

Performance of grid-connected PV

PVGIS-5 estimates of solar electricity generation:

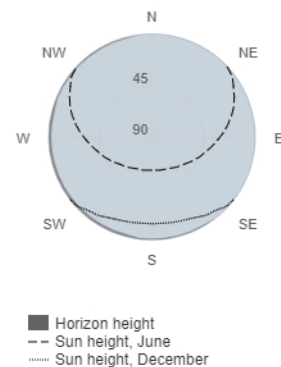
Provided inputs:

Latitude/Longitude: 52.408, 16.930
Horizon: Calculated
Database used: PVGIS-CMSAF
PV technology: Crystalline silicon
PV installed: 5.44 kWp
System loss: 14 %

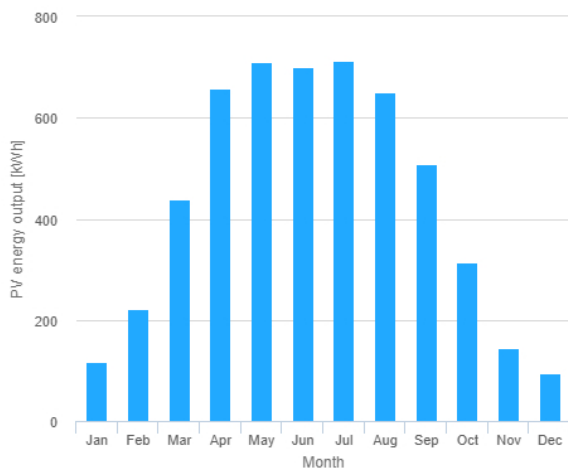
Simulation outputs

Slope angle: 35 °
Azimuth angle: -45 °
Yearly PV energy production: 5270 kWh
Yearly in-plane irradiation: 1240 kWh/m²
Year to year variability: 241.00 %
Changes in output due to:
Angle of incidence: -3.1 %
Spectral effects: 1.7 %
Temperature and low irradiance: -8.1 %
Total loss: -22.1 %

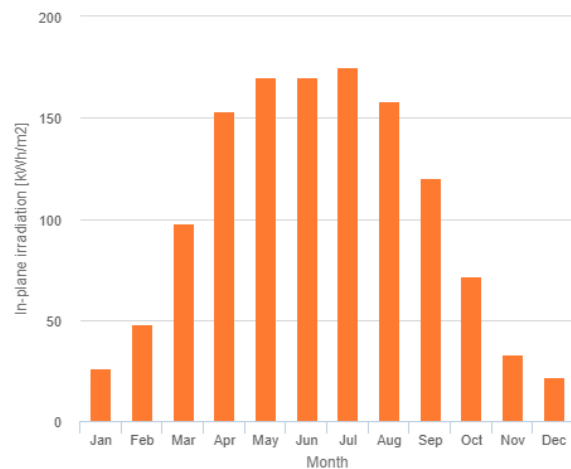
Outline of horizon at chosen location:



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	116	25.9	15.9
February	221	48	62.5
March	438	97.8	70.2
April	659	153	85.9
May	711	170	97.7
June	701	170	63
July	712	175	82.2
August	650	158	57.7
September	509	120	57.3
October	314	71.6	64.9
November	144	33	44
December	93.6	21.7	20.2

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/m²].

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