

Performance of grid-connected PV

PVGIS-5 estimates of solar electricity generation:

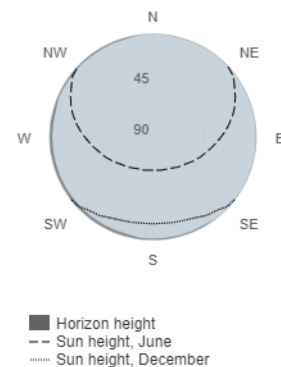
Provided inputs:

Latitude/Longitude: 52.408, 16.930
Horizon: Calculated
Database used: PVGIS-CMSAF
PV technology: Crystalline silicon
PV installed: 9.18 kWp
System loss: 14 %

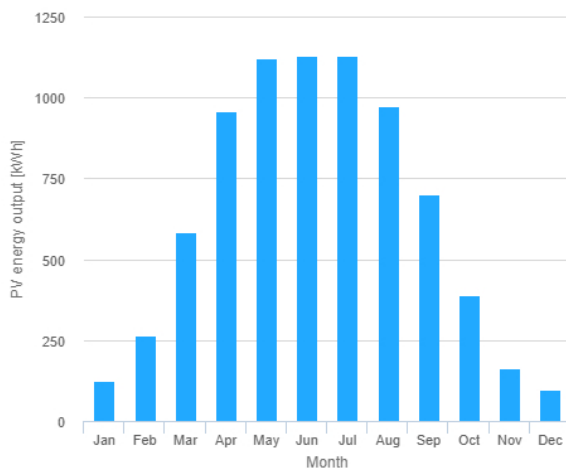
Simulation outputs

Slope angle: 35 °
Azimuth angle: -90 °
Yearly PV energy production: 7630 kWh
Yearly in-plane irradiation: 1070 kWh/m²
Year to year variability: 272.00 %
Changes in output due to:
Angle of incidence: -3.6 %
Spectral effects: 1.6 %
Temperature and low irradiance: -8 %
Total loss: -22.5 %

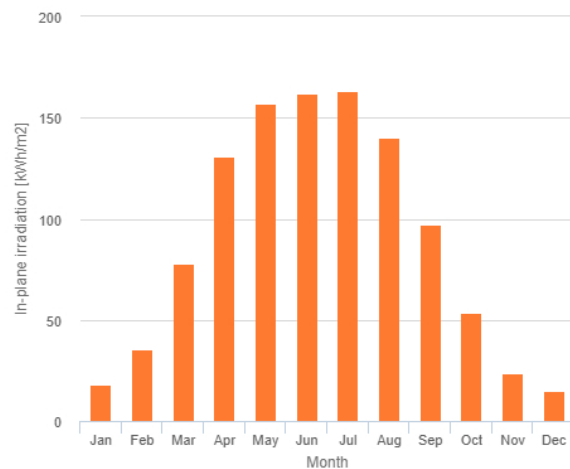
Outline of horizon at chosen location:



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	126	18.2	12.6
February	266	35.5	59.9
March	584	77.7	69.6
April	959	131	105
May	1120	157	146
June	1130	162	100
July	1130	163	133
August	975	140	71
September	699	97.4	63.2
October	388	53.6	65.6
November	162	23.5	37
December	97.3	14.8	16.4

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].