

ROY SETT GAS - RESIDENCE

SOLAR PV

I've been active in the solar field for 40 years, was trained to be a "solar installer" back in the late 70s, when "solar" referred to solar water heating, solar space heating, passive solar design, solar greenhouses, etc. Over the years I installed some 60 or 70 solar thermal systems, mostly for residential water heating. My own home features passive solar design and has had solar water heating for 30 years, initially a passive "batch heater", which was replaced in 2010 with three roof-mounted 4x8 collectors installed as an active "drain-back" system. The newer system provides hot water and contributes space heat via my in-slab hydronic heating system. My home is heated jointly by a wood stove and the in-floor system, which gets some solar contribution, but is largely fueled with off-peak electricity from Bayfield Electric Co-op.

I didn't start out using electricity for most of my in-slab heat, and since that became the case I've been quite ambivalent about using so much electricity. I've considered other heat sources, including a propane boiler (no better than electricity to my tastes) and a gasifying wood boiler (which would have used a renewable fuel, but had other complications/downsides). The potential to put in a relatively large photovoltaic system to generate enough electric energy, primarily in the summer, to meet my winter heating load, was a more recent idea.

Three factors came together to make this a viable concept: declining prices for photovoltaic panels, CheqBay Renewables' group buy, and Bayfield Electric Coop's net metering policy, which allows me to generate credits from more abundant summer solar energy to offset my larger heating season electric bills. Next Energy Solution's willingness to allow owners to do much of the physical installation via the "RTI" option was icing on the cake, providing me both satisfying involvement in the project and considerable price savings on a larger system like this.

Roy Settgas, owner



System overview

- Wooden ground mount style PV installation
- Ready-to-Install (RTI) system provided by Next Energy Solution
- Installed by Roy Settgas with electrical by Dave Anderson
- Grid-tied to Bayfield Electric with net metering

Technical specs

- 11.16 kW dc consists of 36, 310-watt solar modules manufactured by Silfab
- Modules Model SLA-M 310W made in Canada
- Single-phase system, 12 modules per string
- Inverted from DC to AC using Fronius Primo 11.4
- Fronius web-based monitoring
- Estimated generation is 15,000 kWh per year

Incentives

- 30% Federal Investment Tax Credit for renewable energy
- RTI cost savings

Costs

- Total cost including solar system and electrical: \$21,800
 - Breakdown of costs
 - RTI system \$15,800
 - Bayfield Electric fee \$1000
 - Wooden Mount \$1500
 - Electrical hookup \$2500
 - Misc. hardware \$1000
- Out of pocket costs after incentives: \$14,900
- Estimated payback of 7.4 years
- 25-year annualized internal rate of return: 13.9%

What is a Ready-to-Install (RTI) system?

An RTI, just like the name suggests, is a set of parts, blue prints and instructions so the owner can self-install the system, saving on labor costs. It is a trademark name and product of Next Energy Solution (NES) headquartered in Shell Lake, WI. A licensed electrician makes the final connections and NES oversees the project, inspects, and handles the interconnection with the utility company. The RTI system has made solar more affordable to many area farms and residences that have the necessary skills to take on a hands-on project.

Additional Highlights

- Solar thermal installation for hot water & space heat