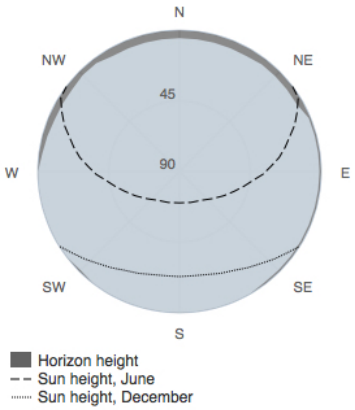
Performance of off-grid PV systems

PVGIS-5 estimates of solar electricity generation

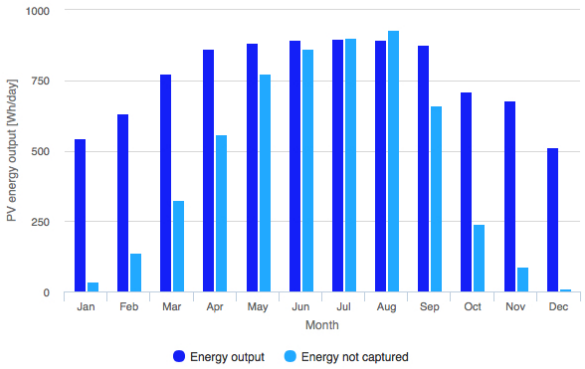
Provided inputs

Latitude/Longitude:	43.219, 27.995	Slope angle:	33 °
Horizon:	Calculated	Azimuth angle	0 °
Database used:	PVGIS-CMSAF	**Simulation outputs**	
PV installed:	390 Wp	Percentage days with full battery:	62.16 %
Battery capacity:	1800 Wh	Percentage days with empty battery:	36.69 %
Cutoff limit:	50 %	Average energy not captured:	742.56 Wh
Consumption per day:	900 Wh	Average energy missing:	368.7 Wh

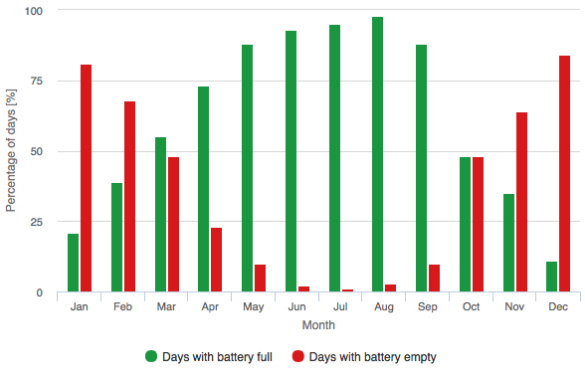
Outline of horizon at chosen location:



Power production estimate for off-grid PV:



Battery performance for off-grid PV system:

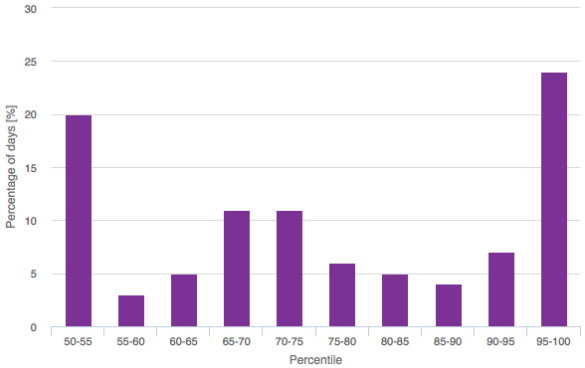


Monthly average performance

Month	Ed	El	Ff	Fe
January	544.75	35.8	21	81
February	633.39	136.8	39	68
March	775.01	325.3	55	48
April	862.12	559.8	73	23
May	882.99	774.8	88	10
June	895.6	862.5	93	2
July	898.13	900.1	95	1
August	895.53	928.6	98	3
September	877.06	659.1	88	10
October	711.51	238.9	48	48
November	678.59	87.3	35	64
December	513.01	11.3	11	84

Ed: Average energy production per day [Wh/day].
El: Average energy not captured per day [Wh/day].
Ff: percentage of days when battery became full [%].
Fe: percentage of days when battery became empty [%].

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



Cs	Cb
50-55	20
55-60	3
60-65	5
65-70	11
70-75	11
75-80	6
80-85	5
85-90	4
90-95	7
95-100	24

Cs: Charge state at the end of each day [%].
Cb: percentage of days with this charge state [%].

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