NREL
NATIONAL RENEWABLE ENERGY LABORATORY

Caution: Photovoltaic system performance predictions calculated by PVWatts® include many inherent assumptions and uncertainties and do not reflect variations between PV technologies nor site-specific characteristics except as represented by PVWatts® inputs. For example, PV modules with better performance are not differentiated within PVWatts® from lesser performing modules. Both NREL and private companies provide more sophisticated PV modeling tools (such as the System Advisor Model at https://sam.nrel.gov) that allow for more precise and complex modeling of PV systems.

The expected range is based on 30 years of actual weather data at the given location and is intended to provide an indication of the variation you might see. For more information, please refer to this NREL report: The Error Report.

The energy output range is based on analysis of 30 years of historical weather data for nearby , and is intended to provide an indication of the possible interannual variability in generation for a Fixed (open rack) PV system at this location.

RESULTS

5,143 kWh/Year*

System output may range from 4,940 to 5,341 kWh per year near this location.

Month	Solar Radiation (kWh / m^2 / day)	AC Energy (kWh)	Value ($)
January	2.91	299	39
February	4.09	368	47
March	4.76	468	60
April	5.66	505	65
May	5.79	523	67
June	6.10	524	68
July	6.31	553	71
August	5.76	507	65
September	5.31	452	58
October	4.16	387	50
November	3.13	292	38
December	2.63	265	34
Annual	**4.72**	**5,143**	**$ 662**

Location and Station Identification

Requested Location	Doylestown, PA
Weather Data Source	Lat, Lon: 40.29, -75.14 1.5 mi
Latitude	40.29° N
Longitude	75.14° W

PV System Specifications *(Residential)*

DC System Size	4 kW
Module Type	Standard
Array Type	Fixed (open rack)
Array Tilt	20°
Array Azimuth	180°
System Losses	14.08%
Inverter Efficiency	96%
DC to AC Size Ratio	1.2

Economics

Average Retail Electricity Rate	0.129 $/kWh

Performance Metrics

Capacity Factor	14.7%