

Solar Energy—Case Study

Thermal hot water and PV Electric array



Home Owner is an energy producer, selling to Xcel and producing up to 80% of the domestic hot water needs of the duplex.

Powderhorn Park Minneapolis, MN

System Size

6000 Watts combined for both units
104 sq. ft. of solar thermal collectors

Solar PV & Thermal Modules

25 Schuco modules - 255 watts each
25 Enphase M215 Micro-Inverters
4 Bosh Buderus thermal modules

Annual Production

6,721 AC Kilowatt hours
50-80% of hot water requirements

Actual vs estimated PV production

	Actual	Consumption
July 2012	938 kWh	507 kWh
Aug 2012	899 kWh	638 kWh
Sept 2012	925 kWh	502 kWh

Powderhorn resident - Energy independence

Overview

Larry Olds utilizes the south-facing roof of his house to offset as much energy as possible while maintaining an aesthetically pleasing thermal and PV electric array. The installation utilizes Schuco 255 watt modules, Enphase micro inverters and highly efficient thermal hot water modules. Larry wanted to be energy neutral for the duplexes hot water and electrical consumption.

Results

The array is located on a surface that is over 86% shade free from any obstructions except in December and January when the sun is at its lowest on the winter solstice. Hardware was selected that mitigates the shading effect from the neighboring trees and increases overall system efficiency year round. When operating at its potential, this system will offset 100% of the household's energy consumption annually.

	1st fl—actual Data Monitor	1st fl— Pathfinder	2nd fl—actual Data Monitor	2nd fl— Pathfinder
July 2012	562 kWh	420 kWh	376 kWh	280 kWh
Aug 2012	541 kWh	390 kWh	358 kWh	260 kWh
Sept 2012	557 kWh	349 kWh	368 kWh	233 kWh



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