Scenario — PV
GEMINI-60-house-part-of-a-settlement China - Shenzhen 22.554, 114.059

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				

Location: Shenzhen
Database PVGIS-ERA5 2005–2023 loss 14 % azimuth 0 = south, 90 = west, −90 = east.
Price bands and charts use UTC+8 from longitude (15° per hour), not the political time zone.
Peak hour 2020-04-13 12:30 local (04:30 UTC) 63,859 W 0.711 W/Wp of 89,760 Wp.
Database gaps: 0 days with 0 yield while the sun reached the horizon at noon. 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.

Click here to work on this simulation. If the click does nothing, copy the address below and paste it in the browser. PEGE energy sim server has to run.

http://127.0.0.1:8765/form?name=China+-+Shenzhen&simname=with+40+kW+grid&lat=22.554&lon=114.059&startyear=2005&endyear=2023&loss=14.0&raddatabase=auto&usehorizon=1&outdir=%2Fhome%2Ffounder%2Finternet%2Fgemini-next-generation.ha

Scenario — house, heat pump, battery
GEMINI-60-house-part-of-a-settlement China - Shenzhen 22.554, 114.059

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	18 °C 22 °C 25 °C 20 °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 / 40.0 kW
	Max export	40.0 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
China - Shenzhen 22.554, 114.059

PV	2020-04-13 04:30	2020-04-12 04:30	2007-04-18 04:30	2017-04-01 04:30	2020-04-13 03:30	2022-04-03 04:30	2010-03-10 04:30	2016-03-26 04:30	2015-04-14 04:30	2022-04-04 04:30
Roof East	14,841	14,743	14,706	14,646	16,011	14,584	14,580	14,579	14,587	14,570
Roof West	15,084	14,977	14,996	14,729	13,492	14,695	14,345	14,574	14,830	14,694
Terrace railing south	1,249	1,267	1,156	1,579	1,203	1,508	2,217	1,754	1,219	1,484
Terrace railing north	194	209	258	208	197	204	207	196	199	203
share central structure east part	16,200	16,103	16,050	15,930	16,519	15,880	15,760	15,817	15,903	15,862
share central strucure west part	16,291	16,191	16,159	15,961	15,574	15,922	15,672	15,816	15,994	15,909
Watt at record	63,859	63,489	63,326	63,054	62,995	62,794	62,781	62,735	62,733	62,721
Percent of installed peak	71.1	70.7	70.6	70.2	70.2	70.0	69.9	69.9	69.9	69.9

Values are watts at that hour. Date and time are UTC. Record 63,859 W (71.1 % of 89,760 Wp).

Hours at or above a share of the record
China - Shenzhen 22.554, 114.059

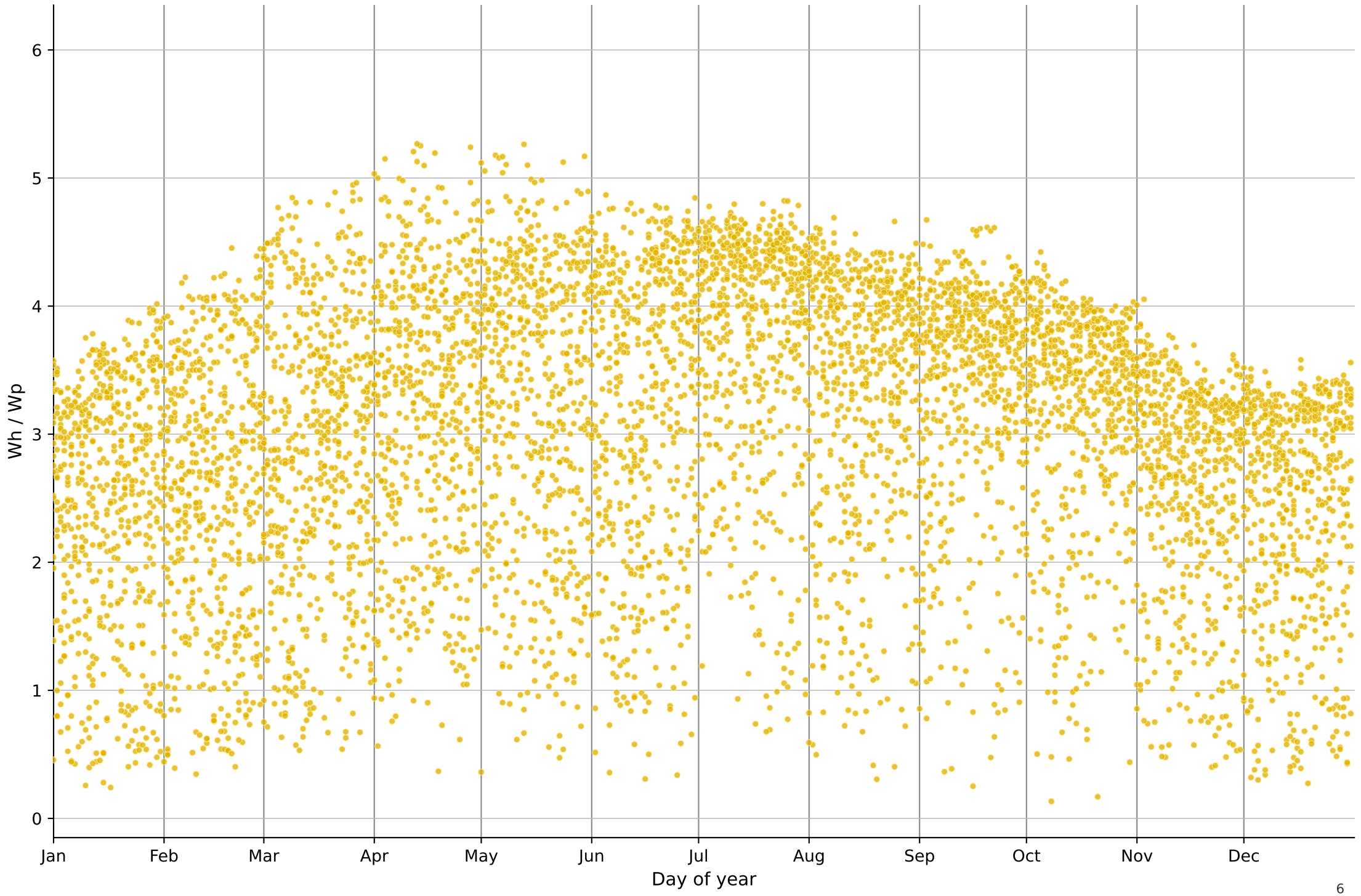
Of the record	Hours	Watts
98 %	10	62,582 W
96 %	28	61,305 W
94 %	52	60,028 W
92 %	115	58,751 W
90 %	197	57,474 W

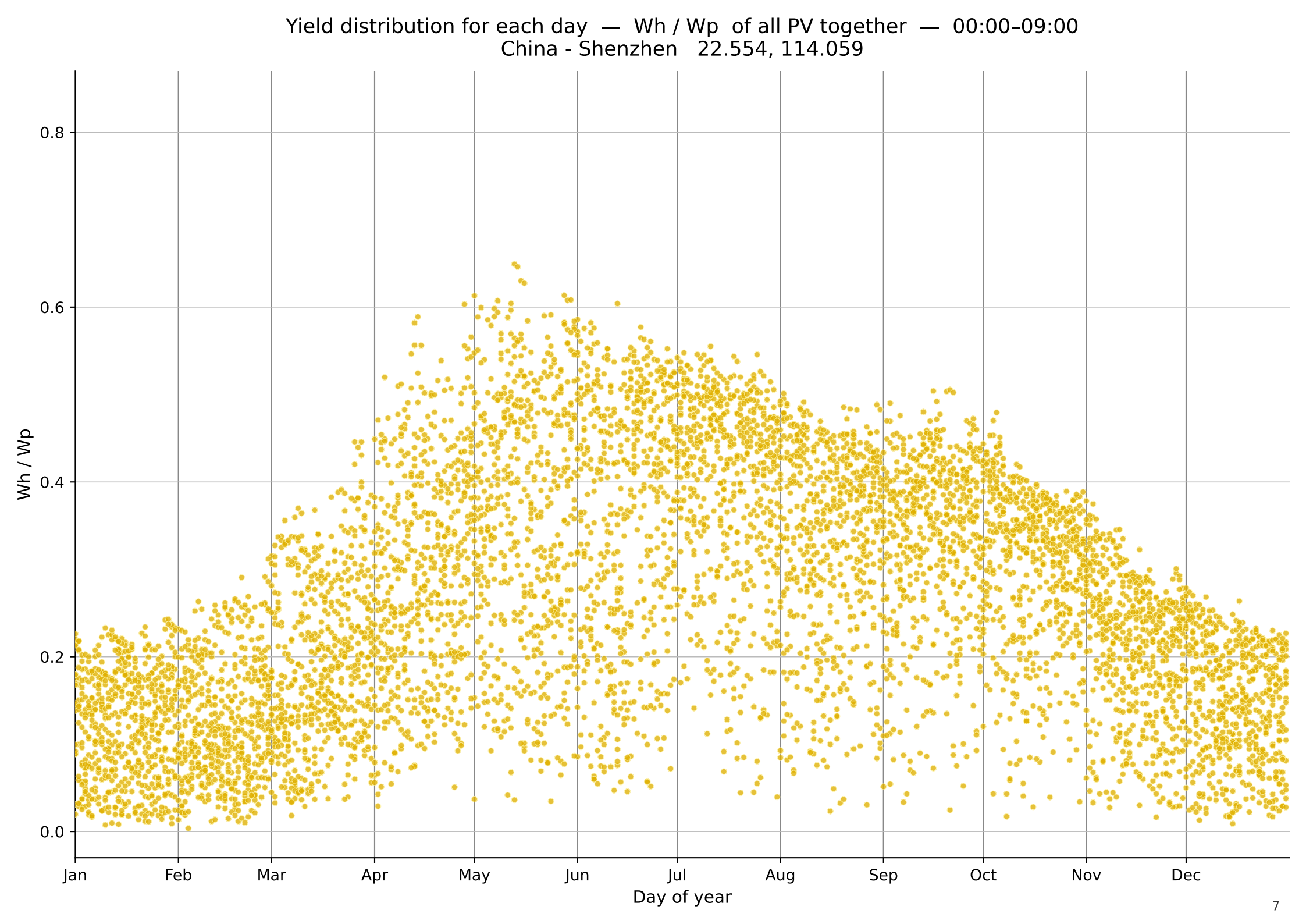
Record hour = 63,859 W combined.

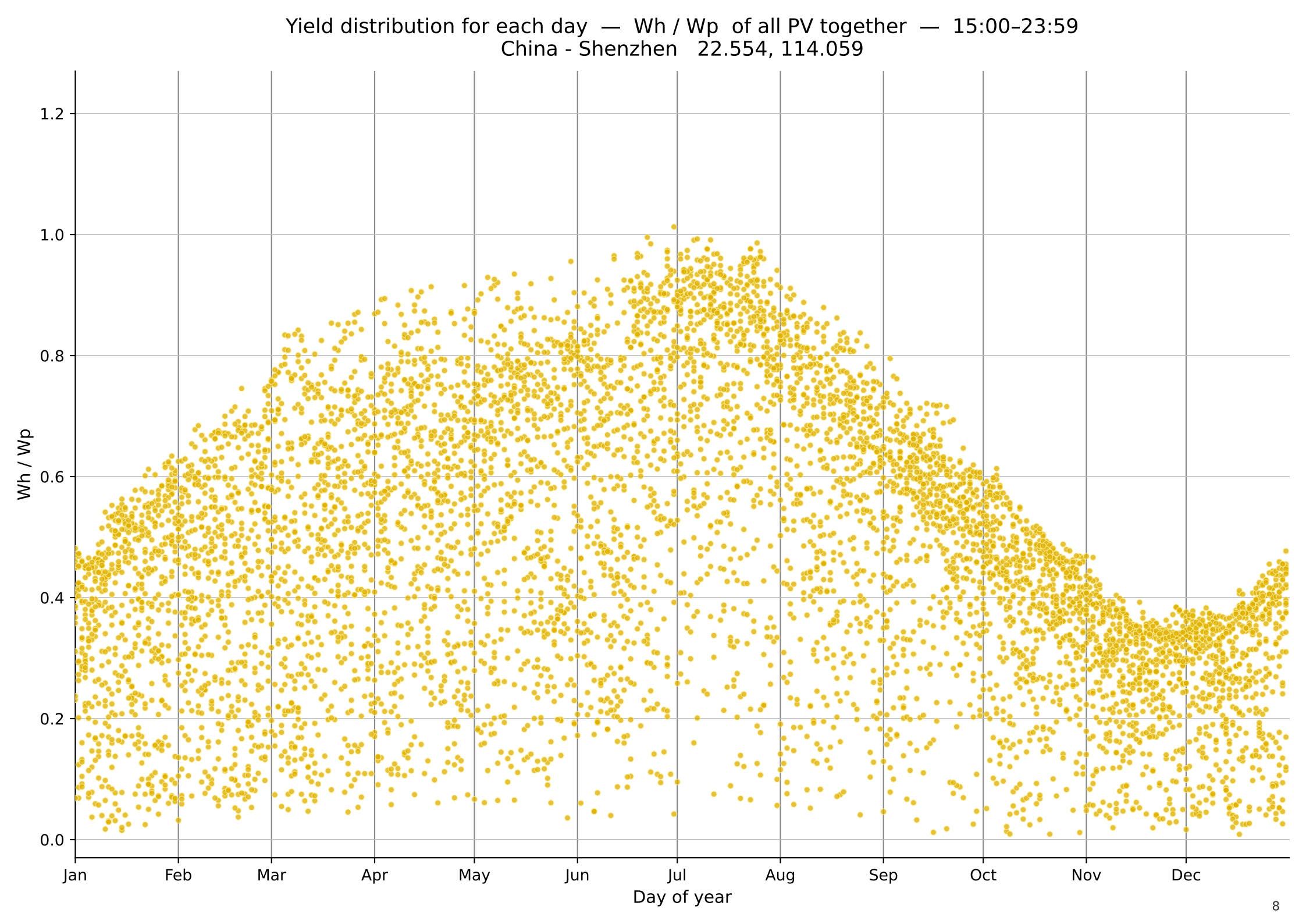
Records of each photovoltaic field
China - Shenzhen 22.554, 114.059

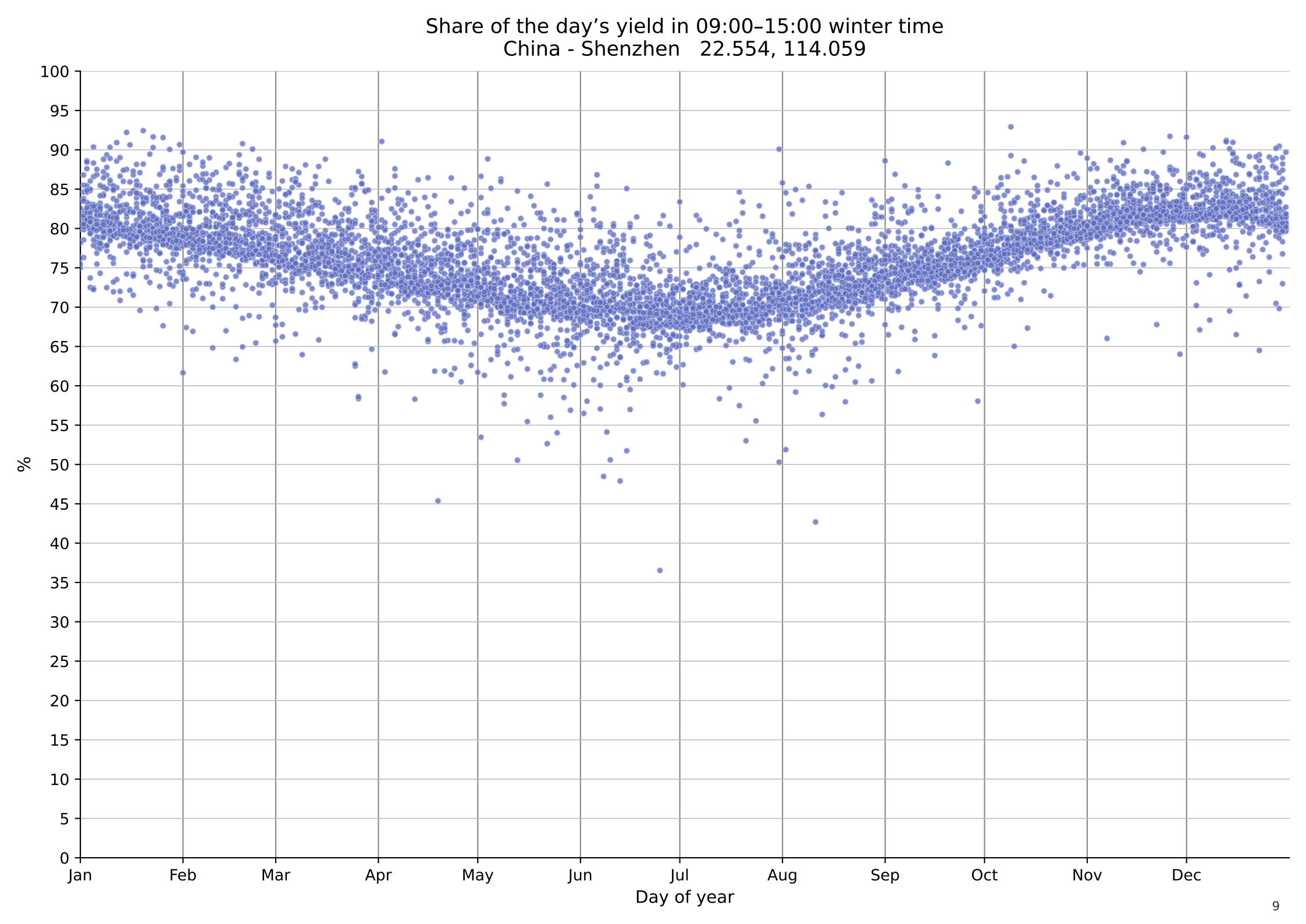
PV	Date	Watts	%	h ≥98%	h ≥96%	h ≥94%	h ≥92%	h ≥90%
Roof East	2020-04-13 02:30	16,049	81.1	4	14	37	73	145
Roof West	2020-04-12 05:30	15,633	79.0	8	23	59	120	204
Terrace railing south	2010-12-17 04:30	3,214	69.6	9	25	81	183	333
Terrace railing north	2020-06-09 04:30	911	19.7	6	9	13	24	42
share central structure east part	2020-04-13 03:30	16,519	80.7	4	16	47	82	150
share central strucure west part	2020-04-13 04:30	16,291	79.6	6	25	58	105	189

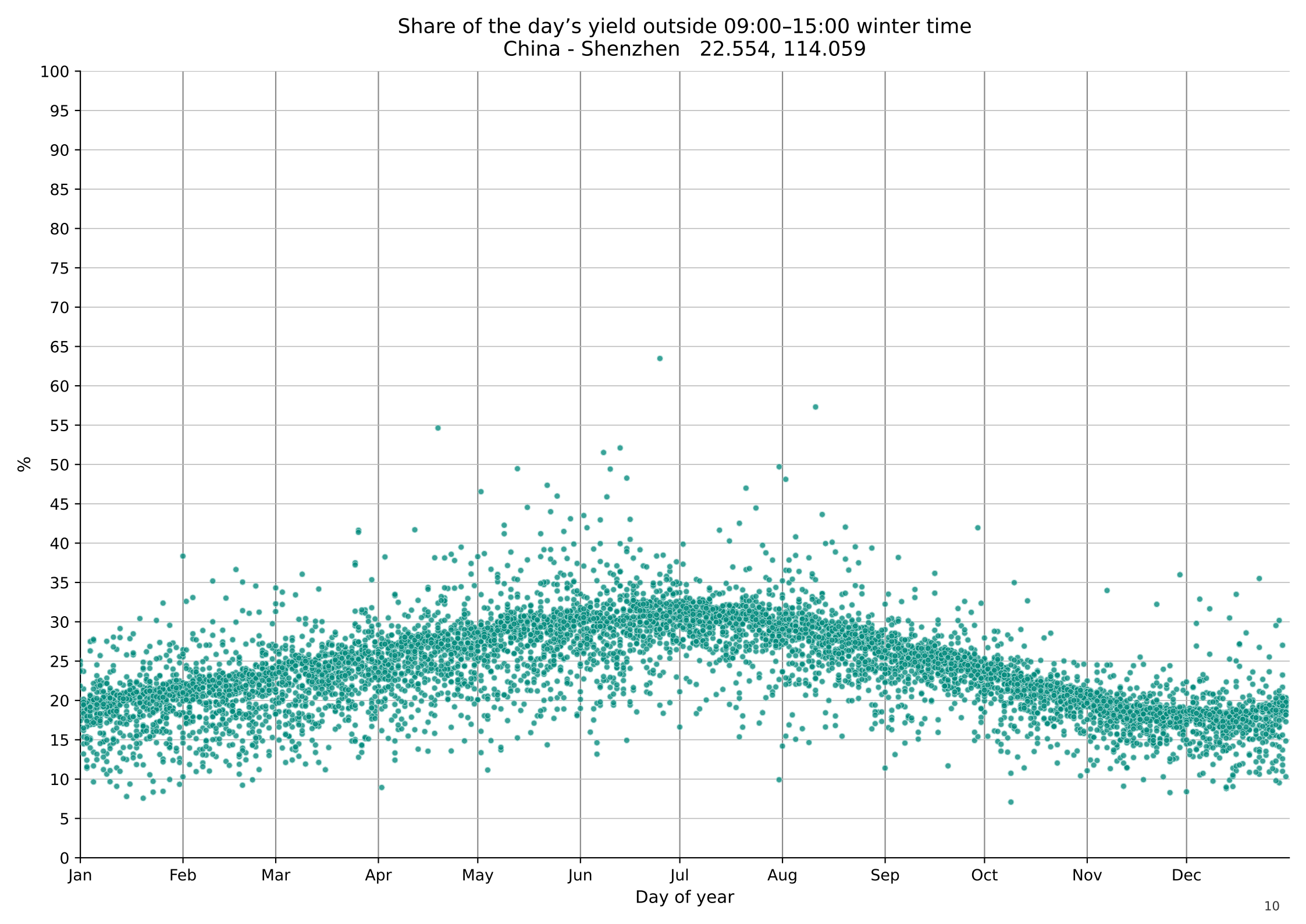
Watts is the highest hour of that field. % is of its own Wp. Hours are the count of hours at or above that share of its own record. Use this to size the MPPT or the inverter for that field.

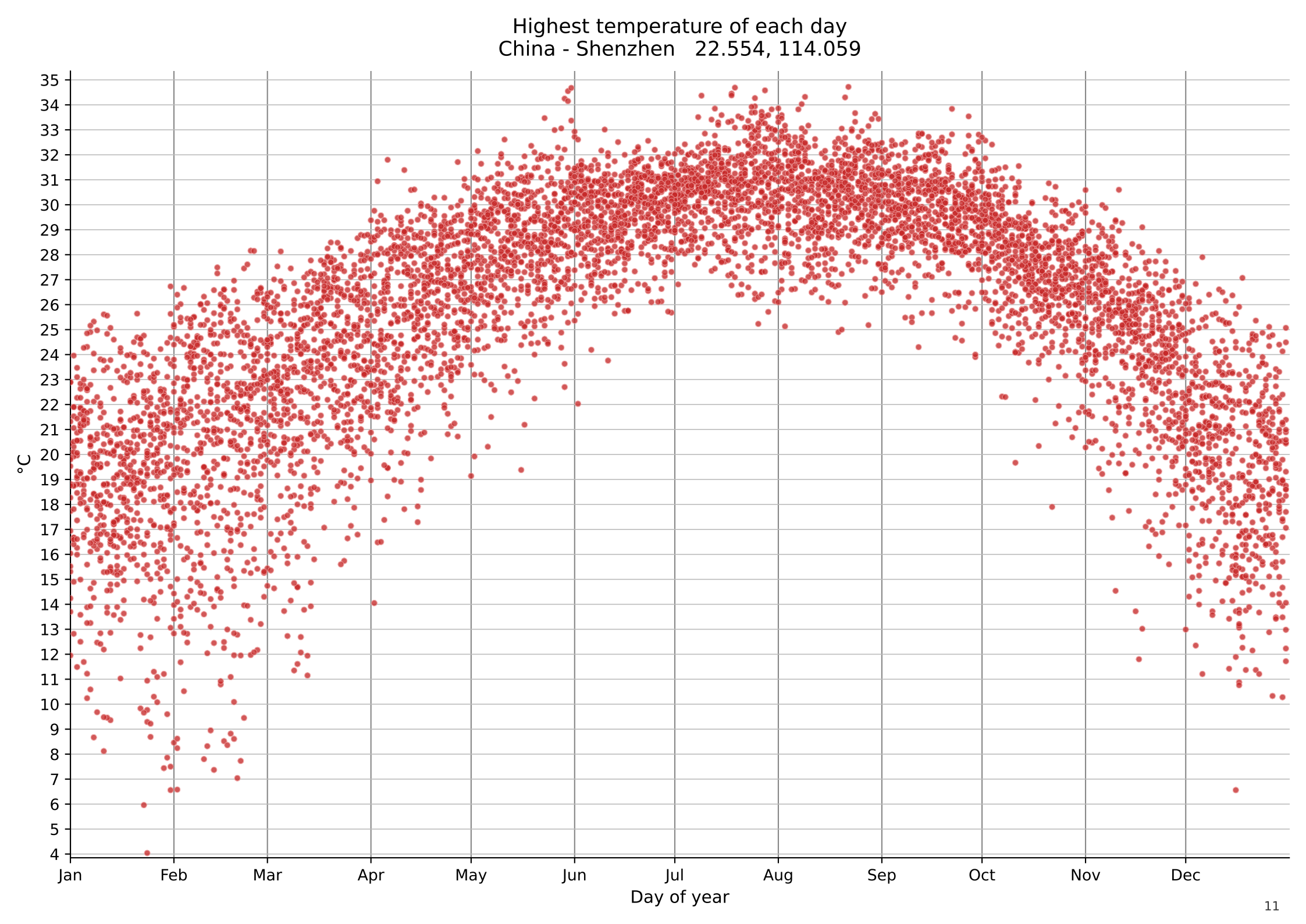

Yield distribution for each day — Wh / Wp of all PV together
China - Shenzhen 22.554, 114.059
Wh / Wp
0
1
2
3
4
5
6
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year

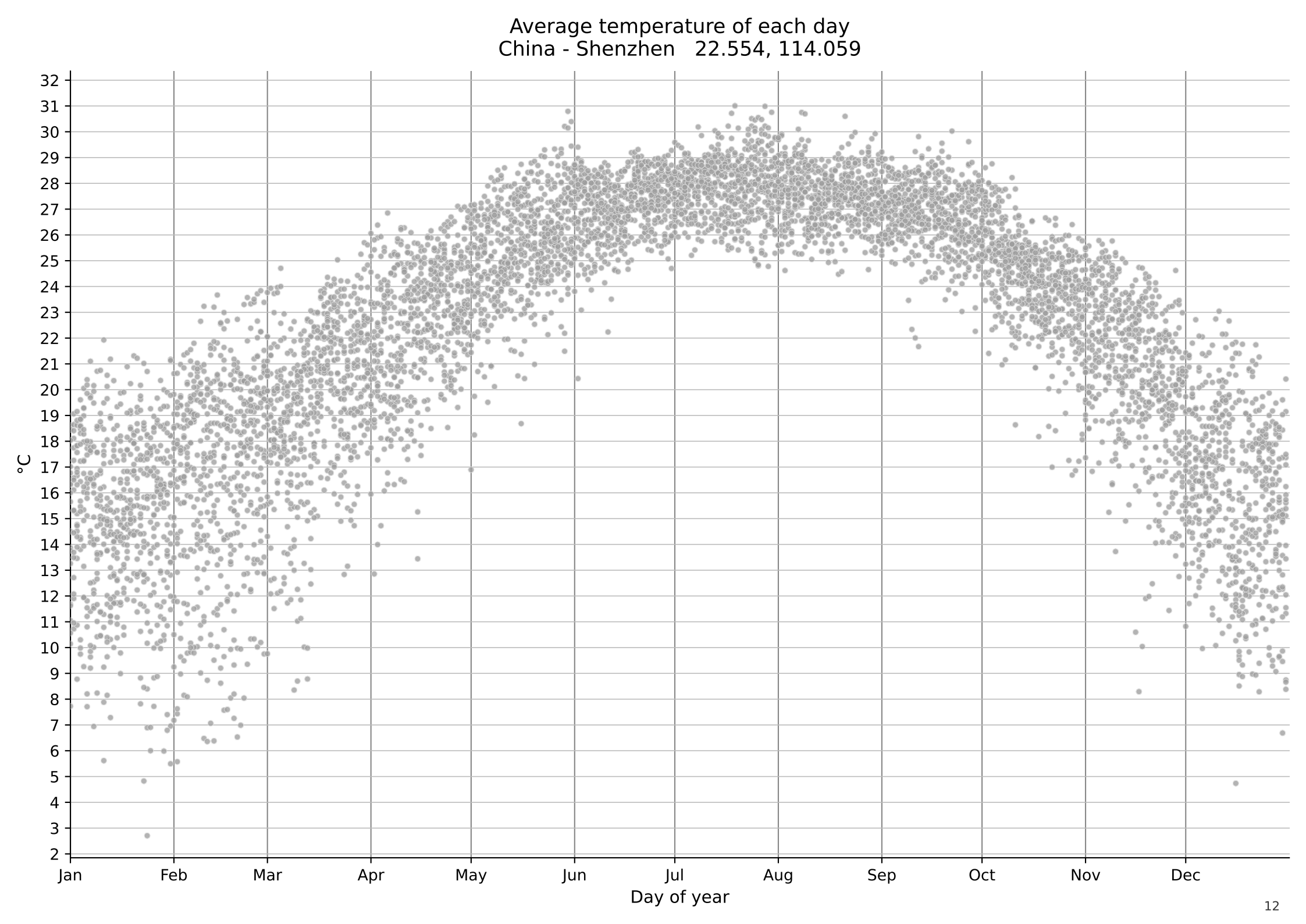

Yield distribution for each day — Wh / Wp of all PV together — 00:00–09:00
China - Shenzhen 22.554, 114.059
Wh / Wp
0.0
0.2
0.4
0.6
0.8
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year

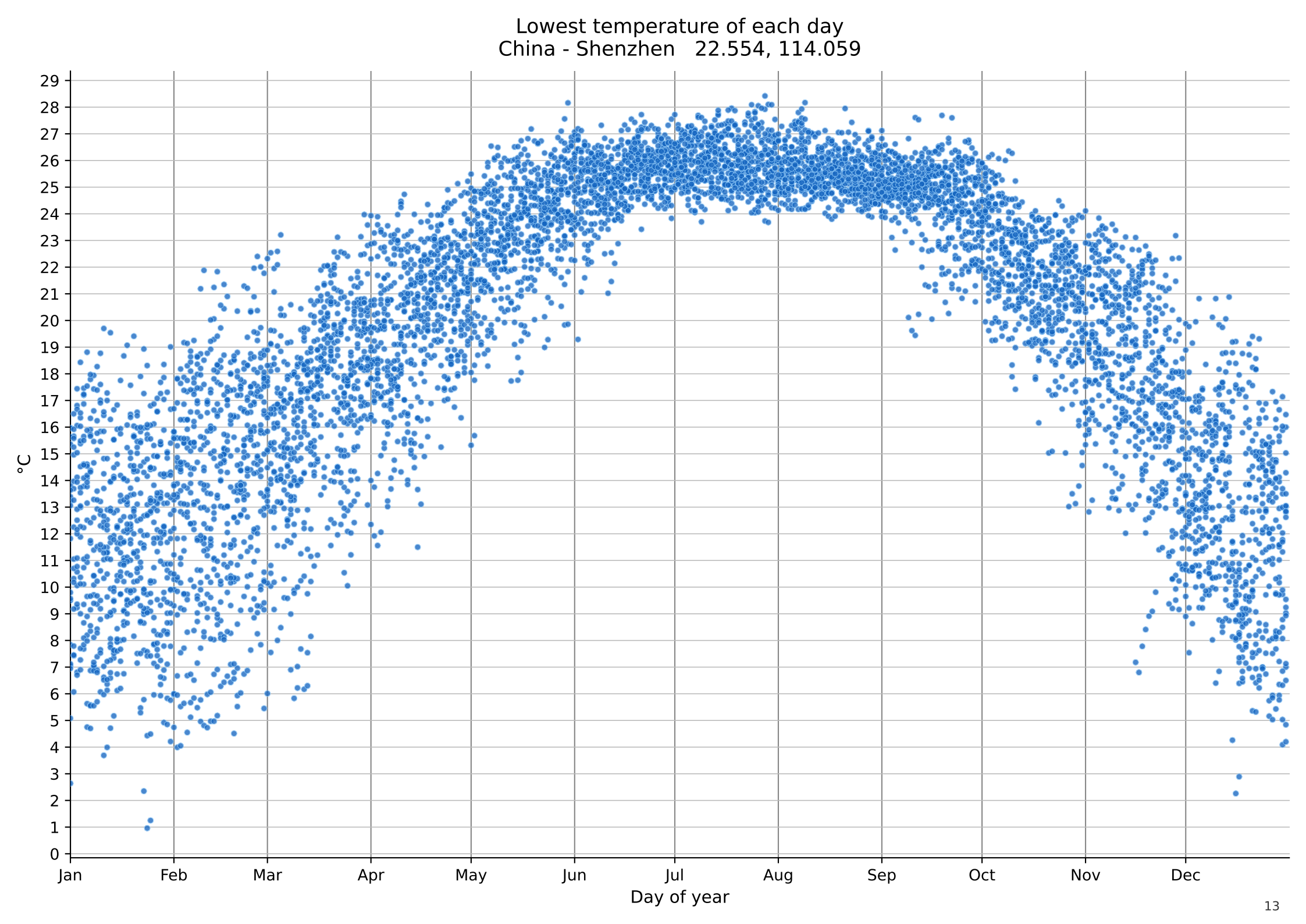

Yield distribution for each day — Wh / Wp of all PV together — 15:00–23:59
China - Shenzhen 22.554, 114.059
Wh / Wp
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year

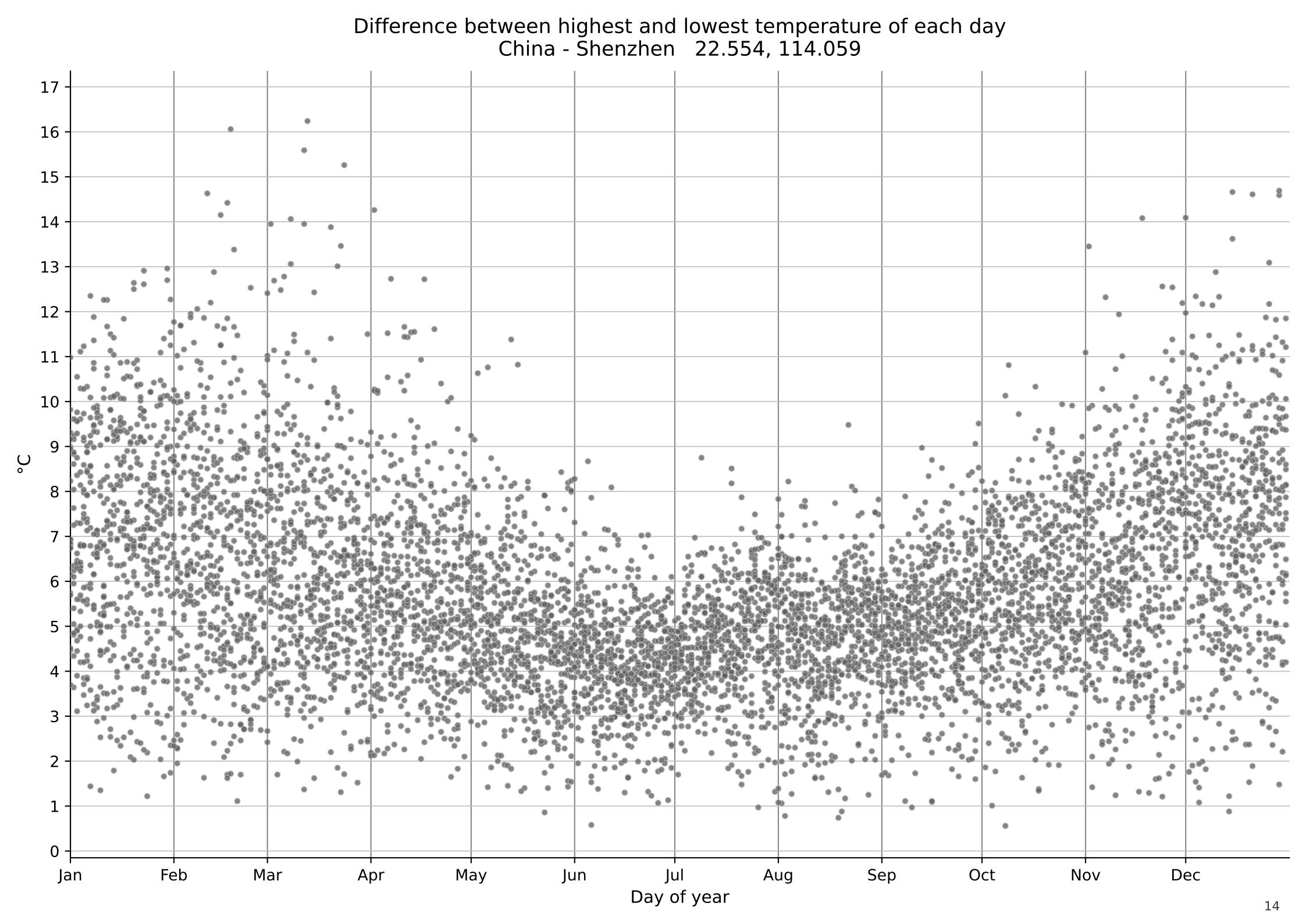

Share of the day’s yield in 09:00–15:00 winter time
China - Shenzhen 22.554, 114.059
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
%
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year


Share of the day’s yield outside 09:00–15:00 winter time
China - Shenzhen 22.554, 114.059
%
Day of year
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100


Highest temperature of each day
China - Shenzhen 22.554, 114.059
°C
35
34
33
32
31
30
29
28
27
26
25
24
23
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year


Average temperature of each day
China - Shenzhen 22.554, 114.059
°C
32
31
30
29
28
27
26
25
24
23
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year


Lowest temperature of each day
China - Shenzhen 22.554, 114.059
°C
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year


Difference between highest and lowest temperature of each day
China - Shenzhen 22.554, 114.059
°C
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year

Monthly and yearly specific yield (kWh/kWp = Wh/Wp)
China - Shenzhen 22.554, 114.059

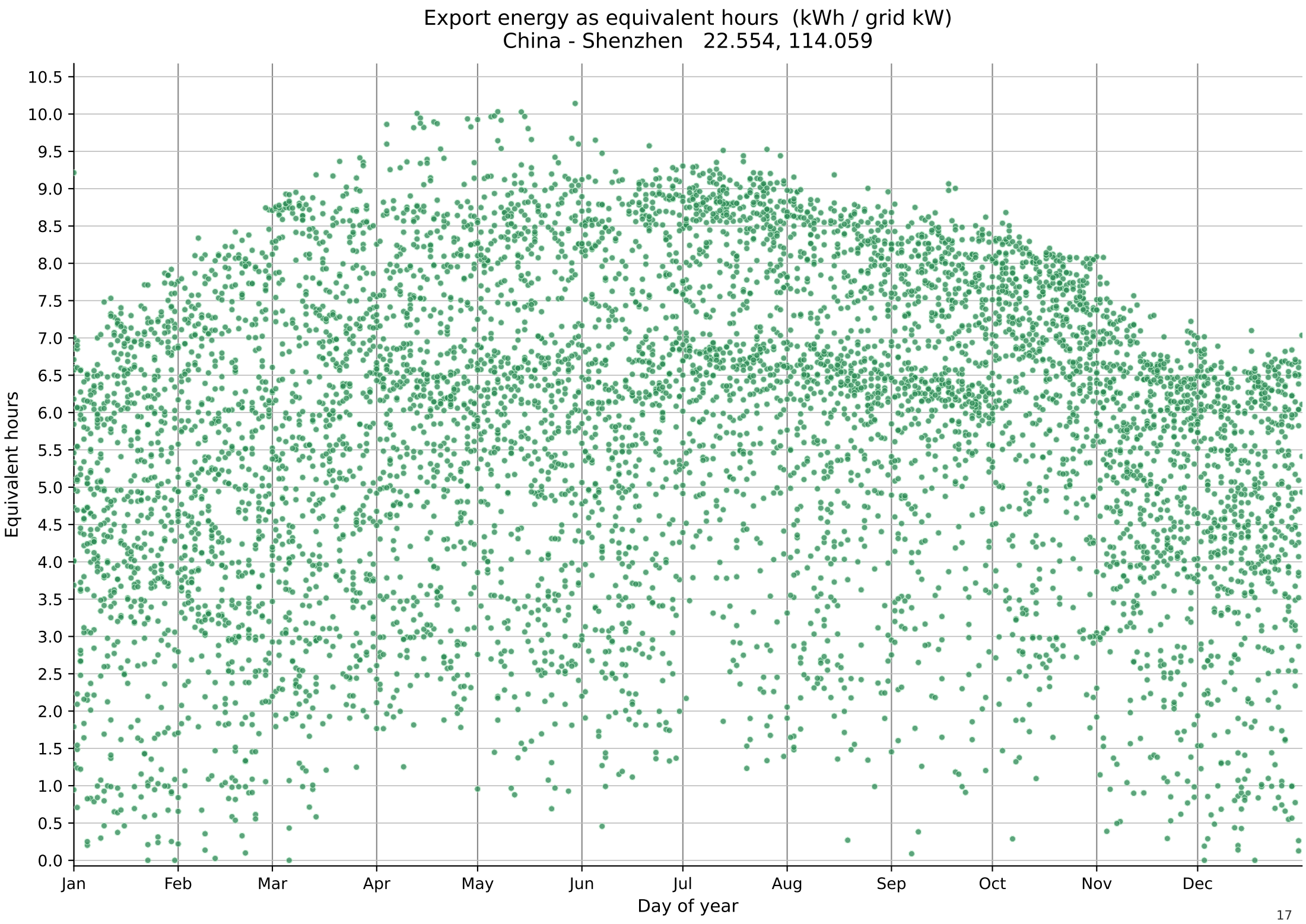
Month / year		Roof East 22°/-90° 19,800 Wp	Roof West 22°/90° 19,800 Wp	Terrace railing south 90°/0° 4,620 Wp	Terrace railing north 90°/180° 4,620 Wp	share central structure east 8°/-90° 20,460 Wp	share central strucure west p 8°/90° 20,460 Wp	All together
January	Maximum	101.94	104.36	62.88	12.41	105.26	106.32	97.50
	average	78.99	80.97	48.79	10.79	81.64	82.47	75.76
	minimum	46.59	48.68	26.92	9.24	48.59	49.42	45.22
February	Maximum	97.35	95.12	61.87	14.23	99.89	99.12	91.55
	average	74.15	76.74	47.71	12.41	77.42	78.53	71.92
	minimum	53.32	56.30	33.54	10.59	56.27	57.38	52.63
March	Maximum	113.75	116.33	63.04	18.23	118.94	119.94	109.26
	average	93.06	94.97	52.34	16.42	97.13	97.93	89.48
	minimum	81.68	82.24	44.45	14.99	85.67	85.55	78.54
April	Maximum	120.48	121.55	41.96	19.95	125.37	125.99	113.79
	average	100.99	102.44	37.90	18.92	105.18	105.85	95.90
	minimum	79.95	79.15	32.87	16.86	82.36	82.03	75.26
May	Maximum	128.55	129.05	27.42	28.10	133.82	134.14	120.49
	average	107.37	107.84	25.75	26.05	111.85	112.05	101.18
	minimum	85.66	89.22	23.47	23.17	90.08	91.45	82.51
June	Maximum	126.27	127.39	19.85	34.33	131.73	132.22	118.74
	average	103.19	102.65	17.61	32.02	107.02	106.84	96.71
	minimum	77.57	79.34	16.45	28.07	81.00	81.67	74.08
July	Maximum	142.16	144.31	22.97	32.14	148.19	149.07	133.48
	average	123.09	123.19	20.90	30.18	127.83	127.89	115.24
	minimum	110.92	107.35	18.92	28.14	114.11	112.72	102.42
August	Maximum	132.08	132.33	34.15	22.51	137.52	137.66	123.74
	average	111.10	109.49	32.12	20.07	114.92	114.33	103.60
	minimum	88.81	87.68	29.77	18.84	91.83	91.39	83.35
September	Maximum	121.17	119.13	57.36	15.35	124.91	124.27	113.30
	average	107.29	106.29	51.17	13.75	110.81	110.55	100.91
	minimum	82.38	83.42	42.36	12.53	85.60	86.08	78.54
October	Maximum	118.95	116.55	72.51	13.17	122.32	121.17	111.69
	average	104.29	103.31	63.79	11.92	107.58	107.13	98.63
	minimum	84.76	84.41	51.77	11.13	87.59	87.45	80.52
November	Maximum	102.17	101.88	66.37	11.44	105.79	105.69	97.10
	average	82.48	82.61	53.73	10.43	85.46	85.54	78.70
	minimum	58.99	59.52	37.64	9.15	61.20	61.47	56.60
December	Maximum	87.82	89.03	54.70	11.05	90.44	91.34	83.61
	average	78.01	78.59	47.33	9.82	80.50	80.83	74.26
	minimum	57.96	60.64	34.69	8.51	60.45	61.57	56.29
All years	Maximum	1,230.4	1,231.2	531.9	219.2	1,273.8	1,273.5	1,161.1
	average	1,164.0	1,169.1	499.1	212.8	1,207.3	1,209.9	1,102.3
	minimum	1,081.9	1,085.0	447.4	206.2	1,122.3	1,124.0	1,024.1

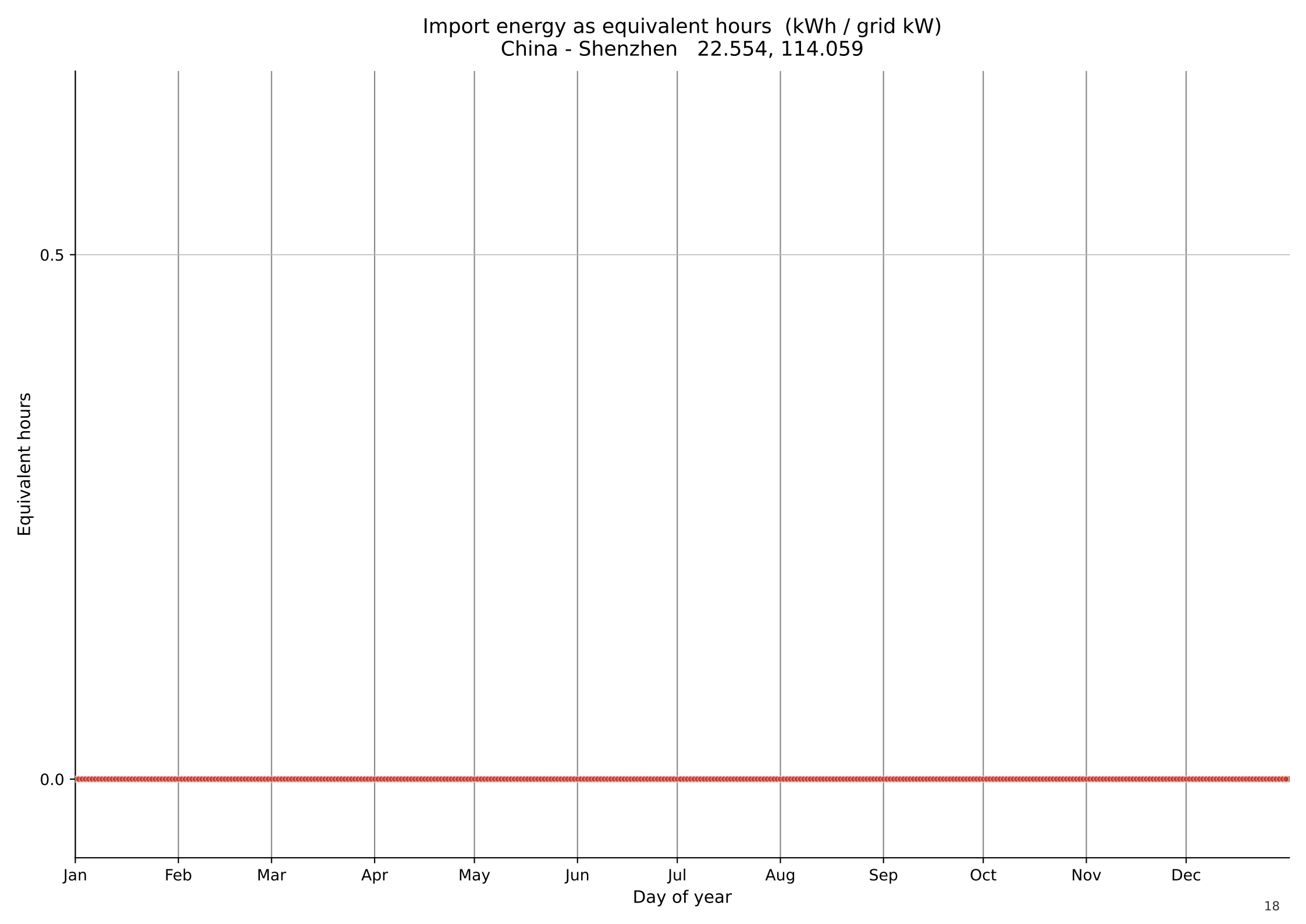
Highest combined yield hour: 2020-04-13 04:30 UTC 63,859.5 W (0.711 W/Wp) of 89,760 Wp installed. Use this hour to size battery charge power.

Monthly and yearly total yield (kWh)
China - Shenzhen 22.554, 114.059

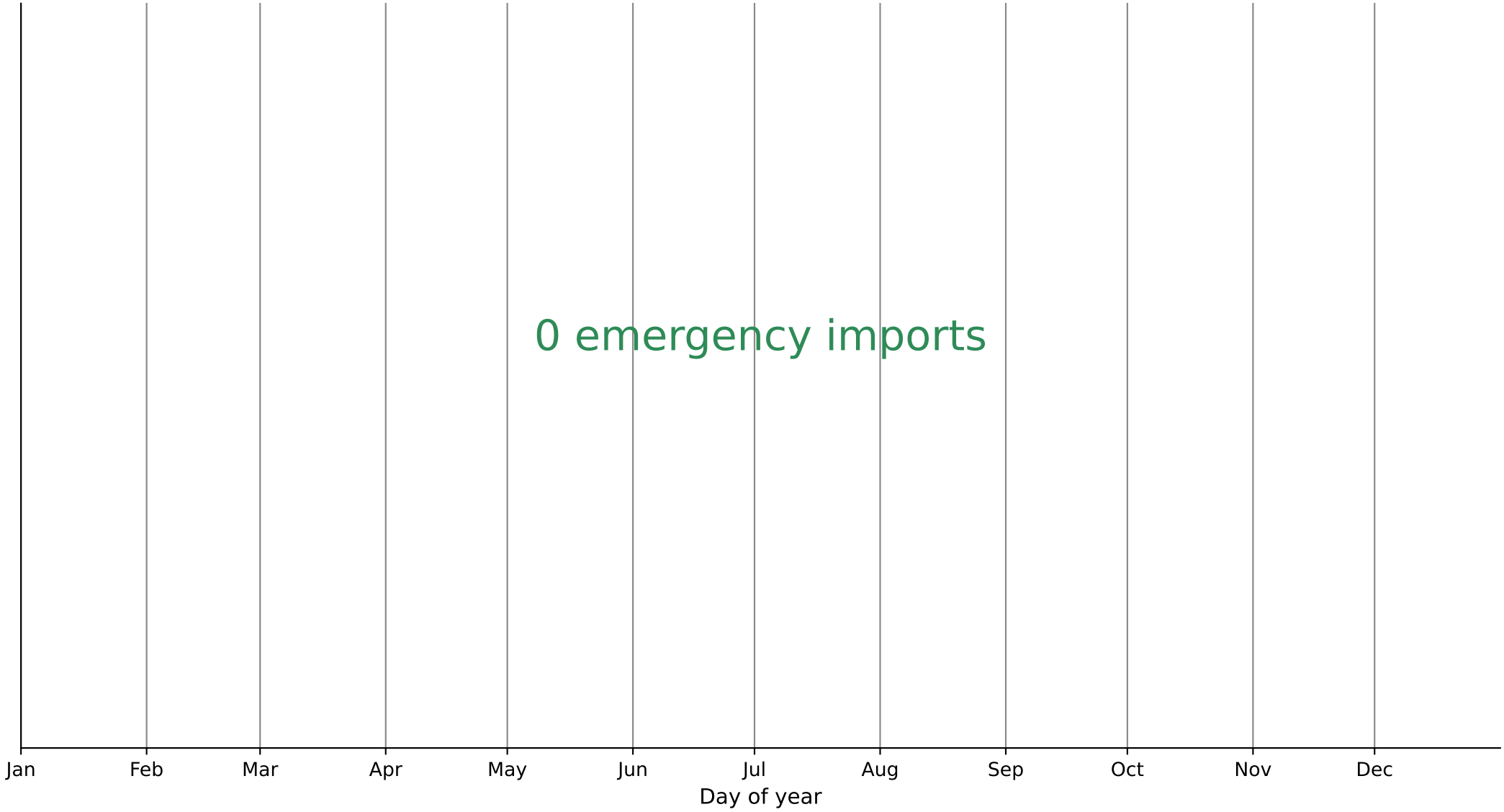
Month / year		Roof East 22°/-90° 19,800 Wp	Roof West 22°/90° 19,800 Wp	Terrace railing south 90°/0° 4,620 Wp	Terrace railing north 90°/180° 4,620 Wp	share central structure east 8°/-90° 20,460 Wp	share central strucure west p 8°/90° 20,460 Wp	All together
January	Maximum	2,018.38	2,066.40	290.51	57.35	2,153.65	2,175.21	8,751.64
	average	1,563.94	1,603.17	225.42	49.86	1,670.40	1,687.34	6,800.13
	minimum	922.52	963.78	124.39	42.69	994.08	1,011.21	4,058.67
February	Maximum	1,927.47	1,883.29	285.84	65.73	2,043.77	2,027.93	8,217.21
	average	1,468.08	1,519.45	220.40	57.32	1,583.98	1,606.62	6,455.86
	minimum	1,055.67	1,114.81	154.98	48.91	1,151.37	1,174.01	4,724.08
March	Maximum	2,252.21	2,303.43	291.26	84.21	2,433.45	2,454.07	9,807.23
	average	1,842.53	1,880.37	241.81	75.85	1,987.19	2,003.64	8,031.39
	minimum	1,617.30	1,628.26	205.36	69.24	1,752.82	1,750.39	7,049.30
April	Maximum	2,385.48	2,406.77	193.86	92.18	2,565.08	2,577.79	10,213.39
	average	1,999.53	2,028.32	175.09	87.42	2,151.97	2,165.69	8,608.02
	minimum	1,583.05	1,567.16	151.85	77.91	1,685.19	1,678.40	6,755.51
May	Maximum	2,545.34	2,555.16	126.68	129.84	2,737.93	2,744.60	10,815.12
	average	2,125.84	2,135.22	118.97	120.35	2,288.53	2,292.57	9,081.49
	minimum	1,696.09	1,766.52	108.41	107.04	1,843.12	1,871.10	7,405.98
June	Maximum	2,500.08	2,522.32	91.73	158.61	2,695.29	2,705.15	10,657.85
	average	2,043.23	2,032.55	81.35	147.93	2,189.71	2,185.98	8,680.75
	minimum	1,535.86	1,570.99	75.98	129.67	1,657.29	1,671.03	6,649.22
July	Maximum	2,814.75	2,857.28	106.12	148.47	3,031.98	3,049.90	11,981.03
	average	2,437.25	2,439.07	96.54	139.42	2,615.30	2,616.53	10,344.11
	minimum	2,196.23	2,125.43	87.41	130.02	2,334.73	2,306.29	9,193.01
August	Maximum	2,615.21	2,620.20	157.78	104.01	2,813.64	2,816.42	11,106.98
	average	2,199.83	2,167.96	148.42	92.72	2,351.21	2,339.18	9,299.32
	minimum	1,758.38	1,736.08	137.54	87.05	1,878.79	1,869.80	7,481.52
September	Maximum	2,399.26	2,358.82	264.98	70.92	2,555.56	2,542.50	10,169.64
	average	2,124.34	2,104.52	236.41	63.52	2,267.09	2,261.81	9,057.69
	minimum	1,631.08	1,651.77	195.72	57.91	1,751.31	1,761.15	7,049.30
October	Maximum	2,355.16	2,307.62	335.00	60.86	2,502.67	2,479.17	10,024.97
	average	2,064.89	2,045.54	294.70	55.08	2,201.18	2,191.88	8,853.28
	minimum	1,678.20	1,671.26	239.17	51.42	1,792.03	1,789.21	7,227.88
November	Maximum	2,022.96	2,017.27	306.64	52.84	2,164.39	2,162.41	8,715.96
	average	1,633.13	1,635.59	248.25	48.17	1,748.47	1,750.13	7,063.74
	minimum	1,168.08	1,178.50	173.91	42.28	1,252.07	1,257.74	5,080.02
December	Maximum	1,738.74	1,762.74	252.73	51.05	1,850.48	1,868.81	7,504.78
	average	1,544.54	1,556.09	218.68	45.36	1,647.02	1,653.76	6,665.45
	minimum	1,147.58	1,200.67	160.28	39.33	1,236.86	1,259.66	5,052.53
All years	Maximum	24,362.5	24,378.5	2,457.5	1,012.6	26,062.1	26,056.7	104,221.3
	average	23,047.1	23,147.8	2,306.0	983.0	24,702.0	24,755.2	98,941.2
	minimum	21,421.3	21,483.8	2,067.1	952.5	22,962.4	22,997.7	91,921.8

Highest combined yield hour: 2020-04-13 04:30 UTC 63,859.5 W (0.711 W/Wp) of 89,760 Wp installed. Use this hour to size battery charge power.


Export energy as equivalent hours (kWh / grid kW)
China - Shenzhen 22.554, 114.059
Equivalent hours
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)
China - Shenzhen 22.554, 114.059
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
China - Shenzhen 22.554, 114.059



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
China - Shenzhen 22.554, 114.059

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All
Export to grid													
month Maximum	7,657	7,237	8,562	8,527	9,030	8,982	9,956	9,308	8,496	8,931	7,698	6,470	89,206
month average	5,799	5,551	6,965	7,253	7,657	7,275	8,700	7,862	7,675	7,811	6,109	5,676	84,332
month minimum	3,110	3,911	5,987	5,707	6,152	5,641	7,906	6,466	5,938	6,269	4,232	4,229	77,900
day Maximum	368.6	349.7	376.5	400.3	405.7	386.0	381.1	367.4	362.6	347.2	323.5	283.9	405.7
day average	187.1	196.8	224.7	241.8	247.0	242.5	280.6	253.6	255.8	252.0	203.6	183.1	230.9
day minimum	0.0	1.0	0.0	50.1	27.6	18.3	49.3	10.8	3.6	11.5	11.7	0.0	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	558	515	505	462	483	478	495	489	468	471	474	536	5,780
month average	525	464	485	454	469	466	485	481	462	463	454	514	5,723
month minimum	507	430	473	448	463	454	468	473	453	461	447	493	5,668
day Maximum	20.8	19.9	19.1	18.9	19.2	19.5	19.4	19.4	19.3	16.1	19.1	20.1	20.8
day average	16.9	16.5	15.7	15.1	15.1	15.5	15.6	15.5	15.4	14.9	15.1	16.6	15.7
day minimum	15.0	15.0	15.0	14.8	14.8	14.8	14.7	14.7	14.7	14.9	14.9	14.9	14.7

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
China - Shenzhen 22.554, 114.059

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All
Export													
month Maximum	1,301	1,167	1,324	1,208	1,242	1,255	1,310	1,304	1,293	1,380	1,271	1,167	14,256
month average	1,033	974	1,169	1,136	1,160	1,095	1,228	1,201	1,189	1,259	1,084	1,027	13,554
month minimum	592	738	1,020	1,001	1,024	924	1,148	1,103	978	1,054	795	790	12,639
day Maximum	54.7	57.3	57.5	53.7	53.4	52.4	52.8	53.5	53.5	55.2	53.5	51.8	57.5
day average	33.3	34.5	37.7	37.9	37.4	36.5	39.6	38.7	39.6	40.6	36.1	33.1	37.1
day minimum	0.0	0.2	0.0	9.9	3.3	4.0	9.2	2.4	0.8	1.4	2.6	0.0	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	1,301	1,167	1,324	1,208	1,242	1,255	1,310	1,304	1,293	1,380	1,271	1,167	14,256
month average	1,033	974	1,169	1,136	1,160	1,095	1,228	1,201	1,189	1,259	1,084	1,027	13,554
month minimum	592	738	1,020	1,001	1,024	924	1,148	1,103	978	1,054	795	790	12,639
day Maximum	54.7	57.3	57.5	53.7	53.4	52.4	52.8	53.5	53.5	55.2	53.5	51.8	57.5
day average	33.3	34.5	37.7	37.9	37.4	36.5	39.6	38.7	39.6	40.6	36.1	33.1	37.1
day minimum	0.0	0.2	0.0	9.9	3.3	4.0	9.2	2.4	0.8	1.4	2.6	0.0	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
China - Shenzhen 22.554, 114.059

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All
Export total													
month Maximum	7,657	7,237	8,562	8,527	9,030	8,982	9,956	9,308	8,496	8,931	7,698	6,470	89,206
month average	5,799	5,551	6,965	7,253	7,657	7,275	8,700	7,862	7,675	7,811	6,109	5,676	84,332
month minimum	3,110	3,911	5,987	5,707	6,152	5,641	7,906	6,466	5,938	6,269	4,232	4,229	77,900
day Maximum	368.6	349.7	376.5	400.3	405.7	386.0	381.1	367.4	362.6	347.2	323.5	283.9	405.7
day average	187.1	196.8	224.7	241.8	247.0	242.5	280.6	253.6	255.8	252.0	203.6	183.1	230.9
day minimum	0.0	1.0	0.0	50.1	27.6	18.3	49.3	10.8	3.6	11.5	11.7	0.0	0.0
Export during high price hours													
month Maximum	6,162	5,551	6,071	5,838	5,782	5,655	5,943	6,088	6,142	6,373	6,180	5,764	67,703
month average	5,038	4,695	5,525	5,461	5,446	5,138	5,620	5,660	5,689	5,943	5,338	5,080	64,632
month minimum	2,891	3,732	4,808	4,943	5,000	4,506	5,256	5,283	4,730	5,239	4,062	3,878	60,876
day Maximum	225.8	223.1	226.3	221.3	223.2	222.0	221.5	222.2	218.6	216.9	217.4	222.2	226.3
day average	162.5	166.4	178.2	182.0	175.7	171.3	181.3	182.6	189.6	191.7	177.9	163.9	177.0
day minimum	0.0	1.0	0.0	50.1	27.6	18.3	49.3	10.8	3.6	11.5	11.7	0.0	0.0
Export during medium price hours													
month Maximum	961	1,028	1,353	1,697	2,062	2,081	2,709	2,034	1,444	1,089	833	675	13,549
month average	520	534	821	1,110	1,349	1,376	1,954	1,390	1,118	814	463	434	11,884
month minimum	132	124	552	503	788	758	1,416	692	719	509	149	130	10,297
day Maximum	49.6	63.2	89.3	105.7	113.7	112.3	110.6	97.1	84.5	61.0	37.7	38.8	113.7
day average	16.8	18.9	26.5	37.0	43.5	45.9	63.0	44.8	37.3	26.3	15.4	14.0	32.5
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
Export during low price hours													
month Maximum	533	785	1,175	1,256	1,594	1,289	1,651	1,415	1,216	1,516	685	368	9,527
month average	240	322	619	683	862	761	1,126	812	868	1,053	308	162	7,817
month minimum	60	0	176	260	313	289	794	349	341	386	21	22	6,616
day Maximum	132.9	81.7	103.1	120.0	120.0	114.7	108.5	96.5	100.6	95.3	80.0	49.7	132.9
day average	7.8	11.4	20.0	22.8	27.8	25.4	36.3	26.2	28.9	34.0	10.3	5.2	21.4
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
China - Shenzhen 22.554, 114.059

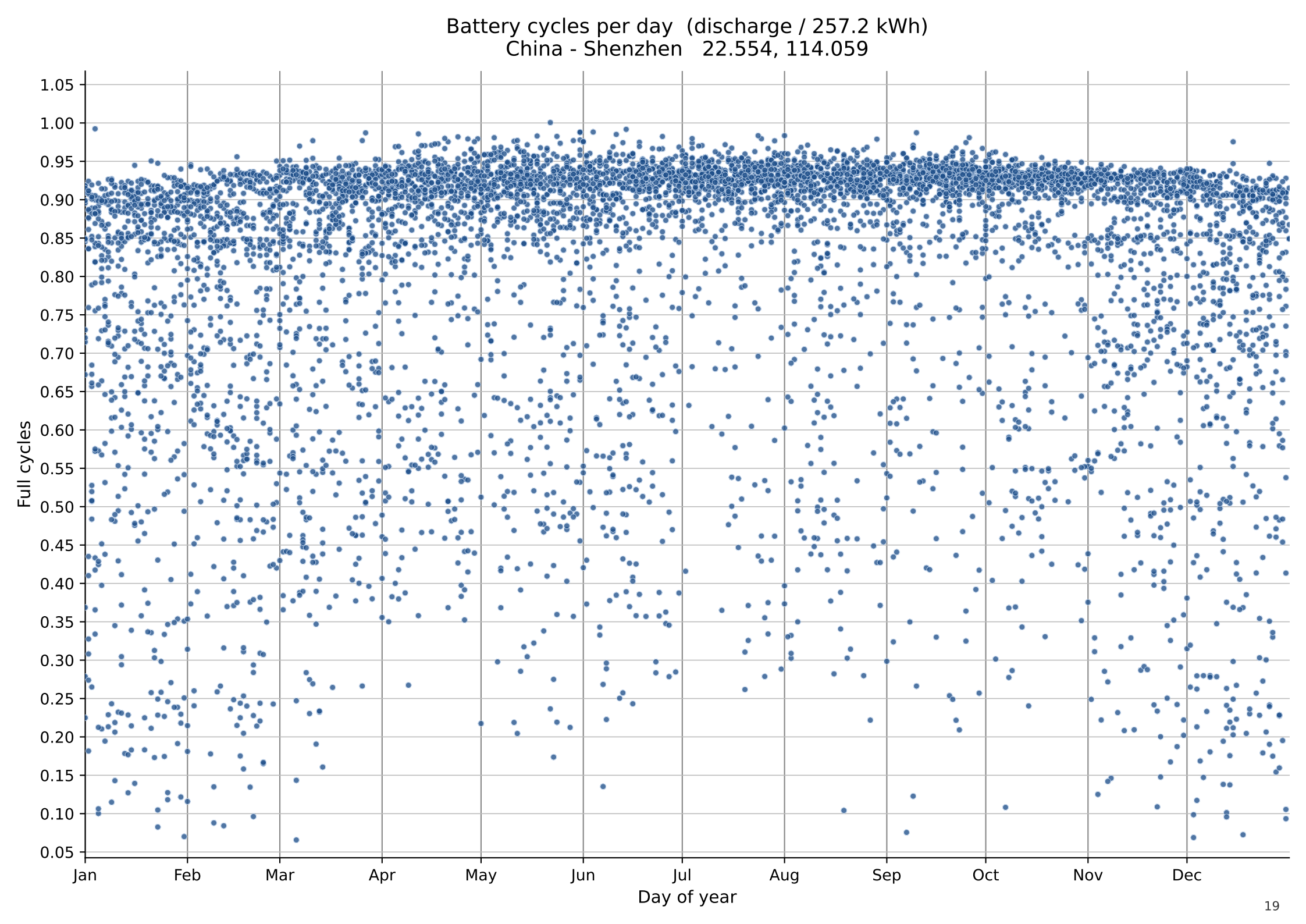
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All
Heating													
month Maximum	86	74	37	16	5	0	0	0	0	0	25	70	234
month average	56	38	19	9	1	0	0	0	0	0	7	48	179
month minimum	39	10	8	3	0	0	0	0	0	0	0	30	120
day Maximum	5.5	4.6	3.9	4.0	3.7	0.0	0.0	0.0	0.0	0.0	3.9	4.9	5.5
day average	1.8	1.4	0.6	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.6	0.5
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
Cooling													
month Maximum	0	0	0	2	25	34	40	35	28	9	0	0	141
month average	0	0	0	1	10	22	31	26	22	2	0	0	114
month minimum	0	0	0	0	3	10	14	18	13	0	0	0	83
day Maximum	0.0	0.0	0.0	1.5	4.4	4.7	4.8	4.7	4.7	1.2	0.0	0.0	4.8
day average	0.0	0.0	0.0	0.0	0.3	0.7	1.0	0.8	0.7	0.1	0.0	0.0	0.3
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	37	34	33	25	25	24	20	20	20	28	29	33	322
month average	35	31	32	24	25	24	20	20	20	27	28	31	318
month minimum	34	28	31	24	24	24	20	20	20	27	27	30	312
day Maximum	1.3	1.3	1.3	1.0	0.9	0.8	0.7	0.7	0.7	1.0	1.2	1.2	1.3
day average	1.1	1.1	1.0	0.8	0.8	0.8	0.7	0.7	0.7	0.9	0.9	1.0	0.9
day minimum	1.0	1.0	1.0	0.8	0.8	0.8	0.7	0.7	0.7	0.9	0.9	0.9	0.7
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

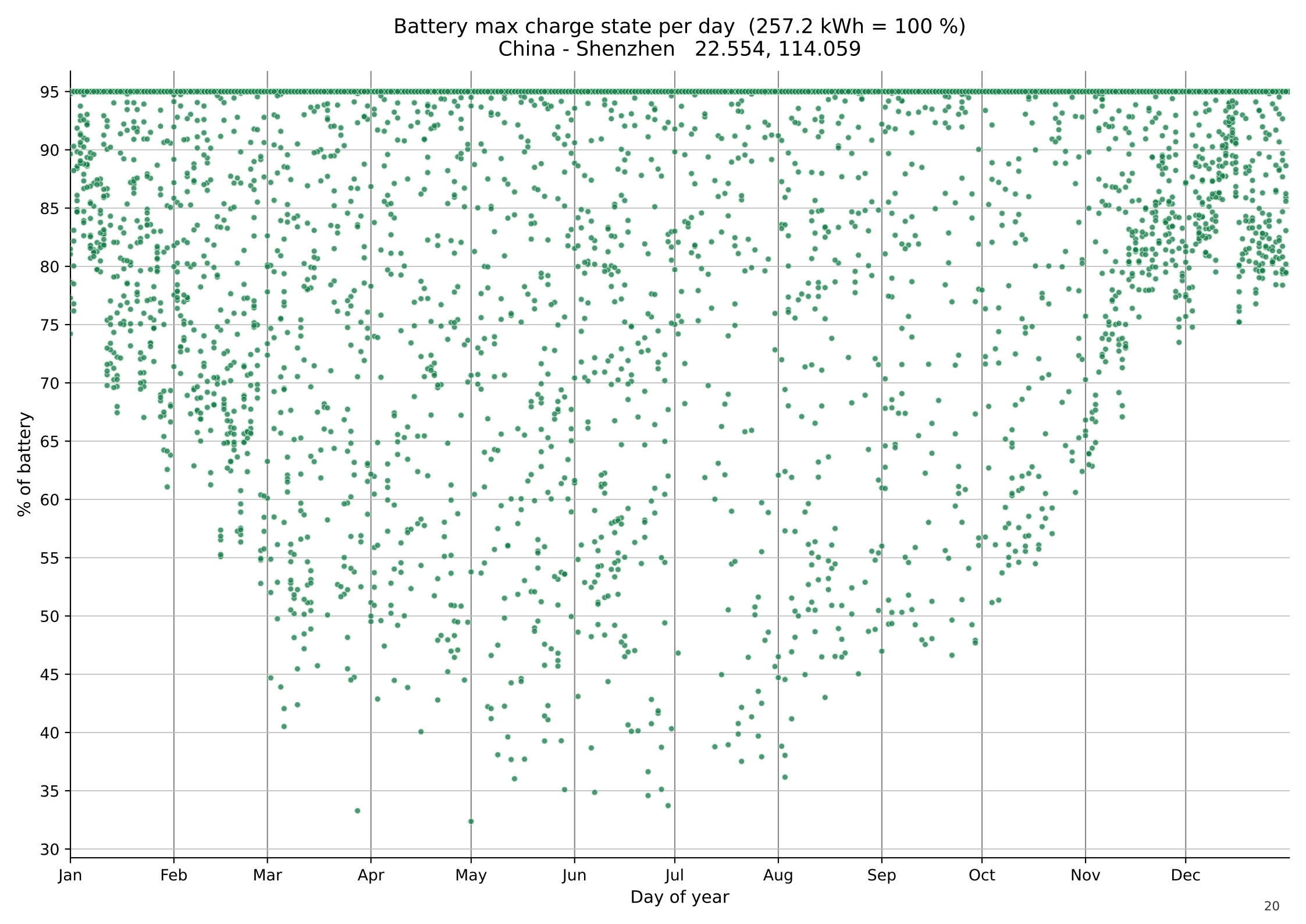
Heating, cooling and DHW are electricity. Direct electric is the part the heat pump could not cover.

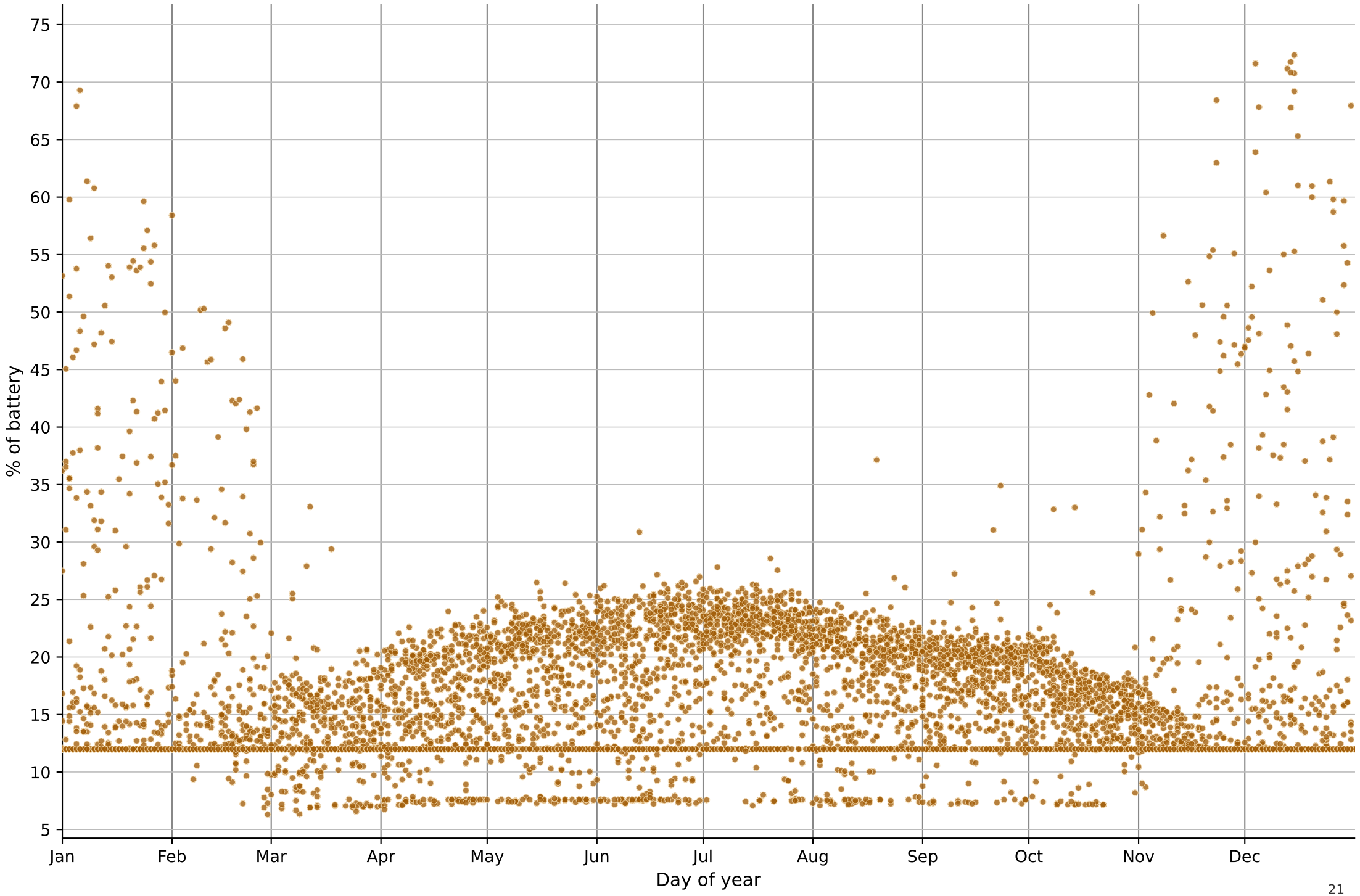
Battery
China - Shenzhen 22.554, 114.059

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All
Wasted													
month Maximum	20	54	184	690	851	637	909	732	671	67	5	0	3,400
month average	4	20	70	371	417	418	584	410	384	19	0	0	2,698
month minimum	0	0	10	85	55	138	266	65	70	0	0	0	1,720
day Maximum	19.6	25.4	30.9	141.6	138.6	120.4	115.5	110.7	114.7	15.8	4.7	0.0	141.6
day average	0.1	0.7	2.3	12.4	13.5	13.9	18.8	13.2	12.8	0.6	0.0	0.0	7.4
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	24	27	26	28	28	29	29	28	29	27	26	308
month average	22	21	24	25	26	25	28	26	26	27	24	23	296
month minimum	14	17	22	22	23	21	26	25	22	23	18	18	281
day Maximum	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9	1.0	1.0
day average	0.7	0.7	0.8	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.8	0.7	0.8
day minimum	0.1	0.1	0.1	0.3	0.2	0.1	0.3	0.1	0.1	0.1	0.1	0.1	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	2
month minimum	0	0	0	0	0	0	0	0	0	0	0	0	2
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	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.2
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
Discharge C													
month Maximum	0	0	0	0	0	0	0	0	0	0	0	0	2
month average	0	0	0	0	0	0	0	0	0	0	0	0	2
month minimum	0	0	0	0	0	0	0	0	0	0	0	0	2
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	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	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)
China - Shenzhen 22.554, 114.059
Full cycles
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
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Nov
Dec
Day of year


Battery max charge state per day (257.2 kWh = 100 %)
China - Shenzhen 22.554, 114.059
% of battery
95
90
85
80
75
70
65
60
55
50
45
40
35
30
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 %)
China - Shenzhen 22.554, 114.059
% of battery
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Day of year