



## Propane Heater vs Heat Pump – Energy Cost Analysis

### Assumptions:

This analysis compares the cost(\$) per 1000 BTU of a wall mounted **Martin Brand** Propane Heater with the cost to operate a 9000 BTU Mini-split wall mounted Heat Pump using a small gasoline powered Generator charging an existing battery bank. The analysis is a **worst case scenario** as it assumes **NO Solar Energy Contribution from PV Panels**

### Propane Heater

- **Martin 8000 BTU** Wall mounted propane heater installed on Savary Island, BC
- Fuel: Propane
- Energy Content (Propane): 21,591 BTU/lb
- Energy Cost (Savary Island): \$1.50 / lb
- Heater Efficiency (Published): 80%
- Propane Energy Cost: 
$$\frac{\text{Propane (\$/lb)}}{\text{Energy Content x Heater Efficiency}}$$
- Propane Energy Cost: 
$$\frac{\$1.50 \times 1000}{21,591 \text{ BTU} \times 80\%}$$

**Propane Heating Energy Cost = \$0.087 / 1000 BTU**

## Mini-Split Heat Pump (WORST CASE SCENARIO: Assume NO Solar Energy available)

- **9000 BTU High Efficiency Heat Pump** (Model SENA – 09HF-Z) using 3000 Watt Generator charging existing battery bank at rated output
- Rated heat output: 10,900 BTU
- Max Power Input: 835 Watts (13.06 BTU/watt)
- Generator: Honda EU 3000IS
- Rated Output: 2800 Watts
- Fuel Consumption (Published): 7.1 hrs run time using 15.4 liters - ie: 2.17 ltr/hr
- Fuel (gasoline) Cost: \$1.15 / ltr
- Heat Pump Energy Cost:  $\frac{\text{fuel consumption (ltr/hr)} \times \text{fuel cost (\$/ltr)}}{\text{Energy Generated (Watts)} \times \text{Heat Pump Output}}$
- Heat Pump Energy Cost:  $\frac{2.17 \text{ (ltr/hr)} \times \$1.15 \times 1000}{2,800 \text{ W} \times 13.06 \text{ BTU/W}}$

**Heat Pump Energy Cost** = **\$0.068 / 1000 BTU**

### Conclusion:

Variable operating costs of **Heat Pump** when powered by gasoline generator are lower than **Wall mounted Propane Heater**. Heat Pump operating costs are even lower if Solar Energy system is available instead of power from generator...