

# Performance of grid-connected PV

PVGIS-5 estimates of solar electricity generation:

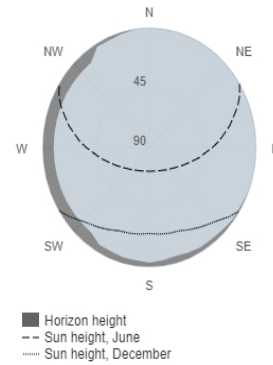
## Provided inputs:

Latitude/Longitude: 41.281, 36.337  
 Horizon: Calculated  
 Database used: PVGIS-SARAH  
 PV technology: Crystalline silicon  
 PV installed: 10 kWp  
 System loss: 14 %

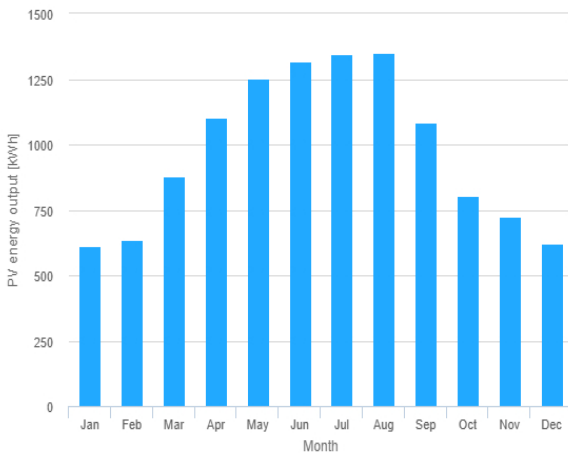
## Simulation outputs

Slope angle: 35 °  
 Azimuth angle: 0 °  
 Yearly PV energy production: 11733.73 kWh  
 Yearly in-plane irradiation: 1508.85 kWh/m<sup>2</sup>  
 Year-to-year variability: 558.99 kWh  
 Changes in output due to:  
 Angle of incidence: -2.74 %  
 Spectral effects: 0.9 %  
 Temperature and low irradiance: -7.86 %  
 Total loss: -22.23 %

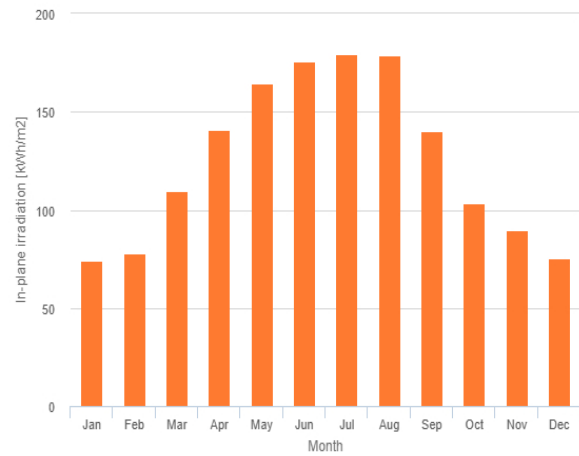
## Outline of horizon at chosen location:



## 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	614.3	73.8	127.2
February	636.5	77.9	93.2
March	877.8	109.6	83.5
April	1101.8	140.9	159.7
May	1250.6	164.3	148.7
June	1317.6	175.8	148.6
July	1346.9	179.1	137.1
August	1350.8	178.9	120.8
September	1084.3	140.5	108.4
October	805.7	103.3	135.1
November	725.0	89.5	121.6
December	622.3	75.1	105.6

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/m<sup>2</sup>].

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