

Performance of off-grid PV systems

PVGIS-5 estimates of solar electricity generation

Provided inputs

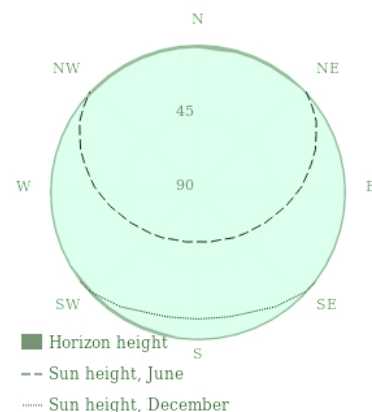
Latitude/Longitude: 53.542, 9.917
 Horizon: Calculated
 Database used: PVGIS-CMSAF
 PV installed: 270 Wp
 Battery capacity: 2160 Wh
 Cutoff limit: 0 %
 Consumption per day: 150 Wh

Slope angle: 45 °
 Azimuth angle: 0 °

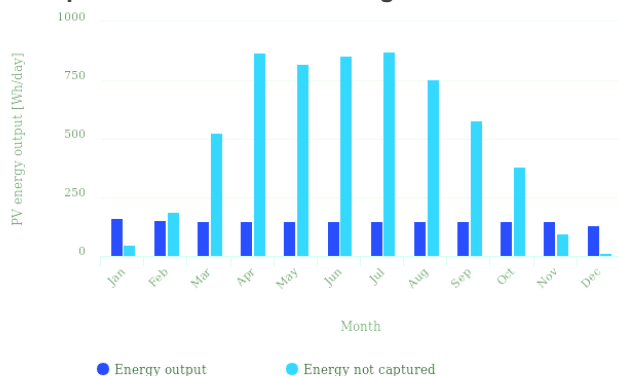
Simulation outputs

Percentage days with full battery: 76.12 %
 Percentage days with empty battery: 0 %
 Average energy not captured: 659.75 Wh
 Average energy missing: 0 Wh

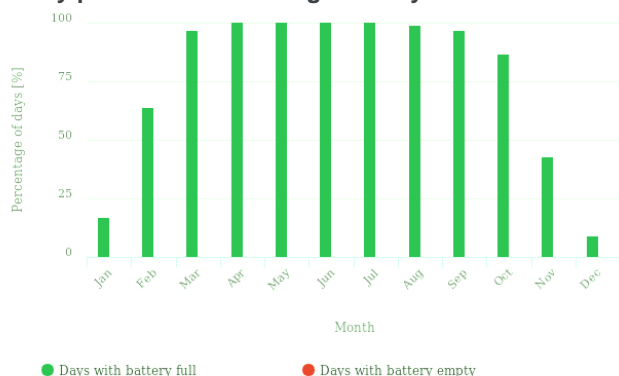
Outline of horizon at chosen location:



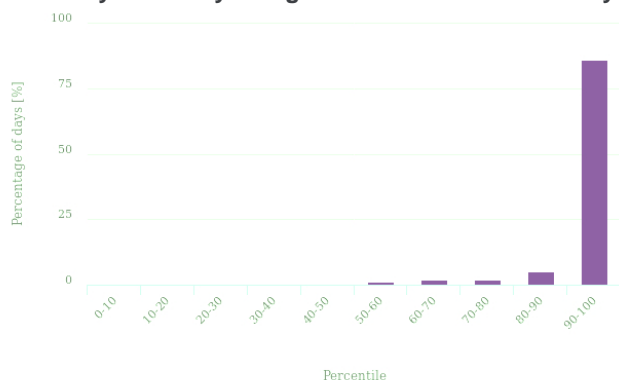
Power production estimate for off-grid PV:



Battery performance for off-grid PV system:



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



Monthly average performance

Month	Ed	EI	Ff	Fe
January	162.32	50.4	17	0
February	152.91	190.1	64	0
March	150.45	526.2	97	0
April	150.1	869.9	100	0
May	150.14	821.7	100	0
June	150.05	854.4	100	0
July	149.98	874.7	100	0
August	149.8	753.3	99	0
September	149.82	577.2	97	0
October	149.13	382.8	87	0
November	147.22	96.3	43	0
December	133.26	15	9	0

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

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

Ff: percentage of days when battery became full [%].

Fe: percentage of days when battery became empty [%].

Cs	Cb
0-10	0
10-20	0
20-30	0
30-40	0
40-50	0
50-60	1
60-70	2
70-80	2
80-90	5
90-100	86

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

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

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