

Grid-Tie Solar Assessment

Fire Rescue Building, Mayne Island

Summary

The Fire Rescue roof has excellent solar potential, with very little shade. This assessment proposes a 158 module, 42 kW system, producing 50,000 kWh annually (valued at \$4,400/year if offsetting usage at \$0.088 per kWh, re BC Hydro [Rate 1500](#)). The annual [consumption](#) is estimated at 65,000 kWh so the solar contribution would be 77%. Installed cost is estimated at \$116k (\$2.75 per Watt) using Enphase microinverters. Since this building appears to have significant electric heating costs, consider installing a [ductless mini-split heat pump](#). With a heat pump, the annual electric consumption should reduce to less than half and the solar contribution would then be greater than the usage and so BC Hydro would pay an annual credit cheque.

South Side



- roof slope: nearly flat (slight slope to the East)
- ideal module tilt is 25° from the horizontal
- shading loss: 6%
- annual production: 50,000 kWh with 158 modules
- kWh/kWp ratio: 1191

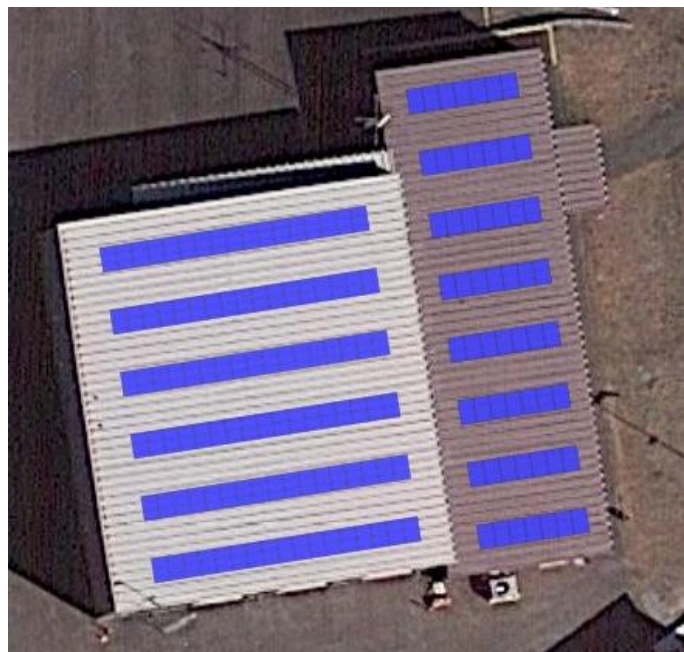
Supporting Documents

- Module layout and shade model: [3D](#), [Line Drawing](#) or [Satellite](#) (maximize row spacing to minimize row-to-row shading)
- [HelioScope Production Report](#)
- [Single Line Diagram](#) (electrical)
- [All Photos](#)

Notes

- the electrical system is a 120/240 Volt split-phase ("single phase") supplied via Eaton commercial panels and a 600 Amp service
- BC Hydro meter number: 4942865 (type P916)
- industrial metal roofing
- module layout optimized for Enphase M215 microinverters (max 17 modules per circuit)... If using APS microinverters then easiest design would have the large roof changed to 14 modules per row so that each row could be one circuit.
- Landscape orientation can reduce row-to-row shade losses in winter but this system has large enough row spacing that this is not a significant issue

Photos



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