A Letter to SolarFest From a 2009 Pre-Festival PV101 Workshop Participant

February 2010

Both my Father and I want to thank you, Richard, and everyone else who helped put together the Introduction to Photovoltaic Technology Workshop last summer (2009). We both participated in the workshop and then took and passed the NABCEP entry-level PV installer exam.

After that, we applied what we learned in workshop and decided to install a grid-tied PV system on our house using micro-inverters instead of a central string inverter.

Below is a brief write-up that summarizes the system. The following link takes you to current per module production and other data for the system. We think it's very cool.

http://enlighten.enphaseenergy.com/public/systems/WHHJ1914

Because of all the incentives and the housing slump, many construction workers and electricians are now installing solar systems here in New Jersey. Recently, I heard that 200 new installers were added to the state's "approved" list just last year. Prices for installed PV systems have been dropping.

Another interesting development here in New Jersey relates to one of our electric utilities (PSE&G). This company provides financing for residential projects and repayment of the loan is through the SREC's (solar renewable energy credits) that the PV system generates. The homeowner does not have to make actual cash re-payments.

Thanks again to everybody involved in the course and SolarFest!!

Best regards, *Dan Fischl*

Grid Connected Solar PV system

Our Solar PV system (see Fig. 1) is up and running. The PV array consists of 24 Sharp ND–216 UC1 panels (http://www.pvpower.com/sharp-216w-pv-module-solar-panel-nd-216uc1l.aspx) and 24 Enphase M190-72 240 V microinverters (http://www.enphaseenergy.com/downloads/Enphase_M190_Datasheet.pdf).
The DC output from each Sharp panel is fed directly to an Enphase microinverter (see Fig. 2),anchored below the panel, to produce 240V 60hz AC.

The operation of the system is illustrated inhttp://www.enphaseenergy.com/products/moreinfo/howitworks.cfm. Instead of the 2 PV panels shown in this website description, our system consists of two branches of 12 PV panel-microinverter modules connected in parallel to produce 60 hz AC power that is fed down from the roof to feed the house electric load in parallel with the utility line. Thus the house 60 hz electric load is supplied either from the solar array or electric company or both. Note since our PV array of solar panel/microinverter modules produce AC power, it differs from most presently installed PV arrays that produce DC power that is fed down from the roof to a DC/AC Inverter via DC line from the PV array.

The rated power output from the 24 panel solar array is 5184W (= 216 x 24). The actual power output depends on the solar insolation on the panels that depends on the weather conditions and sun's position relative to the PV array.

You can monitor the performance of the 24 panel array via the web: http://enlighten.enphaseenergy.com/public/systems/WHHJ1914. This monitoring and display system is provided by the Enphase Co.

displayed information can be obtained by activating the "WATCH THE ENLIGHTEN DEMO" on the http://www.enphaseenergy.com/products/moreinfo/howitworks.cfm. As you will see, the output of each module is shown together with the overall output over the past 7 days. The data is updated every 5 minutes.

Figure 1: The PV array of 2 branches of 12 Sharp ND–216 UC1 PV modules,

Figure 2: An Enphase M190-72 240 V microinverter that is connected to each PV module.