

Performance & Sizes for INVELOX Models



SHEERWIND

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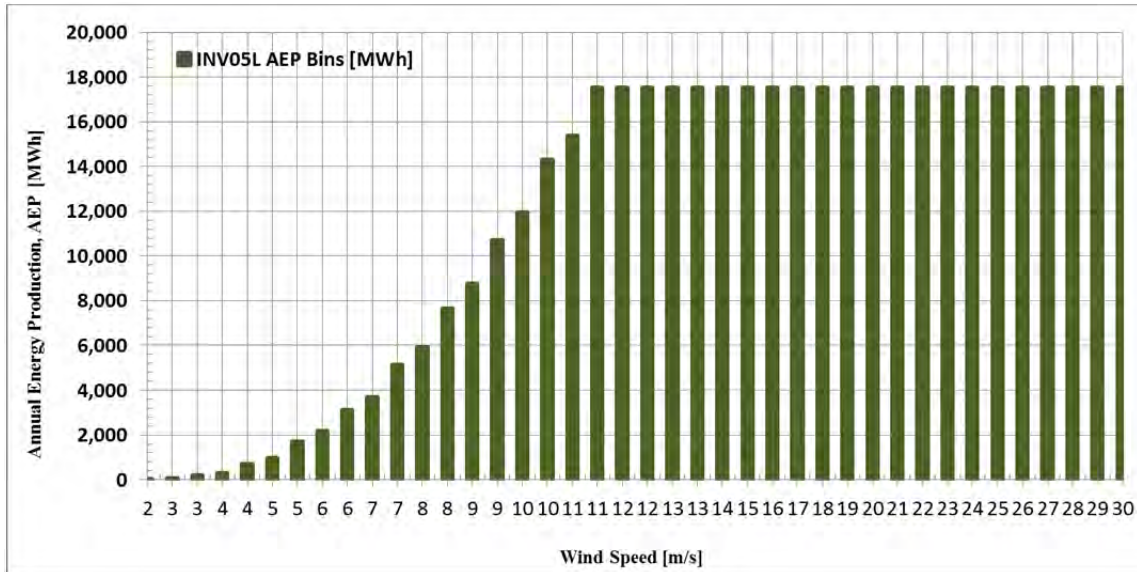
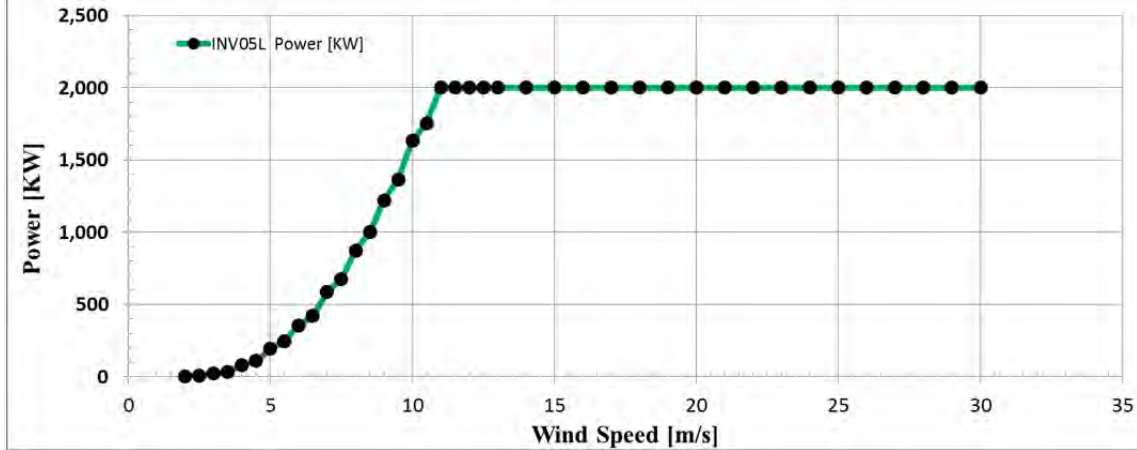
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Notes:

- 1) SR = Speed Ratio: The ratio of wind speed over the free stream wind
- 2) INVXX: INVELOX model with XX meter turbine.
- 3) INVXXL: INVELOX model with XX meter turbine and wind speed control right before the turbine inside the Venturi.
- 4) Turbines: standard 3-blade turbine.
- 5) AEP: is the Annual Emery Production.
- 6) Power Curve: is based on actual field wind data that was input into validated CFD-based computer model.
- 7) High speed generators are used in this analysis.
- 8) Average Wind Speed: refers to average free stream wind speed.
- 9) It is noted that not only INVELOX has low cut in speed, but also does not have to stop when free stream wind speeds are over 25m/s because wind speed is controlled.

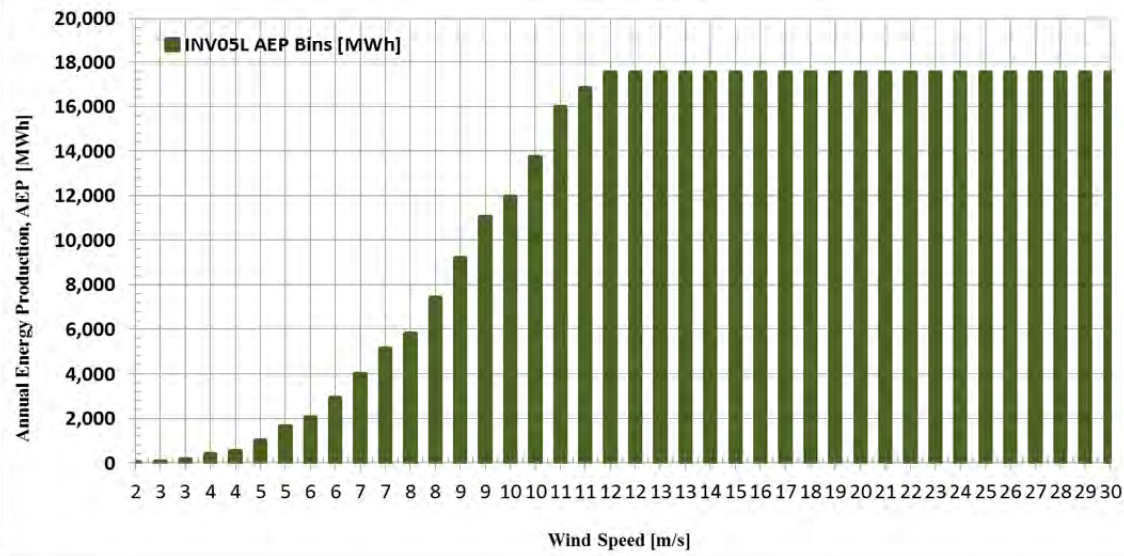
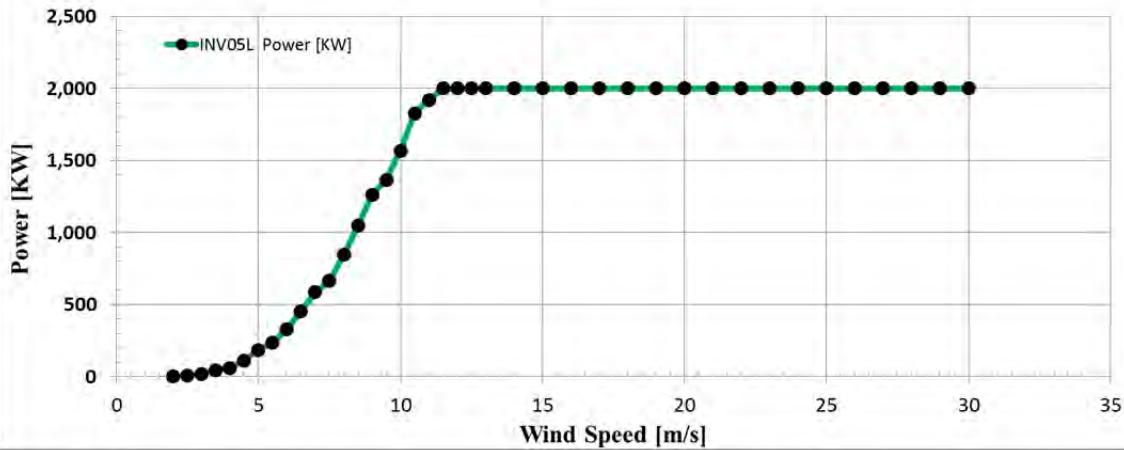
INVELOX Models for Wind Power Plant System – Power Curve and AEP for each assumed Wind Speed



Case 1, SR=6, Average Wind Speed = 8 m/s

Wind Speed [m/s]	INV05L Power [KW]	INV05L AEP Bins [MWh]
2	3	22
2.5	6	55
3	22	192
3.5	35	305
4	79	692
4.5	109	956
5	193	1,687
5.5	247	2,161
6	356	3,119
6.5	422	3,693
7	587	5,143
7.5	676	5,918
8	873	7,650
8.5	1,000	8,757
9	1,220	10,688
9.5	1,365	11,958
10	1,632	14,297
10.5	1,754	15,366
11	2,000	17,520
11.5	2,000	17,520
12	2,000	17,520
12.5	2,000	17,520
13	2,000	17,520
14	2,000	17,520
15	2,000	17,520
16	2,000	17,520
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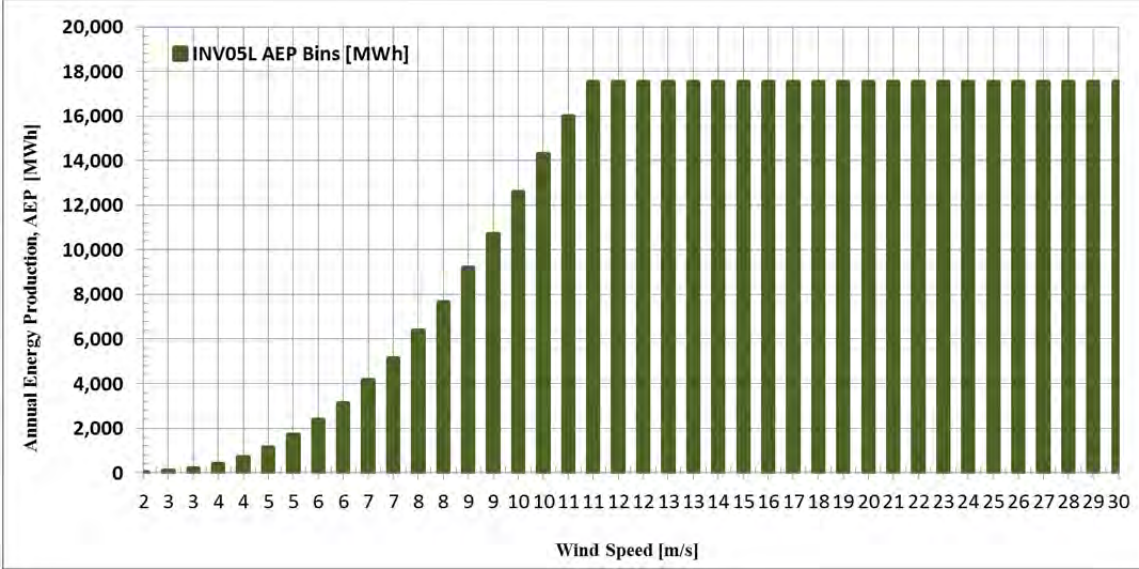
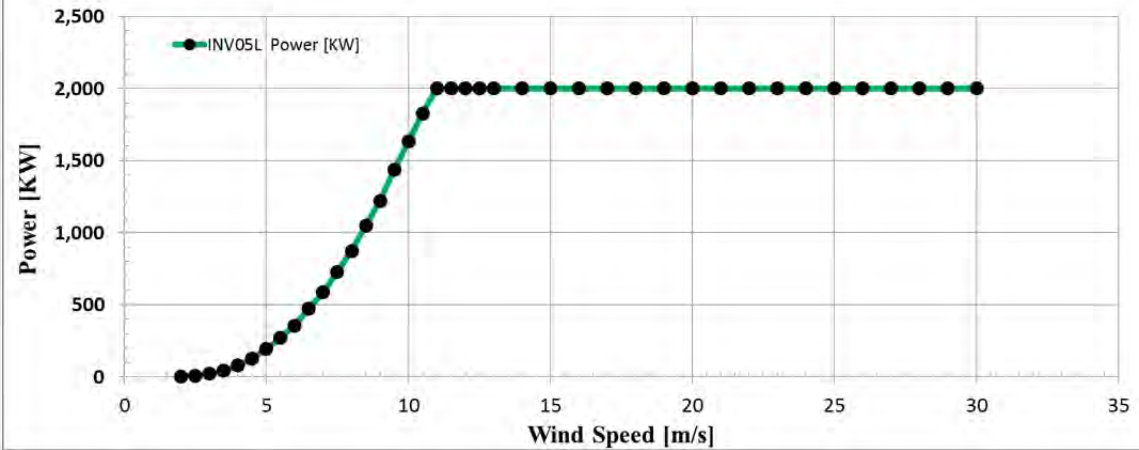
SheerWind Document - Sample Power Curves and Annual Energy Bins



Case 2, SR=6, Average Wind Speed = 7 m/s

Wind Speed [m/s]	INV05L Power [KW]	INV05L AEP Bins [MWh]
2	1	11
2.5	6	55
3	19	166
3.5	44	389
4	62	542
4.5	113	993
5	185	1,624
5.5	234	2,047
6	331	2,898
6.5	454	3,977
7	587	5,143
7.5	663	5,809
8	846	7,412
8.5	1,047	9,175
9	1,262	11,055
9.5	1,365	11,958
10	1,566	13,721
10.5	1,825	15,988
11	1,919	16,811
11.5	2,000	17,520
12	2,000	17,520
12.5	2,000	17,520
13	2,000	17,520
14	2,000	17,520
15	2,000	17,520
16	2,000	17,520
17	2,000	17,520
18	2,000	17,520
19	2,000	17,520
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22	2,000	17,520
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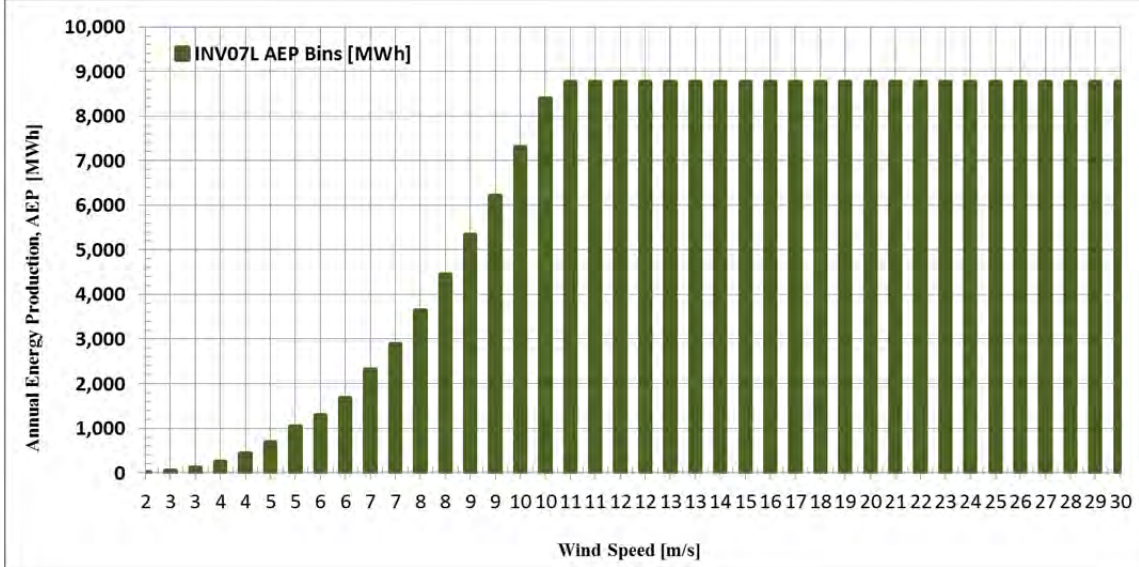
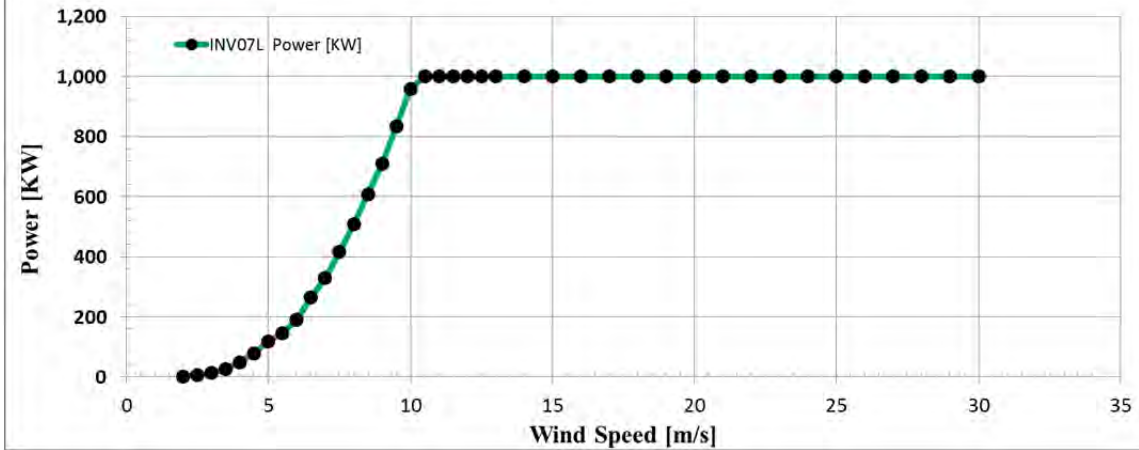
SheerWind Document - Sample Power Curves and Annual Energy Bins



Case 3, SR=6, Average Wind Speed = 4 m/s

Wind Speed [m/s]	INV05L Power [KW]	INV05L AEP Bins [MWh]
2	3	22
2.5	8	72
3	22	192
3.5	44	389
4	79	692
4.5	129	1,129
5	193	1,687
5.5	272	2,384
6	356	3,119
6.5	474	4,153
7	587	5,143
7.5	727	6,372
8	873	7,650
8.5	1,047	9,175
9	1,220	10,688
9.5	1,435	12,571
10	1,632	14,297
10.5	1,825	15,988
11	2,000	17,520
11.5	2,000	17,520
12	2,000	17,520
12.5	2,000	17,520
13	2,000	17,520
14	2,000	17,520
15	2,000	17,520
16	2,000	17,520
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28	2,000	17,520
29	2,000	17,520
30	2,000	17,520

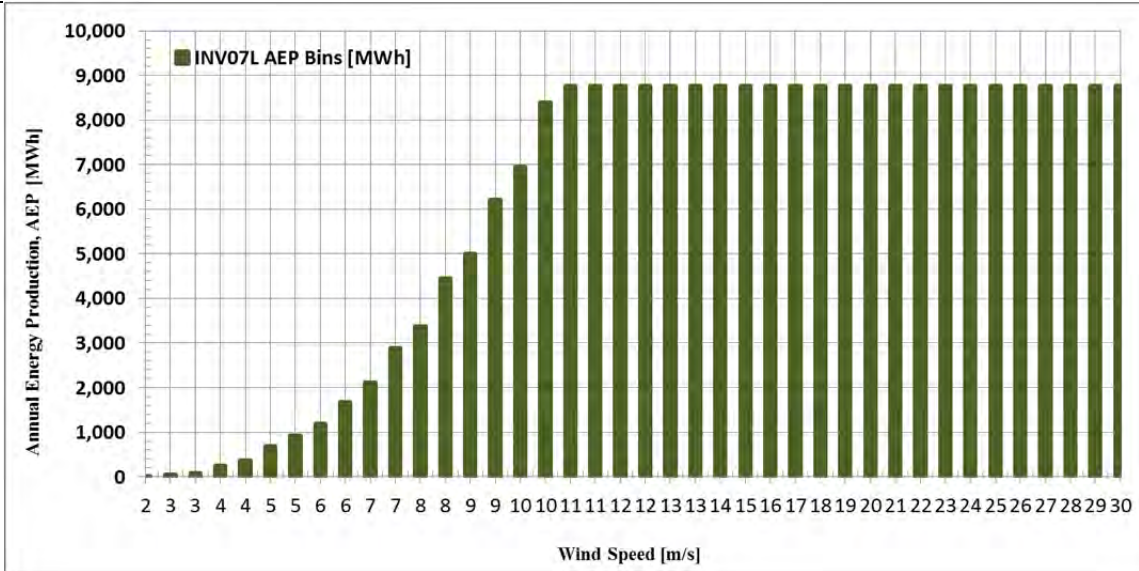
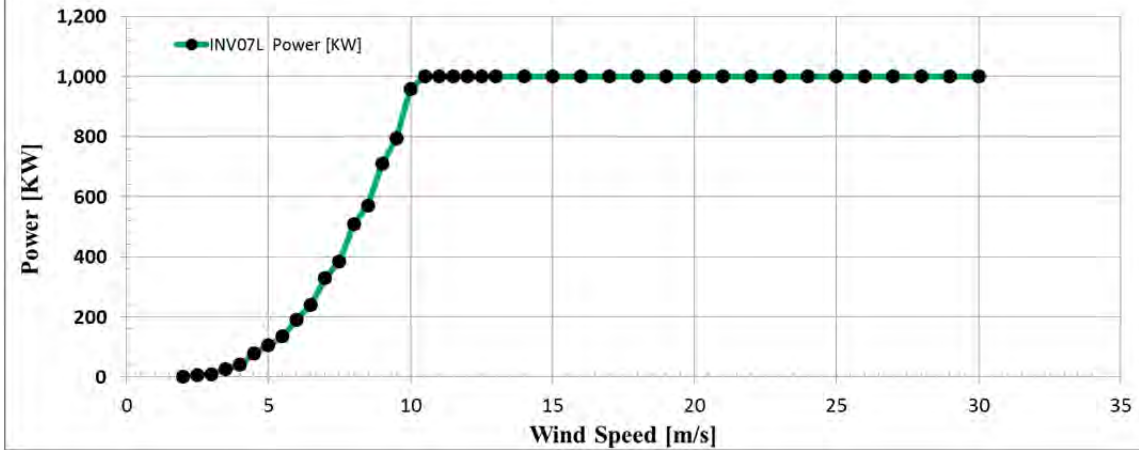
SheerWind Document - Sample Power Curves and Annual Energy Bins



Case 4, SR=4, Average Wind Speed = 4 m/s

	INV07L	INV07L
Wind Speed [m/s]	Power [KW]	AEP Bins [MWh]
2	2	14
2.5	5	47
3	13	112
3.5	27	238
4	49	433
4.5	79	691
5	119	1,043
5.5	147	1,284
6	191	1,672
6.5	264	2,310
7	329	2,880
7.5	415	3,636
8	507	4,442
8.5	608	5,328
9	709	6,207
9.5	833	7,300
10	958	8,394
10.5	1,000	8,760
11	1,000	8,760
11.5	1,000	8,760
12	1,000	8,760
12.5	1,000	8,760
13	1,000	8,760
14	1,000	8,760
15	1,000	8,760
16	1,000	8,760
17	1,000	8,760
18	1,000	8,760
19	1,000	8,760
20	1,000	8,760
21	1,000	8,760
22	1,000	8,760
23	1,000	8,760
24	1,000	8,760
25	1,000	8,760
26	1,000	8,760
27	1,000	8,760
28	1,000	8,760
29	1,000	8,760
30	1,000	8,760

SheerWind Document - Sample Power Curves and Annual Energy Bins



Case 5, SR=4, Average Wind Speed = 8 m/s

Wind Speed [m/s]	INV07L Power [KW]	INV07L AEP Bins [MWh]
2	1	8
2.5	5	47
3	10	84
3.5	27	238
4	41	358
4.5	79	691
5	104	914
5.5	135	1,180
6	191	1,672
6.5	241	2,108
7	329	2,880
7.5	385	3,373
8	507	4,442
8.5	571	5,002
9	709	6,207
9.5	793	6,945
10	958	8,394
10.5	1,000	8,760
11	1,000	8,760
11.5	1,000	8,760
12	1,000	8,760
12.5	1,000	8,760
13	1,000	8,760
14	1,000	8,760
15	1,000	8,760
16	1,000	8,760
17	1,000	8,760
18	1,000	8,760
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23	1,000	8,760
24	1,000	8,760
25	1,000	8,760
26	1,000	8,760
27	1,000	8,760
28	1,000	8,760
29	1,000	8,760
30	1,000	8,760