# Solar PV Residential Net-Metering Pilot Project

**Energy Solutions Centre**

Department of Energy, Mines and Resources

Government of Yukon

October 26, 2012

energy solutions centre

Yukon
Energy, Mines and Resources

**Whitehorse Solar PV Residential Net-Metering Pilot Project**
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# Overview

The Whitehorse **Solar PV Residential Net-Metering Pilot Project** involved the installation of a 1.4 kW PV system on a residential home in Riverdale, Whitehorse. The project was managed by Tim Fordyce, a journeyman electrician and electrical contractor who owns and operates Action Electric. Energy Solutions Centre (ESC) provided $3,000 in funding to pilot this first installation of a residential net-metered PV system so as to test this technology in preparation of the Yukon's finalization of a Net Metering policy for the Yukon.

# Purpose

The purpose of the **Solar PV Residential Net-Metering Project** is to demonstrate the viability of net-metered residential PV installations in the Yukon. The pilot project served to develop local capacity in the safe and proper installation and operation of residential PV systems through facilitating connections between a local electrical contractor, the Yukon Electrical Company Ltd., the City of Whitehorse electrical inspectors and ESC. The pilot project provided an important test case for future installations of residential PV systems and other net metering projects in the Yukon.

# Projected Performance

The 1.4 kW PV system is projected to produce 1,442 kWh of electricity per year at peak capacity.

# System Cost Breakdown

$3.02 per panel watt
$7.32 per system watt (panels, inverter and balance of system components)
$9.93 per system watt & install cost

It should be noted that these costs are expected to decrease as familiarity with this technology increases. See below for detailed Cost Breakdown and Normalized Energy Production details.

# Conclusion

The 1.4kW PV system was successfully installed on September 28, 2012 and is currently live and producing power. Fifty hours of labour was required to install and connect the system. The total system cost was $10,099. The total installed cost was $13,699. Due to the project being the first installation of its kind in the Territory, the Yukon Electrical Company Ltd. has yet to develop a standard protocol for the installation of net metering projects on residential and institutional buildings. Pending a standard grid-integration protocol and the trend of decreasing solar PV equipment costs, future net metering projects in the Yukon will likely become simpler to install and more cost effective. ESC will work with the proponent and the electrical utility to monitor the performance of this system over the next year and report back on its performance.

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# APPENDICES

## Cost Breakdown

| Type | Description | Units | Cost | Total |
|---|---|---|---|---|
| **Solar Equipment** | Cdn Solar 230W GT mono PV module | 6 | $ 695 | $ 4,170 |
| | Roof Mount (3 panels per) | 2 | $ 750 | $ 1,500 |
| **Enphase Inverter Equipment** | Enphase GT microinverter | 6 | $ 275 | $ 1,650 |
| | Enphase Communications Gateway | 1 | $ 650 | $ 650 |
| | Trunk cables | 6 | $ 35 | $ 210 |
| **Rooftop Disconnect & Junction Box** | Disconnecting Combiner Box | 1 | $ 245 | $ 245 |
| | Surge protection device | 1 | $ 120 | $ 120 |
| | Breaker | 1 | $ 30 | $ 30 |
| **Miscellaneous** | Other equipment | -- | -- | $ 43 |
| | | | | |
| **Electrical** | Materials | | | $ 1,000 |
| | | | | |
| | Total | | | $ 9,618 |
| | **Total with tax** | | | **$ 10,099** |
| | | | | |
| **Installation** | Mounting | 30 | $ 60 | $ 1,800 |
| | Hook Up | 20 | $ 90 | $ 1,800 |
| | | | | $ 3,600 |
| | | | | |
| | | | **Total with Installation** | $ 13,699 |

# Normalized Energy Production