

Performance of grid-connected PV

PVGIS-5 estimates of solar electricity generation:

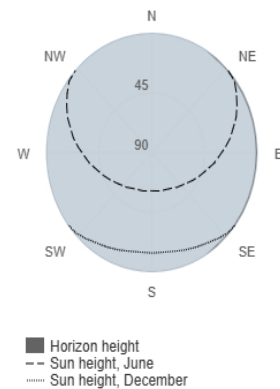
Provided inputs:

Latitude/Longitude: 52.187,16.797
Horizon: Calculated
Database used: PVGIS-SARAH3
PV technology: Crystalline silicon
PV installed: 49.2 kWp
System loss: 14 %

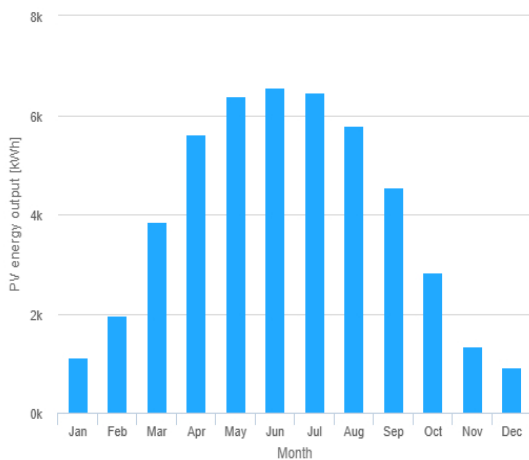
Simulation outputs

Slope angle: 15 °
Azimuth angle: 26 °
Yearly PV energy production: 47350.96 kWh
Yearly in-plane irradiation: 1249.86 kWh/m²
Year-to-year variability: 2136.05 kWh
Changes in output due to:
Angle of incidence: -3.63 %
Spectral effects: 1.75 %
Temperature and low irradiance: -8.69 %
Total loss: -23 %

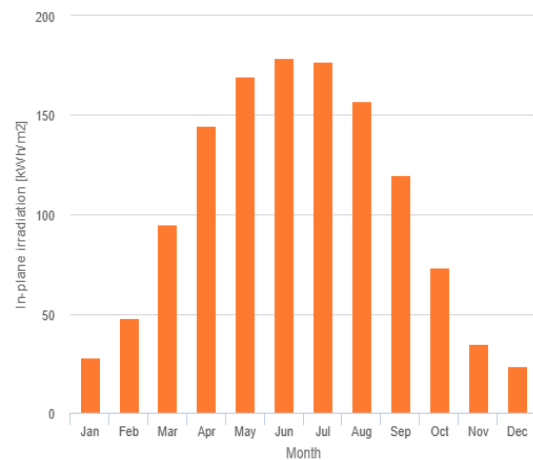
Outline of horizon at chosen location:



Monthly energy output from fix-angle PV system:



Monthly in-plane irradiation for fixed-angle:



Monthly PV energy and solar irradiation

Month	E_m	H(i)_m	SD_m
January	1108.6	27.9	207.6
February	1969.7	48.1	473.3
March	3844.5	95.3	626.7
April	5612.4	144.9	822.1
May	6380.3	169.5	845.3
June	6567.7	178.6	657.3
July	6457.2	177.0	609.2
August	5780.0	157.2	576.2
September	4540.8	119.8	550.1
October	2841.7	73.2	487.1
November	1340.2	34.5	287.6
December	907.8	23.8	181.4

E_m: Average monthly electricity production from the defined system [kWh].

H(i)_m: Average monthly sum of global irradiation per square meter received by the modules of the given system [kWh/m²].

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