

Yarmouth Clean Energy Resiliency Case Study

Municipality: Town of Yarmouth

Project Title: Yarmouth Clean Energy Resiliency for Regional Septic Processing & Transfer Station

Grant Award: \$150,000

Match: \$50,000

Community Overview:

Provide a general description of your community as a brief introduction to the project.

Yarmouth's total year-round population is 23,315 (2018). Yarmouth has a significant vulnerable senior citizen and elderly population, which is aging consistently. In the 2018 census, 30.4% of Yarmouth's residents are 65 years and older.

According to the Massachusetts Environmental Justice Viewer, Yarmouth has four neighborhoods that are considered environmental justice neighborhoods. These areas are defined by the State as, "block groups whose annual median household income is equal to or less than 65 percent of the statewide median." One of these low-income, Environmental Justice neighborhoods is very close to the centrally located project sites.

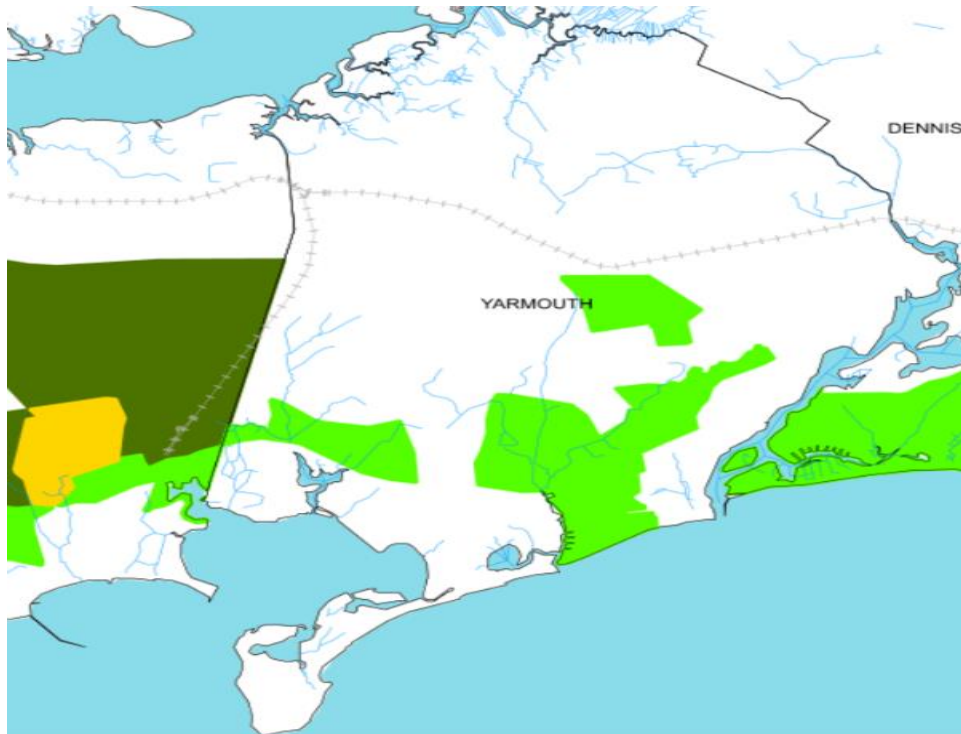



Figure: The Town of Yarmouth as seen on the Massachusetts Environmental Justice Viewer
Massachusetts Environmental Justice Viewer Legend:

 Income

Description of Climate Impact:

Address the community's current and potential future vulnerability to climate change impacts. What are the specific threats to the project area/site and reasons for applying to the grant program?

The Regional Septage-Transfer Station Campus and Fire Station (Emergency Operations Center) facility were prioritized in Yarmouth's June 2019 "Summary of Findings" report, and reaffirmed by the Town after a destructive series of three tornadoes that struck Yarmouth and surrounding communities in July 2019.

Storm intensity and frequency is increasing in Yarmouth and Cape Cod due to climate-change related weather impacts.

The Town of Yarmouth's current objectives include increasing energy resilience to better serve its community and its most vulnerable residents. In addition, Yarmouth plans to create an industry-leading, regional clean energy resiliency strategy which other Cape Cod communities can use as a model for implementation.

Project Goals:

What were the specific goals of the project?

Clean Energy Resiliency for Regional Septage-Transfer Station Campus and Fire Station (Emergency Operations Center) facility were prioritized in Yarmouth's MVP and CRB Processes.

Three Primary Objectives:

- Clean Energy Resiliency: For storm-driven outages of up to 10 days in duration
- Greenhouse Gas Reduction: Through one site solar and storage providing over 50% of facilities annual energy needs
- Operational Cost Savings: Producing savings vs. utility rates on a monthly and annual basis

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Approach and Results:

How did the project team implement the project? Describe the methodology or your approach to achieve the project goals. Describe, and quantify (where possible) project results (e.g. square footage of habitat restored or created). Provide web links, if available, to your project deliverables.

Yarmouth's approach is to follow its strategy of prioritizing 3 objectives:

- Energy Resiliency
- Greenhouse Gas Reduction – Climate Change Mitigation

- Operating Cost Savings for Critical Regional and Municipal Facilities

Expected Results:

- Energy resiliency planning for storm-driven utility outages of up to 10 days in duration through solar, storage and integration with existing back-up generators
- Greenhouse Gas Reduction by Providing over 50% of Annual Energy Needs for Septage-Transfer Station Campus and Fire Station 3 Facility and through On-site Clean Energy
- Operating Cost Savings of over 10% for Critical Facilities vs. Utility Rates
- 75% Level Plans Created with More Work to Follow

Link to Town of Yarmouth Community Outreach Presentation Summarizing Project, 6-30-20:

<https://youtu.be/JUtGg4E6Abw>

Community Outreach Webinar Flyer:

<https://www.yarmouth.ma.us/DocumentCenter/View/13580/MVP-Community-Outreach-Webinar-Flier?bidId=>

Community Outreach PowerPoint Slides, Summarizing Projects:

<http://www.yarmouth.ma.us/DocumentCenter/View/13586/Yarmouth-Energy-Resiliency-Presentation?bidId=>

Lessons Learned:

What lessons were learned as a result of the project? Focus on both technical matter of the project and process-oriented lessons learned.

- Importance of Partners: The Cape Light Compact has been a great partner as we work to reduce peak demand and energy costs
- Put the needs of the community first: Yarmouth has prioritized public health and safety through Regional Septage Plant & Transfer Station - Trash Processing Center along with Emergency Response from Fire Station 3
- More work to do: We plan to add our Department of Public Works to the solution and to finalize our planning to 100% in the next MVP Action Grant round.
- This is a lot of work, but it is important to our community and for the planet!!!

Partners and Other Support:

Include a list of all project partners and describe their role in supporting/assisting in the project.

- MA EEA MVP Team: Courtney Rocha – guided Town and project team through the process successfully. Thank you!
- Cape Light Compact: In kind analysis and services for energy reduction

- Elder Services of Cape Cod and the Islands: A big supporter of project and facilities selected in an effort to serve our high percentage of seniors and elderly residents
- Town of Dennis – Supported the projects as a neighbor and as a participant in the Regional Septage & Transfer Station services
- Yarmouth Chamber of Commerce: Focused on communications and critical business services not being interrupted - goals of our project “Community Supply Chain”
- Weston & Sampson Engineers: Engineering and planning & overall project management
- Rivermoor Energy: Clean energy resiliency strategy, modeling and solution development

Project Photos:

Fire Station 3 – Planned Emergency Operations Center

- Parking lot solar canopy system
- 264kW DC Solar PV system
- 180kWh Battery Storage system
- 150 kW Stationary Backup Generator (existing)
- Energy Management System – system controls and management to connect resources.
- Partner with Cape Light Compact’s “Connected Solutions” Program to reduce peak demand during summer and winter peak periods.
- Reduce stormwater run-off flowing offsite into nearby waterways.
- Increase use of permeable soils on site
- Use of bio-swales to capture water running from canopy gutters
- Serve as a model for future low-impact development throughout the Cape.



Rendering of Planned Solar Parking Lot

Canopy to be paired with Energy Storage
and Existing Building Energy Systems



Yarmouth Fire Station 3 – Future Town
Emergency Operations Center

Regional Septic Treatment & Transfer Station

- 1,200 kW ground mounted solar array
- 919 kWh battery storage system
- Existing backup generator
- Energy Management System – system controls and management to connect and balance energy resources
- Partner with Cape Light Compact for the “Connected Solutions” Program to reduce peak demand during summer and winter peak periods.



Aerial View of Regional Septic Treatment – Transfer Station Campus



Rendering of South Solar Array
To be Paired with Energy Storage Assets
and Building Energy Systems