

Case Study: Local Engineer Tests Fortress eVault 16.5

Paul S., a renewable energy consultant and professional engineer, has been involved with energy from very early on in his career. His first jobs out of college involved working with alternative fuels to gasoline and the conversion of coal to synthetic crude oil. Paul developed a personal interest in energy, as well, and, as early as 1984, Paul was utilizing solar energy to heat his home. The solar on his first home spurred his interest in all solar and renewable technologies.

Paul's first exposure to PV systems with battery back-up came while he was working with the Department of Defense in Kazakhstan. Maintaining communication with the U.S was vital, but the utility power in the country was unreliable. As a result, part of the contract with the Defense Nuclear Agency was for Paul and his team to install a PV + storage system to keep the communications hardware powered regardless of if the grid was working. The system worked so well that Paul installed a PV + storage system in his new home in 2004. "The PPL engineer told me it was the very first net-metered installation throughout the PPL region" says Paul.

Since that time, Paul has installed more than 100 renewable energy systems in Pennsylvania, New Jersey & Delaware. His company specialized in high-end complex systems that included battery back-up, wind turbines, and solar hot water systems in addition to regular grid tied systems. Currently, Paul works as a renewable energy consultant, and Fortress Power is fortunate enough to have Paul's expertise, input and guidance in our endeavors.

Paul recently incorporated Fortress Power's eVault battery into his solar power system for testing. He was impressed that the eVault 16.5 kWh is projected to last three times as long as his current AGM batteries while taking up less than half of the space. "AGM batteries last typically about 750 cycles if they are well maintained. Even if you only use a few cycles a year, the batteries need to be replaced at year seven at as latest. It's amazing to see that consumers can now choose a battery that lasts 6,000 cycles. Even if you use one cycle per day, it means the battery will last 15 years or more. I am going to switch to the Fortress eVault battery when my current AGM batteries are exhausted."

The Renewable Energy Systems at Paul's residence are currently comprised of 5 separate systems:

1. 6500 Watts Solar PV from 3 separate arrays supporting a Battery Back Up Schneider XW+6848 Inverter with 8 8A8D AGM batteries with 12kWh of storage capacity, providing back-up power to important loads in the house. A manual start 6.5KW gasoline generator connected to AC2 of the Inverter input provides a non-renewable method of charging batteries during power outages.



2. A 4.5KW Luminos 3-blade wind turbine that is connected to the battery buss of the Schneider XW+6848 inverter, providing a second Renewable Energy source to charge batteries and support the back-up load panel.



3. A 4300 Watt Garage Roof Mounted Solar Array with an SMA-5000US Grid tied inverter.



4. A pole mounted 3080 Watt Solar PV system at the Barn with a Power One 3.6KW grid interactive inverter. Excess Energy from this array, which is on a separate PPL meter virtually net metered to the main residence.



5. A 90,000 BTU/day (~26 kWh per day) solar thermal system comprising 3-SPP-30 evacuated tube hot water collectors on garage roof, providing nearly 100% of domestic hot water needs. During the summer, excess thermal energy is used to heat a swim spa and hot tub.

