Scenario — PV
GEMINI-60-house-part-of-a-settlement Uganda - Kampala 0.399, 32.767

Name	Slope °	Azimuth °	Wp	Wall d/h m	Face	Bifacial	Wp counted
Roof East	22	-90	19,800	—	front	—	yes
Roof West	22	90	19,800	—	front	—	yes
Terrace railing south	90	0	4,620	5 / 4	front	—	yes
Terrace railing north	90	180	4,620	5 / 4	front	—	yes
share central structure east part	8	-90	20,460	—	front	—	yes
share central strucure west part	8	90	20,460	—	front	—	yes
Total counted			89,760				

Database PVGIS-SARAH3 2005–2023 loss 14 % azimuth 0 = south, 90 = west, −90 = east.
Price bands and charts use UTC+2 from longitude (15° per hour), not the political time zone.
Peak hour 2006-03-10 12:06 local (10:06 UTC) 66,624 W 0.742 W/Wp of 89,760 Wp.
Database gaps: 10 days with 0 yield while the sun reached the horizon at noon. 2008-01-23, 2008-03-01, 2008-03-06, 2008-05-17, 2008-05-18, 2009-04-18, 2009-04-19, 2009-08-15, 2009-08-16, 2016-10-16. Yield charts skip them. The simulation uses the lowest-yield day of that month.
Sell when the export price is above 0. At 0 cent export PV yield only, not the battery. Do not sell when the earning is negative. At 15:00 import/export scheduling.

Scenario — house, heat pump, battery
GEMINI-60-house-part-of-a-settlement Uganda - Kampala 0.399, 32.767

Chapter	Parameter	Value
Building	Design out / in / heat	-10.0 °C / 20.0 °C / 1,600 W
	Heat on / cool on / ground	22.0 °C / 25.0 °C / 10.0 °C
	Curve / flow min / max	0.3 / 25.0 °C / 55.0 °C
	Thermal mass of the house	25.0 kWh/K
	Household only	4.0 kWh/day
DHW	Litres at 40 °C / tank	200 L tank 42.0 °C 8–18 h
	Water out of the pipe Q1–Q4	22 °C 22 °C 21 °C 22 °C
Heat pump	Source	air and ground
	COP −10/0/10 @ 35 °C	2.4 3.4 4.5
	COP −10/0/10 @ 50 °C	1.9 2.6 3.3
	kW −10/0/10 @ 35 °C	4.0 5.0 6.0
	kW −10/0/10 @ 50 °C	3.5 4.5 5.0
Battery	kWh / C-rate / SOC min–max–start	257.2 kWh C 0.5 5 / 95 / 50 %
	Nameplate	—
	Charge / discharge η	95 % / 90 %
Grid	Inverter / grid connection	54.0 kW / 27.0 kW
	Max export	27.0 kW
	Import cap Jan–Jun kW	Jan 2 Feb 2 Mar 2 Apr 2 May 2 Jun 2
	Import cap Jul–Dec kW	Jul 2 Aug 2 Sep 2 Oct 2 Nov 2 Dec 2
Cars	Lunch DC / night AC	0.0 kWh @ 100.0 kW night 10.0 kWh @ 11.0 kW

Clock is winter time UTC+1. Emergency import is an hour above the monthly kW cap.

Records 1–10 contribution of each PV
Uganda - Kampala 0.399, 32.767

PV	2006-03-10 10:06	2015-02-26 10:06	2020-03-25 10:06	2017-02-27 10:06	2012-03-10 09:06	2012-03-10 10:06	2022-09-26 10:06	2013-02-25 10:06	2011-03-11 10:06	2005-08-30 10:06
Roof East	15,636	15,539	15,441	15,381	16,748	15,298	14,859	15,266	15,281	14,941
Roof West	15,921	15,705	15,932	15,551	14,209	15,569	16,087	15,422	15,566	15,711
Terrace railing south	641	943	197	943	639	713	488	999	638	187
Terrace railing north	164	166	541	206	170	249	139	223	192	897
share central structure east part	17,078	16,927	16,943	16,744	17,307	16,676	16,584	16,615	16,676	16,507
share central strucure west part	17,185	16,989	17,127	16,808	16,357	16,778	17,044	16,673	16,782	16,796
Watt at record	66,624	66,268	66,181	65,634	65,431	65,283	65,200	65,198	65,134	65,040
Percent of installed peak	74.2	73.8	73.7	73.1	72.9	72.7	72.6	72.6	72.6	72.5

Values are watts at that hour. Date and time are UTC. Record 66,624 W (74.2 % of 89,760 Wp).

Hours at or above a share of the record
Uganda - Kampala 0.399, 32.767

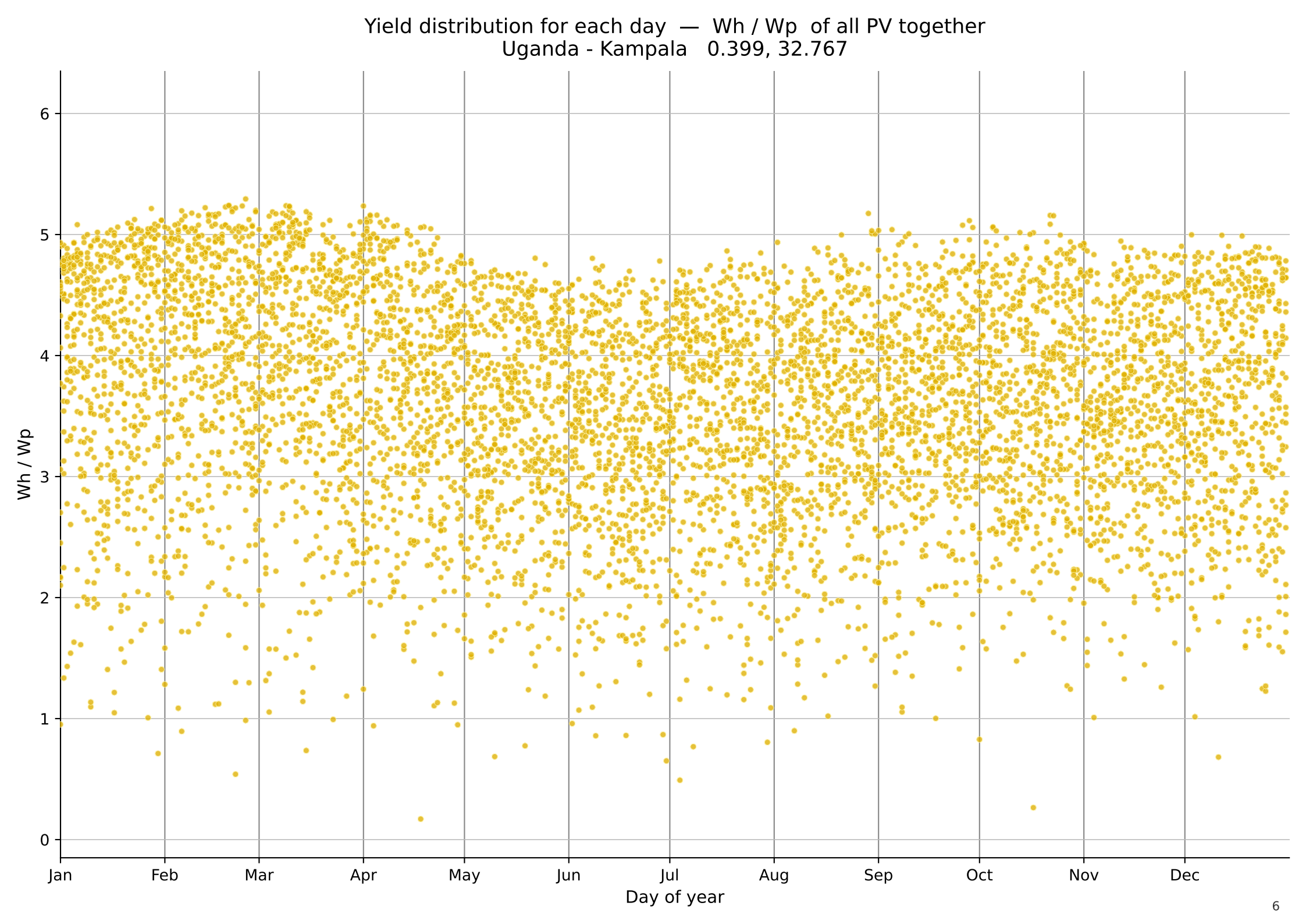
Of the record	Hours	Watts
98 %	5	65,292 W
96 %	70	63,959 W
94 %	317	62,627 W
92 %	867	61,294 W
90 %	1,869	59,962 W

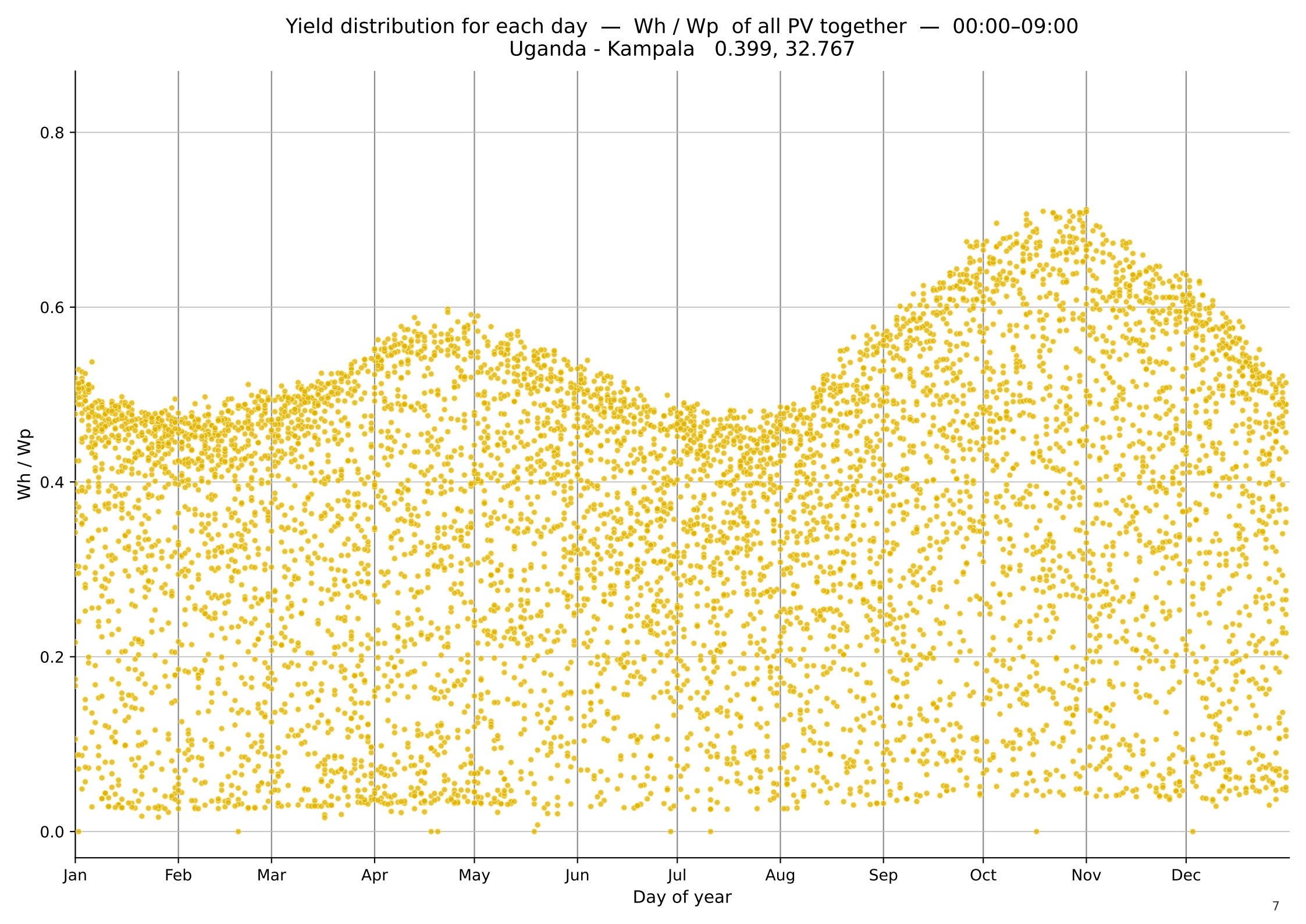
Record hour = 66,624 W combined.

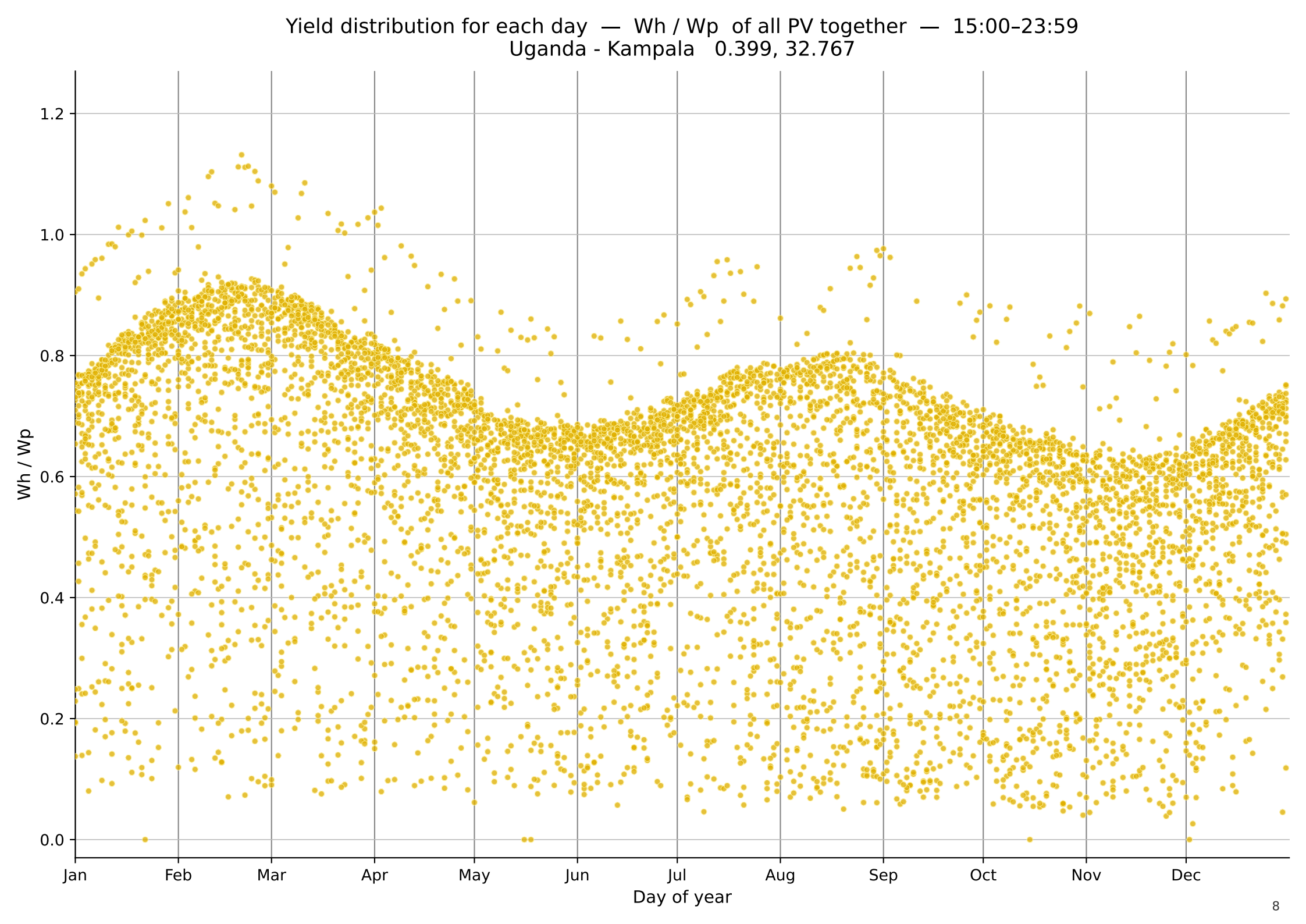
Records of each photovoltaic field
Uganda - Kampala 0.399, 32.767

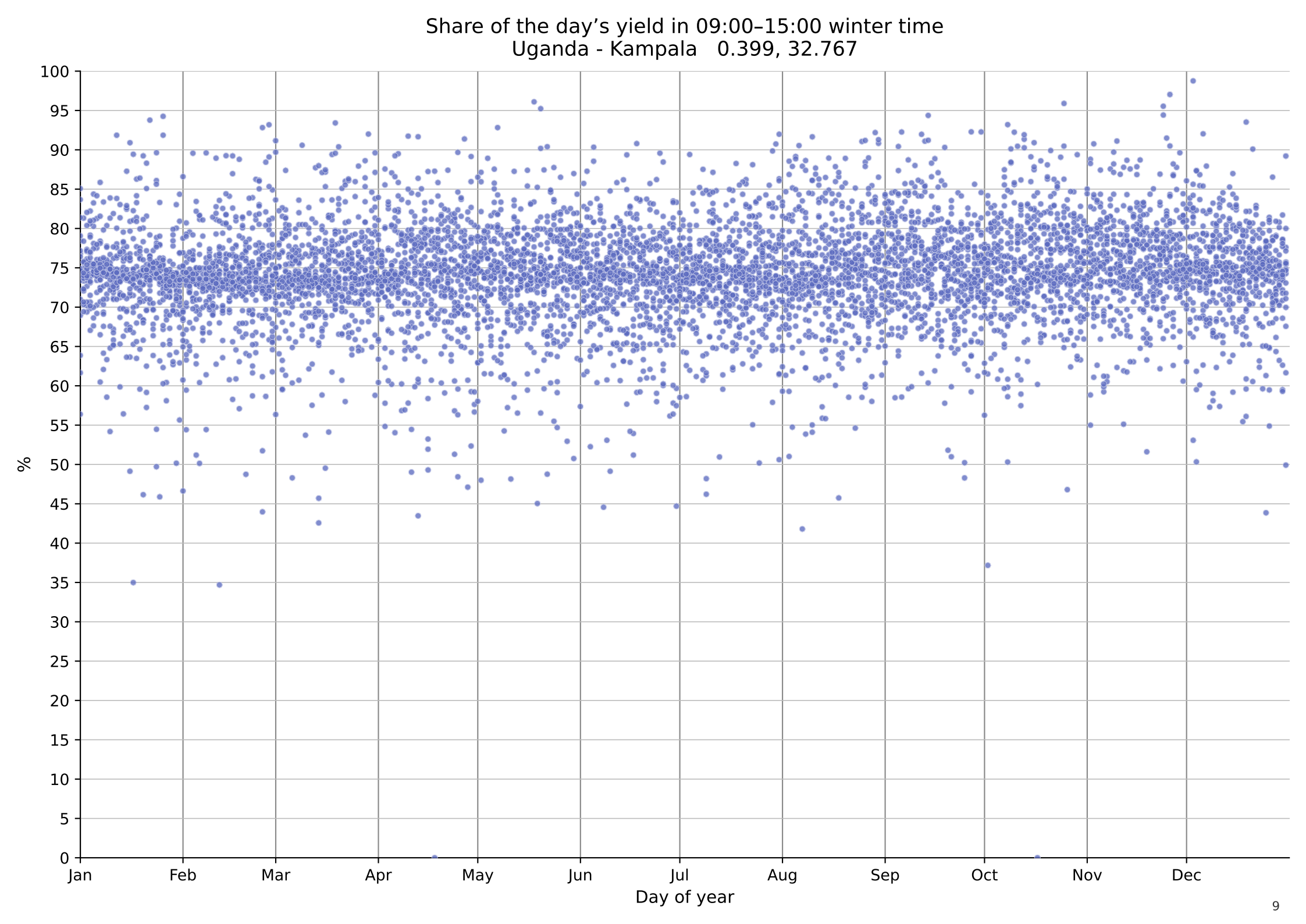
PV	Date	Watts	%	h ≥98%	h ≥96%	h ≥94%	h ≥92%	h ≥90%
Roof East	2012-03-10 09:06	16,748	84.6	3	27	136	421	1042
Roof West	2005-08-30 11:06	16,758	84.6	9	44	148	439	989
Terrace railing south	2007-12-18 10:06	1,998	43.3	44	235	613	1074	1547
Terrace railing north	2007-06-19 10:06	1,854	40.1	16	147	426	854	1336
share central structure east part	2012-03-10 09:06	17,307	84.6	3	34	193	512	1140
share central strucure west part	2006-03-10 10:06	17,185	84.0	6	66	274	704	1393

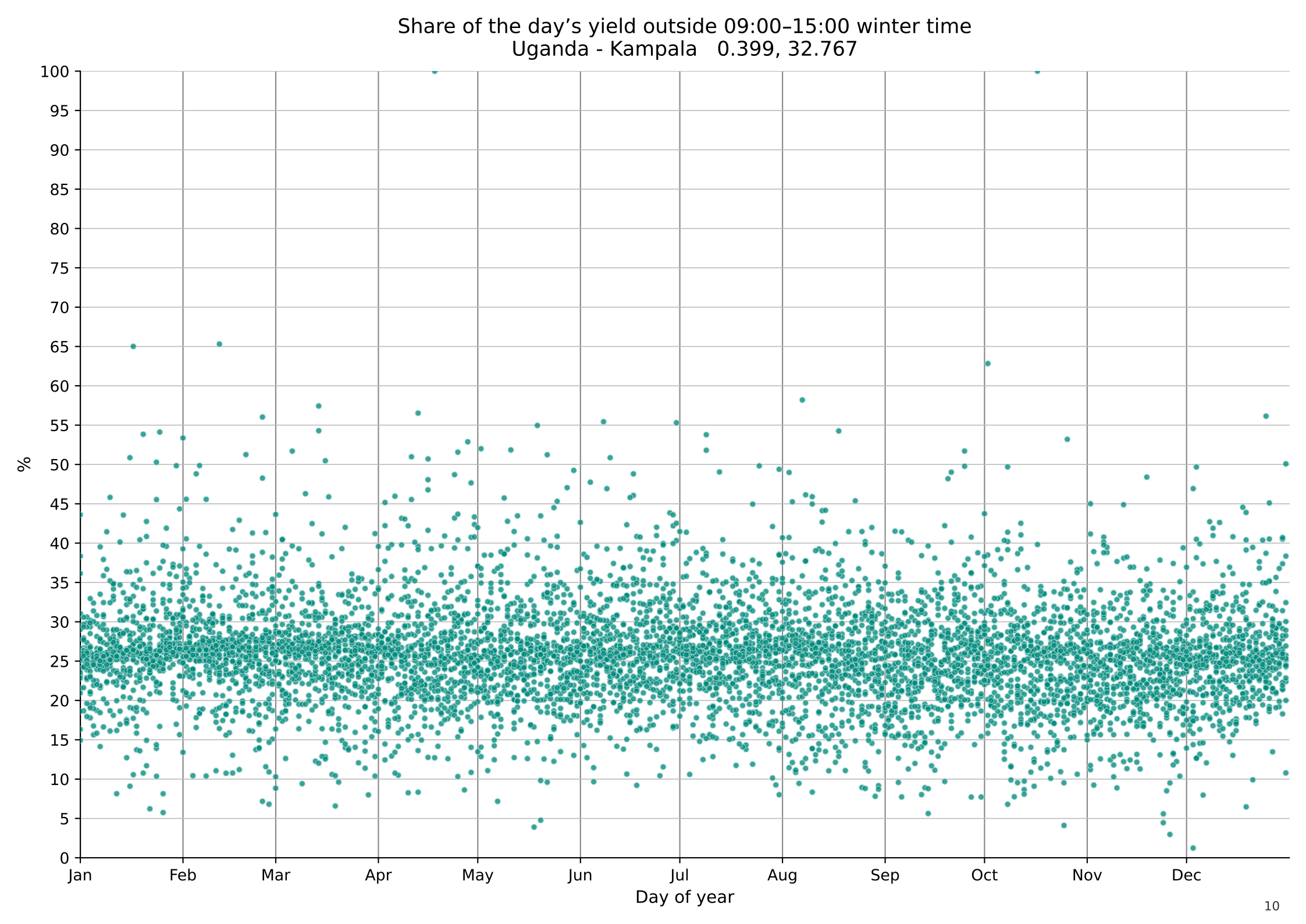
Watts is the highest hour of that field. % is of its own Wp. Hours are the count of hours at or above that share of its own record. Use this to size the MPPT or the inverter for that field.

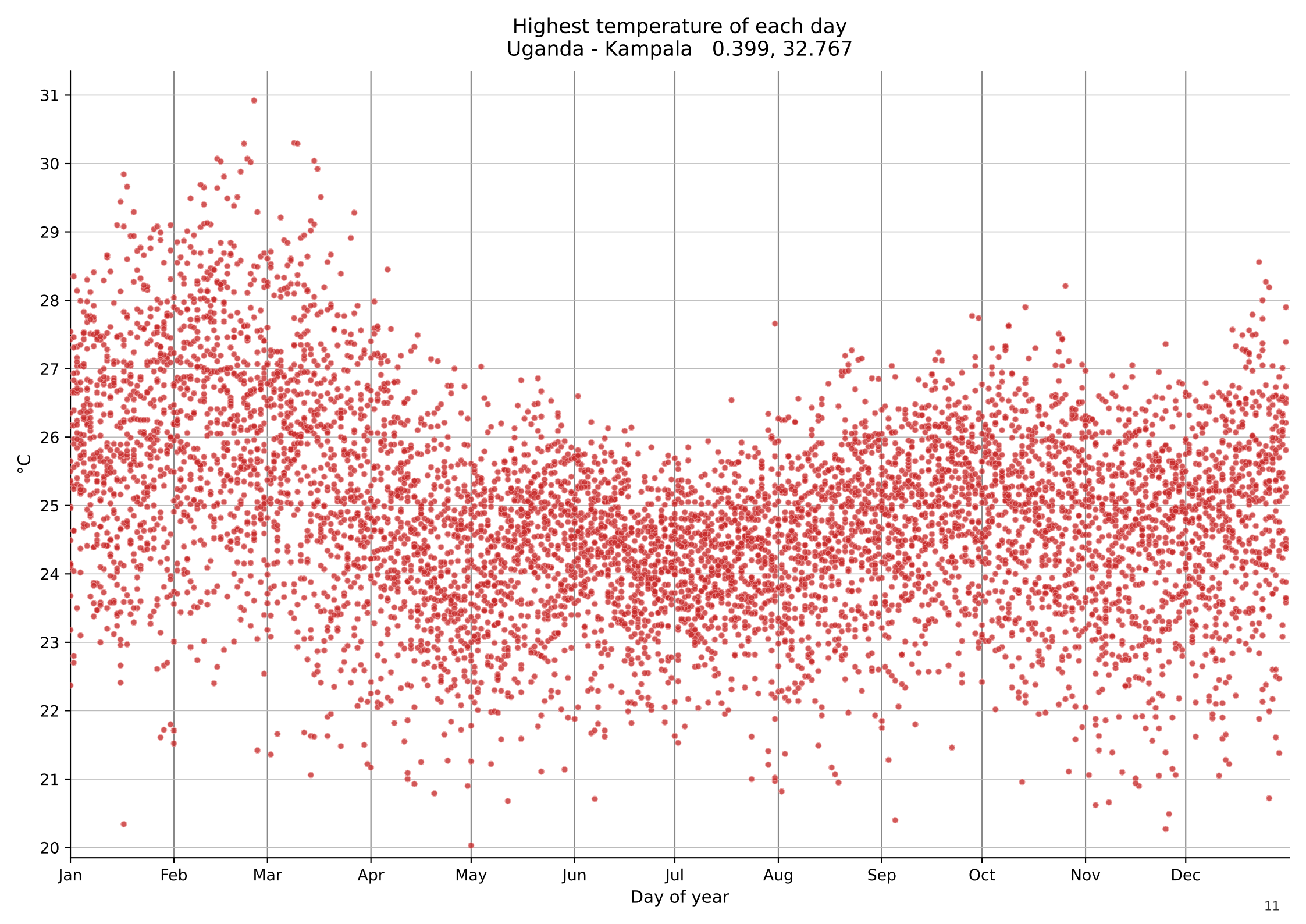

Yield distribution for each day — Wh / Wp of all PV together
Uganda - Kampala 0.399, 32.767
Wh / Wp
0
1
2
3
4
5
6
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year

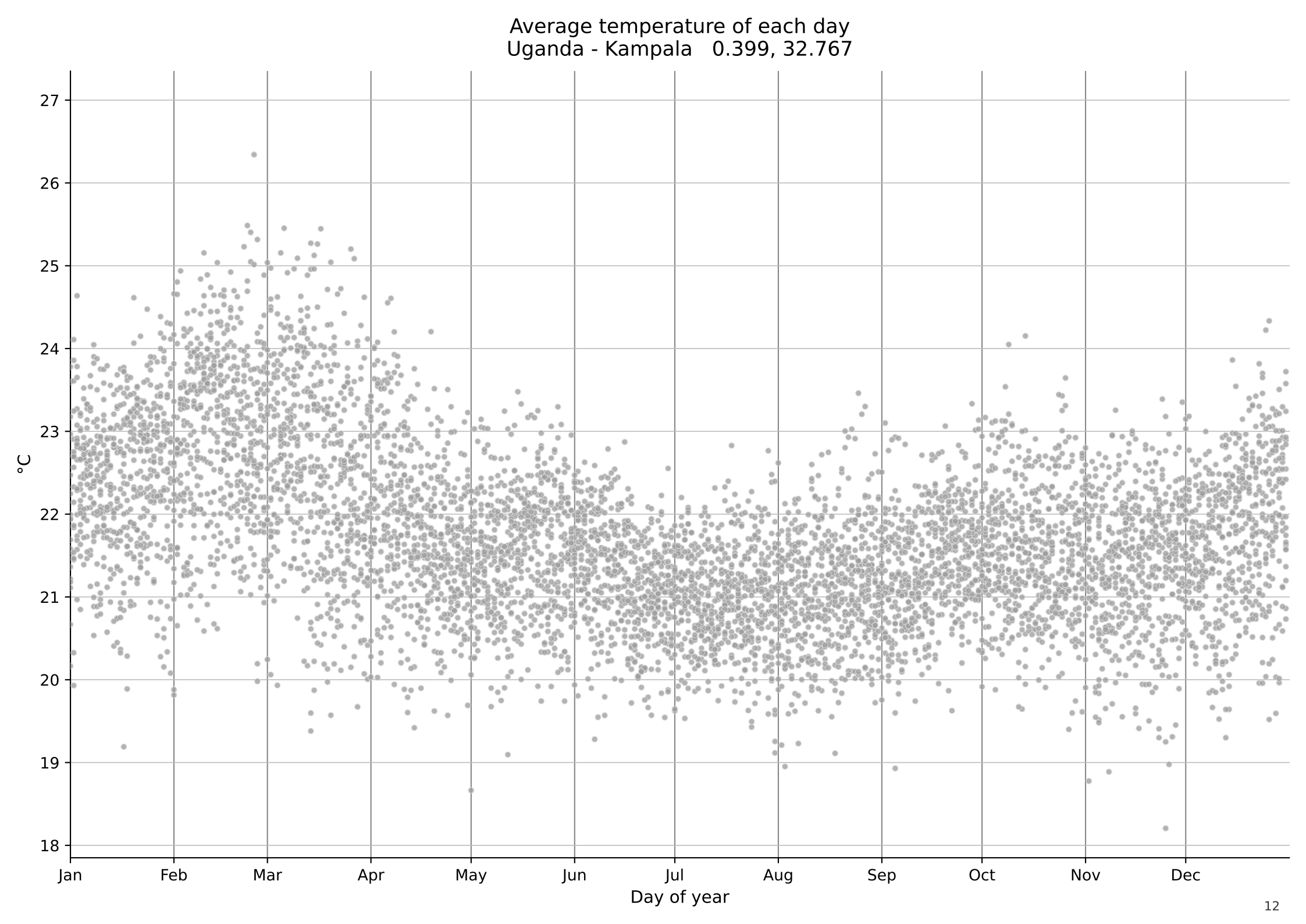

Yield distribution for each day — Wh / Wp of all PV together — 00:00–09:00
Uganda - Kampala 0.399, 32.767
Wh / Wp
0.0
0.2
0.4
0.6
0.8
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year

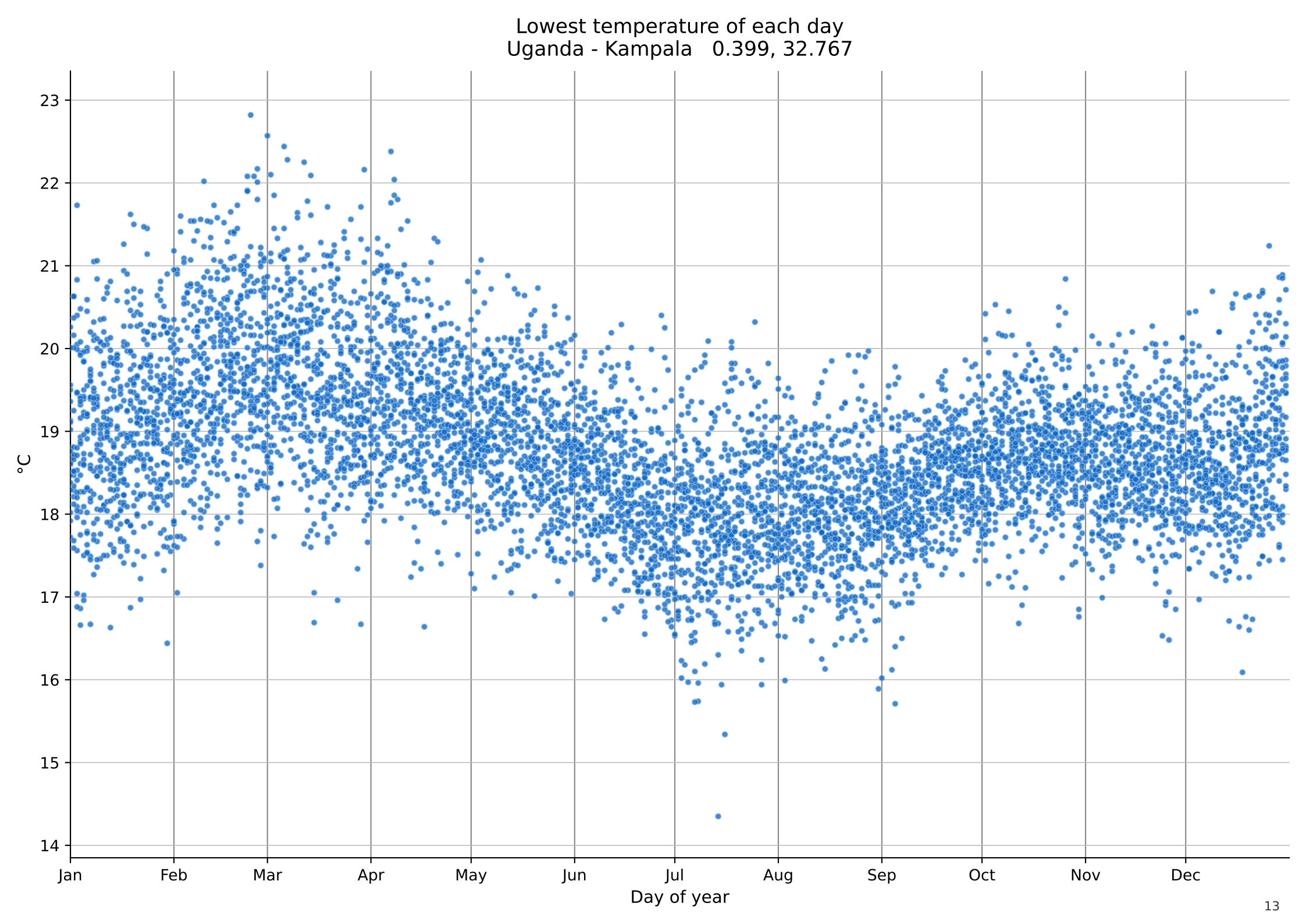

Yield distribution for each day — Wh / Wp of all PV together — 15:00–23:59
Uganda - Kampala 0.399, 32.767
Wh / Wp
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year

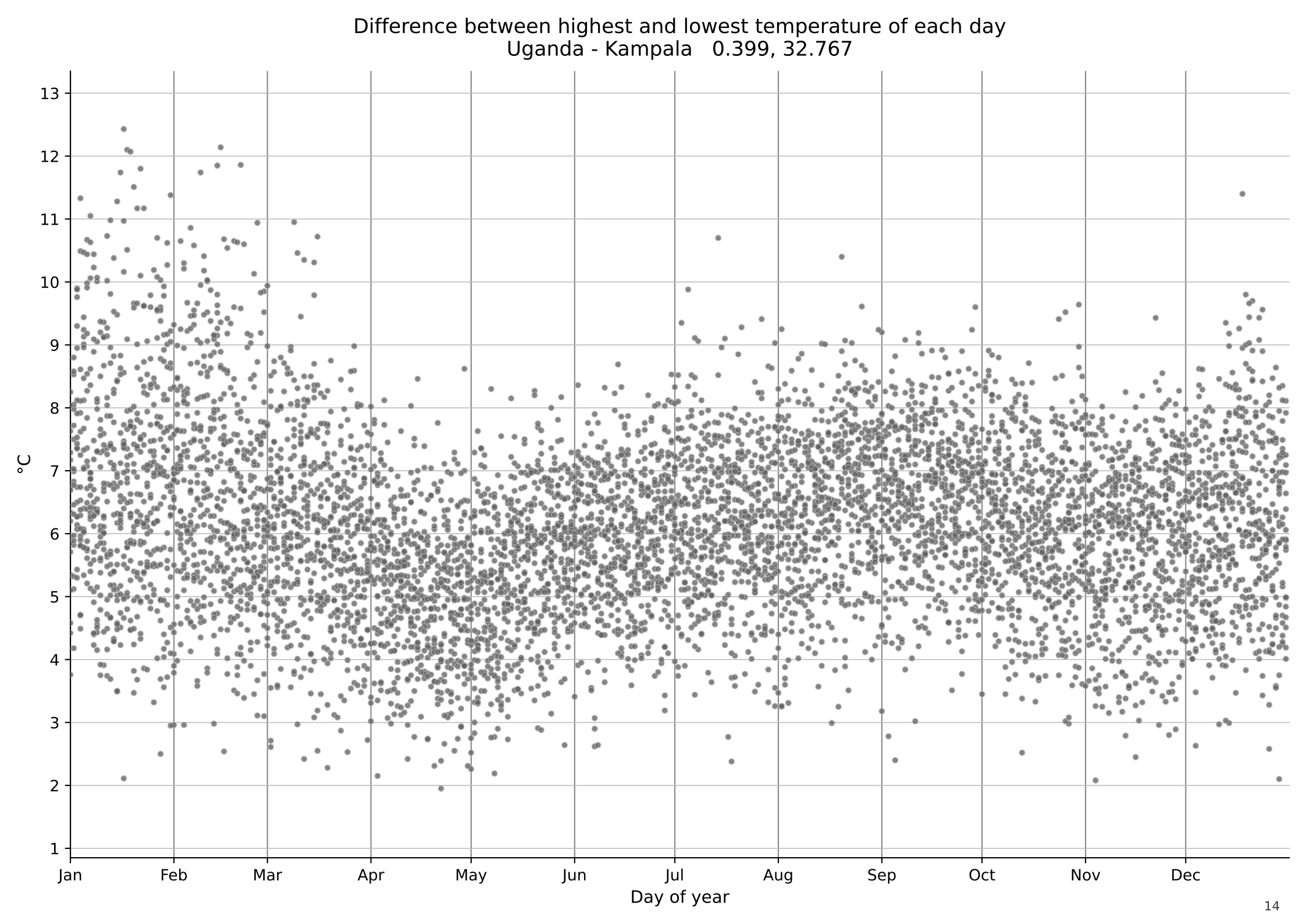

Share of the day’s yield in 09:00–15:00 winter time
Uganda - Kampala 0.399, 32.767
%
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year


Share of the day’s yield outside 09:00–15:00 winter time
Uganda - Kampala 0.399, 32.767
%
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year


Highest temperature of each day
Uganda - Kampala 0.399, 32.767
°C
31
30
29
28
27
26
25
24
23
22
21
20
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year


Average temperature of each day
Uganda - Kampala 0.399, 32.767
°C
27
26
25
24
23
22
21
20
19
18
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year


Lowest temperature of each day
Uganda - Kampala 0.399, 32.767
°C
23
22
21
20
19
18
17
16
15
14
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year


Difference between highest and lowest temperature of each day
Uganda - Kampala 0.399, 32.767
°C
13
12
11
10
9
8
7
6
5
4
3
2
1
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year

Monthly and yearly specific yield (kWh/kWp = Wh/Wp)
Uganda - Kampala 0.399, 32.767

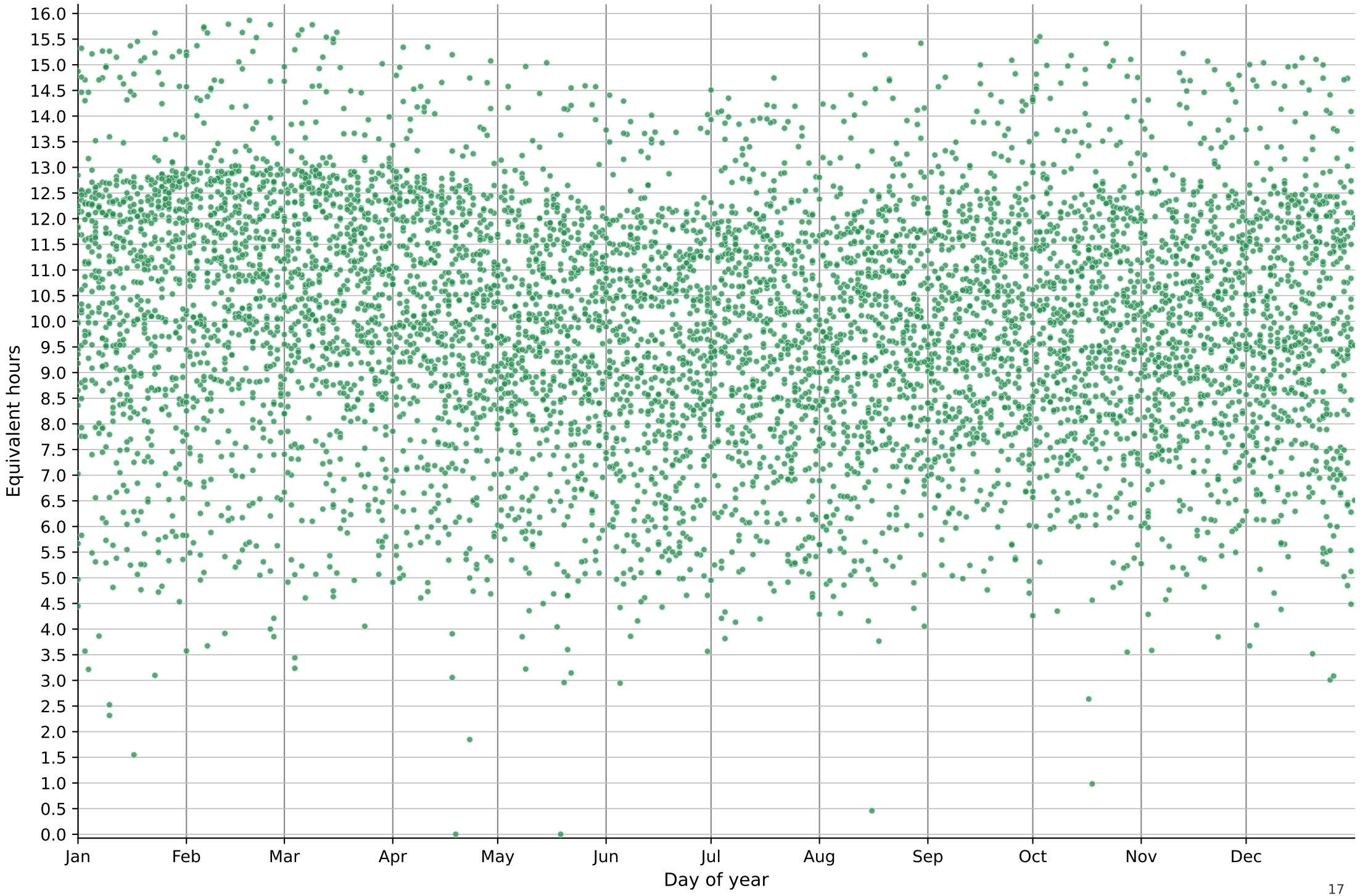
Month / year		Roof East 22°/-90° 19,800 Wp	Roof West 22°/90° 19,800 Wp	Terrace railing south 90°/0° 4,620 Wp	Terrace railing north 90°/180° 4,620 Wp	share central structure east 8°/-90° 20,460 Wp	share central strucure west p 8°/90° 20,460 Wp	All together
January	Maximum	151.65	151.42	75.70	22.09	157.18	157.03	143.12
	average	124.96	129.25	64.78	19.26	130.88	132.85	120.52
	minimum	97.37	106.00	52.48	16.66	104.05	107.58	96.66
February	Maximum	127.87	138.02	56.72	20.88	133.68	139.64	124.26
	average	117.55	119.80	52.93	19.16	122.75	123.84	112.27
	minimum	91.78	97.14	44.83	17.61	96.82	99.04	89.59
March	Maximum	144.71	144.17	37.59	29.95	149.96	150.09	135.49
	average	125.86	131.52	35.65	27.80	132.39	134.83	120.95
	minimum	105.31	106.61	32.77	25.71	109.85	110.50	100.09
April	Maximum	129.72	138.35	22.53	53.84	136.35	139.81	124.94
	average	113.60	121.33	21.43	48.29	120.29	123.47	110.97
	minimum	97.80	103.79	19.94	45.28	103.02	105.55	95.47
May	Maximum	123.52	126.66	22.51	56.36	127.32	126.84	115.52
	average	109.36	115.04	21.13	52.12	115.17	117.53	106.31
	minimum	96.13	100.11	19.11	46.96	101.00	102.46	93.31
June	Maximum	115.50	118.17	20.93	59.33	120.46	121.38	110.48
	average	103.03	106.30	19.61	53.36	107.73	109.19	99.38
	minimum	85.80	90.77	18.08	45.28	90.33	92.49	83.88
July	Maximum	121.22	123.78	22.57	61.72	125.49	125.75	114.88
	average	111.22	114.29	21.05	57.98	116.19	117.62	107.11
	minimum	98.44	99.00	19.36	51.73	102.00	102.54	93.89
August	Maximum	122.32	125.54	23.26	55.30	126.93	127.52	116.11
	average	112.54	113.25	22.02	52.28	116.74	117.28	106.97
	minimum	102.38	99.46	19.95	48.34	106.19	104.57	96.59
September	Maximum	122.75	125.17	26.33	35.08	126.88	128.66	115.58
	average	114.05	114.12	25.05	33.65	118.14	118.38	107.27
	minimum	107.36	103.23	23.01	32.11	110.60	109.36	100.12
October	Maximum	126.64	125.89	51.51	23.53	130.82	130.92	118.83
	average	117.38	119.07	48.61	22.08	122.22	123.12	111.72
	minimum	105.04	106.01	45.26	20.47	108.93	109.46	99.87
November	Maximum	125.27	131.81	59.31	22.91	131.31	133.03	120.33
	average	111.56	112.71	53.63	21.30	115.91	116.58	106.32
	minimum	95.31	101.77	48.30	19.30	100.62	103.33	93.62
December	Maximum	136.57	135.62	70.71	23.78	140.81	140.22	128.42
	average	115.09	120.13	61.38	21.12	120.72	122.86	111.66
	minimum	97.35	107.04	54.07	18.69	105.01	108.11	98.29
All years	Maximum	1,425.7	1,519.4	463.8	443.0	1,487.0	1,523.5	1,363.8
	average	1,376.2	1,416.8	447.3	428.4	1,439.1	1,457.6	1,321.5
	minimum	1,330.8	1,383.0	418.7	415.3	1,397.3	1,419.3	1,284.4

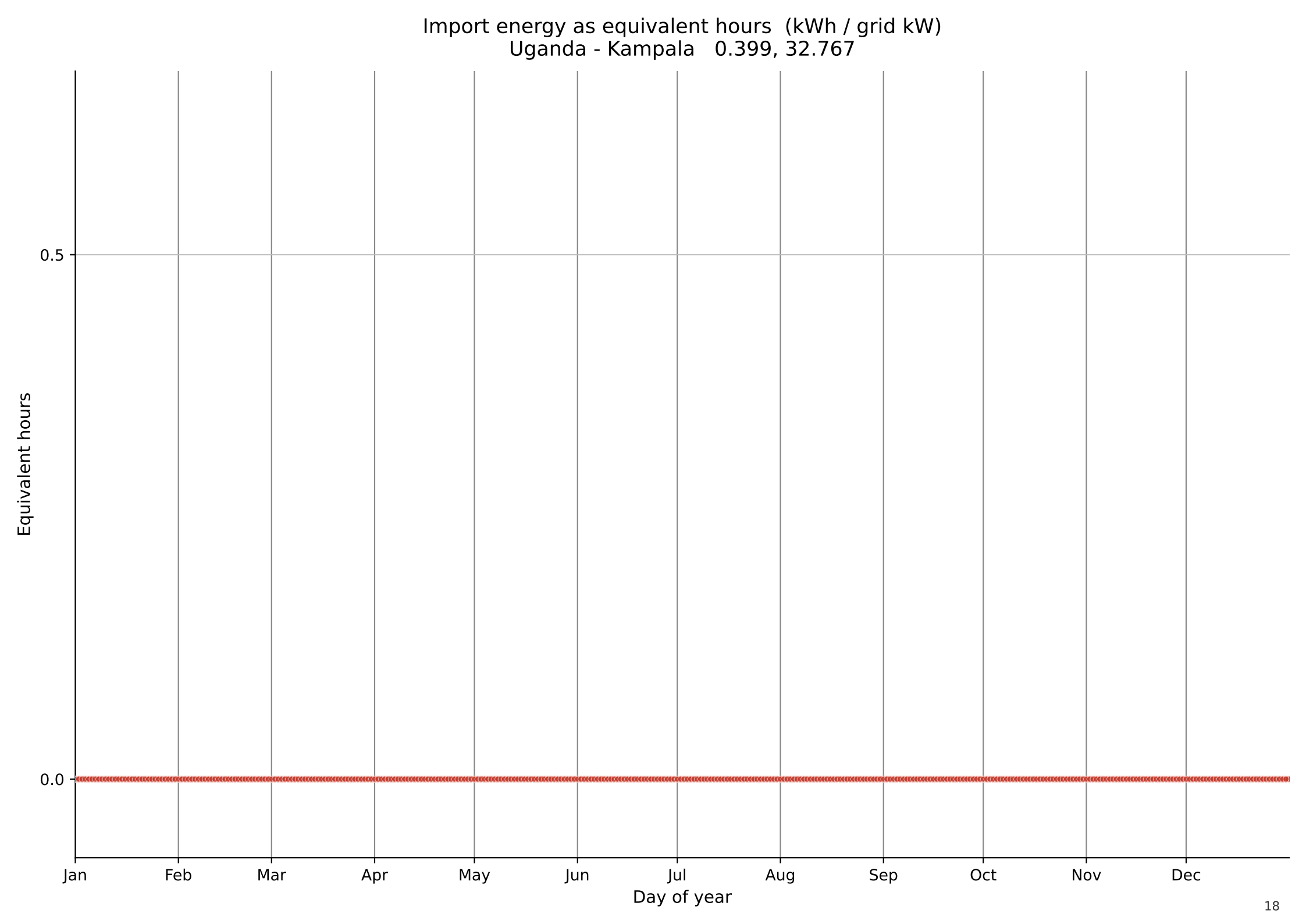
Highest combined yield hour: 2006-03-10 10:06 UTC 66,624.2 W (0.742 W/Wp) of 89,760 Wp installed. Use this hour to size battery charge power.

Monthly and yearly total yield (kWh)
Uganda - Kampala 0.399, 32.767

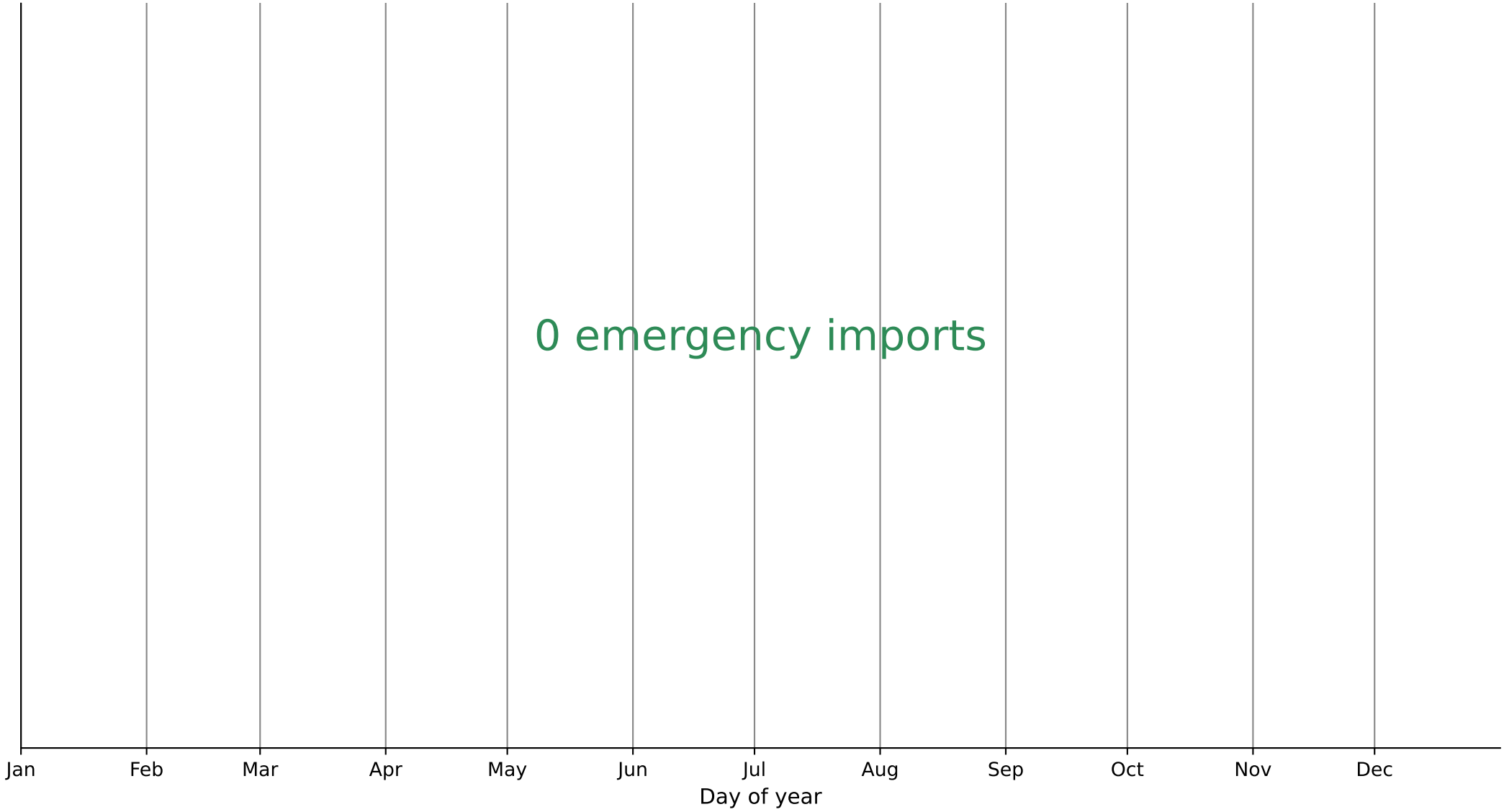
Month / year		Roof East 22°/-90° 19,800 Wp	Roof West 22°/90° 19,800 Wp	Terrace railing south 90°/0° 4,620 Wp	Terrace railing north 90°/180° 4,620 Wp	share central structure east 8°/-90° 20,460 Wp	share central strucure west p 8°/90° 20,460 Wp	All together
January	Maximum	3,002.61	2,998.20	349.73	102.04	3,215.82	3,212.76	12,846.03
	average	2,474.29	2,559.21	299.28	88.99	2,677.75	2,718.20	10,817.72
	minimum	1,928.01	2,098.83	242.47	76.98	2,128.91	2,201.03	8,676.23
February	Maximum	2,531.73	2,732.85	262.03	96.46	2,735.13	2,857.02	11,153.81
	average	2,327.44	2,372.08	244.54	88.50	2,511.42	2,533.80	10,077.78
	minimum	1,817.19	1,923.31	207.13	81.36	1,981.01	2,026.43	8,041.26
March	Maximum	2,865.23	2,854.63	173.67	138.37	3,068.19	3,070.75	12,162.02
	average	2,492.01	2,604.17	164.72	128.42	2,708.73	2,758.57	10,856.62
	minimum	2,085.18	2,110.92	151.40	118.77	2,247.62	2,260.86	8,983.74
April	Maximum	2,568.50	2,739.36	104.10	248.75	2,789.62	2,860.55	11,214.66
	average	2,249.18	2,402.27	99.01	223.11	2,461.20	2,526.16	9,960.93
	minimum	1,936.54	2,055.07	92.13	209.19	2,107.85	2,159.56	8,569.14
May	Maximum	2,445.61	2,507.96	103.98	260.38	2,605.03	2,595.23	10,369.43
	average	2,165.37	2,277.79	97.60	240.78	2,356.32	2,404.62	9,542.48
	minimum	1,903.37	1,982.14	88.27	216.95	2,066.51	2,096.28	8,375.12
June	Maximum	2,286.81	2,339.68	96.70	274.12	2,464.65	2,483.44	9,916.77
	average	2,040.07	2,104.75	90.62	246.53	2,204.08	2,234.12	8,920.17
	minimum	1,698.88	1,797.18	83.54	209.17	1,848.07	1,892.34	7,529.19
July	Maximum	2,400.19	2,450.85	104.29	285.16	2,567.56	2,572.76	10,311.43
	average	2,202.18	2,262.99	97.25	267.89	2,377.22	2,406.55	9,614.07
	minimum	1,949.20	1,960.20	89.45	238.98	2,086.88	2,097.91	8,427.48
August	Maximum	2,422.02	2,485.61	107.45	255.50	2,597.09	2,609.01	10,421.62
	average	2,228.33	2,242.39	101.74	241.54	2,388.46	2,399.45	9,601.91
	minimum	2,027.20	1,969.40	92.19	223.34	2,172.63	2,139.40	8,669.67
September	Maximum	2,430.41	2,478.41	121.62	162.07	2,595.94	2,632.35	10,374.53
	average	2,258.15	2,259.55	115.74	155.46	2,417.22	2,422.15	9,628.28
	minimum	2,125.71	2,043.86	106.30	148.36	2,262.80	2,237.51	8,986.98
October	Maximum	2,507.48	2,492.58	237.99	108.73	2,676.62	2,678.58	10,666.46
	average	2,324.11	2,357.64	224.58	102.02	2,500.70	2,519.10	10,028.15
	minimum	2,079.70	2,098.90	209.09	94.59	2,228.61	2,239.52	8,964.57
November	Maximum	2,480.34	2,609.81	274.02	105.84	2,686.64	2,721.88	10,800.92
	average	2,208.81	2,231.65	247.78	98.43	2,371.57	2,385.20	9,543.44
	minimum	1,887.14	2,015.11	223.15	89.16	2,058.61	2,114.22	8,403.46
December	Maximum	2,704.12	2,685.26	326.69	109.85	2,881.01	2,868.98	11,527.05
	average	2,278.82	2,378.62	283.57	97.55	2,469.90	2,513.71	10,022.17
	minimum	1,927.60	2,119.35	249.79	86.37	2,148.54	2,211.86	8,822.19
All years	Maximum	28,229.2	30,083.8	2,142.5	2,046.8	30,423.2	31,171.2	122,410.4
	average	27,248.8	28,053.1	2,066.4	1,979.2	29,444.6	29,821.6	118,613.7
	minimum	26,349.8	27,383.0	1,934.5	1,918.7	28,589.1	29,038.6	115,284.7

Highest combined yield hour: 2006-03-10 10:06 UTC 66,624.2 W (0.742 W/Wp) of 89,760 Wp installed. Use this hour to size battery charge power.


Export energy as equivalent hours (kWh / grid kW)
Uganda - Kampala 0.399, 32.767
Equivalent hours
16.0
15.5
15.0
14.5
14.0
13.5
13.0
12.5
12.0
11.5
11.0
10.5
10.0
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year


Import energy as equivalent hours (kWh / grid kW)
Uganda - Kampala 0.399, 32.767
0.5
0.0
Equivalent hours
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year

Emergency import hours: 0 days with an emergency: 0
Uganda - Kampala 0.399, 32.767



Emergency = this hour’s grid import is above the month’s max import kW. 2 kW means up to 48 kWh in 24 hours. More than 2 kW in an hour is the higher grid fee.
Import inside that cap is not an emergency. Preferred cheap hours are 00:00–06:00 and 09:00–15:00 winter time.

Energy in kWh
Uganda - Kampala 0.399, 32.767

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All
Export to grid													
month Maximum	10,207	8,726	9,683	9,122	8,720	8,300	8,626	8,622	8,495	8,818	8,910	9,427	100,999
month average	8,793	8,132	8,805	8,169	7,999	7,508	8,034	8,036	7,958	8,372	7,976	8,317	98,099
month minimum	7,119	6,569	7,488	7,164	7,182	6,430	7,168	7,329	7,567	7,688	7,141	7,452	95,306
day Maximum	421.7	428.4	426.1	414.4	406.0	391.7	398.0	416.3	407.4	419.8	411.0	408.7	428.4
day average	283.6	288.3	284.0	272.3	258.0	250.3	259.1	259.2	265.3	270.1	265.9	268.3	268.6
day minimum	41.8	96.5	87.4	0.0	0.0	79.5	103.0	12.4	115.0	26.5	96.8	81.2	0.0
Import from grid													
month Maximum	0	0	0	0	0	0	0	0	0	0	0	0	0
month average	0	0	0	0	0	0	0	0	0	0	0	0	0
month minimum	0	0	0	0	0	0	0	0	0	0	0	0	0
day Maximum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
day average	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
day minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total energy used for house													
month Maximum	462	430	462	452	467	454	473	472	454	468	455	466	5,492
month average	459	418	459	446	463	450	468	468	450	463	449	462	5,456
month minimum	459	414	459	444	459	446	463	461	446	459	444	459	5,426
day Maximum	15.3	15.1	15.3	15.5	15.7	15.5	15.6	15.6	15.7	15.4	15.8	15.5	15.8
day average	14.8	14.8	14.8	14.9	14.9	15.0	15.1	15.1	15.0	14.9	15.0	14.9	14.9
day minimum	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8

Month rows: kWh in that month. Day rows: best / average / worst day.
Total energy used for house = household + car + heating + cooling + DHW + direct electric.
PV not exported and not marked wasted is still in the battery, or could not leave because the grid was already full. It is not house use.

Energy by price
Uganda - Kampala 0.399, 32.767

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All
Export													
month Maximum	1,164	1,068	1,160	992	998	960	986	1,022	941	1,082	1,093	1,107	12,394
month average	1,091	1,008	1,106	936	947	906	950	953	913	1,050	1,014	1,056	11,931
month minimum	970	885	1,015	883	888	850	902	900	884	995	952	1,005	11,743
day Maximum	50.3	51.6	49.9	45.8	45.3	43.5	45.3	44.2	45.2	51.1	48.0	49.7	51.6
day average	35.2	35.7	35.7	31.2	30.6	30.2	30.7	30.8	30.4	33.9	33.8	34.1	32.7
day minimum	5.0	11.1	10.5	0.0	0.0	11.6	12.3	1.5	12.1	5.8	11.6	10.0	0.0
Import													
month Maximum	0	0	0	0	0	0	0	0	0	0	0	0	0
month average	0	0	0	0	0	0	0	0	0	0	0	0	0
month minimum	0	0	0	0	0	0	0	0	0	0	0	0	0
day Maximum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
day average	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
day minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Peak grid fee													
month Maximum	0	0	0	0	0	0	0	0	0	0	0	0	0
month average	0	0	0	0	0	0	0	0	0	0	0	0	0
month minimum	0	0	0	0	0	0	0	0	0	0	0	0	0
day Maximum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
day average	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
day minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Import incl. peak fee													
month Maximum	0	0	0	0	0	0	0	0	0	0	0	0	0
month average	0	0	0	0	0	0	0	0	0	0	0	0	0
month minimum	0	0	0	0	0	0	0	0	0	0	0	0	0
day Maximum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
day average	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
day minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Balance													
month Maximum	1,164	1,068	1,160	992	998	960	986	1,022	941	1,082	1,093	1,107	12,394
month average	1,091	1,008	1,106	936	947	906	950	953	913	1,050	1,014	1,056	11,931
month minimum	970	885	1,015	883	888	850	902	900	884	995	952	1,005	11,743
day Maximum	50.3	51.6	49.9	45.8	45.3	43.5	45.3	44.2	45.2	51.1	48.0	49.7	51.6
day average	35.2	35.7	35.7	31.2	30.6	30.2	30.7	30.8	30.4	33.9	33.8	34.1	32.7
day minimum	5.0	11.1	10.5	0.0	0.0	11.6	12.3	1.5	12.1	5.8	11.6	10.0	0.0

Currency in Your units. Import and export use the cent/kWh of that hour. Peak fee 6.33 / kW / month is the highest import hour of the month (hourly stand-in for the 15-minute peak) and is added to that month's
Sell only when export is above 0. At 0 cent, export PV yield only, not the battery. Do not sell when the earning is negative.

Export in kWh during price hours
Uganda - Kampala 0.399, 32.767

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All
Export total													
month Maximum	10,207	8,726	9,683	9,122	8,720	8,300	8,626	8,622	8,495	8,818	8,910	9,427	100,999
month average	8,793	8,132	8,805	8,169	7,999	7,508	8,034	8,036	7,958	8,372	7,976	8,317	98,099
month minimum	7,119	6,569	7,488	7,164	7,182	6,430	7,168	7,329	7,567	7,688	7,141	7,452	95,306
day Maximum	421.7	428.4	426.1	414.4	406.0	391.7	398.0	416.3	407.4	419.8	411.0	408.7	428.4
day average	283.6	288.3	284.0	272.3	258.0	250.3	259.1	259.2	265.3	270.1	265.9	268.3	268.6
day minimum	41.8	96.5	87.4	0.0	0.0	79.5	103.0	12.4	115.0	26.5	96.8	81.2	0.0
Export during high price hours													
month Maximum	3,970	3,581	4,068	3,725	4,014	3,768	3,971	3,960	3,626	3,886	3,754	3,932	45,608
month average	3,685	3,395	3,783	3,604	3,698	3,562	3,721	3,708	3,516	3,601	3,536	3,686	43,495
month minimum	3,489	3,259	3,584	3,476	3,491	3,398	3,593	3,561	3,317	3,318	3,283	3,467	42,479
day Maximum	157.3	158.6	158.1	157.6	159.8	154.3	157.4	158.1	155.3	155.8	158.4	156.1	159.8
day average	118.9	120.3	122.0	120.1	119.3	118.7	120.0	119.6	117.2	116.2	117.9	118.9	119.1
day minimum	41.8	72.1	73.5	0.0	0.0	74.8	73.2	12.4	76.6	26.5	83.1	76.1	0.0
Export during medium price hours													
month Maximum	4,607	3,944	4,261	4,031	3,810	3,780	3,909	3,744	3,713	3,783	3,838	4,182	43,464
month average	3,766	3,504	3,719	3,428	3,378	3,203	3,431	3,390	3,324	3,556	3,283	3,503	41,483
month minimum	2,709	2,539	2,862	2,881	2,947	2,371	2,942	2,779	3,089	3,054	2,677	2,881	39,697
day Maximum	232.1	237.3	237.6	234.2	227.6	222.9	227.0	235.9	230.6	241.3	234.9	230.3	241.3
day average	121.5	124.2	120.0	114.3	109.0	106.8	110.7	109.4	110.8	114.7	109.4	113.0	113.6
day minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Export during low price hours													
month Maximum	2,111	1,485	1,822	1,587	1,299	1,104	1,193	1,233	1,410	1,599	1,622	1,778	14,410
month average	1,342	1,234	1,304	1,138	923	744	882	938	1,119	1,215	1,157	1,128	13,122
month minimum	764	762	794	674	490	358	503	686	868	796	749	556	12,106
day Maximum	85.4	81.0	81.0	81.0	81.0	81.0	79.6	81.0	81.0	88.3	81.0	81.0	88.3
day average	43.3	43.7	42.1	37.9	29.8	24.8	28.4	30.3	37.3	39.2	38.6	36.4	35.9
day minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

kWh exported while that price band was active. Not the money. Winter time. High 06:00–09:00 and 17:00–20:00, sold first. Low 09:00–15:00, sold last. Medium is the rest.

Heat pump
Uganda - Kampala 0.399, 32.767

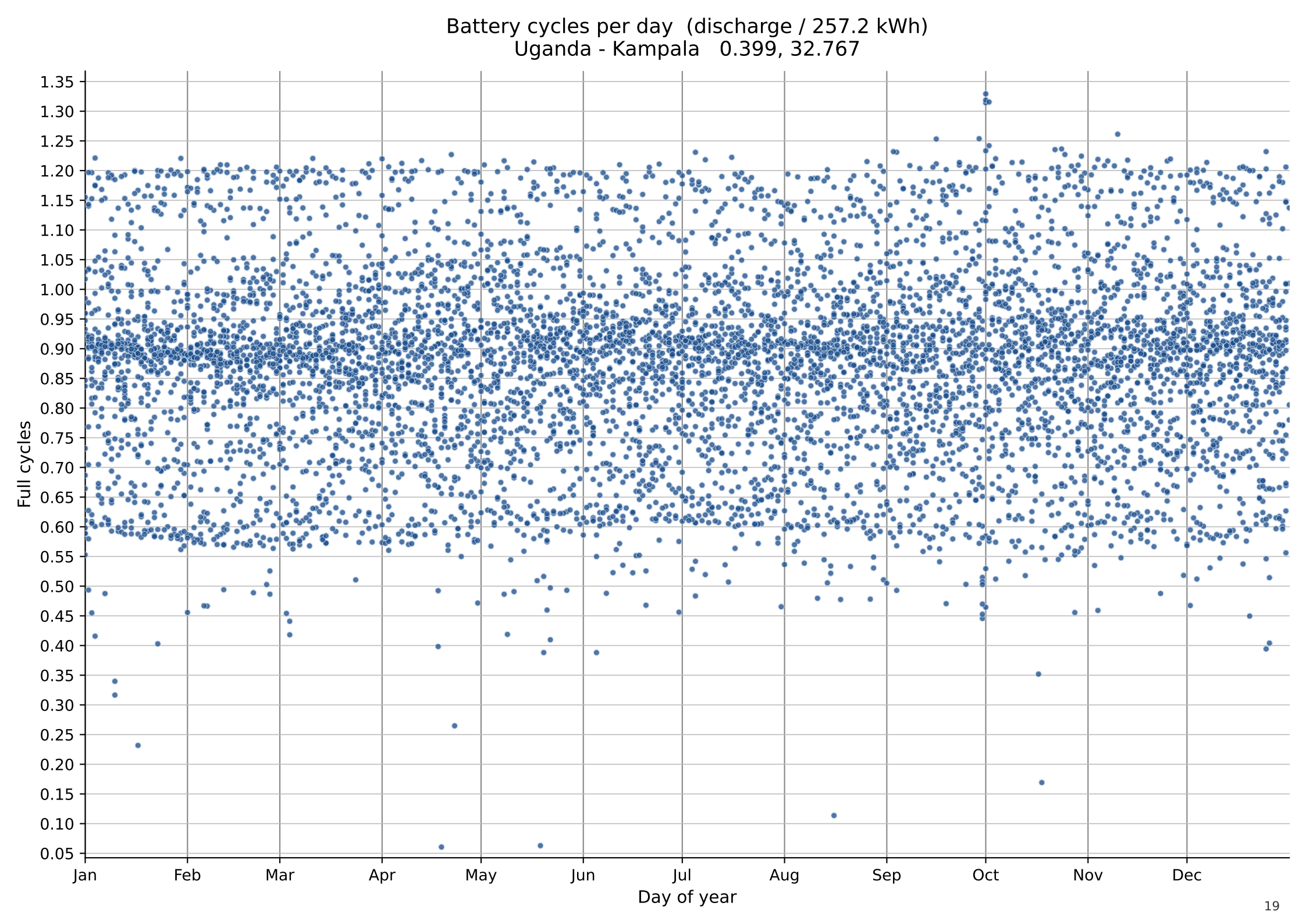
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All
Heating													
month Maximum	3	1	3	8	7	10	12	11	8	8	10	7	66
month average	1	0	0	2	4	5	7	7	5	4	5	3	42
month minimum	0	0	0	0	0	1	2	1	0	0	0	0	17
day Maximum	0.5	0.3	0.4	0.6	0.8	0.6	0.7	0.7	0.7	0.6	0.9	0.6	0.9
day average	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.2	0.1	0.1
day minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cooling													
month Maximum	0	0	0	0	0	0	0	0	0	0	0	0	0
month average	0	0	0	0	0	0	0	0	0	0	0	0	0
month minimum	0	0	0	0	0	0	0	0	0	0	0	0	0
day Maximum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
day average	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
day minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DHW													
month Maximum	25	23	25	25	26	25	27	27	26	26	25	25	303
month average	25	23	25	24	25	24	27	27	26	25	24	25	300
month minimum	25	22	25	24	25	24	26	26	25	25	24	25	299
day Maximum	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
day average	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.9	0.8	0.8	0.8	0.8
day minimum	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Direct electric													
month Maximum	0	0	0	0	0	0	0	0	0	0	0	0	0
month average	0	0	0	0	0	0	0	0	0	0	0	0	0
month minimum	0	0	0	0	0	0	0	0	0	0	0	0	0
day Maximum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
day average	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
day minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

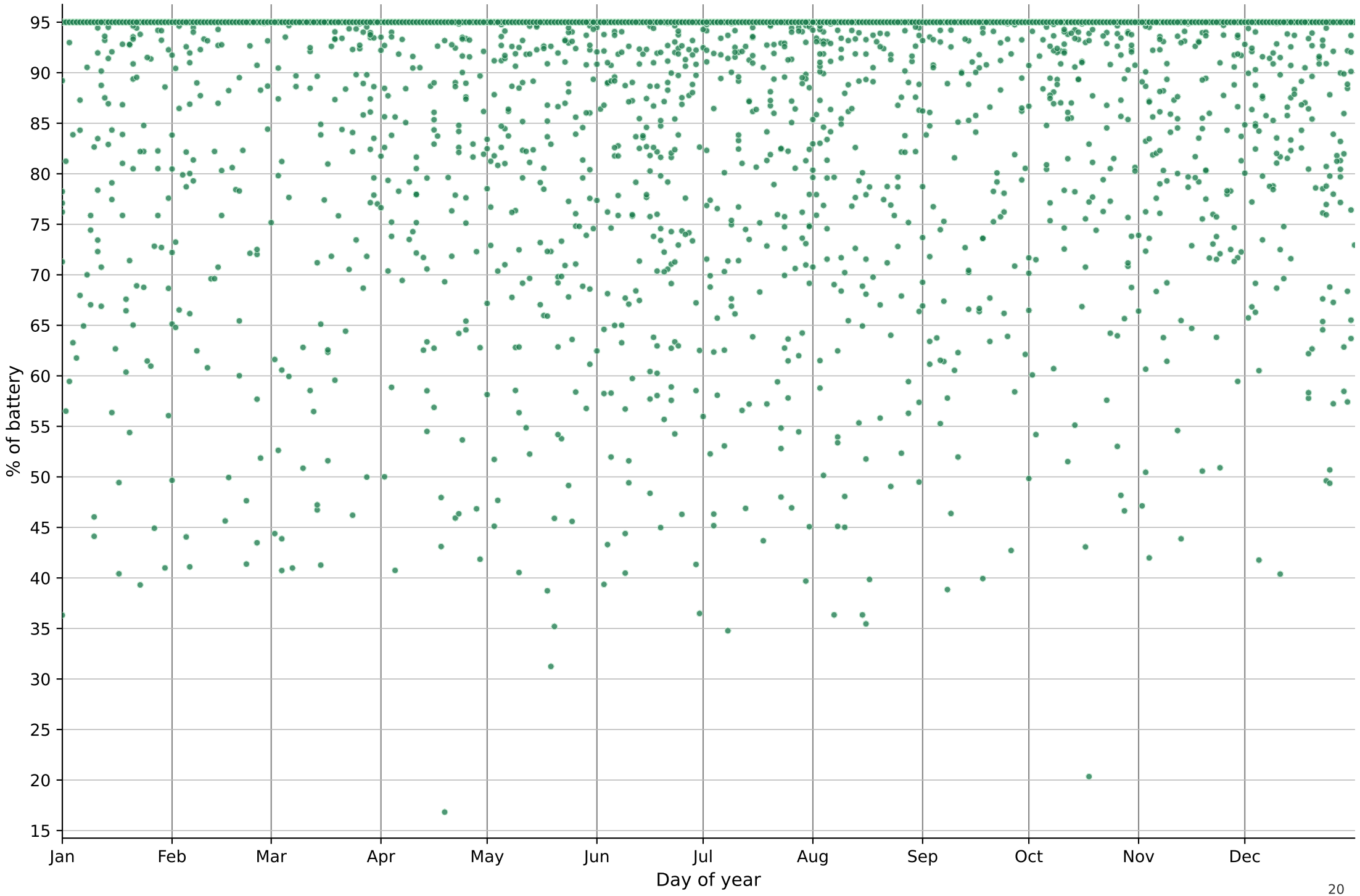
Heating, cooling and DHW are electricity. Direct electric is the part the heat pump could not cover.

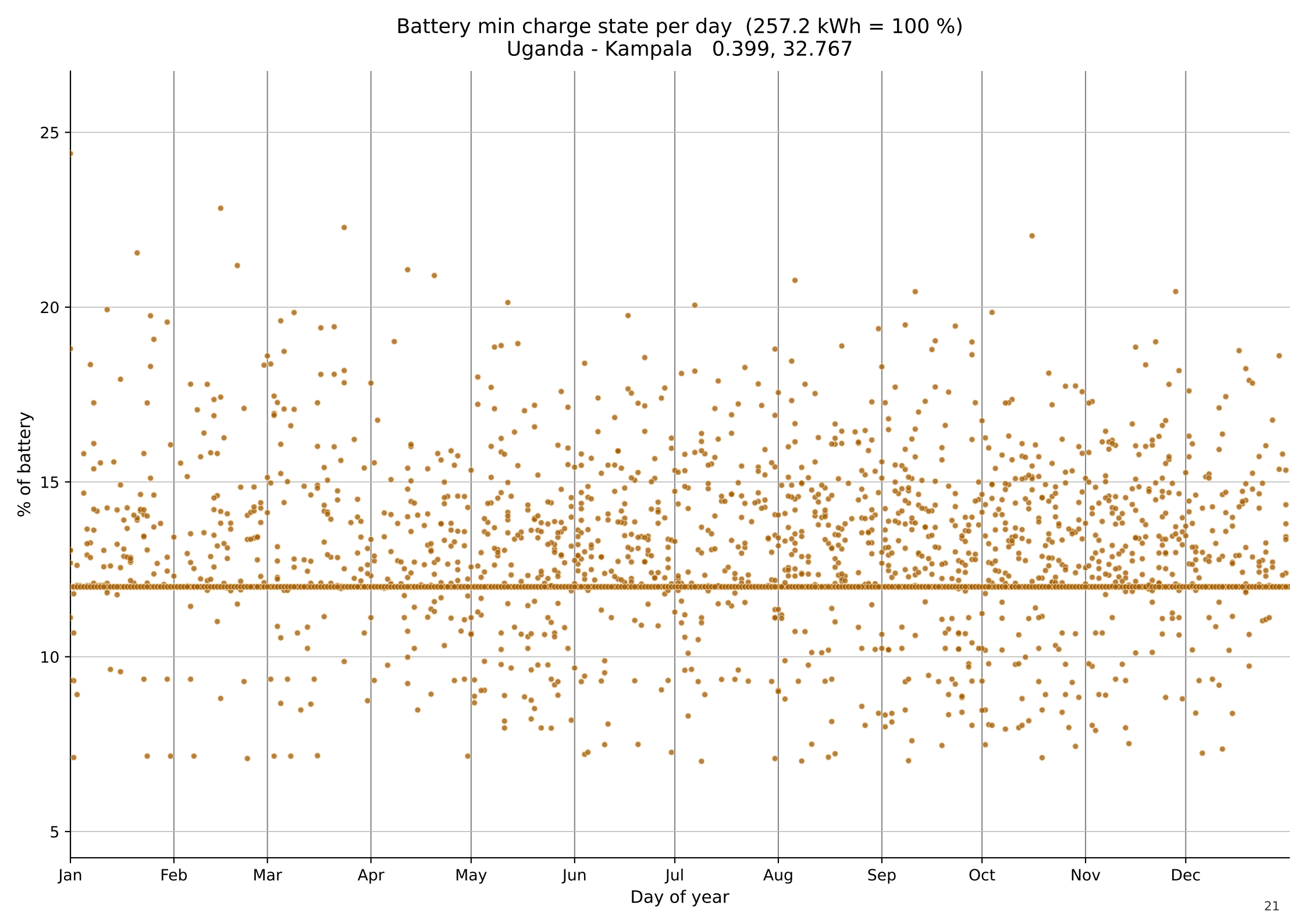
Battery
Uganda - Kampala 0.399, 32.767

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All
Wasted													
month Maximum	1,614	1,516	1,459	1,241	723	774	822	817	784	1,008	937	1,141	9,639
month average	999	1,016	1,042	797	534	420	550	545	610	686	568	673	8,443
month minimum	463	606	541	375	239	150	284	246	422	335	273	255	7,729
day Maximum	86.9	93.5	89.3	89.7	65.3	60.4	68.3	89.8	91.8	94.1	85.1	81.0	94.1
day average	32.2	36.0	33.6	26.6	17.2	14.0	17.7	17.6	20.3	22.1	18.9	21.7	23.1
day minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Full cycles													
month Maximum	28	26	28	27	28	27	28	28	27	28	27	28	324
month average	27	25	27	26	27	26	27	27	26	28	26	27	319
month minimum	24	22	26	25	25	25	26	26	26	26	25	26	313
day Maximum	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.2	1.3
day average	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
day minimum	0.2	0.5	0.4	0.1	0.1	0.4	0.5	0.1	0.4	0.2	0.5	0.4	0.1
Charge C													
month Maximum	0	0	0	0	0	0	0	0	0	0	0	0	3
month average	0	0	0	0	0	0	0	0	0	0	0	0	3
month minimum	0	0	0	0	0	0	0	0	0	0	0	0	3
day Maximum	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
day average	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
day minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.0	0.0
Discharge C													
month Maximum	0	0	0	0	0	0	0	0	0	0	0	0	1
month average	0	0	0	0	0	0	0	0	0	0	0	0	1
month minimum	0	0	0	0	0	0	0	0	0	0	0	0	1
day Maximum	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
day average	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
day minimum	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0

Wasted = PV left when the export price is negative and the battery is full. Full cycles = discharge kWh / 257.2 kWh. Battery export only into hours whose export price is above 0, highest price first. At 0 cent on


Battery cycles per day (discharge / 257.2 kWh)
Uganda - Kampala 0.399, 32.767
Full cycles
1.35
1.30
1.25
1.20
1.15
1.10
1.05
1.00
0.95
0.90
0.85
0.80
0.75
0.70
0.65
0.60
0.55
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year


Battery max charge state per day (257.2 kWh = 100 %)
Uganda - Kampala 0.399, 32.767
% of battery
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year


Battery min charge state per day (257.2 kWh = 100 %)
Uganda - Kampala 0.399, 32.767
25
20
15
10
5
% of battery
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year