

TOWN OF MOUNT DESERT SOLAR

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A Climate to Thrive.*





01.

BACKGROUND & GOALS

Mount Desert Climate Action Plan & Community Resilience Partnership

02.

MAINE'S SOLAR LANDSCAPE

Current state and federal programs supporting solar development

03.

SITE & ECONOMIC ANALYSIS

Review the preliminary solar designs and feasibility of development

04.

RECCOMENDATIONS & NEXT STEPS

Possible project timeline and funding

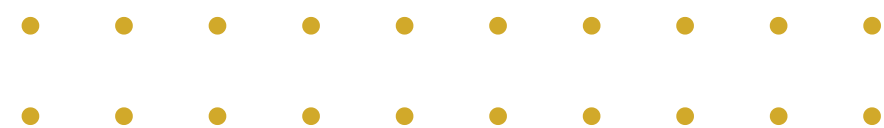


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A Climate to Thrive

A Climate to Thrive works towards energy independence for Mount Desert Island by 2030 through decentralized, local, renewable energy solutions, including efficiency, electrification, and renewable energy generation. We seek solutions that build community ownership and equity and bring the community together around shared goals and priorities.



Town of Mount Desert Solar

Town-owned solar was identified as a priority first-step in the implementation of the Mount Desert Climate Action Plan.

The town can meaningfully reduce municipal emissions by shifting to renewable energy. Locally and responsibly sited solar energy owned by the town will not only reduce emissions, the ownership of this energy generation will also save the town a significant amount of money over time.



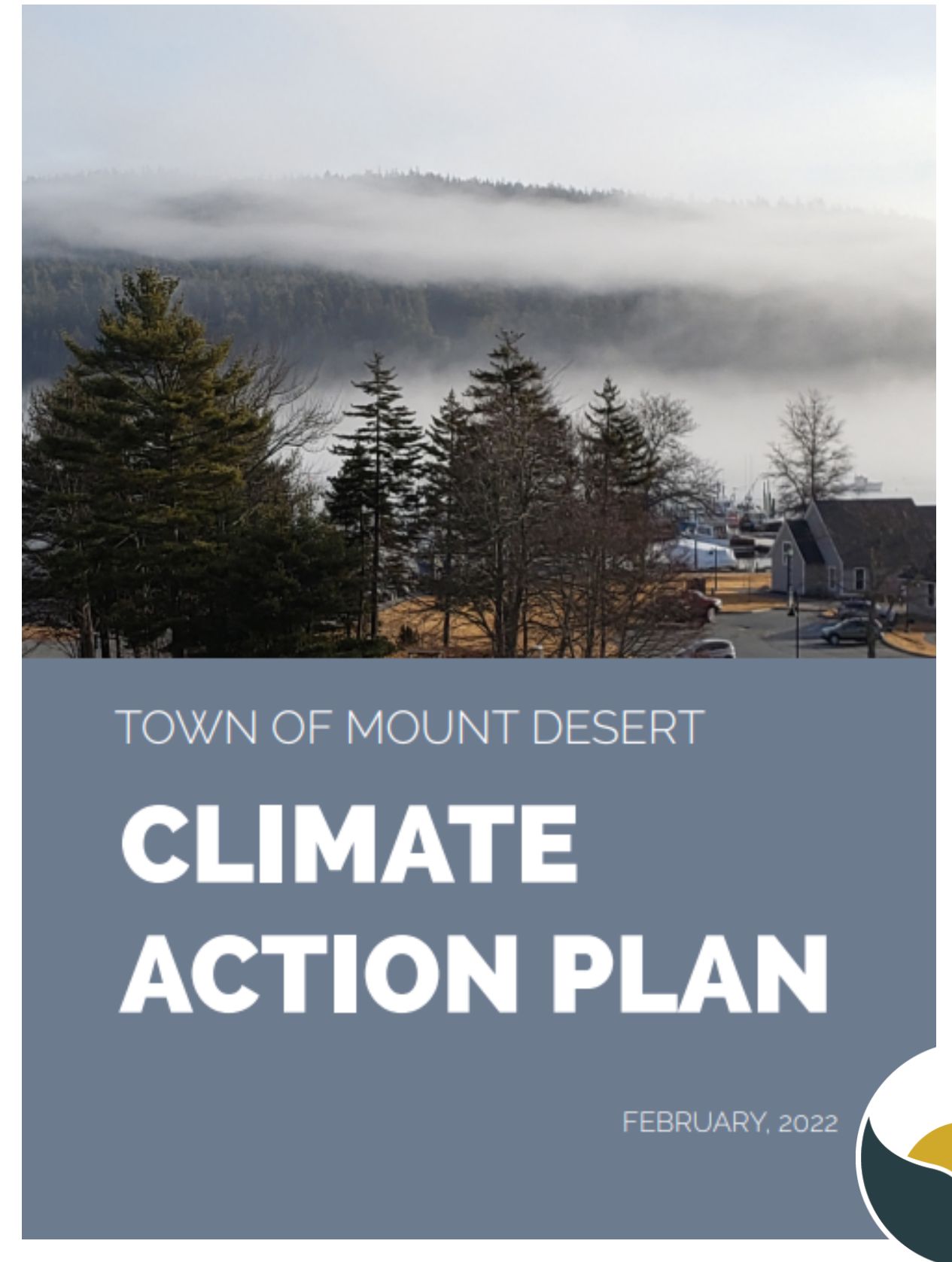
Town of Mount Desert Climate Action Plan & CRP Funding

The Mount Desert's Climate Action Plan identified the action items:

- Identify and prioritize near-term solar sites
- Conduct a feasibility study for solar array(s)
- Develop an RFP to be released in FY 2023-2024.

The Town of Mount Desert was awarded funding from the State's Community Resilience Partnership to perform the solar pre-development work outlined in the Town's Climate Action Plan.

In early 2023, the Town of Mount Desert contracted the solar pre-development work outlined above with A Climate to Thrive (ACTT). Over the spring and summer, ACTT worked with solar contractors to evaluate the solar potential of each municipally identified site.



Municipal Investment Tax Credit

Historically, nontaxable entities like nonprofits and municipalities have not been able to access the significant federal tax credits that make solar economically viable for homeowners and businesses. However, as of January of 2023, nonprofits are eligible to receive a direct payment from the IRS, **which reimburses 30% of the solar project's equipment and installation cost.** Local governments and higher education institutions, as well as other exempt organizations, can now treat tax credits they have earned as an "overpayment of taxes" and receive a direct payment from the U.S. Treasury as a tax refund.



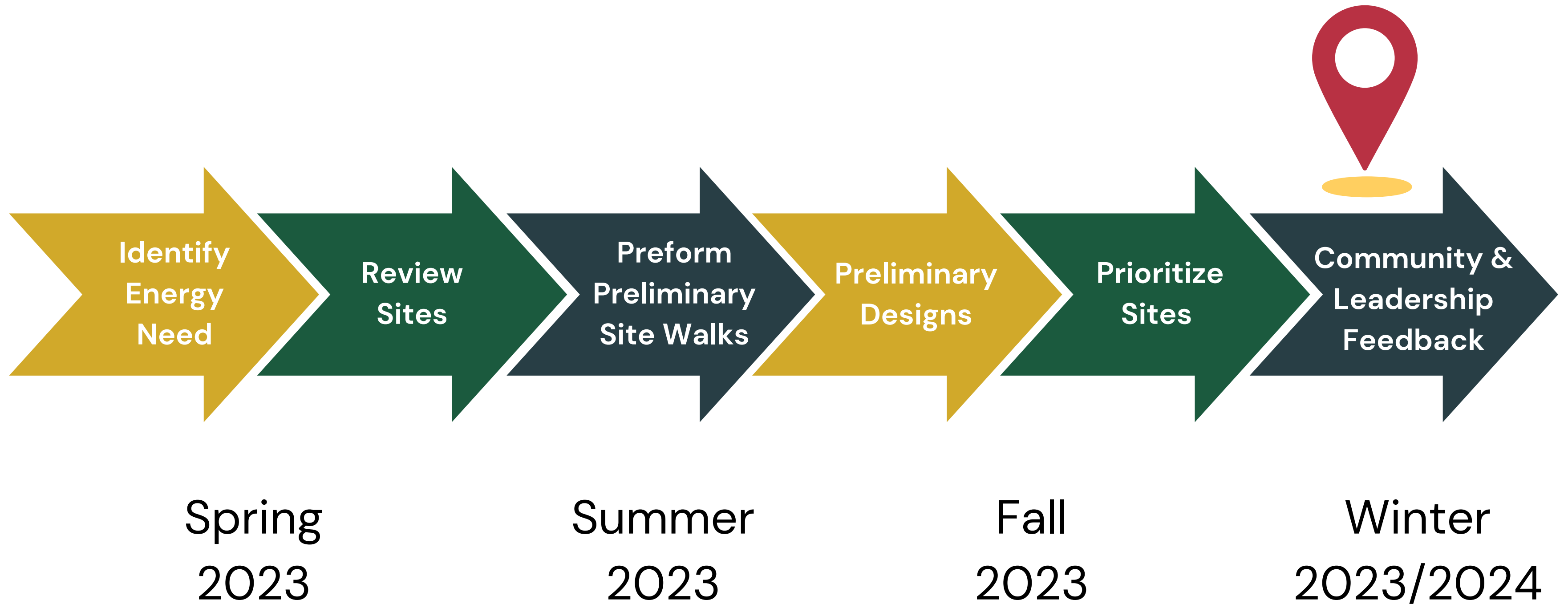
Net Energy Billing:

Maine's net energy billing program allows customers to offset their electricity bills using the output from small renewable generators. The generation facility may be located on the customer's property or on another property within the same utility service territory.

Commercial accounts with demand charges will use the tariff rate. Right now in Versant Power Bangor Hydro territory small commercial generators are credited at \$.25/kWh and medium commercial generators at \$.24/kWh. These credits can be applied to offset the electricity use and demand charges. Unused credits expire after 12-months.



Pre-Development Work



Solar Array at the Town Garage

The 57 kW array became operational in June 2018. The Town signed a power purchase agreement with ReVision Energy and pays \$.1619/kWh generated.

The electricity generated by the array covers the Town Garage and a majority of the Town Office electricity use.

298.54 MWh Lifetime production

ReVision sells the RECs so the Town cannot legally claim the clean energy benefits of the energy.



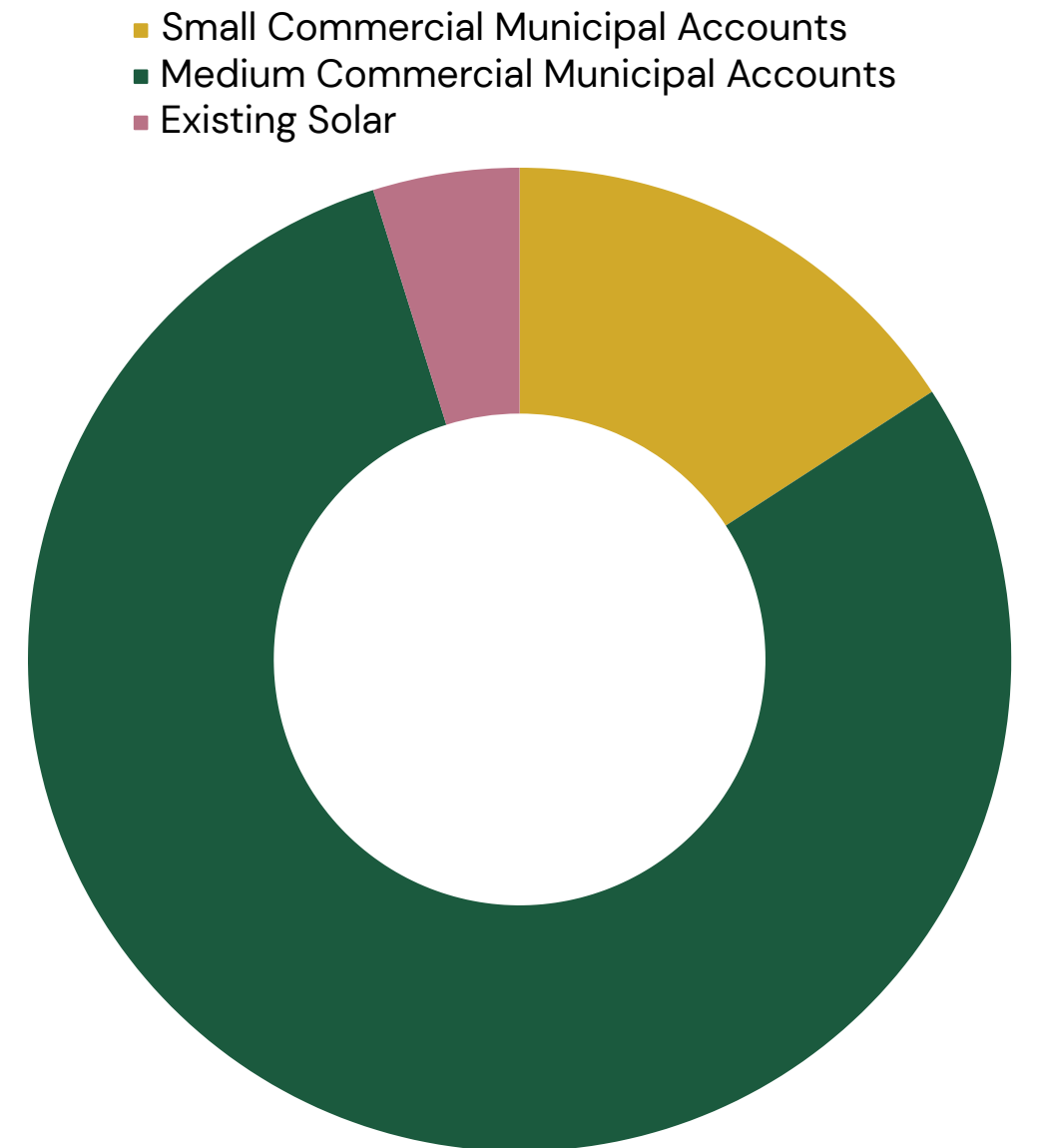
Town of Mount Desert Energy Needs

Small commercial municipal accounts: **246,650 kWh**

Medium commercial municipal accounts: **1,235,720 kWh**

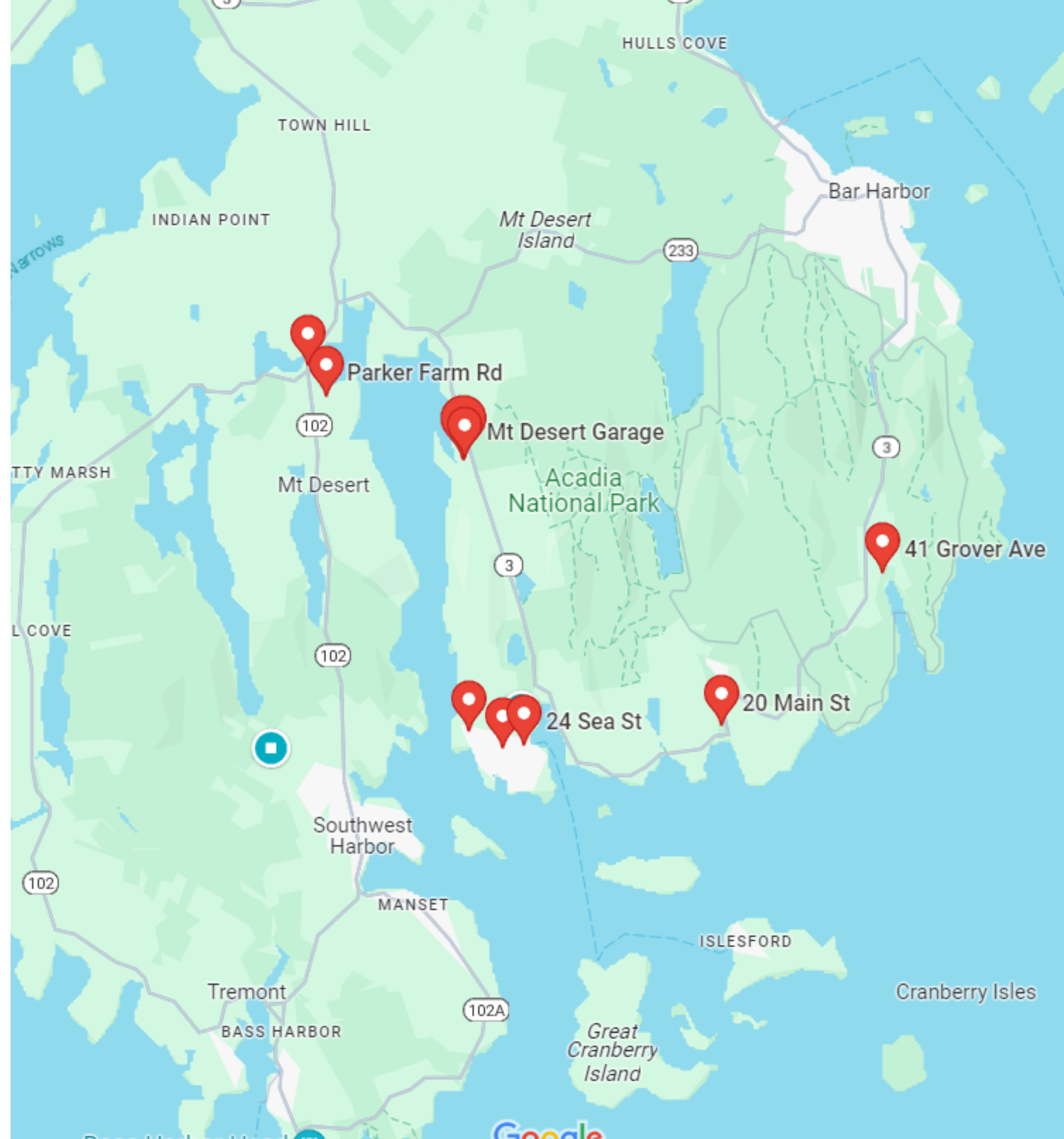
Total municipal electricity use: **1,482,370 kWh.**

In order to generate enough electricity to cover 100% of the municipal electricity use, the town of Mount Desert will need roughly **1,235 kW of installed solar.**

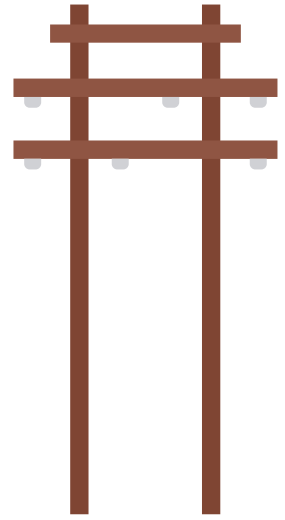


Sites

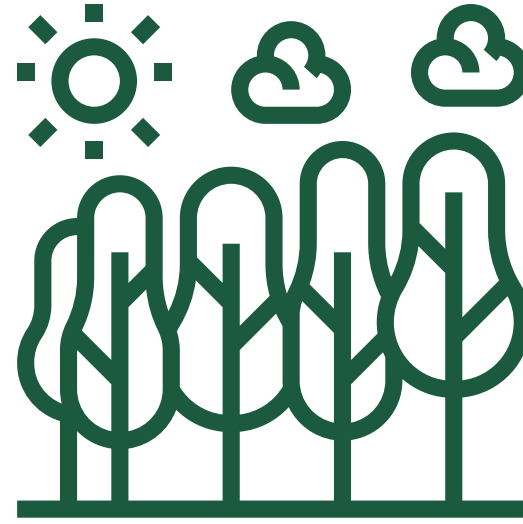
1. Somesville Fire Station
2. NEH Wastewater Treatment Plant
3. Otter Creek Pumping Station
4. Seal Harbor Wastewater Treatment Plant
5. Town Office
6. Town Garage
7. Mount Desert Elementary School
8. Somesville Wastewater Treatment Plant



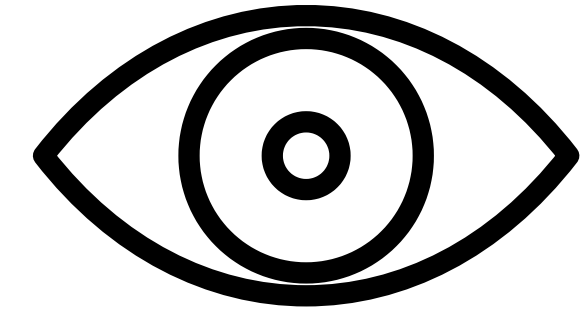
Site Considerations



Grid Conditions



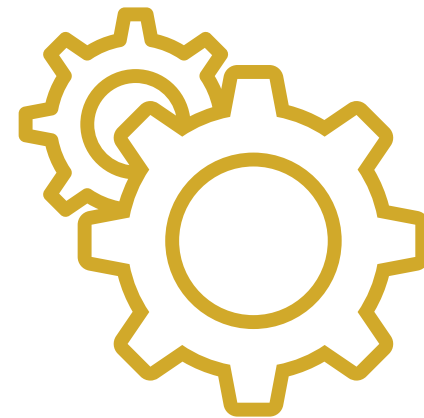
Habitat Impacts



Visual Impacts



Development Cost



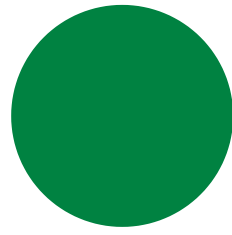
Structural
Engineering



Site Access



1) Somesville Fire Station

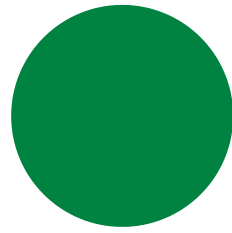


This potential project is relatively small, directly tied into the existing building, and is located in the area of the island with the largest available hosting capacity. ACTT expects minimal interconnection costs. This project should move forward the fastest.

- 48.5 kW Rooftop Solar Array
- 39.41 t CO2 Emissions Saved
- 1,810 Equivalent Trees Planted



1) Somesville Fire Station



Project Cost:
\$140,00-\$170,000 (before 30% ITC)

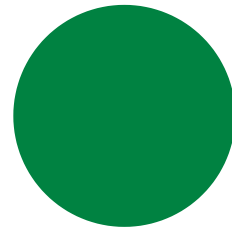
Direct Pay Tax Credit:
\$42,000-\$51,000

Projected Net Savings Over 20 Years:
\$137,523 to \$170,169

(Calculated using a bond with 3.5% annual interest rate
and a 2% annual increase in electricity prices)

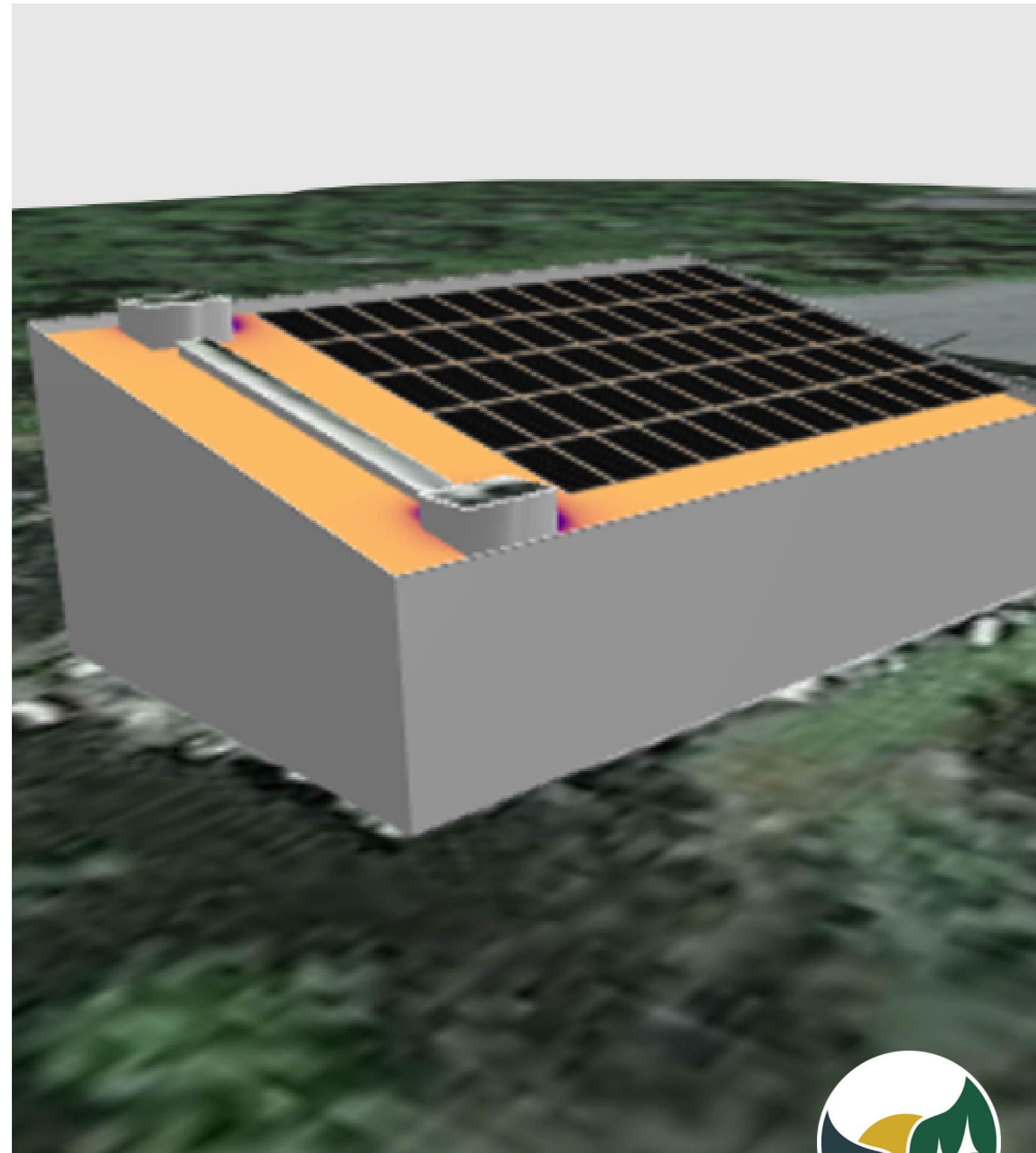


2) Northeast Harbor Wastewater Treatment Plant

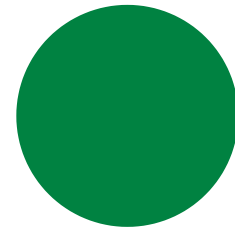


This potential project is relatively small and will be directly tied into the treatment plant's electrical infrastructure. The treatment plant is the municipality's largest user of electricity and, therefore, will use a majority, if not all, of the electricity as the array is producing it.

- 30 kW Rooftop Solar Array
- 22.88t CO2 Emissions Saved
- 1,051 Equivalent Trees Planted



2) Northeast Harbor Wastewater Treatment Plant



30 kW Rooftop Solar Array

Total Cost:

\$87,000–\$105,000 (before 30% ITC)

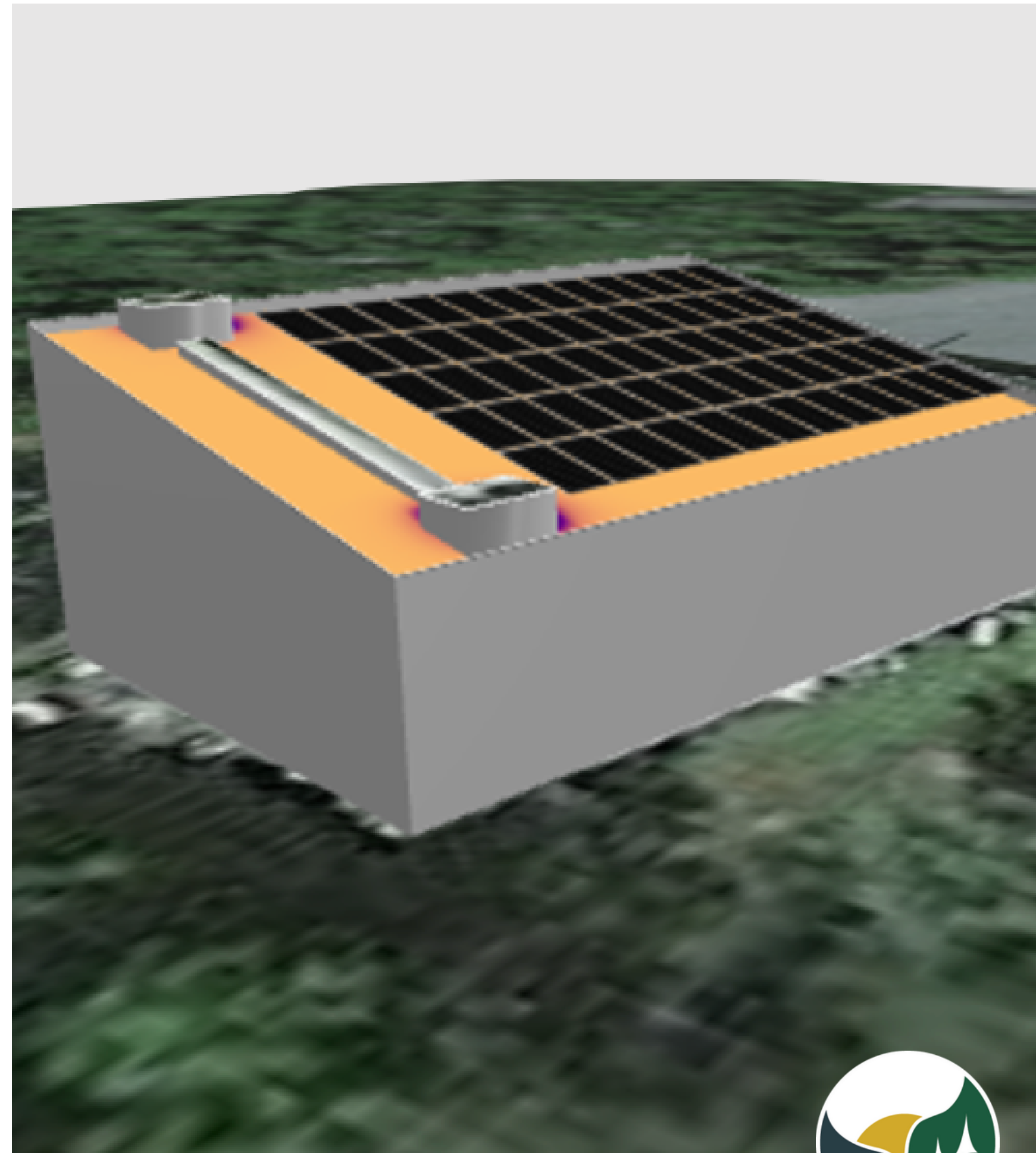
Direct Pay Municipal Tax Credit:

\$26,100– \$31,500

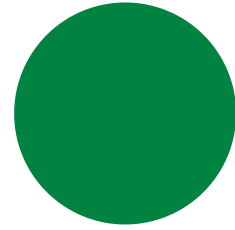
Projected Net Savings Over 20 Years:

\$85,243–104,838

(Calculated using a bond with 3.5% annual interest rate and a 2% annual increase in electricity prices)



3) Otter Creek Pumping Station

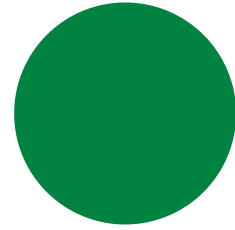


The site is an outstanding space for freestanding solar as it is already cleared and fenced in. This project will be tied directly into the pump station's existing electrical infrastructure. The project is located near Bar Harbor (the area of MDI with the best electrical infrastructure) and under 100 kW, thus ACTT expects this array to have lower associated interconnection costs.

- 77 kW Ground Mounted Solar Array
- 67.44t of CO2 Emissions Saved
- 3,097 Equivalent Trees Planted



3) Otter Creek Pumping Station



Total Project Cost:
\$250,000–\$308,000 (before 30% ITC)

Direct Pay Municipal Tax Credit:
\$75,000–\$123,200
(May qualify as a brownfield, resulting in an additional 10% municipal tax credit.)

Projected Net Savings Over 20 Years:
\$176,837–\$270,805

(Calculated using a bond with 3.5% annual interest rate and a 2% annual increase in electricity prices)



Benefits of the Top Three Sites



Total Solar:
155.5 kW



Twenty-Year Net Electricity Savings:
\$399,603-\$545,812



CO2 Emissions Avoided:
129.73 Metric Tonnes

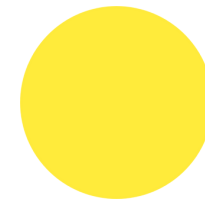


Equivalent Trees Planted:
5958 Trees

1. Easiest to implement
2. Lowest potential interconnection costs
3. Virtually no impact on habitats
4. Lowest upfront investment and highest ROI



4) Seal Harbor Wastewater Treatment/ Parking Lot



This project has two separate arrays that will be tied directly into the existing electrical infrastructure at the wastewater treatment plant. The upper array is a parking canopy that can be paired with EV infrastructure, thus lowering the equipment cost of charging infrastructure. It would be an L-shaped parking canopy (angled solar panels conjoined to maximize energy potential). The canopy would be cantilevered and have a 14 ft clearance that can easily be plowed.

The lower array would be a freestanding ground-mounted array built on the existing dirt parking lot and facing the pump station. As both the upper and lower arrays would be built in space that is already cleared, this project would not need to cut any trees, though some strategic trimming would be required.

- 152 kW Canopy and Ground Mounted Solar Arrays
- 121.13t CO2 Emissions Saved
- 5,563 Equivalent Trees Planted



4) Seal Harbor Pumping Station

152 kW Canopy and Ground Mounted Solar Array

Total Project Cost:

\$608,000–\$684,000 (before 30% ITC)

Direct Pay Municipal Tax Credit:

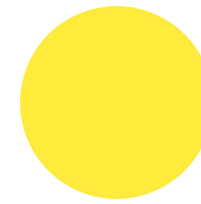
\$182,400–\$273,600

(The site could qualify as a brownfield, resulting in an additional 10% municipal tax credit.)

Projected Net Savings:

\$266,307–\$349,080

(Calculated using a bond with 3.5% annual interest rate and a 2% annual increase in electricity prices)



5) Town Parking Lot

This project is the largest on the list and is located in the village of NEH, where the town has been experiencing ongoing issues with Versant Power's grid. While large, the surrounding buildings and their associated load have the potential to lower the associated interconnection costs.

- 379 kW Parking Canopy Solar Array
- 292.4t CO2 Emissions Saved
- 13,430 Equivalent Trees Planted



5) Town Parking Lot

379 kW Parking Canopy Solar Array

Total Project Cost:

\$1,516,000– \$1,895,000 (before 30% ITC)

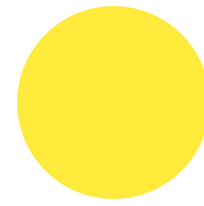
Direct Pay Municipal Tax Credit:

\$454,800–568,500

Projected Twenty-Year Net Savings:

\$457,690– \$870,405

(Calculated using a bond with 3.5% annual interest rate and a 2% annual increase in electricity prices)



Pros and Cons of the Parking Canopy Sites



Total Solar:
531 kW



Twenty-Year Net Electricity Savings:
\$724,528-\$1,219,485



CO2 Emissions Avoided:
413.53 Metric Tonnes



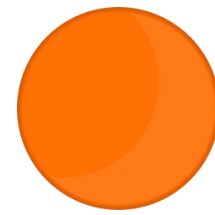
Equivalent Trees Planted:
18,993 Trees

1. Valuable use of a space that would have traditionally been overlooked
2. Could pair well with EV charging infrastructure
3. No impact on habitats

1. More expensive per kW
2. Since they're larger they could have higher interconnection costs.



6) Town Garage

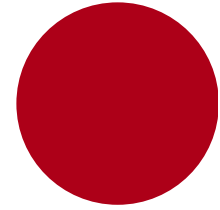


This project is large and has poor surrounding infrastructure. The existing array on the town garage will complicate and potentially delay the interconnection process. ACTT sees this project as having the highest associated interconnection costs and the longest interconnection timeline. Additionally, this is the only site where solar would require clear-cutting and heavy site work.

- 337 kW Ground Mounted Solar Array
- \$977,300– \$1,179,500 (before 30% ITC)
- 218.19 t CO2 Emissions Saved
- 10,021 Equivalent Trees Planted



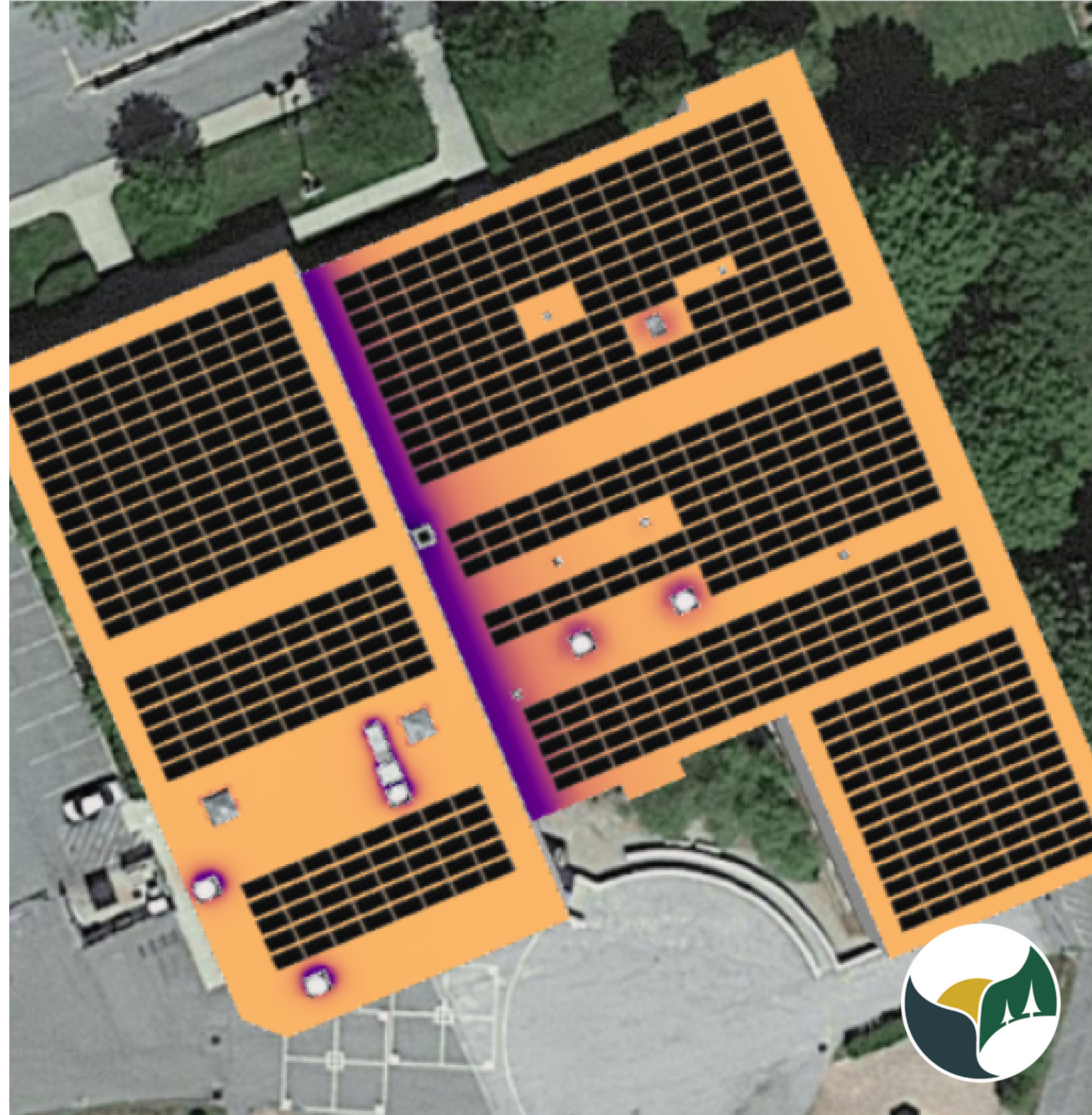
7) Mount Desert Elementary School



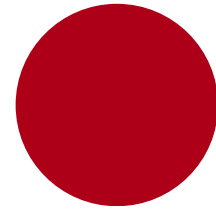
This project's size makes it more likely to have higher associated interconnection costs. It is also located in the village of NEH, where the town has been experiencing ongoing issues with Versant Power's grid.

Blatt Architects reported that the roof cannot support solar in its current condition and the additional construction would be cost-prohibitive.

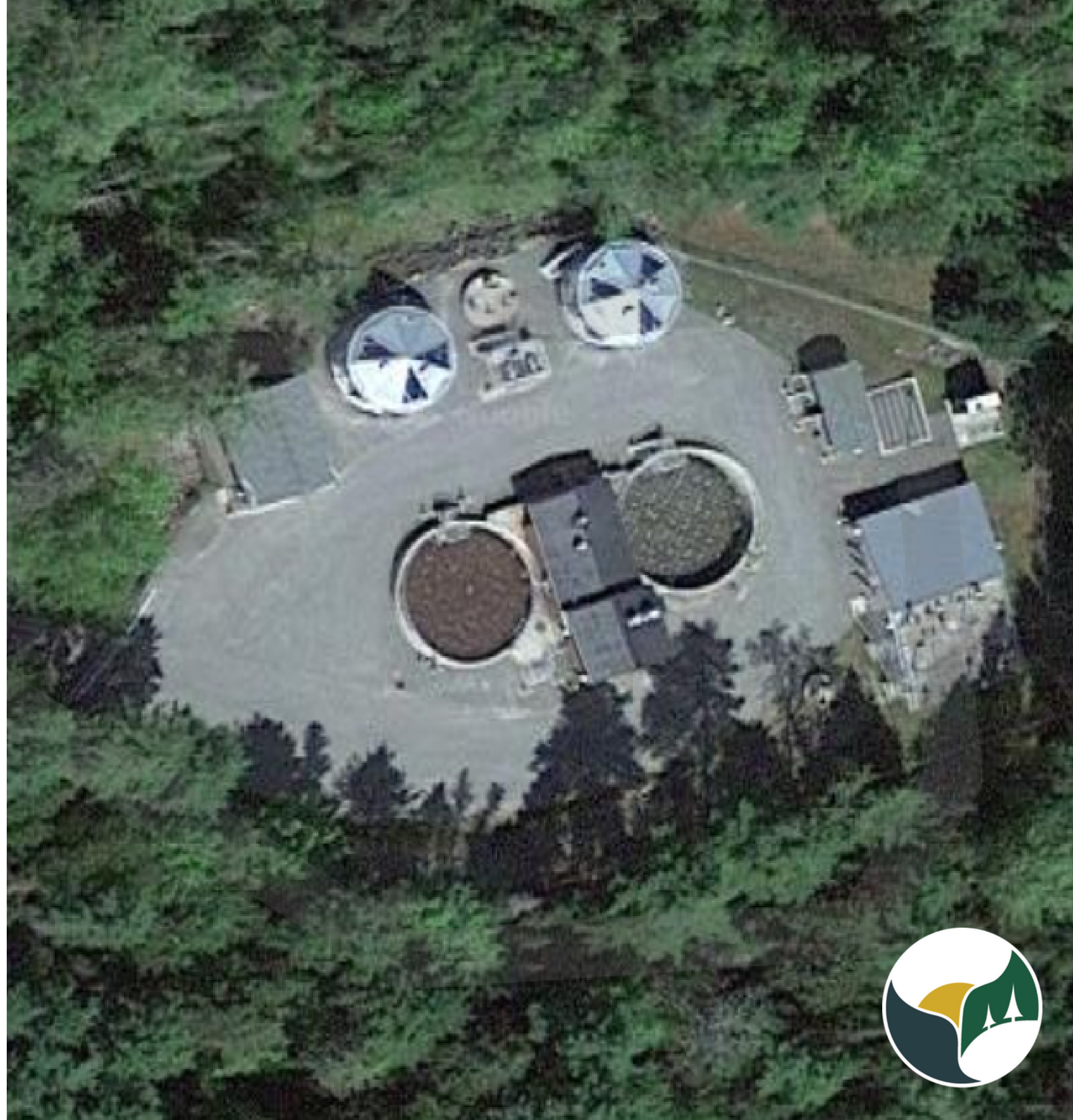
- 331.5 kW Rooftop Solar Array
- \$994,000–\$1,160,000 Total Cost (before 30% ITC)
- 249.8 t CO2 Emissions Saved
- 11,473 Equivalent Trees Planted



8) Somesville Wastewater Treatment Plant

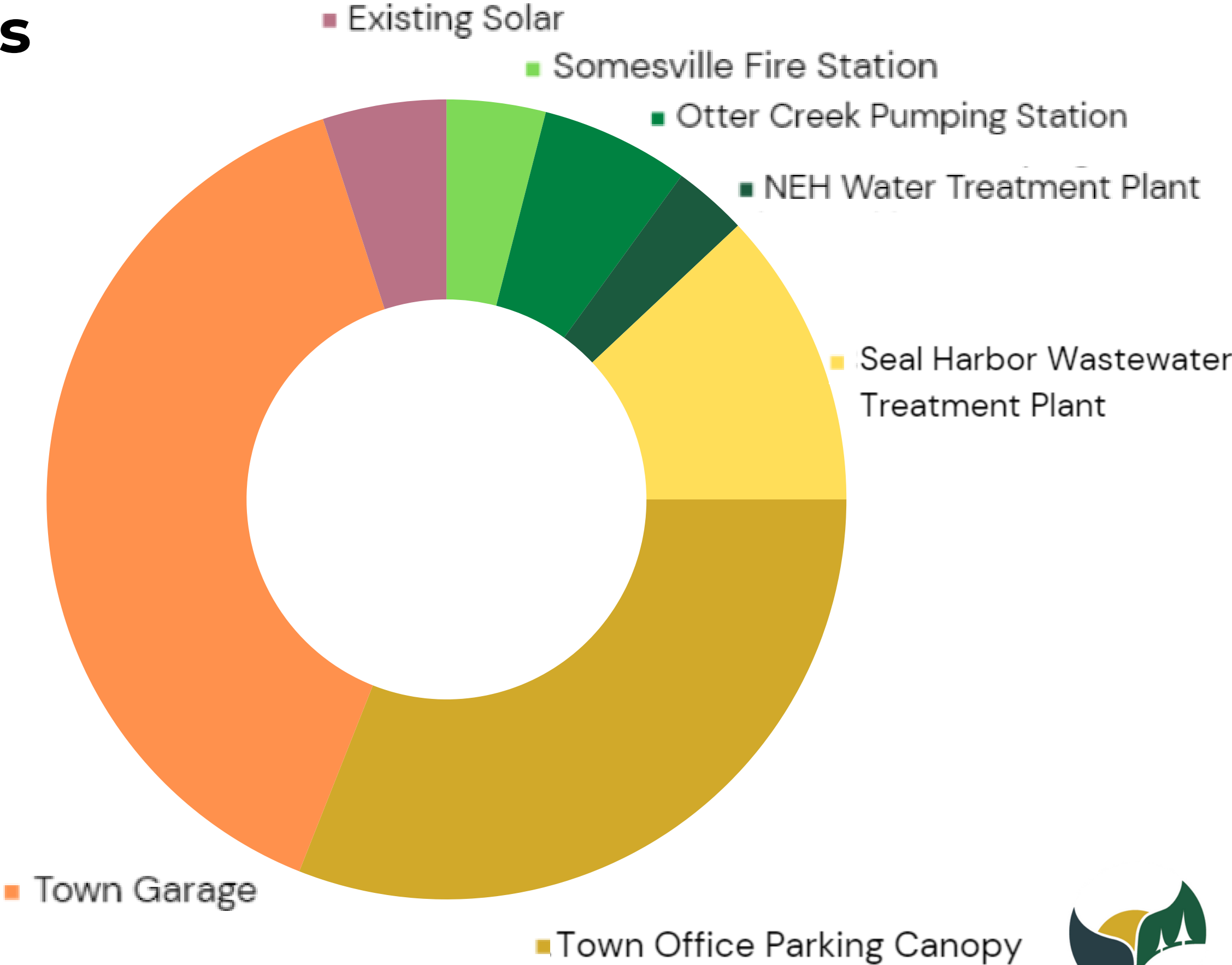


ACTT does not recommend pursuing solar development at this site. The site's buildings are too small for a rooftop array and any ground mount arrays would require tree clearing.



Municipal Energy Use and Potential Solar Projects

- 1. Somesville Fire Station- 4%
- 2. NEH Wastewater Treatment Plant-3%
- 3. Otter Creek Pumping Station- 6%
- 4. Seal Harbor Wastewater Treatment Plant- 12%
- 5. Town Office Parking Canopy- 31%
- 6. Town Garage- 39+%



Site	Size	Small Account Coverage	Medium Account Coverage	Maximum Estimated Cost	Minimum Projected Twenty Year Net Savings	Minimum Twenty Year ROI
Somesville Fire Station	48.5 kW	23.6%	X	\$170,000	\$137,523	81%
NEH Waste Water Treatment Plant	30 kW	X	3%	\$105,000	\$85,243	81%
Ottercreek Pumping Station	77 kW	X	7.5%	\$308,000	\$240,005	78%
Seal Harbor Parking Lot	152 kW	X	15%	\$608,000	\$266,307	44%
Town Parking Lot	379 kW	X	37%	\$1,895,000	\$457,690	24%
Total	686.5 kW	23.6%	62.5%	\$3,086,000	\$1,123,600	X

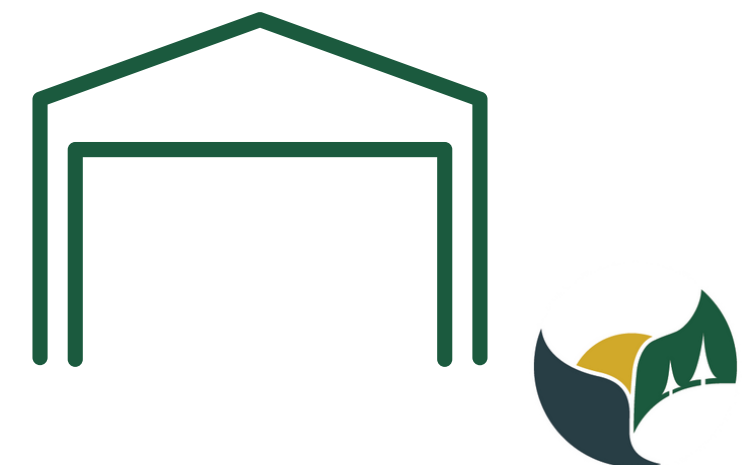
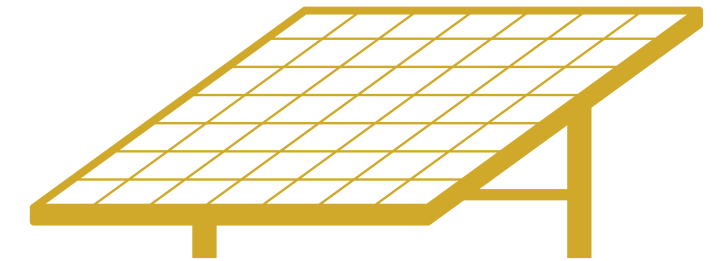
Recommendations

1) Fund phase one of development for the top three sites:

- Somesville Fire Station (48.5 kW)
- Northeast Harbor Waste Water Treatment (30 kW)
- Otter Creek Pumping Station (77 kW)

2) Work with Greg Johnston Associates to explore the viability of solar parking canopies further in the town parking lot and Seal Harbor Parking Lot sites.

3) Collect feedback from the community about their level of interest in further exploring the Town Garage solar site.



Project Timeline

Phase	Milestone	2023			2024				2025			
		Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Pre Development: Scoping	Identify energy needs	█										
	Review Sites	█										
	Perform preliminary site walks with engineers	█										
	Receive and review preliminary designs		█									
	Prioritize sites		█									
	Receive community and leadership feedback			█								
	Draft warrant article to fund phase one				█							
	Develop & Administer RFP				█	█						
	Receive proposals and select contractors					█	█					
	Town vote						█					
	Sign contract for phase one							█				
	Phase One: Due Diligence	Finalize project designs							█			
Interconnection application & studies								█	█			
Obtain state and local permitting									█	█		
Finalize interconnection agreements									█	█		
Secure funding for phase two									█	█		
Phase Two: Construction	Site Prep										█	█
	Construction										█	█
	Commission Testing											█
	Interconnection											█
	Launch project operations											█



Phase One Development Budget Recommendations

Budget Item & Description	Cost
Interconnection Applications	\$20,000
Interconnection Studies & Deposits	\$150,000
Engineering & Additional Studies	\$30,000
Third Party Engineer Review	\$10,000
Project Management	\$15,000
20% Contingency	\$45,000
Total	\$270,000



Questions?