CAPE COD CLIMATE CHANGE COLLABORATIVE

Forests vs Solar Farms: A Position Statement

Cape Cod Climate Change Collaborative

Cape Cod and the Islands are seeking an appropriate balance between clearing upland forest to accommodate solar farms and conserving forests to maintain healthy ecosystems and absorb carbon. This position statement outlines the stance of the Cape Cod Climate Change Collaborative (Climate Collaborative) regarding this tension and will guide its position in response to proposed large scale solar projects on Cape Cod and the Islands in the future.

Introduction

In Massachusetts and across the country a consensus has emerged that the planet is warming, and that this warming is caused by the burning of fossil fuels. Climate scientists explain that, prior to the Industrial Revolution, the forests carpeting the earth, along with the oceans, were able to keep the atmosphere in balance by absorbing excess carbon produced by volcanoes and other natural events. The vast increases in carbon dioxide caused by the burning of fossil fuels over the past 150 years, combined with the cutting of vast tracts of forest, has upset that balance and led to the uncontrolled warming of the planet.

One constructive response to the climate crisis has been an effort to reduce the removal of forest and encourage the planting of more trees and other carbon-absorbing plants. At the same time, increasingly efficient solar panels have been developed as a clean means of capturing electrons. The price of these panels has dropped to the point where companies are able to make a profit by assembling them in large 'solar farms' or 'arrays'. These arrays need space, and the most 'cost effective' space available may be forested land. News of companies clearcutting forests to erect solar farms now abound, as do protests against such forest removal. The MA Department of Energy Resources estimates that approximately 2,500 acres of trees have been cut down in the Commonwealth to erect solar panels in the last 10 to 15 years.[1]

Clean energy advocates argue that electrons produced by solar panels must replace those produced by burning fossil fuels, and are far more efficient at generating that en-

[1] See https://www.wgbh.org/news/local-news/2019/04/26/some-massachusetts-forestland-is-being-clear-cut-to-put-up-solar-farms April, 2019

ergy than trees and other plants are at removing carbon from the atmosphere. One estimate is that a typical solar array (7.500 KWh) offsets 9,606 pounds of CO2 produced by burning fossil fuel, and is equivalent to the carbon absorbing capability of about 50 trees.[2] This solar array contains 24 panels, indicating that each panel is equivalent to the carbon absorbing capacity of two trees.

Conservationists counter that forests provide many more benefits than functioning simply as carbon-absorbing sponges. They play a major role in maintaining healthy ecosystems, providing habitat for the development and maintenance of other plants and animals. They filter air and absorb water, protecting against land erosion. They provide a buffer against flooding from increasingly torrential rains. And they provide recreational space for human residents and visitors.[3]

The Position of the Cape Cod Climate Change Collaborative[4]

The Climate Collaborative believes that solar arrays are a very important source of clean energy for our region. At the same time we are keenly aware that the amount of land devoted to upland forests has been shrinking rapidly on the Cape and Islands during the past 25 years.[5] For instance, Cape Cod lost 2,300 acres of forest cover between 2001 and 2011, which amounted to 2.5% of the Cape's forest cover in10 years. About 70% of that cover was replaced by development, much of it involving impervious surfaces, which leads on the Cape to greater volume and peak flows of run-off, with increased contamination into the Cape's water bodies.[6]

Site selection considerations

Given a 50-year trend away from forested land and toward impervious surfaces on Cape Cod, the Climate Collaborative believes that every effort should be made to site solar installations on existing and municipally owned planned development sites. A review of solar installations on Cape Cod over the past 20 years indicates that Cape residents, municipalities and businesses have, in general, concentrated those installations

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[2] See https://newenglandcleanenergy.com/energymiser/2015/09/24/tree-math-2-solar-vs-trees-whats-the-carbon-trade-off/ for detailed calculations and assumptions.

[3] https://relaypower.com/solar-farms-and/

[4]Mass Audubon has made climate change a central theme within the organization's conservation mission. As part of that undertaking Mass Audubon has developed a position on the siting of solar panels. The 5Cs position statement has used the Mass Audubon statement as a template, adapted to the particular conditions on the Cape and Islands.

[5] http://www.capecodcommission.org/index.php?id=574&maincatid=536

[6] Ibid, pg. 1.

on rooftops and landfills.[7] During that period the uptake of solar systems has been somewhat greater on the Cape and Islands than in Massachusetts as a whole, but uptake to date includes only about 6.5% of Cape and Islands households. The Climate Collaborative concurs with the Mass Audubon in finding that "(c)areful site selection for renewable facilities of all types is important to minimize the loss and fragmentation of wildlife habitat, as well as forests, farm lands, and wetlands that sequester carbon and provide other functions and values. These lands are an important part of resilience for people and nature."[8]

When sited in undeveloped areas, commercial scale ground based solar arrays threaten the amount of forest cover on Cape Cod.[9] The Climate Collaborative recommends prioritizing siting of such solar arrays, siting on brown fields, old industrial sites, depleted gravel pits and paved parking lots, and avoid undeveloped sites, such as forests or open fields.

Siting standards

The Climate Collaborative recognizes that building large solar arrays on developed sites (e.g. solar canopies on parking lots) may be more expensive than placing them on undeveloped land. The Climate Collaborative is gratified that the Commonwealth of Massachusetts has adopted a solar financing incentive program (Solar Massachusetts Renewable Target - SMART) that increases financial incentives for projects proposed for rooftops, parking lots, and brownfield sites, and reduces incentives for projects on undeveloped sites.[10] The Climate Collaborative applauds these priorities and the financing strategy underlying them.

Local options

The Climate Collaborative believes that local municipalities should develop bylaws for the siting of solar arrays that conform with the Massachusetts state Zoning Act.[11] The Act's solar exemption states that "No zoning ordinance or by-law shall prohibit or unreasonably regulate the installation of solar energy systems or the building of structures that facilitate the collection of solar energy, except where necessary to protect the public health, safety or welfare."

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[7] https://capecodclimate.org/wp-content/uploads/2019/02/Net-Zero-Call-to-Action-Feb.-2019.pdf pg 8.

[8] https://www.massaudubon.org/our-conservation-work/climate-change/what-mass-audubon-is-doing/policy-advocacy/solar-siting

[9] https://www.capecodtimes.com/news/20190610/large-scale-solar-project-proposed-for-sandwich; https://www.capenews.net/falmouth/news/large-scale-solar-project-clears-conservation-commission/article_a27c3d6e-c4a6-5294-930e-91feee326a88.html

[10] https://www.mass.gov/solar-massachusetts-renewable-target-smart

[11] https://malegislature.gov/Laws/GeneralLaws/PartI/TitleVII/Chapter40A/Section3

The MA Department of Energy Resources [DOER] has developed a model zoning bylaw to provide local guidance,[12] which reads in part: *"Where a solar facility is sited, as well as placement on the site once selected, is an important consideration, particularly in regard to large-scale ground mounted facilities. DOER strongly discourages locations that result in significant loss of land and natural resources, including farm and forest land, and encourages rooftop siting, as well as locations in industrial and commercial districts, or on vacant, disturbed land. Significant tree cutting is problematic because of the important water management, cooling, and climate benefits trees provide."*

The Cape Cod Climate Change Collaborative agrees with and endorses this guidance.

[12] https://www.mass.gov/files/documents/2017/10/26/Model%20Solar%20Zoning%20Documents_0.pdf