

# Performance of grid-connected PV

PVGIS-5 estimates of solar electricity generation:

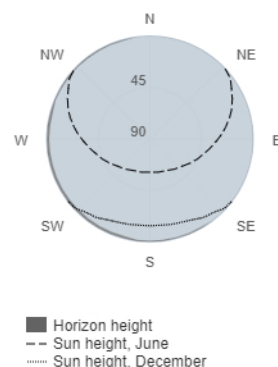
## Provided inputs:

Latitude/Longitude: 52.408, 16.930  
Horizon: Calculated  
Database used: PVGIS-CMSAF  
PV technology: Crystalline silicon  
PV installed: 8.84 kWp  
System loss: 14 %

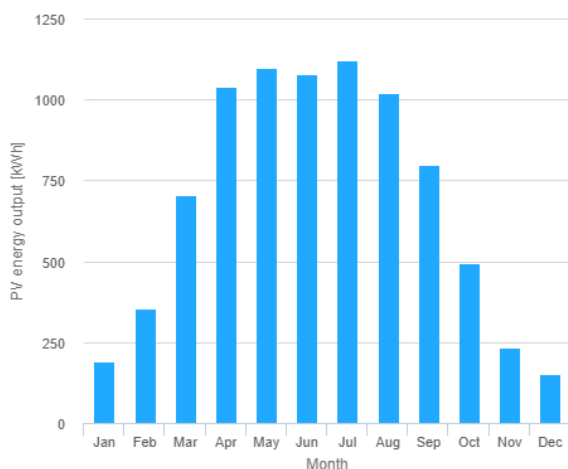
## Simulation outputs

Slope angle: 35 °  
Azimuth angle: 45 °  
Yearly PV energy production: 8280 kWh  
Yearly in-plane irradiation: 1210 kWh/m<sup>2</sup>  
Year to year variability: 425.00 %  
Changes in output due to:  
Angle of incidence: -3.2 %  
Spectral effects: 1.7 %  
Temperature and low irradiance: -8.5 %  
Total loss: -22.5 %

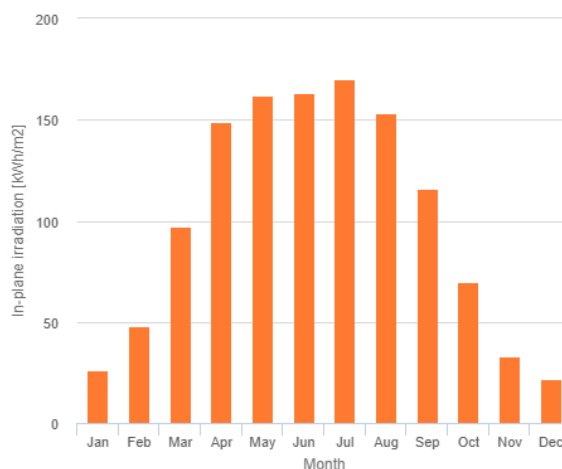
## Outline of horizon at chosen location:



## Monthly energy output from fix-angle PV system:



## Monthly in-plane irradiation for fixed-angle:



## Monthly PV energy and solar irradiation

Month	Em	Hm	SDm
January	189	26.1	26.5
February	356	47.7	101
March	705	97.3	121
April	1040	149	158
May	1100	162	141
June	1080	163	81.3
July	1120	170	109
August	1020	153	96.5
September	799	116	99.8
October	494	69.9	101
November	233	32.9	72.9
December	151	21.6	31.6

Em: Average monthly electricity production from the given system [kWh].

Hm: Average monthly sum of global irradiation per square meter received by the modules of the given system [kWh/m<sup>2</sup>].

SDm: Standard deviation of the monthly electricity production due to year-to-year variation [kWh].