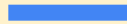


Solarize Southeast PA



How we started

Neighbors helping neighbors to join the clean energy revolution

- Ready for 100 - Chester, Delaware, Montgomery
- Referred to Solarize Greater Media
- Experience with Northwest Philly Solar Co-op
- Led to... Solarize Southeast PA!



Who's behind Solarize Southeast PA

Meenal Raval - primary contact

Marion Biddle - PECO contact & data analysis

Jim Wylie - Sierra Club interface



What is Solarize Southeast PA?

We are neighbors helping neighbors....

- Increase energy literacy
- learn how rooftop residential systems are sized & priced
- connect each household to a local vetted installer
- support the Ready for 100 teams in each town
- Advocate for better policies on clean energy



Solarize Southeast PA in 2019

- Initial interest in Havertown
- Worked with EAC to build more interest
- Requested proposals from area installers
- Identified review team to evaluate proposals
- Vetted 3 installers - one for Chester, one for Delaware & one for Montgomery County - and one for Philly

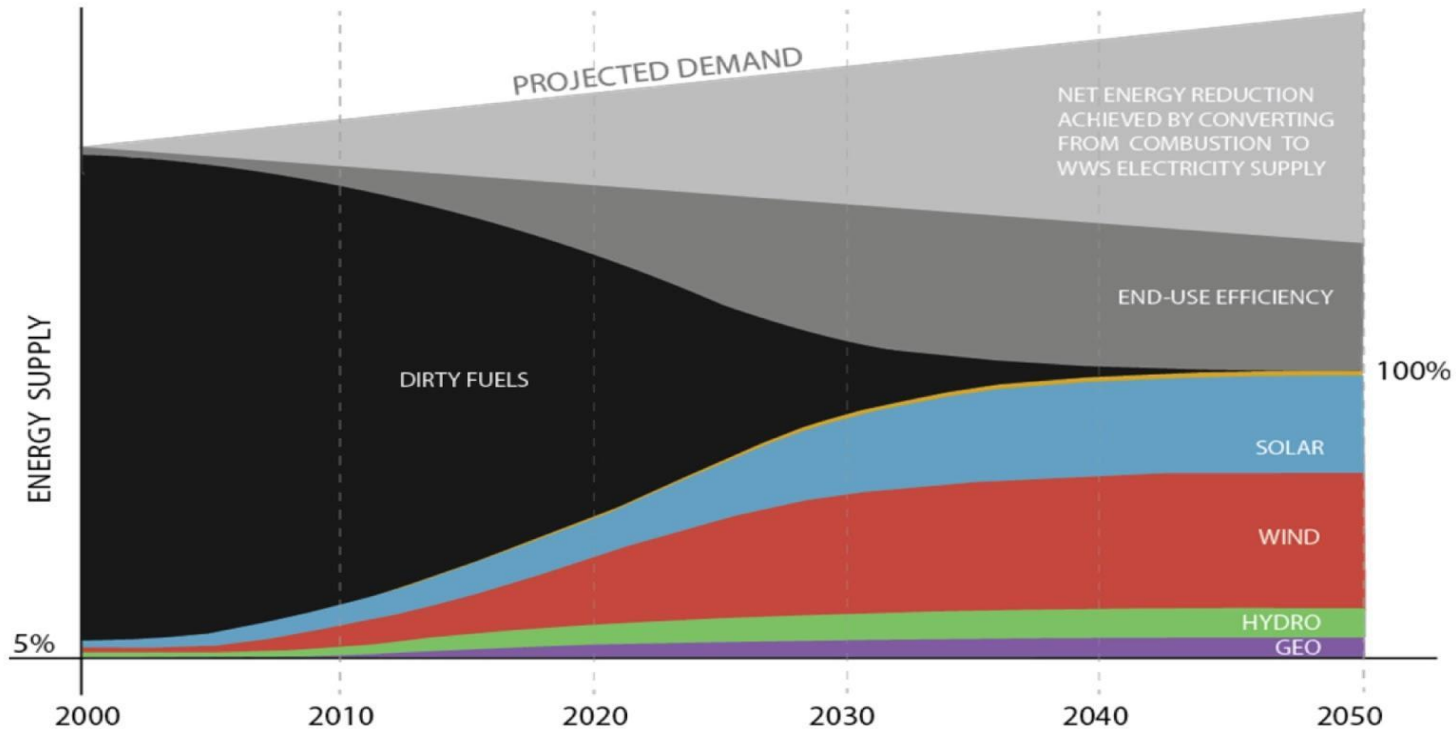


Solarize Southeast PA in 2020

- Working relationships with 5 area installers
- 26% federal tax credit
- Haverford EAC organizing as Solarize Delco
- Phila Energy Authority organizing as [Solarize Philly](#)
- Our goal is to educate neighbors



THE SOLUTION



Electrify Everything & Power it all with Clean Energy

- Switch to clean energy
- Consider additional electric needs
 - Water heating
 - Clothes drying
 - Space heating
 - Stove
 - Car



Gas & Electric Meters

Electricity use measured in kilowatt hours, gas use measured in 100 cubic feet

Meter Information

Read Dates	Meter Number	Load Type	Reading Type	Meter Reading		Difference	Multiplier X	Total Usage
				Previous	Present			
05/14-06/13	122160128	General Service	Tot kWh	69139 Actual	70402 Actual	1,263	1	1,263
05/14-06/13	015593347	General Service	Total Ccf	6980 Actual	6986 Actual	6	1	6

Total kWh Used: 1,263

Total Ccf Used: 6



Electric use

Need to generate 12,000 kWh from rooftop solar installation.

Consider conservation & efficiency first!

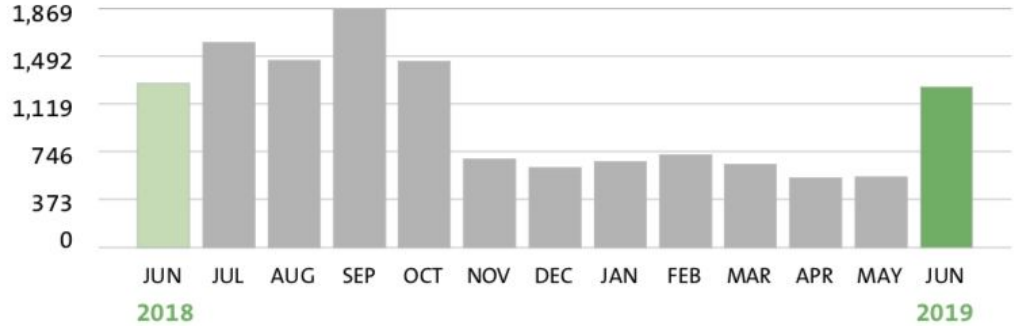
1.5 lb CO₂ per kWh

2204 lbs per metric ton

CO₂e

Your Usage Profile ANNUAL ELECTRIC USAGE

peco.com/smartideas
Save energy and money



Period	Usage	Avg Daily Usage	Days	Avg Daily Temp
Current Month	1,263	42.1	30	71
Last Month	555	19.1	29	61
Last Year	1,287	42.9	30	68
Avg kWh per Month	1,012			
Total Annual kWh Usage	12,155			



Gas use

Need to get from 868 ccf to zero! How?

- Consider electrification
- Consider conservation & efficiency

12 lb CO₂ per ccf

2204 lbs per metric ton

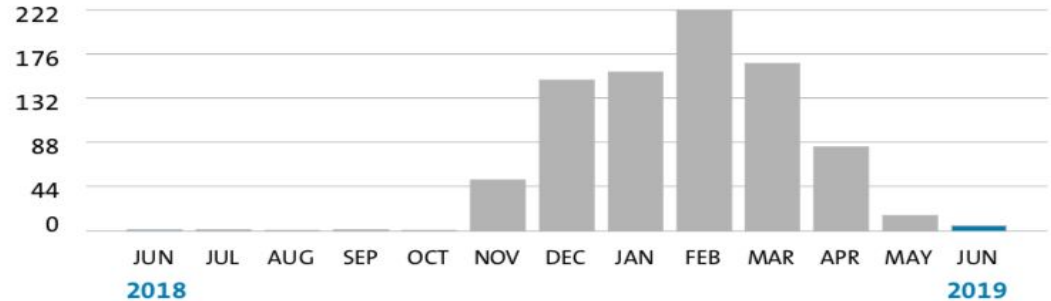
CO₂e

Your Usage Profile

ANNUAL GAS USAGE

peco.com/smartideas

Save energy and money



Period	Usage	Avg Daily Usage	Days	Avg Daily Temp
Current Month	6	0.2	30	71
Last Month	16	0.6	29	61
Last Year	2	0.1	30	68
Avg Ccf per Month	72			
Total Annual Ccf Usage	868			



Get that assessment!

Reduce before Renewable...

Is your home wasting energy?
Find out with a **PECO Energy Assessment**.



Schedule now for **just \$25** (a \$150 value)*
peco.com/assessment | **1-888-5-PECO-SAVE**

PECO. The future is on.



We'll help you stay comfortable and stop wasting energy.



Get an **unbiased evaluation** of your home by a PECO energy advisor.



Receive a **personalized report** with energy-saving recommendations.



Get access to **PECO rebates** for additional energy-saving upgrades.



You may qualify for **higher heating and cooling equipment rebates** when you use a PECO HVAC participating contractor.



All this for **just \$25** (a \$150 value)*

► **Schedule your appointment** at peco.com/assessment or call **1-888-5-PECO-SAVE** (1-888-573-2672).

*You must be a PECO residential customer heating your home with electricity to receive a comprehensive assessment. Only one Energy Assessment per year. This program is subject to change, including termination, without prior notice. Appointments are available Monday-Friday. Limited number of appointments available on Saturdays.

PECO 0519
07 EXE 110871



© PECO Energy Company, 2019



The process

- **We:** do initial roof assessment, solar potential, compare to current usage
- **Installer:** evaluates roof & provides formal proposal
- **You:** sign contract with Installer
- **Installer:** gets PECO interconnection, permits, installs & schedules inspections
- **We:** follow-up with PECO & Installer, facilitate as needed
- **You:** start getting electricity from the sun!



Free solar assessment

For free solar assessment, please send people to the
Contact page of Solarize Southeast PA

solarizesepa.com/contact

Will need name, e-mail address,
home address and annual electric usage

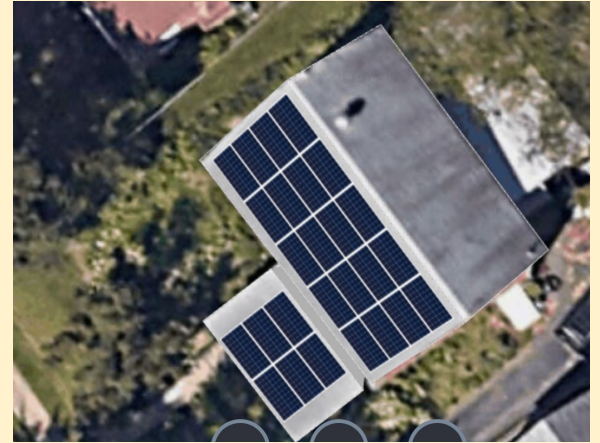
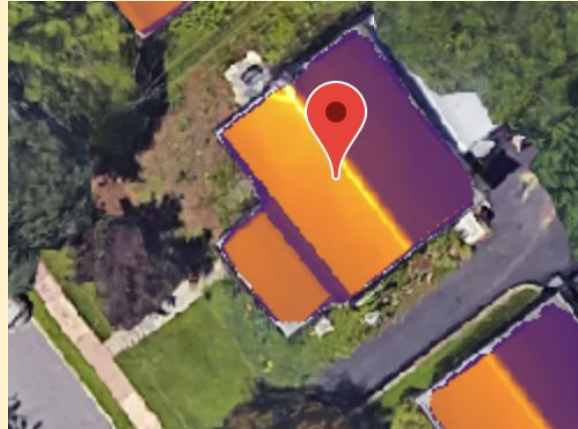


Quick check of roof potential

- Assess roof - Google satellite image
 - Southern exposure, minimal shade, good condition
- Assess system size
 - Translate address to system size in Watts
 - Roof angle
- Back of envelope
 - Watts to kWh & Dollars



An example...811 Powder Mill Rd



26 panels



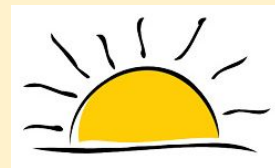
Now the math...

- **Number of panels** = 26
- **System size** = number of panels x Watts / panel = 26 x 305 = 7,930 DC Watts (or 7.93 kW)
- **Annual generation** (DC to AC) = system size x 1.1 = 8,723 kWh
- **System cost** = DC system size x \$3.10 / Watt = \$24,583
- Less 26% Federal tax credit = 24583 x 0.26 = \$6,392
- **Net cost** = 24583 - 6392 = \$18,191



Optional / Additional costs

- Upgrade electric service
- Install on steep roof
- Install on slate roof
- Ground mount system
- Pole mounted system
- Higher efficiency panels - latest tech
- Energy Monitoring
- Battery storage
- Remove & reinstall system
- Redo roof
- PECO upcharge for outside wiring



Paying for clean energy

- Buy
 - Personal savings
 - Home equity loan
 - Unsecured loan - Clean Energy Credit Union or others
- Lease (Power Purchase Agreement) - for commercial projects
- Federal Tax Credit (26%)
- Solar electricity runs loads in house first
- Net metering (PECO)



Solar - Not just at home!

- Houses of worship - no federal tax credit
- Municipal buildings - no federal tax credit
- Home Owner's Associations (HOA)
- Place of work



Meter info with solar

Meter Information

Read Dates	Meter Number	Load Type	Reading Type	Meter Reading		Difference	Multiplier X	Total Usage
				Previous	Present			
05/15-06/14	575395757	In/Out No Flow	kWh From Grid	7669 Actual	7781 Actual	112	1	112
05/15-06/14	575395757	In/Out No Flow	kWh To Grid	10468 Actual	11371 Actual	903	1	903

Total kWh Used: 112

Two meter readings.

As of summer 2017 PECO uses a bi-directional meter, rather than two meters

**Excess
Production:
791 kWh**



Net Metering in PA

1. Excess solar production is sent back to grid and offsets usage
2. If net amount from PECO is positive - customer will pay for that amount
3. If net amount from PECO is negative - cost is \$0 and excess is rolled over to the next month as “banked” kWh
4. On the May bill PECO credits any excess banked kWh’s at the Price to Compare and zeroes out the bank



Monthly bill with solar

What's not to like?

The bill is dependent on the system production compared to use. This sample household generates more electricity than is used by the house. The bill is always reduced but not always to \$0.



Electric Residential Service

Service Period 05/15/2019 to 06/14/2019 - 30 days

PECO ELECTRIC DELIVERY	\$9.94
Customer Charge	9.97
Distribution System Improvement Charge	-0.03
TAXES & FEES	\$0.00
Total Current Charges	\$9.94



PECO Message Center

“Money” in the PECO bank...

Your Previous Banked Distribution kWh is 0. Your Current Change in Banked Distribution kWh is 791. Your current Adjustment to Banked Distribution kWh due to settlement is 0. Your Remaining Banked Distribution kWh is 791.

Your Previous Banked Generation kWh is 0. Your Current Change in Banked Generation kWh is 791. Your current Adjustment to Banked Generation kWh due to settlement or electric generation supplier switch is 0. Your Remaining Banked Generation kWh is 791.

Your **Total Account Balance of \$-83.92** includes your Total Amount Due and all other Arrearage/Agreement/Deferred balances that are on this account.



Sample PECO Bill With Solar

Billing Summary

Bill Date	06/14/2019
Excess credit	-\$93.86
Total Other Charges	-\$93.86

Current Period Charges

Electric	\$9.94
Total New Charges	\$9.94

No Payment is Due \$0.00

Your remaining excess credit is \$83.92

Account Number

Meter Information

Read Dates	Meter Number	Load Type	Reading Type	Meter Reading		Difference	Multiplier X	Total Usage
				Previous	Present			
05/15-06/14	575395757	In/Out No Flow	kWh From Grid	7669 Actual	7781 Actual	112	1	112
05/15-06/14	575395757	In/Out No Flow	kWh To Grid	10468 Actual	11371 Actual	903	1	903

Total kWh Used: 112

In and Out Meters



Electric Residential Service

Service Period 05/15/2019 to 06/14/2019 - 30 days

PECO ELECTRIC DELIVERY	\$9.94
Customer Charge	9.97
Distribution System Improvement Charge	-0.03

TAXES & FEES \$0.00

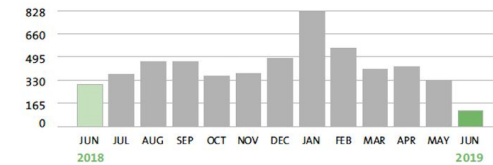
Total Current Charges \$9.94

Your Usage Profile

ANNUAL ELECTRIC USAGE

peco.com/smartideas

Save energy and money



Period	Usage	Avg Daily Usage	Days	Avg Daily Temp
Current Month	112	3.7	30	71
Last Month	334	11.5	29	61
Last Year	303	10.1	30	69

Avg kWh per Month 434
Total Annual kWh Usage 5,216

Message Center

From PECO:

New charges contain estimated total state taxes of \$0.73, including \$0.59 for State Gross Receipts Tax.

Your Previous Banked Distribution kWh is 0. Your Current Change in Banked Distribution kWh is 791. Your current Adjustment to Banked Distribution kWh due to settlement is 0. Your Remaining Banked Distribution kWh is 791.

Your Previous Banked Generation kWh is 0. Your Current Change in Banked Generation kWh is 791. Your current Adjustment to Banked Generation kWh due to settlement or electric generation supplier switch is 0. Your Remaining Banked Generation kWh is 791.

Your electric price to compare is \$0.0000 per kWh. This may change in March, June, September and December. For more information and supplier offers visit PAPowerSwitch.com and oca.state.pa.us.

Your Total Account Balance of \$-83.92 includes your Total Amount Due and all other Arrearage/Agreement/Deferred balances that are on this account.

Because your account has a credit balance, no payment amount will be deducted from your bank account this month. Thank you for using our electronic bill payment plan.

Credit balance on this bill will be applied to your next standard bill.

Banked kWh

The bill is dependent on the system production compared to use. This sample household generates more electricity than is used by the house. Bill is always reduced but not always to \$0



Three types of Solar Designs

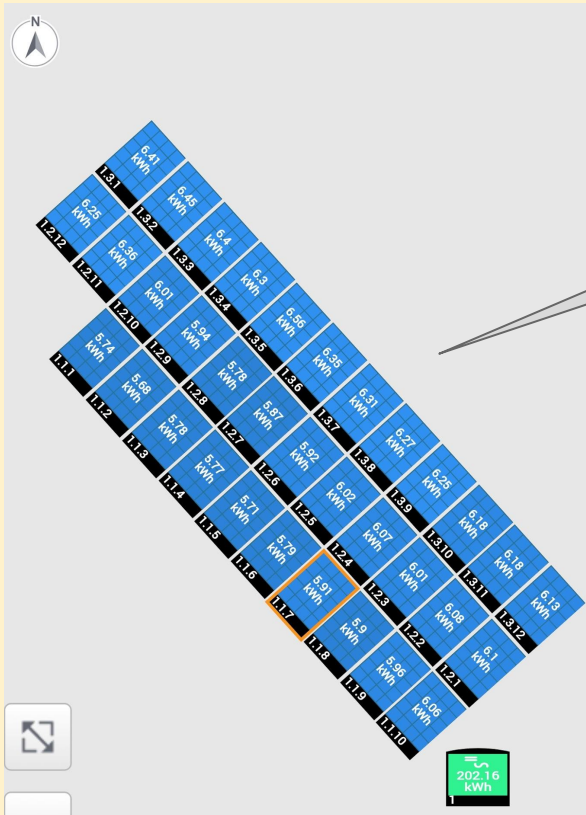
1. Panels connected in series - older technology - panel with least production limits the whole array
2. Microinverters on each panel - converts DC to AC at each panel, production is not limited by each panel
3. Optimizers on each panel - production is not limited - DC is converted to AC at the central inverter



Equipment on Caledonia Street

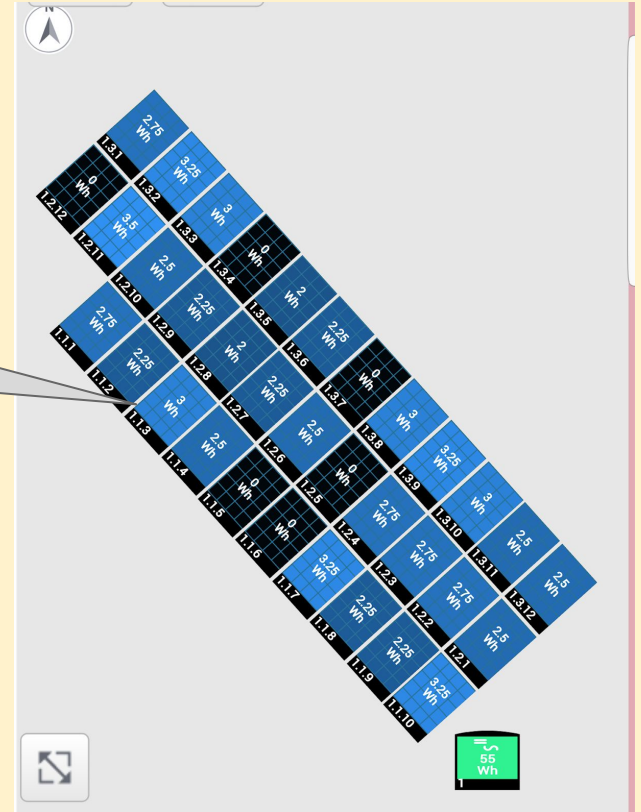


Production by Panel Caledonia Street

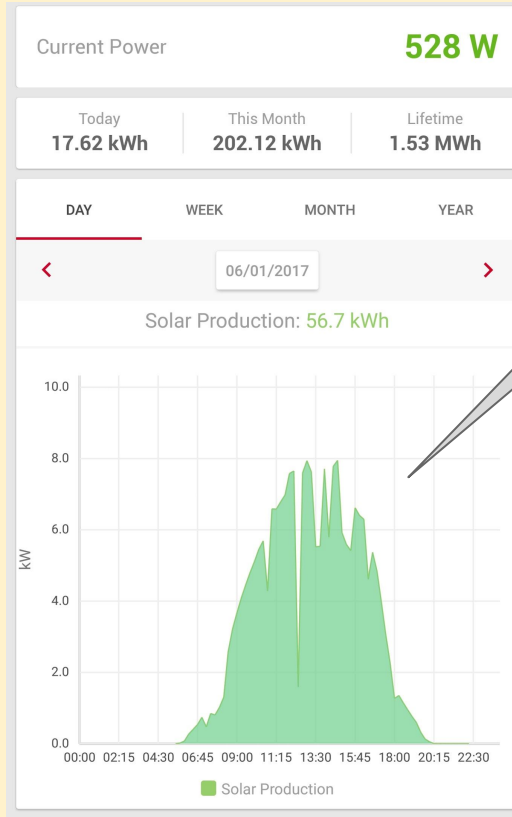


**Sunny
Midday**

Cloudy

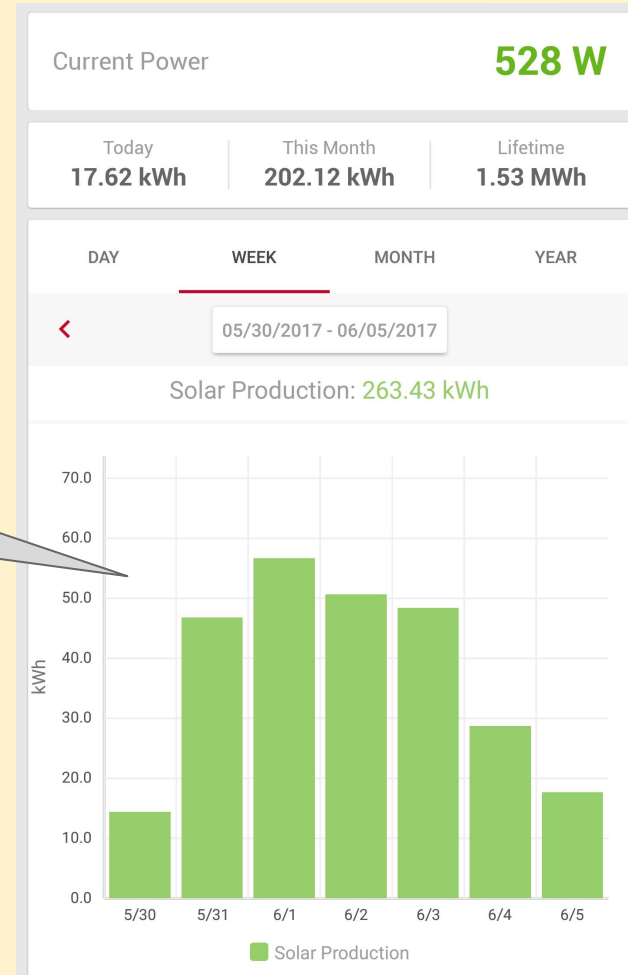


PV Generation at Caledonia

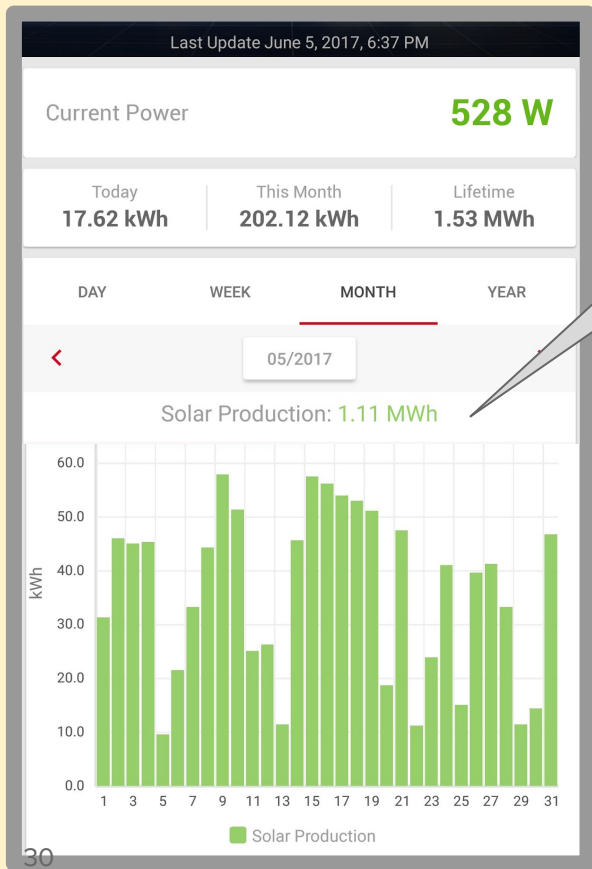


One Day

One Week

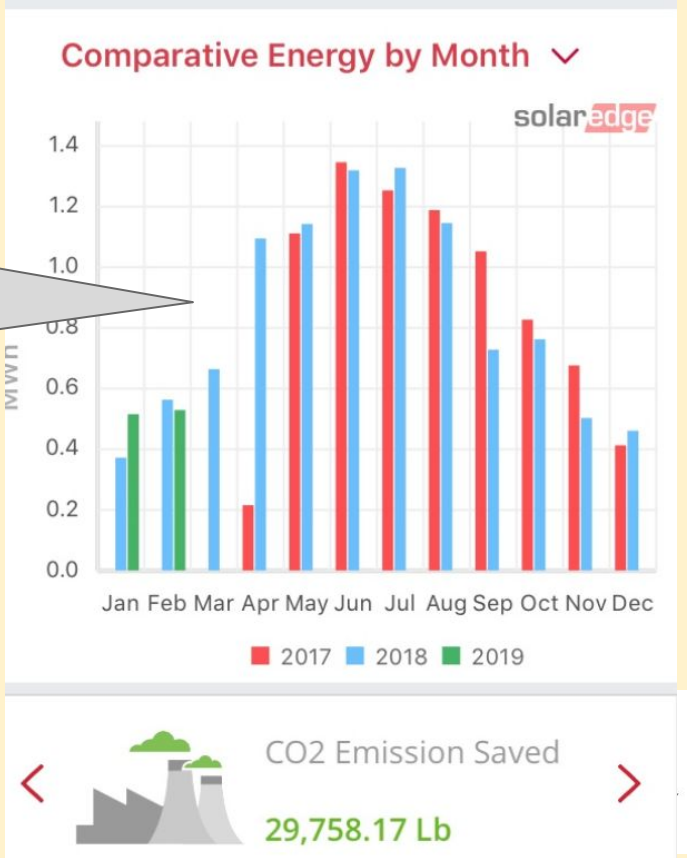


PV Generation at Caledonia



One Month

Months over the years



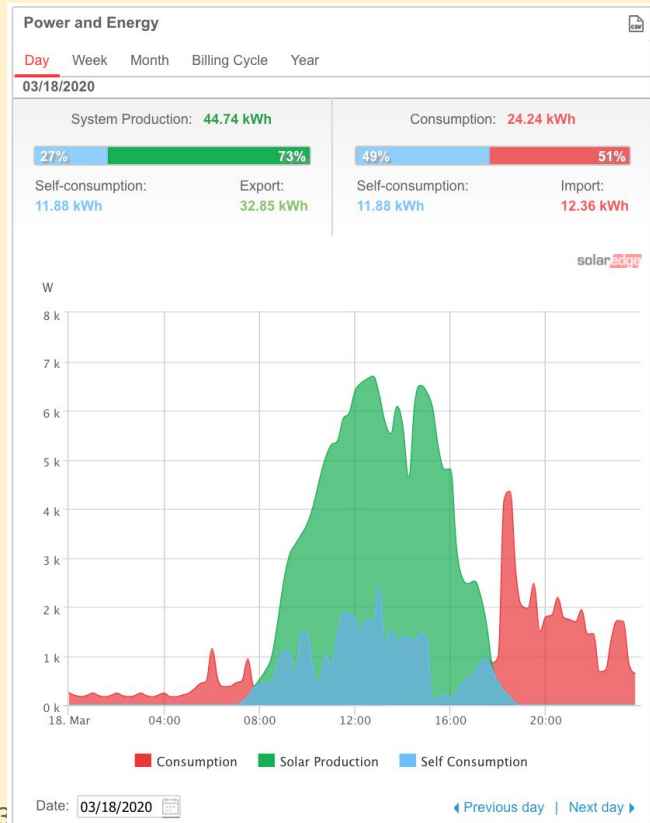
Enhanced Monitoring - Sample Day

SolarEdge Inverter with Usage Monitoring Add-on

Red shows power used from PECO's grid (night time or when sun isn't shining)

Blue shows power used directly from solar panels

Green shows power being sent back to PECO via the grid. (Technically goes to the immediate neighbors)



Contact information

For free solar assessment, please share name, email, home address & annual electric usage at solarizesepa.com/contact

Website: solarizesepa.com

Email: solarizesepa@gmail.com

Presenters: Meenal Raval & Marion Biddle

Phone: 267.709.3415



Photos!



W Upsal Street / pitched roof



Sprague St / flat roof



W Upsal Street



Gerhard St



E Phil Ellena St



E Gowen Ave



Thomas Mill Terrace



Dupont Street



Mermaid Lane



Cresheim Road



W Mount Airy Avenue

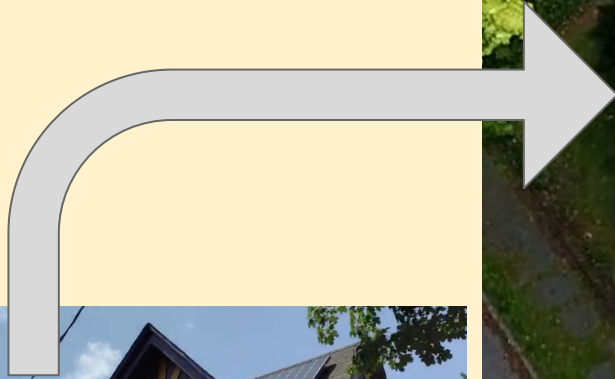


East Upsal Street



Rural Lane

Purple House Goes Solar [Video](#)



Not just on rooftops...

- Total capacity:
3.5 kW DC
- Total generation:
4,690 kWh per year
- Greenhouse gas reduced:
3.3 metric tons/year

[Video](#)



Your form, We're neighbors helping neighbors..., has new responses. Inbox x

Google Forms <forms-receipts-noreply@google.com>

2:43 PM (2 minutes ago)



to me ▾

Google Forms

1 new response

Hi,

Your form [We're neighbors helping neighbors...](#) has a new response.

Response 1

[VIEW SUMMARY](#)

