

# Performance of grid-connected PV

PVGIS-5 estimates of solar electricity generation:

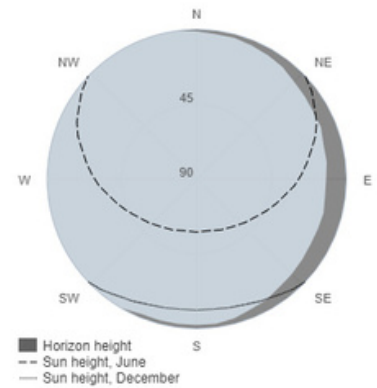
**Provided inputs:**

Latitude/Longitude: ██████████  
 Horizon: Calculated  
 Database used: PVGIS-SARAH2  
 PV technology: Crystalline silicon  
 PV installed: 3.5 kWp  
 System loss: 14 %

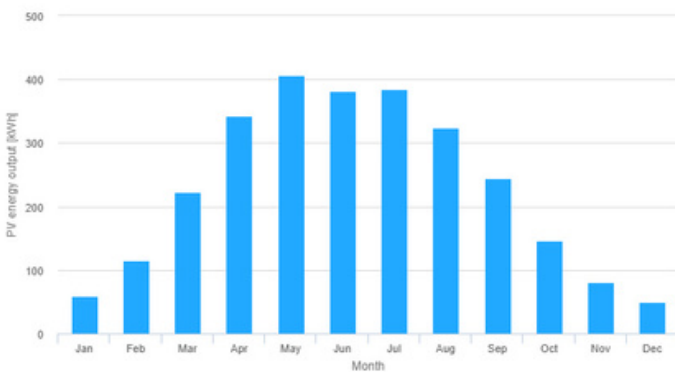
**Simulation outputs**

Slope angle: 15 °  
 Azimuth angle: 10 °  
 Yearly PV energy production: 2758.83 kWh  
 Yearly in-plane irradiation: 1003.02 kWh/m<sup>2</sup>  
 Year-to-year variability: 87.09 kWh  
 Changes in output due to:  
 Angle of incidence: -3.86 %  
 Spectral effects: 1.76 %  
 Temperature and low irradiance: -6.6 %  
 Total loss: -21.41 %

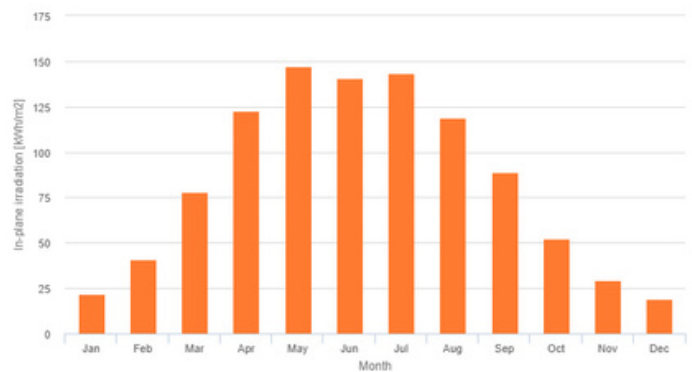
**Outline of horizon at chosen location:**



**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	59.5	21.9	8.9
February	116.0	41.1	20.8
March	222.2	78.0	25.1
April	343.1	122.5	46.0
May	405.9	147.0	39.9
June	380.9	140.9	40.6
July	384.0	143.1	52.8
August	324.7	118.8	30.6
September	244.6	88.7	24.9
October	146.4	52.5	21.3
November	81.3	29.6	11.1
December	50.2	18.9	7.1

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/m<sup>2</sup>].  
 SD\_m: Standard deviation of the monthly electricity production due to year-to-year variation [kWh].

# Performance of grid-connected PV

PVGIS-5 estimates of solar electricity generation:

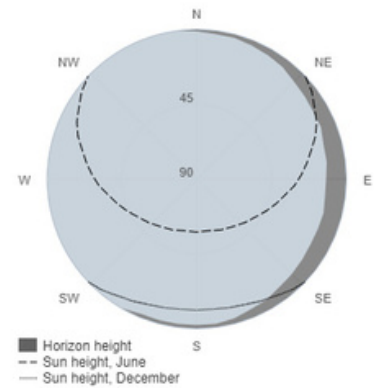
**Provided inputs:**

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

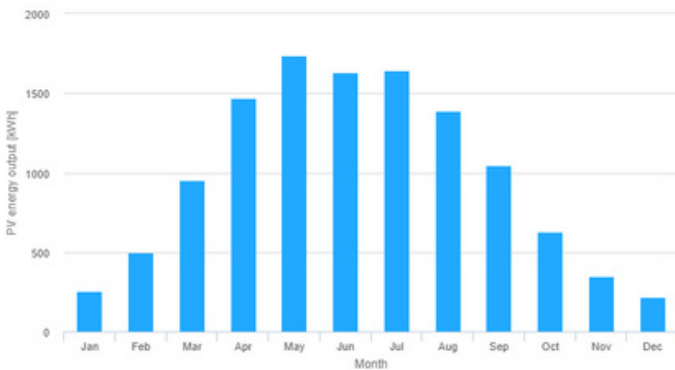
**Simulation outputs**

Slope angle: 15 °  
 Azimuth angle: 10 °  
 Yearly PV energy production: 11823.58 kWh  
 Yearly in-plane irradiation: 1003.02 kWh/m<sup>2</sup>  
 Year-to-year variability: 373.26 kWh  
 Changes in output due to:  
 Angle of incidence: -3.86 %  
 Spectral effects: 1.76 %  
     Temperature and low irradiance: -6.6 %  
 Total loss: -21.41 %

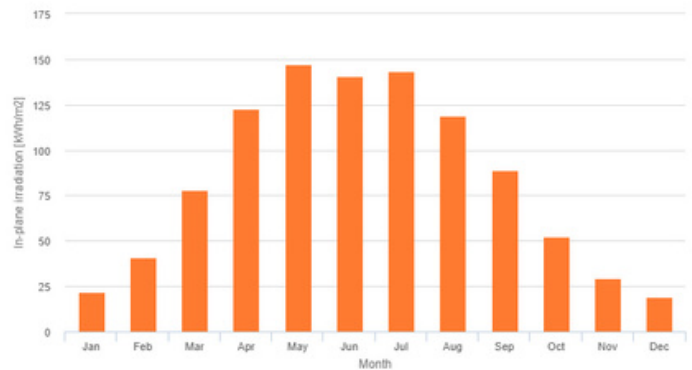
**Outline of horizon at chosen location:**



**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	255.1	21.9	38.3
February	497.3	41.1	89.0
March	952.3	78.0	107.7
April	1470.3	122.5	197.1
May	1739.8	147.0	171.0
June	1632.5	140.9	173.8
July	1645.6	143.1	226.4
August	1391.4	118.8	131.3
September	1048.2	88.7	106.9
October	627.5	52.5	91.0
November	348.5	29.6	47.5
December	215.2	18.9	30.6

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].