

Solar Successes & Lessons Learned

Case Studies from PA Schools

Thursday June 8
9:30-10:30AM

Join us for a robust discussion with superintendents and facilities managers from three solar school districts!



Presented in partnership with



PHILADELPHIA
SOLAR ENERGY ASSOCIATION



Generation180



PENNSYLVANIA
SOLAR CENTER

Solar Schools Toolkit

Webinar #2 - Solar Successes and Lessons Learned

June 8, 2023



Speakers

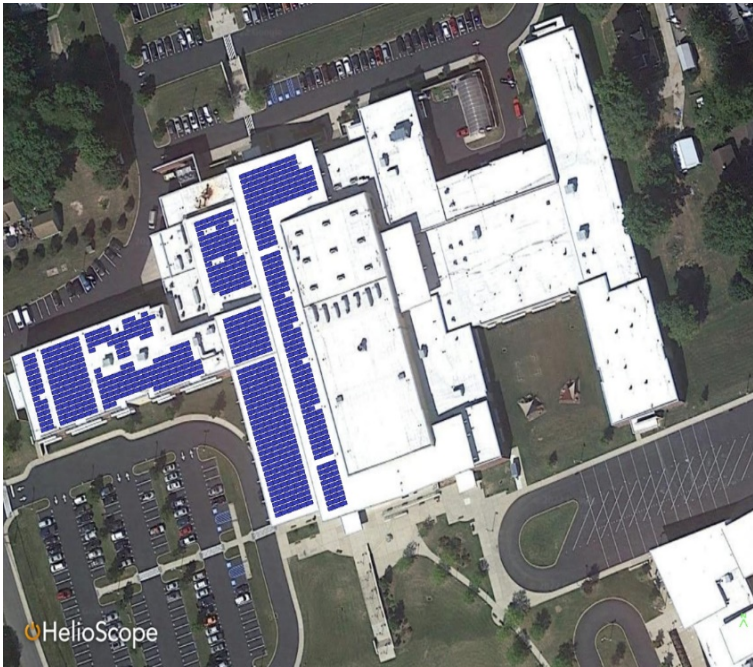
- Mick Iskric, Superintendent, Steelton Highspire School District
- Rick Musselman, Former Superintendent, Midd-West School District
- Mark Stein, Director, Facilities and Operations, Bethlehem Area School District
- Roger Clark, Director, Sustainable Development Fund (retired)

Philadelphia Solar Energy Association

Toolkit supported by PA Department of Environmental Protection

In cooperation with: PHENND, PA Solar Center, Generation 180, Delaware Valley Regional Planning Commission

Solar Schools Toolkit



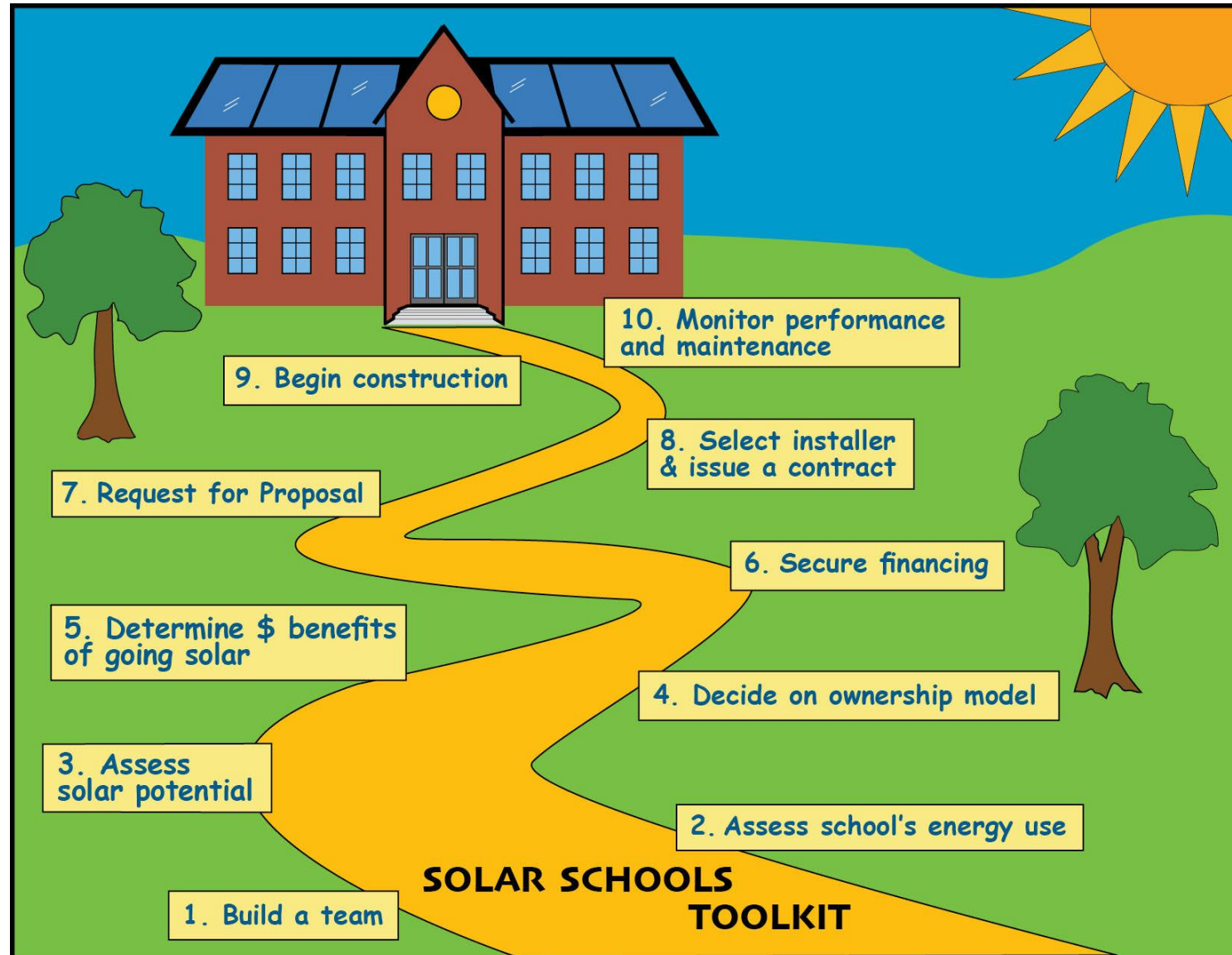
Save Money
Increase Educational Opportunities
Provide Environmental Benefits
Improve Resilience

Advantages of Going Solar

- **Electricity Bill Savings**
 - Offset electricity consumption
 - Earn Solar Renewable Energy Credits
 - Reduce peak demand (sometimes)
- **Avoid future electric price increases**
- **Reduce CO₂ emissions**
- **Create educational opportunities for students and staff**
- **Improve Resilience**



10 Steps to Become a Solar School



Case Study 1: Steelton-Highspire SD



Typical ground mounting system with perimeter fencing



On settled landfill from flooding caused by Hurricane Agnes

- 1.6 MW in 2021
- Ground mounted on settled landfill behind high school
- PPA with McClure Energy
- Provides 100% of the district's load

Case Study 2: Mid-West SD



West Snyder Elementary School 460KW

- Completed in 2020
- Total of 2.56 MW
- Supplies 90% of District's load



Behind the High School 2.1 MW Bifacial panels

- PSA with Greenworks Development
- Contractor: Solar Renewable Energy LLC
- Snyder County

Case Study 3: Bethlehem Area SD



East Hills

- Completed in 2011-12
- 1.625 MW on 5 schools
- Ground mounted, rooftop and parking canopy



Solar Parking Canopy at Freedom High School

- PPA with Tangent Energy Solutions
- Solar contractor: Tri-M Group and Baja Group
- Northampton and Lehigh Counties

Step 1: Build a Team

- How did the solar project begin?
Early champions ?
- Who were the key team members?
the key decision makers?
- What were the initial goals? Did those goals change over time?
- What roadblocks did you encounter? How did you overcome them?



Step 2: Analyze School Electricity Usage

- How did you analyze your school's electricity usage and bills?


Who was involved in that process?

- Did you learn anything surprising

when you analyzed the bills

- Were electricity costs the driver

for the solar project?



PECO
An Exelon Company
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Meter Information

Read Dates	Meter Number	Load Type	Reading Type	Meter Reading		Difference	Multiplier X	Total Usage
				Previous	Present			
12/22-01/28	017000629	General Service	Pk kW	Actual	Actual	0.3450	600	207.00
12/22-01/28	017000629	General Service	Tot kWh	Actual	Actual	208.3200	600	124,992
12/22-01/28	017000629	General Service	GS Off Pk kW	Actual	Actual	0.3450	600	207.00
12/22-01/28	017000629	General Service	On Pk Kw	Actual	Actual	0.3300	600	198.00
12/22-01/25	043348083	General Service	Total Ccf	56193 Actual	64421 Actual	8,228	1.03	8,475

Distribution kW - Measured : 207.0 Total kWh Used: 124,992
Total Ccf Used: 8,475

Electric Commercial Service 100kW-500kW

Service Period 12/22/2020 to 01/28/2021 - 37 days

PECO ELECTRIC DELIVERY	\$2,092.94
Customer Charge	44.21
Distribution Charges	207.00 kW X 8.59000 1,778.13
Distribution Charges	124,992 kWh X -0.00060 -75.00
Distribution System Improvement Charge	6.87
Energy Efficiency Charge	124,992 kWh X 0.00271 338.73
ELECTRIC SUPPLY	\$8,227.72
Dynergy Energy Services Charges (877-331-3045)	
GENERATION: 124992 KWH @ \$0.0621	7,762.00
Sales Tax	465.72
TAXES & FEES	\$125.25
State Tax Adjustment	-0.31
Sales Tax	125.56
Total Current Charges	\$10,445.91

Message Center

From PECO:
5.90% estimated Gross Receipts Tax of \$123.47 included in new charges.

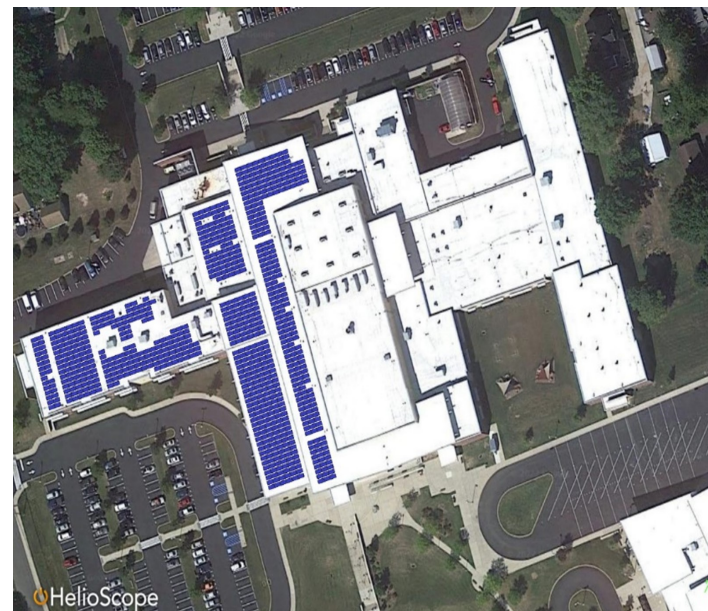
Your estimated electric price to compare adder is **\$0.00928 per kWh**, which includes ancillary charges and the purchased generation adjustment but excludes energy and capacity. This may change monthly. For more information and supplier offers visit PAPowerSwitch.com.

Your estimated gas price to compare for your rate class is **\$0.3354 per Ccf**. This may change in March, June, September and December. For more information on how to shop for natural gas visit PaGasSwitch.com and oca.state.pa.us.

From Dynergy Energy Services:
We appreciate your business. Visit our website for energy-saving tips.

Step 3: Assess Your Solar Potential

- How was the size and location of your solar project determined?
- Did the solar installer do the initial layout?
- Was there much back and forth about the layout?
- What were the key issues in the location of the project?

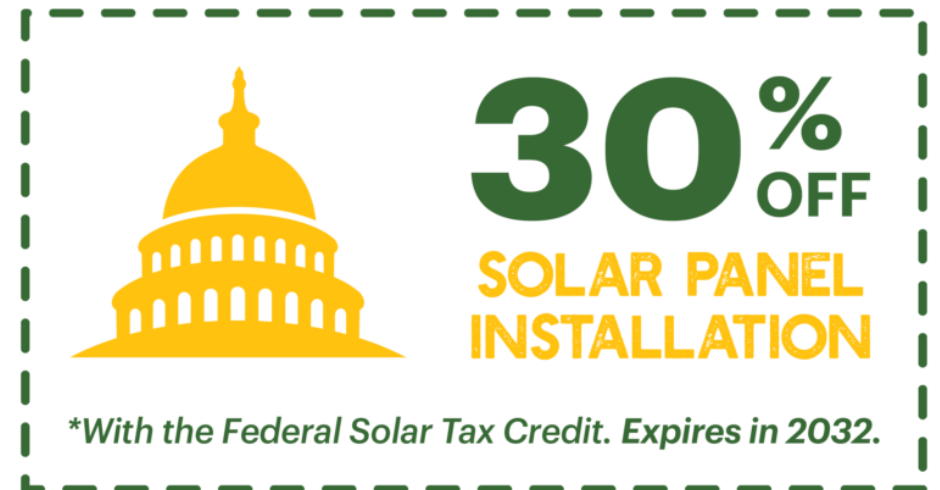


Step 4: Determine the Ownership Model

In the past **PPAs** or other third-party ownership models worked well for schools, but the Inflation Reduction Act (IRA) is a game changer:

Direct Payment under IRA extends the federal Investment Tax Credit benefit to tax-exempt entities, changing the math.

- **30% tax credit** is the base credit
- **Adders:**
 - +10% for domestic content
 - +10%, for fossil fuel energy communities
(much of PA qualifies)
 - +10% for low-income communities
(competitive, cap on MWs, 2 years only)

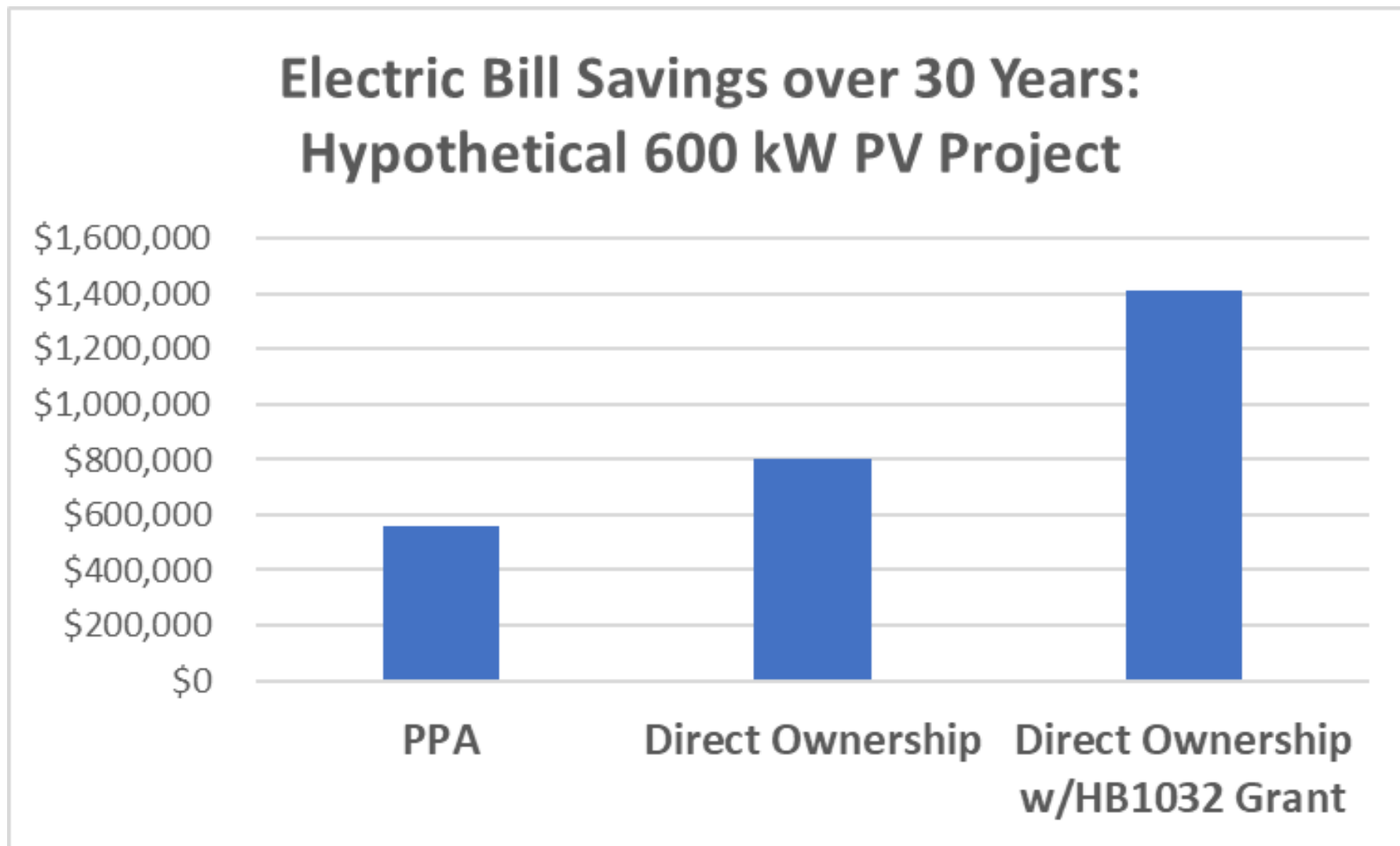


Direct Ownership benefiting from other trends

- Pennsylvania **SREC** prices are up - currently \$46/MWh - up from \$5
- Electric utility **Act 129 solar programs** - up to 10 cents per kWh generated and used in first year
- Other potential **state grants/financing** - much is afoot



PPA v. Direct Ownership Savings



Step 5: Estimate Financial Benefits

- Did you do an initial financial analysis of bill savings
- Did you realize the predicted financial savings? If not, what was the problem that caused the problem?
- What advice do you have for others about the terms of a PPA?
- Did you retain the SRECs? Do you sell the SRECs or retire them?

Year	Electricity Cost	Paid to PPA Provider	Paid to PPL Utility	SREC Revenue	Difference	Savings
2021-22	\$630,000	\$358,550	\$297,548	\$106,646	\$549,452	\$ 80,548
2022-23	\$840,000	\$362,136	\$307,462	\$110,000	\$519,598	\$280,402

Step 6: Financing

With a PPA, project financing is the concern of the solar developer, not the school. But with Direct Ownership, the school must arrange financing.

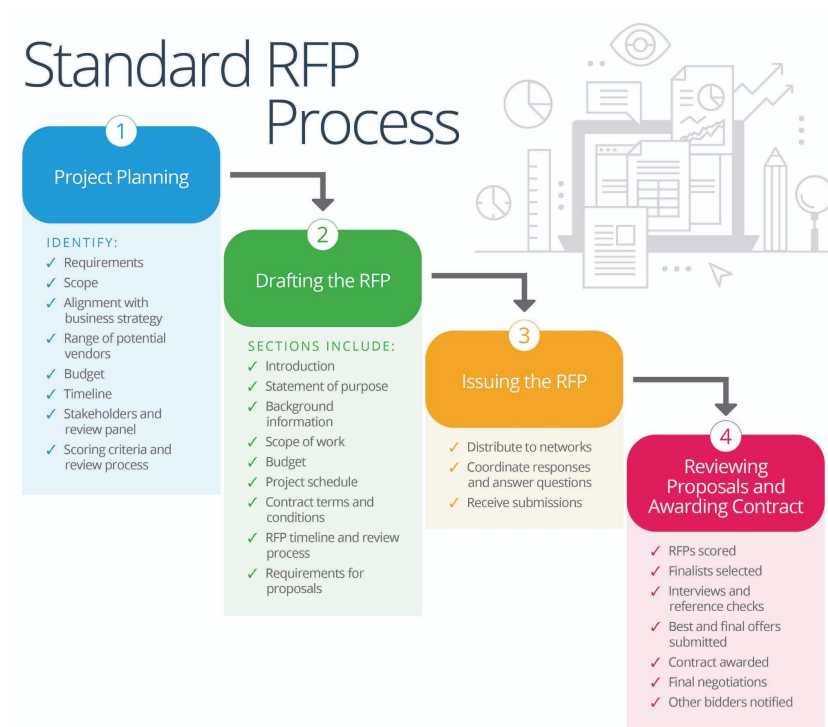
Financing will be the subject of the third Solar on Schools webinar - Thursday, June 29 at 9:30 a.m.



Central Columbia SD 3.8 MW Largest solar school system in PA !

Step 7: Request for Proposal (RFP)

- Did you issue an RFP to select your PPA provider/solar contractor?
- What advice do you have about the RFPs document?
- How many responses did you get to the RFP?



Step 8: Select Solar Installer & Issue Contract

- Did your RFP specify the selection criteria and the scoring of the proposals? Did that work as you expected?
- Who evaluated the proposals?
- What did you learn about the contracting process? What changes would you make if you could re-do the contract?



Step 9: Construction

- What time of year did the construction occur?
- Did construction impede normal school operations?
- How long did it take?
- Any surprises in the construction?



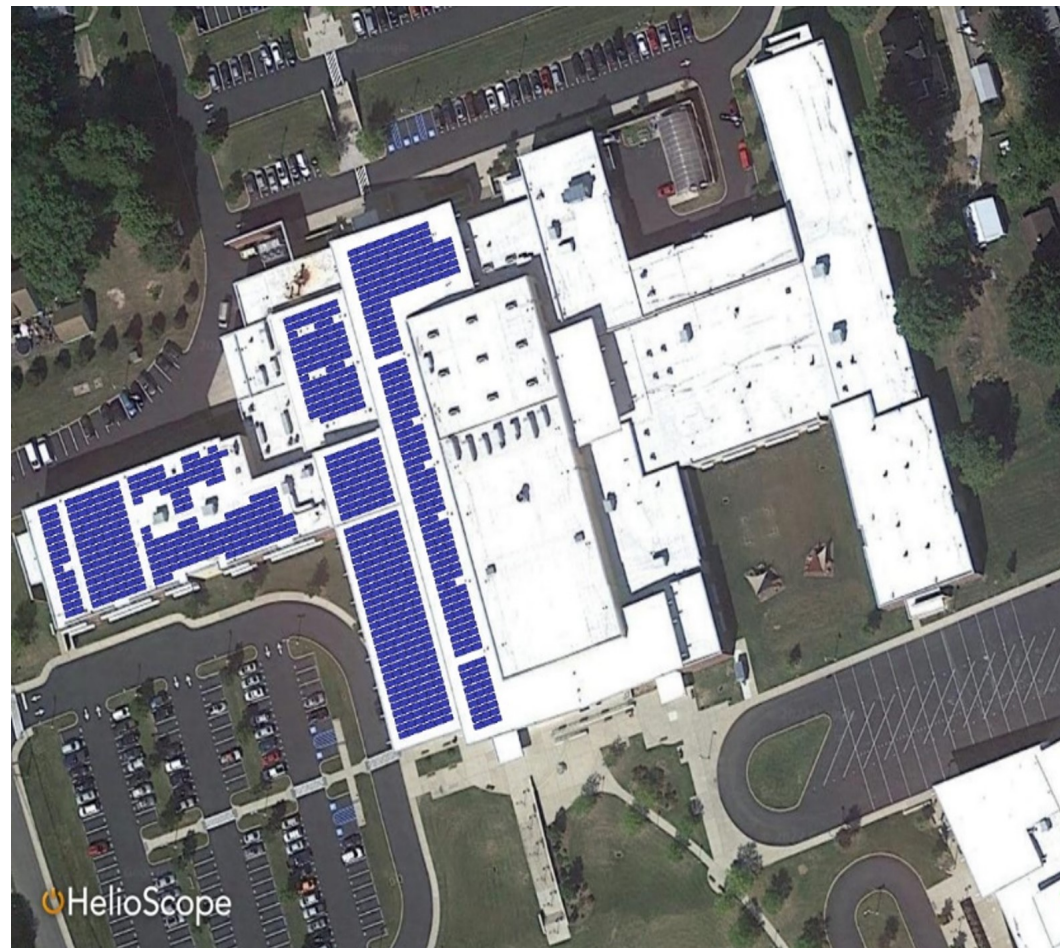
Step 10: System Monitoring, O & M

- How is the performance of your system monitored? Who does it? How is that monitoring information used?
- Have teachers and students used the monitoring information in the classroom? What teaching about the system has taken place?
- Has your system needed any repair or replacement?
- How do you mow under the ground mounted systems?



Future Plans?

- Are you planning to add more solar ?
- Do you plan to electrify your HVAC and other systems? Electric school buses?
- Do you plan additional energy efficiency measures in the district?



How to Pay for Your School's Solar System

Thursday June 29

9:30-10:45 AM

Solar finance experts will describe new and existing options, and how these incentives create opportunities for greater financial savings!



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