ages to become informed about climate change and the actions available to address it 2. Distribute the Climate Action Plan in print and other media 3. Identify individual actions or lifestyle choices that individuals can take 4. Identify actions that businesses can take 	CAC

Goal #7: Encourage the Production and Use of Clean Local Energy

Explain why this is important and how it ties to prior goals

Actions:	Assigned to:
<ol style="list-style-type: none"> 1. Assess future energy needs for Truro 2. Use clean energy sources in municipal operations 3. Encourage the use of solar energy and electric vehicle charging 4. Identify affordable renewable energy sources 5. Understand the options for storage capability/battery technology and encourage their use 6. Research the potential for community green 	

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energy, such as power grids	
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Goal #8: Ensure Human Health and Safety

Hotter summers are a risk to elderly, infants, those with health issues, low-income families, outdoor workers, and indoor workers without air cooling. Deaths result from heat stroke and related conditions, but also from cardiovascular disease, respiratory disease, and cerebrovascular disease. Heat waves are also associated with increased hospital admissions for cardiovascular, kidney, and respiratory disorders.

More violent storms, such as northeasters and hurricanes, put human health and safety at risk via loss of heat/cooling, access to potable water, access to health care, and damage to homes. Mental health is also at risk due to threats to physical health and safety. These risks increase with prolonged power outages.

Actions:	Assigned to:
<ol style="list-style-type: none"> 1. Ensure heating and cooling shelters in the event of an extended power loss 2. Ensure cooling centers during extended hot temperatures 3. Educate about the effect of heat on humans 4. Assess the potential threat to physical and mental health from severe storms, flooding, wind damage, and wildfires 	

Goal #9: Assess Threat to Economic Viability of Truro

Potential Impact: Assess the potential loss of income to the municipality and to businesses due to climate change. This may include, but is not limited to:

- Loss of tax revenue: property & businesses
- Loss of beach parking
- Loss of tourist revenue

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- Loss of successful farming
- Loss of aquaculture/fishing/shellfishing

Actions:	Assigned to:
<ol style="list-style-type: none">1. Assess loss of tax revenues due to residential and commercial property loss (flood plain map)2. Assess loss of revenues due to loss of beaches3. Assess loss of revenues due to loss of shell and fin fishing (licenses, launch and mooring fees)4. Assess the impact of climate change on tourism	

Next Steps

Select Board:

1. Review and approve this Climate Action Plan
2. Assign climate goals and actions to subject matter experts: municipal staff, boards, and committees
3. Ensure that work teams have the appropriate resources to complete the goals
4. Review progress toward goals
5. Review and approve recommendations from work teams

Climate Action Committee:

1. Create the Climate Action Plan
2. Present to the Select Board
3. Work with municipal departments, boards, and committees to develop actions
4. Provide periodic progress updates
5. Help work teams present recommendations to Select Board

Work Teams: Municipal Departments, Boards, and Committees

1. Work with CAC to understand climate change and its potential impact on Truro
2. Research and develop recommendations OR develop action plan
3. Provide periodic progress updates

4. Provide final recommendations OR actions to the Select Board

Businesses & Residents:

1. Learn how climate change may impact your building or home and property
2. Support climate actions in Truro
3. Learn what green energy options are available
4. Plan what you can do and when you can do it

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APPENDIX: What Has Truro Already Done?

Notes: 1) this needs to be updated 2) ask Emily and Jarrod for input 3) Fix formatting/spacing

Municipal Actions

2004 Truro forms the Energy Committee

2009-2020 Energy consumption for municipal buildings/vehicles reduced by 28% (from *Mass Energy Insight*)

2010 26.8 kw Solar PV array installed on Central Elementary School

2011 Truro is awarded *Green Community* designation, adopts MA *stretch Energy Code*

2013 Municipal buildings excluding the school converted to LED lighting

2015 Truro institutes a ban on plastic bags

2017 Truro invests in a solar farm in Canton that supplies 100% of municipal electricity

2018 Truro adopts a zoning bylaw limiting house size

2018 Truro Central School converts to LED lighting

2019 Composting is available to residents at the Transfer Station

2019 Formation of Climate Action Committee (approved at Annual Town Meeting)

2021 The Climate Action Committee starts drafting a Community Climate Action Plan

2021 Truro completes a Town wide greenhouse gas inventory and presents to SB

2021 EV Charging stations installed at Town Hall

2021 Climate Action Committee supports Cape Light Compact's Main Streets program: 17 Truro businesses sign up for a business energy audit

Ongoing: Cape Light Compact provides rebates for efficient lighting, heat pumps, solar, and electric vehicles. All Municipal buildings have had insulation upgrades.

Residential Actions

2018-2020 Participates in *Solarize Outer Cape* program for residential rooftop solar

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As of 2021 14 electric cars are registered with the town of Truro
Approximately 2.6 Megawatts generated by residential solar

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APPENDIX: Example of Development of a Climate Action

Show a sample work plan and completed climate assessment/action form

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