

CAC 4/19/23 Meeting Info

Climate Action Committee

DRAFT

Meeting Minutes

3/16/23

Present; Lili Flanders, Rebecca Bruyn, Fred Gaechter, Georgia Neill

Public Comment – Cynthia Conroy, Jon Slater and Jack Reimer attended to provide comments re Mill Pond.

2/23/23 Meeting minutes- revisions made, Rebecca moved to approve, Lili seconded it and all in favor

Pond Village Newsletter- Discussed sending an article to the Pond Village Newsletter on the educational series. Rebecca approved and Lili seconded it, all in favor

Truro Talks Article – Discussion re April article. Rebecca suggested the article be about April's talk on landscaping. She had introduced Carol and Kristin from APCC to write something for the newsletter. Rebecca to follow up with Carol re status. Lili moved to approve the topic, Rebecca seconded it. All were in favor.

Mill Pond – After much discussion re the benefits to a breach and after the March 8th educational session with DPW and consultant it was clear that all 4 options have a positive impact on the health of the marsh/pond. Since the role of the CAC is to support town initiatives that have an impact on climate change and not to determine financial impact, it was decided that removing the road did not offer enough of an advantage to support a breach in the face of significant public resistance. It was decided to rewrite the letter which was then read during the meeting. Rebecca moved to approve the new letter. Lili seconded it. All were in favor.

Newspaper – Rebecca had contacted the Indie to invite to the Building Code session this month and all agreed that Carol, our chair, could be the spokesperson for the CAC in the event there was an opportunity to be interviewed. Fred mentioned that in general the Chair of a town Committee can function as the spokesperson, as needed. All agreed for any future needs. Rebecca to follow up with Carol.

Library session update; Everything is running smoothly for the remaining 3 months; Resilient Landscaping in April, Solar in May and What it means to be a Green Community in June.

Whole Government Approach: No updates as of today. Still waiting to hear back from the EC.

Other updates:

EVs- Rebecca will be attending the EV Symposium in April. Fred told a great EV joke that had us all laughing. Jarrod is going before SB to begin process of installing more town EV stations
High Head Trail – Fred mentioned the trail was open and that at some point the CAC could regroup re signage on the impact that climate change may have in this area.

Micro Grids- Lili mentioned there are grants available and that she is working with Bob on exploring these kinds of opportunities to consider installing one at the COA/Library.

Next meeting- April 13th

Respectfully submitted by,
Rebecca Bruyn

Truro PEP Project
Produce clean, renewable energy
Enhance energy resilience and independence
Provide emergency shelter

Truro Energy Committee
DRAFT Mar 30, 2023

*“When is the best time to plant a tree? Twenty years ago....
When is the next best time? Now.”*
– *The Overstory*, Richard Powers

Preface

The Commonwealth’s MVP (Municipal Vulnerability Preparedness) Action Grant offers financial resources to municipalities that are seeking to advance priority climate adaptation actions to address climate change impacts resulting from extreme weather, sea level rise, inland and coastal flooding, severe heat, and other climate impacts.

The grants include 25% municipal cost sharing.

<https://www.mass.gov/service-details/mvp-action-grant>

Action grant applications are due May 8, 2023 for 2023. If Truro cannot make that deadline it has ample time to prepare for the 2024 round.

Introduction

The Outer Cape was not included in Eversource’s 2022 Capital improvement plan. For now, towns from Brewster to Provincetown are responsible for their own short-term improvements in resiliency.

To remain viable communities, Wellfleet, Truro and Provincetown must plan for a combination of resiliency and proactive relocation.

To improve resiliency, Truro’s section of the grid needs to have sufficient capacity for increased electrification, 2-way Distributed Energy Resources (DERs) and hardened infrastructure.

The Inflation Reduction Act (IRA) offers Investment tax credits (ITCs) allowing direct pay rebates (i.e., a check) for up to 30%. These rebates reimburse municipalities for projects including solar arrays, microgrid controllers, wind, tidal, battery storage etc.¹

IRA ITCs represent a boon for municipalities that wish to add renewable energy and microgrids to their resiliency portfolio.

Local Issues

1. During a large scale and/or long duration power outage, Truro residents who need shelter must travel to Provincetown or Nauset Regional High school. This assumes that roads are passable, not buried in snow or flooded. It also assumes and that the power lines along Shore Rd remain standing and accessible.
2. There are unresolved water and sewage issues on a section of Shore Rd in North Truro along with its vulnerable electrical infrastructure.
3. Route 6 is slated to be repaved post 2025.
4. The Walsh property development plans are ongoing. There has been little consideration of future resilience.
5. Electrical infrastructure projects take years in planning and permitting

Why not establish a long-term plan now, in 2023, to address these issues that could benefit Truro and the Outer Cape?

Goal 1: Establish resilient microgrids² at various Truro locations

Emergency Shelter heating/cooling centers:

The Council on Aging (COA) and the adjacent library campus is a prime candidate for a community microgrid. There is abundant solar potential on both buildings' roofs and parking lots. Both include existing backup generators. The COA is an excellent emergency shelter location.

The Truro Central School has an existing solar array, backup generator and ample space for emergency shelter. The school microgrid could remain self-supporting or be expanded by adding additional solar. It could be connected to the adjacent Walsh property. It could go even further to the Public Safety Facility (PSF) which is 0.5 miles from the school.

Community Microgrid: “A community microgrid is a group of customers and Distributed Energy Resources (DERs) within clearly defined electrical boundaries with the ability to disconnect (island) from and reconnect to the grid.”

These microgrids are typically designed to serve the portions of communities that include community resources, such as: hospitals, police and fire stations, gas stations and markets.

Each community microgrid is uniquely designed by the community to address their specific goals and needs. A range of factors determine the size of the microgrid, what community services are served and what elements are included in the design.”³

The development of the Walsh property offers a unique platform for a community microgrid like the one in Florida that weathered Hurricane Ian without power loss.⁴

The PSF microgrid location, if combined with solar generation and storage at the “burn dump” on South Highland Rd, could maintain critical loads for emergency services at the PSF, including minimal heating and cooling, computers and dispatch. The burn dump is 0.5 miles from the PSF.

Undergrounding the lines⁵ from the burn dump to the PSF would increase its resiliency immeasurably, but it would cost significantly more.

The burn dump-to-PSF-to-Truro Central school-to-Walsh property loop, approximately 1 mile total length, could be a separate underground line paid for by some combination of grants; DOE, DOER, MVP. Including IRA ITCs, would help. (0.5 mile burn dump to PSF+ 0.5 mile PSF to School)

This connection, when separated from the main grid in “island” mode, would ensure uninterrupted public safety operations and provide emergency shelter.

At other times microgrids help balance grid voltage and provide revenue for towns or other entities by feeding excess power into the grid. Microgrids usually include back-up generation as an additional energy source.

If the Town included the cost of undergrounding in a microgrid development between different locations, it would obviate some DPU/utility regulatory roadblocks, such as the prohibition of using utility poles and wires to transmit privately owned electricity generation between two locations.

Structuring a microgrid as Energy-as-a-service (EEaS)⁶ or Microgrid-as-a-service (MaaS)⁷ are other ways to sidestep some of the roadblocks and defray or minimize upfront cost.

Ideally, diverse stakeholders including Truro, Provincetown, DOT, Eversource, and the phone and/or internet providers could coordinate with undergrounding Eversource

distribution lines between the school/ Walsh property and the PSF when Route 6 is being repaved

We'd need to start now.

This may necessitate some reconfiguring of Eversource's main and branch feeders. These diverge from Route 6 after the public safety facility.

Implementation:

- Increase renewable energy generation at municipal buildings.
- Complete a solar survey for all municipal roofs, parking lots, and open land. Include procurement options, initial and long-term costs. Include maintenance cost, ROI and payback period.
- Use initial cost to the Town, ROI and payback period to prioritize the order for projects to be implemented.
- Coordinate adding solar to municipal buildings with the end of roof service life or when the roof age/IRA ITC expiration date makes it cost effective.

For example, the school's Solar panels' useful life coincides roughly with the school's roof life, around 2037.

- Set payback and ROI requirements for parking lot canopies.
- Include roof-mounted solar panels on the proposed DPW facility to provide electricity, saving the Town money.
- Confirm the viability and interconnection costs of the burn dump site with a solar developer and Eversource.
- Identify microgrid locations that can increase resiliency locally, while adding electrical capacity to the local grid.
- Develop criteria to rate microgrid locations.
- Prioritize locations like the COA and school that can also provide emergency shelter.
- Determine whether a Truro-developed-and-owned or a CVEC option for a PV array on the capped landfill at the Transfer station is better for the Town.
- Determine demand loads and critical loads for minimal heat and cooling and lighting at all municipal locations. This identifies potential cost-effective savings.
- List and prioritize retrofits and upgrades.
- Truro tracks energy usage and greenhouse gas emission through Mass Energy Insight. Truro's current CIP targets the PSF for a deep energy retrofit In FY 2023 and FY 2024.
- Reduce demand loads through energy efficiency and envelope upgrades, making it easier and cheaper to satisfy both critical and demand loads.
- Align Truro's CIP plans with the 2050 Decarbonization Roadmap and An Act Creating a Next-Generation Roadmap for Massachusetts Climate Policy.

- The 2050 Roadmap stresses a combination of high energy efficient buildings with electrification, with the upgrades coinciding with the end of service life of building components, HVAC systems etc. ⁸
- Phase in battery storage with emerging battery technology when available. Batteries such as Iron air⁹, sodium bromide flow batteries. ¹⁰ These emerging technologies use cheaper materials and are non-flammable, non-toxic, reusable or easily recyclable. Iron-air currently being deployed can provide backup power for up to 100 hours vs. 4-6 hours for lithium-ion batteries ¹¹ Truro could model a small-scale system for adoption by similar communities statewide.
- Optional (dependent on the Walsh project) Add one or two Bergey 10 KW home wind turbines ⁹. The turbines could be grid-tied with inverters that allow for storage and islanding.

Goal 2: Improve through Transmission to and from Provincetown

Eversource's Battery Electric Storage system (BESS) is a model regional microgrid. Its positives are many and its weaknesses are few.

But its weaknesses could prevent it from accomplishing its dual purposes: balancing grid loads and furnishing power to Truro and Wellfleet during outages.

Power goes to and from Truro on Eversource's 13.1 Mile circuit 96. Circuit 96 includes a 1.5 mile (verify) stretch of overhead lines along Shore Rd. That 1.5 miles is a weak link.

Shore Rd is a low-lying section of road susceptible to wind and flooding risk.

During a significant weather event like a hurricane or nor'easter with multiple poles down and flooding on Shore Rd in North Truro, BESS backup power could be confined to Provincetown.

Combining that with multiple faults between the Wellfleet substation and North Truro, large parts of Truro could be left in the dark. According to Eversource, the BESS system can furnish backup power for 3 hours in the summer and 10 hours in the winter.^{footnote} Rather than an either/or approach, a both/and approach of additional renewable energy fed into the grid and the ability of Truro subsections of Circuit 96 to island would enhance Circuit 96 as whole.



Work with all stake holders to resolve sewage and water issues on Shore Road.

Anticipating that resolution, diverse stakeholders including the towns of Truro, Provincetown, along with, DOT, Eversource, the phone and/or internet providers could plan and coordinate any sewer and water infrastructure improvements with undergrounding Eversource distribution lines on Shore Road.

This could involve some reconfiguring Eversource's main and branch feeders. These feeders diverge from Route 6 after the public safety facility.

Similarly; DOT, Eversource, and the phone and/or internet providers could coordinate with undergrounding Eversource lines between the school/ Walsh property and the PSF when Route 6 is being repaved.

We'd need to start now.

Endnotes

1 https://www.energy.gov/sites/default/files/2022-10/IRA-Energy-Summary_web.pdf

2 <https://www.districtenergy.org/microgrids/about-microgrids97/features>

Reorder footnotes

<https://www.power-technology.com/marketdata/outer-cape-battery-energy-storage-system-us/>

<https://www.capecodtimes.com/story/news/2022/12/13/provincetowns-new-battery-system-provides-backup-power-to-outer-cape/69697459007/>

3 https://www.pge.com/en_US/safety/emergency-preparedness/natural-disaster/wildfires/community-microgrid-enablement-progam.page

4 *One Florida community built to weather hurricanes endured Ian with barely a scratch*

<https://www.npr.org/2022/10/05/1126900340/florida-community-designed-weather-hurricane-ian-babcock-ranch-solar>

5 National Grid PDF "Undergrounding high voltage electricity transmission lines"

https://www.nationalgrid.com/sites/default/files/documents/39111-Undergrounding_high_voltage_electricity_transmission_lines_The_technical_issues_INT.pdf

“Strategic Underground Program” Dominion Energy — Resilient distribution
<https://www.dominionenergy.com/projects-and-facilities/electric-projects/strategic-underground-program>

Good but very long (3.5 hrs) DOE “Resilient Power Grids: Strategically Undergrounding Powerlines”
<https://www.energy.gov/oe/resilient-power-grids-strategically-undergrounding-powerlines>

6 “Energy-as-a-service (EaaS) is a business model whereby customers pay for an energy service without having to make any upfront capital investment. EaaS models usually take the form of a subscription for electrical devices owned by a service company or management of energy usage to deliver the desired energy service.”

<https://www.rff.org/publications/issue-briefs/energy-service-business-model-expanding-deployment-low-carbon-technologies/>

7 “Microgrid-as-a-Service (Maas) is a new, industry-leading financing mechanism that enables organizations to deploy microgrids without any upfront investment. This financing model allows municipal, district, institutional, commercial campuses and large buildings to stabilize long-term energy costs and upgrade critical energy infrastructure without capital outlay”

<https://www.microgridknowledge.com/google-news-feed/article/11431200/microgrids-as-a-service-making-resilient-efficient-and-sustainable-energy-a-reality>

8 <https://www.mass.gov/info-details/ma-decarbonization-roadmap>

9 *Iron-Air Batteries Are Here. They May Alter the Future of Energy*

<https://www.popularmechanics.com/science/energy/a42532492/iron-air-battery-energy-storage/>

AND

Form Energy “...commercializing a new class of cost-effective, multi-day energy storage systems that will enable a reliable and fully renewable electric grid year-round. Our first commercial product is an iron-air battery capable of storing electricity for 100 hours at system costs competitive with legacy power plants.”

<https://formenergy.com>

10 Zinc bromide batteries

<https://gelion.com/gelion-endure-battery/>

AND

11 <https://redflow.com/solutions>

12 10 KW Bergey wind turbines have a 25 ft blade diameter and a 100-foot tower.

“A typical 10 kW Bergey PowerSync II home wind energy system will cost \$40,000 – \$60,000 to install, depending on the tower option and various installation factors. Depending on the wind resource they will produce between 8,000 – 18,000 kWh per year.”

<http://www.bergey.com/wind-school/wind-power-for-the-home/>

A 100 Foot tower is the tallest tower allowed in Truro’s wind generation bylaw. Setbacks requirements at the Walsh property and some parts of the school property are easily satisfied. (Tower height + 6’ = 106’)

<https://www.fema.gov/fact-sheet/hazard-mitigation-assistance-grant-funding-microgrid-projects>

IMPORTANT CONTACTS

contact by phone to identify the appropriate person to address mail to

Massachusetts Department of Transportation

10 Park Plaza, Suite 4160, Boston, MA 02116

Directions

Phone: For all departments

Call Massachusetts Department of Transportation, (857) 368-4636

Mary-Joe Perry, District 5 Highway Director

1000 County Street, Taunton, MA 02780

(857) 368-5000

Senator Edward Markey

975 JFK Federal Building

15 New Sudbury St

Boston, MA 02203

(617) 565-8519

Senator Elizabeth Warren

Boston

2400 JFK Federal Building

15 New Sudbury Street

Boston, MA 02203

Phone: (617) 565-3170

Congressperson William Keating

259 Stevens Street
Suite E
Hyannis, MA 02601
Phone: (508) 771-6868^[L]_[SEP] Fax: (508) 790-1959

Provincetown Public Works

2 Mayflower Street
Provincetown, MA 02657
Phone: 508-487-7060
Jim Vincent Director
jvincent@provincetown-ma.gov

Sewer Department
Sherry Prada
sprada@provincetown-ma.gov

Town Manager
Alex Morse
(508) 487-7002
amorse@provincetown-ma.gov

Executive assistant
Elizabeth Verde
(508) 487-7002
everde@provincetown-ma.gov

10 Park Plaza, Suite 4160, Boston, MA 02116
Directions

Other stakeholders

Open cape – high speed internet

Comcast Cable and TV