



# **Mashpee Wampanoag Tribe Climate Action Plan 2024**

**Natural Resources Department**

**Jason Steiding, Director**

**Dale Oakley, Assistant Director**

## Executive Summary

The Mashpee Wampanoag Tribe is committed to reducing its operational energy costs and usage along with its associated greenhouse gas emissions. We are also committed to increasing our reliance on renewable energy technologies as a tangible way to reduce climate warming emissions.

We are excited to be reexamining the energy consumption of our operations, as well as designing a comprehensive Climate Action Plan that will include emissions reductions targets, procurement policies, and updates on the solar and electrification opportunities on our lands. We will be mapping out a strategic plan for our energy initiatives. This report provides an update on our activities so far.

The Mashpee Wampanoag Tribe is eager to advance our plans for implementation of technologies that will advance our goals of energy sovereignty, equitable climate resilience and development of clean energy on tribal lands to serve our tribal members.

## Background

### Wampanoag Environmental Stewardship

The Mashpee Wampanoag Tribe, known as the People of the First Light, has been located in present-day Massachusetts for more than 12,000 years. As the original stewards of this coastal region, the Mashpee Wampanoags have many cultural, spiritual, environmental, and economic connections with the land.

Current tribal programs focus on economic vitality, environmental integrity, and cultural resilience. Some examples of these programs include: The Mashpee Wampanoag Shellfish Farm, which has improved the water quality of the Popponesset Bay and 2012 pilot program “Native Youth in Science—Preserving Our Homelands,” which explored science and traditional ecological knowledge as tools to conserve the ecosystems and homelands of the Mashpee Wampanoag Tribe in the face of climate change and human development. Finally, the New England Cottontail Tracking Project seeks to track threatened New England cottontail populations on tribal lands. The idea is that with a better understanding of the current status of the world around us, proactive solutions will be easier to implement, protecting both the environment and the species dependent on it for years to come. During the summer of 2015, the Tribe furthered this commitment to environmental stewardship by delving into the world of energy and climate action, commissioning an energy and climate action plan and energy benchmarking study to be conducted for all Tribal facilities.

In absence of existing internal energy, climate and greenhouse emissions reduction policy, the Mashpee Wampanoag Tribe is committed to following the climate law that was passed in 2022 by the Commonwealth of Massachusetts.

The goals set forth in that law are:

- 50% reduction of greenhouse gas emissions by 2030
- 75% reduction of greenhouse gas emissions by 2040
- Net-zero emissions by 2050

## **Acknowledgements**

The Mashpee Wampanoag Tribe has been working with Self-Reliance Corporation (Self-Reliance), a women-led 501 (c ) 3 organization, since 2007 on a variety of clean energy projects. Self-Reliance provided the Tribe with its first energy benchmark in 2015. They were present during the Indigenous Collaborative listening sessions that resulted in the Mashpee Wampanoag 10-year Energy Strategic Plan. This plan, as well as feedback from many meetings with department heads, committee board members, the general membership body, Tribal Council and the board of directors of the Community Development Corporation, has informed the energy advocacy work that Self-Reliance provides the Tribe. Self-Reliance is committed to helping the Tribe bring to life the plans of creating a tribal utility and implementing renewable energy and electrification strategies that will enable the dramatic reduction of greenhouse gas emissions and increase energy sovereignty for the Mashpee Wampanoag Tribal members and the Tribe's operations.

We would also like to acknowledge the Cape Light Compact, the municipal aggregator for Barnstable County that manages the region's rate-payer funded energy efficiency programs. The Cape Light Compact's energy efficiency programs have made significant energy savings possible and will support the electrification and high energy efficiency of new and existing construction on tribal lands.

## **Inventory**

The Mashpee Wampanoag Tribe is conducting its first comprehensive energy and greenhouse gas emissions benchmarking.

The first energy benchmark was conducted for the Mashpee Wampanoag Tribe in 2015. However, no liquid fuels were accounted for and the number of Tribal properties has increased since then.

We will be utilizing the EPA's Energy Portfolio Manager software as the platform for the inventory. We will have all of the buildings' utility accounts set up so that the data can be automatically downloaded to maintain the data tracking. According to the Commonwealth of Massachusetts' Climate Law, buildings over 10,000 square feet must be collecting their energy data on an annual basis. We would like to collect the energy data for all of our buildings to enable the data to inform when there may be outlying mechanical issues that are not physically seen or reported. We can also track use changes in facilities and how the energy and associated greenhouse gas emissions change.

## **Mashpee Wampanoag Tribe Objectives**

By performing an initial energy analysis of tribal facilities and commissioning the Mashpee Wampanoag Climate & Energy Action Plan, the Tribe is continuing its commitment to protecting the natural beauty of Mashpee and Massachusetts. The report will assist the Tribe in proactively making sound economic and scientific decisions to reduce its carbon footprint. In light of the Tribe's desires, the main objectives of this report are simple:

1. To benchmark the energy use and performance of the Mashpee Wampanoag’s facilities against similar facilities;
2. To use the benchmarking analysis to make suggestions on how to increase energy efficiency of current facilities and to properly plan for future expansion;
3. And to demonstrate how renewable energy can be implemented to lower energy costs and combat climate change.

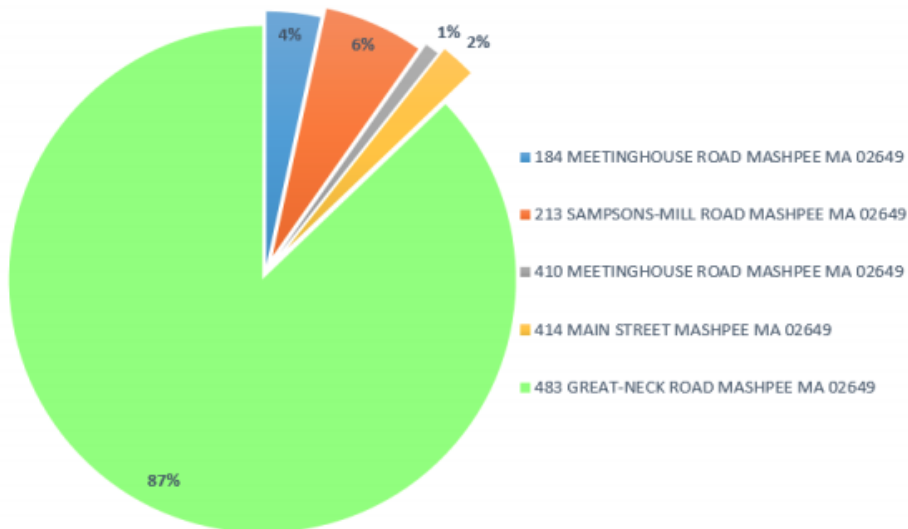
## Benchmarking Tool Selection

### ENERGY STAR

ENERGY STAR’s Portfolio Manager was selected as the tool to complete the benchmarking portion of the report. Portfolio Manager uses specific data entries to create a virtual rendering of energy use, which is then compared against a database containing over 40% of U.S. commercial buildings. Due to Portfolio Manager’s lack of transparency in reporting which buildings are included in the “median,” the results should be viewed as general observations.

## Tribal Energy Usage from 2015 Energy Assessment

Account	Usage (KWH)	Bill Amount	Avg Rate
184 MEETINGHOUSE ROAD MASHPEE MA 02649	21,996	\$ 4,449	\$ 0.20
213 SAMPSONS-MILL ROAD MASHPEE MA 02649	40,566	\$ 7,740	\$ 0.19
410 MEETINGHOUSE ROAD MASHPEE MA 02649	5,707	\$ 1,209	\$ 0.21
414 MAIN STREET MASHPEE MA 02649	14,188	\$ 2,848	\$ 0.20
483 GREAT-NECK ROAD MASHPEE MA 02649	559,200	\$ 94,743	\$ 0.17
<b>Total</b>	<b>641,657</b>	<b>\$ 110,988</b>	<b>\$ 0.20</b>



## Buildings Overview

The Mashpee Wampanoag Tribe has five total buildings that have been benchmarked in the 2015 report. These five facilities are:



- **The Government Building** - Located at 483 Great Neck Road South Mashpee, this building is home to a variety of essential Tribal departments. Constructed in 2014, this building serves as the chief administrative building of the Tribe. This building won an energy efficiency award after its construction.
- **The Tribal Museum** - The Tribal Museum, located at 414 Main Street, Mashpee, exhibits Mashpee Wampanoag cultural artifacts from the Stone Age to present-day. It is registered on the National Register of Historic Places.
- **The Wastewater Treatment Plant** - Located at 184 Meetinghouse Road in Mashpee, the Wastewater Treatment Plant is currently inactive. Despite this status, it still consumed a monthly average of 1670 kWh of electricity when it was idling in 2015. Upgrades in this facility are recommended to mitigate these costs, which will have increased since it is being fully utilized now that the First Light Homes are occupied.
- **Community Farm** - The Community Farm is located at 213 Sampson's Mill Road, Mashpee. Three buildings are present on this property: a barn equipped with solar panels, an inactive residential property, and an active residential property. The latter serves as the headquarters of the Building, Grounds, and Roads Department. There is also a small plot of cultivated land on this property, though much of the land remains untouched.
- **Purchase Street** - The Purchase Street property acts as a satellite office for tribal members living in the New Bedford area. All Tribal services that are offered at the Government Center located in Mashpee, MA are available at this property. THIS FACILITY IS NO LONGER

**For the 2024 report, we will be including the following properties:**

- **Plaza Del Sol**, this facility is slated for transitional housing for Tribal members and is located at 72 Main Street, Mashpee, MA
- **First Light Housing** units, located at Alice Lopez Dr. and Blue Bird Lane, Mashpee, MA
- **Emergency Management Facility**, located at 85 Route 130 Sandwich, MA
- **Residential Unit**: 56 Uncle Percy's Rd, Mashpee, MA
- **Residential Unit**: 308 Hoophole Rd, Mashpee, MA
- **Residential Unit**: 9 Deborah Bottle Rd, Mashpee, MA

- **Mashpee Wampanoag School**, breaking ground Summer 2024, located at
- **Community Center** with emergency shelter at First Light Homes Site, Alice Lopez Dr. breaking ground in 2024
- Fleet vehicles
- Other fossil fuel usage for generators and marine transportation operations

### **Baseline Selection**

In order to properly benchmark a building's energy use, a baseline year was chosen. A baseline year serves as a standard or point of reference against which things may be compared or assessed. For the Mashpee Wampanoag Tribe's facilities, the year chosen for every facility was 2014 because this provided the most complete and relevant information. For this 2024 benchmark, we will be looking at the data for the same buildings in the 2014 dataset as well as the additional properties and usage data. We will also be including liquid fuels, including propane, #2 fuel oil, diesel and gasoline to get a more comprehensive representation of the Mashpee Wampanoag Tribe's energy usage and associated greenhouse gas emissions.

### **Data**

The following graphs and charts portray the results from the benchmarking and analysis process. The graphs are based upon the 2014 benchmark year collected from the Mashpee Wampanoag Tribe utility bills. Data was compared against Portfolio Manager's reported median value in the United States. The median values have been compiled from four separate nationwide surveys. The most comprehensive survey, the Commercial Building Energy Consumption Survey (CBECS), is a national survey conducted by the U.S. Department of Energy's Energy Information Administration.

### **Alignment with the Mashpee Wampanoag Tribe's 10-Year Energy Strategic Plan (2016)**

The Indigenous Collaborative and members of the Mashpee Wampanoag Tribe participated in a consensus vision for the 2016 10-year Strategic Energy Plan.

In 2016, the Mashpee Wampanoag Tribe completed its 10-Year Energy Strategic Plan. This plan envisions what the ideal energy landscape for the Mashpee Wampanoag Tribe would look like in 2026, and provides thematic overview, a brainstormed list of energy goals, potential barriers to the implementation of those goals, and strategies to realize the Tribe's vision. Several of the action items outlined in this Climate and Energy Action Plan mirror goals listed in the Energy Strategic Plan, and it is important to align them to demonstrate progress towards a sustainable energy system for the Tribe.

### **Action Items in the Climate and Energy Action Plan**

Below is a bulleted list of action items presented in this Climate and Energy Action Plan:

- **Energy Monitoring Activities**

- Continue to measure and record energy usage data for Tribe-owned facilities and compare them to the baseline year (2014).
- Schedule a professional energy audit to identify the best opportunities for energy efficiency upgrades. Implementing upgrades following the audit.
- Perform education and outreach measures directed at the tribal community to encourage energy conservation and demonstrate the value of renewable energy technologies and energy efficiency upgrades.
- **Renewable Energy Installations**
  - A solar photovoltaic (PV) array on the Community and Government Center's roof
  - A solar canopy for the parking lot of the Community and Government Center
  - Solar photovoltaic array for disturbed piece of land abutting the Farm
  - Solar PV and solar hot water applications in the new residential development proposed for 184 Meetinghouse Rd, Mashpee
  - Wind turbine feasibility on appropriate tribal grounds
  - Geothermal heat pump feasibility for the Community and Government Center (or other appropriate buildings)
- **Encouraging Environmentally-Friendly Development for Homes**
  - Home energy efficiency, passive solar design, renewable energy installations (rooftop solar PV and solar hot water), and a community agricultural system
- **Financing**
  - Identifying and taking advantage of loans, rebates, and incentive programs to fund energy efficiency and renewable energy projects.

### **Alignment with Goals of the Energy Strategic Plan**

Below is a list of goals from the 10-Year Energy Strategic Plan that are aligned with action items from the Climate and Energy Action Plan:

- 100% of the Tribe's energy being generated on tribal land
- Climate change mitigation through renewable energy projects
- Standards for energy efficiency in buildings
- Conservation of the natural environment
- Economic growth for the Tribe and quality of life improvements
- Independent Tribal Utility to manage electricity rates
- Building community engagement and support for renewable energy and energy efficiency



**Consensus Vision Statements**

The following statements represent the group’s consensus after discussing the individual elements of the vision. These Vision Elements capture the group’s insight on their collective intent in each arena.

Towards a Stable Foundation for Development		Towards Restoration & Protection of Our Culture & Environment		Towards Community Independence & Self-Sustainability	
Tribal Development & Codes Incorporate Values to Build & Operate Optimally Green, Low Cost, Cohesive Structures and Systems	Policies, Laws & Practices That Protect Our Water, Land and Air for a Clean Future	Tribal Stewardship & Restoration of Our Renewable Resources	Diverse and Dynamic Resources and Opportunities for Generations to Live, Learn & Sustain Our Way of Life	Tribal Utility Stabilizes Cost of Energy to Improve the Quality of Life for Tribe and Members	SMART Homes Built By The People, For The People

The plan’s vision includes the installation and ownership of renewable energy technologies, both wind and solar, as well as energy conservation and efficiency measures for tribal projects and to benefit the members of the Mashpee Wampanoag Tribe are the key priority of our efforts.

**Plans for Greenhouse Gas Emissions Reduction Action Plan**

The Mashpee Wampanoag Tribe understands that we cannot manage well what we have not measured in the context of energy usage and associated emissions. We are preparing a comprehensive action plan that identifies our top energy using facilities and creates a priority list of actions. We will also have the anticipated funding sources identified, though this list is quite fluid.

Once we obtain all of the energy bills, we will determine which year to choose as our updated benchmark year. Obviously, the pandemic years have skewed our energy consumption and shifted the way our buildings are used. However, we will be looking at 2023 as the year for most normalized activities.

We will also be developing procurement policies for equipment, including a vehicle procurement policy that will align our purchasing procedures with our goal to reduce energy, operating costs and greenhouse gas emissions of our operations.

Below are the Mashpee Wampanoag Tribe-owned buildings that fall into our priority list:

**First Light Housing & Community Center**



Construction began in 2019 on the homes and the last one is And were built according to the Massachusetts building energy code and had additional energy upgrades provided by the Cape Light Compact prior to occupancy. All of the homes have electricity serviced by Eversource, the investor owned utility serving the region. At this point in time, the Massachusetts Renewable Portfolio Standard requires that all entities selling electricity into the Massachusetts market have 3.6% of their supply coming from class II renewable energy technologies in 2024 and 40% by 2030.

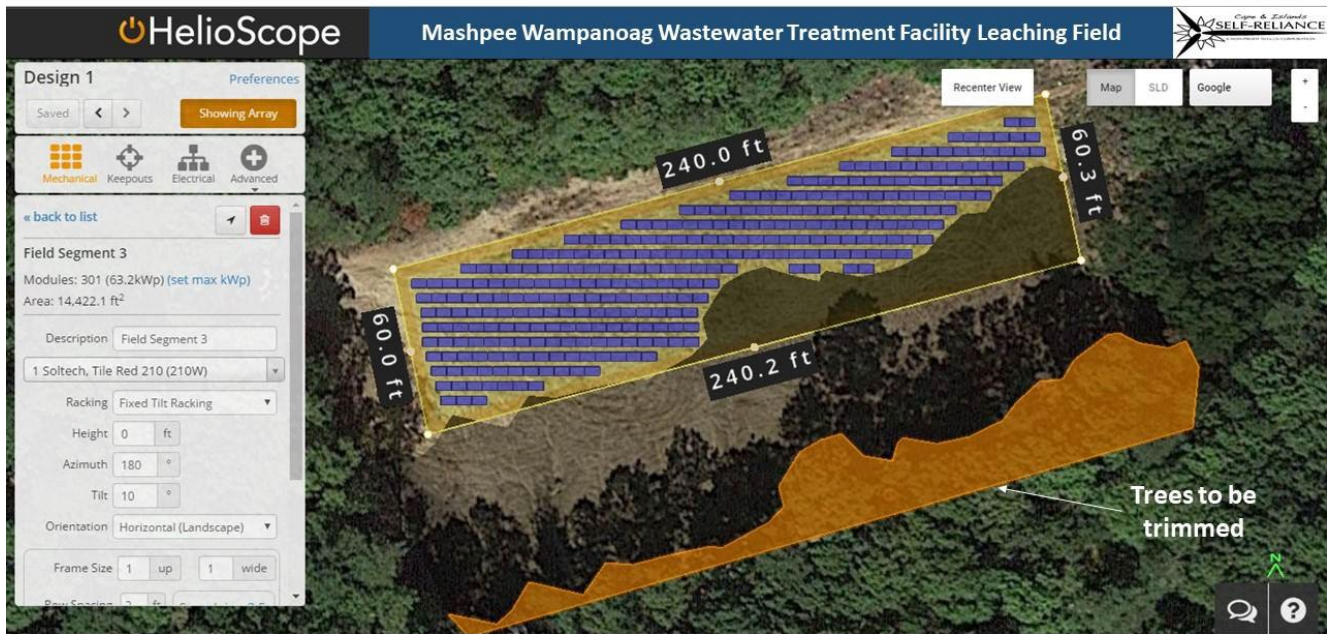
The plan for these homes is to install solar on all of the suitable roofs and install energy storage systems to maintain critical loads during emergencies. We have funding from Vineyard Wind I to support the first round of solar installations and energy storage on tribal elder duplexes.

### Layout of Panels



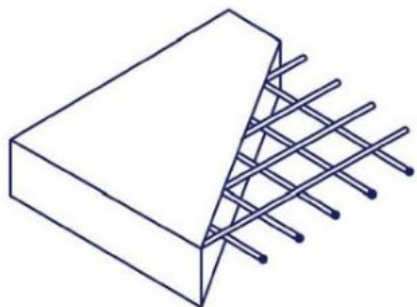
## **Wastewater Treatment Facility**

The wastewater treatment facility is located in a heavily treed area. Leach field at Wastewater Treatment Facility adjacent to the First Light Homes, however, is already cleared land and a potential site for solar. The Wastewater Treatment Facility is located at Meetinghouse Road, Mashpee.

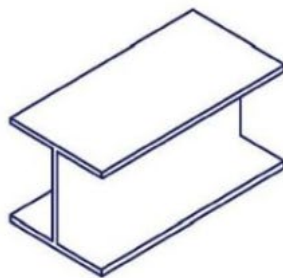


Given the open space that has been cleared for the leach field area of the wastewater treatment facility and its close proximity to the First Light Housing, the community has expressed the need for further discussion on the land usage. To cover the entire area with solar would make the space unusable by the community. The priority of developing solar on this land and the need for communal space can co-exist if we look to designing a communal space that would provide structure for solar and shade for a bandshell or community gathering space.

WholeTree canopy structures have provided us with ideas for ways to creatively marry the solar technology back to the land without an abundance of steel and concrete that has an overly industrial feel to it. According to WholeTree, their structures provide a greenhouse gas friendly alternative to structures that use abundant steel and concrete.



**Concrete**  
385 kg CO<sub>2</sub> emitted  
per cubic meter



**Steel**  
12,200 kg CO<sub>2</sub> emitted  
per cubic meter



**Timber**  
900 kg CO<sub>2</sub> sequestered  
per cubic meter

Examples of the WholeTree structures can be seen below:

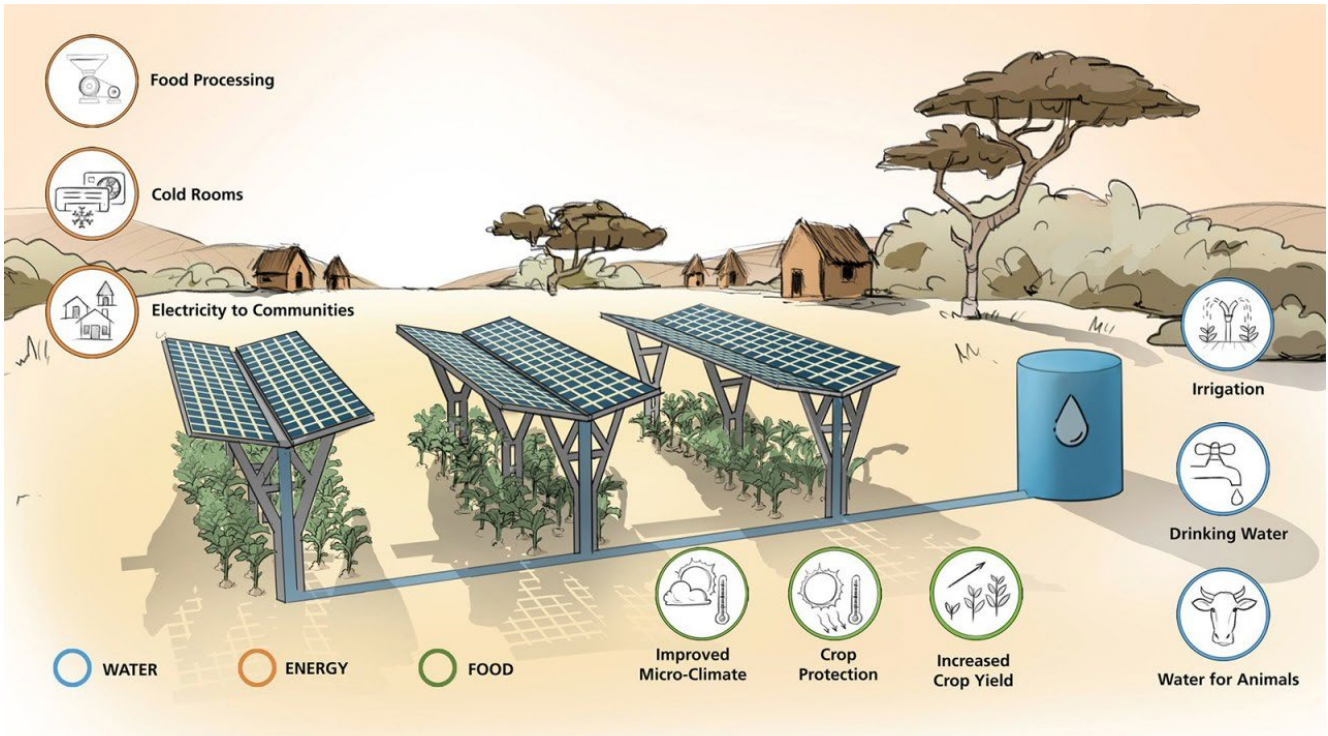




## Farm Property

The farm property hosts 9 kilowatts of solar on one barn. There are many other options for the installation of ground-mounted solar at this site. Our Solar Feasibility Study identified that the property could host close to one megawatt, depending on the layout and mounting design. The community feedback has been clear that we would like the farmland to remain usable. We are exploring the concept of agrovoltaics to enable us to farm and have the solar mounted high enough to enable planting or grazing under the modules. We are also interested in incorporating pollinator plantings into the design of the development at this site.





**HelioScope** Save & Exit Design Revisions Chenyu Chen

Design 1 Preferences

Saved Showing Array

Mechanical Keepouts Electrical Advanced

Field Segments New

Field segments cast shadows

Description	Modules	Action
Field Segment 1	78 (30kW)	[Left Arrow] [Red X]
Field Segment 2	88 (33kW)	[Left Arrow] [Red X]
Field Segment 3	58 (22kW)	[Left Arrow] [Red X]

224 Modules, 85.1kWp

Recenter View Map SLD Google

Questions? Ask us now!



## Plaza Del Sol Property

The Plaza Del Sol property is undergoing remodeling to change and update the facilities. The basic options for roof-mounted and ground mounted or canopied solar is shown below. Energy efficiency and electrification upgrades will be integrated as the project progresses and funds are available. We will be working with the Cape Light Compact, the region's Mass Save energy efficiency partner, to provide many of the energy upgrades at no cost.



## Museum Property



The Museum property has potential for solar development in the parking lot, which is shared. Defining the boundaries of the space is necessary before we move forward with that planning. Energy efficiency measures will be explored through the energy assessment with the Cape Light Compact

## Community & Government Center







Potential Pow Wow structure that could also provide space to co-locate solar. This space is at the Community and Government Center.

## Emergency Management Facility

Route 130 Forestdale, MA

This facility is currently leased, so on-site solar is not an option. Having a comprehensive energy assessment and implementing the energy efficiency and conservation upgrades offered through the Cape Light Compact is on the list of priority actions.

## Funding Opportunities

Funding opportunities are currently abundant though the Biden Administration. The Commonwealth of MA is beginning to offer grant opportunities that align with our goals and objectives. We also obtained private funding from Vineyard Wind I to support the first solar and battery assets of the Mashpee Wampanoag Tribe Community Development Corporation's goal of standing up a tribal utility.

We are working on a number of grant applications to support electrification, the establishment of a tribal utility, broadband infrastructure, solar and battery storage, electric vehicles and charging infrastructure that will also serve to support the grid during peak demand and provide much needed emergency power during power outages for our most vulnerable members and government operations. More details will be provided in the next report.