Performance of grid-connected PV

PVGIS-5 estimates of solar electricity generation:

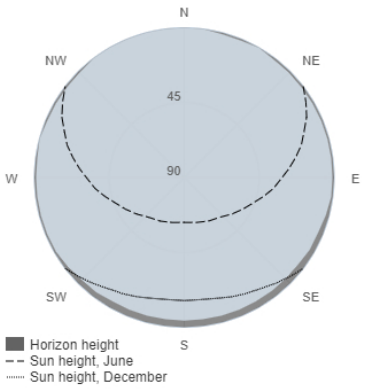
Provided inputs:

Latitude/Longitude:	50.155, 14.161
Horizon:	Calculated
Database used:	PVGIS-SARAH
PV technology:	Crystalline silicon
PV installed:	332.64 kWp
System loss:	14 %

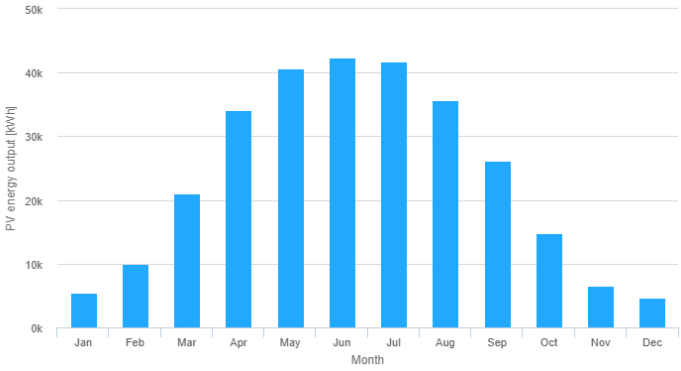
Simulation outputs

Slope angle:	10 °
Azimuth angle:	-105 °
Yearly PV energy production:	283123.36 kWh
Yearly in-plane irradiation:	1109.56 kWh/m²
Year-to-year variability:	9835.77 kWh
Changes in output due to:	
Angle of incidence:	-4.36 %
Spectral effects:	1.49 %
Temperature and low irradiance:	-8.11 %
Total loss:	-23.29 %

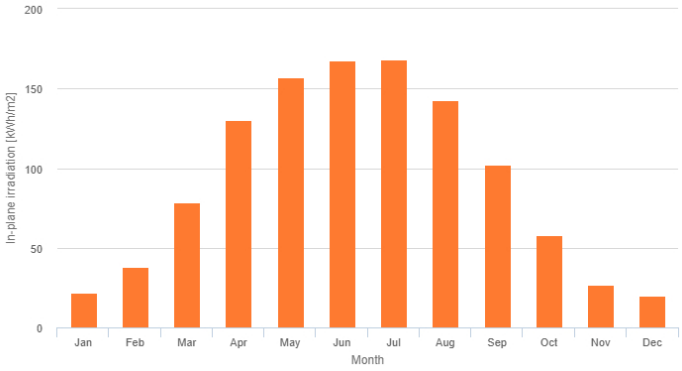
Outline of horizon at chosen location:



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	5409.8	22.0	937.4
February	9971.7	37.8	1878.4
March	21054.8	78.7	3397.8
April	34091.2	130.0	4234.5
May	40591.3	156.9	5230.8
June	42403.7	167.7	2656.6
July	41719.0	167.9	3993.2
August	35736.0	142.4	3027.4
September	26193.3	102.0	2450.2
October	14776.3	57.7	2311.3
November	6524.9	26.6	977.9
December	4651.5	19.8	644.0

E_m: Average monthly electricity production from the given 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].

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Performance of grid-connected PV

PVGIS-5 estimates of solar electricity generation:

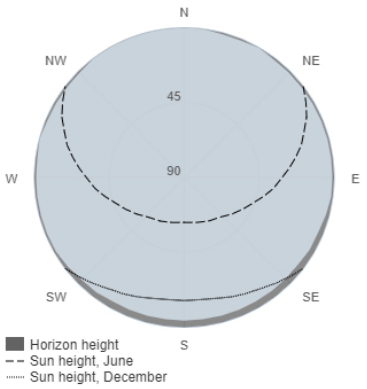
Provided inputs:

Latitude/Longitude:	50.155, 14.161
Horizon:	Calculated
Database used:	PVGIS-SARAH
PV technology:	Crystalline silicon
PV installed:	332.64 kWp
System loss:	14 %

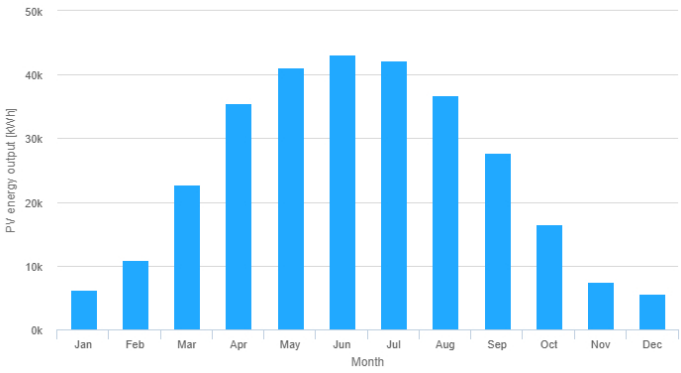
Simulation outputs

Slope angle:	10 °
Azimuth angle:	75 °
Yearly PV energy production:	295974.74 kWh
Yearly in-plane irradiation:	1157.83 kWh/m²
Year-to-year variability:	11089.84 kWh
Changes in output due to:	
Angle of incidence:	-4.08 %
Spectral effects:	1.52 %
Temperature and low irradiance:	-8.24 %
Total loss:	-23.15 %

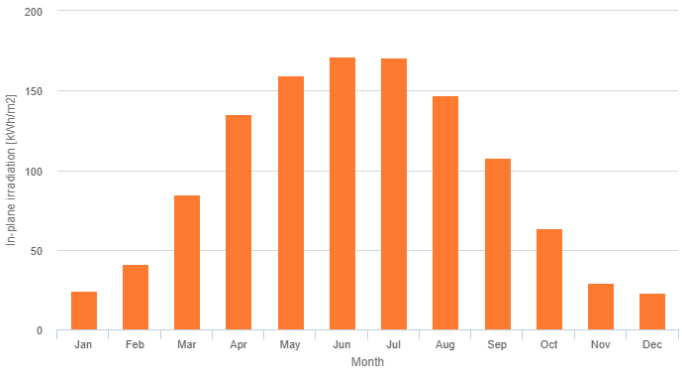
Outline of horizon at chosen location:



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	6233.3	24.5	1152.2
February	10969.5	40.9	2372.8
March	22707.8	84.6	3804.8
April	35437.0	135.5	4618.4
May	41123.5	159.6	5139.6
June	43143.0	171.2	2511.2
July	42245.0	170.6	4085.8
August	36753.9	146.8	3117.0
September	27684.7	107.9	3081.9
October	16557.8	63.8	3003.7
November	7479.9	29.6	1263.8
December	5639.2	22.9	802.0

E_m: Average monthly electricity production from the given 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].

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Performance of grid-connected PV

PVGIS-5 estimates of solar electricity generation:

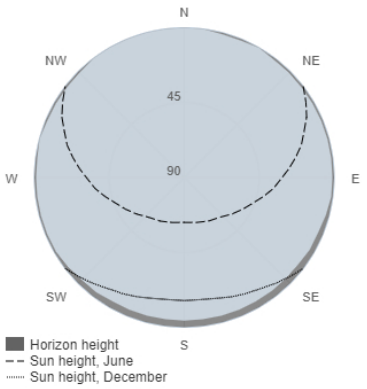
Provided inputs:

Latitude/Longitude:	50.155, 14.161
Horizon:	Calculated
Database used:	PVGIS-SARAH
PV technology:	Crystalline silicon
PV installed:	167.04 kWp
System loss:	14 %

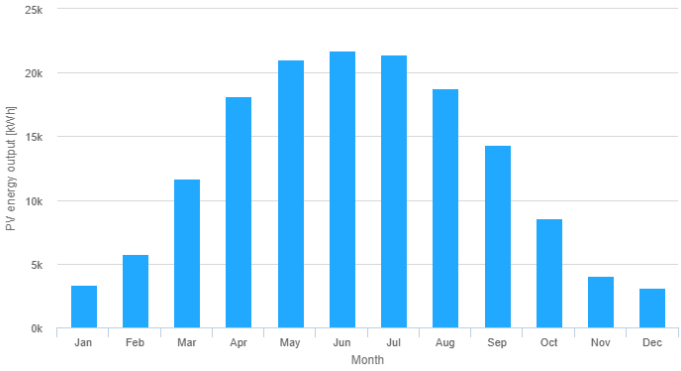
Simulation outputs

Slope angle:	10 °
Azimuth angle:	-60 °
Yearly PV energy production:	151995.2 kWh
Yearly in-plane irradiation:	1180.55 kWh/m²
Year-to-year variability:	5680.92 kWh
Changes in output due to:	
Angle of incidence:	-3.89 %
Spectral effects:	1.54 %
Temperature and low irradiance:	-8.16 %
Total loss:	-22.92 %

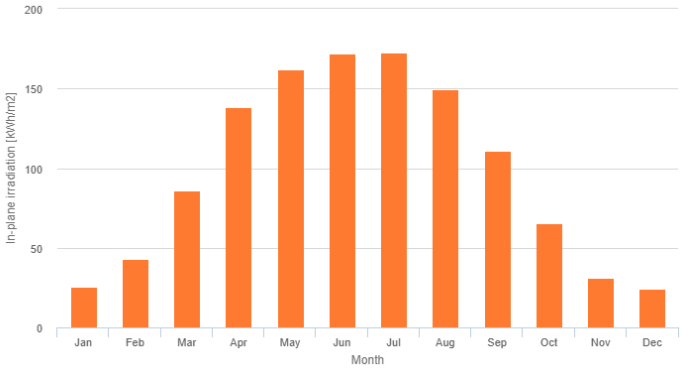
Outline of horizon at chosen location:



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	3346.3	25.7	622.1
February	5798.0	42.7	1277.9
March	11649.9	86.2	2086.7
April	18167.9	138.1	2379.8
May	20996.1	162.1	2767.3
June	21743.2	171.8	1383.5
July	21453.7	172.5	2095.7
August	18797.2	149.4	1671.7
September	14366.0	111.0	1455.6
October	8573.1	65.5	1553.3
November	4022.2	31.2	721.6
December	3081.7	24.3	510.8

E_m: Average monthly electricity production from the given 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].

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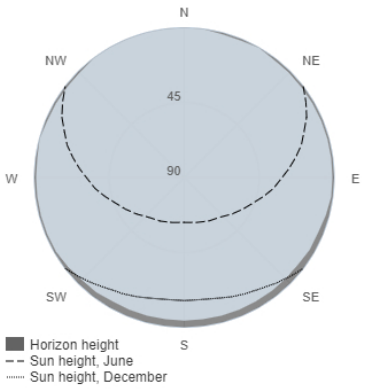
Horizon:	Calculated
Database used:	PVGIS-SARAH
PV technology:	Crystalline silicon
PV installed:	167.04 kWp
System loss:	14 %

Simulation outputs

Slope angle:	10 °
Azimuth angle:	120 °
Yearly PV energy production:	138658.13 kWh
Yearly in-plane irradiation:	1086.45 kWh/m²
Year-to-year variability:	4807.70 kWh
Changes in output due to:	
Angle of incidence:	-4.62 %
Spectral effects:	1.48 %
Temperature and low irradiance:	-8.21 %
Total loss:	-23.6 %

Outline of horizon at chosen location:



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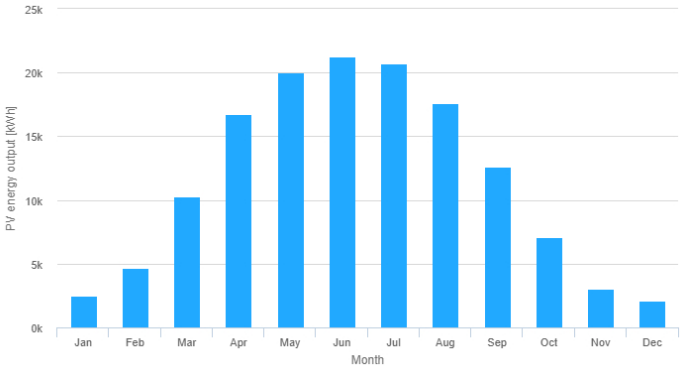
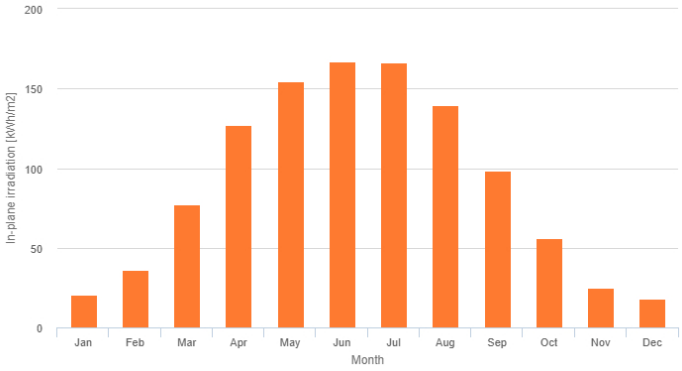


Monthly in-plane irradiation for fixed-angle:



Monthly PV energy and solar irradiation

Month	E_m	H(i)_m	SD_m
January	2512.6	20.8	432.5
February	4705.4	36.0	845.6
March	10283.7	77.0	1518.2
April	16723.3	127.3	2059.6
May	20028.3	154.4	2433.0
June	21235.5	167.3	1218.3
July	20717.9	166.1	1961.2
August	17584.6	139.7	1404.8
September	12643.1	98.7	1306.2
October	7121.3	55.9	1090.5
November	3015.8	25.0	400.4
December	2086.6	18.3	237.2

E_m: Average monthly electricity production from the given 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].

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