



Name of Project: Chris and Clare's Zero Carbon Home

Type of Project: New Residential Construction, Combination Solar Thermal System with Seasonal Energy Storage, Grid-Tied and Grid-Interactive PV system, multiple natural energy and efficiency sub-systems

Location: 732 Heritage Drive
Merrickville, ON
K0G 1N0

Region: Merrickville-Wolford

Size of Installation: House, 10+kW PV, 20 kW thermal, Seasonal Thermal Energy Store, Solar SDHW, solar thermal radiant floor heating, radiant floor cooling with ground loop heat exchange, solar heated greenhouse, root cellar, ground loop pre-heating of ERV, ground loop post-cooling ERV, critical systems backed-up on grid-interactive PV system, grid-tied PV system to offset EV and house consumption,

Actual/Estimated Generation Output Per Year: 20 MWh (thermal)/ 15 MWh (electrical)

Actual/Estimated Cost Savings Per Year: Not Applicable; house has no baseline consumption, does not burn carbon and will be a net producer of energy.

Actual/Estimated Energy Savings Per Year: 100%, house will generate more thermal and electrical energy than it will consume.

Ownership Model: Private

Owner: Chris and Clare Weissflog

Builder(s)/Equipment Supplier(s)/Developer(s): Owner Built / EcoGen Energy Inc.

Description: This construction project will yield an extremely efficient house with great resilience. Designed to the Passive House standard, it will require only a very small fraction of the energy a similarly-sized code built home would use for heating or cooling. It will be capable of heating itself and the DHW for the occupants entirely with solar-thermal energy. The radiant floor design optimizes performance of the entire system: heating, pumping, cooling, collection and integral seasonal energy storage. Excess thermal energy will be used to extend the growing season of a greenhouse and the harvest will be stored for months in the basement root cellar. Cooling is accomplished with ground loops through ERV post-heat exchanger and through the radiant floors. Winter air is pre-heated via a separate heat exchanger. Appliances are selected for high efficiency. The grid-tied PV system will generate in thirds: enough for the house, the EV and excess. A second PV system will be grid-interactive and will support the solar thermal system, heating, ventilation, well, refrigerator, freezer, some lights, and small plug loads. This second system gives the house limited off-grid capability to ride out power-outages without the loss of critical systems. A rainwater harvesting system will supply water to toilets and the garden.

"Clare and I are driven to reduce the environmental impact of our carbon emissions and resource consumption. We've taken on this project to demonstrate to others that one can live in a comfortable home and have enjoy a lifestyle that is carbon-free. We've focused on solutions that support not just the house itself, but also transportation and food because they are important aspects of our lifestyle." - *Chris Weissflog, President, EcoGen Energy Inc.*