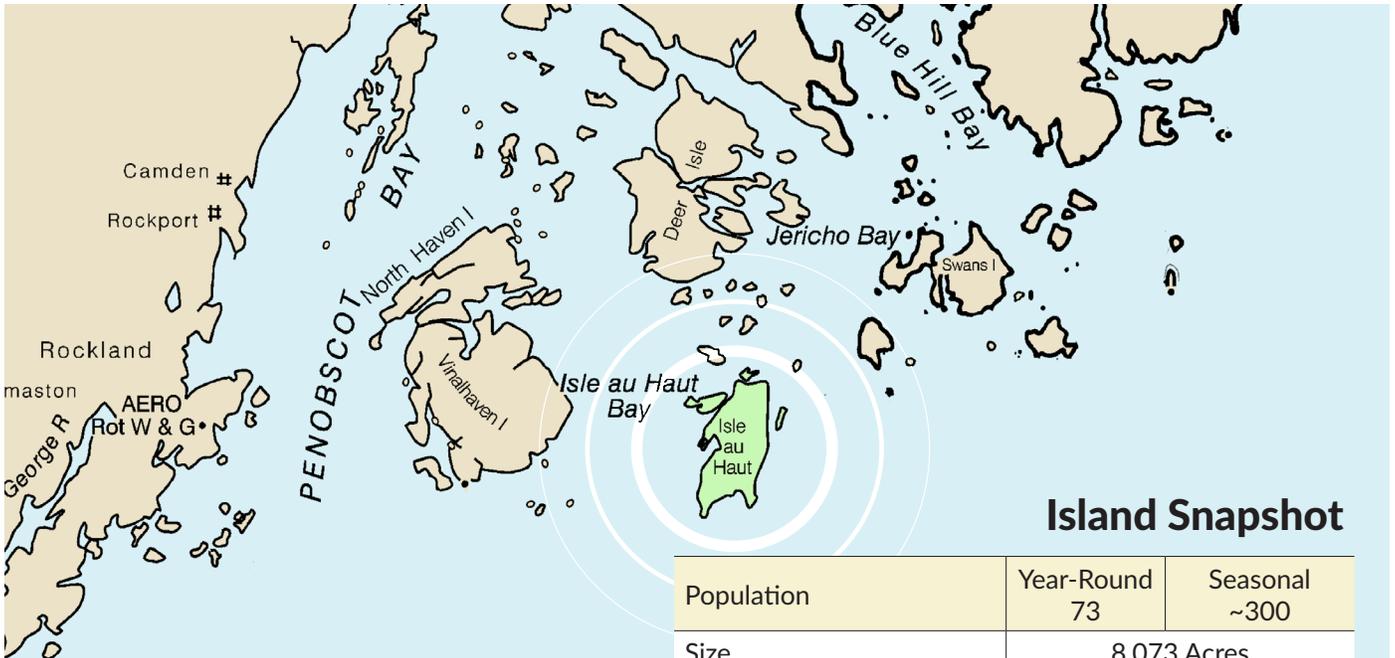


NEW ENGLAND ISLAND ENERGY PROFILES

Isle au Haut

Seeking microgrid solutions for an aging transmission cable



Island Snapshot

Population	Year-Round 73	Seasonal ~300
Size	8,073 Acres	
Distance from Mainland	6 Miles	
Median Household Income (2010)	\$36,250	
Electrical Systems	Single-phase submarine transmission cable w/ two backup diesel generators (171 kW and 50 kW)	
Electric Rate	\$0.39/kWh	% Of U.S. Avg. 325%
Minimum Monthly Charge	\$16/month	
Total Annual Electrical Usage	241,000 kWh	
Average Heating Fuel Price (2015)	\$4.28/gallon (kerosene)	

Critical Needs

With a high electric rate (\$0.39/kWh) and an aging submarine transmission cable, Isle au Haut faces a significant decision: replace the cable or use alternative sources of power and take the island off-grid. Laying a new cable ensures energy security but involves long-term costs to pay off debt associated with the project that could significantly increase electric rates. Centralized solar PV with battery storage and diesel backup would provide reliability in the event of bad weather or malfunction and create equitable benefits for all ratepayers but may also impact rates.

Local Governance

Isle au Haut is incorporated as an independent town, governed by a Board of Selectmen. An annual town meeting is held to approve budget items and other issues. Some town positions are paid; many more are volunteer. Over half of the island is held in conservation as part of Acadia National Park. The Isle au Haut Electric Power Company formed in 1969 as a for-profit corporation with a cooperative governance structure. It operates on a break-even basis, holding annual meetings with occasional updates to ratepayers as appropriate.

Electrical Systems

Power is received via a 32-year old unarmored, unburied submarine cable which is well past its rated life span. The power company has maintained its current kWh and monthly charge since 1983, resulting in prices that are well below where they would be if the company had accounted for inflation. The delivered rate is \$0.39/kWh. This equates to a charge that is 325% more than the U.S. average electric rate of \$0.12/kWh. Annual electricity sales are 241 MWh. The load varies seasonally, with much higher usage in the summer months. In the event of blackouts on the mainland where the cable originates, the power company maintains diesel generation that can be manually started to restore power to the island.

Major Energy Consumers

Major year-round electricity users include The Island Store, the Town Hall, Black Dinah Chocolatiers, and the telephone company. The island building stock is old, with many buildings only occupied in the summer.

Heating Fuel Accessibility

Heating oil and kerosene are the primary heating fuels used on Isle au Haut. Fuels are delivered about six miles from Deer Isle. #2 heating oil is delivered by tanker, with bulk storage located at the store. A propane truck is barged to the island several times a year. Fuel prices are high due to delivery costs, as is the case on many Maine islands. The price of kerosene in 2015 was \$4.28/gallon, 48% higher than the statewide average at that time. Firewood costs upwards of \$350/cord.



"Fuel storage at The Island Store."

Energy Leaders

The Isle au Haut Electric Power Company has been leading efforts to explore options for the island's future energy system. In 2015, the power company led community meetings to review various options for island electrical systems. They ran calculations and distributed materials detailing the payback time and projected kWh rate for options including financing a new cable, installing photovoltaics and batteries, and going to 100% diesel. Following a favorable community vote for a renewable system, the power company released an RFP soliciting proposals for a PV/storage/diesel hybrid system.

Energy Initiatives to Date

Renewable Energy & Fuel Substitution

Transmission Cable Replacement: In 2015, the Isle au Haut Electric Power Company commissioned a feasibility study on the state of the island's undersea transmission cable and the potential costs around replacing with on-island generation. It is currently considering proposals for an off-grid solar/diesel/storage system, as well as configurations that would enable excess power from the system to heat hot water with heat pumps and/or charge electric vehicles.

Energy Efficiency

Weatherization: In 2013, 35% of year-round island homes received energy assessments and basic air sealing and insulation through participation in a Weatherization Week. This will result in more than \$60,000 in lifetime savings for homeowners.

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