

# Performance of grid-connected PV

PVGIS-5 estimates of solar electricity generation:

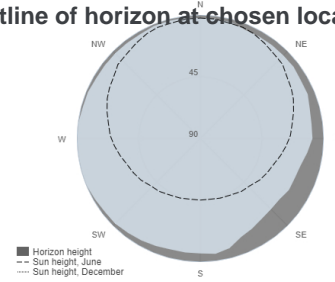
## Provided inputs:

Latitude/Longitude: 68.438, 17.427  
 Horizon: Calculated  
 Database used: PVGIS-ERA5  
 PV technology: Crystalline silicon  
 PV installed: 34.4 kWp  
 System loss: 14 %

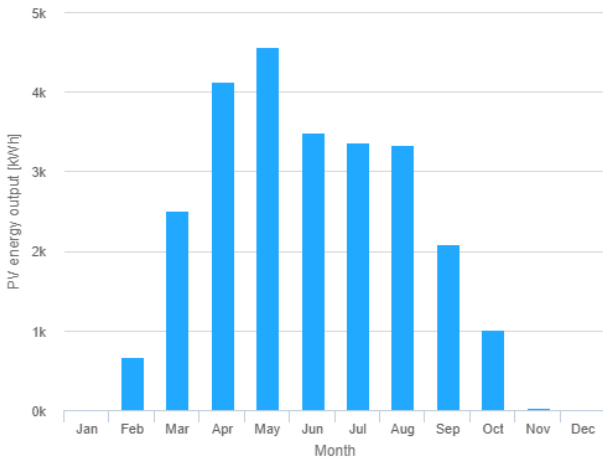
## Simulation outputs

Slope angle: 47 (opt) °  
 Azimuth angle: 11 (opt) °  
 Yearly PV energy production: 25200 kWh  
 Yearly in-plane irradiation: 918 kWh/m<sup>2</sup>  
 Year to year variability: 1470.00 %  
 Changes in output due to:  
 Angle of incidence: -3 %  
 Spectral effects: ? (0) %  
 Temperature and low irradiance: -4.4 %  
 Total loss: -20.3 %

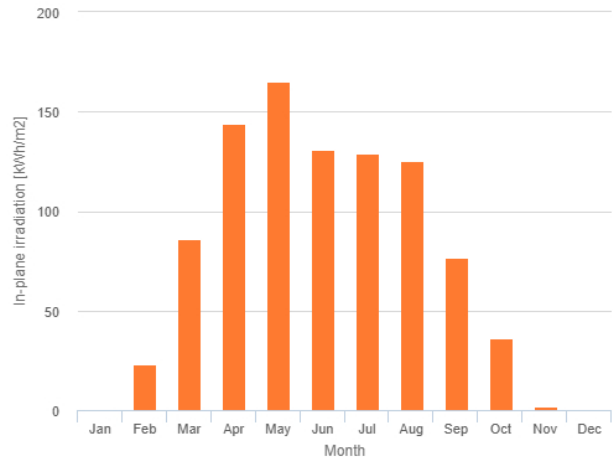
## Outline of horizon at chosen location:



## Monthly energy output from fix-angle PV system:



## Monthly in-plane irradiation for fixed-angle:



## Monthly PV energy and solar irradiation

Month	Em	Hm	SDm
January	4.4	0.487	0.577
February	667	23.3	169
March	2510	85.9	339
April	4130	144	652
May	4560	165	286
June	3490	131	367
July	3370	129	695
August	3330	125	432
September	2090	76.6	352
October	1010	36.4	315
November	35.2	1.93	20.2
December	0	0	0

Em: Average monthly electricity production from the given system [kWh].

Hm: Average monthly sum of global irradiation per square meter received by the modules of the given system [kWh/m<sup>2</sup>].

SDm: Standard deviation of the monthly electricity production due to year-to-year variation [kWh].

**Horizon line at Narvik Iii/Framnes**

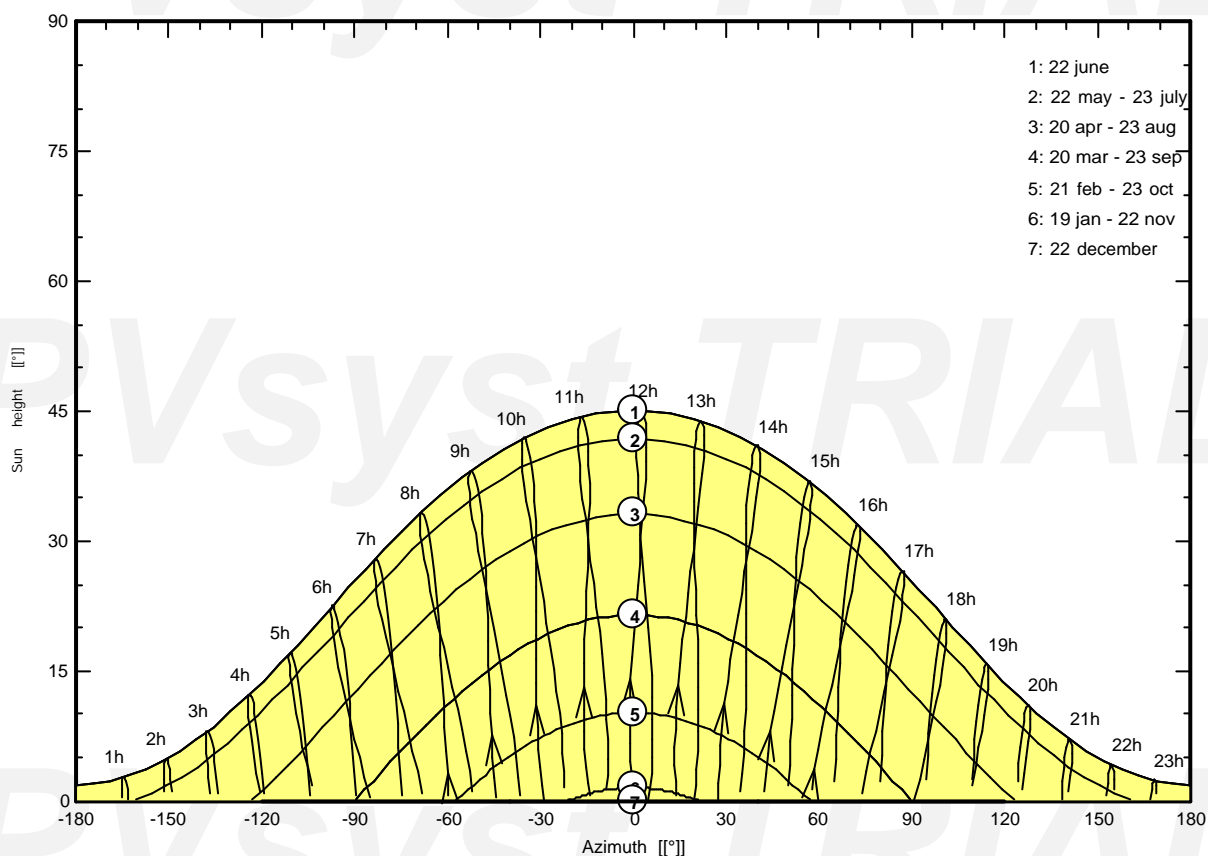
**Geographical Site** Narvik Iii/Framnes **Country** Norway

**Situation** Latitude 68.44° N Longitude 17.43° E  
 Time defined as Legal Time Time zone UT+1 Altitude 252 m

**Horizon** Average Height 0.0° Diffuse Factor 1.00  
 Albedo Factor 100 % Albedo Fraction 0.00

Height [°]	0.0	0.0	0.0	0.0
Azimuth [°]	-120	-40	40	120

Horizon line at Narvik Iii/Framnes



# Sun report for Beisfjordveien 88

## Key stats

There are 126 days with no sun at all.  
 The latest sunset of the year is at 22:17, and the earliest sunrise is at 07:20.  
 The yearly average cloud cover is 78 %.  
 The average sun time per day is 07:23 hours (assuming no cloud cover).

The sun index gives the percentage of the time not lost due to terrain blocking. In other words, a sun index value of 100 % says that there is no blocking, while an index value of 0 % means that the sun is completely blocked by the terrain.

Period	Sun index	Morning sun index	Afternoon sun index	Average sun hours per day
Overall	58 %	42 %	73 %	07:23
Winter	4 %	7 %	0 %	00:08
Spring	68 %	53 %	82 %	11:07
Summer	66 %	42 %	88 %	14:12
Autumn	43 %	39 %	46 %	03:54

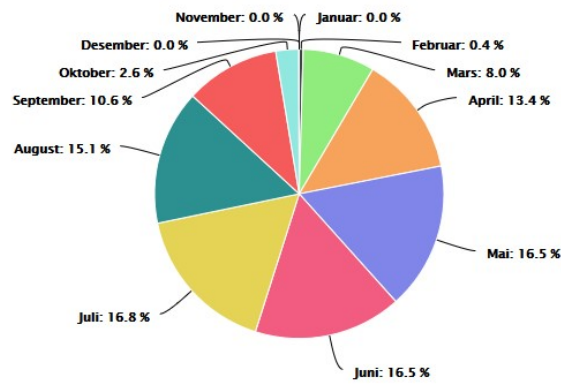
The table below shows the average sunrise and sunset times for each week of the year.

<b>Week 1</b> -	<b>Week 2</b> -	<b>Week 3</b> -	<b>Week 4</b> -	<b>Week 5</b> -	<b>Week 6</b> -	<b>Week 7</b> -	<b>Week 8</b> -	<b>Week 9</b> 08:38 11:43
<b>Week 10</b> 08:15 13:11	<b>Week 11</b> 08:01 15:38	<b>Week 12</b> 07:54 16:47	<b>Week 13</b> 07:44 17:30	<b>Week 14</b> 08:34 19:27	<b>Week 15</b> 08:24 20:19	<b>Week 16</b> 08:11 20:43	<b>Week 17</b> 07:57 21:00	<b>Week 18</b> 07:41 21:24
<b>Week 19</b> 07:33 21:45	<b>Week 20</b> 07:28 21:55	<b>Week 21</b> 07:24 22:00	<b>Week 22</b> 07:21 22:06	<b>Week 23</b> 07:20 22:10	<b>Week 24</b> 07:20 22:14	<b>Week 25</b> 07:21 22:16	<b>Week 26</b> 07:22 22:17	<b>Week 27</b> 07:25 22:16
<b>Week 28</b> 07:29 22:13	<b>Week 29</b> 07:32 22:09	<b>Week 30</b> 07:38 22:05	<b>Week 31</b> 07:42 21:54	<b>Week 32</b> 07:47 21:32	<b>Week 33</b> 08:02 21:08	<b>Week 34</b> 08:13 20:46	<b>Week 35</b> 08:22 20:20	<b>Week 36</b> 08:28 19:32
<b>Week 37</b> 08:33 18:29	<b>Week 38</b> 08:38 17:37	<b>Week 39</b> 08:42 16:30	<b>Week 40</b> 08:48 13:56	<b>Week 41</b> 09:08 12:41	<b>Week 42</b> 09:24 11:48	<b>Week 43</b> -	<b>Week 44</b> -	<b>Week 45</b> -
	<b>Week 46</b> -	<b>Week 47</b> -	<b>Week 48</b> -	<b>Week 49</b> -	<b>Week 50</b> -	<b>Week 51</b> -	<b>Week 52</b> -	

The lowermost figure shows the apparent terrain profile as seen from the location. The centre of the figure points due south, and the whole 360-degree horizon is shown. The three sun curves are for (from bottom to top): the winter solstice, the spring equinox, and the summer solstice. The numbers inside the sun discs indicate the local time for each position.



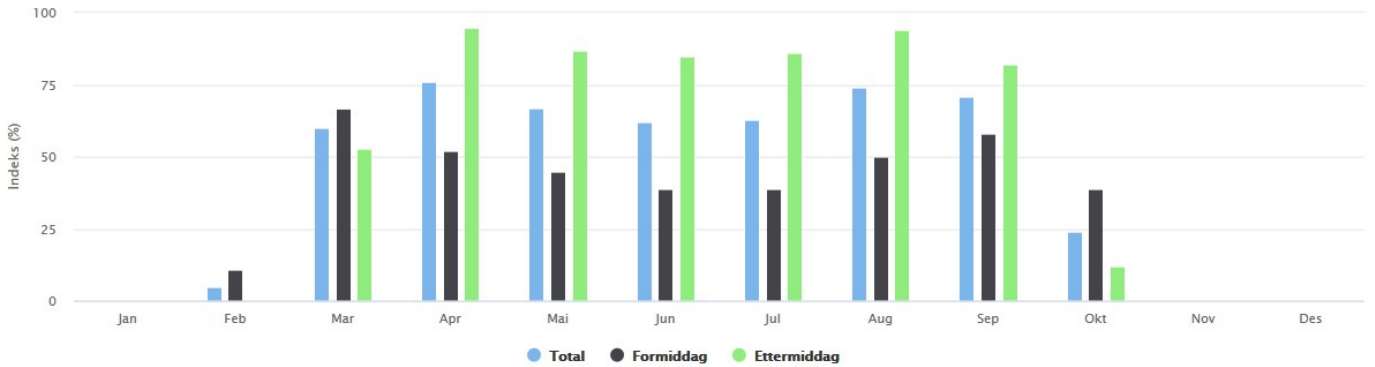
## Månedlig andel av årlig soltid uten hensyn til skydekke



Highcharts.com

## Månedlig solindeks

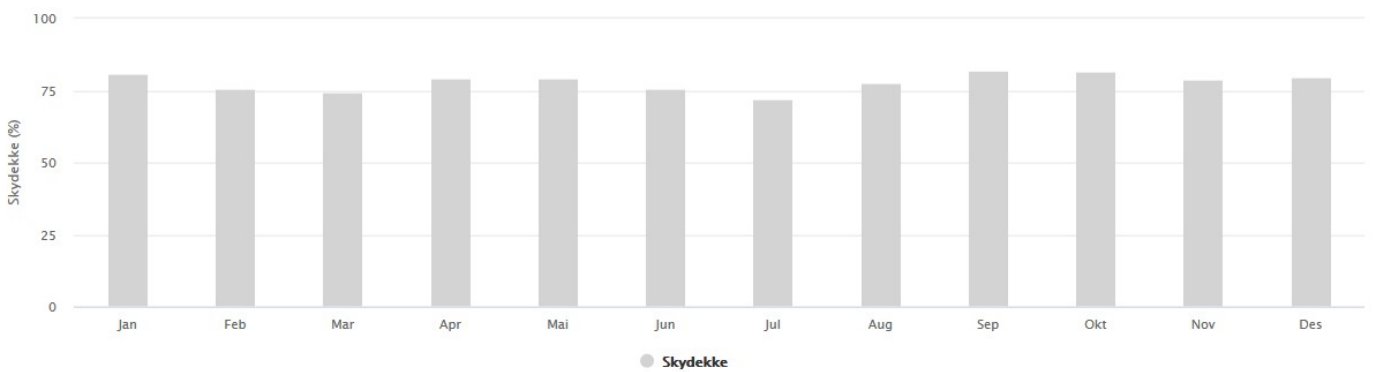
Indeksverdi 100 betyr ingen terrengskygge



Highcharts.com

## Månedlig skydekke

Gjennomsnittlig skydekke



Highcharts.com

Periode	Totalt (%)	Formiddag (%)	Ettermiddag (%)	Soltimer	Soltimer i snitt
Hele året	58	42	73	2697	07:23
Januar	0	0	0	0	00:00
Februar	5	11	0	12	00:26
Mars	60	67	53	217	07:00
April	76	52	95	362	12:04
Mai	67	45	87	444	14:19
Juni	62	39	85	446	14:52
Juli	63	39	86	454	14:39
August	74	50	94	407	13:08
September	71	58	82	285	09:30
Oktober	24	39	12	70	02:15
November	0	0	0	0	00:00
Desember	0	0	0	0	00:00
Vinter	4	7	0	12	00:08
Vår	68	53	82	1023	11:07
Sommer	66	42	88	1307	14:12
Høst	43	39	46	355	03:54