

## CASE STUDY

# Calvert Island Field Station



"It's a total, integrated energy system that I think is quite elegant. Nobody that I've seen has that degree of integration."

JUERGEN PUETTER, FORMER CHAIR, SUSTAINABLE DEVELOPMENT TECHNOLOGY CANADA



## OVERVIEW

The Hakai Institute's Calvert Island Field Station is an education and research station. State-of-the-art scientific exploration is conducted on site, in the heart of the Great Bear Rainforest.

Prior to the development of Hakai Institute, the facility was a fishing lodge powered solely by diesel electric generation. Relying heavily on diesel has many drawbacks including fuel price instability, high operating and maintenance costs, ongoing dependence on diesel shipments, and reduced generator lifetimes due to the need to run continuously. The site's challenge of achieving reliable energy generation are familiar to remote communities across British Columbia.

Reducing the reliance of the Hakai Institute on diesel generation was a multi-faceted process. Considerable attention was given to determining how and when energy was being used, identifying opportunities to curtail consumption while maintaining services, increasing the efficiency of equipment, and exploring how to utilize the natural resources available to produce cleaner, more reliable energy.

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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.

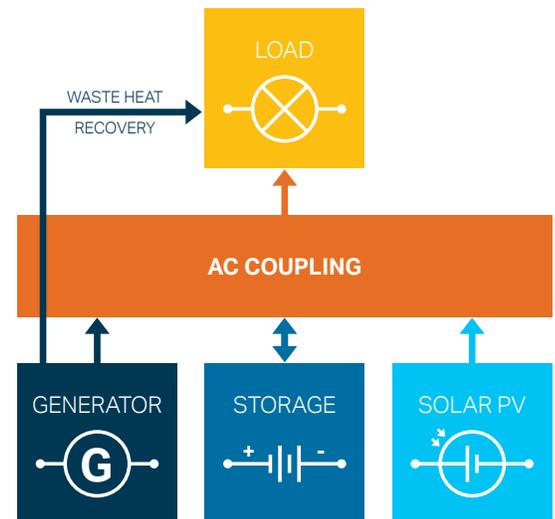
## SYSTEM SPECIFICATIONS

Location	Calvert Island, Central Coast BC
Continuous Capacity	108 kW
Commissioning Date	November 2010
System Type	AC-coupled photovoltaic and battery storage diesel energy system including heat recovery
Photovoltaics	120 x 220W polycrystalline 109 x 235W polycrystalline
Inverters	6 x SB 6000TL-US 3 x SB 7000TL-US 12 x SI 6048-US

## SYSTEM PERFORMANCE HIGHLIGHTS

Annual photovoltaic energy generation <sup>1</sup>	35,529 kWh
Reduction in diesel fuel consumption by generator	83%
Renewable energy generation proportion	19.9% / yr.
Lifetime reductions in CO <sub>2</sub> emissions <sup>2,3</sup>	663,859 kg

- 1 Annual generation calculated based on regional variables and equipment specifications.
- 2 Lifetime assumed to be 25 years based on manufacturer's warranty.
- 3 CO<sub>2</sub> emissions calculated using standard emissions from equivalent diesel generators.



This collaboration between HAKAI Energy Solutions and the Hakai Institute demonstrates that remote communities in British Columbia can add solar energy to their existing facilities by utilizing hybrid AC-coupled technology. It also illustrates the reductions in CO<sub>2</sub> emissions and savings in operations and maintenance costs that are possible by diversifying diesel energy systems and reducing energy consumption. The remote energy system upgrade resulted in an 83% reduction of diesel-fuel consumption for electrical generation.

Demonstrating the viability of solar energy in the remote temperate rainforests of British Columbia is no small feat. With the installation of this system, Hakai Institute became a global leader in the clean energy movement and demonstrated that remote communities can benefit substantially from investing in photovoltaic energy systems to compliment and offset diesel generation.