SOLAR STATES

Solar Energy Proposal

Westtown Township Public Works

10 E. Pleasant Grove Rd. West Chester, PA 19382

7.14.2022

*Solar States LLC :: 1500 N. American St. Philadelphia, PA 19122 :: **w** www.solar-states.com :: **p** (215) 939-6699*

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Company Overview

Solar States is a Philadelphia-based solar installation and education firm actively investing in positive environmental and economic change since 2008. We have installed more than 700 solar (PV) systems on homes, institutions, university campuses, at schools, via ground mounts, and on commercial rooftops in Pennsylvania, New Jersey, New York, Maryland and Massachusetts.

A Full Service Electrical and Design/Build Firm
We are a design and build shop with deep in-house expertise in solar design, permitting, solar installation, electrical work and solar equipment maintenance. We have master electricians on staff and a number of our employees are certified by the National American Board of Certified Energy Practitioners (NABCEP, http://www.nabcep.org), the gold standard for certification in the solar industry. We observe all OSHA safety regulations and pride ourselves on being a great partner with excellent employees.

Ten Year Workmanship Warranty
We offer a ten year warranty on our installation work which is rare in the solar industry. This is typically complemented by a 25 year production warranty on the solar panels through their manufacturer as well as upgraded 20 + year warranties on the inverters we use. When combined with a thorough operations and maintenance program we assure performance for the full life cycle of the equipment.

B Corporation Certified
As a B Corporation (http://www.bcorporation.net), Solar States focuses equally on profit, the health and wellbeing of its employees, and the environment. We pay a living wage, offer insurance, and retain decent hard working people we train and trust. We are ambassadors of the B Corp approach to a healthy local economy.

Intentionally Local and Diverse
80% of Solar States employees reside in Philadelphia. Staff is 40% non-white, 15% female.

NABCEP CERTIFIED PV Installation Professional

sbn Sustainable Business Network of Greater Philadelphia

Solarize PHILLY

SEIA

Certified B Corporation

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Westtown Township Public Works
Solar Proposal

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Solar Project Information - Larger System
Finalized Rooftop Solar Design

System Size:
117 kW

Panel Count:
244

Racking Type:
Flashing + Rail

Electricity Offset:
100%

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Roof Analysis - Public Works Building 1

Solar Design - Public Works Building 1

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Roof Analysis - Public Works Building - 2

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Solar Design - Public Works Building 2

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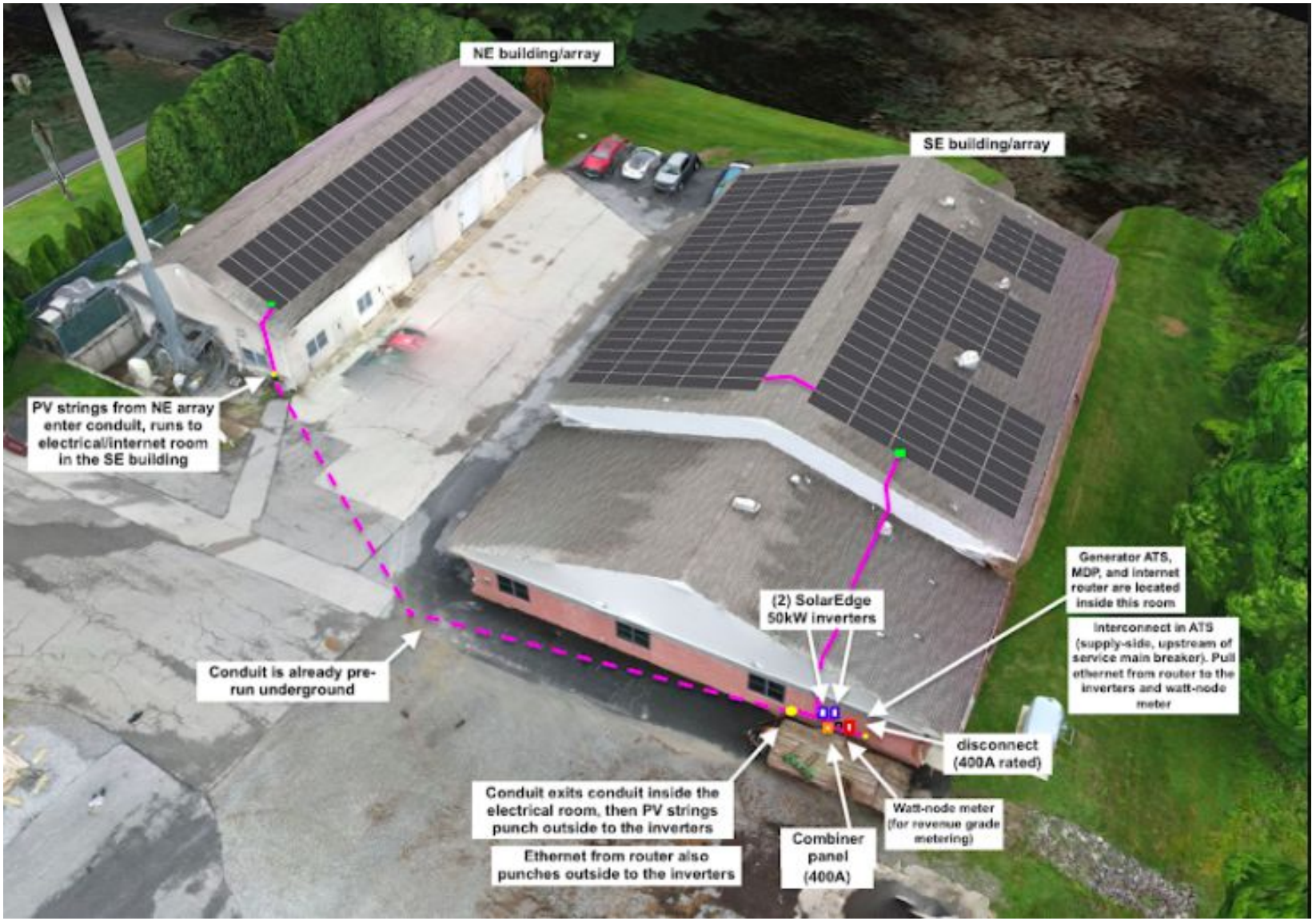
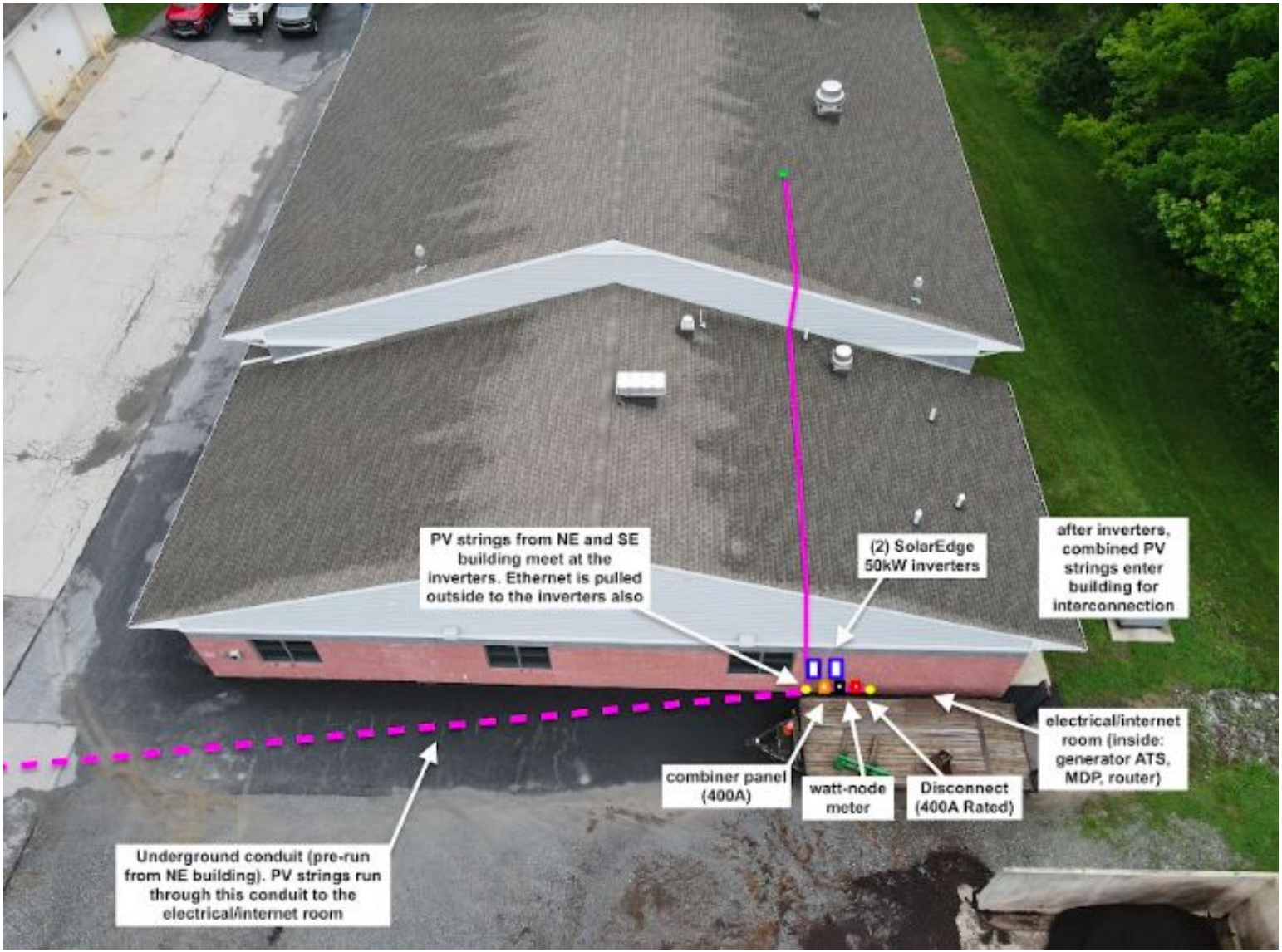
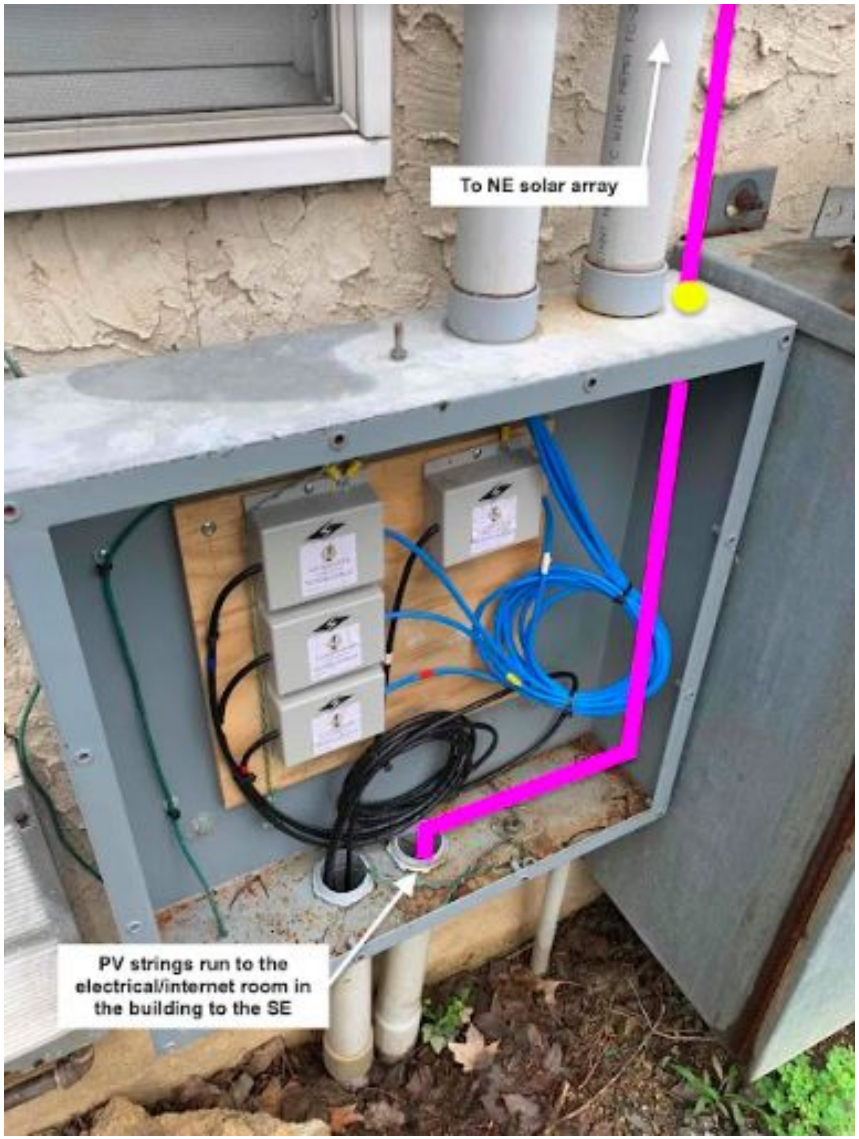
Interconnecting the Solar Arrays

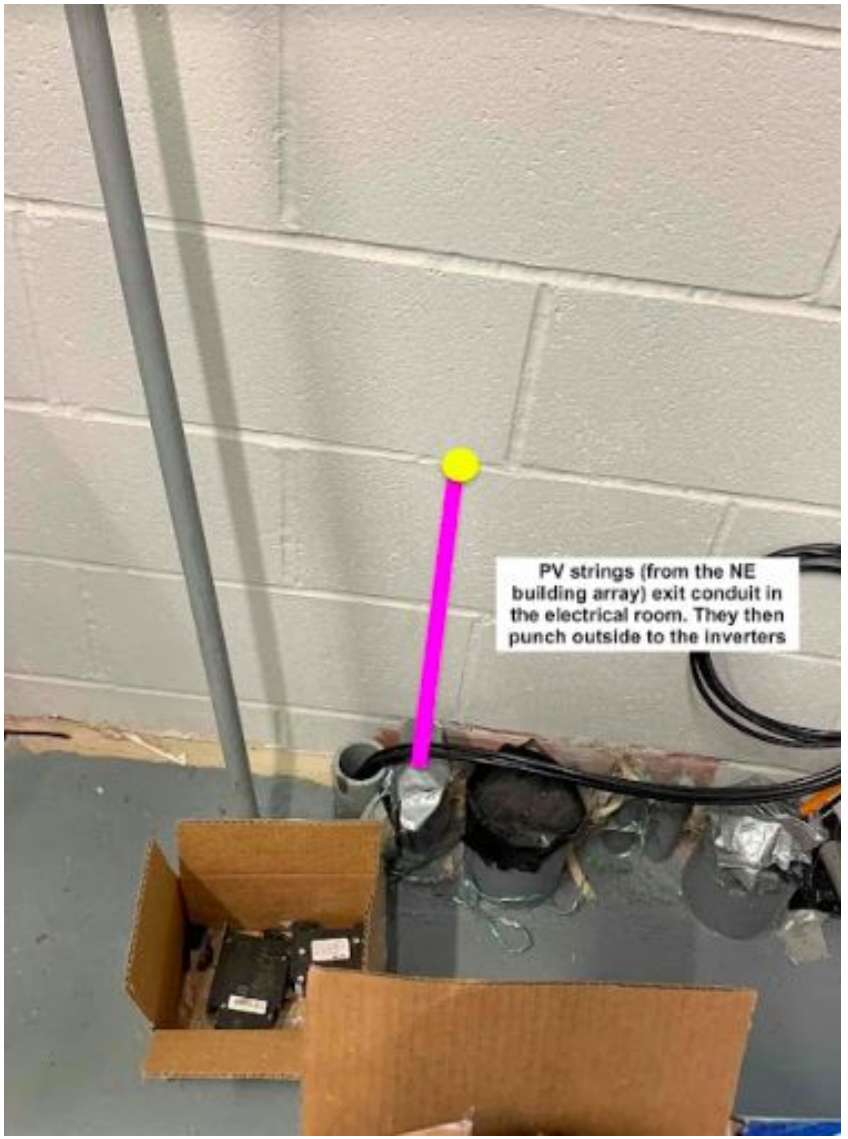


Electrical - External Electrical Components



Electrical - External Conduit





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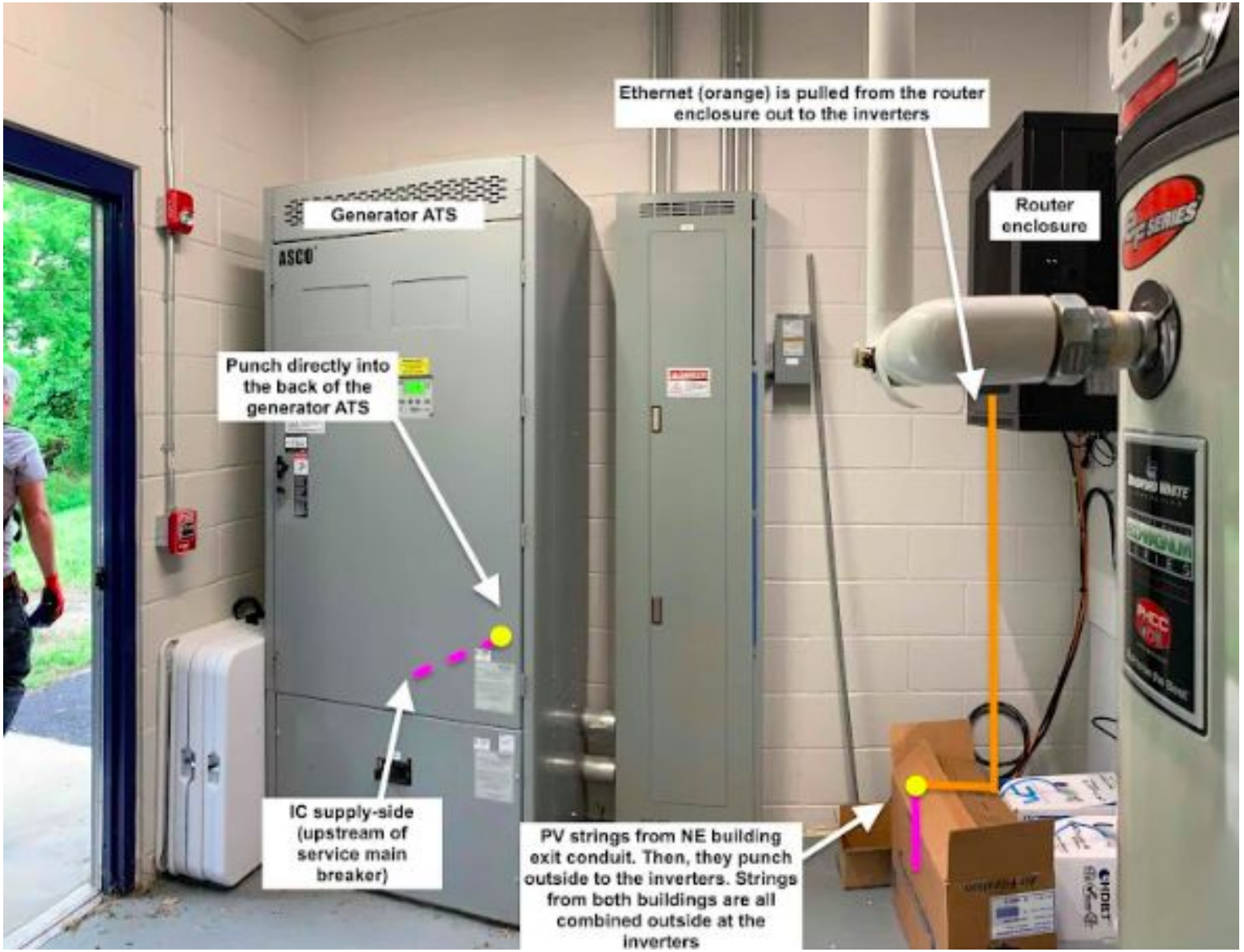
Electrical - Internal Conduit + Interconnection



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Solar Array Details - Larger System

System Size	117.12 kW
Annual kWh Production Estimate	126,489 kWh
Annual Electricity Usage (2021)	126,080
Total Electric Usage Offset (Year 1)	100%
Total Warrantied Electric Production (Annual kWh production x 25 performance warrantied years (includes expected 0.4% annual panel degradation)	3,496,384 kWh

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Solar Project Information - Larger System

Rooftop Solar Design

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Solar Array Details - Efficient Solar Design

System Size	62.88 kW
Annual kWh Production Estimate	74,827 kWh
Annual Electricity Usage (2021)	126,080
Total Electric Usage Offset (Year 1)	59.3%
Total Warrantied Electric Production (Annual kWh production x 25 performance warrantied years (includes expected 0.4% annual panel degradation)	1,783,577 kWh

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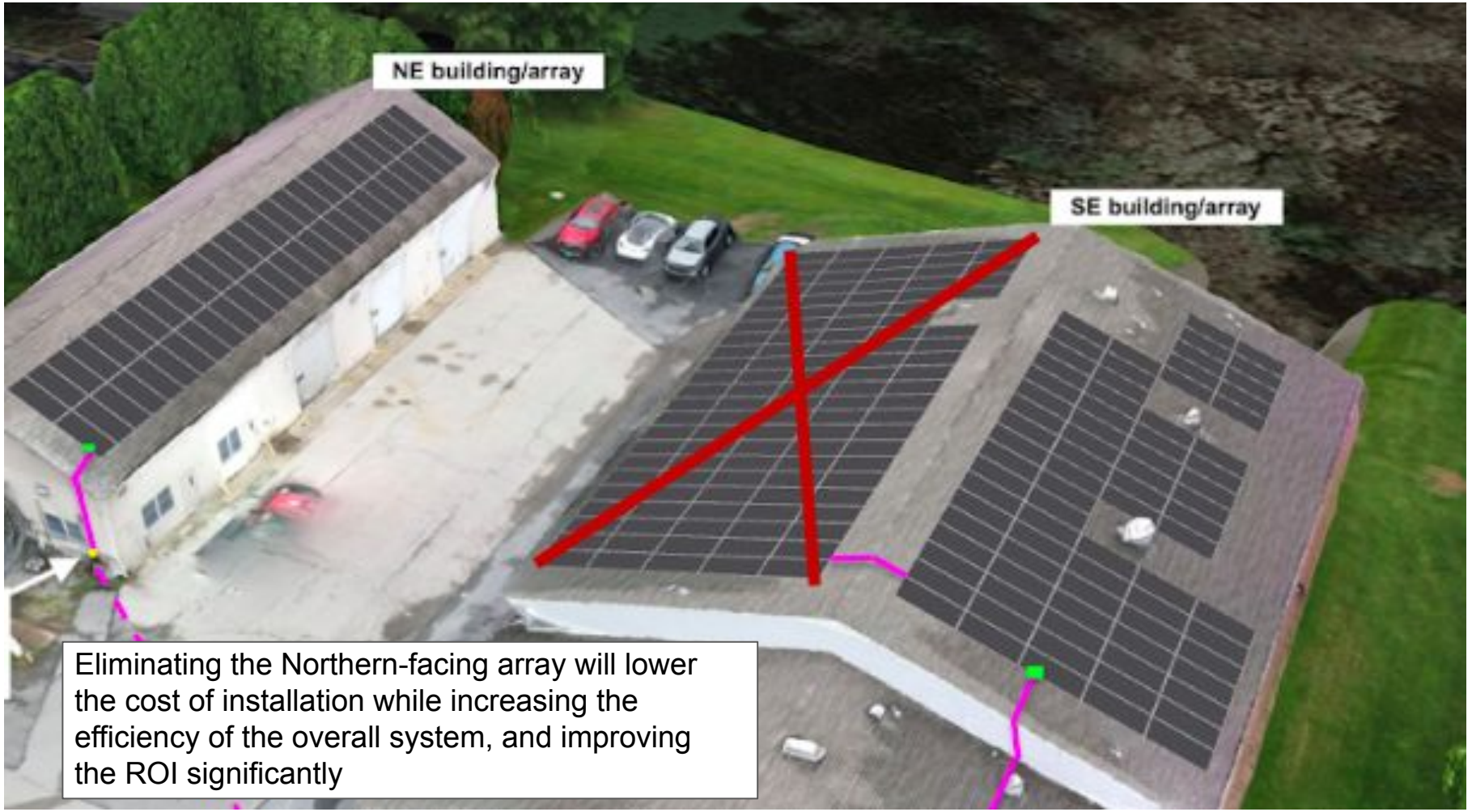
Efficient Solar Design - Smaller System
Rooftop Solar Design



Installation Cost + Impact

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Solar Installation Cost - Larger System

Turnkey Installation Cost (Includes Engineering, Documentation, Permitting, Procurement, Installation, Interconnection, Monitoring, SREC Registration, and 10 year Workmanship Warranty)	$285,000*
System Size	117.12 kW
$/Watt	$2.43
Return on Investment (ROI) (over 25 years)	17.6%

**This number is calculated at current Solar States wage rates and would increase if this project is subject to prevailing wage considerations or effective grounding requirements.*

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Economic Impact of Solar Installation - Larger System

Annual kWh Production Estimate	126,489 kWh
Current kWh rate	.0470
Electric Cost Savings (Year 1)	$5,944
Current SREC value	$43
Annual SREC revenue (Year 1)	$5,439
Annual Cash Flow	11,383
Total Economic Impact (Savings + Revenue) (Annual kWh offset and SREC revenue x 25 performance warrantied years - includes expected 0.4% panel degradation. Assumes expected 1.5% annual kWh rate increase and assumes SREC value remains constant)	$335,174

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Solar Installation Cost - Smaller System

Turnkey Installation Cost (Includes Engineering, Documentation, Permitting, Procurement, Installation, Interconnection, Monitoring, SREC Registration, and 10 year Workmanship Warranty)	$159,000*
System Size	62.88 kW
$/Watt	$2.53
Return on Investment (ROI) (over 25 years)	24.7%

**This number is calculated at current Solar States wage rates and would increase if this project is subject to prevailing wage considerations or effective grounding requirements.*

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Economic Impact of Solar Installation - Smaller System

Annual kWh Production Estimate	74,827 kWh
Current kWh rate	.0470
Electric Cost Savings (Year 1)	$3,519
Current SREC value	$43
Annual SREC revenue (Year 1)	$3,218
Annual Cash Flow	6,737
Total Economic Impact (Savings + Revenue) (Annual kWh offset and SREC revenue x 25 performance warrantied years - includes expected 0.4% panel degradation. Assumes expected 1.5% annual kWh rate increase and assumes SREC value remains constant)	$198,273

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Equipment Specs: QCell 480 watt solar panels

BiHiKu5

465 W ~ 490 W

BIFACIAL MONO PERC

CS3Y-465|470|475|480|485|490MB-AG

MORE POWER

- 490 W — Module power up to 490 W
Module efficiency up to 20.7 %
- $ — Up to 11.5 % lower LCOE
Up to 3.2 % lower system cost
- Comprehensive LID / LeTID mitigation technology, up to 50% lower degradation
- Compatible with mainstream trackers, cost effective product for utility power plant
- Better shading tolerance

MORE RELIABLE

- Minimizes micro-crack impacts

CanadianSolar

** or alternative Tier 1 solar panel that offers comparable performance characteristics*

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Equipment Specs: Three Phase SolarEdge Inverter (50 kW) X2

Three Phase Inverter with Synergy Technology

For the 208V Grid for North America

SE50KUS

INVERTERS

Powered by unique pre-commissioning process for rapid system installation

- Pre-commissioning feature for automated validation of system components and wiring during the site installation process and prior to grid connection
- Easy 2-person installation with lightweight, modular design (each inverter consists of 3 Synergy units and one Synergy Manager)
- Independent operation of each Synergy unit enables higher uptime and easy serviceability
- Built-in thermal sensors detect faulty wiring ensuring enhanced protection and safety
- Built-in arc fault protection and rapid shutdown
- Built-in PID mitigation for maximized system performance
- Monitored* and field-replaceable surge protection devices, to better withstand surges caused by lightning or other events
- Built-in module-level monitoring with Ethernet or cellular communication for full system visibility

Three Phase Inverter with Synergy Technology

For the 208V Grid for North America

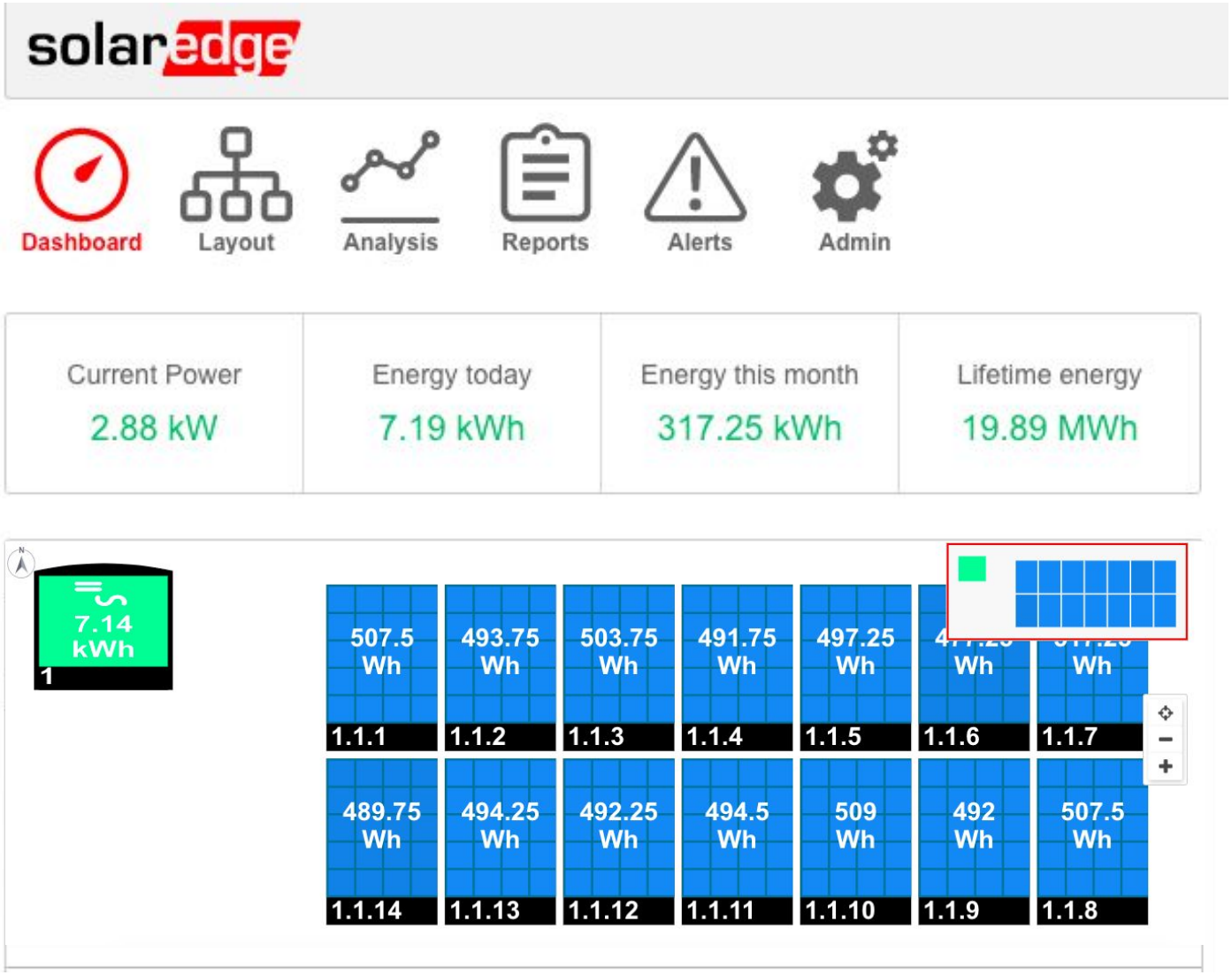
SE50KUS

Applicable to inverter with Part Numbers	SExxK-US02Ixxxx SE50KUS	
OUTPUT		
Rated AC Active Output Power	50000	W
Maximum AC Apparent Output Power	50000	VA
AC Output Line Connections	3W + PE, 4W + PE	
Supported Grids	WYE: TN-C, TN-S, TN-C-S, TT, IT; Delta: IT	
AC Output Voltage Minimum-Nominal-Maximum[1] (L-N)	105-120-132	Vac
AC Output Voltage Minimum-Nominal-Maximum[1] (L-L)	183-208-229	Vac
AC Frequency Min-Nom-Max[2]	59.5 - 60 - 60.5	Hz
Maximum Continuous Output Current (per Phase, PF=1)	139.5	Aac
GFDI Threshold	1	A
Utility Monitoring, Islanding Protection, Configurable Power Factor, Country Configurable Thresholds	Yes	
Total Harmonic Distortion	< 3	%
Power Factor Range	+/-0.2 to 1	
INPUT		
Maximum DC Power (Module STC) Inverter / Synergy Unit	75000 / 25000	W
Transformer less, Ungrounded	Yes	
Maximum Input Voltage DC+ to DC-	600	Vdc
Operating Voltage Range	370 - 600	Vdc
Maximum Input Current	3 x 46.5	Adc
Reverse-Polarity Protection	Yes	
Ground-Fault Isolation Detection	1676Ω sensitivity per Synergy Unit[3]	
CEC Weighted Efficiency	97	%
Nighttime Power Consumption	< 12	W
ADDITIONAL FEATURES		
Supported Communication Interfaces[3]	2 x RS485, Ethernet, Wi-Fi (optional), Cellular (optional)	
Smart Energy Management	Export Limitation	
Inverter Commissioning	With the SetApp mobile application using built-in Wi-Fi access point for local connection	
Arc Fault Protection	Built-in, User Configurable (According to UL1699B)	
Photovoltaic Rapid Shutdown System	NEC 2014, 2017 and 2020, Built-in	
PID Rectifier	Nighttime, built-in	
RS485 Surge Protection (ports 1+2)	Type II, field replaceable, integrated	
AC, DC Surge Protection	Type II, field replaceable, integrated	
DC Fuses (Single Pole)	25A, integrated	
DC SAFETY SWITCH		
DC Disconnect	Built-in	
STANDARD COMPLIANCE		
Safety	UL1699B, UL1741, UL1741 SA, UL1998, CSA C22.2#107.1, Canadian AFCI according to T.I.L. M-07	
Grid Connection Standards	IEEE 1547, Rule 21, Rule 14 (HI)	
Emissions	FCC part 15 class A	

(1) For other regional settings please contact SolarEdge support
(2) Where permitted by local regulations
(3) For specifications of the optional communication options, visit https://www.solaredge.com/products/communication or the Resource Library webpage: https://www.solaredge.com/downloadcdf, to download the relevant product datasheet

** or alternative inverter that Solar States will seamlessly propose as part of the electrical design or due to direction from Utility*

Monitoring Portal & Capabilities



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Past Projects

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Privately-Owned Warehouses

Location: Philadelphia

Commercial PassiveHouse Solar Array

Location: Harrisburg, PA

Size: 24 kW

Integrated with a green roof and PassiveHouse certification

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Delran Intermediate School
Location: Delran, NJ


Private Business
Location: Warminster, PA


Self Storage
Location: Columbia, PA


Private Business
Location: Montgomery County, PA

Partnerships & Workforce Development

EMMA LEE / WHYY

Thomas Glenn of Solar States completes the wiring for an array of solar roof panels on Nick DiPatri's home in Bryn Mawr. Glenn says he made a mistake by dropping out of high school. But now that he has his GED and this job, he says solar helped turn his life around.

https://stateimpact.npr.org/pennsylvania/2017/05/17/philadelphia-aims-to-cash-in-on-solar-job-boom/

nquirer philly.com NEWS SPORTS BUSINESS HEALTH ENTERTAINMENT FOOD OPINION REAL ESTATE OB

Meet the graduates of Philly School District's first solar training program

Updated: AUGUST 18, 2017 — 5:17 PM EDT

http://www.philly.com/philly/health/meet-the-graduates-of-philly-school-districts-first-solar-training-program-20170818.html

Solar States References:

PA - Private Warehouse @ Water Street - 50 kW - Peter Knight (owner) - knightp110@yahoo.com

NJ - DelRan Intermediate School - 394 kW - Bill Sharp, Pennoni (client) - WSharp@pennoni.com

PA - Pennsylvania Housing Finance Agency (PHFA) - 24 kW
Chuck Hillen, Boro (client) - chillen@boroconstruction.com

PA - Finanta, CDFI - 50 kW - Luis Mora (owner) - luismora@finanta.org

PA - Crane Arts - 82 kW - David Gleeson (offtaker) - gleeson729@comcast.net

PA - Private Business in Warminster PA - 303 kW
Edward Dipalantino (PM) edwardd@thermomegatech.com

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Solarize Philly / Education & training partnerships
Alon Abramson (program manager) - aabramson@philaenergy.org