

Performance of off-grid PV system

PVGIS-5 estimates of solar electricity generation

Provided inputs

Latitude/Longitude: 53.632,10.023

Horizon: Calculated

Database used: PVGIS-SARAH2

PV installed: 30 Wp

Battery capacity: 600 Wh

Cutoff limit: 40 %

Consumption per day: 300 Wh

Slope angle:

Azimuth angle

Simulation outputs

Percentage days with full battery:

Percentage days with empty battery:

Average energy not captured:

Average energy missing:

35 °

0 °

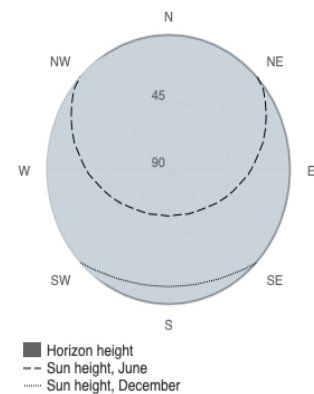
0 %

99.98 %

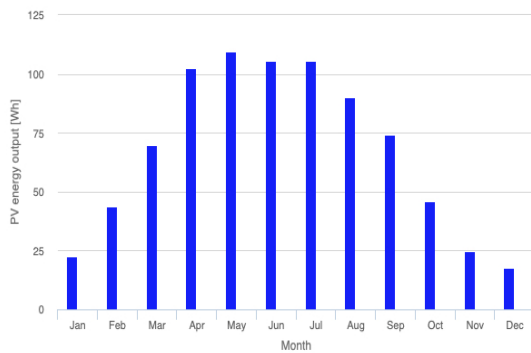
0 Wh

232.13 Wh

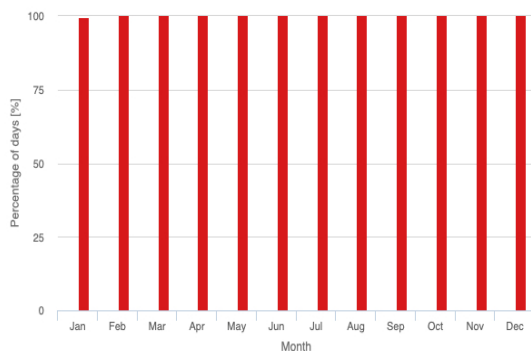
Outline of horizon at chosen location:



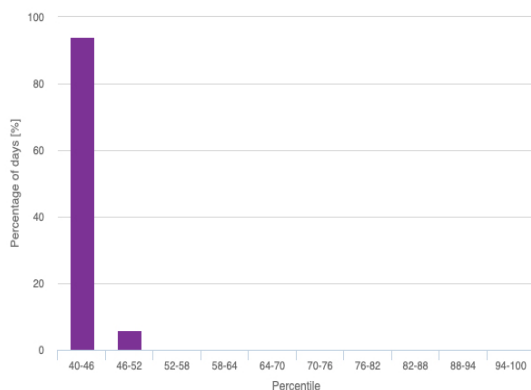
Power production estimate for off-grid PV:



Battery performance for off-grid PV system:



Probability of battery charge state at the end of the day:



Monthly average performance

Month	E_d	E_l	f_f	f_e
January	22.4	0.0	0.0	99.8
February	43.7	0.0	0.0	100.0
March	70.0	0.0	0.0	100.0
April	102.6	0.0	0.0	100.0
May	109.3	0.0	0.0	100.0
June	105.7	0.0	0.0	100.0
July	105.5	0.0	0.0	100.0
August	90.3	0.0	0.0	100.0
September	74.4	0.0	0.0	100.0
October	46.0	0.0	0.0	100.0
November	24.9	0.0	0.0	100.0
December	17.7	0.0	0.0	100.0

E_d: Average energy production per day [Wh/day].

E_l: Average energy not captured per day [Wh/day].

f_f: Percentage of days when battery became full [%].

f_e: Percentage of days when battery became empty [%].

Cs	Cb
40-46	94.0
46-52	6.0
52-58	0.0
58-64	0.0
64-70	0.0
70-76	0.0
76-82	0.0
82-88	0.0
88-94	0.0
94-100	0.0

Cs: Charge state at the end of each day [%].

Cb: Percentage of days with this charge state [%].

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