

Net-Positive Home in PA

Mt. Joy, PA



The Hoffers had geothermal installed in their home in September 2020. They were immediately impressed with their geothermal system, saying it's done an amazing job heating and cooling their home. The unit is quiet and accomplishes excellent humidity control in the summer. Since the installation, the Hoffers have had tremendous savings. During winter, their monthly heating bill averaged less than \$100. Likewise, their cooling cost throughout two summers equaled \$100 (yes, you read that right)! Because of the success of their geothermal system, the Hoffers began looking into further options for their home. Although going net-positive was not originally a goal for them, after reading and researching, they knew solar would be the next best step.

Geothermal and Solar PV complement each other and work great together. In December 2022, a solar array was installed. The Hoffers decided to oversize their solar system, so the house is overproducing. This will help with the payback time. The Solar PV is projected to produce more electricity than the home uses annually, meaning that the home is a net-positive home.

The Hoffer's home features a 3-ton Navigator series geothermal unit with a desuperheater that works in both heating and cooling modes. The geothermal unit is connected to two geothermal wells, each 235 ft deep. A 50-gallon Rheem Marathon hot water heater is hooked up to the desuperheater for stored heat. That

"It was never my plan to live in a home that was a net zero home, let alone a net positive home, but here we are... Thank you to all at EnerTech for its GeoComfort Navigator series geothermal heat pump system and all who helped make our journey possible."

– L Hoffer, Homeowner

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water goes into the primary 50-gallon A.O. Smith Signature Premier heat pump water heater. The Solar PV system is roof mounted. The McElroy Metal Standing Seam roof is a Slate Gray color. The homeowner, Leonard Hoffer, comments that the metal roof is much lighter than their old asphalt shingles, and it reflects the sun's rays which cuts down on the cost of air conditioning during the summer.

At the end of it's life, the roof can be recycled rather than placed in a landfill. The Solar PV system consists of 31 panels, each 405w. SnapNrack roof mounting hardware attaches to the standing seam of the roof. The percent of solar coverage is

estimated at 175%. The home uses approximately 8000 kWh per year, and the system is estimated to produce around 14000 kWh per year. The Hoffer's home also has 2x6 inch exterior insulated walls, including the attached garage walls. All the exterior walls are covered with Tyvek House Wrap. Andersen Windows are used, with the majority being the Tilt Wash, except in the home's sunroom, which uses glider windows. Double pane windows with low E glaze and argon gas filled are standard in all windows. In springtime, screens are installed on the home's east, west, and south sides. The original screen material was replaced with Phifer Solar Screening, which blocks up to 90% of the sun's heat. Various LED lighting is used throughout the home.

PROJECT DETAILS

Building Size:	2200 sq. ft. home + 700 sq. ft. finished basement
Loop Type:	Vertical closed loop with two wells
Geothermal Equipment:	GeoComfort YT two-stage, multi-position, vertical packaged geothermal heat pump, 3-ton system
Installation Date:	September, 2020
Contractor / Installer:	Mid-Atlantic Geothermal of York, PA
Estimated Annual Costs:	Winter cost: 2020-2021- \$357; 2021-2022-\$363, Summer cost: 2020-2021- \$40; 2021-2022-\$60



CONSTRUCTION TYPE
Existing Building



APPLICATION TYPE
Forced Air System



LOOP TYPE
Vertical

