

Scenario — PV

GEMINI-60-house-part-of-a-settlement Denmark - Aalborg 57.033, 9.844

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				

Location: My connection with Aalborg: here lives Dr. Franz Wilhelm Winterberg, a pioneer in lithium ion batteries for cars. He could have been a European founder of something like BYD and CATL with another mindset here. So I use Aalborg as the far north example.

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 2009-06-14 12:11 local (11:11 UTC) 59506 W 0.663 W/Wp of 89760 Wp.

Database gaps: 11 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, 2014-12-02, 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 Denmark - Aalborg 57.033, 9.844

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	6 °C 10 °C 14 °C 9 °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

Records 1-10 — contribution of each PV
Denmark - Aalborg 57.033, 9.844

PV	2009-06-14 11:11	2009-05-28 11:11	2021-06-12 11:11	2010-06-18 11:11	2009-06-13 11:11	2005-06-10 11:11	2023-05-17 11:11	2022-06-16 11:11	2012-06-21 11:11	2019-05-28 11:11
Roof East	13797	13572	13632	13665	13611	13589	13377	13548	13550	13393
Roof West	13347	13250	13203	13183	13179	13184	13089	13083	13046	13085
Terrace railing south	2618	2733	2591	2576	2590	2606	2882	2557	2553	2702
Terrace railing north	177	196	198	188	179	169	177	135	116	248
share central structure east part	14868	14672	14700	14711	14668	14653	14472	14604	14581	14454
share central strucure west part	14698	14551	14538	14529	14505	14501	14363	14429	14392	14338
Watt at record	59506	58973	58862	58853	58731	58702	58360	58355	58237	58220
Percent of installed peak	66.3	65.7	65.6	65.6	65.4	65.4	65.0	65.0	64.9	64.9

Hours at or above a share of the record
Denmark - Aalborg 57.033, 9.844

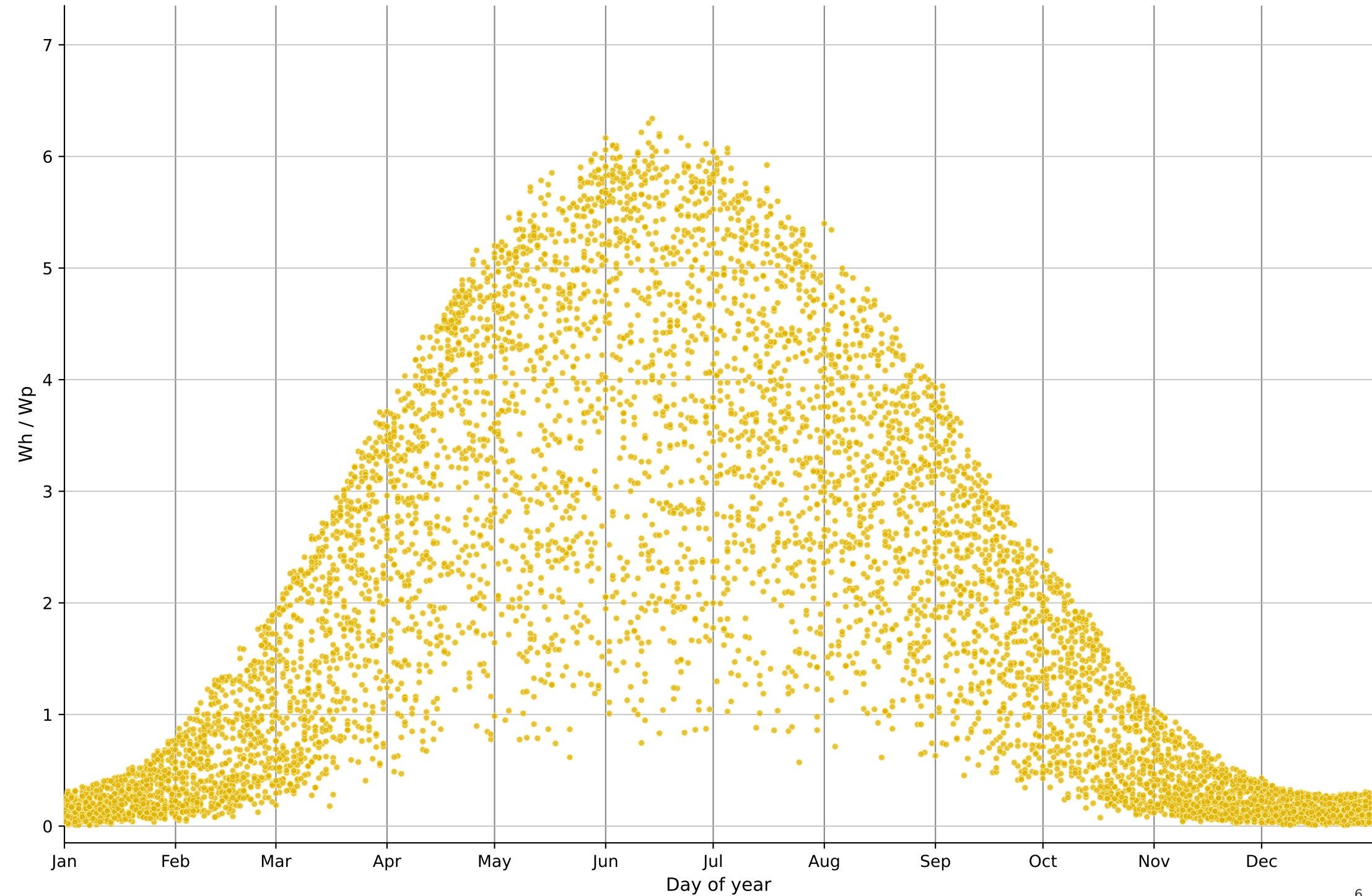
Of the record	Hours	Watts
98 %	8	58316 W
96 %	55	57125 W
94 %	166	55935 W
92 %	396	54745 W
90 %	703	53555 W

Records of each photovoltaic field
Denmark - Aalborg 57.033, 9.844

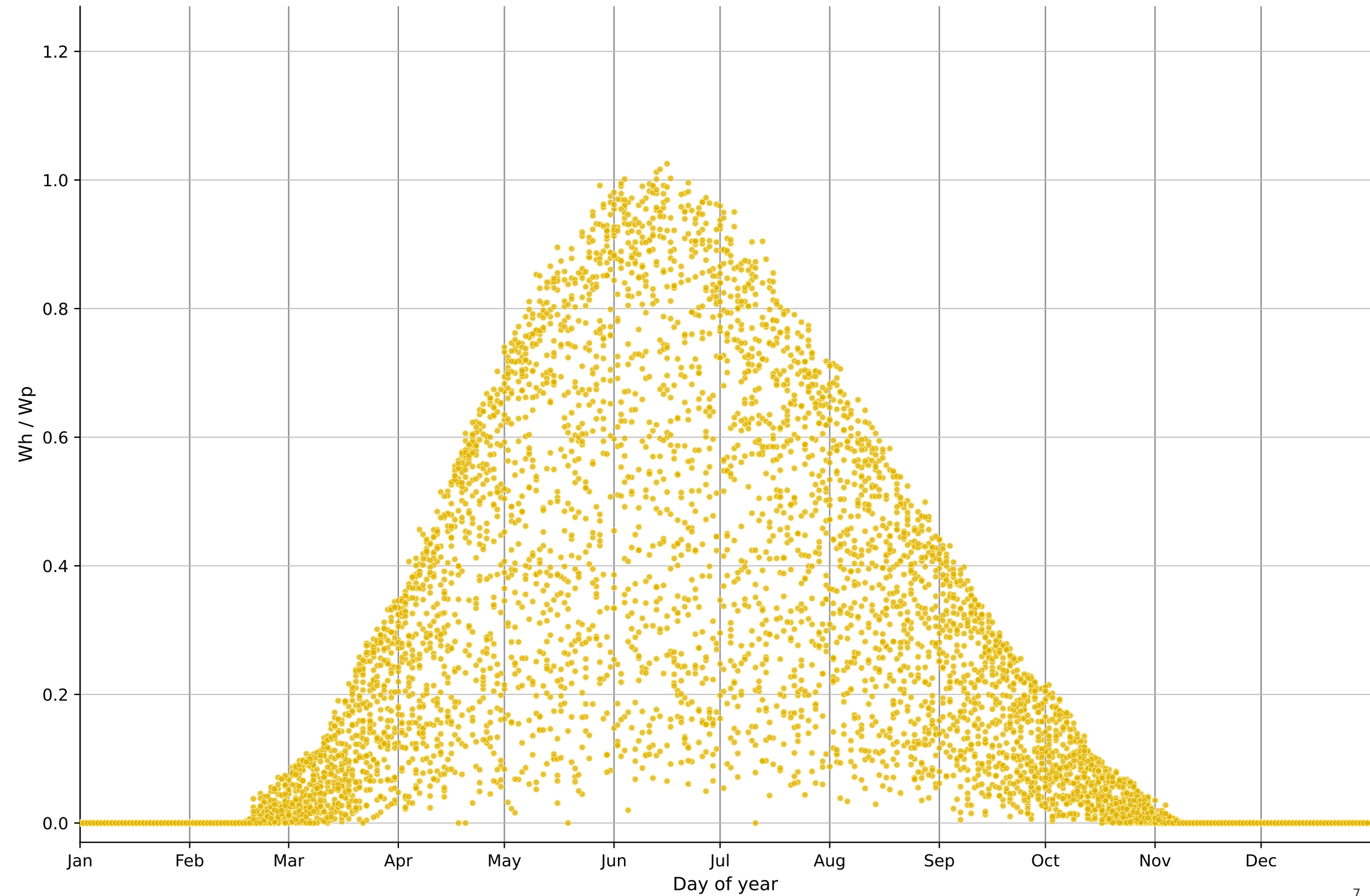
PV	Date	Watts	%	h ≥98%	h ≥96%	h ≥94%	h ≥92%	h ≥90%
Roof East	2019-05-28 09:11	15346	77.5	1	12	61	183	396
Roof West	2005-06-22 13:11	14988	75.7	20	72	188	405	699
Terrace railing south	2022-04-11 11:11	3466	75.0	5	9	21	64	131
Terrace railing north	2012-06-02 05:11	830	18.0	2	4	11	24	38
share central structure east part	2009-06-14 10:11	14991	73.3	9	58	163	368	651
share central strucure west part	2007-06-14 12:11	14908	72.9	17	77	196	409	742

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.

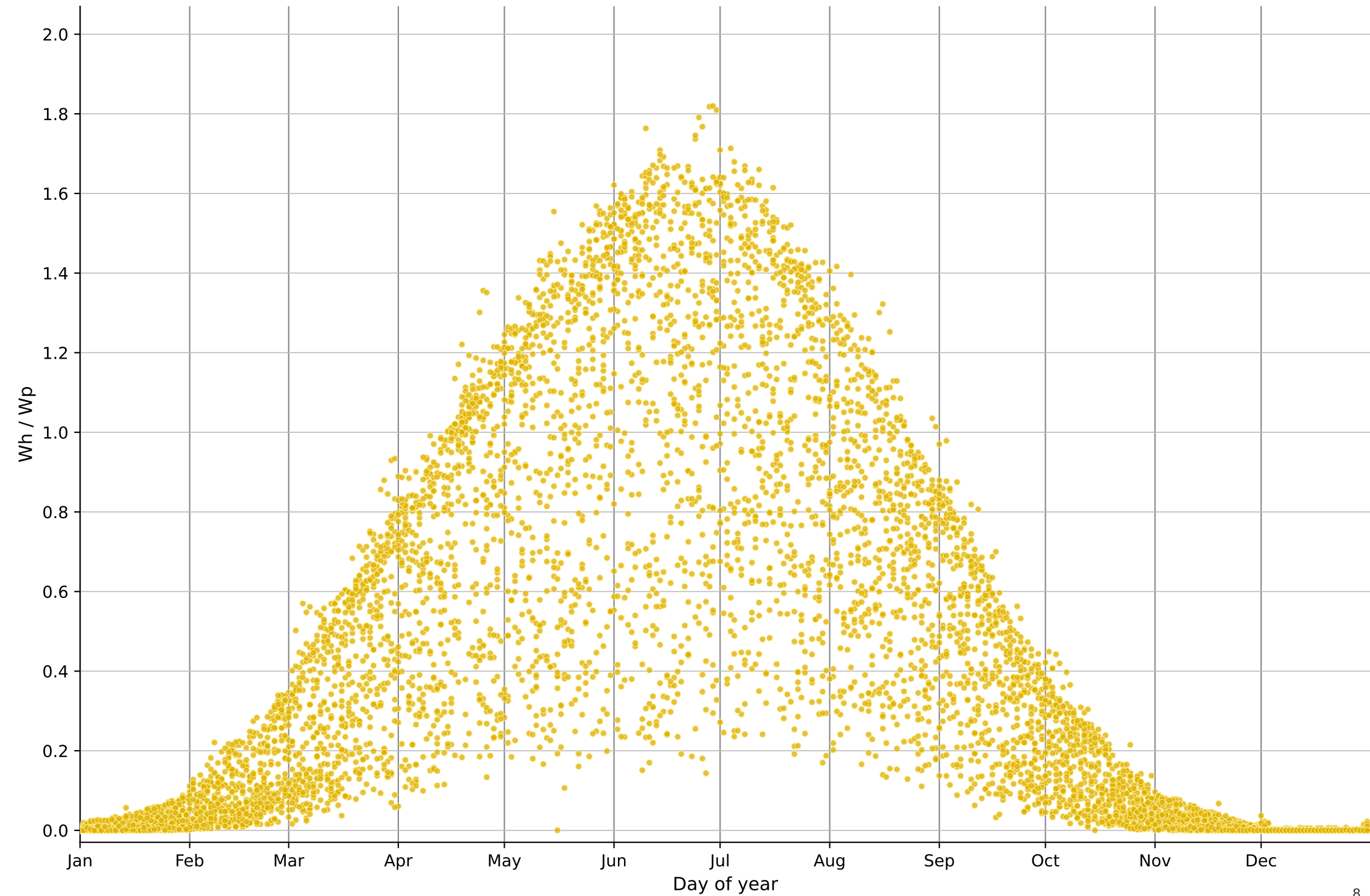
Yield distribution for each day — W_h / W_p of all PV together
Denmark - Aalborg 57.033, 9.844



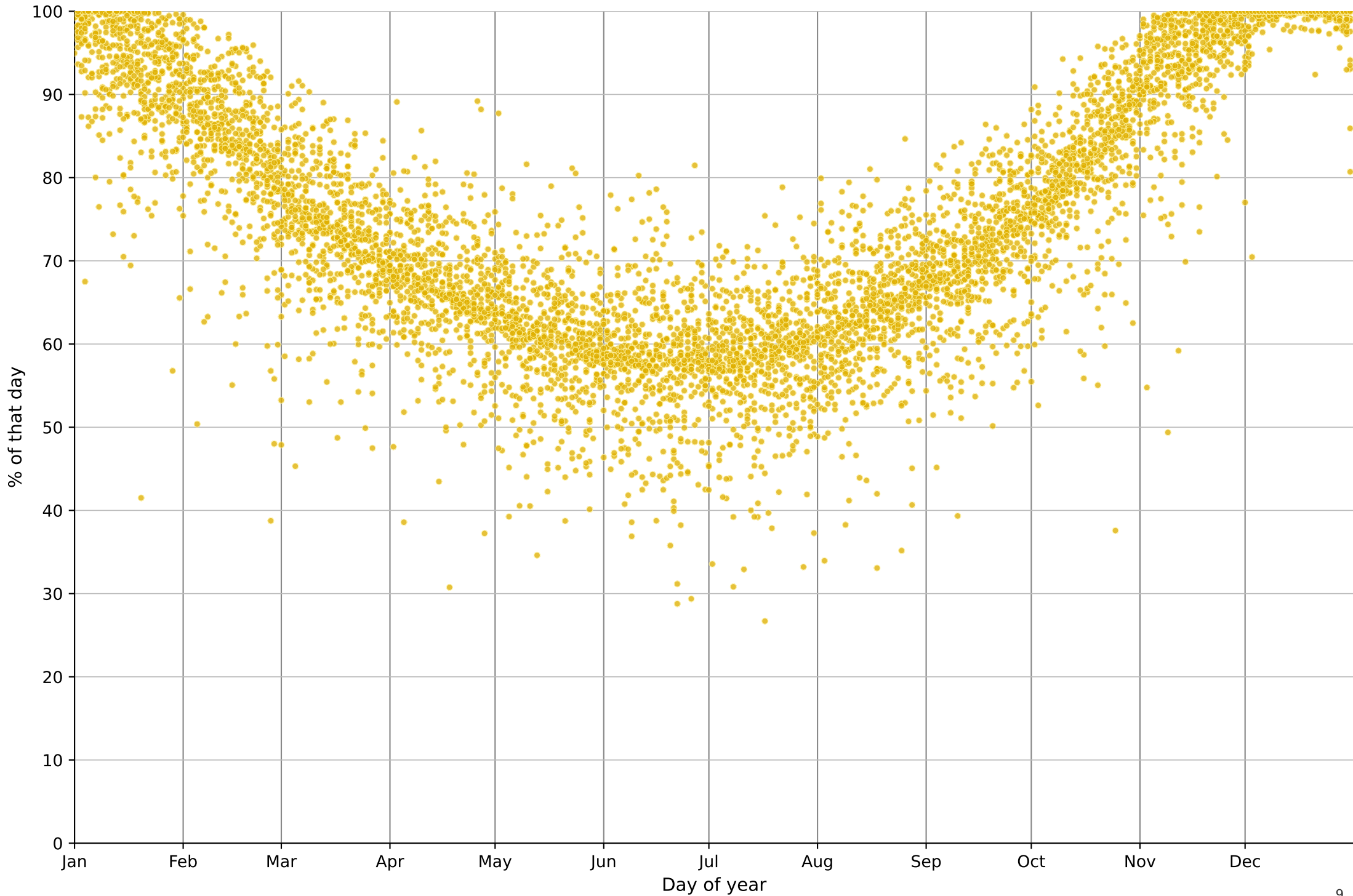
Yield distribution for each day — W_h / W_p of all PV together — 00:00-09:00
Denmark - Aalborg 57.033, 9.844



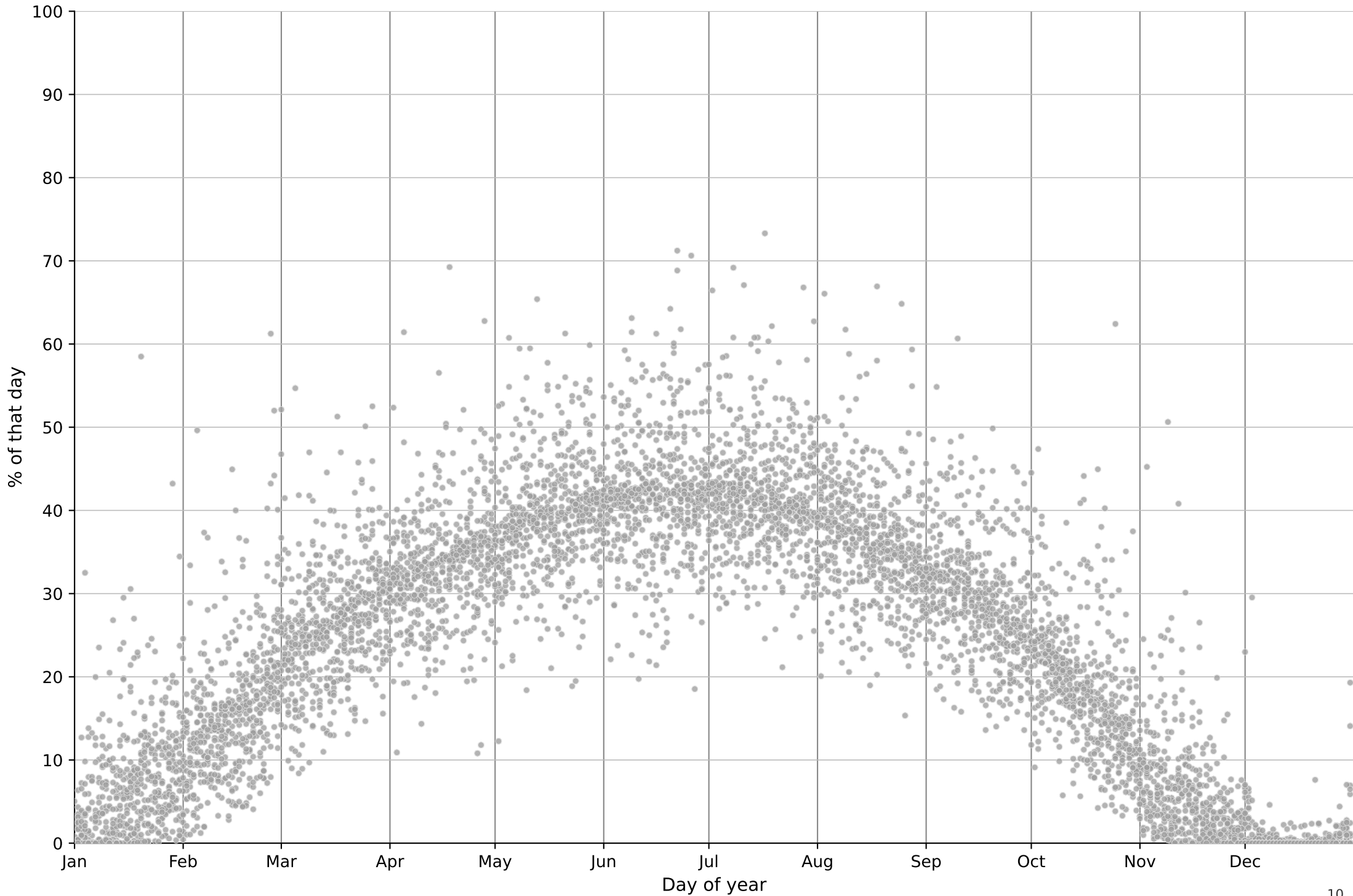
Yield distribution for each day — Wh / Wp of all PV together — 15:00-23:59
Denmark - Aalborg 57.033, 9.844



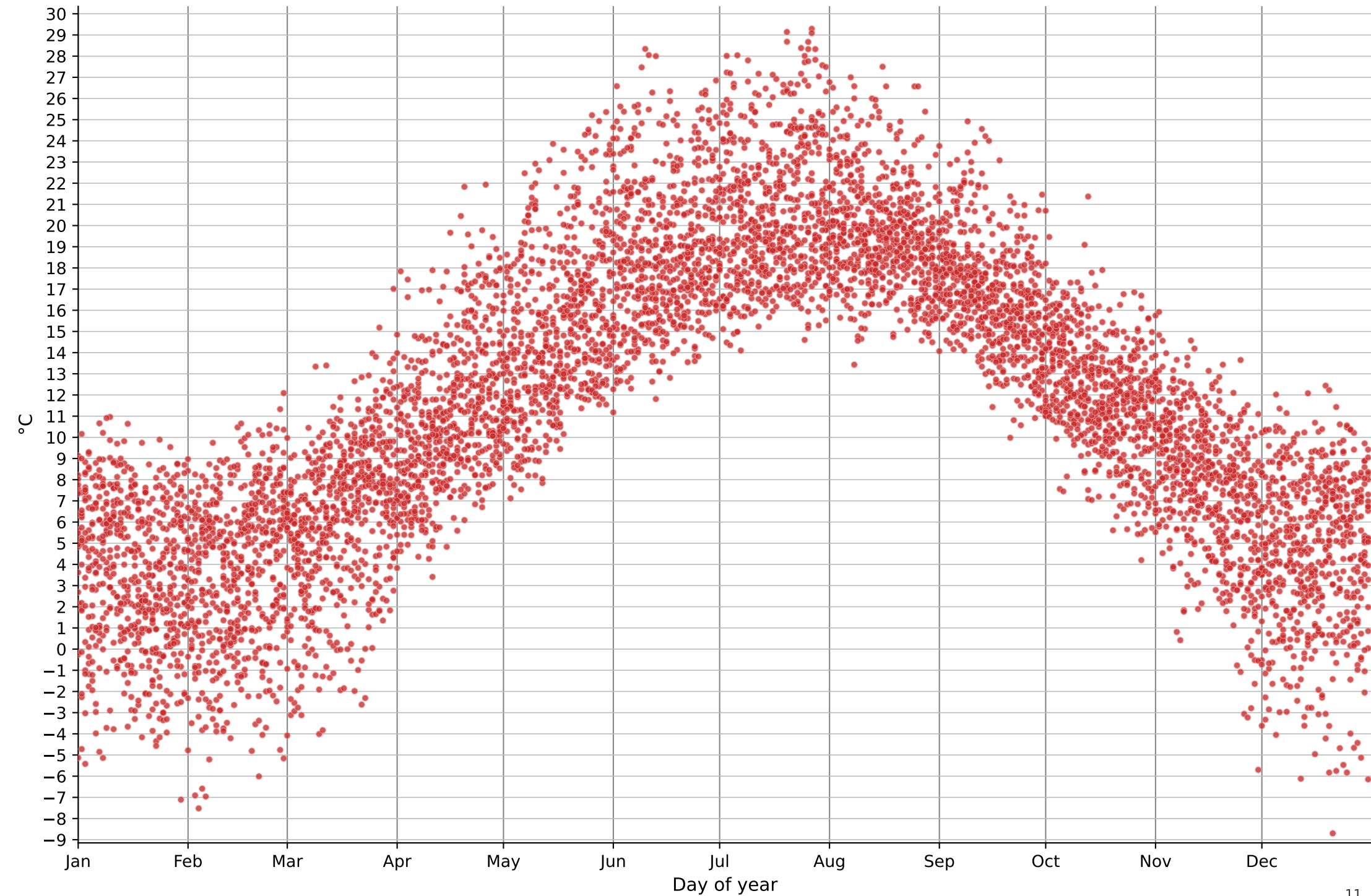
Share of the day's yield in 09:00-15:00 winter time
Denmark - Aalborg 57.033, 9.844



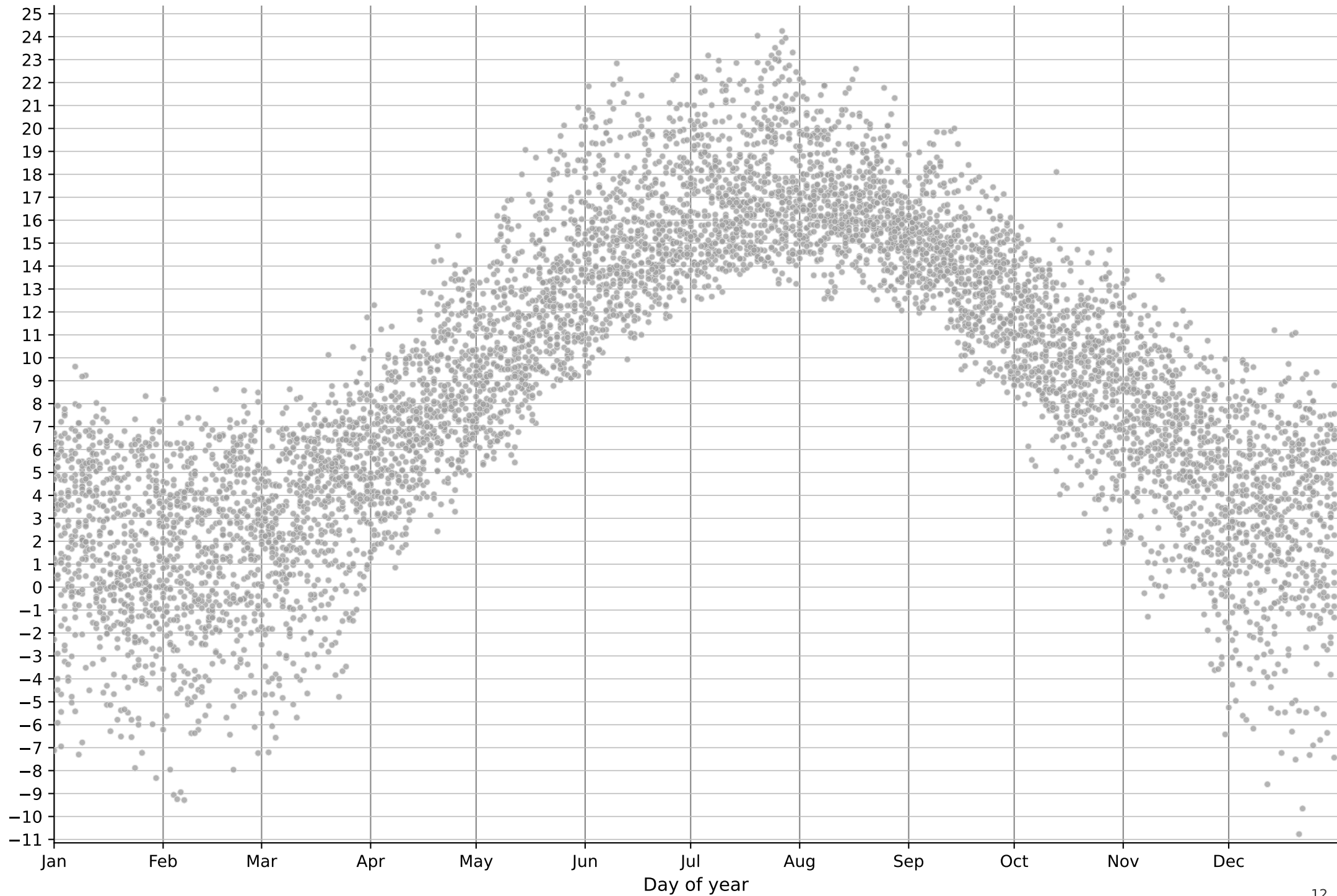
Share of the day's yield outside 09:00-15:00 winter time
Denmark - Aalborg 57.033, 9.844



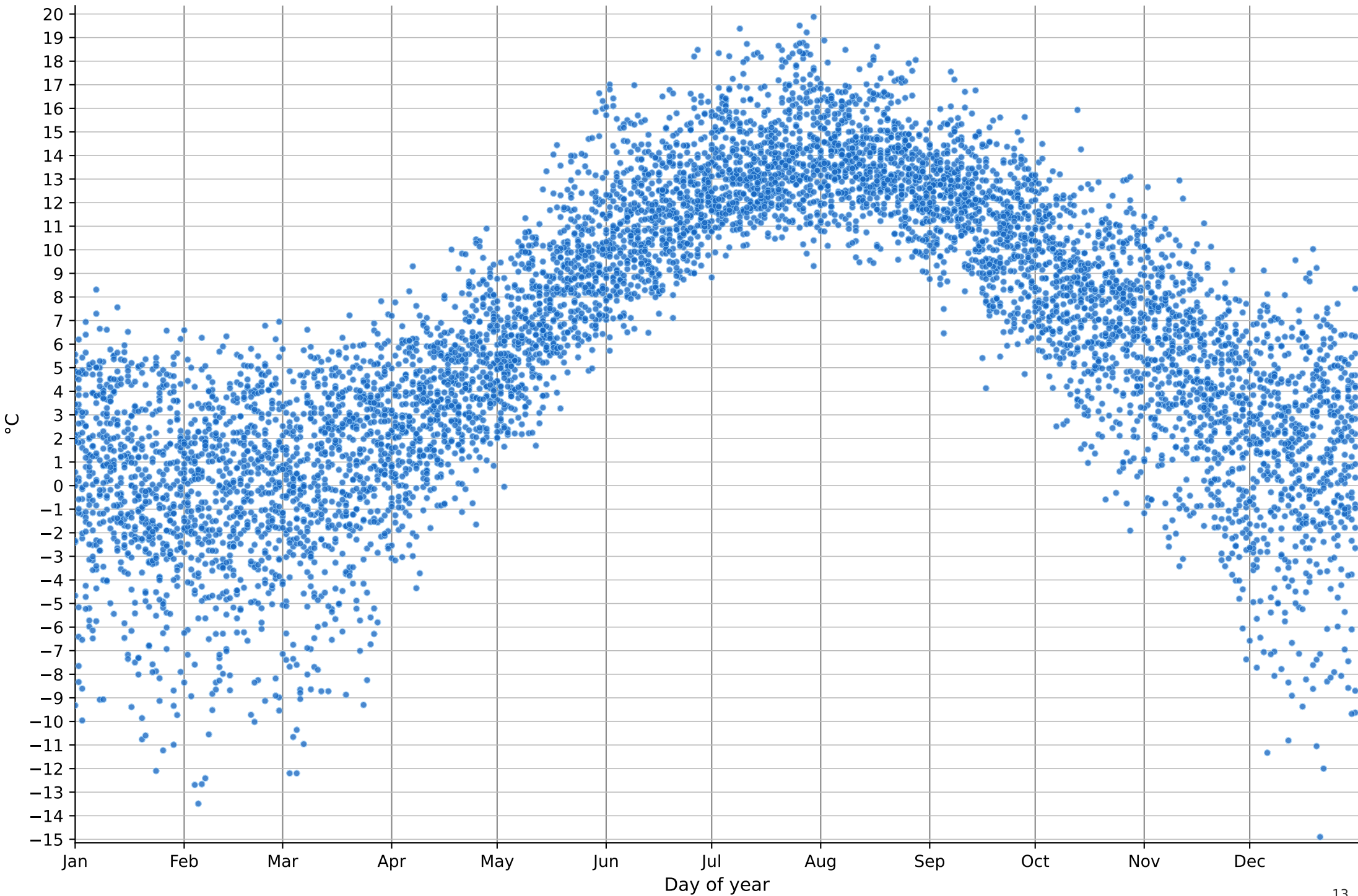
Highest temperature of each day
Denmark - Aalborg 57.033, 9.844



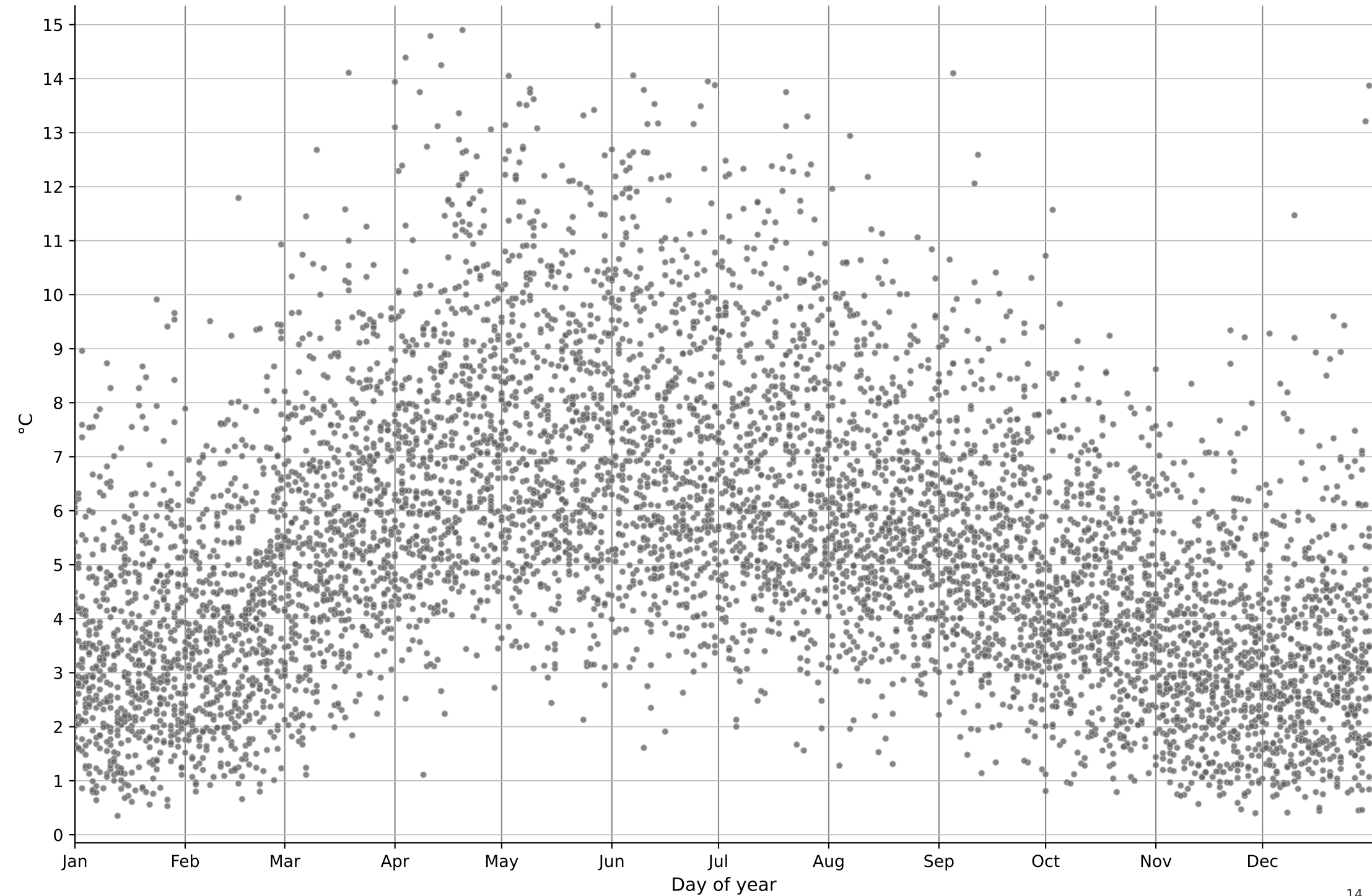
Average temperature of each day
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Lowest temperature of each day
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Difference between highest and lowest temperature of each day
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Monthly and yearly specific yield (kWh/kWp = Wh/Wp)
Denmark - Aalborg 57.033, 9.844

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 structure west 8°/90° 20460 Wp	All together
January	Maximum	11.11	10.83	2.07	2.07	10.32	10.19	9.73
	average	8.19	8.04	1.74	1.74	7.77	7.70	7.29
	minimum	4.82	4.60	1.20	1.20	4.61	4.52	4.28
February	Maximum	31.22	28.54	4.83	4.83	29.32	28.16	26.78
	average	21.53	20.75	4.33	4.33	20.82	20.49	19.19
	minimum	14.11	13.63	3.41	3.41	13.70	13.52	12.72
March	Maximum	78.83	84.19	12.49	12.16	80.27	82.48	73.94
	average	58.66	59.23	11.00	10.65	58.74	59.04	53.96
	minimum	46.83	47.12	8.75	8.44	46.90	46.99	43.29
April	Maximum	118.38	117.34	60.62	20.93	119.49	119.10	110.39
	average	99.55	99.94	52.13	17.76	101.23	101.50	93.81
	minimum	78.09	74.32	40.57	15.32	78.07	76.65	72.00
May	Maximum	152.34	158.12	100.38	28.89	158.19	161.07	147.53
	average	124.58	125.92	78.71	26.15	128.29	128.96	119.29
	minimum	98.70	103.74	63.04	23.45	103.42	106.66	97.60
June	Maximum	148.62	156.01	88.28	29.86	154.39	157.85	143.35
	average	128.13	132.18	75.42	26.89	133.05	134.90	123.77
	minimum	113.45	112.76	65.69	23.32	116.09	116.11	107.71
July	Maximum	150.83	157.51	95.23	29.29	157.98	160.83	146.74
	average	122.26	123.60	73.34	27.03	125.93	126.72	116.99
	minimum	103.31	103.85	58.20	22.37	106.44	106.36	98.95
August	Maximum	108.52	109.75	67.91	24.62	111.50	112.06	103.63
	average	98.93	98.13	58.62	22.25	100.48	100.36	93.41
	minimum	84.39	85.69	49.73	19.88	86.87	87.76	81.12
September	Maximum	72.85	75.72	22.42	14.79	73.25	74.47	68.02
	average	66.27	66.56	19.83	13.39	66.62	66.78	61.42
	minimum	57.77	57.87	16.26	12.40	58.81	58.44	54.05
October	Maximum	39.37	47.35	7.37	7.37	40.70	43.99	39.09
	average	33.62	33.44	6.56	6.56	33.04	32.98	30.52
	minimum	26.13	25.59	4.75	4.75	25.68	25.57	23.58
November	Maximum	16.12	15.07	2.78	2.78	14.89	14.27	13.70
	average	10.88	10.93	2.29	2.29	10.53	10.55	9.85
	minimum	7.80	7.90	1.87	1.87	7.57	7.72	7.20
December	Maximum	6.80	6.30	1.24	1.24	6.21	5.94	5.79
	average	5.07	5.05	1.03	1.03	4.80	4.78	4.52
	minimum	3.10	3.37	0.70	0.70	3.12	3.24	2.95
All years	Maximum	820.4	828.1	422.8	167.2	839.2	844.0	776.3
	average	777.7	783.8	385.0	160.1	791.3	794.8	734.0
	minimum	723.9	729.9	356.0	149.9	741.9	743.0	687.5

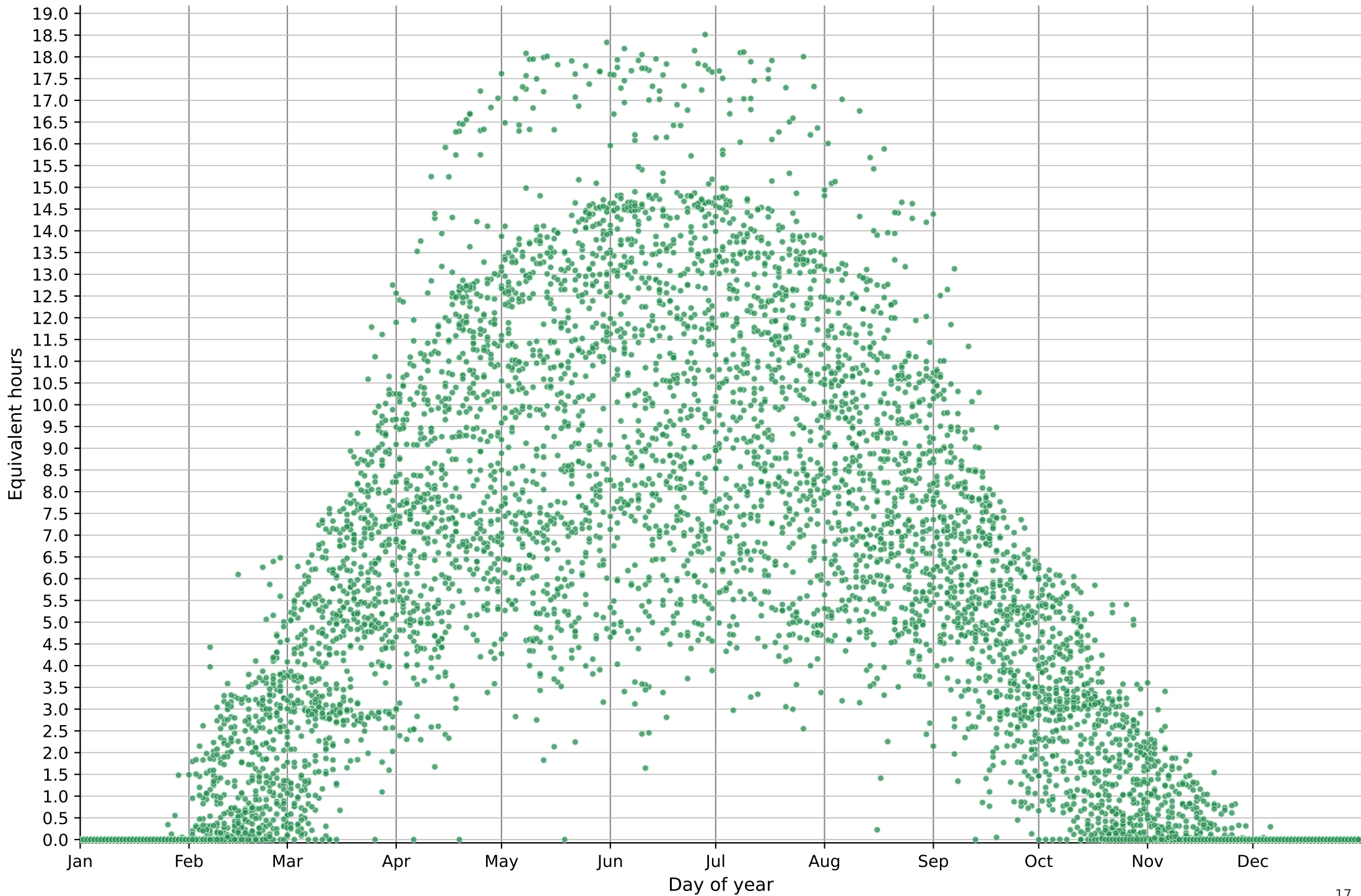
Highest combined yield hour: 2009-06-14 11:11 UTC 59505.6 W (0.663 W/Wp) of 89760 Wp installed. Use this hour to size battery charge power.

Monthly and yearly total yield (kWh)
Denmark - Aalborg 57.033, 9.844

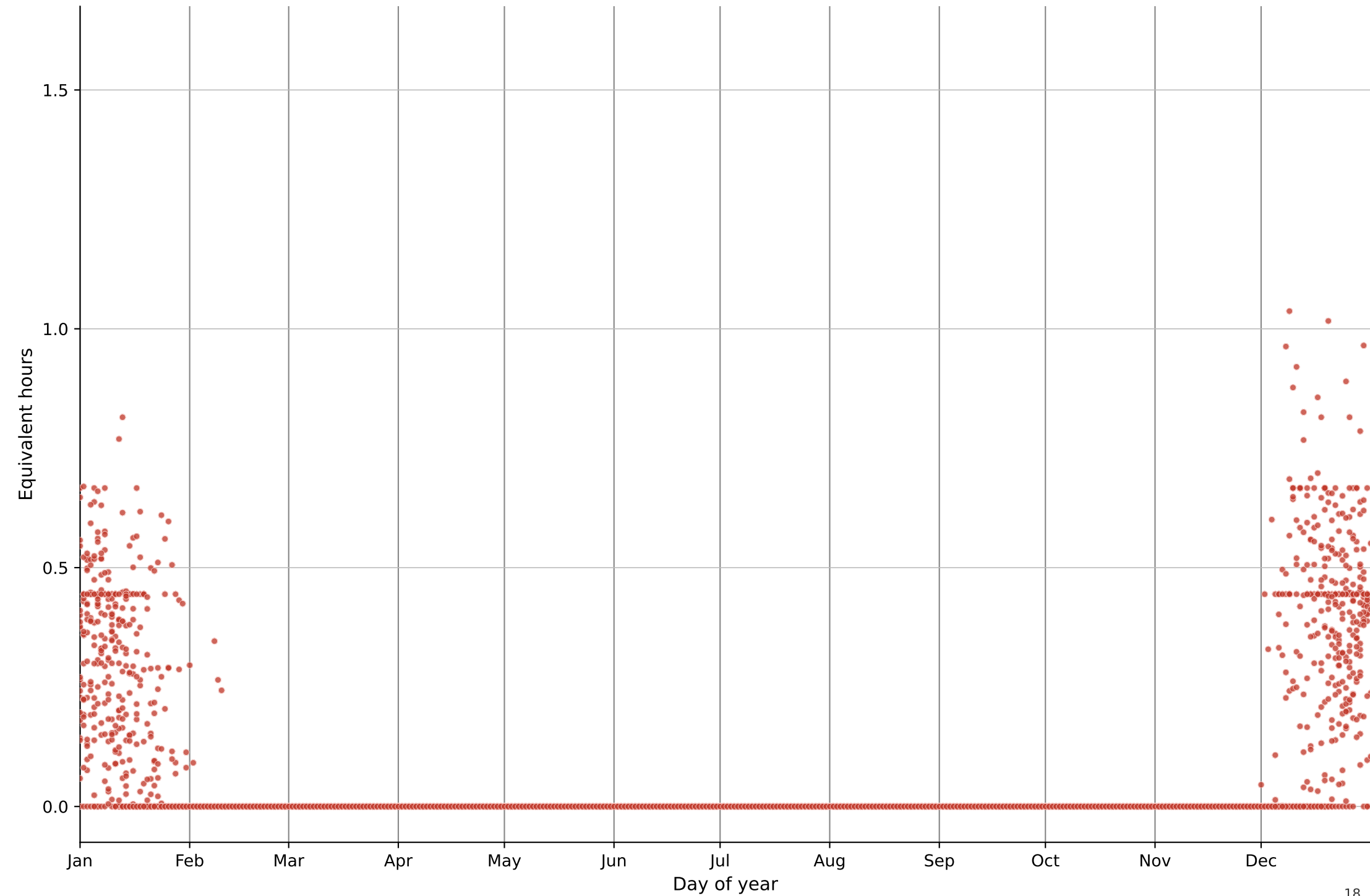
Month / year		Roof East 22°/-90° 19800 Wp	Roof West 22°/-90° 19800 Wp	Terrace railing south 90°/0° 4620 Wp	Terrace railing north 90°/180° 4620 Wp	Share central structure east 8°/-90° 20460 Wp	Share central structure west 8°/90° 20460 Wp	All together
January	Maximum	219.9	214.4	9.6	9.6	211.2	208.5	873.2
	average	162.1	159.2	8.1	8.1	159.1	157.6	654.1
	minimum	95.4	91.2	5.6	5.6	94.2	92.4	384.3
February	Maximum	618.1	565.0	22.3	22.3	599.8	576.2	2403.8
	average	426.2	410.9	20.0	20.0	425.9	419.2	1722.2
	minimum	279.4	270.0	15.7	15.7	280.2	276.5	1141.6
March	Maximum	1560.8	1667.0	57.7	56.2	1642.3	1687.5	6637.0
	average	1161.4	1172.7	50.8	49.2	1201.8	1207.9	4843.8
	minimum	927.2	933.0	40.4	39.0	959.5	961.4	3885.7
April	Maximum	2343.9	2323.3	280.1	96.7	2444.7	2436.8	9908.5
	average	1971.1	1978.8	240.8	82.1	2071.1	2076.7	8420.6
	minimum	1546.3	1471.6	187.4	70.8	1597.2	1568.2	6462.6
May	Maximum	3016.2	3130.8	463.8	133.5	3236.6	3295.6	13242.2
	average	2466.6	2493.2	363.7	120.8	2624.7	2638.6	10707.6
	minimum	1954.2	2054.0	291.3	108.4	2116.0	2182.4	8760.8
June	Maximum	2942.7	3089.1	407.9	137.9	3158.8	3229.6	12867.3
	average	2537.1	2617.1	348.4	124.2	2722.2	2760.1	11109.2
	minimum	2246.3	2232.7	303.5	107.7	2375.2	2375.7	9668.3
July	Maximum	2986.4	3118.7	439.9	135.3	3232.3	3290.6	13171.2
	average	2420.8	2447.4	338.8	124.9	2576.6	2592.7	10501.1
	minimum	2045.5	2056.1	268.9	103.4	2177.8	2176.1	8881.5
August	Maximum	2148.8	2173.1	313.7	113.7	2281.2	2292.8	9301.4
	average	1958.8	1943.0	270.8	102.8	2055.8	2053.5	8384.7
	minimum	1670.9	1696.7	229.7	91.9	1777.4	1795.5	7281.6
September	Maximum	1442.5	1499.3	103.6	68.3	1498.8	1523.7	6105.3
	average	1312.1	1317.9	91.6	61.8	1363.1	1366.3	5512.8
	minimum	1143.8	1145.9	75.1	57.3	1203.3	1195.7	4851.8
October	Maximum	779.5	937.6	34.0	34.0	832.8	900.0	3509.1
	average	665.7	662.1	30.3	30.3	675.9	674.8	2739.2
	minimum	517.3	506.7	21.9	21.9	525.4	523.1	2116.4
November	Maximum	319.2	298.3	12.8	12.8	304.7	291.9	1229.8
	average	215.5	216.5	10.6	10.6	215.4	215.9	884.5
	minimum	154.4	156.3	8.6	8.6	154.9	158.0	646.2
December	Maximum	134.7	124.8	5.7	5.7	127.1	121.4	519.3
	average	100.3	100.0	4.8	4.8	98.2	97.8	405.8
	minimum	61.4	66.8	3.2	3.2	63.9	66.3	264.8
All years	Maximum	16243	16396	1953	773	17170	17268	69682
	average	15398	15519	1779	740	16190	16261	65885
	minimum	14333	14452	1645	692	15179	15201	61706

Highest combined yield hour: 2009-06-14 11:11 UTC 59505.6 W (0.663 W/Wp) of 89760 Wp installed. Use this hour to size battery charge power.

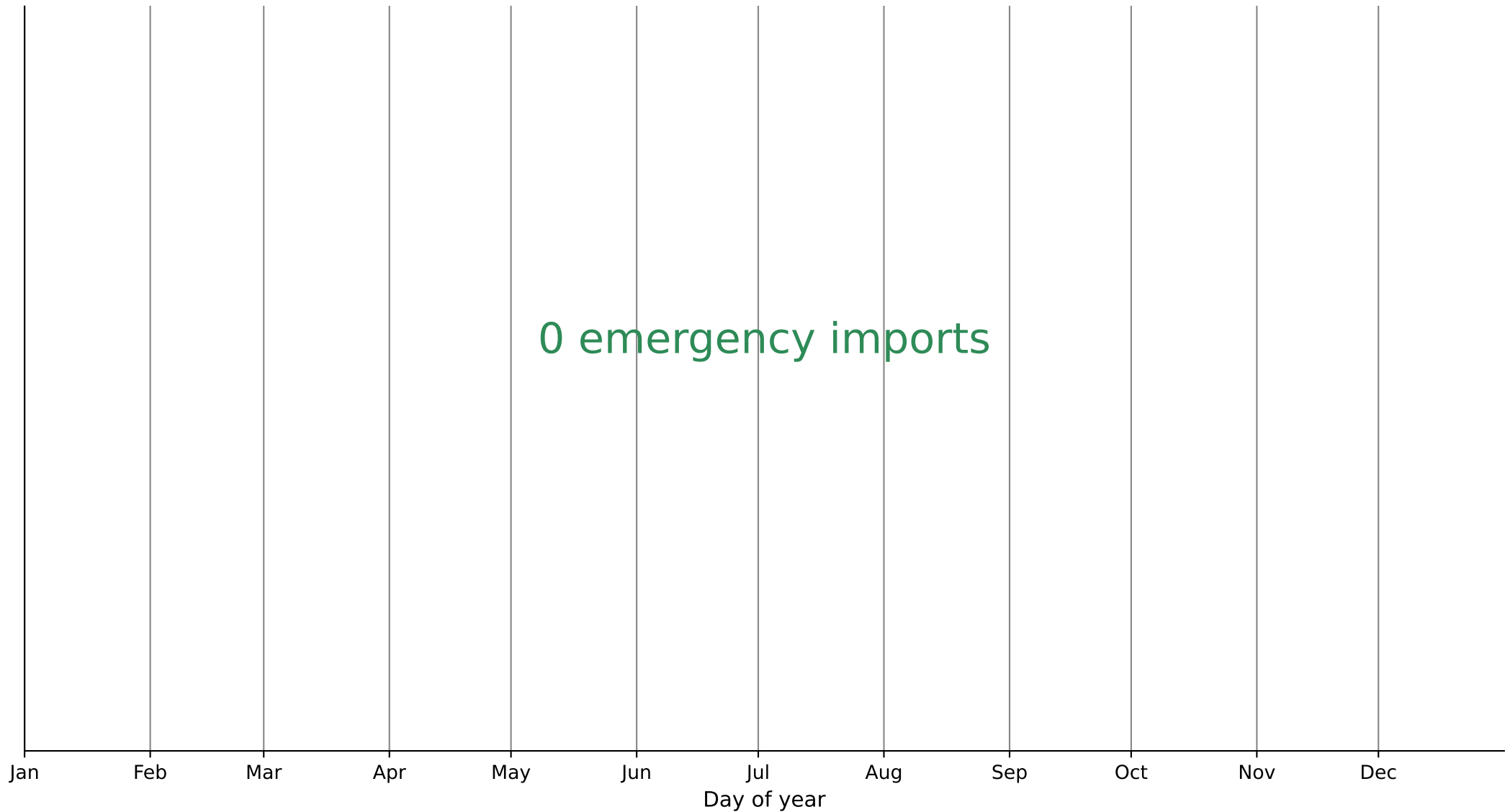
Export energy as equivalent hours (kWh / grid kW)
Denmark - Aalborg 57.033, 9.844



Import energy as equivalent hours (kWh / grid kW)
Denmark - Aalborg 57.033, 9.844



Emergency import hours: 0 days with an emergency: 0
Denmark - Aalborg 57.033, 9.844



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
Denmark - Aalborg 57.033, 9.844

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All
Export to grid													
month Maximum	69	1515	5614	8089	10056	9683	10197	7664	5003	2647	495	9	53885
month average	4	926	3945	6902	8352	8591	8480	7050	4470	1908	231	0	50860
month minimum	0	438	3051	5259	6902	7642	7319	6056	3884	1329	10	0	47236
day Maximum	40.0	175.0	344.3	464.8	495.0	499.8	489.0	459.7	354.4	170.4	97.4	7.9	499.8
day average	0.1	32.8	127.3	230.1	269.4	286.4	273.6	227.4	149.0	61.5	7.7	0.0	139.3
day minimum	0.0	0.0	0.0	0.0	0.0	44.4	68.8	6.1	0.0	0.0	0.0	0.0	0.0
Import from grid													
month Maximum	346	23	0	0	0	0	0	0	0	0	0	342	554
month average	152	2	0	0	0	0	0	0	0	0	0	201	356
month minimum	56	0	0	0	0	0	0	0	0	0	0	53	192
day Maximum	22.0	9.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	28.0	28.0
day average	4.9	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.5	1.0
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	724	649	698	615	596	545	531	525	538	616	642	722	7296
month average	674	615	661	596	575	519	512	515	524	593	610	658	7051
month minimum	640	588	637	570	532	497	492	505	502	573	592	626	6934
day Maximum	24.6	24.9	24.3	22.3	22.0	22.6	20.4	20.0	19.3	21.5	23.9	25.2	25.2
day average	21.7	21.8	21.3	19.9	18.5	17.3	16.5	16.6	17.5	19.1	20.3	21.2	19.3
day minimum	16.0	19.8	18.6	15.8	15.3	15.3	15.1	15.1	15.5	16.4	17.8	18.7	15.1

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
Denmark - Aalborg 57.033, 9.844

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All
Export													
month Maximum	10	284	893	933	996	955	1009	933	793	494	98	2	6632
month average	1	174	672	851	894	890	909	869	708	365	46	0	6377
month minimum	0	82	529	735	813	839	813	779	622	255	2	0	6073
day Maximum	4.8	36.5	45.9	48.2	49.4	48.8	48.2	48.9	41.8	35.6	21.4	1.7	49.4
day average	0.0	6.2	21.7	28.4	28.8	29.7	29.3	28.0	23.6	11.8	1.5	0.0	17.5
day minimum	0.0	0.0	0.0	0.0	0.0	7.6	6.9	0.7	0.0	0.0	0.0	0.0	0.0
Import													
month Maximum	81	6	0	0	0	0	0	0	0	0	0	80	130
month average	36	0	0	0	0	0	0	0	0	0	0	48	84
month minimum	13	0	0	0	0	0	0	0	0	0	0	13	45
day Maximum	5.2	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.0	7.0
day average	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	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
Peak grid fee													
month Maximum	13	13	0	0	0	0	0	0	0	0	0	13	38
month average	13	1	0	0	0	0	0	0	0	0	0	13	27
month minimum	13	0	0	0	0	0	0	0	0	0	0	13	25
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	94	18	0	0	0	0	0	0	0	0	0	93	155
month average	48	2	0	0	0	0	0	0	0	0	0	60	110
month minimum	25	0	0	0	0	0	0	0	0	0	0	25	70
day Maximum	5.2	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.0	7.0
day average	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	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
Balance													
month Maximum	-25	284	893	933	996	955	1009	933	793	494	98	-23	6515
month average	-48	172	672	851	894	890	909	869	708	365	46	-60	6267
month minimum	-94	82	529	735	813	839	813	779	622	255	2	-93	5969
day Maximum	4.8	36.5	45.9	48.2	49.4	48.8	48.2	48.9	41.8	35.6	21.4	1.7	49.4
day average	-1.1	6.2	21.7	28.4	28.8	29.7	29.3	28.0	23.6	11.8	1.5	-1.5	17.2
day minimum	-5.2	-2.2	0.0	0.0	0.0	7.6	6.9	0.7	0.0	0.0	0.0	-7.0	-7.0

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
Denmark - Aalborg 57.033, 9.844

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All
Export total													
month Maximum	69	1515	5614	8089	10056	9683	10197	7664	5003	2647	495	9	53885
month average	4	926	3945	6902	8352	8591	8480	7050	4470	1908	231	0	50860
month minimum	0	438	3051	5259	6902	7642	7319	6056	3884	1329	10	0	47236
day Maximum	40.0	175.0	344.3	464.8	495.0	499.8	489.0	459.7	354.4	170.4	97.4	7.9	499.8
day average	0.1	32.8	127.3	230.1	269.4	286.4	273.6	227.4	149.0	61.5	7.7	0.0	139.3
day minimum	0.0	0.0	0.0	0.0	0.0	44.4	68.8	6.1	0.0	0.0	0.0	0.0	0.0
Export during high price hours													
month Maximum	63	1302	3877	3514	3290	3044	3238	3491	3617	2405	490	9	25971
month average	3	806	3084	3297	3010	2882	3051	3322	3265	1772	225	0	24718
month minimum	0	359	2396	3121	2782	2745	2901	3158	2833	1216	10	0	24017
day Maximum	39.3	159.9	158.4	156.7	148.3	153.3	146.7	154.3	157.1	160.7	97.4	7.9	160.7
day average	0.1	28.6	99.5	109.9	97.1	96.1	98.4	107.2	108.8	57.2	7.5	0.0	67.7
day minimum	0.0	0.0	0.0	0.0	0.0	36.0	31.8	6.1	0.0	0.0	0.0	0.0	0.0
Export during medium price hours													
month Maximum	6	213	1718	4315	5933	5776	5932	3982	1738	242	16	0	25551
month average	0	120	856	3275	4605	4867	4765	3457	1186	136	6	0	23272
month minimum	0	61	297	1949	3326	4079	3918	2497	630	82	1	0	20550
day Maximum	3.4	22.1	216.4	307.7	319.7	321.0	319.7	309.0	223.8	35.6	5.1	0.0	321.0
day average	0.0	4.3	27.6	109.2	148.5	162.2	153.7	111.5	39.5	4.4	0.2	0.0	63.7
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	0	0	22	568	1276	1198	1127	513	55	0	0	0	3985
month average	0	0	5	331	737	842	665	271	19	0	0	0	2870
month minimum	0	0	0	86	287	636	361	66	0	0	0	0	2079
day Maximum	0.0	0.0	18.7	67.0	101.1	99.1	98.1	73.8	27.0	0.0	0.0	0.0	101.1
day average	0.0	0.0	0.2	11.0	23.8	28.1	21.4	8.7	0.6	0.0	0.0	0.0	7.9
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
Denmark - Aalborg 57.033, 9.844

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All
Heating													
month Maximum	228	199	202	142	109	77	56	50	76	126	167	231	1567
month average	178	164	165	124	90	53	38	41	63	104	135	167	1323
month minimum	143	140	142	100	52	33	21	32	43	86	118	135	1214
day Maximum	8.6	8.9	8.3	6.5	6.5	6.9	5.0	4.7	3.8	5.7	8.1	9.4	9.4
day average	5.7	5.8	5.3	4.1	2.9	1.8	1.2	1.3	2.1	3.4	4.5	5.4	3.6
day minimum	0.0	3.8	2.8	0.2	0.0	0.0	0.0	0.0	0.2	0.9	2.1	3.0	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	62	58	62	53	53	48	41	41	42	56	55	57	623
month average	62	57	62	52	51	46	39	40	41	55	55	57	615
month minimum	62	56	62	50	46	43	37	39	39	53	54	57	605
day Maximum	2.0	2.0	2.0	1.8	1.8	1.7	1.4	1.4	1.5	1.8	1.8	1.8	2.0
day average	2.0	2.0	2.0	1.7	1.6	1.5	1.3	1.3	1.4	1.8	1.8	1.8	1.7
day minimum	2.0	2.0	1.8	1.5	1.3	1.3	1.1	1.1	1.2	1.5	1.6	1.8	1.1
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

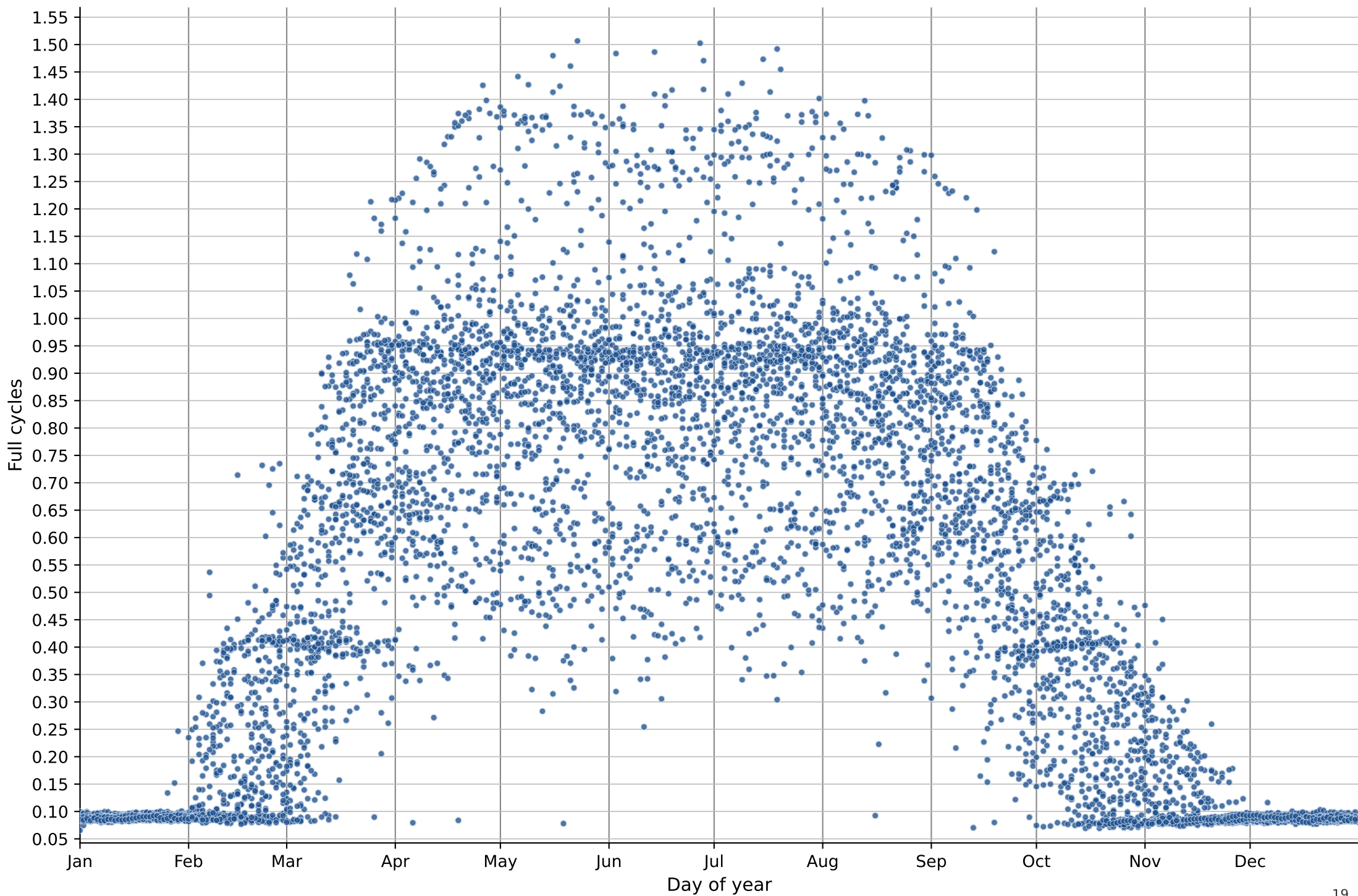
Heating, cooling and DHW are electricity. Direct electric is the part the heat pump could not cover.

Battery
Denmark - Aalborg 57.033, 9.844

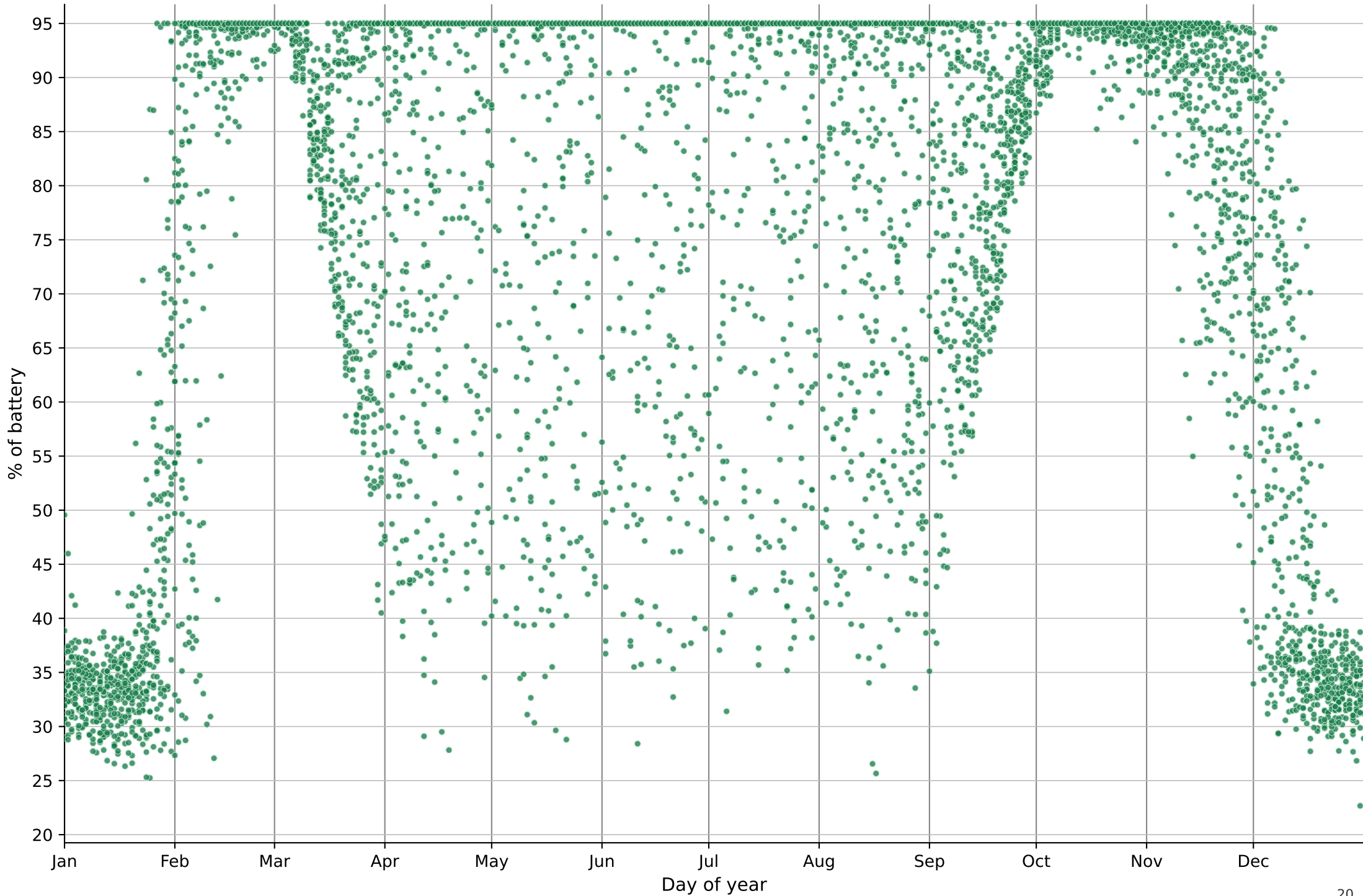
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All
Wasted													
month Maximum	0	0	8	739	2094	2180	1938	617	36	0	0	0	6219
month average	0	0	2	413	1207	1451	947	292	11	0	0	0	4324
month minimum	0	0	0	134	747	915	314	98	0	0	0	0	3115
day Maximum	0.0	0.0	4.2	126.1	190.3	207.6	184.2	107.9	28.5	0.0	0.0	0.0	207.6
day average	0.0	0.0	0.1	13.8	38.9	48.4	30.6	9.4	0.4	0.0	0.0	0.0	11.8
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
Full cycles													
month Maximum	3.07	7.78	23.91	27.02	29.28	27.74	28.76	26.91	21.63	11.95	4.53	2.95	200.66
month average	2.77	5.73	17.84	24.93	26.87	26.17	27.22	25.84	19.51	9.64	3.41	2.70	192.62
month minimum	2.62	3.89	14.57	21.89	24.72	24.41	24.81	23.10	16.77	7.54	2.50	2.56	184.57
day Maximum	0.25	0.73	1.22	1.43	1.51	1.50	1.49	1.40	1.26	0.78	0.48	0.12	1.51
day average	0.09	0.20	0.58	0.83	0.87	0.87	0.88	0.83	0.65	0.31	0.11	0.09	0.53
day minimum	0.07	0.08	0.08	0.08	0.08	0.25	0.30	0.09	0.07	0.07	0.07	0.08	0.07
Charge C													
month Maximum	0.05	0.11	0.17	0.21	0.22	0.22	0.21	0.20	0.18	0.13	0.07	0.03	1.73
month average	0.05	0.10	0.15	0.20	0.21	0.21	0.20	0.19	0.17	0.12	0.06	0.03	1.69
month minimum	0.03	0.08	0.14	0.19	0.20	0.20	0.19	0.18	0.15	0.10	0.04	0.03	1.65
day Maximum	0.05	0.11	0.17	0.21	0.22	0.22	0.21	0.20	0.18	0.13	0.07	0.03	0.22
day average	0.02	0.05	0.10	0.15	0.16	0.16	0.16	0.14	0.11	0.06	0.03	0.02	0.10
day minimum	0.00	0.00	0.01	0.02	0.03	0.04	0.03	0.03	0.02	0.01	0.00	0.00	0.00
Discharge C													
month Maximum	0.11	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.02	1.26
month average	0.01	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.11	0.01	1.18
month minimum	0.01	0.11	0.11	0.12	0.12	0.12	0.12	0.12	0.12	0.11	0.04	0.01	1.10
day Maximum	0.11	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.02	0.12
day average	0.01	0.06	0.11	0.12	0.11	0.11	0.11	0.11	0.11	0.09	0.03	0.01	0.08
day minimum	0.00	0.01	0.01	0.01	0.01	0.08	0.08	0.03	0.01	0.01	0.01	0.01	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)
Denmark - Aalborg 57.033, 9.844



Battery max charge state per day (257.2 kWh = 100 %)
Denmark - Aalborg 57.033, 9.844



Battery min charge state per day (257.2 kWh = 100 %)
Denmark - Aalborg 57.033, 9.844

