

MATINICUS RENEWABLE POWER PROJECT

Overview

Matinicus is Maine's most remote island community, sitting 22 miles from the nearest port in Rockland. The island's remote location creates numerous challenges for its residents, including very high energy costs. Matinicus is too far from the mainland to be connected to the electric grid via undersea cable, and so all electricity used on the island is produced on island by diesel generators. Fuel delivery premiums and a small rate base over which to spread fixed costs mean that Matinicus residents pay one of the highest electric rates in the country, at times more than \$0.70/kWh, depending on the price of fuel. The environmental impact of this energy system is also of great concern to the islands residents, many of whom depend on the lobster fishery for their livelihood.

Work to Date

Recognizing the threat that these issues pose to the community's sustainability, residents have been pursuing options to reduce the island's diesel consumption. The Matinicus Plantation Electric Company (MPEC) has solicited initial designs for a solar PV and battery storage system from several different vendors, worked with a local land trust to secure land for a potential renewable energy project, conducted community surveys, and undertaken efficiency programs aimed at reducing the island's peak load. MPEC has also submitted several unsuccessful applications to the USDA Rural Utilities Service's High Energy Cost Grant program to cover the cost of a solar PV and battery storage system. The Island Institute has worked with MPEC to collect and aggregate data related to electricity consumption, daily load profile, and fuel costs.

Next Steps

To better understand technology options, MPEC is seeking assistance from the National Renewable Energy Laboratory's REopt team to model renewable energy scenarios for the island's energy systems. MPEC hopes to be able to use information from scenarios modeled to create a project RFP with enough specificity to ensure cost-effective proposals.

Data Need	Collected	Available	Outstanding
Site Layout	<ul style="list-style-type: none"> • Location of critical facilities • Elevation and topography of the village 	<ul style="list-style-type: none"> • Available roof space 	<ul style="list-style-type: none"> • Site Plan
Previous/Ongoing Energy System Reports	<ul style="list-style-type: none"> • 2015 High Energy Cost Grant application • Quotes and design specifications from Northern Reliability (2016) • Summary of pricing and conversations, UGEI (2016) • LED Bulk Purchase Program Overview • Matinicus – Monhegan Rate Review (2016) 	<ul style="list-style-type: none"> • 2013 and 2014 High Energy Cost Grant applications 	
Planned/Expected Load Growth	<ul style="list-style-type: none"> • Energy use data 2009 – 2014 • Projected load growth (annual and monthly business-as-usual) 	<ul style="list-style-type: none"> • Energy use data 2015 - present 	
Electrical Load Data	<ul style="list-style-type: none"> • Historical daily high-low load plant readings 	<ul style="list-style-type: none"> • Minute-by-minute load data collected Jan 2017 - present 	
Heating Systems Data			<ul style="list-style-type: none"> • Heating fuel pricing • Fuel consumption data
Information on Existing Electrical Power System	<ul style="list-style-type: none"> • Voltage, frequency, phasing of generators • Frequency and phasing of distribution system • Generator capacity, age, nameplates • Monthly fuel price and consumption 	<ul style="list-style-type: none"> • One-line diagrams • Distribution system voltage • Maintenance schedules/cost • Summary of operating protocol • Fuel tank capacity 	
Information on Current Renewable Energy Generation	N/A	N/A	N/A
Resource Data		<ul style="list-style-type: none"> • Wind resource data for nearby Monhegan Island, ME • PVWatts file for Rockland, ME 	<ul style="list-style-type: none"> • Matinicus-specific wind data • Matinicus-specific solar data