CASE STUDY

False Bay School, Lasqueti Island

"I was impressed by the quality of workmanship. The system is a huge improvement over reliance on diesel for electrical generation."

EZRA AUERBACH, FORMER EXECUTIVE DIRECTOR, NORTH AMERICAN BOARD OF ENERGY PRACTITIONERS

OVERVIEW

Lasqueti Island is a unique Gulf Island community that is independent from the BC Hydro grid. Prior to this solar project, community facilities including False Bay School, the telecommunications tower, and the volunteer fire department relied exclusively on diesel generators and a small inverter and storage system.

False Bay School was constructed in 1953. From that time forward, the residents have become accustomed to hearing the ever-present hum of the diesel generators that supply the school with electricity. After nine years of planning and community fundraising, HAKAI Energy Solutions was selected to bring our extensive off grid experience to deliver the project. In the spring of 2016 HAKAI custom-designed, installed, and commissioned the solar PV system which allowed the generators to becomes a back-up power source and diesel costs to be reduced to a fraction of their previous burden.

HAKAI overcame challenging logistics, limited site access, inclement weather, shallow bedrock, restricted communication, and the unavailability of local material in delivering this project.

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HAKAI Energy Solutions is dedicated to working with communities to develop energy systems that are sustainable and cost effective while providing reliable power year-round.

SYSTEM SPECIFICATIONS

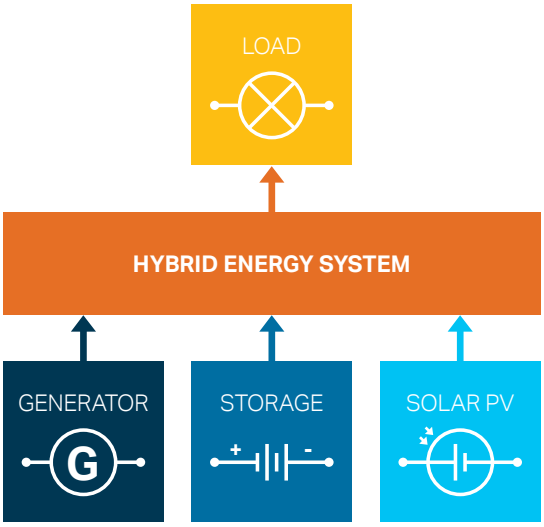
Location	Lasqueti Island, Georgia Strait
Commissioning Date	March 2016
System Type	Ground mounted photovoltaic, hybrid diesel-photovoltaic system plus storage
Photovoltaics	134 x 315W polycrystalline (42.2kw)
Inverters	3 x SB 9000TL-US 2 x SB 7000TL-US 2 x SI 6048-US (plus 2 existing)

SYSTEM PERFORMANCE HIGHLIGHTS

Annual photovoltaic energy generation[1]	47, 613 kWh
Average annual energy yield (kWh/kWp)	1,128
Lifetime savings[2]	$587,800
Payback period[2] (solar PV component)	7.1 years
Annual reduction in generator run time compared to 100% diesel-fueled energy system[3]	7,845 hrs (327 days)
Lifetime reductions in CO_2 emissions	814,650 kg

1 Annual generation calculated based on regional variables and equipment specifications.

2 Over 25 year lifespan, compared to $0.75/kWh on diesel electric, includes O&M, performance depreciation of 0.7% per year, and net present value with 2.5% discount rate.



The system consists of five ground mounted arrays that are AC-coupled to a quad Sunny Island battery based inverter string. This energy system upgrade allowed for the use of a primary generator of lower capacity. The 17 kW generator is expected to run for at least 1,600 hours less per year than the previous 25 kW generator. The overall runtime for the system had already been greatly reduced by using battery storage to store excess production. Compared to a fully diesel-fueled system in continuous operation, this hybrid energy system is expected to reduce annual generator run hours by 7,845 hours per year, or 327 days.

Over the lifetime of the facility there will be a CO2 emission reduction of 814,650 kg and a savings of $587,800. The solar component has a payback period of 7.1 years, with a minimum 25 year expected lifetime.

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