

**The
MATINICUS
RENEWABLE POWER
PROJECT**

An application to the
USDA Rural Utilities Service High Energy Cost Grant Program
Submitted by
The Matinicus Plantation Electric Company
Matinicus Island, Maine

Clayton L. Philbrook
December 14, 2015

**APPLICATION FOR
FEDERAL ASSISTANCE**

OMB Approved No. 3076-0006

Version 7/03

1. TYPE OF SUBMISSION: Application <input type="checkbox"/> Construction <input checked="" type="checkbox"/> Non-Construction		2. DATE SUBMITTED December 14, 2015	Applicant Identifier
Pre-application <input type="checkbox"/> Construction <input type="checkbox"/> Non-Construction		3. DATE RECEIVED BY STATE	State Application Identifier
		4. DATE RECEIVED BY FEDERAL AGENCY	Federal Identifier

5. APPLICANT INFORMATION

Legal Name: Matinicus Plantation Electric Company		Organizational Unit: Department:	
Organizational DUNS: 3611735240000		Division:	
Address: Street: P.O. Box 238		Name and telephone number of person to be contacted on matters involving this application (give area code) Prefix: First Name: Ben	
City: Matinicus		Middle Name	
County: Knox		Last Name Algeo	
State: Maine	Zip Code 04851	Suffix:	
Country: United States		Email: balgeo@islandinstitute.org	

6. EMPLOYER IDENTIFICATION NUMBER (EIN): 01-0348102	Phone Number (give area code) (207)939-8516	Fax Number (give area code) (207)594-9314
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8. TYPE OF APPLICATION: <input checked="" type="checkbox"/> New <input type="checkbox"/> Continuation <input type="checkbox"/> Revision If Revision, enter appropriate letter(s) in box(es) (See back of form for description of letters.) Other (specify) <input type="checkbox"/> <input type="checkbox"/>	7. TYPE OF APPLICANT: (See back of form for Application Types) C. Municipal Other (specify)
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10. CATALOG OF FEDERAL DOMESTIC ASSISTANCE NUMBER: 10-859	9. NAME OF FEDERAL AGENCY: United States Department of Agriculture Rural Utilities Service
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TITLE (Name of Program): Assistance to High Energy Cost Rural Communities	11. DESCRIPTIVE TITLE OF APPLICANT'S PROJECT: Matinicus Renewable Power Project
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12. AREAS AFFECTED BY PROJECT (Cities, Counties, States, etc.): Matinicus Isle Plantation, Knox County, Maine

13. PROPOSED PROJECT Start Date: April 2016 Ending Date: January 2017	14. CONGRESSIONAL DISTRICTS OF: a. Applicant ME-01 b. Project ME-01
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15. ESTIMATED FUNDING:	16. IS APPLICATION SUBJECT TO REVIEW BY STATE EXECUTIVE ORDER 12372 PROCESS?
a. Federal \$ 1,161,113. ⁰⁰	a. Yes. <input type="checkbox"/> THIS PREAPPLICATION/APPLICATION WAS MADE AVAILABLE TO THE STATE EXECUTIVE ORDER 12372 PROCESS FOR REVIEW ON DATE:
b. Applicant \$. ⁰⁰	b. No. <input checked="" type="checkbox"/> PROGRAM IS NOT COVERED BY E. O. 12372
c. State \$. ⁰⁰	<input type="checkbox"/> OR PROGRAM HAS NOT BEEN SELECTED BY STATE FOR REVIEW
d. Local \$. ⁰⁰	17. IS THE APPLICANT DELINQUENT ON ANY FEDERAL DEBT?
e. Other \$. ⁰⁰	<input type="checkbox"/> Yes If "Yes" attach an explanation. <input checked="" type="checkbox"/> No
f. Program Income \$. ⁰⁰	
g. TOTAL \$ 1,116,455. ⁰⁰	

18. TO THE BEST OF MY KNOWLEDGE AND BELIEF, ALL DATA IN THIS APPLICATION/PREAPPLICATION ARE TRUE AND CORRECT. THE DOCUMENT HAS BEEN DULY AUTHORIZED BY THE GOVERNING BODY OF THE APPLICANT AND THE APPLICANT WILL COMPLY WITH THE ATTACHED ASSURANCES IF THE ASSISTANCE IS AWARDED.

a. Authorized Representative		
Prefix	First Name Clayton	Middle Name
Last Name Philbrook	Suffix	
b. Title First Assesor	c. Telephone Number (give area code) (207)366-3980	
d. Signature of Authorized Representative	e. Date Signed	

BUDGET INFORMATION - Non-Construction Programs

OMB Approval No. 0348-0044

SECTION A - BUDGET SUMMARY						
Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
Assistance to High Cost Rural Communities	17.859	\$ 1,161,113	\$	\$	\$	\$ 1,161,113
2.						
3.						
4.						
5. Totals		\$ 1,161,113	\$	\$	\$	\$ 1,161,113
SECTION B - BUDGET CATEGORIES						
6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY				Total (5)	
	(1)	(2)	(3)	(4)		
a. Personnel	\$ 79,200	\$	\$	\$	\$ 79,200	
b. Fringe Benefits	0				0	
c. Travel	5,000				5,000	
d. Equipment	1,022,255				1,022,255	
e. Supplies	0				0	
f. Contractual	10,000				10,000	
g. Construction	0				0	
h. Other	0				0	
i. Total Direct Charges (sum of 6a-6h)	1,116,455				1,116,455	
j. Indirect Charges	44,658				44,658	
k. TOTALS (sum of 6i and 6j)	\$ 1,161,113	\$	\$	\$	\$ 1,161,113	
7. Program Income	\$	\$	\$	\$	\$	

SECTION C - NON-FEDERAL RESOURCES					
(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) TOTALS	
8.	\$	\$	\$	\$	
9.					
10.					
11.					
12. TOTAL (sum of lines 8-11)	\$	\$	\$	\$	
SECTION D - FORECASTED CASH NEEDS					
	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
13. Federal	\$	\$	\$	\$	\$
14. Non-Federal					
15. TOTAL (sum of lines 13 and 14)	\$	\$	\$	\$	\$
SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT					
(a) Grant Program	FUTURE FUNDING PERIODS (Years)				
	(b) First	(c) Second	(d) Third	(e) Fourth	
16.	\$	\$	\$	\$	
17.					
18.					
19.					
20. TOTAL (sum of lines 16-19)	\$	\$	\$	\$	
SECTION F - OTHER BUDGET INFORMATION					
21. Direct Charges: 1,116,455		22. Indirect Charges: 44,658			
23. Remarks: Quarterly cash needed depending on start date					

PROJECT SUMMARY AND GRANT ELIGIBILITY STATEMENT

1. Project Abstract & Eligibility

The Matinicus Renewable Power Project (MRPP) will lower and stabilize electricity costs and improve the reliability of electric service on Matinicus Island by integrating renewable energy and storage, and replacing aging critical distribution equipment. At 20 miles off the coast, this small lobster fishing village is Maine's most remote island community and also pays the second highest electric rate in the state (\$0.69 per kilowatt hour) for power from its on-island diesel generator station. This rate is more than double the per unit high energy cost (HEC) benchmark for electricity (\$0.33) set by USDA. In addition to the strain of high costs, electricity generation and service are plagued with safety, reliability and efficiency challenges, primarily due to the power station's aging switchgear, generators, and total reliance on fossil fuels.

Led by the municipally-owned Matinicus Plantation Electric Company (MPEC), MRPP will purchase and install a 100kW solar photovoltaic (PV) array, and a 200kWh battery storage bank; and replace an obsolete switchgear and utility line truck that is necessary for line repairs, maintenance and safe, reliable service. These four components will greatly reduce diesel consumption and improve system efficiency; replace critical distribution infrastructure required to provide reliable service; improve system resiliency; and provide flexible infrastructure to support further renewable generation.

Additionally, this project will provide a model for a microgrid system which could be emulated on other islands and in small, remote communities in Alaska and other isolated areas. The link between Matinicus and remote Alaskan villages was highlighted in AlexAnna Salmon's keynote at the 2015 Island Energy Conference in South Portland, Maine.¹

2. Applicant Eligibility

MPEC is a municipal electric utility established in 1977 to provide centralized power to Matinicus Island at its remote location 20 miles off the coast of Maine. Matinicus was incorporated in 1840 as a Plantation, a civil division exclusive to Maine that falls between a town and an unorganized territory and to which the State has granted limited governing powers. After decades of relying first on individually-owned diesel and gasoline generators and then a centralized, privately-run, but problematic, generation and distribution system, the Plantation applied to have a new system declared a public utility. The municipal non-profit MPEC was established in 1977, subject to regulation according to federal and state law. Due to MPEC's small number of ratepayers (approx. 80) and distance from the mainland (20 miles), laying a submarine transmission cable is cost prohibitive, so electricity must be generated on-site. The current system consists of a centralized power station housing three Newage generators driven by GM diesels (two 65kW and one 100kW) and switchgear, as well as an on-island grid. MPEC has demonstrated capacity to receive and administer federal funds, having managed three previous grants of \$150,000 (HUD 1977), \$100,000 (HUD 1978) and \$400,000 (CDBG, 1983). Two of the principals involved with this project, Paul Murray and Clayton Philbrook, worked on these previous projects.

3. Community Eligibility – Matinicus Isle Plantation, Maine

The proposed project would be located on the island of Matinicus, within the local municipal jurisdiction of Matinicus Isle Plantation, and would be undertaken by the applicant, MPEC. According to the 2010 U.S. Census 600 (Census Tract# 975600-5-001), the island is

¹ For more on the link between Matinicus and AlexAnna's hometown of Iguigig, Alaska, please visit: <https://dieselislandpost.wordpress.com/2015/11/13/maines-diesel-islands-find-a-role-model-3500-miles-away/>

currently home to 74 year-round residents and has a seasonal population of roughly 120. Electric rates on Matinicus are seven times the national average, and heating fuels and propane sell for a high premium. Matinicus is one of 15 remaining year-round island communities on the Maine coast.

Matinicus is an economically distressed community

According to the U.S. Census (2009), the median household income for the community is \$52,857, 3% above the national median at the time and 14% above the Maine MHI figure (Census Tract# 975600-5-001). The census figures fail to take account of the fact that the cost of living on the island is estimated to be between 20% and 30% higher than on the mainland. According to the *Island Indicators 2010-2011* report, “The higher costs of food, fuel and other necessities are a factor to consider when looking at median income levels on the islands as compared to the state as a whole.”²

The cost of living is higher on Matinicus because all food and supplies must be imported from the mainland. Freight costs are substantial: groceries are ordered via fax from a mainland store and delivered by air taxi for an \$8.00/box charge; anything that will not fit on the plane must come by the water taxi during the late spring and summer, if there is room, or wait for the infrequent State ferry runs. Residents report at least a 15% to 25% additional cost for delivery on all items. So while the island appears to have an *annual income* that is slightly higher than the median for the state, the *standard of living* for the year-round community is significantly below this. These figures are also skewed by inclusion of a small number of wealthier seasonal residents.

Lobster fishing is the most common source of income on the island. This fishery is susceptible to booms and busts, dependent upon the price of fuel and bait, and the global seafood market. When fuel prices rise, Matinicus fishing families are hit twice; their cost of doing business goes up as they have to pay more to fuel their boats, and their electricity and heating costs rise as well. Seasonal tourism makes a small contribution to the island’s economy, but is constrained by the lack of rental housing, restaurants and stores, and transportation challenges.

Matinicus is an HEC community

Matinicus qualifies as an HEC community under two of the annual average per unit residential energy cost benchmarks: electricity and propane. Matinicus also appears to qualify under the Total Household Energy Use average annual fuel costs benchmark, but definitive data is lacking.

Electricity - The national average for electricity costs is \$0.12 kWh, and the benchmark for this grant is \$0.33. **At \$0.69 kWh, residents of Matinicus are currently paying one of the highest electric rates in the state and one of the highest in the country, and more than double the per unit high energy cost benchmark for electricity.** MPEC is the island’s sole provider of electricity. The per unit electricity cost data is documented in reports to the Maine Public Utilities Commission. Added transport and delivery costs apply for all goods and supplies on Matinicus, including diesel fuel used to generate electricity; electric rates are based on \$0.30/kWh plus a fuel charge added to bills to cover the cost of the diesel fuel, less a dollar per gallon, necessary for generation.

Propane - Propane costs \$6.14/gallon on Matinicus, above the Rural Utilities Service (RUS) benchmark of \$5.76/ gallon, as reported by Paul Murray, Matinicus’ sole distributor of propane.

Total Household Energy Costs - For heating, Matinicus residents employ a mix of fuels, including propane, kerosene, coal, wood, and wood pellets. Electric heat is rarely used due to its high cost. There is no natural gas infrastructure on the island. Propane is often used for

² Terry, Mary. “Island Indicators 2010-2011.” Island Institute. 2012.

cooking, hot water heaters, and clothes dryers, instead of electricity. Average household electricity consumption (3,050 kWh/year) is drastically lower than the national average (11,480 kWh), due to efficiency and conservation measures, as well as fuel substitution. To the extent we can calculate, it appears **Matinicus also qualifies for the Total Household Energy Costs benchmark of \$5,566/year**, but it is extremely difficult to document due to the diverse combinations of heating fuels employed and lack of centralized service for heating fuels. (With the exception of propane, islanders are responsible for procuring their own heating fuels and do not go through one centralized distributor/utility.) For example, a cord of wood purchased on the mainland for \$285 carries the cost of boat transport (\$187.25 per 5 cord) so that the actual cost on Matinicus is \$322.45/cord. Wood pellets go for \$241 per ton, with boat costs of \$44/ton.

One resident reports using 7 tons of wood pellets per year, costing \$230/ton with ferry costs and delivery costs of \$60/ton for a total heating cost of \$2,030, plus electricity costs of \$3,900 for a total energy budget of \$5,930.

Another resident reports fuel oil use of 900 gallons with a cost of \$3,321, plus electricity costs of \$4,200 for a total energy budget of \$7,521.

A third resident, who uses a mix of fuels, reports coal use at \$475/year, K-1 use of \$500/year and electricity use of \$3,600/year plus several cords of locally-cut spruce at a cost per cord exceeding \$150, for a total energy budget exceeding \$5,000/year.

PROJECT NARRATIVE PROPOSAL

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EXECUTIVE SUMMARY

Matinicus Plantation Electric Company (MPEC), a municipal electric utility which serves Matinicus Island, ME, respectfully requests \$1,161,113 for the purchase and installation of clean, reliable, and affordable generation technology, and the improvement of distribution equipment on the island. The primary objectives of this project are to: 1) lower fuel and operations and maintenance costs and reduce the environmental impacts of electricity generation on the island by installing and integrating a hybrid energy system including centralized, locally-generated renewable energy; and 2) increase the reliability and safety of the electricity generation and distribution system. Funds would provide for the purchase and installation of a 100kW PV array, 200kWh of battery storage, a replacement switchgear, and a new line truck. The USDA Rural Utilities Service's High Energy Cost Grant program represents a unique opportunity for the MRPP, as very limited funding is available at the state level for community-based renewable energy projects.

Residents of Matinicus are currently paying one of the highest electricity rates in the country: \$0.69/kWh, which is more than double the per unit high energy cost benchmark (\$0.33/kWh). Matinicus' 20 mile distance from the coast makes the cost of a submarine cable prohibitive, which has left the island dependent on diesel generators for its power. The combination of volatile fuel costs and high fixed costs necessitate billing at the regulated cost of \$0.30/kWh and recovering the variable cost of fuel by use of a fuel charge, which is calculated monthly based on fuel costs. This extraordinarily high electric rate is particularly burdensome due to residents' reliance upon variable, seasonal incomes, the high cost of living on Matinicus. The remoteness of the island raises the cost of every service and supply item by 20% to 30% over mainland costs.

The safety and reliability of the current system is compromised by an obsolete analog switchgear, which has caused several outages, and occasionally needs to be bypassed due to maintenance issues. It has become increasingly difficult to repair this equipment, as many replacement parts are now outmoded. Similarly, the island's bucket truck used for line repairs is nearing the end of its useful life, which compromises MPEC's ability to maintain its distribution system.

The integration of renewable energy and battery storage will significantly reduce MPEC's reliance on diesel fuel. The PV component of the MRPP will be able to cover most of the island's load during the day, and the integration of battery storage will allow for maximum utilization of the PV, and more efficient utilization of the generators. Most of the fuel savings from reduced generator use and improved generator efficiency will be passed directly on to MPEC's customers and amount to significant savings for the community: savings from the PV array and battery storage are estimated to exceed \$50,000 per year. Additional savings will be realized from decreased operations and maintenance costs.

The MRPP will also improve the safety and reliability of electricity service by replacing the obsolete switchgear and line truck. The new switchgear will have off-site monitoring and maintenance support, and allow for frequent, smoother synchronization of generators for optimal efficiency. Replacing the line truck will enhance MPEC's ability to maintain its distribution system.

The viability of Matinicus as a place to live and work is directly tied to the price of diesel. The island's main source of income comes from lobster fishing, and diesel prices directly affect the cost of doing business for lobstermen. When the price of diesel rises, Matinicus fishing families have to cope with reduced incomes in addition to a higher cost of living. This situation has contributed to an outmigration in recent years; in 2014, there were no students enrolled in the Matinicus Island School. By reducing MPEC's fuel consumption, the MRPP will decouple the survival of the community from the volatile price of diesel.

PROJECT DESCRIPTION

A. Community Eligibility and Assessment of Community Needs

1. Background

The high cost of living on Matinicus is due primarily to extremely high energy and transport costs. The volatile pricing of fossil fuels, resulting in increases in diesel fuel costs and the costs of transporting it to the island, deeply impact all residents in terms of **electricity costs, which are over five times the national average.** A variety of heating fuels are used on the island, all more expensive than on the mainland. The most commonly used fuels for heating are #2 heating oil and K-1 which cost \$1.83 and \$2.40/gallon, respectively. Propane is used for cooking, clothes drying, and heating hot water and costs \$6.14 per gallon, which is above the high energy cost benchmark for propane. Fuel for the power company has averaged \$3.18/gallon as we have switched to Ultra Low Sulfur Diesel (ULSD). When average annual fuel costs are added to average annual electricity bills on Matinicus, **the annual household energy costs for many residents appear to be well above the HEC benchmark of \$5,566 year.**

The current generation and distribution system on Matinicus is aging and obsolete. MPEC experiences continued problems with the analog switchgear used to synchronize engines and manage load. This extremely critical piece of equipment was intentionally built and purchased in 1983 and has essentially exceeded its original design life. Many parts have been replaced over the past 30 years. What was State of the Art in 1983 is becoming increasingly hard to source new and difficult to repair as technology moves on. In some cases, the switchgear must be bypassed, leaving MPEC with no ability to synchronize multiple generators, necessitating the use of a larger generator at a low output, which is very inefficient, and wears heavily on the machine. While in bypass mode, safety devices which monitor outgoing voltages, frequency and currents are also bypassed, increasing the risk of damaging the grid and customer loads. In many cases, switchgear issues have resulted in false faults, which disrupted service to the island, resulting in extended power outages while the switchgear system is either reset or bypassed.

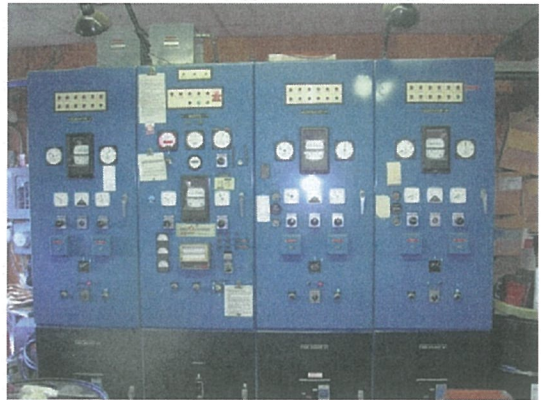


Figure 1 Current switch gear (32 years old)



Figure 2 Matinicus Power Station

Additionally, the island's 20 – 30 year old generators are suffering from a lifetime of wear and tear. Their efficiency has declined in recent years, and one unit had to be sent in to be rebuilt, a process that cost \$20,440 and took over a year. The cost of maintaining this system is increasing, which recently forced us to raise our base rate, which covers operational costs, from \$0.24/kWh to \$0.30/kWh. **The cost of fuel (minus \$1.00 per gallon) is passed directly on to MPEC's customers.**

MPEC sources its diesel fuel from a small tanker run by Maine Coast Petroleum (MCP) and receives, as needed and as weather and tide dictate, deliveries only being possible at times of high tide and good weather. The power company owns a small, 17,500 gallon tank farm. This fragile system

depends upon regular oil deliveries and sufficient cash flow which can be challenging due to the seasonality of the island's economy. Over the past 18 months, delivered fuel prices averaged \$3.18/gallon.

These issues have left Matinicus residents in a vulnerable situation regarding their energy future. With the support of the Island Institute in 2012, MPEC began the process of applying for a Clean Engine grant from the EPA to replace the aging generators, all 20-30 years old, with new, cleaner, more efficient engines. However, when Tier 4 emissions standards went into place in 2014, we discovered that replacement costs would be 50-60% higher than first proposed, and fuel economy would not improve, so lacking the necessary matching funds, this project was ultimately abandoned.

Due to the recent rate increase, some wealthier residents have begun to discuss installing their own generators or solar PV systems, and going off grid. This is a decision that could have a severe impact on the community. When a customer goes off grid, the revenue that they were contributing to cover the power company's fixed operating costs goes away, meaning that those costs will now have to be spread over a smaller (and likely less affluent) customer base, ultimately resulting in more rate increases, which would further compound the problem. Reducing the cost of electricity from MPEC is imperative to remedying this situation.

There are three major constraints on MPEC's ability to improve electricity generation and distribution to the community:

1. The island's remoteness and isolation increases the cost of supplies, fuel, and services,
2. MPEC has a small customer base (about 80 customers) over which to spread the cost of capital improvements, and
3. MPEC has only two paid employees, which limits its ability to designate human resources towards these types of projects.

Additionally, MPEC is constrained by a lack of available funding on the state level to undertake a community-based renewable energy project.

2. Economic Hardship

According to the U.S. Census (2009), the median household income for the community is \$52,857, 3% above the national median at the time and 14% above the Maine MHI figure (Census Tract# 975600-5-001). These figures do not accurately reflect the incomes of actual year-round residents, as a few wealthy seasonal residents identify Matinicus as their home, but do not live there year-round. Approximately 60% of the homes on Matinicus are used seasonally. The vast majority of year-round residents in this community work several jobs and often struggle to make ends meet. Most residents rely upon highly variable seasonal income sources, such as lobstering and tourism to support themselves and their families.

Lobster fishing is the most common source of income on the island; approximately 40% of Matinicus residents hold lobster licenses.³ This fishery is susceptible to booms and busts, dependent upon the price of fuel and bait, and the global seafood market. When fuel prices rise, Matinicus fishing families are hit twice; their cost of doing business goes up as it gets more expensive to fuel their boats, and their cost of living goes up as electricity rates and heating costs rise. Seasonal tourism makes a small contribution to the island's economy, but is constrained by the lack of rental housing, restaurants and stores, and transportation challenges.

³ Terry, Mary. "Island Indicators 2010-2011." Island Institute. 2012.

Tourism makes a very small contribution to the local economy, since there is only one bed and breakfast, very few weekly rentals and almost no places for tourists to spend money, as well as no convenient way to travel to Matinicus for day trips: travel options being limited to air taxi (high cost, \$60/passenger-shared flight-each way, weather limited) and the State-operated ferry (four trips monthly in summer, one monthly in winter). Passenger tickets on the State Ferry are \$33/round trip and vehicle rates are based on length of vehicle and start at \$86/round trip for a normal length (20 feet) automobile and going up by \$6.75/ft. for additional lengths such as delivery trucks.



Figure 3 Plane used for transport to Matinicus

The median household income does not appropriately represent the higher cost of living on Matinicus compared to the mainland. The cost of living is higher on Matinicus because all food and supplies must be imported from the mainland. Freight costs are substantial: groceries are ordered via fax from a mainland store and delivered by air taxi for an \$8.00/box charge; anything that will not fit on the plane must come by the water taxi during the late spring and summer, if there is room, or wait for the infrequent State ferry runs. Residents report at least a 15% to 25% additional cost for delivery on all items. Motor vehicles, both for personal use and for large deliveries, such as building supplies or propane tanks, must come by ferry, and personal vehicles to be left on island must pay a \$250 disposal fee to the municipal government to ensure removal at the end of their useful life which, given that there are no paved roads or garages for repairs, is usually very short. According to the *Island Indicators 2010-2011* report, “The higher costs of food, fuel and other necessities are a factor to consider when looking at median income levels on the islands as compared to the state as a whole.”⁴

3. Imminent Hazard

The current energy system on Matinicus is unsustainable, and presents an imminent hazard to welfare, safety, and the environment. Aging and obsolete equipment is compromising the power company’s ability to provide reliable service to its customers. Generators installed in the 90s are reaching the end of their useful life, and the power station’s analog switchgear is quickly becoming obsolete, making it difficult to repair and source replacement parts. These factors increase the likelihood of a catastrophic system failure resulting in a long-term outage, which could have a devastating impact on the community.

Reliable power supply is crucial to maintaining emergency services on the island, and assisting with marine rescue operations, which are a regular occurrence on the island. Onshore VHF radios, dock lighting, and weather monitoring equipment at the island’s airstrip are all required to respond to medical, marine, or other emergencies, all require electrical service from the electric company. Additionally, the diesel generators currently used to provide power on the island have adverse impacts on human health, welfare, and the environment. The generators have no emissions controls, and are very inefficient, due to their old age. Long-term exposure to diesel exhaust has been linked to a number of respiratory issues, including lung cancer.⁵

⁴ Terry, Mary. “Island Indicators 2010-2011.” Island Institute. 2012.

⁵ “Diesel Exhaust and Cancer.” American Cancer Society. 2015.

<http://www.cancer.org/cancer/cancercauses/othercarcinogens/pollution/diesel-exhaust-and-cancer>

B. Project Design, Technical Feasibility, and Responsiveness of Community Needs

1. Background

Prior to the mid-1960s, Matinicus Island residents primarily relied on individually-owned diesel and gasoline generators to provide limited electricity to the island. A more centralized, privately-owned system eventually evolved but it was plagued by noise issues, mechanical problems, severe line losses and extreme unreliability, original installation was on untreated cedar poles that were essentially just trees that had been cut, limbed and debarked, and stuck into the ground with wire strung on them. In response, Plantation leaders appealed to the Maine Public Utilities Commission (MPUC) in 1977 to have a new system declared a public utility. The municipal non-profit MPEC was thus established, subject to regulation according to federal and state law.

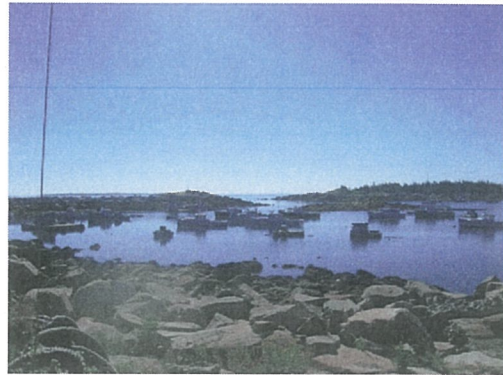


Figure 4 Matinicus Harbor

Rates were set at \$0.24/kWh, to cover projected costs and \$1.00/gallon diesel fuel. A fuel surcharge was built in, in case fuel prices got over \$1.00/gallon, which they eventually did. The base rate, however, remained at \$0.24/kWh up until the summer of 2015, as rising costs forced us to raise it to \$0.30/kWh.

The MRPP has spurred a conversation in the community, around how to address the energy cost problem, and the community has adopted a many-pronged approach to tackling this issue. In the fall of 2014, we hosted a spray foam crew through the Island Institute's "Weatherization Week" program. This crew was out for one week and weatherized or insulated 8 homes on the island, for an anticipated savings of about \$2,500. With the help of an Island Institute Fellow, hired in September of 2014, we have taken steps to quantify the impact of line losses, and identify the sources of those losses. The Fellow has also inventoried buildings on the island to determine the greatest need for energy efficiency investments across the island, and run an LED bulk purchase program, that offered island residents high-quality LED lights for a significantly discounted rate. It's estimated that these efforts will save our ratepayers about \$5,000 annually on their electric bills. Additionally, we have enlisted the support of Maine's Public Advocate to hire a consultant who has been examining rate design and helping us plan more energy efficiency investments. While these steps help ratepayers cope with rising power costs, they do not alleviate the root cause of the problem: inefficient generation and reliance on fossil fuels.

2. Project Elements

The MRPP will address the needs of the community through the procurement, installation, and integration of several critical pieces of equipment, including a 100kW solar PV array, a 200 kWh battery storage bank, and a modern switchgear. Additionally, MPEC will replace its outdated bucket truck with a newer model. These system upgrades will meet the following key project goals, which are explained in further detail in section (F.) of this application:

1. Stabilizing and lowering electricity costs on the island.
2. Increasing the reliability and long-term viability of the electric system on Matinicus.
3. Integrating renewable generation into the island's grid, and easing the integration of future renewable capacity.
4. Providing a model for other remote microgrids to follow.



Figure 5 Town garage, proposed site of fixed PV array

acquire the various components of the MRPP, relying on MPEC and the Island Institute’s extensive networks to enhance competition.

Solar PV

We intend to install and integrate two 50kW solar arrays. The first array will be mounted on the roof of a municipal garage; a small Quonset hut located adjacent the power station, as shown in figures 5, 6, and 7. The second array will consist of 8 ground-mounted tracker panels, located on town property adjacent the fuel storage tanks, as shown in Figure 7.

TPC is recommending AllSun solar trackers for the ground array, in order to best utilize the limited available space. Geological conditions at the site also prevent other types of installation methods to be considered. Existing granite ledge will be bored and pinned to receive tracker mast attachments. Concrete forms will be constructed with concrete encapsulating the rebar and mats. The Quonset hut PV attachments will be achieved by means of a custom anodized aluminum rack.

- 192 PV modules will be installed on the existing Quonset hut (Figure 6).
- 8 All Earth solar trackers will be installed adjacent to the oil storage tanks. Each tracker will have 24 - 250 Watt modules installed on each.

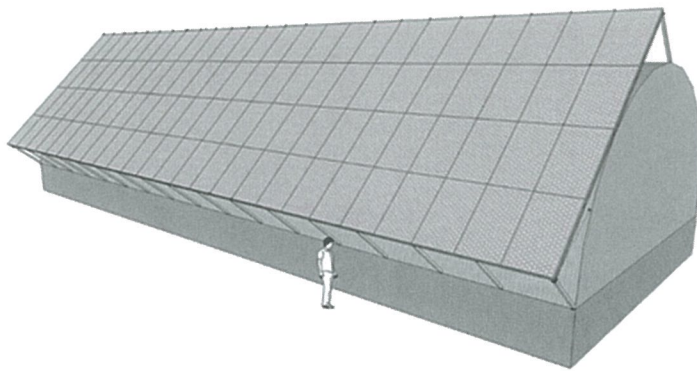


Figure 6 A digital rendition of the town garage with PV panels

The PV component of the MRPP will significantly reduce MPEC’s diesel consumption, which will reduce the cost of power, and the environmental effects of generation on the island. This component is sized to match the island’s peak summer load, meaning that even during the summer months, generator use will be minimal. In addition to fuel savings, running the generators less will reduce the rate of wear and tear, which will reduce the frequency of oil changes and other routine maintenance, and the need for costly and time-consuming generator rebuilds. Fuel savings will be immediately passed on to

⁶ For more on The Power Company, please visit www.maineowercompany.com

customers through reduced fuel charges on their bills, and MPEC's cost savings could be passed onto customers through a rate decrease. In addition to these cost savings, the risk of an outage due to mechanical failure will be greatly reduced, due to a decreased reliance on out-of-date generators for prime power.

Energy Storage

We intend to install and integrate a 200 kWh battery storage system, which will be located in the municipal garage adjacent the generator shed (see



Figure 7 Satellite image of proposed sites

Figure 8). These batteries must be able to handle daily charging and discharging with little maintenance, be applicable to a grid scale project such as this one, and have a useful lifespan in a salt air environment greater than ten years.

TPC recommends Samsung SDI lithium-ion batteries with Battery Management System (BMS), integrated with Princeton Power System's site controller and inverter for proper functionality. These batteries are 60Ah cells in a 128S2P or 128S4P configuration, depending on the capacity used. With an 80% Depth of Discharge (DOD), the batteries have a rated cycle life of about 13 years. The batteries are rated at a nominal voltage of 473V and will operate between 384~525V. The batteries come equipped with a BMS to ensure that the State of Health (SOH) of the batteries are taken into consideration at all times of system operation.

The battery component of this project will have several uses. First, it will facilitate maximum utilization of the solar arrays, by allowing power generated during the middle of the day, when solar generation peaks, but the load generally isn't as high, to be used later on in the day or at night. Second, the battery storage system will allow the generators to be run independent of power demand. Instead of responding to changes in load in real time, which results in inefficient fuel consumption, the generators will simply have to charge the batteries when they discharge below a certain level. This means that when the generators are running, they will be running at maximum efficiency, creating additional fuel savings, which will be passed on to customers, and reducing the need for regular maintenance and rebuilds, which will also result in cost savings. Finally, batteries can act as a redundant source of power in the event of a mechanical failure or a maintenance shutdown that would otherwise result in an outage, providing stored electricity to customers while an issue is diagnosed and remedied.

Switchgear

We intend to install and integrate a new switchgear, to replace the outdated model currently in use at the generator shed. This replacement must be able synchronize multiple generators, and optimize them for efficiency, have remote monitoring capabilities, and maintenance support. MPEC intends to run a competitive procurement process to find a suitable model from a reputable vendor.

Replacing the switchgear will increase the reliability of the power supply on the island by eliminating outages due to switchgear malfunction. It will also eliminate the need to run in bypass mode, greatly improving the safety of operations at the power station. Additionally,

decreased maintenance will result in cost savings for MPEC, which can be passed on to customers through a rate decrease.

Power Electronics

We intend to install and integrate the necessary power electronics to successfully and seamlessly integrate the various components of the MRPP.

TPC recommends a GTIB-480-100 inverter for this project; this unique 3-terminal inverter is designed for maximum system flexibility and advanced functionality. The additional AC terminal permits the system to flawlessly integrate storage without the assistance of a supplementary inverter. Such flexibility is essential for delivering real and reactive power on command, performing peak shaving, day-to-night energy cycling, renewable energy management, and various other functionalities. Each bidirectional terminal can be configured to reach the customer's desired function.

One GTIB-100 Inverter will be tied to the PV arrays while the other GTIB-100 Inverter will be tied to the LiO Battery Bank. The two inverters will function independently, yet as one single system, capable of communicating with one another. The GTIB 480-100 is certified to meet UL standard 1741 and IEEE standard 1547 for grid-tied inverters and includes Unintentional Islanding Protection and field-adjustable utility voltage and frequency trip points.

Utility Line Truck

We intend to procure a replacement line truck. The current line truck is very old, and is approaching the point of being unsafe to operate. Not having a line truck would render MPEC useless when it came to maintaining and repairing lines, an essential part of providing customers with reliable service.

The replacement truck needs to have a bucket for a line worker to perform his or her duties from, and some lift capability for transformers and the placement of poles. The actual model selected will be decided by Paul Murray, Plant Manager, who has the most experience with this type of equipment both from his time with MPEC and as an employee of Central Maine Power Company.

3. Project Timeline

The installation process is expected to take about twelve weeks, from installing inverters and controls to training. Competitive procurements will begin six months ahead of the anticipated project start date, in order to allow for full vendor participation and adequate time for order processing. Permitting will also begin six months before the project start date, to ensure adequate time for regulatory approval. For more information on the project timeline, please see section (C.) of this application.

C. Management Plan

1. Relevant Organizational Experience

Matinicus Plantation Electric Company

MPEC was established in 1977 to provide centralized power to the remote island community of Matinicus, Maine. MPEC is a non-profit, municipal utility, subject to state and federal law. MPEC manages the diesel generators on Town-owned land near the harbor, the island distribution system and roughly 130 ratepayer accounts. Revenues are generated solely from ratepayer accounts; MPEC does not receive any town or state funds other than annual payments on a loan from MPEC to the Town for piping upgrades to the Town-owned fuel facility that serves MPEC. Decisions are made by a three-member Board of Assessors that also serves as the Board of Directors. Assessors are elected at the Annual Town Meeting to overlapping three year terms. Through the leadership of Operations Manager Paul Murray and Board of Assessors member Clayton Philbrook, MPEC will oversee the implementation of all aspects of the project. Additional support on project management and administration, as well as system design and measurement and verification will be provided in partnership with the Island Institute.

Island Institute

The Island Institute is a non-profit corporation with an annual budget for FY15 of \$6,412,577 founded in 1983 to partner with Maine's 15 year-round inhabited islands and working-waterfront communities to ensure their long-term sustainability. Approximately 10% of the Institute's annual operating budget is supported by federal funds, from the National Science Foundation, the U.S. Environmental Protection Agency, the Economic Development Administration, National Oceanographic and Atmospheric Administration, and AmeriCorps, and from state agencies, such as Efficiency Maine. General operating funds for the Island Institute come from private donations and individual donors.

The Island Institute will provide project management support while assisting MPEC with reporting, administrative tasks, and outreach and information sharing about the project. The Institute will help oversee the procurement process and financial management, both during the term of this project, and during the discussions, calculations, and consideration of rate changes that result from cost savings due to this project. In its role as convener, the Institute will work with MPEC to ensure that the Matinicus community is informed about the project and its impact on power company costs.

2. Implementation Plan

MPEC will work in partnership with the Island Institute to oversee site preparation, transportation and installation of all components and to ensure work is completed in a timely manner. The installation process is expected to take about twelve weeks, from installing inverters and controls to training. Competitive procurements will begin about six months ahead of the anticipated project start date, in order to allow for full vendor participation and adequate time for order processing. Permitting will also begin six months before the project start date, to ensure adequate time for regulatory approval.

Installation Timeline

TASKS	Six months prior to project start	Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Wk 7	Wk 8	Wk 9	Wk 10	Wk 11	Wk 12	Project Lifetime
Permits	█													
Material Procurement & Delivery	█													
Inverters Install and all Princeton Power Components including batteries		█												
Prep site material			█											
Survey, Drill Piers			█											
Deliver Pole Mounts & Prep			█											
Pump & Pour Concrete				█										
Pole installation & Frame				█										
AC Electrical					█									
Set Interconnection Breaker					█									
Clean-up					█									
3rd Party Inspection LOC Eng.						█								
Build Rack & Inventory Modules						█	█	█						
Install PV Panels							█	█	█					
DC Conduit & Wiring								█	█	█				
Debug									█	█	█			
Test & Inspect											█	█		
Electrical Inspection												█	█	
Commissioning													█	█
Training													█	█
Monitoring and verification													█	█

The proposed project's design and its implementation schedule have been created with close attention to the possibility for delays, particularly due to the potential for weather to impact transport. Freight movement to Matinicus is, as might be expected, highly weather dependent. Island Transporter, LLC has a very capable and seaworthy fleet of transport vessels but allowances must still be made for weather as the crossing is nearly 15 miles of open ocean.

The PV component of the system will not require any significant downtime at the power station so therefore it will not be installed until the more timely components of the system – the switchgear and batteries – are fully operational. Due to the fact that the panels will be installed on an existing structure (i.e., the town garage roof) and on the ground, installation and grid tie-in is anticipated to be quick.

Maintenance of these new components will be incorporated into MPEC's regular maintenance routine and will be enhanced by the switchgear's remote monitoring capabilities and training in PV operations and maintenance for MPEC's Operations Manager. The power station crew will continue to take daily measurements of power production and system performance. The Island Institute will work with MPEC on a monthly basis to review the new production and performance data, comparing it to historic data in order to verify the impact of the proposed modifications.

Throughout this process, the Matinicus community will be kept informed of the project's progress. Once funding is secured and the timeline is clear, MPEC – with support

from the Island Institute – will announce the project implementation plan during a presentation at a regular MPEC Board of Assessors meeting and ratepayers will be notified through an update in their monthly bills. The Island Institute will coordinate with MPEC and USDA to help to share news of this project with New England’s other island HEC communities through its monthly newspaper, *The Working Waterfront*, its website, its quarterly Island Energy Newsletter, and its annual Island Energy Conference.

3. Procurement

MPEC will run competitive procurement processes in accordance with federal guidelines outlined in 2 CFR §200.318 - §200.326, Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards for materials and installation of the various components of the MRPP. Once funds are secured, MPEC will work with the Island Institute to prepare Requests for Proposals (RFPs), which will be disseminated in Maine’s major daily newspapers; the *Portland Press Herald* and the *Bangor Daily News*, as well as any relevant industry publications. MPEC and the Island Institute will also share RFPs within their extensive professional networks, to further enhance competition.

4. Regulatory Approvals

Zoning and land use issues on Matinicus, as in other plantations in the state, are in the jurisdiction of the State of Maine’s Land Use Planning Commission (LUPC) with consultation with the local community. While the modifications in this proposal are not substantial in terms of land use, Matinicus Plantation will seek an advisory ruling from LUPC regarding required permitting and will apply for any permits necessary prior to awarding of funding to minimize delays in starting the project. Matinicus Plantation will also draw up and execute previously approved agreements with abutting land owners to allow placing PV panels near property lines.

D. Organizational Experience

Matinicus Plantation Electric Company

MPEC has considerable experience administering federal funds having applied for and been awarded three previous grants, in 1977, 1978 and 1983. Paul Murray, the current Station Operator, was present and worked for the contractor on the 1977 and 1978 grants and worked for MPEC for the 1983 grant. Clayton Philbrook, Project Administrator for this project, filled the same position for the 1978 grant. In addition Mr. Murray has researched, purchased, installed and monitored a hydrogen generator that was attached to one of our current generators in an attempt to lower fuel consumption; he also participates in Island Institute Energy Conferences both by video conference and in person. Mr. Philbrook took an Island Institute sponsored trip to Naushon and Cuttyhunk islands in Massachusetts in the spring of 2014 to learn more about solar installations and their integration with existing diesel micro-grids and has also attended Island Institute Energy Conferences in person.

Island Institute

The Island Institute's Community Energy program will be working closely with MPEC on this project, providing technical assistance for grant compliance, financial management, and reporting requirements. For the past four years, the Community Energy program has been providing technical assistance and community outreach support to New England island communities in order to help them plan, develop and evaluate community-owned wind and solar projects, an innovative smart grid-controlled fuel substitution project, local weatherization efforts, and an exciting energy education program.

In 2009, the institute worked with the Fox Islands Electric Cooperative to obtain a USDA HEC Grant for the 4.5 MW Fox Islands Wind project on Vinalhaven Island. That same year, the Institute implemented a nearly \$500,000 project to purchase and install videoconferencing equipment in each island school, as well as several coastal mainland schools, with a Distance Learning and Telemedicine grant from USDA. In response to the Institute's successful USDA funded projects, Undersecretary Dallas Tonsager and Maine State Director Virginia Manuel hosted a tour of the Fox Island Wind project and a demonstration of the Tandberg teleconferencing equipment at the Island Institute's offices for nine other USDA state directors from the Northeast in May 2012. The Island Institute also worked with the Monhegan Plantation Power District (MPPD) to obtain its \$1,092,015 HEC Grant (ME 23 A84), awarded in 2012 for the Monhegan Hybrid Power Project on Monhegan Island and has continued to work with MPPD through the ongoing implementation of the project.

In addition to USDA support, the Island Institute has received and is currently managing grants from the U.S. Department of Energy/National Renewable Energy Lab, U.S. Environmental Protection Agency, the Economic Development Administration, the National Science Foundation, the National Oceanic and Atmospheric Administration, and AmeriCorps. Related to energy, the institute recently completed serving as project manager and fiscal sponsor for a community wind power feasibility study for the Swan's Island Electric Cooperative that was funded by ARRA and state funds. Assisting small island communities in procuring and efficiently managing funding is a primary part of the institute's mandate.

E. Key Staff Experience

The team assembled for the MRPP is well-versed in the island's electric system, renewable energy technologies, project economics, environmental impacts, regulatory review, risk management, island logistics, as well as strategies for meaningful community engagement.

Matinicus Plantation Electric Company

Paul Murray has served as MPEC's Plant Manager since 2000. Before that he was assistant to and back-up for the former Plant Manager, Charles Pratt. His technical knowledge of the Matinicus Power Station and its past operations will be critical to the success of this project. His work will be supported by other members of the MPEC Board of Directors and the Island Institute.

Clayton Philbrook has served as Business Manager for MPEC in the past, was Project Administrator for one of the HUD Grants that was used to build MPEC infrastructure, has served on the Board of Assessors for over 24 of the past 35 years and in that capacity has served as project manager for several capital improvement projects for the Plantation, including purchase of and upgrading the tank farm that serves MPEC. He is currently certified by the Maine Department of Transportation as a Locally Administered Projects Supervisor and has recently completed a State funded project to upgrade and resurface the airport on Matinicus. Clayton will work closely with other members of MPEC and the Island Institute to meet all reporting requirements for this grant.

Island Institute

Suzanne Pude MacDonald is the Community Energy Director at the Island Institute in Rockland, Maine, where she supports island communities in their efforts to better understand and confront their unique energy challenges. Suzanne directs programming on community-owned renewable energy, energy efficiency, offshore wind and energy education. In particular, she has helped to provide technical assistance and community outreach support to the 4.5 MW Fox Islands Wind project on Vinalhaven Island, Maine, the Star Island Solar Hybrid Project in the Isles of Shoals, New Hampshire, the Monhegan Hybrid Power Project, and several other communities considering wind and solar power. Suzanne is also a co-lead for the newly-launched Islanded Grid Resource Center, a project funded by the Department of Energy and the National Renewable Energy Lab to promote fact-based decision making about wind and other renewable energy sources in remote "islanded grid" communities in New England, Alaska, and other US states and territories.

Suzanne's extensive energy project development experience will be valuable to MPEC, for she is a former seasonal resident of Monhegan, coordinated the 2008-2009 community renewables feasibility study, and continues to be an active participant in energy-related discussions on the island. For this project, Suzanne will work closely with MPEC to support grant reporting efforts.

Brooks Winner is the Community Energy Associate at the Island Institute where he works with Suzanne MacDonald to support island communities in their efforts to better understand and confront their unique energy challenges. Brooks coordinates the Island Institute's energy efficiency initiatives and has also provided technical assistance and outreach support to several communities investigating renewable energy and energy efficiency solutions. Brooks was the co-author of the Swan's Island Wind Feasibility Study completed for the Swan's Island Electric Cooperative, and is a supporting project team member for the Monhegan Hybrid Power Project, funded by a USDA High Energy Cost grant, and the Islanded Grid Resource Cent. For this project, Brooks will assist MPEC with its project management and grant reporting efforts.

F. Project Goals, Objectives and Performance Measures

1. Goals and Performance Measures

The Matinicus Renewable Power Project will:

1. **Stabilize and lower electricity costs on the island** – Once implemented, the MRPP will result in savings for MPEC and its ratepayers. The primary savings will come from reductions in fuel use, however, additional savings will also be realized through reduced maintenance costs.

The PV and battery components of the project will offset diesel generation, resulting in fuel savings. TPC estimates that these components will offset 146,000 kWh of diesel generation, about 45% of the island’s total annual electricity consumption. Additional fuel savings will be realized from increased generator efficiency, as the switchgear and battery components will allow the generators to be run at optimal efficiency instead of responding to load in real time. It is difficult to predict exactly how much efficiency will improve, but current optimal efficiency is about 10kWh/gallon. Given these estimates, the MRPP is expected to reduce fuel consumption by over 50%, and generate more than \$50,000 in annual fuel savings. MPEC currently recoups its fuel costs, minus a dollar per gallon, through a fuel surcharge on customer’s monthly bills, so most of these saving will be passed directly onto MPEC’s customers. The table below demonstrates projected fuel savings:

System Performance Analysis	
Total Annual Island Consumption	325,000 kWh
Annual Solar Production	146,000 kWh
Total Annual Production from Diesel	189,000 kWh
Estimated Generator Efficiency	10 kWh/gallon
Annual Fuel Consumption (before MRPP)	36,633 gallons
Annual Fuel Consumption (after MRPP)	18,900 gallons
Annual Fuel Savings	17,733 gallons
Annual Fuel Cost Savings*	\$53,199

*Based on a Diesel fuel cost of \$3.00 per gallons with no annual escalator

Maintenance savings will be realized through reducing the frequency of daily checks at the power station and oil changes on generators, reducing the need for costly generator rebuilds, the addition of remote monitoring and maintenance support with the new switchgear, and enhanced line work capabilities facilitated by the replacement bucket truck.

These outcomes (as well as those outlined below) will be validated through measurements and analysis performed by MPEC and the Island Institute and reported on a monthly basis and in a report produced one year after the project’s completion.

2. **Increase the reliability and long-term viability of the electric system on Matinicus** – In addition to high electricity costs, Matinicus’ consumers have suffered inconsistent and unreliable service. The combination of a new, better functioning switchgear that allows for remote monitoring and support and the PV/battery system will allow for more seamless switching among modules, and more consistent performance from newer, more facilitative equipment.

This goal would be measured by tracking the number and length of island-wide power outages. Island-wide outages due to switchgear issues are expected to be greatly minimized, if not completely eliminated as a result of this project.

3. **Increase the potential and ease of renewable energy integration into the island grid** – The new switchgear will integrate renewable and diesel energy generation, as well as enable MPEC to better respond to the dramatic seasonal fluctuation of the island's electric load with PV production. It will have the capacity to integrate several additional modules, and can accommodate diverse power sources such as wind power and solar, as well as various sizes and numbers of diesel generators. As the community continues to study the feasibility of various energy resources, the versatility of this equipment will accommodate any of them.

This goal will be measured by tracking the performance of the system and its ability to integrate with our current grid system, using the number and length of outages and system faults as a metric for performance

4. **Provide a replicable model for other islands and other remote HEC communities** – This microgrid system, which will integrate renewable power generation with battery storage, will be the first of its kind on a Maine island. The scale of this project is also unprecedented on Maine islands and will be the largest community-owned solar project in any of the 15 year-round island communities in the state. As such, it will serve as a model for other islands and remote communities as they search for solutions to address high energy costs, safety and reliability issues, and reliance on unsustainable energy sources.

The MRPP was developed in coordination with the Islanded Grid Resource Center (IGRC), which

This model will be disseminated through the Island Energy Conference, the Island Energy News, and other media. The link between Matinicus and remote Alaskan villages was highlighted in AlexAnna Salmon's keynote at the 2015 Island Energy Conference in South Portland, Maine.⁷ Additionally, the energy efficiency work currently being undertaken by MPEC and the Island Institute was highlighted in a *Portland Press Herald* article published on November 8th, 2015.⁸

2. **Broader Community Impact**

This project will be an important first step in increasing the viability and sustainability of the historic fishing community of Matinicus by reducing energy costs and related emissions. In the short term, MPEC's decreased expenses and new system components are anticipated to increase the quality of service to the island and decrease electric rates, benefiting families and businesses that have been hit hard by the current recession. In the long term, the project will help to sustain Matinicus' year-round community by providing more affordable and reliable electricity while lowering the environmental footprint of its diesel plant and partially insulating the island from future increases in the price of diesel fuel.

⁷ For more on the link between Matinicus and AlexAnna's hometown of Iguigig, Alaska, please visit: <https://dieselislandpost.wordpress.com/2015/11/13/maines-diesel-islands-find-a-role-model-3500-miles-away/>

⁸ For more on this story, visit: <http://www.pressherald.com/2015/11/08/in-maines-remotest-island-the-simple-act-of-changing-the-lightbulb-has-far-reaching-implications/>

G. Project Reporting Plan

MPEC and Island Institute will work together to meet all USDA reporting requirements. Locally, MPEC staff and the Island Institute will prepare and present monthly updates to the Matinicus Board of Assessors on project implementation, including the procurement, installation and operation of new equipment, as well as the impact of that equipment on fuel costs, maintenance costs and reliability of service. Island Institute will work with MPEC to collect data relevant to these factors and provide a comprehensive report to the Matinicus Board of Assessors that summarizes the performance and impact of the new system one year after the project has been completed.

H. Project Budget, Financial Feasibility and Matching Contributions

1. Project Budget

Quantity		Installed Cost
	HARD COSTS	
384	384 SolarWorld 275 kW PV modules	\$118,061
8	8-All Earth Renewable solar trackers	\$98,374
	System Racking (Quonset Hut)	\$27,300
	Concrete bases for trackers : including forms, Rebar, Concrete, Drilling	\$8,000
	Site Prep, Excavation, Trenching	\$5,000
	Incoming Freight	\$3,000
	Shipping to Island	\$5,000
	Electrical Conduit & wire and Fasteners	\$3,400
	Electrician (labor and Travel)	\$3,800
	Installation Labor	\$37,000
	Princeton Power 200kWh Micro grid System	\$465,960
64	Lithium-ion Batteries with Racks	
1	Black Start Power Supply for low-voltage	
2	(2) GTIB-480-100 Inverter	
2	600V 200A AC Disconnect Switch	
1	Battery Monitoring System (BMS)	
1	Site Controller (SC)	
2	DC input Fuse	
2	Isolation Transformer 480:480 100kW	
2	GFDI	
	Extra 100KW Battery Option	\$130,000
	Bucket Truck	\$50,000
	Total - Hard Costs	\$954,895
	SOFT COSTS	
	Hard Cost Contingency	\$67,360
	Appraisal, Inspection & Insurance	\$3,340
	A&E Fees	\$2,500
	Travel & Accommodations	\$5,000
	Legal	\$6,000
	Developers Fee	\$67,360
	Island Institute	\$10,000
	Total - Soft Costs	\$161,560
	TOTAL PROJECT COST	\$1,116,456

2. Budget Information and Explanation

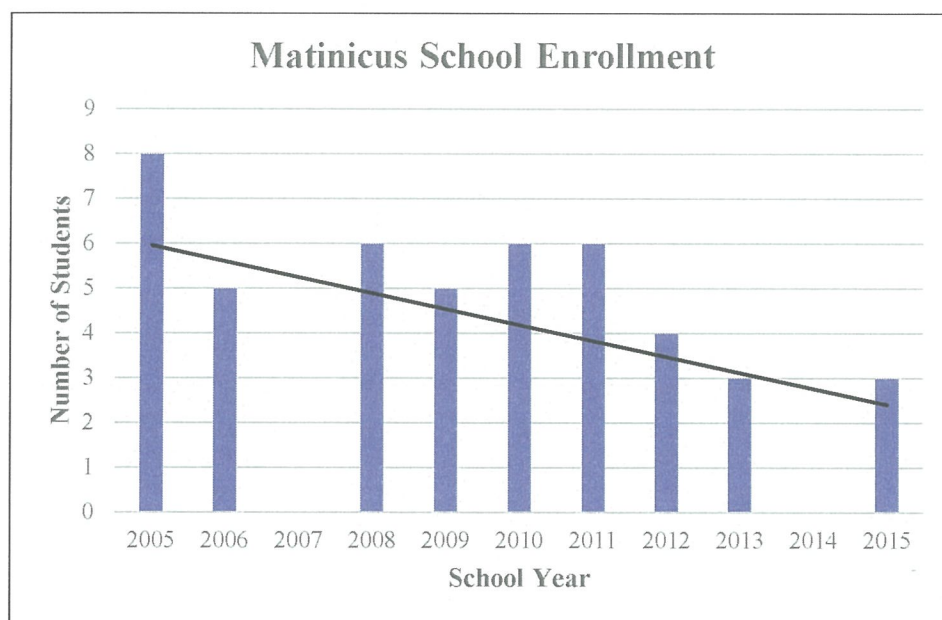
MPPD respectfully requests \$1,161,113 from USDA – High Energy Costs Grant Program, to be allocated as follows:

- A. **Personnel** – (\$79,200) This will cover the following expenses:
- Appraisal, inspection, and insurance
 - Architecture and engineering services
 - Legal fees
 - Developer’s fees
- MPEC’s staff will provide support on this project, and their time will be compensated through indirect charges, as outlined in section (I).
- B. **Fringe Benefits** – None.
- C. **Travel** – (\$5,000) This will cover travel and accommodations for any persons involved in the project but not directly contracted to install or integrate its components. Individuals or organizations bidding for a contract to install or integrate a component, or components, of this project will be asked to include travel costs as part of their bid. This will ensure that contractors understand and have accounted for the often complicated travel logistics involved in working on an island 23 miles away from the mainland.
- D. **Equipment** – (\$1,022,255) The largest expense in this budget is for procurement, transportation, installation, and integration of the new system components, including all costs listed under “Hard Costs” in the budget chart above, and the “Hard Cost Contingency” line listed under “Soft Costs.”
- E. **Supplies** – None.
- F. **Contractual** - (\$10,000) The Island Institute is contracted to assist MPEC in assembling required reports to help meet USDA grant compliance requirements for reporting and invoicing. The fee represents two weeks of the Island Institute’s Community Energy Director’s time and one week of support from the Island Institute’s Grants Director, as well as organizational indirect and fringe rates for this staff time.
- G. **Construction** – None.
- H. **Other** – None.
- I. **Total Direct Charges** (\$1,116,455) – Includes all charges detailed previously.
- J. **Indirect Charges** (\$44,658) – This represents the maximum allowed by USDA for this grant, 4% of all direct charges. These funds will support the work of Paul Murray and Clayton Philbrook at MPEC for additional effort required to implement this project and comply with the terms of this grant, including all reporting and accounting requirements.

Total Grant Request (\$ 1,161,113) – The full amount required for this project is requested of USDA. While the two MPEC staff members and members of the Matinicus Plantation Board of Assessors have and will continue to devote many volunteer hours to this project, there is no recorded match.

I. State Rural Development Initiatives

The MRPP’s goals to reduce the cost of energy and cost of living on Matinicus aligns with the USDA Maine State Office’s rural development initiatives to reduce outmigration and non-employment in rural communities. Matinicus has suffered a recent outmigration of fishing families who have been forced to move off the island due to unfavorable market conditions in the lobster fishery and the high cost of living and doing business attributed to high diesel prices. As this trend started in 2010, US Census data does not effectively illustrate this very real problem. However, one key indicator of population on the island is enrollment at the school, and the Maine Department of Education keeps track of school enrollment on a year-to-year basis. This data shows that school enrollment on Matinicus has dipped from a high of eight, in 2005, to three in 2015, and in 2014, there were no students in the school.⁹ Additionally, Knox County, where Matinicus is located, has a not-employed rate of 40%. A letter from Virginia Manuel, the State Director of USDA Rural Development in Maine, is included in the supplementary materials of this application to document how the MRPP aligns with the state office’s rural development initiatives.



In addition to aligning with the aforementioned rural development initiatives, the MRPP aligns with several other regional and statewide initiatives. Letters of support from Senators Susan Collins and Angus King, and Congresswoman Chellie Pingree are included with the supplementary materials for this application, and outline how the goals of the MRPP align with their policy priorities. Letters of support are also included from the Maine Governor’s Energy Office, Efficiency Maine, and the Island Institute, which outline how the MRPP aligns with their organizational objectives.

Additionally, the MRPP was developed in close coordination with the Islanded Grid Resource Center (IGRC), a US Department of Energy-funded network devoted to supporting information exchange between remote “islanded” electric grids (i.e. grids that aren’t connected into the main electric grid, such as on islands like Matinicus, or in remote Alaskan villages) that

⁹ Data available at: <http://www.maine.gov/education/enroll/attending/statefallpub.htm>

are seeking to adopt renewable energy. Matinicus is represented in the network and has participated in several exchange trips run by the IGRC, which have involved tours of other islanded microgrids, on Cuttyhunk and Naushon islands in Massachusetts, Star Island in New Hampshire, and Appledore Island in Maine. These trips have helped inform project design for the MRPP, and networking between other recipients of the Rural Utilities Service's High Energy Cost Grant, including Cuttyhunk Island and Monhegan Island, and related service providers and vendors. The MRPP will benefit this network by disseminating lessons learned on a unique project undertaken in a very remote rural community. The IGRC is funded by the US Department of Energy's WINDEXchange program, and facilitated by the Island Institute and the Renewable Energy Alaska Project (REAP).

J. Priority Considerations

1. High poverty areas

Matinicus Isle Plantation is located in Knox County, Maine. Knox County is not classified as a High Poverty or Persistent Poverty area by the USDA Economic Research Service, nor does it contain a census tract with a poverty rate of 20% or more. However, this county-wide designation does not take into account the much higher cost of living on a remote island. According to the *Island Indicators 2010 – 2011* report, “The higher costs of food, fuel, and other necessities are a factor to consider when looking at median incomes on the islands as compared to the state as a whole.”

These higher costs are mostly due to freight charges. Groceries are ordered via fax from a store in Rockland and delivered by air taxi for an \$8.00/box charge; anything that will not fit on the plane must come by the water taxi during the late spring and summer, if there is room, or wait for the infrequent State ferry runs. Residents report at least a 15% to 25% additional cost for delivery on all items. Motor vehicles, both for personal use and for large deliveries, such as building supplies or propane tanks, must come by ferry, and personal vehicles to be left on island must pay a \$250 disposal fee to the Municipal government to ensure removal at the end of their useful life which, given that there are no paved roads or garages for repairs, is usually very short.

2. Rurality

According to the 2010 U.S. Census (Census Tract #975600-5-001), Matinicus is home to 74 people, substantially less. The island’s population varies seasonally; in the deep winter months of February and March the population dips down to about 20, whereas in July and August the population can be as high as 120.

3. Renewable energy projects

The MRPP will acquire, install, and integrate 100kW of solar PV, for the purposes of lowering and stabilizing electricity costs and reducing the environmental impacts of electricity generation on the island. The MRPP will also acquire, install, and integrate 200kWh of battery storage, which will allow for a more seamless integration and full utilization of the PV component of the project, as well as any future renewable installations.

4. Extraordinary conditions or circumstances

Imminent hazard

The current energy system on Matinicus is unsustainable, and presents an imminent hazard to welfare, safety, and the environment. Aging and outdated equipment is compromising the power company’s ability to provide reliable service to its customers and increased the risk of a long-term outage due to catastrophic equipment failure. Additionally, the aging and outdated diesel generators currently used to provide power on the island have adverse impacts on the environment.

The reliability of electric service on Matinicus is critical to welfare and safety on and around the island. Onshore VHF radios, dock lighting, and weather monitoring equipment at the island’s airstrip are all required to respond to medical, marine, or other emergencies, all require electrical service from the power company. Matinicus community members have played a crucial role in several marine rescue operations, including the sinking of the *Harkness* tugboat in 1992, a plane crash off the island in 2011, the rescue of the *Southern Skies* in the winter of 2014, and many other, similar incidents. Additionally, on-island medical emergencies often involve logistically complicated medical evacuations, which require functioning communication

equipment. If the power goes out on Matinicus, the ability of the island to respond to on- and off-shore emergencies is severely inhibited.

Weather is the most common source of outages on the island. The power company's ability to respond to weather-related outages is dependent upon a functioning line truck, and the current line truck is almost forty years old. Outages due to switchgear malfunction have also been reported, and are expected to become more common as it becomes more difficult to source replacement parts, due to the outdated nature of the equipment.

As the generators and switchgear continue to age, the risk of a long-term outage due to catastrophic equipment failure increases significantly. The cost of avoiding these types of outages is significant; the power company had to send in a generator for a rebuild in October of 2014, a job that took over a year to complete, and cost \$20,440. The consequences of such an outage would be severe, and would threaten the ability of residents to continue living on the island.

The environmental impact of generation on Matinicus also presents an imminent hazard. The current generators being used to provide power to the island have no emissions controls, and, due to their old age, are very inefficient. The health and environmental impacts of diesel emissions are well-documented; the American Cancer Society lists diesel engine exhaust as a "known human carcinogen", and the US Environmental Protection Agency (EPA) states that "chronic exposure [to diesel particulate emissions] in experimental animal inhalation studies have shown a range of dose dependent lung inflammation and cellular changes in the lung and there are also diesel exhaust immunological effects."¹⁰ Diesel emissions also contribute to global climate change and associated issues such as ocean acidification and sea level rise, which have potentially devastating effects to island lobster fishing communities such as Matinicus.

The MRPP will remedy these imminent hazards. By adding 100kW of PV and 200kWh of battery storage, generator run time will decrease significantly. This will reduce long term wear and tear, and allow more down time to service the engines, decreasing the likelihood of outages related to equipment failure. The integration of battery storage will also allow the generators to run more efficiently, by allowing them to run at a constant speed, instead of responding to load fluctuations in real time. Reducing generator runtime, and improving generator efficiency will greatly reduce the environmental impact of generation on Matinicus. Replacing the current switchgear will reduce the risk of outages due to equipment failure, and replacing the power company's line truck will ensure that crews can respond quickly and effectively to weather-related outages.

Extreme economic hardship

According to the U.S. Census (2009), the median household income for the community is \$52,857, 3% above the national median at the time and 14% above the Maine MHI figure (Census Tract# 975600-5-001). These figures do not accurately reflect the incomes of actual year-round residents, as a few wealthy seasonal residents identify Matinicus as their home, but do not live there year-round. Approximately 60% of the homes on Matinicus are used seasonally. The vast majority of year-round residents in this community work several jobs and often struggle to make ends meet. Most residents rely upon highly variable seasonal income sources, such as lobstering and tourism to support themselves and their families.

Approximately 40% of Matinicus residents hold lobster licenses.¹¹ While this has been a particularly strong year for lobstering, thanks to high sale prices and low fuel costs, the industry can change very quickly. Matinicus was hit particularly hard by the recession, as demand for

¹⁰ For more information, see the EPA's page on diesel particulate matter, found at: <http://www3.epa.gov/region1/eco/airtox/diesel.html>

¹¹ Terry, Mary. "Island Indicators 2010-2011." Island Institute. 2012.

lobster dipped dramatically, and fuel prices rose to historic highs. Last year there were no students in the Matinicus Island School. During this period, many lobstering families were unable to make ends meet, and were forced to move off the island. The high cost of power, which also rose significantly as fuel costs went up, directly contributed to this outmigration trend.

The MRPP will reduce the community's dependence on diesel fuel, thereby decoupling, to some degree, the price of diesel and the ability of fishing families with seasonal, variable incomes to live on the island.

5. Substantially Underserved Trust Areas

Matinicus is not an eligible Substantially Underserved Trust Area.

ADDITIONAL REQUIRED FORMS AND CERTIFICATIONS

Attached:

1. SF424B, “Assurances – Non Construction Programs”
2. SF LLL (SF LLLA not needed)
3. “Certification Regarding Debarment, Suspension, and Other Responsibility Matter”
4. Environmental Questionnaire
5. AD-3030, “Felony Disclosure Form”

SUPPLEMENTARY MATERIAL

Letters of Support (attached)

1. Representative Chellie Pingree, (ME-01), U.S. House of Representatives
2. Senators Susan Collins (ME), and Angus S. King (ME), U.S. Senate
3. Patrick Woodcock, Director, Governor’s Energy Office of Maine
4. Michael Stoddard, Executive Director, Efficiency Maine
5. Robert Snyder, President, Island Institute
6. Virginia Manuel, State Director, USDA Rural Development

ASSURANCES - NON-CONSTRUCTION PROGRAMS

Public reporting burden for this collection of information is estimated to average 15 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0040), Washington, DC 20503.

PLEASE DO NOT RETURN YOUR COMPLETED FORM TO THE OFFICE OF MANAGEMENT AND BUDGET. SEND IT TO THE ADDRESS PROVIDED BY THE SPONSORING AGENCY.

NOTE: Certain of these assurances may not be applicable to your project or program. If you have questions, please contact the awarding agency. Further, certain Federal awarding agencies may require applicants to certify to additional assurances. If such is the case, you will be notified.

As the duly authorized representative of the applicant, I certify that the applicant:

1. Has the legal authority to apply for Federal assistance and the institutional, managerial and financial capability (including funds sufficient to pay the non-Federal share of project cost) to ensure proper planning, management and completion of the project described in this application.
2. Will give the awarding agency, the Comptroller General of the United States and, if appropriate, the State, through any authorized representative, access to and the right to examine all records, books, papers, or documents related to the award; and will establish a proper accounting system in accordance with generally accepted accounting standards or agency directives.
3. Will establish safeguards to prohibit employees from using their positions for a purpose that constitutes or presents the appearance of personal or organizational conflict of interest, or personal gain.
4. Will initiate and complete the work within the applicable time frame after receipt of approval of the awarding agency.
5. Will comply with the Intergovernmental Personnel Act of 1970 (42 U.S.C. §§4728-4763) relating to prescribed standards for merit systems for programs funded under one of the 19 statutes or regulations specified in Appendix A of OPM's Standards for a Merit System of Personnel Administration (5 C.F.R. 900, Subpart F).
6. Will comply with all Federal statutes relating to nondiscrimination. These include but are not limited to: (a) Title VI of the Civil Rights Act of 1964 (P.L. 88-352) which prohibits discrimination on the basis of race, color or national origin; (b) Title IX of the Education Amendments of 1972, as amended (20 U.S.C. §§1681-1683, and 1685-1686), which prohibits discrimination on the basis of sex; (c) Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. §794), which prohibits discrimination on the basis of handicaps; (d) the Age Discrimination Act of 1975, as amended (42 U.S.C. §§6101-6107), which prohibits discrimination on the basis of age; (e) the Drug Abuse Office and Treatment Act of 1972 (P.L. 92-255), as amended, relating to nondiscrimination on the basis of drug abuse; (f) the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970 (P.L. 91-616), as amended, relating to nondiscrimination on the basis of alcohol abuse or alcoholism; (g) §§523 and 527 of the Public Health Service Act of 1912 (42 U.S.C. §§290 dd-3 and 290 ee 3), as amended, relating to confidentiality of alcohol and drug abuse patient records; (h) Title VIII of the Civil Rights Act of 1968 (42 U.S.C. §§3601 et seq.), as amended, relating to nondiscrimination in the sale, rental or financing of housing; (i) any other nondiscrimination provisions in the specific statute(s) under which application for Federal assistance is being made; and, (j) the requirements of any other nondiscrimination statute(s) which may apply to the application.
7. Will comply, or has already complied, with the requirements of Titles II and III of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646) which provide for fair and equitable treatment of persons displaced or whose property is acquired as a result of Federal or federally-assisted programs. These requirements apply to all interests in real property acquired for project purposes regardless of Federal participation in purchases.
8. Will comply, as applicable, with provisions of the Hatch Act (5 U.S.C. §§1501-1508 and 7324-7328) which limit the political activities of employees whose principal employment activities are funded in whole or in part with Federal funds.

9. Will comply, as applicable, with the provisions of the Davis-Bacon Act (40 U.S.C. §§276a to 276a-7), the Copeland Act (40 U.S.C. §276c and 18 U.S.C. §874), and the Contract Work Hours and Safety Standards Act (40 U.S.C. §§327-333), regarding labor standards for federally-assisted construction subagreements.
10. Will comply, if applicable, with flood insurance purchase requirements of Section 102(a) of the Flood Disaster Protection Act of 1973 (P.L. 93-234) which requires recipients in a special flood hazard area to participate in the program and to purchase flood insurance if the total cost of insurable construction and acquisition is \$10,000 or more.
11. Will comply with environmental standards which may be prescribed pursuant to the following: (a) institution of environmental quality control measures under the National Environmental Policy Act of 1969 (P.L. 91-190) and Executive Order (EO) 11514; (b) notification of violating facilities pursuant to EO 11738; (c) protection of wetlands pursuant to EO 11990; (d) evaluation of flood hazards in floodplains in accordance with EO 11988; (e) assurance of project consistency with the approved State management program developed under the Coastal Zone Management Act of 1972 (16 U.S.C. §§1451 et seq.); (f) conformity of Federal actions to State (Clean Air) Implementation Plans under Section 176(c) of the Clean Air Act of 1955, as amended (42 U.S.C. §§7401 et seq.); (g) protection of underground sources of drinking water under the Safe Drinking Water Act of 1974, as amended (P.L. 93-523); and, (h) protection of endangered species under the Endangered Species Act of 1973, as amended (P.L. 93-205).
12. Will comply with the Wild and Scenic Rivers Act of 1968 (16 U.S.C. §§1271 et seq.) related to protecting components or potential components of the national wild and scenic rivers system.
13. Will assist the awarding agency in assuring compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. §470), EO 11593 (identification and protection of historic properties), and the Archaeological and Historic Preservation Act of 1974 (16 U.S.C. §§469a-1 et seq.).
14. Will comply with P.L. 93-348 regarding the protection of human subjects involved in research, development, and related activities supported by this award of assistance.
15. Will comply with the Laboratory Animal Welfare Act of 1966 (P.L. 89-544, as amended, 7 U.S.C. §§2131 et seq.) pertaining to the care, handling, and treatment of warm blooded animals held for research, teaching, or other activities supported by this award of assistance.
16. Will comply with the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. §§4801 et seq.) which prohibits the use of lead-based paint in construction or rehabilitation of residence structures.
17. Will cause to be performed the required financial and compliance audits in accordance with the Single Audit Act Amendments of 1996 and OMB Circular No. A-133, "Audits of States, Local Governments, and Non-Profit Organizations."
18. Will comply with all applicable requirements of all other Federal laws, executive orders, regulations, and policies governing this program.

SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL	TITLE
APPLICANT ORGANIZATION	DATE SUBMITTED

DISCLOSURE OF LOBBYING ACTIVITIES

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352

(See reverse for public burden disclosure.)

Approved by OMB

0348-0046

1. Type of Federal Action: <input checked="" type="checkbox"/> a. contract <input type="checkbox"/> b. grant <input type="checkbox"/> c. cooperative agreement <input type="checkbox"/> d. loan <input type="checkbox"/> e. loan guarantee <input type="checkbox"/> f. loan insurance	2. Status of Federal Action: <input checked="" type="checkbox"/> a. bid/offer/application <input type="checkbox"/> b. initial award <input type="checkbox"/> c. post-award	3. Report Type: <input checked="" type="checkbox"/> a. initial filing <input type="checkbox"/> b. material change For Material Change Only: year _____ quarter _____ date of last report _____
4. Name and Address of Reporting Entity: <input checked="" type="checkbox"/> Prime <input type="checkbox"/> Subawardee Tier _____, <i>if known:</i> Congressional District, <i>if known:</i> ME-01	5. If Reporting Entity in No. 4 is a Subawardee, Enter Name and Address of Prime: Congressional District, <i>if known:</i>	
6. Federal Department/Agency: United States Department of Agriculture/Rural Utiliti	7. Federal Program Name/Description: Assistance to High Energy Cost Rural Communities CFDA Number, <i>if applicable:</i> 10.859	
8. Federal Action Number, if known:	9. Award Amount, if known: \$ 1161114	
10. a. Name and Address of Lobbying Registrant (<i>if individual, last name, first name, MI</i>):	b. Individuals Performing Services (<i>including address if different from No. 10a</i>) (<i>last name, first name, MI</i>):	
11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less that \$10,000 and not more than \$100,000 for each such failure.	Signature: _____ Print Name: Clayton Philbrook Title: First Assesor, Matinicus Plantation Telephone No.: 207-366- _____ Date: 12/12/15	
Federal Use Only:		Authorized for Local Reproduction Standard Form LLL (Rev. 7-97)

AD-3030

U.S. DEPARTMENT OF AGRICULTURE

**REPRESENTATIONS REGARDING FELONY CONVICTION
 AND TAX DELINQUENT STATUS FOR CORPORATE APPLICANTS**

Note: You only need to complete this form if you are a corporation. A corporation includes, but is not limited to, any entity that has filed articles of incorporation in one of the 50 States, the District of Columbia, or the various territories of the United States including American Samoa, Federated States of Micronesia, Guam, Midway Islands, Northern Mariana Islands, Puerto Rico, Republic of Palau, Republic of the Marshall Islands, or the U.S. Virgin Islands. Corporations include both for profit and non-profit entities.

The following statement is made in accordance with the Privacy Act of 1974 (5 U.S.C. 552(a), as amended). The authority for requesting the following information for USDA Agencies and staff offices is in §744 and 745 of the Consolidated and Further Continuing Appropriations Act, 2015, P.L. 113-235, as amended and/or subsequently enacted. The information will be used to confirm applicant status concerning entity conviction of a felony criminal violation, and/or unpaid Federal tax liability status.

According to the Paperwork Reduction Act of 1985 an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0505-0025. The time required to complete this information collection is estimated to average 15 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

1. APPLICANT'S NAME Matinicus Plantation Electric Company	2. APPLICANT'S ADDRESS (Including Zip Code) PO Box 238 17 South Road Matinicus, ME 04851	3. TAX ID NO. (Last 4 digits) 8102
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- 4A. Has the Applicant been convicted of a felony criminal violation under Federal law in the 24 months preceding the date of application? YES NO
- 4B. Does the Applicant have any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability? YES NO

Providing the requested information is voluntary. However, failure to furnish the requested information will make the applicant ineligible to enter into a contract, memorandum of understanding, grant, loan, loan guarantee, or cooperative agreement with USDA.

PART B – SIGNATURE		
5A. APPLICANT'S SIGNATURE (BY)	5B. TITLE/RELATIONSHIP OF THE INDIVIDUAL IF SIGNING IN A REPRESENTATIVE CAPACITY First Assessor	5C. DATE SIGNED (MM-DD-YYYY) 12/12/2015

The U.S. Department of Agriculture (USDA) prohibits discrimination in all of its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, political beliefs, genetic information, reprisal, or because all or part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Assistant Secretary for Civil Rights, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue, S.W., Stop 9410, Washington, DC 20250-9410, or call toll-free at (866) 632-9992 (English) or (800) 877-8339 (TDD) or (866) 377-8642 (English Federal-relay) or (800) 845-6136 (Spanish Federal-relay). USDA is an equal opportunity provider and employer.

United States Department of Agriculture
Rural Utilities Service

*Certification Regarding Debarment, Suspension, and Other
Responsibility Matters – Primary Covered Transactions*

The following statement is made in accordance with the Privacy Act of 1974 (5 U.S.C. § 552(a), as amended). This certification is required by the regulations implementing Executive Order 12549, Debarment and Suspension, and 2 C.F.R. § 180.335, Participants' responsibilities. The regulations were amended and published on August 31, 2005, in 70 Fed. Reg. 51865-51880. Copies of the regulations may be obtained by contacting the Rural Utilities Service..

- (1) The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:
 - (a) are not presently debarred, suspended, proposed for Debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
 - (b) have not within a 3-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
 - (c) are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State, or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and
 - (d) have not within a 3-year period preceding this application/proposal had one or more public transactions (Federal, State, or local) terminated for cause or default.
- (2) Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

Matinicus Plantation Electric Company
Organization Name

Clayton Philbrook, First Assesor
Name and Title of Authorized Representative

Signature *Date*

(This is not an official Government form. It has been prepared to assist and expedite the application process and is only intended for use in the Program for Assistance to Rural Communities with Extremely High Energy Costs.)

USDA High Energy Cost Grant Program

Matinicus Plantation Electric Company Matinicus Renewable Power Project

Environmental Report

A. Project Description and Location:

The Matinicus Renewable Power Project (MRPP) will install and integrate a 100kW solar array and 200kWh of battery storage, and replace an outdated switchgear and utility line truck. Half of the proposed solar array will be mounted on the roof of an existing town garage, while the other half will consist of a ground array, located adjacent fuel tanks owned by the power company (see figure 1). The switchgear will be installed at the current generator shed, while the batteries will be housed in the town garage. The locations described are located on Matinicus Island, near the harbor.



Figure 1: Aerial photograph of the location of proposed project components.

B. Land Ownership and Use:

The MRPP will be entirely located on property owned by the Matinicus Plantation, and will involve minimal clearing. The MRPP will not be located on land owned or managed by the Federal Government.

C. Farmlands:

The MRPP will not irreversibly convert farmland to nonagricultural use, as the project is contained to existing structures, and bare ledge with no agricultural use.

D. Wetlands:

The MRPP will not affect any wetlands, as it will be located inside and on top of existing structures, and on bare ledge.

E. Floodplains:

The MRPP will not be located on any known floodplain.

F. Coastal Areas:

The MRPP will be located within the boundaries of a coastal zone management area.

G. Protected Species:

The MRPP is not located in a critical habitat for any threatened, endangered, or candidate species. Matinicus is often a stopover point for migratory birds and bats, including the following species of conservation concern:

1. Arctic Tern
2. Black-billed Cuckoo
3. Canada Warbler
4. Great Cormorant
5. Great Shearwater
6. Horned Grebe
7. Hudsonian Godwit
8. Peregrine Falcon
9. Purple Sandpiper
10. Short-eared Owl
11. Upland Sandpiper
12. Northern Long-eared Bat

The effect on these species is expected to be minimal to non-existent, as the project will be mostly contained to existing structures. The Matinicus Plantation Electric Company will work with the United States Fish and Wildlife Service to secure the necessary permits for this project, and make necessary project revisions to ensure a minimal impact on migratory bird and bat species.

H. Section 106 of the National Historic Preservation Act (NHPA) Review:

The project area is not located within 500 feet of any known historical sites, all of the land within that distance has been excavated, filled, graded, and built up over the last 15 years. This project will not impact, use, or alter any building or structure that was constructed more than 50 years ago.

2162 RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, DC 20515

PHONE: 202-225-6116
FAX: 202-225-5590

WWW.PINGREE.HOUSE.GOV



CHELLIE PINGREE
CONGRESS OF THE UNITED STATES
1ST DISTRICT, MAINE

COMMITTEE ON APPROPRIATIONS

SUBCOMMITTEES:

AGRICULTURE, RURAL DEVELOPMENT, AND
RELATED AGENCIES

INTERIOR, ENVIRONMENT, AND RELATED
AGENCIES

December 11, 2015

Ms. Robin Meigel
Finance Analyst
Rural Utilities Service
United States Department of Agriculture, STOP 1568
1400 Independence Avenue, SW, Room 1274-S
Washington, DC 20250-1568

Dear Ms. Meigel,

I am writing to once again express my steadfast support for the application submitted by the Matinicus Plantation Electric Company for a USDA Rural Utilities Service High Energy Cost Community Grant.

The State of Maine is known for having more islands than anywhere else in the United States. However, only 15 of those islands remain home to year-round communities. Matinicus Island, located 20 miles off the coast, pays one of the highest electric rates in the state—\$0.69 per kilowatt hour. This rate is more than twice the per unit high energy cost benchmark for electricity set by the USDA (\$0.33). These power costs—along with safety, reliability and efficiency challenges caused by outdated equipment—represent an unreasonable and unsustainable burden resting on the shoulders of this small island community.

Matinicus Plantation Electric Company proposes to address these issues by purchasing and installing a 100kW solar photovoltaic (PV) array and a 200kWh battery storage bank; and replacing an obsolete switchgear and utility line truck that is necessary for line repairs, maintenance and safe, reliable service. Additionally, this project will serve as a model for a system that could be used to contribute to the sustainability of other communities around the country facing energy similar challenges, including remote Alaskan villages.

I am a strong proponent of investing in energy efficiency and renewable energy. For rural communities like Matinicus Island, federal investment is a critical step toward economic stability and energy independence. By lowering power costs and reducing the island's carbon footprint, this project will help sustain the year-round community on Matinicus. As an islander myself, I strongly believe that helping the few remaining island communities is a priority for our state.

The investment proposed by the Matinicus Plantation Electric Company is critical to this island community's survival. Their federal options for funding this work are extremely limited, making their application for this High Energy Cost grant even more important. I fully support this project and urge your full and fair consideration.

Sincerely,

A handwritten signature in blue ink that reads "Chellie R" followed by a long horizontal line extending to the right.

Chellie Pingree
Member of Congress

United States Senate

WASHINGTON, DC 20510

December 14, 2015

Robin Meigel
Financial Specialist
Electric Programs
Rural Utilities Service
U.S. Department of Agriculture, STOP 1568
1400 Independence Avenue SW, Room 1274-S
Washington, DC 20250-1568

Dear Ms. Meigel:

We are writing in support of the application submitted by the Matinicus Plantation Electric Company of Matinicus Isle, Maine, for the U.S. Department of Agriculture's Rural Utilities Service High Energy Cost Grant Program. The company's proposal aims to better serve the island's energy needs by helping increase the efficiency of the island's existing power equipment and providing support to integrate solar energy into its grid.

Located more than 20 miles off the coast of Maine, Matinicus Isle is the most remote inhabited island community on the east coast and relies primarily on costly diesel fuel to generate the electricity needed to power its homes. At nearly \$.70 per kWh, monthly household power bills are over four times higher than the average Maine resident and can easily reach \$200 or more. The high cost of electricity places a major economic strain on residents and poses a significant threat to the viability of this small remote community. Improving energy efficiency is critical in order for Matinicus residents to take steps toward long-term sustainability.

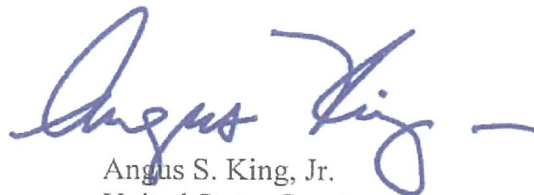
If funded, the company would be able to purchase new solar energy equipment for the island's power station as well as a new utility line truck to replace an aging vehicle used for line repairs and maintenance. According to the Island Institute, an organization working with Matinicus Isle on energy efficiency initiatives, these investments would offset just over half of the island's diesel consumption, increase system reliability, and decrease maintenance costs.

Thank you for your time and effort on behalf of Matinicus Plantation Electric Company. We urge your careful consideration of this application, subject to all applicable laws and regulations, and ask that you please notify Katie Seelen (Senator Collins) at (202) 224-2523 and Adam Lachman (Senator King) at (202) 224-5344 when a final decision has been made.

Sincerely,



Susan M. Collins
United States Senator



Angus S. King, Jr.
United States Senator



PAUL R. LEPAGE
GOVERNOR

STATE OF MAINE
OFFICE OF THE GOVERNOR
1 STATE HOUSE STATION
AUGUSTA, MAINE
04333-0001

PATRICK C. WOODCOCK
DIRECTOR OF GOVERNOR'S
ENERGY OFFICE

August 1, 2014

Kristi Kubista-Hovis
Senior Policy Advisor
Electric Programs,
Rural Utilities Service
United States Department of Agriculture, STOP 1560
1400 Independence Avenue, SW, Room 5165-S
Washington, DC 20250-1560

Dear Ms. Kubista-Hovis,

I am writing in support of the Matinicus Plantation Electric Company's (MPEC) application for funding through the USDA Rural Utility Service's High Energy Cost Community Grant Program. I hope you will consider their proposal, as the need on the island is urgent.

Located over 20 miles off of Maine's coast, too far to be reached by electric cable from the mainland, Matinicus residents rely primarily on costly diesel fuel to generate the electricity needed to power their homes. At nearly \$.70 per kWh, monthly household power bills can easily reach \$200, or even higher. The high costs place a major economic strain on residents, and pose a significant threat to the long-term sustainability of the small community.

The Matinicus Renewable Power Project will help MPEC replace the current switchgear, add a 200 kW/hr battery storage bank and two 50 kW solar photovoltaic (PV) arrays, and replace an aging utility line truck required for line repairs, as well as for maintenance and delivery of safe, reliable service. Prior to these upgrades, the MPEC will be working to increase energy efficiency throughout the community to help further reduce the cost of energy. This proposal represents a sound investment, including an upgrade to their current power delivery system, an investment in the future with the move to renewables and recognition that maintaining and delivering power is as important as generating it. Islanders are resourceful people, and are accustomed to stretching their resources as far as possible. Residents of Matinicus will carefully maintain the equipment purchased with grant funds, maximizing every dollar spent on their community.

Matinicus has a demonstrated track record of commitment to the goal of reducing their diesel usage. I am happy to express my support for their current proposal, and hope you will give their application all appropriate consideration.

Sincerely,



Patrick C. Woodcock

Director, Governor's Energy Office of Maine

PHONE: (207) 287-3292



August 1, 2014

Kristi Kubista-Hovis
Senior Policy Advisor
Electric Programs,
Rural Utilities Service
United States Department of Agriculture, STOP 1560
1400 Independence Avenue, SW, Room 5165-S
Washington, DC 20250-1560

Dear Ms. Kubista-Hovis,

I am writing in support of the Matinicus Plantation Electric Company's (MPEC) application for funding through the USDA Rural Utility Service's High Energy Cost Community Grant Program. I hope you will consider their proposal, as the need on the island is urgent.

Located over 20 miles off of Maine's coast, too far to be reached by electric cable from the mainland, Matinicus residents rely primarily on costly diesel fuel to generate the electricity needed to power their homes. At nearly \$.70 per kWh, monthly household power bills can easily reach \$200, or even higher. The high costs place a major economic strain on residents, and pose a significant threat to the long-term sustainability of the small community.

The Matinicus Renewable Power Project will help MPEC replace the current generator fleet switchgear, add a 200 kW/hr battery storage bank and two 50 kW solar photovoltaic (PV) arrays. In conjunction with these upgrades, the MPEC will inventory island-wide energy consumption usage and seek to promote electric appliance and lighting upgrades to increase energy efficiency throughout the community further reducing the cost of energy. This proposal represents an investment in the future with the move to both renewables and energy efficiency.

Matinicus has a demonstrated track record of commitment to the goal of reducing their diesel usage. I am happy to express my support for their current proposal, and hope you will give their application all appropriate consideration.

Sincerely,

A handwritten signature in blue ink, appearing to read "Michael D. Stoddard", is written over a large, stylized blue scribble that partially obscures the signature.

Michael D. Stoddard
Executive Director



386 Main Street
Post Office Box 648
Rockland, Maine 04841-0648
Tel: 207-594-9209 • Fax: 207-594-9314

ISLAND INSTITUTE

inquiry@islandinstitute.org
www.islandinstitute.org

August 1, 2014

Kristi Kubista-Hovis
United States Department of Agriculture, STOP 1560
1400 Independence Avenue, SW, Room 5165-S
Washington, DC 20250-1560

Dear Kristi,

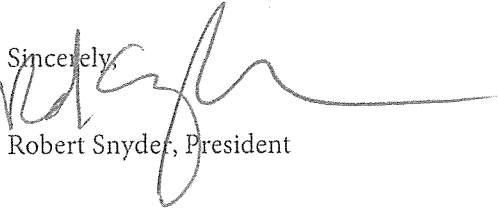
I am writing to support the Matinicus Plantation Electric Company's (MPEC) application for funding through the USDA Rural Utility Service's High Energy Cost Community Grant Program. The Island Institute Community Energy Program Team is delighted and honored to be partnering with MPEC on this grant. With MPEC's years of service and commitment to the power needs of residents of Matinicus and our 30 years of experience managing multiple projects dedicated to island sustainability, we make a strong team to deal with issues that threaten the sustainability of Matinicus Island.

Matinicus is located over 20 miles off of Maine's coast, too far to be reached by electric cable from the mainland, and its residents rely primarily on costly diesel fuel to generate the electricity needed to power their home. Their equipment has exceeded its normal service life and is incompatible with renewables. The high costs place a major economic strain on residents, and the deteriorating equipment poses a significant threat to the consistent and safe delivery of power to residents and businesses.

The Matinicus Renewable Power Project will fund a new switchgear to replace the current one, add a 200 kW/hr battery storage bank and two 50 kW solar photovoltaic (PV) arrays, and replace an aging utility line truck required for line repairs, as well as for maintenance and delivery of safe, reliable service. This proposal represents a sound investment, including an upgrade to their current power delivery system, an investment in the future with the move to renewables and recognition that maintaining and delivering power is as important as generating it.

Maine's islands are an essential part of our natural and cultural landscape. Unfortunately, there are fewer and fewer people able to make a life for themselves and their families on the islands. In the 19th century, there were 300 year-round island communities; today, only 15 remain. Addressing the extremely high cost of electricity is a crucial and urgently needed step toward Matinicus' sustainability. Thank you for your time and please give all appropriate consideration to this proposal.

Sincerely,


Robert Snyder, President



United States Department of Agriculture

December 10, 2015

Clayton Philbrook
Matinicus Plantation Electric Company
P.O. Box 238
Matinicus, ME 04851

RE: High Energy Cost Application
Matinicus Renewable Power Project

Dear Mr. Philbrook:

Thank you for your interest in USDA Rural Development's High Energy Cost program.

This letter will serve to meet the documentation criteria contained in the Notice of Solicitation of Applications for the High Energy Cost Program in the Federal Register dated October 13, 2015. Specifically this will address Section D, Application and Submission Information, subsection (j), Rural Economic Development Initiatives.

The proposed project will procure, install and integrate 100kW of solar PV, 200kW of battery storage, a new switchgear, and replace an aging utility line truck. These critical system upgrades will lower the cost of energy, and improve the reliability of electricity supply on Matinicus Island, Maine.

In the application materials submitted, Matinicus Plantation Electric has identified that reducing outmigration is a goal of the project. In the application you have cited Maine Department of Education data that reflects that student enrollment has declined from 8 students in 2005 to 3 students in 2015. Outmigration is an initiative with USDA Rural Development.

USDA Rural Development also has a Rural Economic Impact Initiative within the Community Facilities (CF) program whereby projects with a service area not employed rate in excess of the standard rate of 19.5% qualify for CF program points. The not employed rate for Knox County, where Matinicus is located, is 40.4%

If you have any further questions concerning this program or other funding, please contact Bob Nadeau, Community Programs Director, at 207-990-9121.

Sincerely,

Virginia A Manuel
State Director

cc: Ben Algeo, Island Institute

Rural Development • Community Programs
967 Illinois Avenue Suite 4 • Bangor ME 04401-2767
Voice 207.990.9121 • Fax 1.855.589.1098

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