

Performance of grid-connected PV

PVGIS-5 estimates of solar electricity generation:

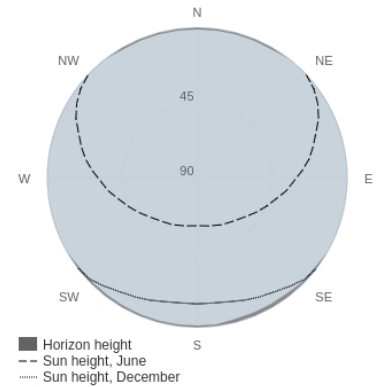
Provided inputs:

Latitude/Longitude: 52.314,13.215
 Horizon: Calculated
 Database used: PVGIS-SARAH2
 PV technology: Crystalline silicon
 PV installed: 15 kWp
 System loss: 14 %

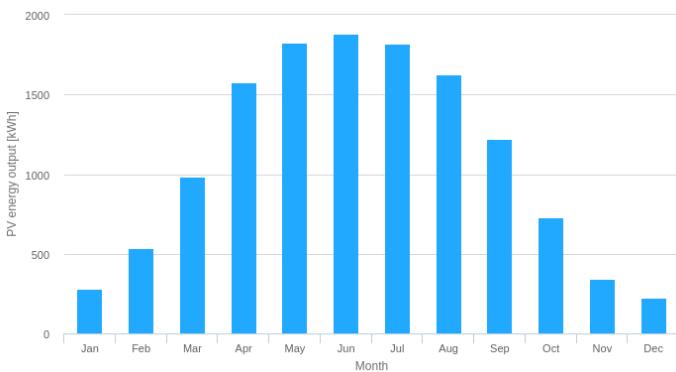
Simulation outputs

Slope angle: 25 °
 Azimuth angle: -78 °
 Yearly PV energy production: 13048.13 kWh
 Yearly in-plane irradiation: 1133.06 kWh/m²
 Year-to-year variability: 670.03 kWh
 Changes in output due to:
 Angle of incidence: -3.75 %
 Spectral effects: 1.65 %
 Temperature and low irradiance: -8.76 %
 Total loss: -23.23 %

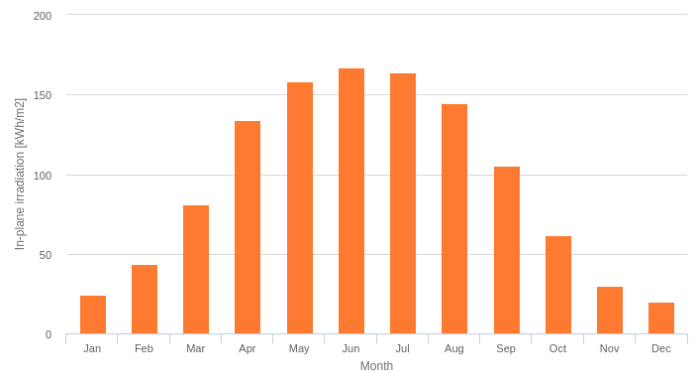
Outline of horizon at chosen location:



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	282.9	24.4	48.2
February	533.1	43.4	133.8
March	985.1	81.1	127.3
April	1577.5	133.9	193.6
May	1824.6	158.4	274.6
June	1881.2	167.3	155.1
July	1821.8	163.6	223.5
August	1629.1	144.4	143.8
September	1220.0	105.1	127.7
October	728.1	61.8	119.2
November	342.2	29.7	55.8
December	222.7	19.9	36.1

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].