

On February 12, 2018, Friends Meeting of Washington brought its new 25.2-Kilowatt solar panel array on line and began generating clean solar power.

The array consists of 84 300-Watt Silfab solar panels, connected to a pair of Solar Edge 14.4 KW 3-phase inverters, which convert the high-voltage DC power from the panels to AC power that can be used to power Meeting lights and equipment.



The array is expected to generate about 27 Megawatt-hours of power each year. This is not sufficient to offset all of the Meeting power demands, so we will still be receiving some power from Pepco, especially in the winter, when the sun is low and our heat pumps are working hard.

At times, the panels will generate more power than we can use, and the excess will flow into the Pepco system and be used elsewhere. We will get a credit for that excess energy. We expect to save about \$3,000 a year in reduced electricity bills

from this arrangement. In addition, under DC rules, we will receive Solar Renewable Energy Credits (SRECs) for each Megawatt-hour of power that we generate. We expect to receive about \$8,000 per year from sale of those credits, which will more than offset the cost of our electricity bills.

We expect the system to repay the \$70,042 installation cost in about seven years.

Each pair of panels is connected to a Solar Edge power optimizer, which maintains maximum power on the array, even when individual panels are shaded or malfunctioning.

Equally important, the power optimizers allow individual pairs of panels to be monitored, which is very important to insure continued full performance of the system.

The power from each pair of panels is recorded by the inverters and sent by internet to the SolarEdge website, where the information can be viewed in real time:

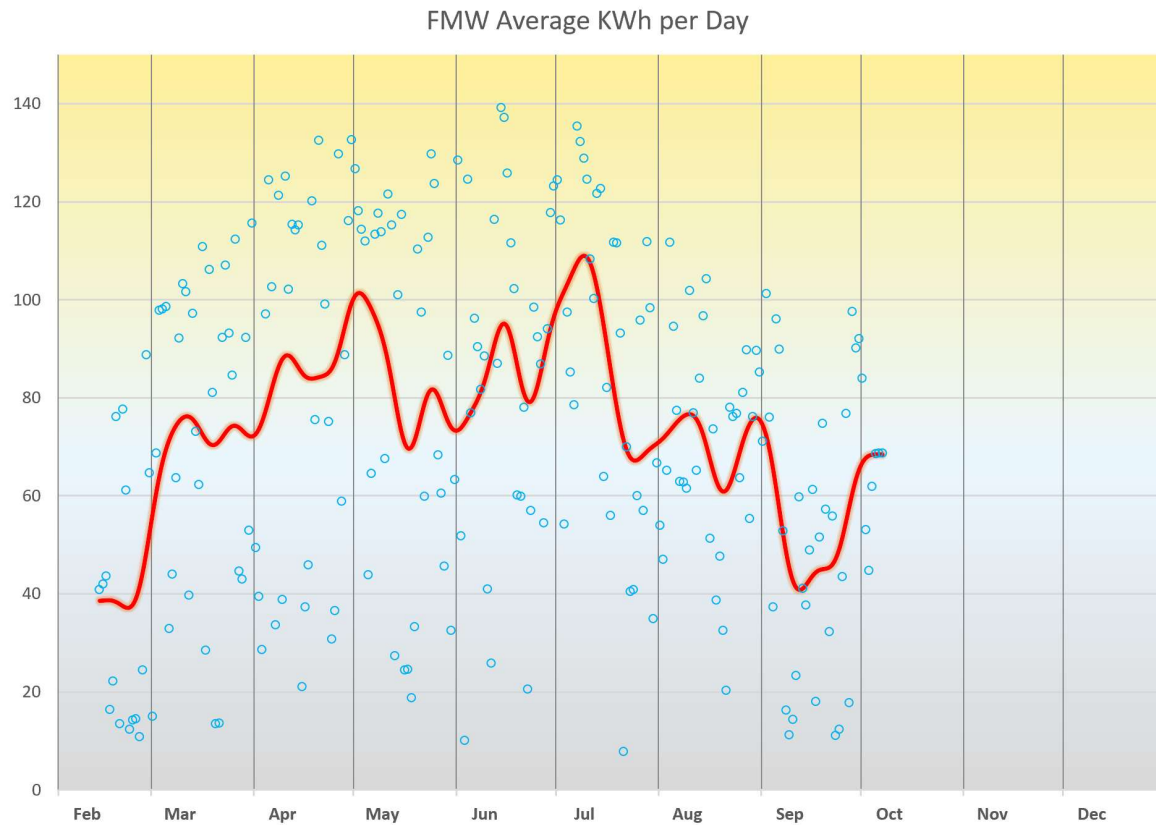
33.13 W	33.13 W	35.34 W	35.34 W	37.62 W	37.62 W	37.07 W	37.07 W	40.84 W	40.84 W	31.23 W	31.23 W
1.0.1	1.0.1	1.0.2	1.0.2	1.0.3	1.0.3	1.0.4	1.0.4	1.0.5	1.0.5	1.0.6	1.0.6
40.52 W	40.52 W	41.04 W	41.04 W	38.43 W	38.43 W	39.26 W	39.26 W	43.04 W	43.04 W	40.15 W	40.15 W
1.0.3	1.0.3	1.0.2	1.0.2	1.0.1	1.0.1	1.0.9	1.0.9	1.0.8	1.0.8	1.0.7	1.0.7
39.39 W	39.39 W	39.19 W	39.19 W	42.29 W	42.29 W	39 W	39 W	40.95 W	40.95 W	40.49 W	40.49 W
1.0.4	1.0.4	1.0.5	1.0.5	1.0.6	1.0.6	1.0.7	1.0.7	1.0.8	1.0.8	1.0.9	1.0.9
39.21 W	39.21 W	37.98 W	37.98 W	38.15 W	38.15 W	38.29 W	38.29 W	41.05 W	41.05 W	38.54 W	38.54 W
2.1.2	2.1.2	2.1.1	2.1.1	2.2.2	2.2.2	2.2.1	2.2.1	2.3.2	2.3.2	2.3.1	2.3.1
32.68 W	32.68 W	36.18 W	36.18 W	39.3 W	39.3 W	37.64 W	37.64 W	37.43 W	37.43 W	39.71 W	39.71 W
2.1.3	2.1.3	2.1.4	2.1.4	2.2.3	2.2.3	2.2.4	2.2.4	2.3.3	2.3.3	2.3.4	2.3.4
37.82 W	37.82 W	35.65 W	35.65 W	36.49 W	36.49 W	35.42 W	35.42 W	34.99 W	34.99 W	36.11 W	36.11 W
2.1.6	2.1.6	2.1.5	2.1.5	2.2.6	2.2.6	2.2.5	2.2.5	2.3.6	2.3.6	2.3.5	2.3.5
34.54 W	34.54 W	35.61 W	35.61 W	38.14 W	38.14 W	37.86 W	37.86 W	36.42 W	36.42 W	39.54 W	39.54 W
2.1.7	2.1.7	2.1.8	2.1.8	2.2.7	2.2.7	2.2.8	2.2.8	2.3.7	2.3.7	2.3.8	2.3.8

In this case, at noon on a cloudy day, you can see that the pair of panels in the upper right is slightly affected by the shadow of the neighboring Meetinghouse chimney.

You can see the real-time performance of our array at:

<https://monitoringpublic.solaredge.com/solaredge-web/p/site/public?name=FMW>

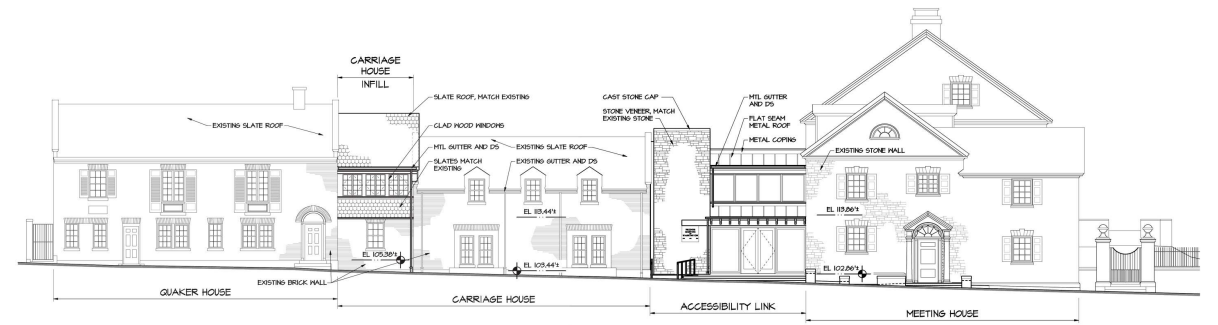
This has been one of the wettest, cloudiest summers on record for Washington, DC, and so our solar array performance has been similarly depressed:



Nevertheless, we have generated more than 17 Megawatt-hours of electricity in our first 8 months, saving us about \$7,000 and helping to reduce global carbon consumption.

We have also replaced most of our heating systems with efficient split-system heat pumps with programmable thermostats, so we only heat and cool rooms when they are in use.

With these changes, our renovated Meeting campus will have more space but a far smaller carbon footprint than a decade ago.



Friends Meeting of Washington

Solar Panel Array Project

October 2018

