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	19800	—	front	—	yes
Roof West	22	90	19800	—	front	—	yes
Terrace railing south	90	0	4620	5 / 4	front	—	yes
Terrace railing north	90	180	4620	5 / 4	front	—	yes
share central structure east part	8	-90	20460	—	front	—	yes
share central strucure west part	8	90	20460	—	front	—	yes
Total counted			89760				

Database PVGIS-SARAH3 2005–2023 loss 14 % azimuth 0 = south, 90 = west, −90 = east.
Price bands and charts use UTC+1 from longitude (15° per hour), not the political time zone.
Peak hour 2006-03-10 11:06 local (10:06 UTC) 66624 W 0.742 W/Wp of 89760 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 winter time, battery export is only the kWh that would not fit in the next 72 h.

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 / 1600.0 W
	Heat on / cool on / ground	22.0 °C / 25.0 °C / 10.0 °C
	Curve / flow min / max	0.4 / 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	200.0 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 5 6
	kW −10/0/10 @ 50 °C	3.5 4.5 5
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	15636	15539	15441	15381	16748	15298	14859	15266	15281	14941
Roof West	15921	15705	15932	15551	14209	15569	16087	15422	15566	15711
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	17078	16927	16943	16744	17307	16676	16584	16615	16676	16507
share central strucure west part	17185	16989	17127	16808	16357	16778	17044	16673	16782	16796
Watt at record	66624	66268	66181	65634	65431	65283	65200	65198	65134	65040
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 66624 W (74.2 % of 89760 Wp).

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

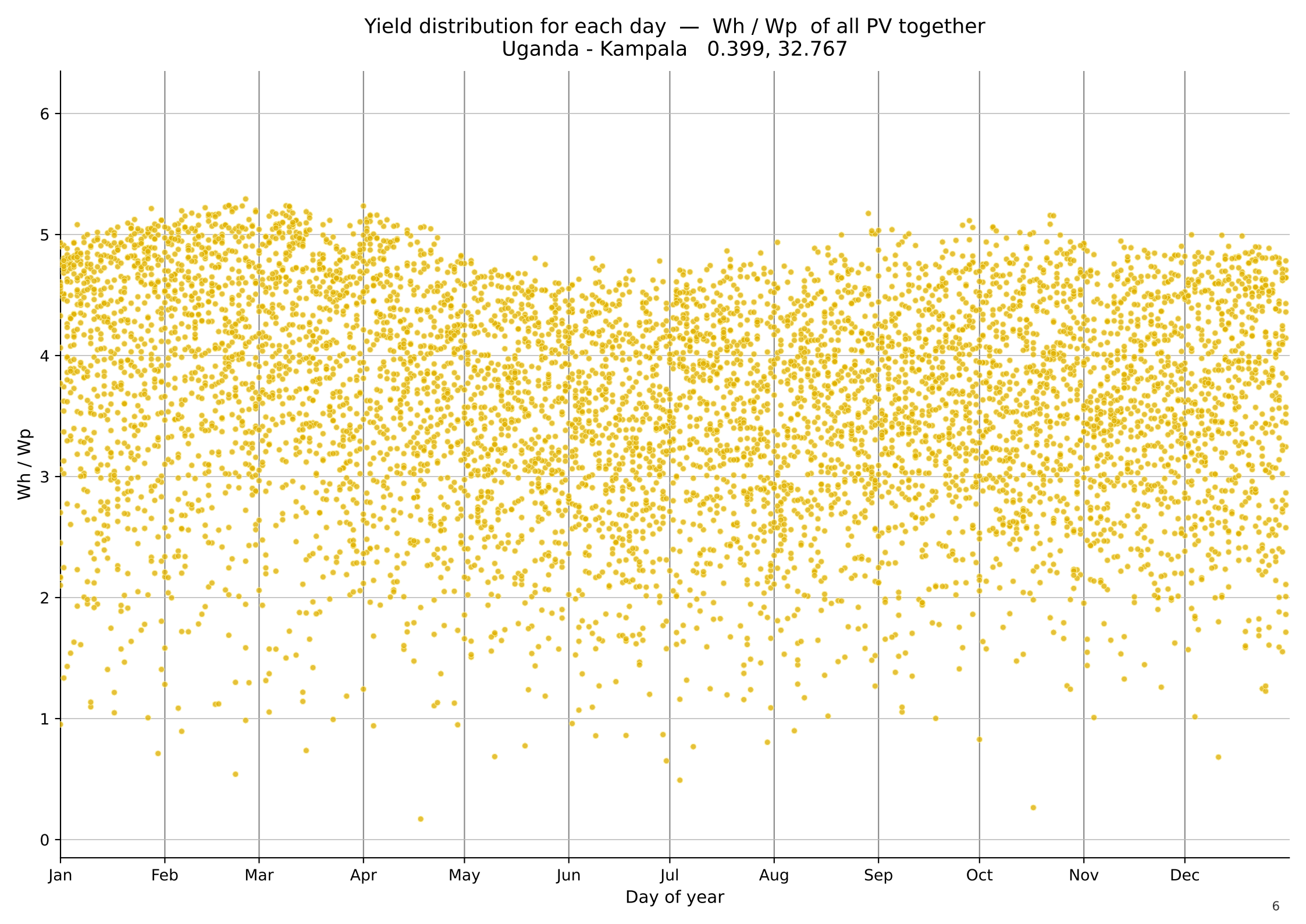
Of the record	Hours	Watts
98 %	5	65292 W
96 %	70	63959 W
94 %	317	62627 W
92 %	867	61294 W
90 %	1869	59962 W

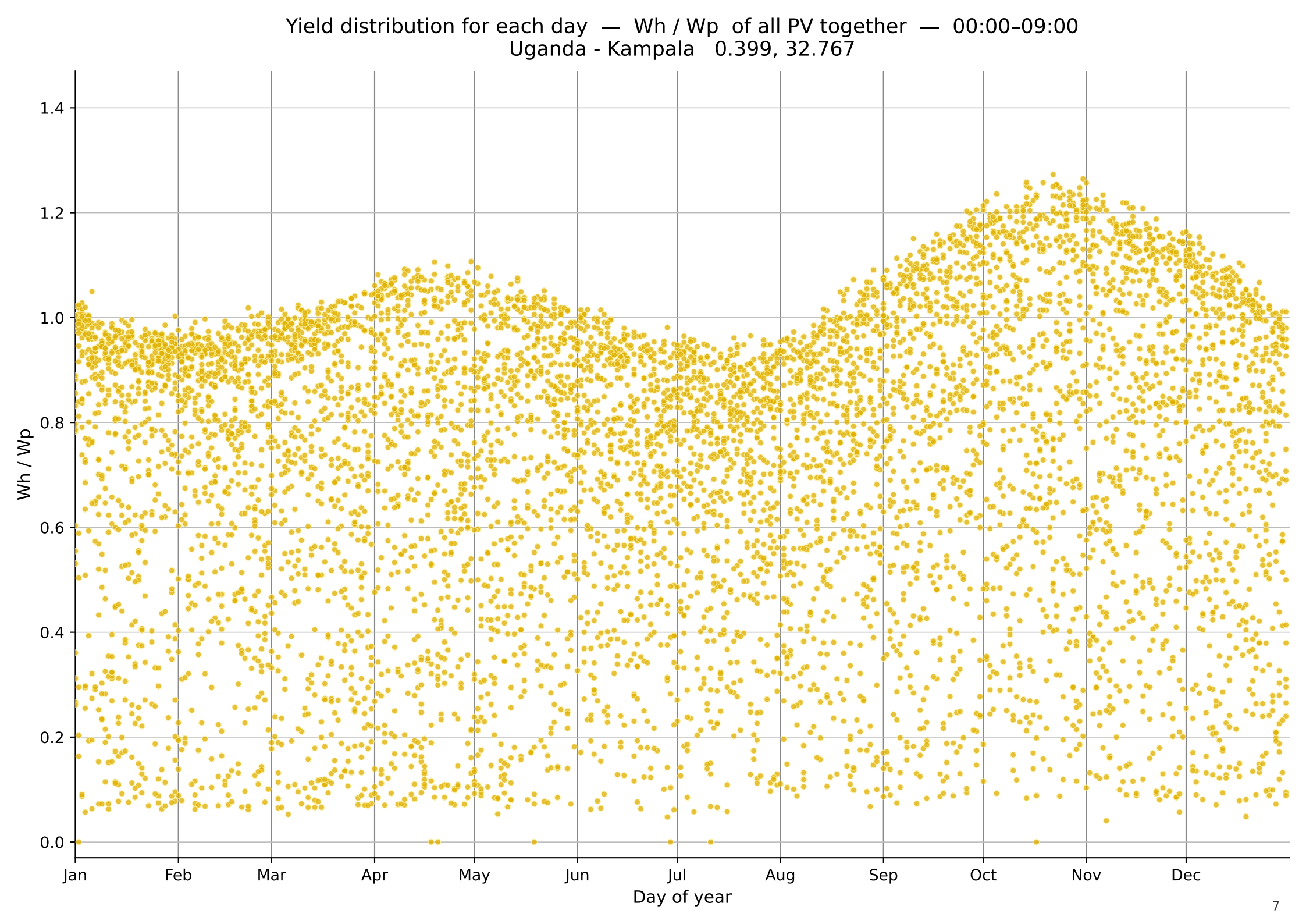
Record hour = 66624 W combined.

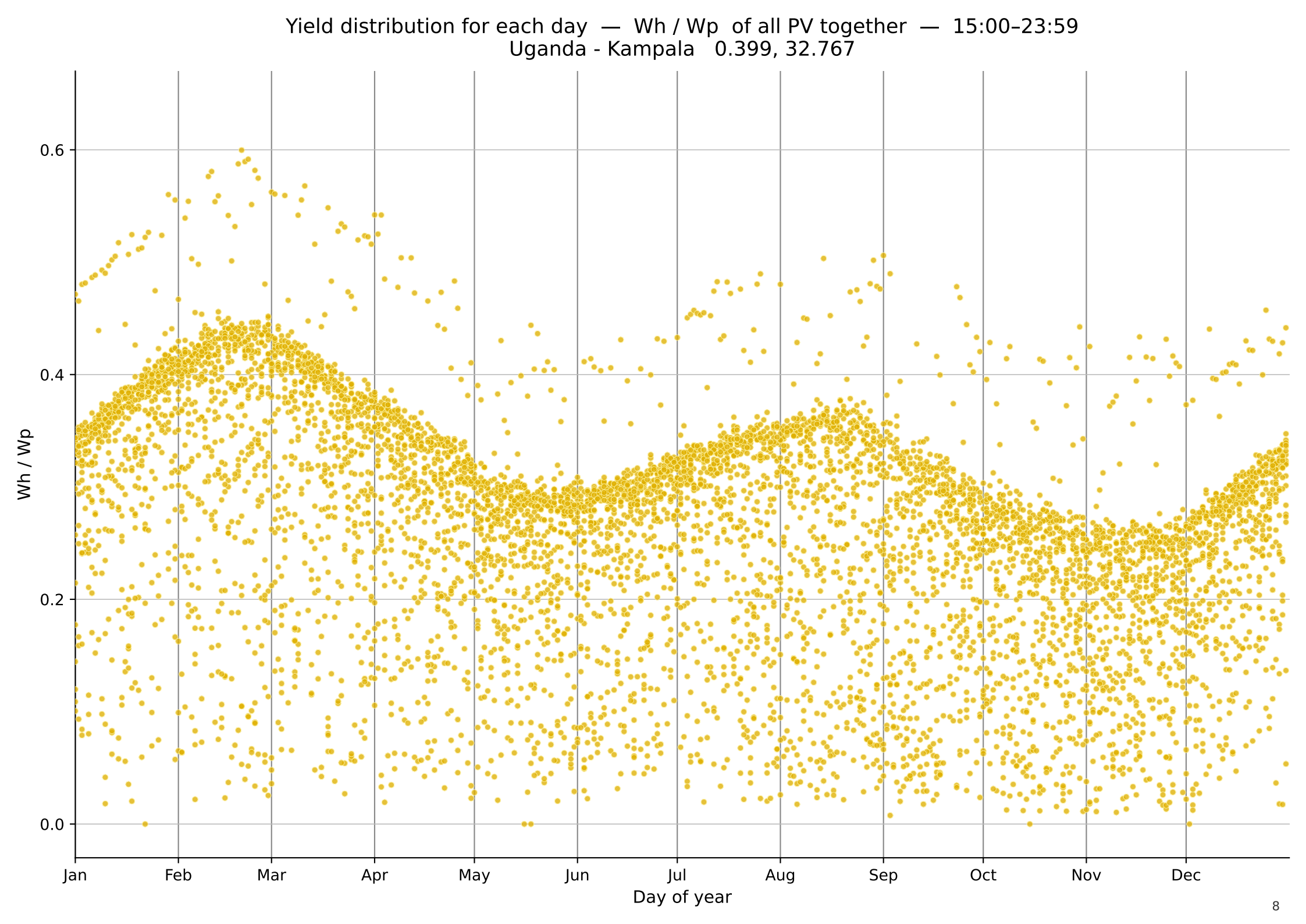
Records of each photovoltaic field
Uganda - Kampala 0.399, 32.767

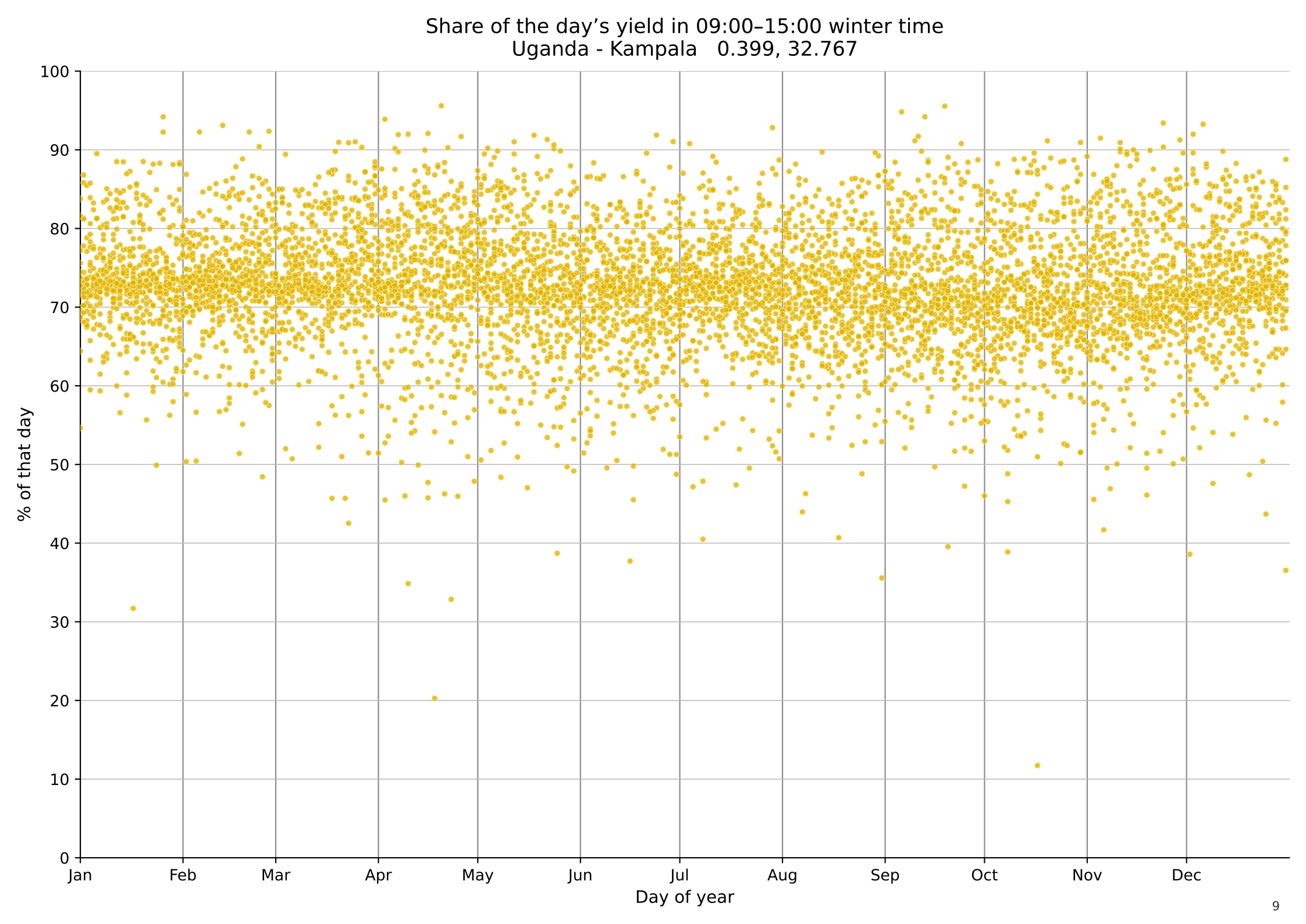
PV	Date	Watts	%	h ≥98%	h ≥96%	h ≥94%	h ≥92%	h ≥90%
Roof East	2012-03-10 09:06	16748	84.6	3	27	136	421	1042
Roof West	2005-08-30 11:06	16758	84.6	9	44	148	439	989
Terrace railing south	2007-12-18 10:06	1998	43.3	44	235	613	1074	1547
Terrace railing north	2007-06-19 10:06	1854	40.1	16	147	426	854	1336
share central structure east part	2012-03-10 09:06	17307	84.6	3	34	193	512	1140
share central strucure west part	2006-03-10 10:06	17185	84.0	6	66	274	704	1393

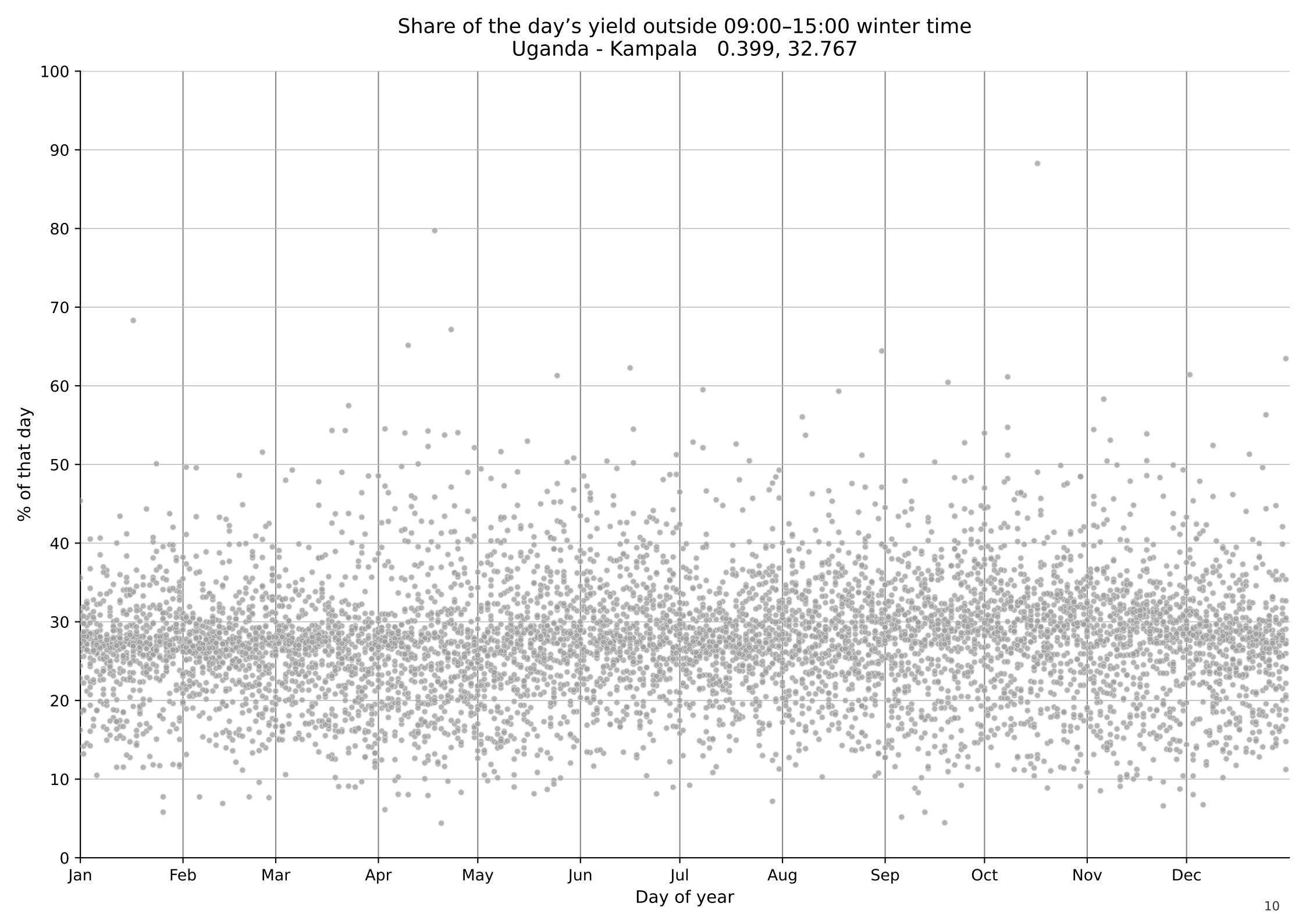
Watts is the highest hour of that field. % is of its own Wp. Hours are the count of hours at or above that share of its own record. Use this to size the MPPT or the inverter for that field.

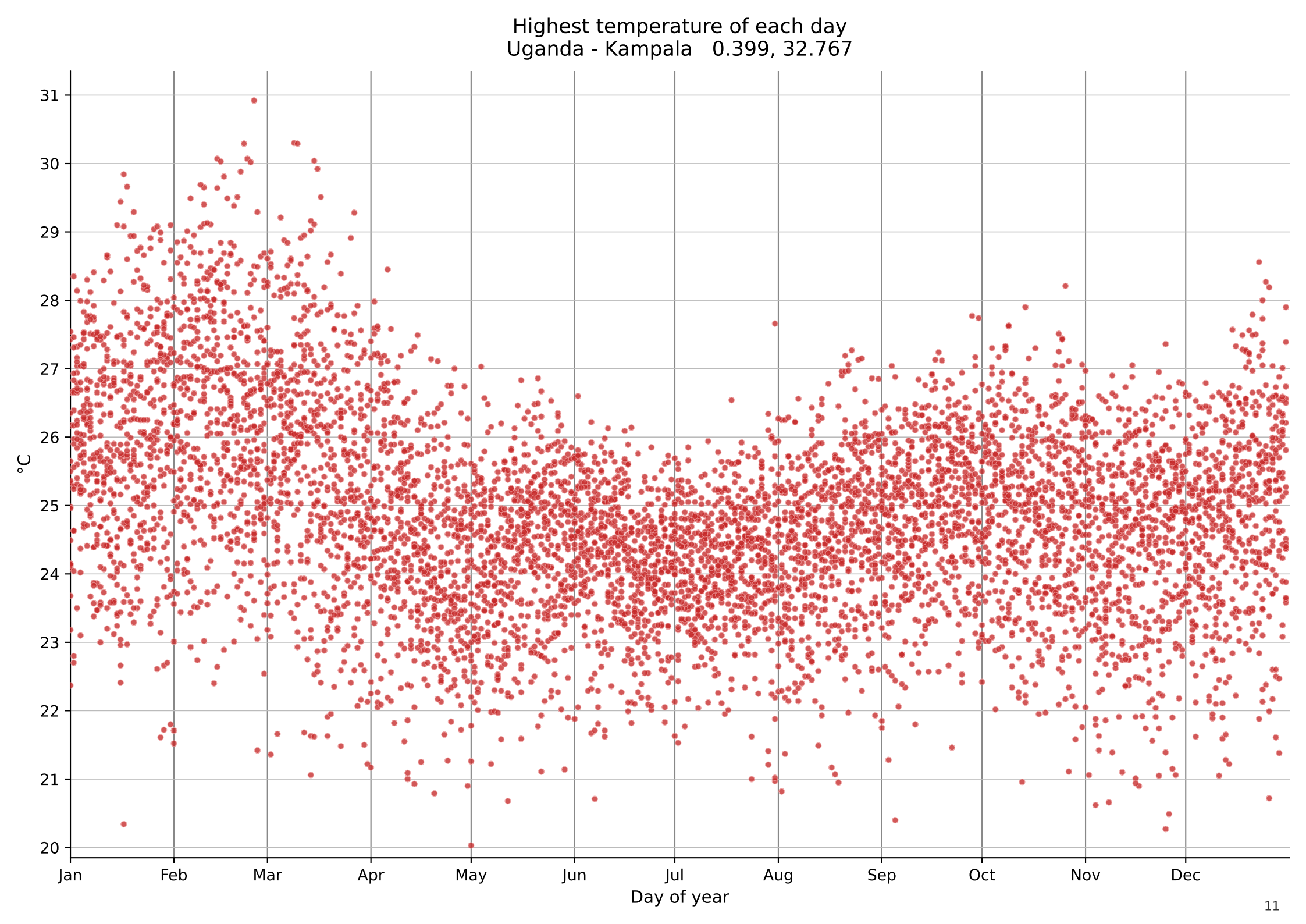

Yield distribution for each day — Wh / Wp of all PV together
Uganda - Kampala 0.399, 32.767
Wh / Wp
0
1
2
3
4
5
6
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year

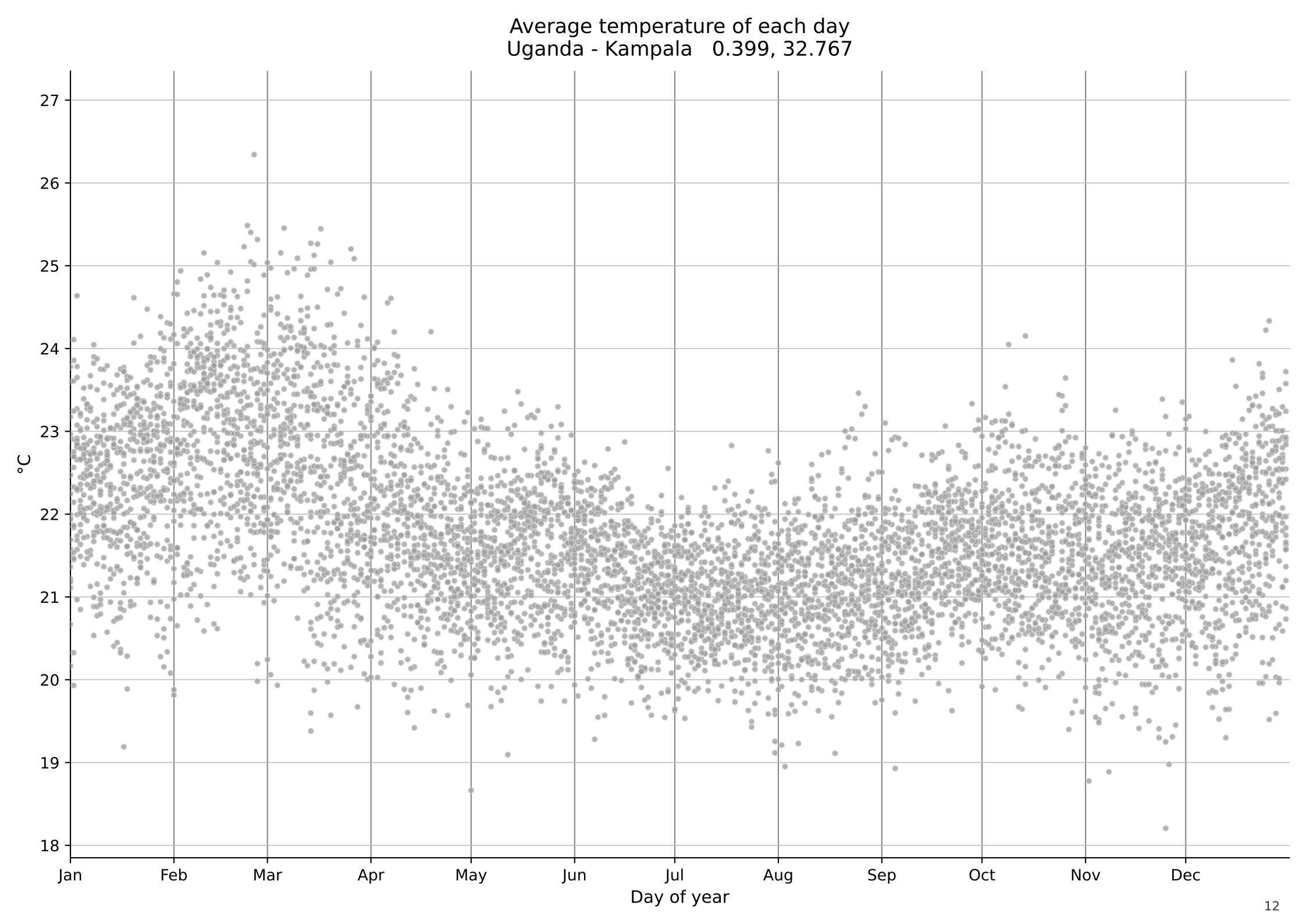

Yield distribution for each day — Wh / Wp of all PV together — 00:00–09:00
Uganda - Kampala 0.399, 32.767
Wh / Wp
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year

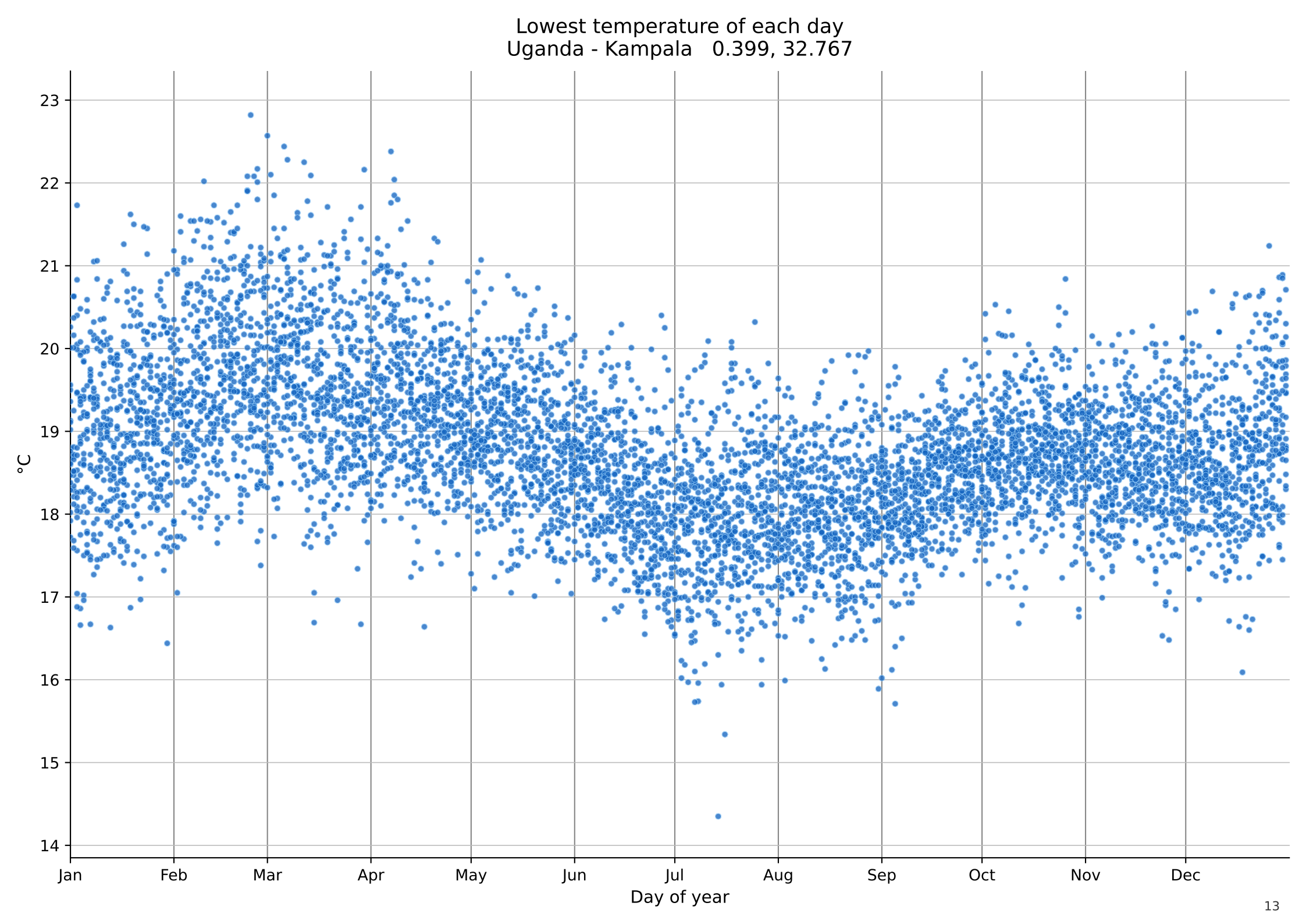

Yield distribution for each day — Wh / Wp of all PV together — 15:00–23:59
Uganda - Kampala 0.399, 32.767
0.6
0.4
0.2
0.0
Wh / Wp
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year

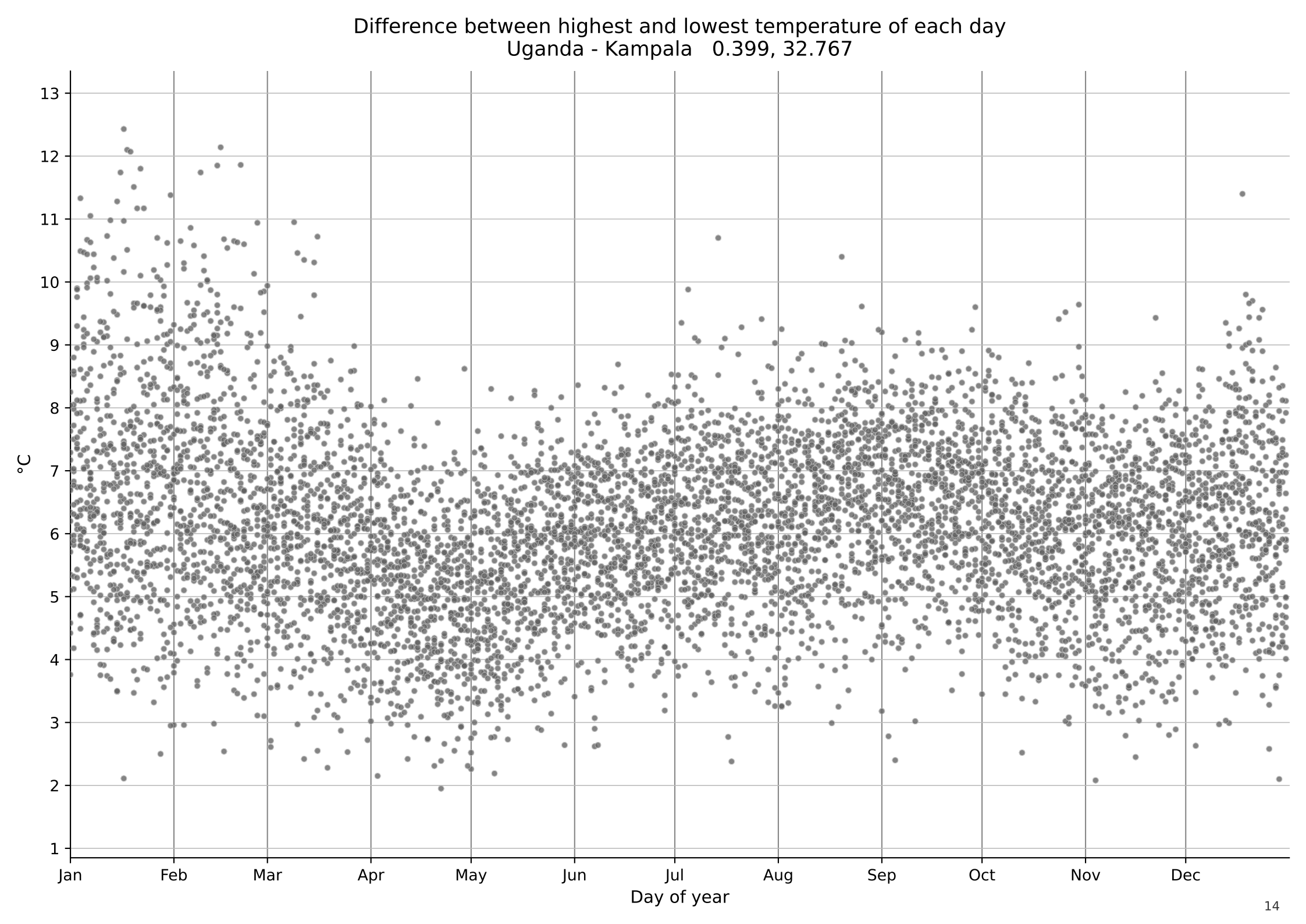

Share of the day’s yield in 09:00–15:00 winter time
Uganda - Kampala 0.399, 32.767
% of that day
100
90
80
70
60
50
40
30
20
10
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year


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


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

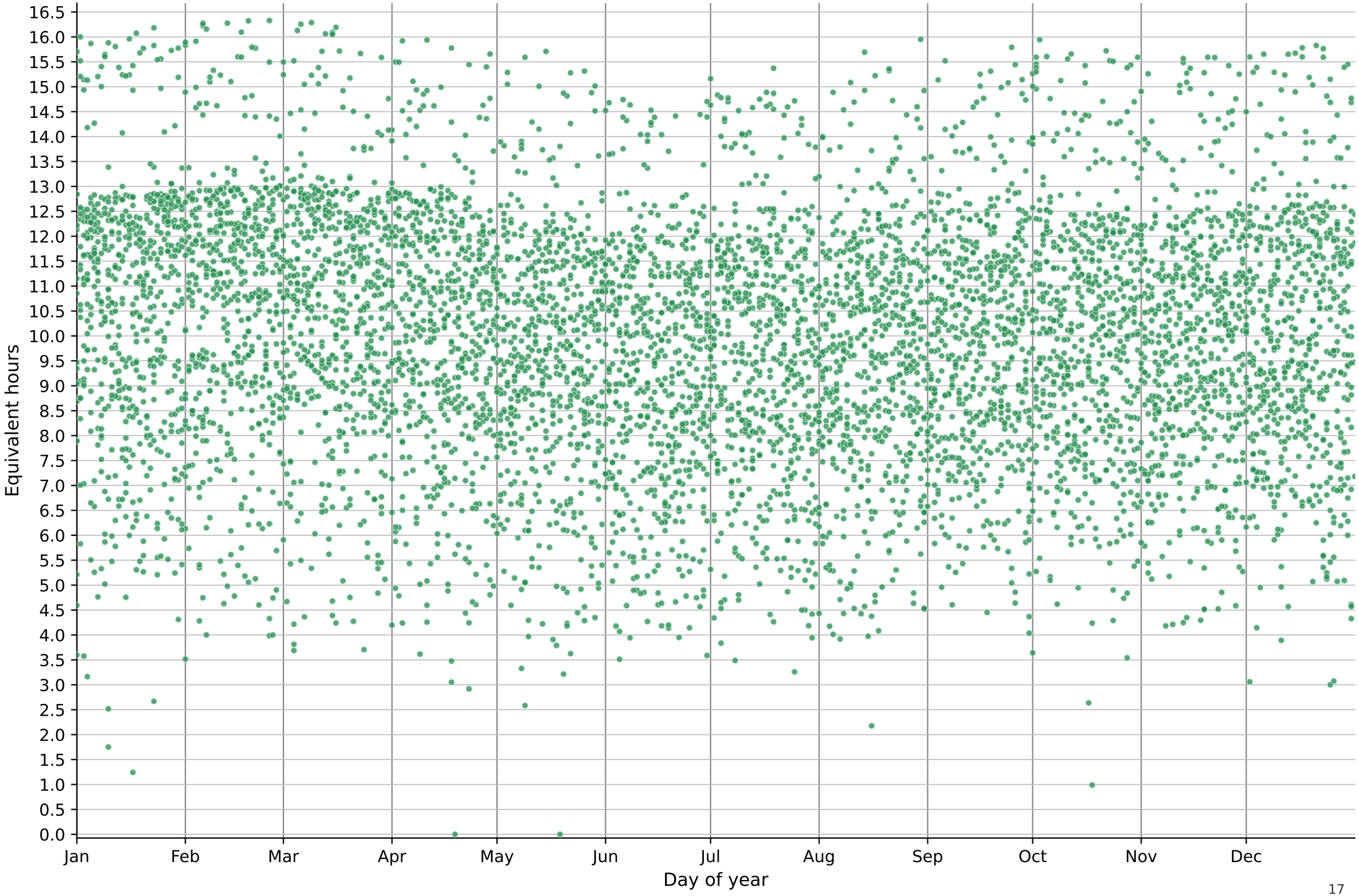
Month / year		Roof East 22°/-90° 19800 Wp	Roof West 22°/90° 19800 Wp	Terrace railing south 90°/0° 4620 Wp	Terrace railing north 90°/180° 4620 Wp	share central structure east 8°/-90° 20460 Wp	share central strucure west p 8°/90° 20460 Wp	All together
January	Maximum	151.65	151.42	75.70	22.09	157.18	157.03	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	1425.7	1519.4	463.8	443.0	1487.0	1523.5	1363.8
	average	1376.2	1416.8	447.3	428.4	1439.1	1457.6	1321.5
	minimum	1330.8	1383.0	418.7	415.3	1397.3	1419.3	1284.4

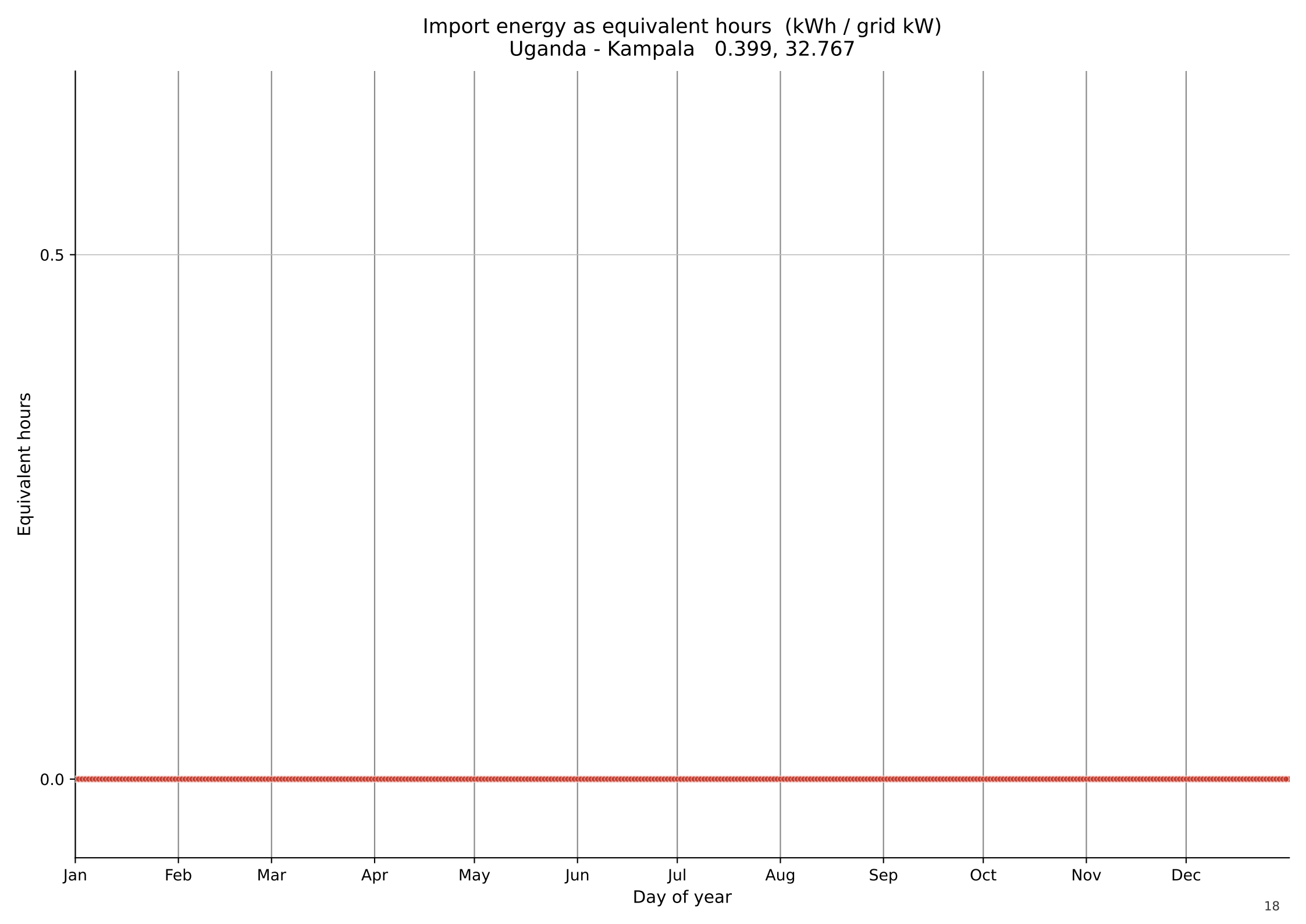
Highest combined yield hour: 2006-03-10 10:06 UTC 66624.2 W (0.742 W/Wp) of 89760 Wp installed. Use this hour to size battery charge power.

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

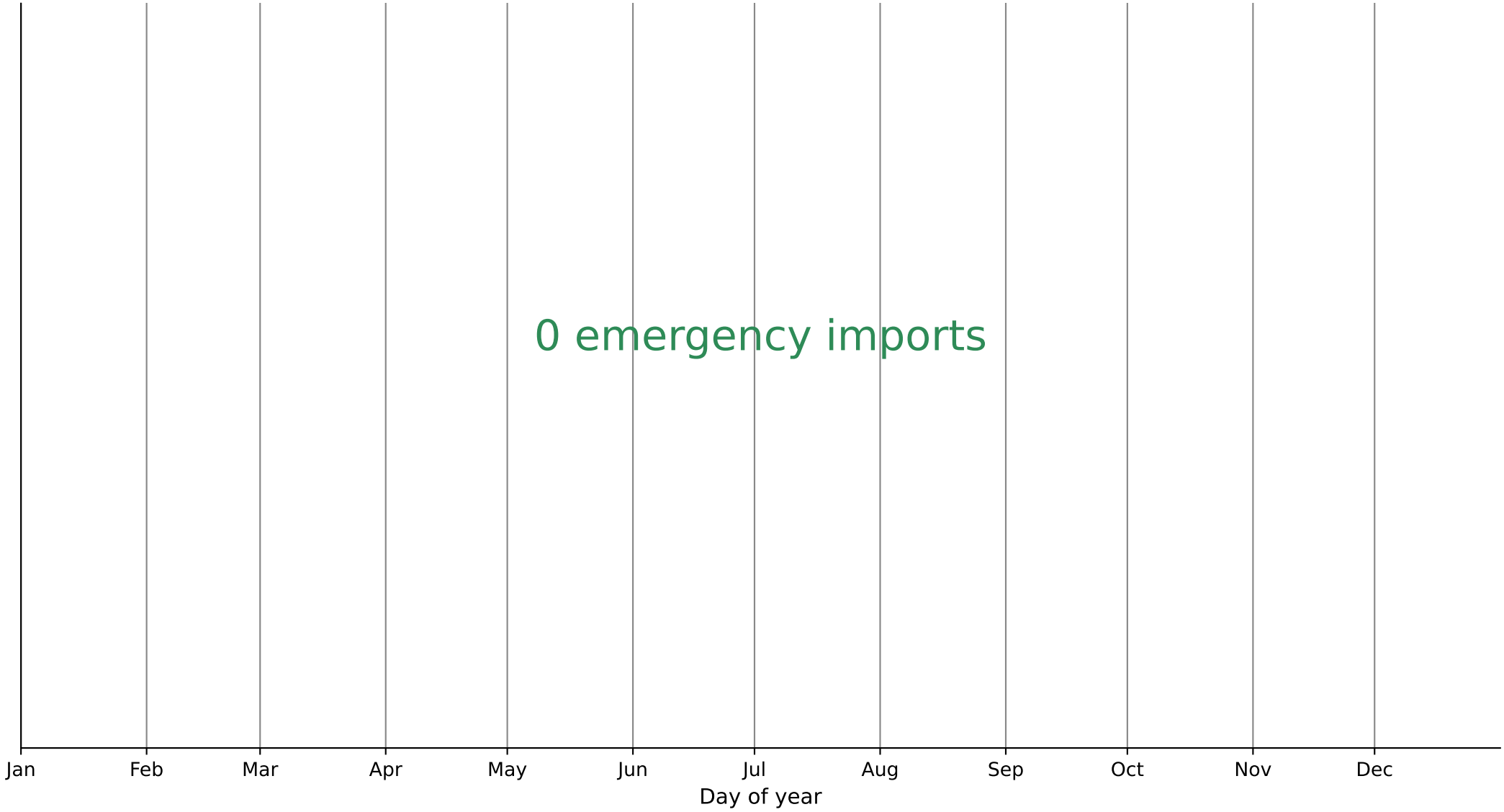
Month / year		Roof East 22°/-90° 19800 Wp	Roof West 22°/90° 19800 Wp	Terrace railing south 90°/0° 4620 Wp	Terrace railing north 90°/180° 4620 Wp	share central structure east 8°/-90° 20460 Wp	share central strucure west p 8°/90° 20460 Wp	All together
January	Maximum	3002.6	2998.2	349.7	102.0	3215.8	3212.8	12846.0
	average	2474.3	2559.2	299.3	89.0	2677.7	2718.2	10817.7
	minimum	1928.0	2098.8	242.5	77.0	2128.9	2201.0	8676.2
February	Maximum	2531.7	2732.8	262.0	96.5	2735.1	2857.0	11153.8
	average	2327.4	2372.1	244.5	88.5	2511.4	2533.8	10077.8
	minimum	1817.2	1923.3	207.1	81.4	1981.0	2026.4	8041.3
March	Maximum	2865.2	2854.6	173.7	138.4	3068.2	3070.8	12162.0
	average	2492.0	2604.2	164.7	128.4	2708.7	2758.6	10856.6
	minimum	2085.2	2110.9	151.4	118.8	2247.6	2260.9	8983.7
April	Maximum	2568.5	2739.4	104.1	248.8	2789.6	2860.5	11214.7
	average	2249.2	2402.3	99.0	223.1	2461.2	2526.2	9960.9
	minimum	1936.5	2055.1	92.1	209.2	2107.8	2159.6	8569.1
May	Maximum	2445.6	2508.0	104.0	260.4	2605.0	2595.2	10369.4
	average	2165.4	2277.8	97.6	240.8	2356.3	2404.6	9542.5
	minimum	1903.4	1982.1	88.3	217.0	2066.5	2096.3	8375.1
June	Maximum	2286.8	2339.7	96.7	274.1	2464.6	2483.4	9916.8
	average	2040.1	2104.7	90.6	246.5	2204.1	2234.1	8920.2
	minimum	1698.9	1797.2	83.5	209.2	1848.1	1892.3	7529.2
July	Maximum	2400.2	2450.9	104.3	285.2	2567.6	2572.8	10311.4
	average	2202.2	2263.0	97.2	267.9	2377.2	2406.5	9614.1
	minimum	1949.2	1960.2	89.5	239.0	2086.9	2097.9	8427.5
August	Maximum	2422.0	2485.6	107.4	255.5	2597.1	2609.0	10421.6
	average	2228.3	2242.4	101.7	241.5	2388.5	2399.4	9601.9
	minimum	2027.2	1969.4	92.2	223.3	2172.6	2139.4	8669.7
September	Maximum	2430.4	2478.4	121.6	162.1	2595.9	2632.3	10374.5
	average	2258.2	2259.6	115.7	155.5	2417.2	2422.2	9628.3
	minimum	2125.7	2043.9	106.3	148.4	2262.8	2237.5	8987.0
October	Maximum	2507.5	2492.6	238.0	108.7	2676.6	2678.6	10666.5
	average	2324.1	2357.6	224.6	102.0	2500.7	2519.1	10028.2
	minimum	2079.7	2098.9	209.1	94.6	2228.6	2239.5	8964.6
November	Maximum	2480.3	2609.8	274.0	105.8	2686.6	2721.9	10800.9
	average	2208.8	2231.6	247.8	98.4	2371.6	2385.2	9543.4
	minimum	1887.1	2015.1	223.1	89.2	2058.6	2114.2	8403.5
December	Maximum	2704.1	2685.3	326.7	109.8	2881.0	2869.0	11527.0
	average	2278.8	2378.6	283.6	97.6	2469.9	2513.7	10022.2
	minimum	1927.6	2119.3	249.8	86.4	2148.5	2211.9	8822.2
All years	Maximum	28229	30084	2143	2047	30423	31171	122410
	average	27249	28053	2066	1979	29445	29822	118614
	minimum	26350	27383	1935	1919	28589	29039	115285

Highest combined yield hour: 2006-03-10 10:06 UTC 66624.2 W (0.742 W/Wp) of 89760 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
16.5
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	10214	8744	9696	9144	8768	8328	8631	8639	8540	8876	8947	9494	101206
month average	8806	8146	8826	8187	8013	7522	8040	8049	7970	8406	7996	8341	98305
month minimum	7147	6563	7518	7175	7215	6419	7176	7323	7600	7722	7136	7445	95440
day Maximum	436.9	440.9	439.8	430.3	424.2	409.4	415.0	430.7	426.3	430.4	421.0	427.3	440.9
day average	284.1	288.8	284.7	272.9	258.5	250.7	259.4	259.7	265.7	271.2	266.5	269.1	269.2
day minimum	33.6	94.9	99.6	0.0	0.0	94.8	88.0	58.8	98.3	26.7	112.9	81.0	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	5491
month average	459	418	459	446	463	450	468	468	450	463	449	462	5455
month minimum	459	414	459	444	459	446	463	461	445	459	444	459	5425
day Maximum	15.3	15.1	15.3	15.4	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	1069	978	1078	905	921	870	898	922	862	1026	1022	1037	11336
month average	1017	932	1030	857	872	827	862	865	837	986	951	991	11028
month minimum	939	832	962	822	816	785	818	819	805	937	898	938	10871
day Maximum	50.4	48.9	49.7	43.9	44.6	45.3	43.0	42.8	44.8	49.4	48.0	48.2	50.4
day average	32.8	33.0	33.2	28.6	28.1	27.6	27.8	27.9	27.9	31.8	31.7	32.0	30.2
day minimum	4.0	12.2	11.7	0.0	0.0	11.6	11.8	7.1	11.0	5.9	12.7	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	1069	978	1078	905	921	870	898	922	862	1026	1022	1037	11336
month average	1017	932	1030	857	872	827	862	865	837	986	951	991	11028
month minimum	939	832	962	822	816	785	818	819	805	937	898	938	10871
day Maximum	50.4	48.9	49.7	43.9	44.6	45.3	43.0	42.8	44.8	49.4	48.0	48.2	50.4
day average	32.8	33.0	33.2	28.6	28.1	27.6	27.8	27.9	27.9	31.8	31.7	32.0	30.2
day minimum	4.0	12.2	11.7	0.0	0.0	11.6	11.8	7.1	11.0	5.9	12.7	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	10214	8744	9696	9144	8768	8328	8631	8639	8540	8876	8947	9494	101206
month average	8806	8146	8826	8187	8013	7522	8040	8049	7970	8406	7996	8341	98305
month minimum	7147	6563	7518	7175	7215	6419	7176	7323	7600	7722	7136	7445	95440
day Maximum	436.9	440.9	439.8	430.3	424.2	409.4	415.0	430.7	426.3	430.4	421.0	427.3	440.9
day average	284.1	288.8	284.7	272.9	258.5	250.7	259.4	259.7	265.7	271.2	266.5	269.1	269.2
day minimum	33.6	94.9	99.6	0.0	0.0	94.8	88.0	58.8	98.3	26.7	112.9	81.0	0.0
Export during high price hours													
month Maximum	3461	3029	3591	3306	3554	3210	3331	3328	3198	3301	3232	3462	38132
month average	3132	2811	3211	3119	3220	3051	3156	3130	3042	3100	3046	3198	37217
month minimum	2809	2607	2904	2918	3020	2923	3009	2941	2861	2873	2825	2974	36407
day Maximum	157.3	154.5	151.3	151.3	156.6	157.5	156.2	147.3	150.3	146.8	152.0	153.4	157.5
day average	101.0	99.6	103.6	104.0	103.9	101.7	101.8	101.0	101.4	100.0	101.5	103.2	101.9
day minimum	33.6	81.0	61.2	0.0	0.0	76.5	78.5	58.8	81.0	26.7	66.5	81.0	0.0
Export during medium price hours													
month Maximum	4478	3951	4305	3983	3845	3686	3865	3901	3615	3800	3882	4055	43883
month average	3744	3541	3718	3389	3389	3267	3483	3514	3337	3597	3326	3494	41800
month minimum	2571	2460	2848	2915	2940	2580	3140	2978	3089	3145	2793	2868	39604
day Maximum	238.0	240.7	240.2	237.4	227.0	226.1	230.6	232.3	235.1	251.8	229.6	233.9	251.8
day average	120.8	125.5	119.9	113.0	109.3	108.9	112.4	113.4	111.2	116.0	110.9	112.7	114.5
day minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0	0.0
Export during low price hours													
month Maximum	2940	2135	2508	2243	1825	1679	1774	1739	1920	2160	2263	2465	20987
month average	1931	1794	1896	1679	1404	1204	1401	1405	1592	1709	1625	1648	19287
month minimum	1115	1167	1222	1053	788	629	912	1042	1318	1080	1112	958	18150
day Maximum	112.4	108.0	108.0	108.0	108.0	105.6	105.9	108.0	108.0	108.0	108.0	108.0	112.4
day average	62.3	63.6	61.2	56.0	45.3	40.1	45.2	45.3	53.1	55.1	54.2	53.2	52.8
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

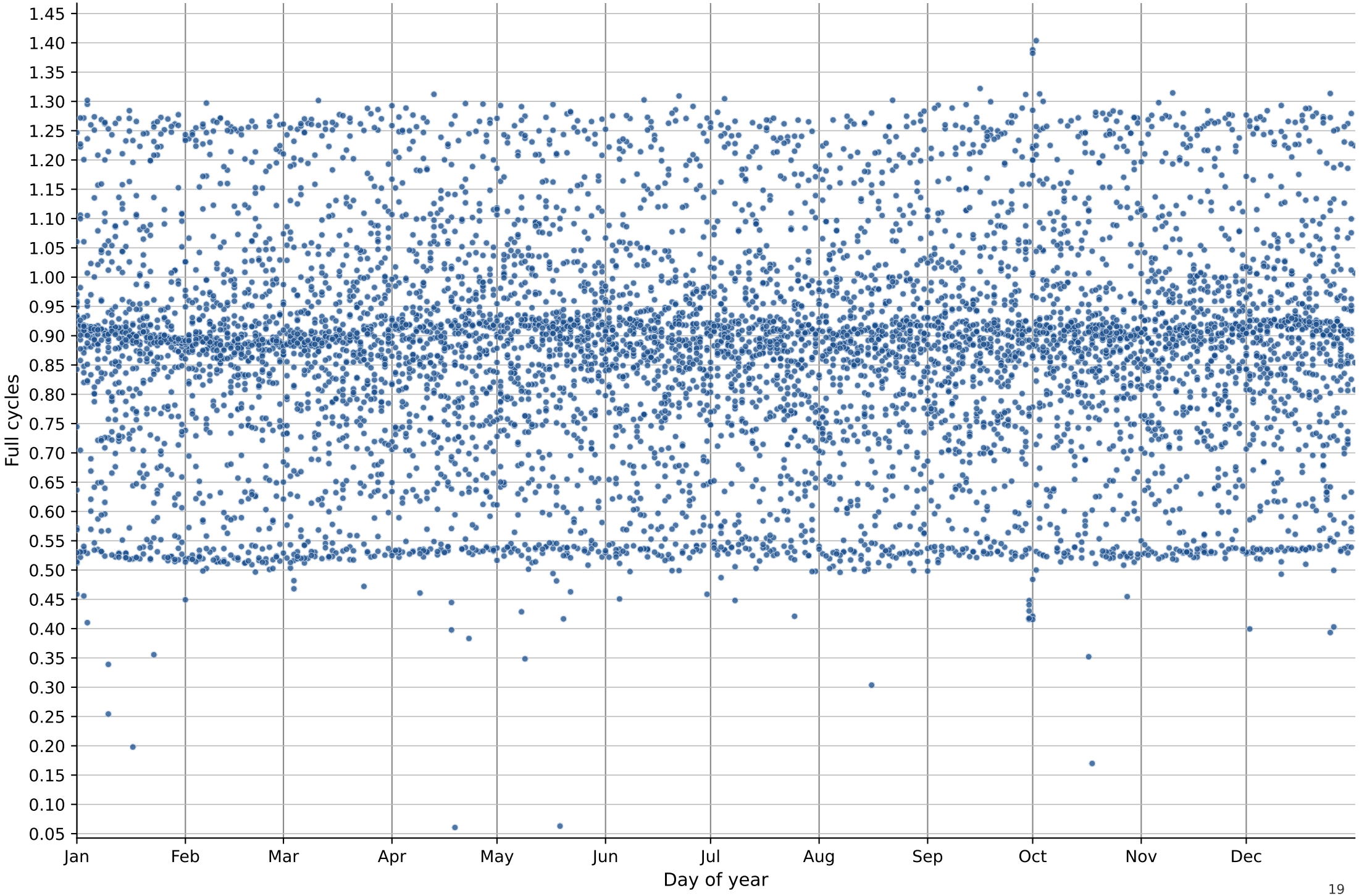
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All
Heating													
month Maximum	3	1	3	8	7	10	12	11	8	8	10	7	66
month average	1	0	0	2	4	5	7	7	5	4	5	3	42
month minimum	0	0	0	0	0	1	2	1	0	0	0	0	17
day Maximum	0.5	0.3	0.4	0.6	0.8	0.6	0.7	0.7	0.7	0.6	0.9	0.6	0.9
day average	0.0	0.0	0.0	0.1	0.1	0.2	0.2	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
month average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
month minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
day Maximum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
day average	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
day minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DHW													
month Maximum	25	23	25	25	26	25	27	27	26	25	25	25	302
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	298
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

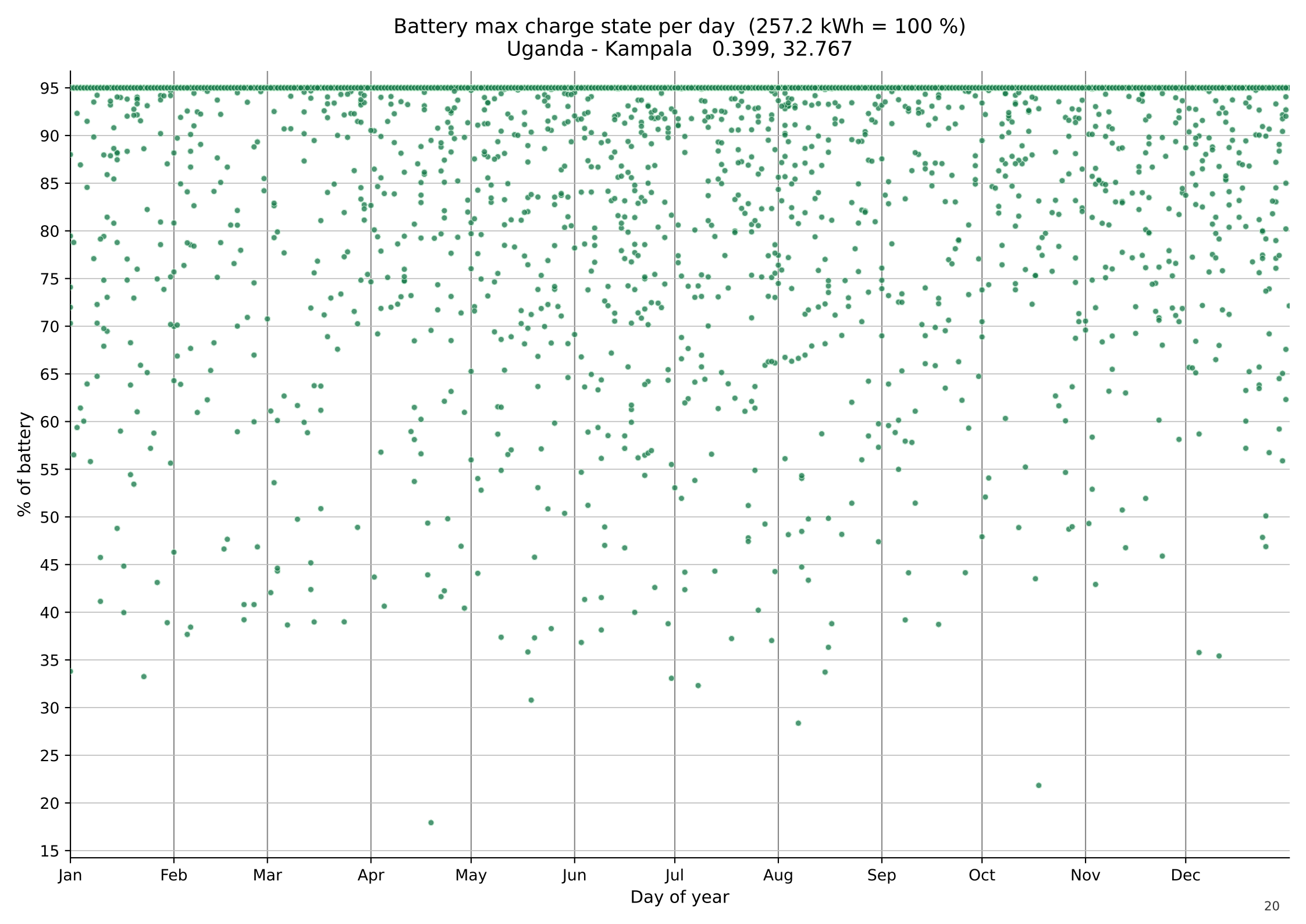
Heating, cooling and DHW are electricity. Direct electric is the part the heat pump could not cover.

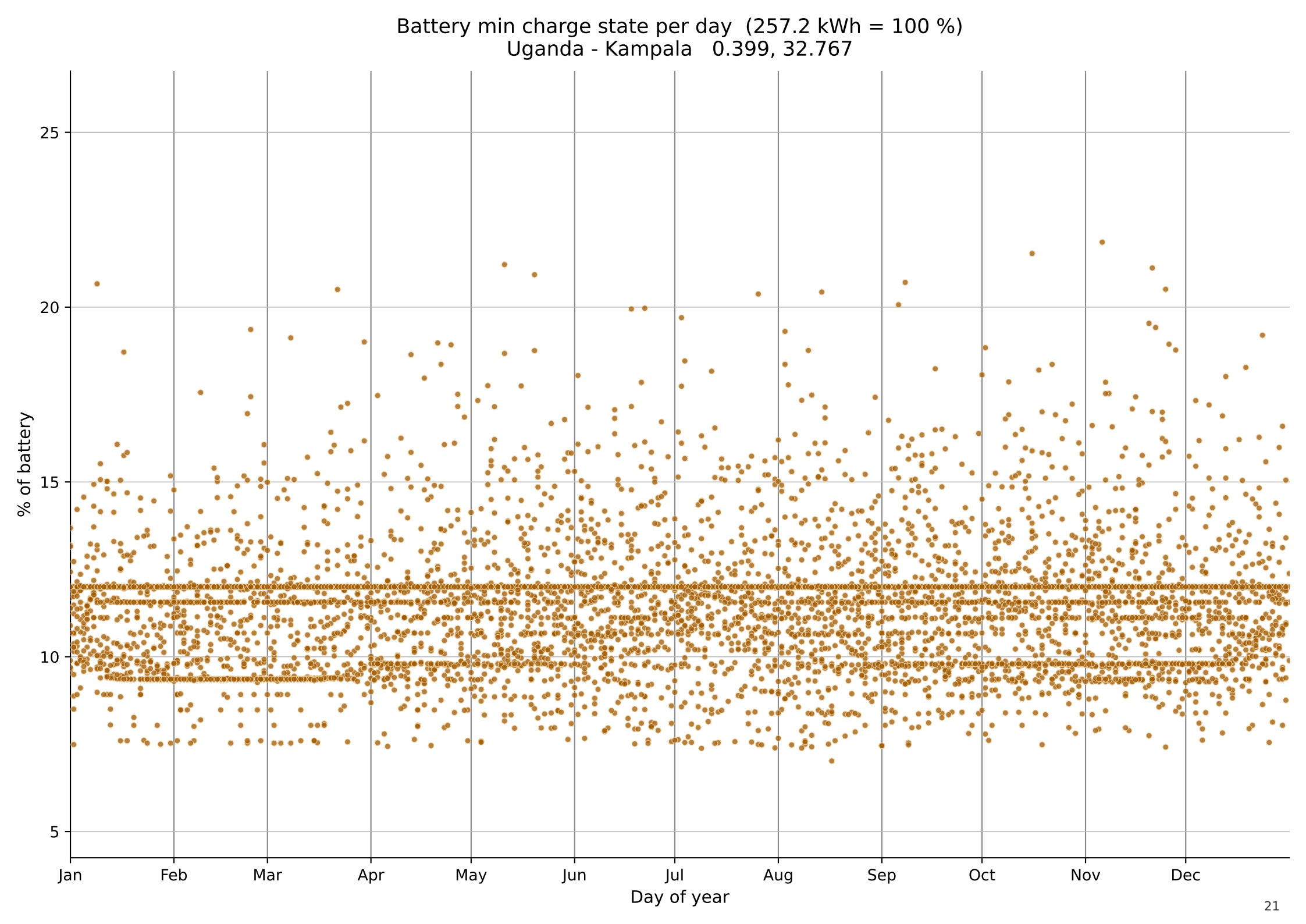
Battery
Uganda - Kampala 0.399, 32.767

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All
Wasted													
month Maximum	1596	1512	1443	1224	720	754	809	807	773	960	907	1115	9445
month average	982	1007	1017	774	520	410	543	534	582	667	548	649	8233
month minimum	444	609	513	361	229	144	275	243	404	325	274	248	7520
day Maximum	86.4	93.5	87.2	85.1	65.3	60.4	68.4	89.9	86.1	94.9	81.6	75.3	94.9
day average	31.7	35.7	32.8	25.8	16.8	13.7	17.5	17.2	19.4	21.5	18.3	20.9	22.5
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	27.91	25.95	27.85	27.21	28.21	27.09	27.72	27.79	26.60	28.26	27.34	28.43	323.48
month average	27.00	24.58	27.10	26.18	27.12	25.97	26.91	26.97	26.06	27.55	26.35	27.32	319.14
month minimum	24.52	21.77	25.70	24.69	25.18	24.57	25.79	25.70	25.62	26.20	25.24	26.16	314.15
day Maximum	1.30	1.30	1.30	1.31	1.29	1.31	1.30	1.30	1.32	1.40	1.31	1.31	1.40
day average	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.89	0.88	0.88	0.87
day minimum	0.20	0.45	0.47	0.06	0.06	0.45	0.42	0.30	0.42	0.17	0.52	0.39	0.06
Charge C													
month Maximum	0.24	0.25	0.25	0.24	0.23	0.23	0.23	0.24	0.24	0.24	0.24	0.23	2.80
month average	0.23	0.24	0.24	0.24	0.23	0.22	0.22	0.23	0.24	0.24	0.23	0.23	2.78
month minimum	0.23	0.23	0.23	0.23	0.22	0.21	0.21	0.22	0.23	0.23	0.23	0.22	2.76
day Maximum	0.24	0.25	0.25	0.24	0.23	0.23	0.23	0.24	0.24	0.24	0.24	0.23	0.25
day average	0.21	0.21	0.21	0.20	0.19	0.19	0.19	0.20	0.21	0.21	0.20	0.20	0.20
day minimum	0.04	0.03	0.04	0.03	0.04	0.04	0.03	0.07	0.07	0.05	0.07	0.03	0.03
Discharge C													
month Maximum	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	1.38
month average	0.11	0.11	0.11	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	1.38
month minimum	0.11	0.11	0.11	0.11	0.11	0.12	0.12	0.11	0.11	0.11	0.11	0.11	1.38
day Maximum	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
day average	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
day minimum	0.07	0.11	0.11	0.00	0.00	0.11	0.11	0.11	0.11	0.10	0.11	0.11	0.00

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
1.45
1.40
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
% of battery
25
20
15
10
5
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year