

# Solar Water Heating

## NWTHC Ft. Providence Senior's Center

### System Overview:

In August 2008 a Solar Water Heating (SWH) System was installed at the Ft. Providence Senior's Center. The system was installed by the Northwest Territories Housing Corporation (NWTHC). The SWH consists of 4 arrays of 30 Evacuated Cylinder Solar Energy Collectors produced by Mazdon, this totals 120 Tubes. Storage for the system is provided by two 115 US Gallon (435L) tanks.

The SWH System is not designed to completely heat the residential water to the desired use temperature of 60°C. Instead the system heats the tank water and the remaining difference in temperature is made up by running the water through an oil heater before arriving at the household faucets.

During the summer the maximum temperature reached within the tanks on a sunny day was 54°C, and at night the tanks generally cooled to 25-30°C. During the winter months the majority of the water heating would be conducted by the oil heater.

The SWH System has successfully reduced both the cost of heating water at the Seniors' Center as well as reduced their Green House Gas emissions. As well the system has operated to date without any significant problems.



Figure 1 – SWH Tubes at Ft. Providence

### Technical Data:

The installed system consisted of the following main components:

Solar Collector Tubes	Mazdon Solar Collector tubes, 4 Arrays of 30 tubes (120 total)
Water Tanks	2 - 115 Gallon(US) tanks (435L)

Figure 2 - Technical Data

## Performance Data:

The following data was recorded between May 1<sup>st</sup> and August 31<sup>st</sup>, 2009. It shows the system energy captured by the Solar Tubes over the four month period and from that value determined the equivalent amount of heating oil that would be required in order to produce the same amount of power. From this the money the system saved and the Green House Gases no emitted into the air were also determined.

		Units
Energy Captured	50.1	GJ
Litres of Fuel Displaced	1,293	L
Savings	1,282	\$
Green House Gas Reduction	3.49	Tonne CO <sub>2</sub>

Figure 3 - System Data

Data was obtained by use of a *DATASTORE Thermomax SMT400* data logger that tracks the solar energy production on a daily basis. The following graph shows the daily energy consumption between May and August 2009 (line) and the estimated monthly savings (bar) compared to if the system was operating entirely on heating oil.

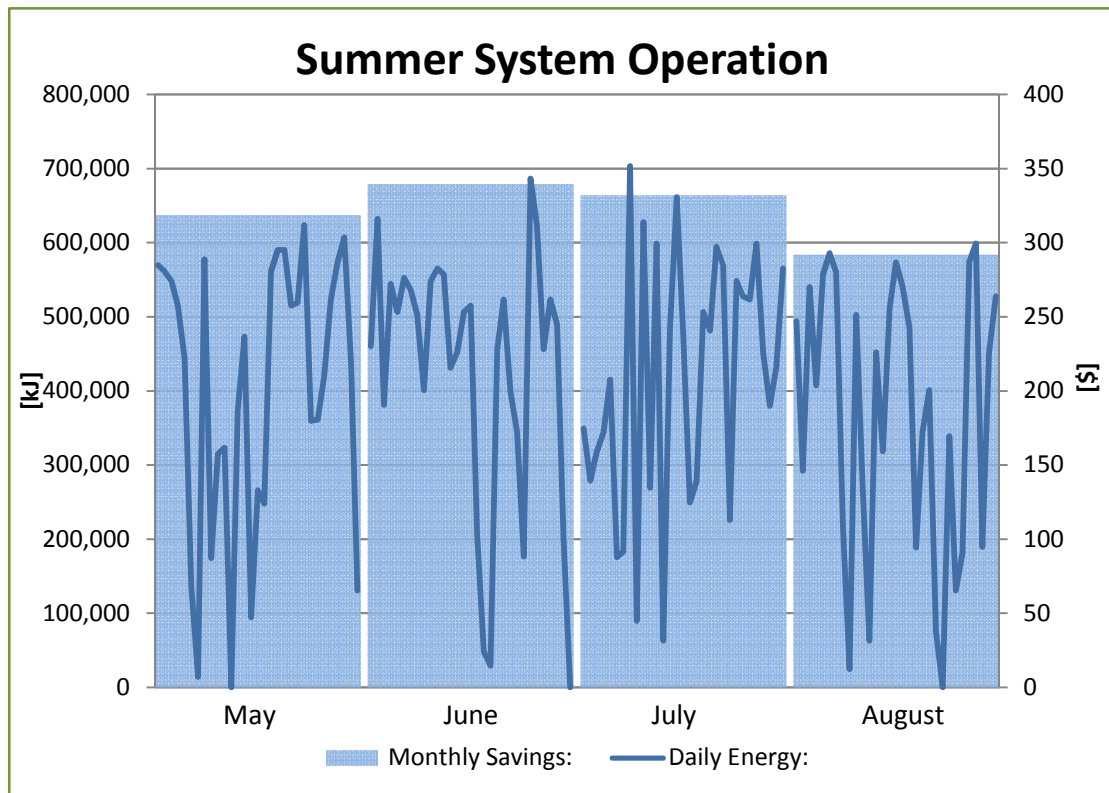


Figure 4 - Summer Operation