

## Chester County Administration Building

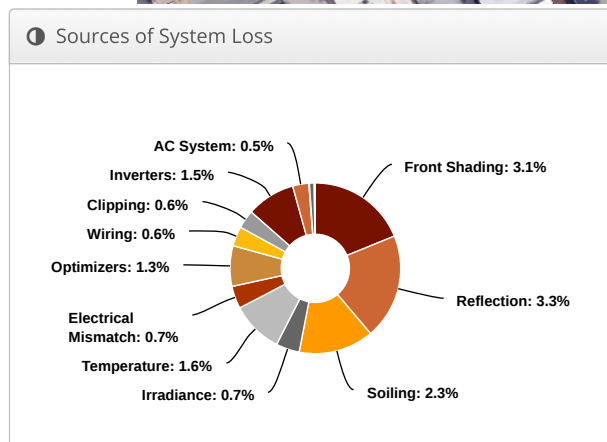
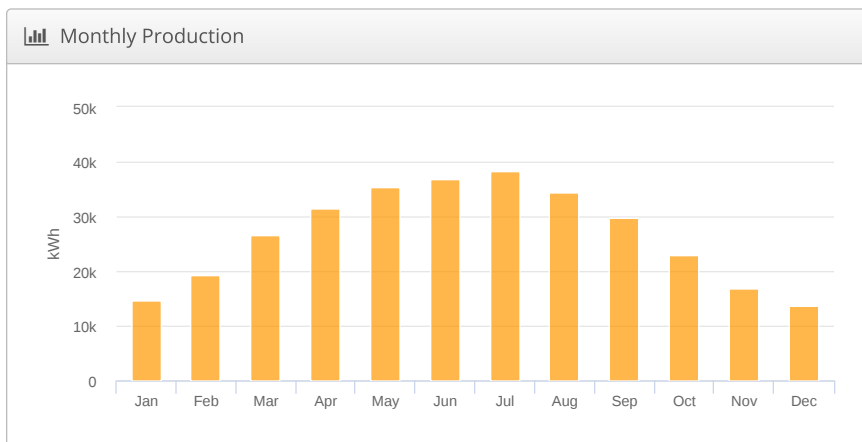
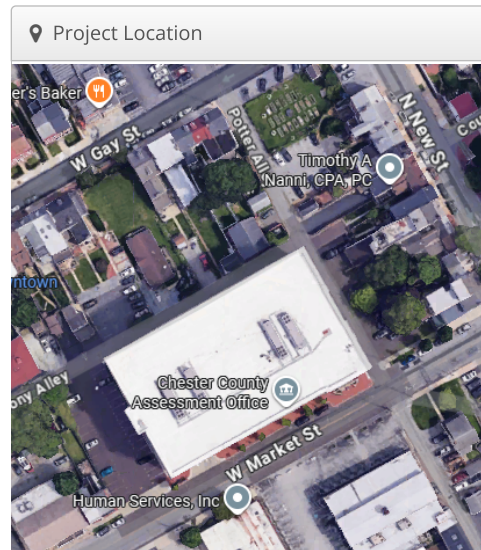
**Report**

Project Name	DVRPC - Chester County
Project Address	313 W. Market St., West Chester, PA 19380
Prepared By	Leo Kowalski leo@pasolarcenter.org



**System Metrics**

Design	313 W Market
Module DC Nameplate	235.17 kW
Inverter AC Nameplate	199.80 kW Load Ratio: 1.18
Annual Production	319.9 MWh
Performance Ratio	85.2%
kWh/kWp	1,360.3
Weather Dataset	TMY, 10km grid (40.05,-75.65), NREL (prospector)
Simulator Version	e904549051-5abf85779f-481db701bd-6227c96bf6



⚡ Annual Production				
	Description	Output	% Delta	
Front Irradiance (kWh/m <sup>2</sup> )	Annual Global Horizontal Irradiance	1,490.9		
	POA Irradiance	1,596.3	7.1%	
	Shaded Irradiance	1,547.2	-3.1%	
	Irradiance after Reflection	1,496.7	-3.3%	
	Irradiance after Soiling	1,461.9	-2.3%	
	<b>Total Front Collector Irradiance</b>	<b>1,461.7</b>	<b>0.0%</b>	
Rear Irradiance (kWh/m <sup>2</sup> ) <i>Supported only for fixed tilt racking</i>	Surface Irradiance in Collector Plane	Global Incident Irradiance on Surface	359.8	-
		Surface Reflected Irradiance after Albedo	72.0	-80.0%
		Conversion from Surface Area to Collector Area	99.8	
		<b>Surface Irradiance in Collector Plane</b>	<b>5.8</b>	<b>-94.2%</b>
	Unshaded Irradiance on Rear Side	Surface Irradiance in Collector Plane	5.8	
		Sky Diffuse	1.7	
		Beam Effective	0.0	
		<b>Total Unshaded Irradiance on Rear Side</b>	<b>7.6</b>	
		Shaded Irradiance on Rear Side	7.2	-5.0%
		<b>Total Rear Collector Irradiance</b>	<b>7.2</b>	
		<b>Effective Rear Collector Irradiance</b>	<b>5.0</b>	<b>-30.0%</b>
		<b>Total Collector Irradiance</b>	<b>1,466.7</b>	
Energy (kWh)	Nameplate	344,875.4		
	Output at Irradiance Levels	342,369.7	-0.7%	
	Output at Cell Temperature Derate	336,865.7	-1.6%	
	Output after Electrical Mismatch	334,513.2	-0.7%	
	Output after Rear Mismatch	334,399.2	0.0%	
	Optimizer Output	330,318.1	-1.3%	
	Optimal DC Output	328,314.5	-0.6%	
	Constrained DC Output	326,433.7	-0.6%	
	Inverter Output	321,512.1	-1.5%	
	<b>Energy to Grid</b>	<b>319,904.5</b>	<b>-0.5%</b>	
Temperature Metrics				
	Avg. Operating Ambient Temp		13.8 °C	
	Avg. Operating Cell Temp		21.5 °C	
Simulation Metrics				
	Operating Hours		4678	
	Solved Hours		4678	

☁ Condition Set													
Description	Condition Set 1												
Weather Dataset	TMY, 10km grid (40.05,-75.65), NREL (prospector)												
Solar Angle Location	Meteo Lat/Lng												
Transposition Model	Perez Model												
Temperature Model	Sandia Model												
Temperature Model Parameters	Rack Type	a	b	Temperature Delta									
	Fixed Tilt	-3.56	-0.075	3°C									
	Flush Mount	-2.81	-0.0455	0°C									
	East-West	-3.56	-0.075	3°C									
	Carport	-3.56	-0.075	3°C									
Soiling (%)	J	F	M	A	M	J	J	A	S	O	N	D	
	13	9	4	1	1	1	0	0	1	1	1	7	
Albedo	J	F	M	A	M	J	J	A	S	O	N	D	
	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	
Rear Mismatch Loss	10%			Rear Shading Factor				5%					
Module Transparency	0%												
Irradiation Variance	5%												
Cell Temperature Spread	4° C												
Module Binning Range	-2.5% to 2.5%												
AC System Derate	0.50%												
Module & Component Characterizations	Type	Component						Characterization			Bifacial		
	Module	Q.PEAK DUO XL-G11S 585W (QCells)						Spec Sheet Characterization, PAN			True		
	Inverter	SE66.6KUS (SolarEdge)						Spec Sheet			N/A		
	Buck Boost Optimizer	S1200 (SolarEdge)						Mfg Spec Sheet			N/A		

Components		
Component	Name	Count
Inverters	SE66.6KUS (SolarEdge)	3 (199.80 kW)
Strings	10 AWG (Copper)	14 (2,294.3 ft)
Optimizers	S1200 (SolarEdge)	206 (247.20 kW)
Module	QCells, Q.PEAK DUO XL-G11S 585W (585W)	402 (235.17 kW)

Wiring Zones			
Description	Combiner Poles	String Size	Stringing Strategy
Wiring Zone	-	13-29	Along Racking

Field Segments									
Description	Racking	Orientation	Tilt	Azimuth	Intrarow Spacing	Frame Size	Frames	Modules	Power
Field Segment 1	Fixed Tilt	Landscape (Horizontal)	Module: 10°	Module: 150°	1.5 ft	1x1	402	402	235.17 kW

Detailed Layout2

