



## COMMERCIAL SOLAR PV CASE STUDY

Yellowknife

DATE: JULY 9, 2017

### PREPARED FOR

Yellowknife Chamber of Commerce Members

### ABOUT US

*Solvest is a Solar and Storage engineering, procurement, and construction (EPC) firm specializing in Northern Canada and remote energy system solutions. With offices in Whitehorse and Yellowknife we proudly serve all three Territories.*

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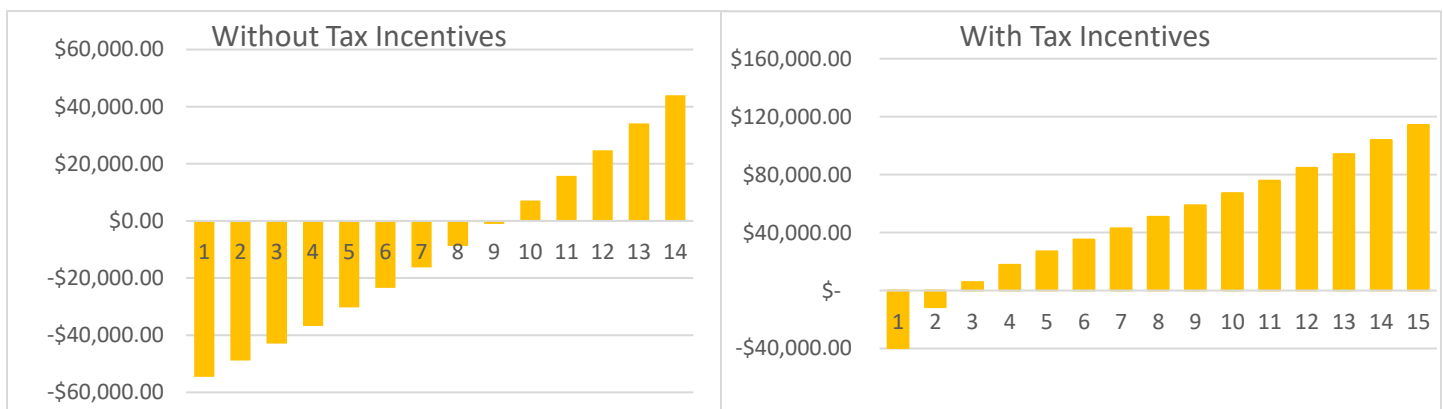
This solar design was created to show the rough costs and benefits of the maximum allowable commercial solar PV installation in Yellowknife under optimal conditions (steep roof pitch facing due south) vs. non optimal (shallow roof pitch + 30° off south). Conservative model parameters were used in combination with data from local existing systems previously installed to tailor our analysis to Yellowknife’s climate and conditions.

### Commercial Solar PV Design Summary

	25.6kWdc – Non Solar Optimal	12.8kWdc -Non Solar Optimal	25.6kWdc – Solar Optimal
<b>Number of Solar Modules</b>	64 x 400W	32 x 400W	64 x 400W
Price (before GST)	\$60,000	\$30,000	\$60,000
<b>Cost per Watt</b>	<b>\$2.34</b>	<b>\$2.34</b>	<b>\$2.34</b>
<b>Annual Power Produced</b>	22590 kWh	11295 kWh	24760 kWh
<b>Cost per kWh (2017)</b>	\$0.24 kWh	\$0.24 kWh	\$0.24kWh
<b>Value of Power (Year 1)</b>	\$5,421.60	\$2710.80	\$5942.40
<b>Diesel equivalent abated</b>	6000 L	3000 L	6500 L
<b>Equity Payback (NO CCA)</b>	<b>9 Years</b>	<b>9 Years</b>	<b>8.5 Years</b>
<b>Pre-tax IRR</b>	<b>14%</b>	<b>14%</b>	<b>15%</b>
<b>Break-Even (CCA Included)</b>	<b>3 Years</b>	<b>3 Years</b>	<b>3 Years</b>

- 25.6 kWdc/15kWac is currently the largest energy generation system permitted under Net Metering
  - **The economics of smaller systems scale well, to the benefit of the system owner**
- 5% energy price inflation was conservatively used in our analysis
  - Historical data shows 5-12% energy inflation in NWT over the past decade
  - **The upcoming Federal Carbon Policy will likely accelerate energy inflation**
- Leasing opportunities are available with entirety of lease payments tax deductible
- From the CRA: [“Under Classes 43.1 and 43.2 in Schedule II of the Income Tax Regulations, certain capital costs of systems that produce energy by using renewable energy sources \(including solar\) are eligible for accelerated capital cost allowance ... may be written-off at 50 percent per year on a declining balance basis.”](#) (Click for link)
  - The charts below illustrate the tax benefits of class 43.1 and 43.2

#### **Cumulative Cash Flows - \$60,000 – 25.6kW Commercial Solar PV System**



**Please contact us for more information and/or a free solar viability assessment and analysis:**

- Custom Design – Residential to Utility scale
- Ground, Roof, Pole Mount, Trackers
- Lead-acid, AGM, Li-ion, Saltwater batteries
- Industrial Solar, Batteries, and Generator integrated systems

- Energy and Financial Analysis
- In-depth energy production models
- Relevant policies and tax incentives are applied
- Detailed financial parameters