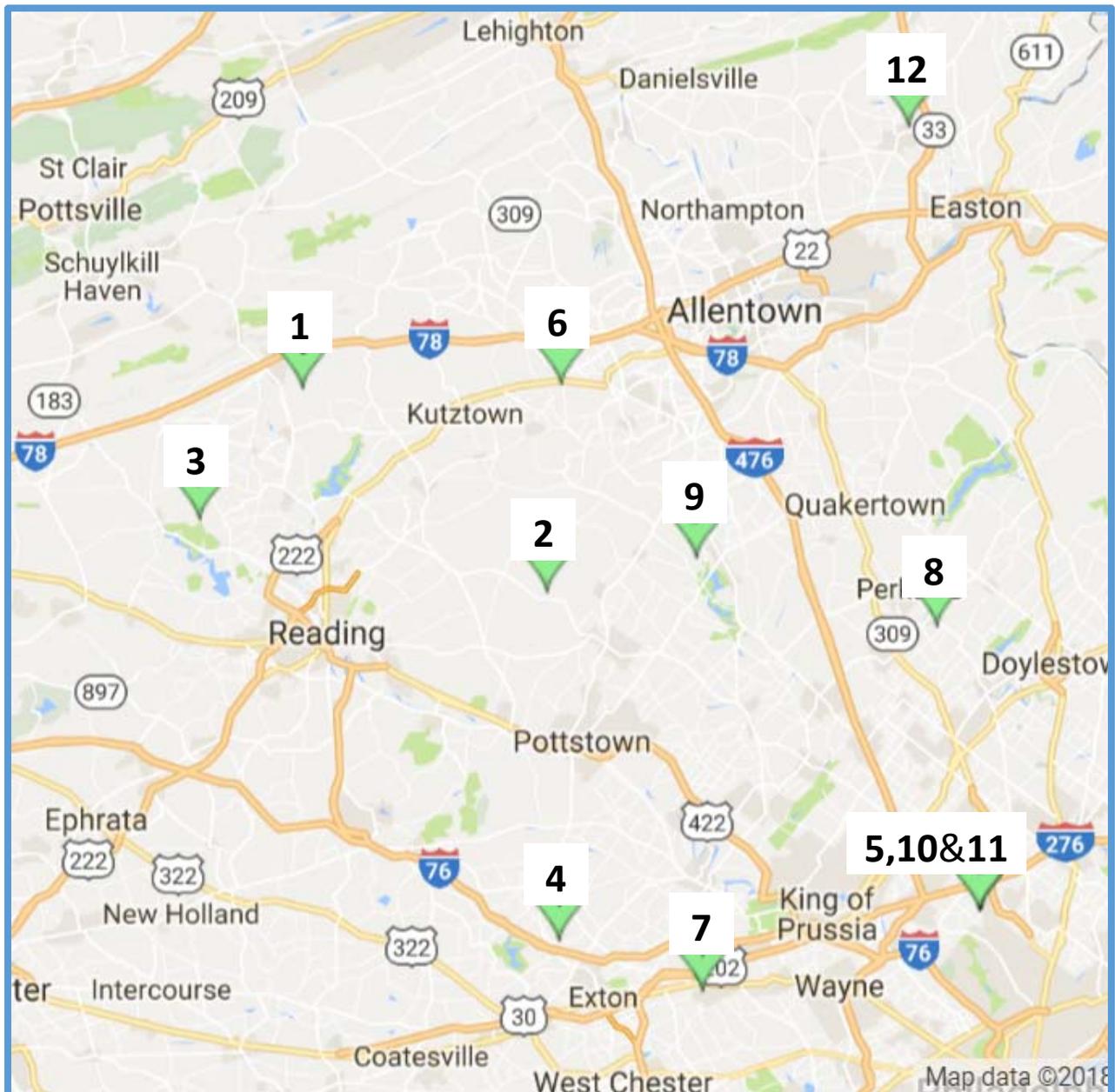


# 2018 Sustainable Living Open House

**Saturday, May 5**  
**10:00 am – 3:00 pm**



## 1 HAPPY ACRES – Kurt & Joanne Reinhart

[715 Schappell Rd., Hamburg, PA 19526](#)

2,500 sq. ft. ranch home with 8.4 kW rooftop Photovoltaic system. Home is super-insulated, airtight, with heat recovery ventilation, all electric. HVAC via Mitsubishi mini-splits, standing seam steel roof, 4,000 gal rainwater catchment system used for toilets, cold water laundry & exterior hoses, heat pump for domestic hot water, approaching Net Zero (structure produces as much energy as it consumes). Note: Recently added 13 rooftop panels to increase system from 5.1 kW to 8.4 kW.

## 2 Steve and Deb Miller

[28 Koch Road, Boyertown, PA 19512](#)

In 2016 we installed 40 Solar World 280 watt panels equaling 11,200 kilowatts with 40 Enphase 250 inverters. It is a ground mount system with a catwalk 8 foot off the ground. It is a grid tied system, but can function 20 panels if grid is shut down with a pure sine wave power inverter tricking the inverters to function with 60hz.grid-tied inverter, a Magnum back up inverter and a no-maintenance Deka absorbed glass mat battery bank.

## 3 Dave & Laura Kennedy

[213 Snyder School Road, Bernville, PA 19506](#)

A 10.78 KW **Ground Mount Array** was installed in 2012 with 44 Suniva 245 Art245-60 Modules, 44 Enphase M-215 Inverters, and 1 Inverter per Module. A **Battery Backup System** was installed in 2015 consisting of four Deka 8A8D, 250Ah rated, and maintenance-free batteries. A **standby generator** can be used to charge the batteries if weather does not permit the solar system to do so. With the grid-tied system, in general when there is a power outage for area Met-Ed customers we do not even know it is happening since the power switches automatically to the battery system with no discernible change. A grid-tied system without battery backup requires the need for a

generator. When the grid goes down, the solar system shut offs automatically to prevent back-feeding into the grid and electrocuting workers doing repairs.

## **Background**

For many years, we were interested in installing a solar system at our rural property for a more sustainable existence, reducing utility bills, and being less dependent on the aging grid infrastructure. With numerous, lengthy power outages experienced since we're at the end of the electric utility line, restoration of power was not considered a priority by the power company.

Laura Kennedy also attended a solar energy class at RACC taught by Bill Hennessy some years ago in which she calculated the cost of the system and the payback in terms of number of years. It exceeded 9 years at that time, therefore it did not seem to make sense to install it.

In a few short years, Met-Ed received approval to raise rates dramatically (almost 30% in year 1) and a recalculation showed that the payback for solar panels would drop to 7 years, and the Pennsylvania incentives would be ending soon. So in 2012 we decided to make the purchase and install the system, leaving it grid-tied.

## **Sustainable Living Features –**

**Home Heating System** – The home is heated by a dual fuel hot water boiler manufactured by Benjamin in Canada. The system is fueled by either oil or wood and can automatically switch to oil if the wood fire dies down or is not maintained. It takes up the same space as a traditional oil boiler. The boiler also has a coil for heating our hot water for domestic use.

**Garden** – A raised bed vegetable garden has been established in front of the Solar Array. A gutter system on the array captures rain water and fills rain barrels which supply water to the garden.

**Grapevines, small fruit, and Fruit Trees** – The property also has numerous grapevines, blueberry and raspberry bushes, and several fruit trees.

**Water and Septic** – Onsite water well and septic system further reduce the need for outside resources.

## 4 Michael Craner

[115 Rising Hill Lane, Chester Springs, PA 19425](#)

Description: A 15.75 kW roof mounted, grid tied array was installed in 2010 by Advanced Solar Industries with 50 Sunpower 315 Solar panels (at 19.3% efficient) and 1 each of SMA 3000, SMA 5000, and SMA 7000 inverters fed by 2, 2 and 3 strings of panels, respectively. A Natural Gas Generac Whole House Backup Generator was installed in 2015. Heating and cooling is supplied by a 5 ton vertical loop geothermal system. Michael was an early adopter of electric vehicles. He has a 2009 Tesla Roadster 1.5 (#245) which he drove across country that year during his Renew America Roadtrip cross country renewable energy campaign, along with a 2012 Signature Red Model S P85 (#242) and a 2016 Model X 90D, as well as two reservations for the Model 3. He previously owned a 2012 Nissan LEAF and both Prius and Honda Civic hybrid. Visitors are welcome to go for a ride in one of the Telsa's.

Background: Michael is an electric vehicle and renewable energy advocate and investor. He is passionate about increasing renewable energy to reduce the harmful effects of climate change. He has been driving electric vehicles since 2009, derives most of his household electric use through rooftop solar panels, and installed geothermal for heating and cooling.

## 5 Joy Bergey

[100 South College Ave, Flourtown PA 19031](#)

(Eastern Montgomery County, just outside northwest Phila.)

Solar array: 3.36 kW pole-mounted PV system in the backyard of my residence, with a bidirectional tracker system, which generates more electricity on net than this one-residence house needs. I bought additional capacity so that I can move away from other uses of fossil fuel in my life: I've just installed a high efficiency electric heat pump water heater, which replaces a gas heater. My next car will be an EV, so I cut my consumption of petroleum. My intent is to have enough solar capacity for all these uses.

I have twelve 280W CertainTeed PV panels and a Fronius Primo 3.8-1 inverter.

My installation is surrounded by a “sun garden” of native plants and two organic raised vegetable beds.

## 6 Matt & Shawn Keller

[10952 Folk Road, Breinigsville, PA 18031](#)

(Note: On the Berks/Lehigh County Line)

Description: 3.2 kW solar array on the workshop roof, grid tied, installed January 2010. 33 Megawatt Hours as of May 2017. The solar array, inverter, and meter are located in or on workshop alongside the driveway for easy access.

BONUS: In addition to my solar system, I enjoy speaking about my Chevy Volt and WVO diesel Volvos and I grew 500 organic potato plants last year!

Directions: From Route 222, turn South on Folk road at Premise Maid Candies. Take 1st left – country lane about 1/3 mile from 222 and drive to workshop.

## 7 Mark & Betsy King

[16 Griffith Avenue, Malvern, PA 19355](#)

- 15 kW roof mounted, grid tied solar array consisting of 35 WSP290M6 290 Watt Winaico panels using Solar Edge P300 DC Power Optimizers on each panel running through a SolarEdge SE10000A inverter with online monitoring system. The electric service was upgraded from 100 to 200 amps to ensure sufficient capacity for future electric vehicle charging needs. System produced 21MWh of electricity in the first year two years of service with 3 MWh of excess production over the first 21 months since the array was built larger than current needs.
- 2014 Nissan LEAF S
- Minimize trash pickups through the 3R's & 2C's – Reduce, Reuse, Recycle, Compost & Compact

Mark thought we should use more solar energy back in the 70's when he was growing up. The opportunity to make this happen came in 2015 when a phone call from SolarCity in June, while a new roof was being installed on their house, began a four month process researching many options. His family wanted to meet their daily 20 kWh need and allow for future electrical demand increases that could come from converting their oil furnace to a heat pump and transitioning their two gas powered autos to electric vehicles. They talked with several solar panel installers, a couple of geothermal installers, and some electric vehicle enthusiasts to increase their knowledge of these technologies to determine how many panels to install. The installers also needed to estimate how much a tree shading the roof in the afternoon would reduce their production. They finally decided in October to have Advanced Solar Industries in New Holland, PA complete the installation.

In October 2017, they purchased a 2014 Nissan LEAF to replace their 2nd car and make use of the excess electricity being generated from their solar panels.

In recent years, with the increase recycling opportunities and other sustainable practices, the family of 3 has drastically reduced their trash pickups so much that they put their 35 gallon can out at the curb for pick up just 4 times in 2017. Read "[We Took Out Our Trash Only 4 Times Last Year! How Did We Do It?](#)" to learn more.

## 8 Athena Bauerle

[508 Delaware Drive, Sellersville, PA 18960](#)

System Description: 24 panel, 290-W SolarWorld, 6.96-kW Enphase installation on the back roof. We also have an electric car - Ford EV that we charge in the garage through regular outlet. Additionally, we have a reverse osmosis filter installed on the refrigerator water dispenser and mounted in the basement.

## 9 Tim and Melanie Cunningham

[2091 Mack Road, East Greenville, PA 18041](#)

72 Microinverters 4 Arrays

1Azimuth: 180°PV Module: HIP-210NKHA5 Sanyo

2Azimuth: 180°PV Module: HIP-210NKHA5 Sanyo

Pole Mount #1Azimuth: 180°PV Module: HIP-210NKHA5 Sanyo

TPM #2Azimuth: 180°PV Module: HIP-210NKHA5 Sanyo

We put up our first solar panels on two of our garage roofs in November of 2009 – 45 panels. A few years later we added a pole mount and an additional three panels on one of the two garages when we realized we had room for three more. We now have 72 panels.

Since inception, we have made 150 megawatts of power. Our pole mounts can be tilted for different seasons of sun. We do not have back up battery capacity.

We have an on-site well and on-site septic systems.

Our house has a basic oil heat system – but we have two woodstoves that primarily heat the entire house. When we had our house built, we picked a design where the chimneys were in the middle of the house so we would be able to retain more of the heat. We don't usually use the first floor woodstove – our house is nice and toasty just using the basement woodstove. We have also installed some vents to aid in the farthest reaches of our house. We have some very small fans (computer fans actually) to direct the heated air to our first floor and our second floor. We use the natural design of our house to help accomplish this.

We utilize a back-up generator to run our house if the electric goes off. We are interested in the Tesla solar shingles and also the Tesla storage batteries. Not ready for a new roof yet, though.

## 10 David and Marsha Low

[48 College Avenue, Flourtown, PA 19031](#)

Special Open House Hours from 10 AM to 12 PM and 2 PM to 3 PM

**UNAVAILABLE 12-1 PM**

We have 11 panels on our roof and 2 collectors for hot water. We have battery backup consisting of four "deep-6" batteries. At the time (was it 2013?...), from what our installer said, this was very unusual, but it seems like lots of people have them now, which makes sense!! It did strike me as funny that if you get a solar system installed, that it wouldn't actually provide any power if the grid went down! But, it turns out, there are safety concerns with linemen doing repairs, etc. And so, as soon as the grid goes down--which it does in our neighborhood a lot--the batteries kick in and isolate the house electrically so nobody fixing anything can get shocked. And we decided ahead of time which circuits the batteries would service. As long as your fridge and HVAC are not drawing off the batteries, normal lighting use can continue for quite some time, provided you turn lights off that you don't need. It's been worth having... although, the battery backup did bring the price on the system up 1/3rd again higher than what it would have been otherwise.

## 11 Chris and Gail Farmer

[95 College Avenue, Flourtown, PA 19031](#)

Our system was installed by SolarCity in late 2015 and became operational in January 2016. It is a 3.65 kW system comprising 13 panels, and covers about 65% of our electricity annually. It is operated on a 20-year power purchase agreement and carried no installation cost to us as a result. It is net metered to Peco.

## 12 Jonathan Lopresti

[47 Schoeneck Ave, Nazareth, PA 18064](#)

Evoked installed a 5.886 Sunpower AC module roof-mounted grid tie system (18×327) at my residence in the fall of 2017. We've made some other modifications too!

Other improvements to the house are ...

- Smappee energy monitor for the electric consumption and solar production.
- Haiku DC (40 watts with the lights on) ceiling fans in the bedrooms from BigAssFans
- Niagara Stealth .8 GPF toilet
- Cansolair 240 solar supplemental heat (20 watt fan moving air through black recycled cans, heated by the sun)
- Double cell window blinds
- HPWH add on to water heater.

That's what was substantial. Other improvements were LED bulbs, attic insulation, rim insulation, solar attic vent fan.

I'm currently trying to get information about an Ice-Energy cooling system for air conditioning. The company is unresponsive to my requests.