PARK - Main Result

Calculation: AEP_Enercon_Curtainment

Setup

AEP scaled to a full year based on number of samples
Scaling factor from 31.0 years to 1 year: 0.032

Calculation performed in UTM (north)-WGS84 Zone: 32
At the site centre the difference between grid north and true north is: 0.6°

Wake

Wake Model: N.O. Jensen (RISØ/EMD) Park 2 2018
Wake decay constant
Wake decay constant: 0.085 Mixed farmland Hub height dependent
Reference WTG: 01_ENERCON E-147 EP5 E2 5000 147.0 !O! hub: 126.0 m (TOT: 199.5 m) (12)

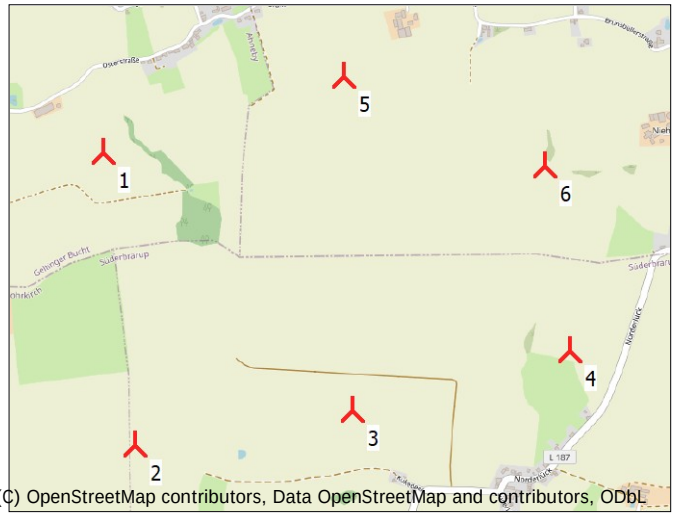
Scaler / wind data

Name	EMD Default Measurement Mast Scaler
Terrain scaling	Measured Data Scaling (WAsP Stability / A-Parameter)
Micro terrain flow model	WAsP IBZ from Site Data
Used period	1/1/1994 1:00:00 AM - 1/1/2025
Meteo object(s)	MCP LT - MCP session (1) - [Neural Network] (3), 125.00m - MCP LT - MCP session (1) - [Neural Network]
Displacement height	Omnidirectional from objects
WAsP version	WAsP 11 Version 11.04.0026

Power correction

Power curve correction (adjusted IEC method, improved to match turbine control)

		Min	Max	Avg	Corr. [%]	Neg. corr. [%]	Pos. corr. [%]
Air density							
From air density settings	[°C]	7.6	7.6	7.6			
From air density settings	[hPa]	990.6	990.6	990.6			
Resulting air density	[kg/m³]	1.229	1.229	1.229			
Relative to 15°C at sea level	[%]	100.4	100.4	100.4	0.2	0.0	0.2



Scale 1:25,000

New WTG

Calculated Annual Energy for Wind Farm

WTG combination	Result PARK	Result-10.0%	GROSS (no loss) Free WTGs	Curtailment loss	Wake loss	Specific results¤) Capacity factor	Mean WTG result	Full load hours	Wind speed free	wake reduced
	[MWh/y]	[MWh/y]	[MWh/y]	[%]	[%]	[%]	[MWh/y]	[Hours/year]	[m/s]	[m/s]
Wind farm	82,797.3	74,517.5	88,238.7	2.5	3.7	28.3	12,419.6	2,484	7.0	6.9

¤) Based on Result-10.0%

Calculated Annual Energy for each of 6 new WTGs with total 30.0 MW rated power

	WTG type Valid	Manufact.	Type-generator	Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Power curve Creator	Name	Annual Energy Result [MWh/y]	Result-10.0% [MWh/y]	Curtailment loss [%]	Wake loss [%]	Wind speed free [m/s]	reduced [m/s]
1	No	ENERCON	E-147 EP5 E2-5,000	5,000	147.0	126.0	USER	Mode 04 - OM 102.3 dB(A) - 3746 kW	13,115.2	11,804	2.6	2.5	7.03	6.94
2	No	ENERCON	E-147 EP5 E2-5,000	5,000	147.0	126.0	USER	Mode 00 - OM 0 s - 5000 kW	15,596.3	14,037	2.1	1.9	7.03	6.96
3	No	ENERCON	E-147 EP5 E2-5,000	5,000	147.0	126.0	USER	Mode 00 - OM 0 s - 5000 kW	15,114.1	13,603	2.3	4.0	7.00	6.86
4	No	ENERCON	E-147 EP5 E2-5,000	5,000	147.0	126.0	USER	Mode 04 - OM 102.3 dB(A) - 3746 kW	12,788.1	11,509	2.7	4.0	7.00	6.85
5	No	ENERCON	E-147 EP5 E2-5,000	5,000	147.0	126.0	USER	Mode 04 - OM 102.3 dB(A) - 3746 kW	12,755.4	11,480	2.7	4.3	7.00	6.84
6	No	ENERCON	E-147 EP5 E2-5,000	5,000	147.0	126.0	USER	Mode 03 - OM 103.3 dB(A) - 4117 kW	13,428.2	12,085	2.6	5.5	7.05	6.85

More power curves may be used due to curtailment. Please view Curtailment assumptions report.

WTG siting

		UTM (north)-ETRS89 Zone: 32 Easting	Northing	Z [m]	Row data/Description	Calculation period Start	End
1	New	547,702	6,061,711	60.0	01_ENERCON E-147 EP5 E2 5000 147.0 !O! hub: 126.0 m (TOT: 199.5 m) (12)	1/1/1994	1/1/2025
2	New	547,819	6,060,747	60.0	02_ENERCON E-147 EP5 E2 5000 147.0 !O! hub: 126.0 m (TOT: 199.5 m) (13)	1/1/1994	1/1/2025
3	New	548,537	6,060,868	60.0	03_ENERCON E-147 EP5 E2 5000 147.0 !O! hub: 126.0 m (TOT: 199.5 m) (14)	1/1/1994	1/1/2025
4	New	549,253	6,061,072	60.0	E04_NERCON E-147 EP5 E2 5000 147.0 !O! hub: 126.0 m (TOT: 199.5 m) (15)	1/1/1994	1/1/2025
5	New	548,497	6,061,973	60.0	05_ENERCON E-147 EP5 E2 5000 147.0 !O! hub: 126.0 m (TOT: 199.5 m) (16)	1/1/1994	1/1/2025
6	New	549,164	6,061,683	60.0	06_ENERCON E-147 EP5 E2 5000 147.0 !O! hub: 126.0 m (TOT: 199.5 m) (17)	1/1/1994	1/1/2025

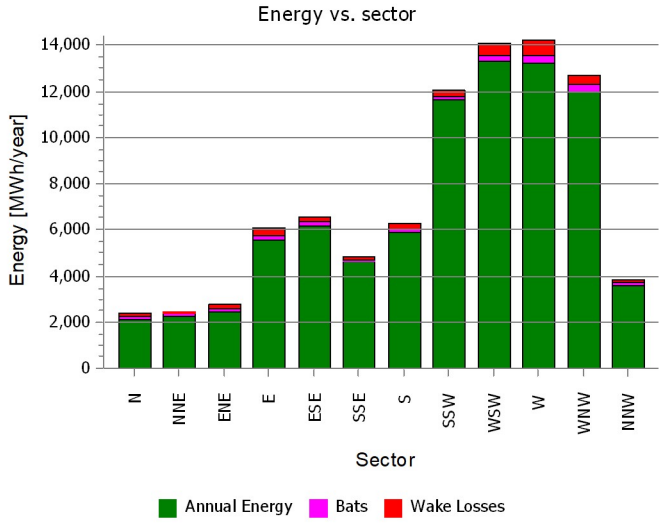
PARK - Production Analysis

Calculation: AEP_Enercon_Curtainment WTG: All new WTGs, Air density 1.229 kg/m³
Directional Analysis

Sector		0 N	1 NNE	2 ENE	3 E	4 ESE	5 SSE	6 S	7 SSW	8 WSW	9 W	10 WNW	11 NNW	Total
Gross	[MWh]	2,361.7	2,427.8	2,775.9	6,109.4	6,572.9	4,841.4	6,306.9	12,056.6	14,075.1	14,224.3	12,675.0	3,812.1	88,238.7
-Decrease due to curtailments	[MWh]	87.4	73.9	127.9	191.7	178.7	107.8	106.1	174.9	266.2	357.6	356.2	162.6	2,191.0
Bats	[MWh]	87.4	73.9	127.9	191.7	178.7	107.8	106.1	174.9	266.2	357.6	356.2	162.6	2,191.0
-Decrease due to wake losses	[MWh]	140.4	77.2	168.4	336.0	247.6	128.9	289.7	266.8	486.2	637.2	373.9	98.2	3,250.5
Resulting energy	[MWh]	2,133.9	2,276.7	2,479.5	5,581.6	6,146.6	4,604.7	5,911.1	11,614.8	13,322.7	13,229.5	11,944.9	3,551.3	82,797.3
Specific energy	[kWh/m²]													813
Specific energy	[kWh/kW]													2,760
-Decrease due to curtailments	[%]	3.7	3.0	4.6	3.1	2.7	2.2	1.7	1.5	1.9	2.5	2.8	4.3	2.5
Bats	[%]	3.7	3.0	4.6	3.1	2.7	2.2	1.7	1.5	1.9	2.5	2.8	4.3	2.5
Decrease due to wake losses	[%]	5.9	3.2	6.1	5.5	3.8	2.7	4.6	2.2	3.5	4.5	3.0	2.6	3.68
Full Load Equivalent	[Hours/year]	71	76	83	186	205	153	197	387	444	441	398	118	2,760

Note:

- A turbines' curtailment losses are calculated based on the wake-reduced wind speed.
- The wake reduced wind speed includes curtailment of up-wind WTGs.



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Calculated:
1/16/2025 5:23 PM/4.0.547

PARK - Power Curve Analysis

Calculation: AEP_Enercon_Curtainment WTG: 1 - ENERCON E-147 EP5 E2 5000 147.0 !O!, Hub height: 126.0 m

Name: Mode 04 - OM 102.3 dB(A) - 3746 kW
Source: ENERCON GmbH

Source/Date	Created by	Created	Edited	Stop wind speed [m/s]	Power control	CT curve type	Generator type	Specific power kW/m²
8/2/2019	USER	2/10/2020	2/25/2020	25.0	Pitch	User defined	Variable	0.29

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Enercon reserves the right to change the above specifications without prior notice.

HP curve comparison - Note: For standard air density

Vmean	[m/s]	5	6	7	8	9	10
HP value Pitch, variable speed (2013)	[MWh]	8,581	13,010	17,262	21,030	24,193	26,713
ENERCON E-147 EP5 E2 5000 147.0 !O! Mode 04 - OM 102.3 dB(A) - 3746 kW	[MWh]	7,196	10,426	13,465	16,143	18,387	20,162
Check value	[%]	19	25	28	30	32	32

The table shows comparison between annual energy production calculated on basis of simplified "HP-curves" which assume that all WTGs performs quite similar - only specific power loading (kW/m^2) and single/dual speed or stall/pitch decides the calculated values. Productions are without wake losses.
For further details, ask at the Danish Energy Agency for project report J.nr. 51171/00-0016 or see the windPRO manual.
The method is refined in EMD report "20 Detailed Case Studies comparing Project Design Calculations and actual Energy Productions for Wind Energy Projects worldwide", jan 2003.
Use the table to evaluate if the given power curve is reasonable - if the check value are lower than -5%, the power curve probably is too optimistic due to uncertainty in power curve measurement.

Power curve

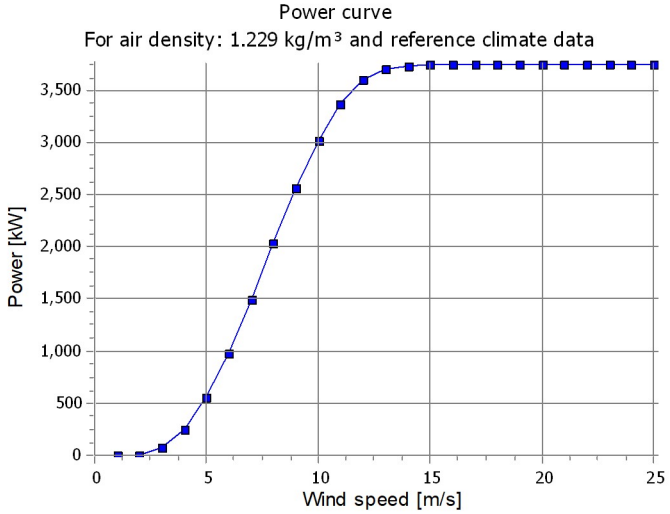
Original data, Air density: 1.225 kg/m³

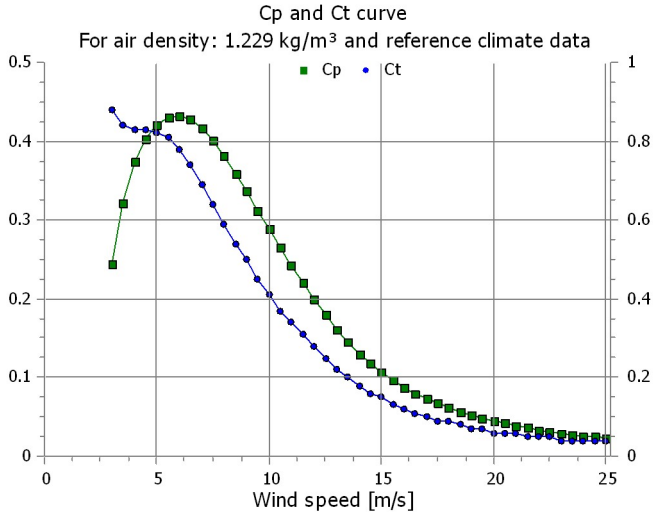
Wind speed [m/s]	Power [kW]	Cp	Wind speed [m/s]	Ct curve
3.0	68.0	0.24	3.0	0.88
3.5	143.0	0.32	3.5	0.84
4.0	248.0	0.37	4.0	0.83
4.5	382.0	0.40	4.5	0.83
5.0	547.0	0.42	5.0	0.82
5.5	745.0	0.43	5.5	0.81
6.0	972.0	0.43	6.0	0.78
6.5	1,222.0	0.43	6.5	0.74
7.0	1,487.0	0.42	7.0	0.69
7.5	1,759.0	0.40	7.5	0.64
8.0	2,031.0	0.38	8.0	0.59
8.5	2,297.0	0.36	8.5	0.54
9.0	2,552.0	0.34	9.0	0.50
9.5	2,790.0	0.31	9.5	0.45
10.0	3,008.0	0.29	10.0	0.41
10.5	3,201.0	0.27	10.5	0.37
11.0	3,365.0	0.24	11.0	0.34
11.5	3,494.0	0.22	11.5	0.31
12.0	3,590.0	0.20	12.0	0.28
12.5	3,655.0	0.18	12.5	0.25
13.0	3,696.0	0.16	13.0	0.22
13.5	3,720.0	0.15	13.5	0.20
14.0	3,734.0	0.13	14.0	0.18
14.5	3,741.0	0.12	14.5	0.16
15.0	3,744.0	0.11	15.0	0.15
15.5	3,746.0	0.10	15.5	0.13
16.0	3,746.0	0.09	16.0	0.12
16.5	3,746.0	0.08	16.5	0.11
17.0	3,746.0	0.07	17.0	0.10
17.5	3,746.0	0.07	17.5	0.09
18.0	3,746.0	0.06	18.0	0.09
18.5	3,746.0	0.06	18.5	0.08
19.0	3,746.0	0.05	19.0	0.07
19.5	3,746.0	0.05	19.5	0.07
20.0	3,746.0	0.05	20.0	0.06
20.5	3,746.0	0.04	20.5	0.06
21.0	3,746.0	0.04	21.0	0.06
21.5	3,746.0	0.04	21.5	0.05
22.0	3,746.0	0.03	22.0	0.05
22.5	3,746.0	0.03	22.5	0.05
23.0	3,746.0	0.03	23.0	0.04
23.5	3,746.0	0.03	23.5	0.04
24.0	3,746.0	0.03	24.0	0.04
24.5	3,746.0	0.02	24.5	0.04
25.0	3,746.0	0.02	25.0	0.04

Power and efficiency vs. wind speed

Data used in calculation, Mean air density: 1.229 kg/m³

Wind speed [m/s]	Power [kW]	Cp
1.0	0.0	0.00
2.0	0.0	0.00
3.0	68.5	0.24
4.0	249.2	0.37
5.0	549.3	0.42
6.0	975.4	0.43
7.0	1,491.3	0.42
8.0	2,035.8	0.38
9.0	2,557.1	0.34
10.0	3,013.2	0.29
11.0	3,369.3	0.24
12.0	3,592.5	0.20
13.0	3,697.0	0.16
14.0	3,734.3	0.13
15.0	3,744.1	0.11
16.0	3,746.0	0.09
17.0	3,746.0	0.07
18.0	3,746.0	0.06
19.0	3,746.0	0.05
20.0	3,746.0	0.04
21.0	3,746.0	0.04
22.0	3,746.0	0.03
23.0	3,746.0	0.03
24.0	3,746.0	0.03
25.0	3,746.0	0.02





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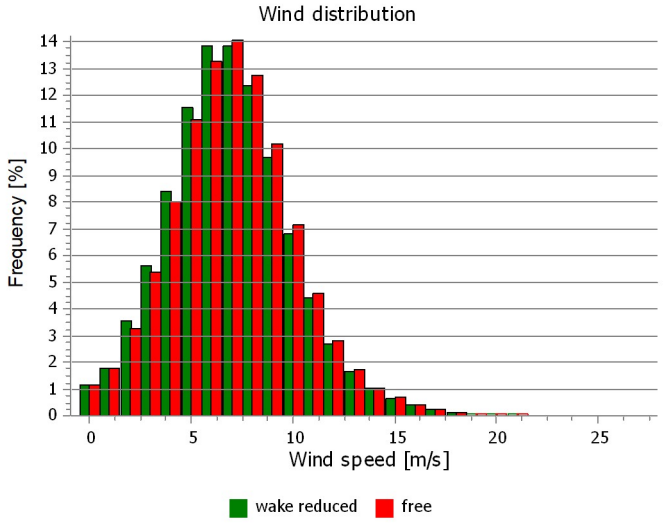
PARK - Wind Data Analysis

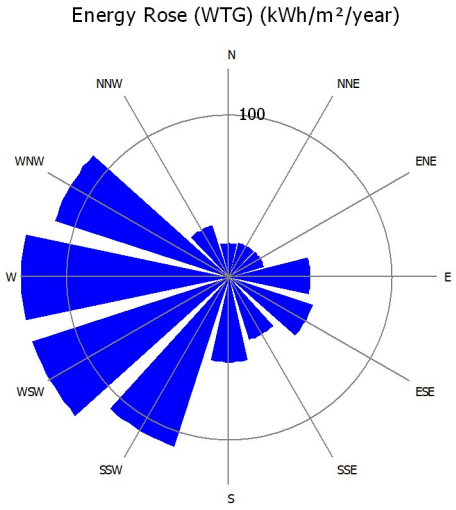
Calculation: AEP_Enercon_Curtainment Wind data: 1 - 01_ENERCON E-147 EP5 E2 5000 147.0 !O! hub: 126.0 m (TOT: 199.5 m) (12); Hub height: 126.0

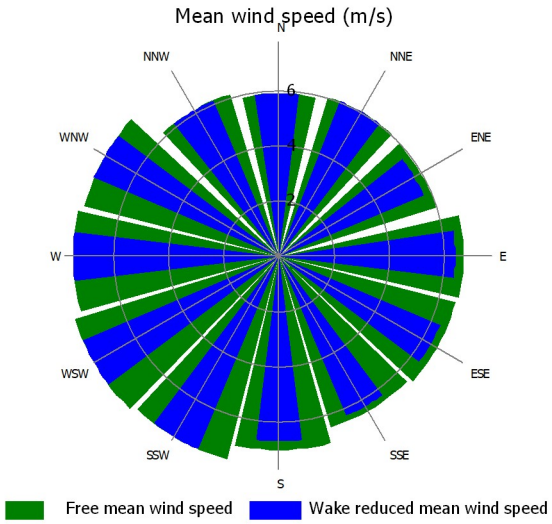
Site coordinates
UTM (north)-ETRS89 Zone: 32
East: 547,702 North: 6,061,711
01_ENERCON E-147 EP5 E2 5000 147.0 !O! hub: 126.0 m (TOT: 199.5 m) (12)
Masts used
Take nearest

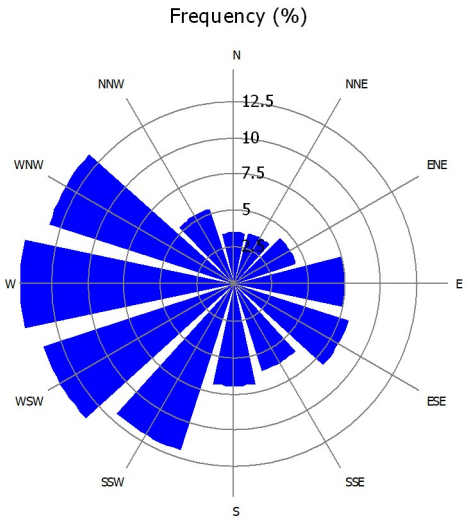
Winddata for site

Sector	Free mean wind speed [m/s]	Wake reduced mean wind speed [m/s]	Frequency [%]
0 N	5.9	5.9	3.6
1 NNE	6.0	6.0	3.6
2 ENE	6.0	5.7	4.5
3 E	6.7	6.4	7.6
4 ESE	6.6	6.4	8.3
5 SSE	6.5	6.3	6.2
6 S	7.0	6.7	7.0
7 SSW	7.6	7.6	12.0
8 WSW	7.7	7.7	13.7
9 W	7.5	7.5	14.7
10 WNW	7.3	7.3	13.4
11 NNW	6.1	6.1	5.4
All	7.0	6.9	100.0









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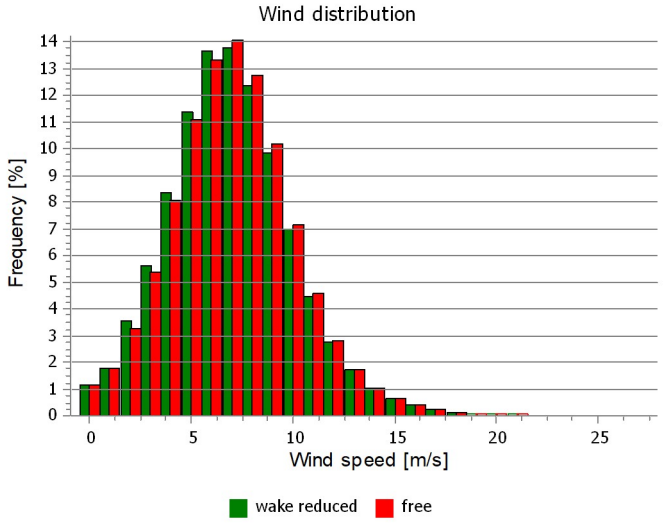
PARK - Wind Data Analysis

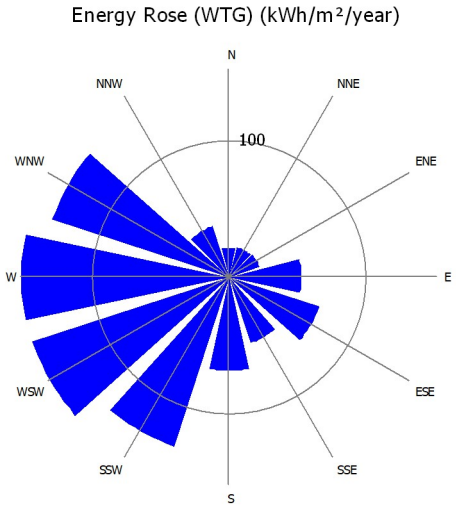
Calculation: AEP_Enercon_Curtainment Wind data: 2 - 02_ENERCON E-147 EP5 E2 5000 147.0 !O! hub: 126.0 m (TOT: 199.5 m) (13); Hub height: 126.0

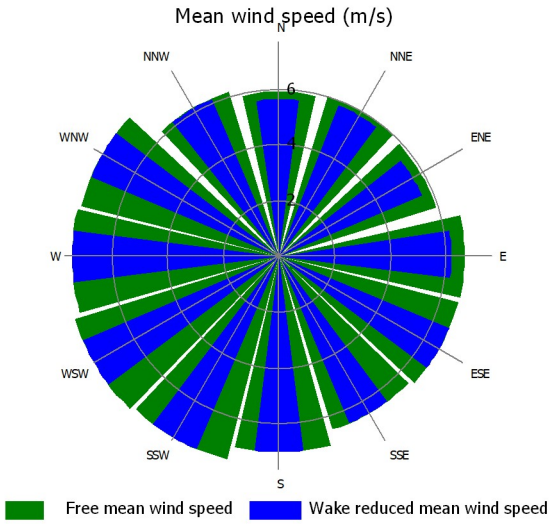
Site coordinates
UTM (north)-ETRS89 Zone: 32
East: 547,819 North: 6,060,747
02_ENERCON E-147 EP5 E2 5000 147.0 !O! hub: 126.0 m (TOT: 199.5 m) (13)
Masts used
Take nearest

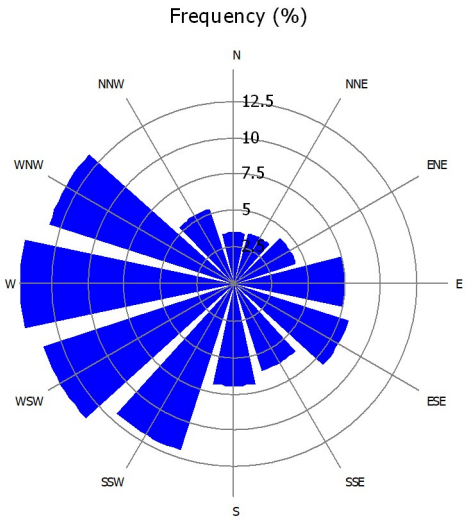
Winddata for site

Sector	Free mean wind speed [m/s]	Wake reduced mean wind speed [m/s]	Frequency [%]
0 N	5.9	5.7	3.6
1 NNE	6.0	5.8	3.6
2 ENE	5.9	5.6	4.5
3 E	6.7	6.2	7.6
4 ESE	6.7	6.7	8.3
5 SSE	6.5	6.5	6.2
6 S	7.0	7.0	7.0
7 SSW	7.5	7.5	12.0
8 WSW	7.7	7.7	13.7
9 W	7.5	7.5	14.7
10 WNW	7.4	7.4	13.4
11 NNW	6.2	6.2	5.4
All	7.0	7.0	100.0







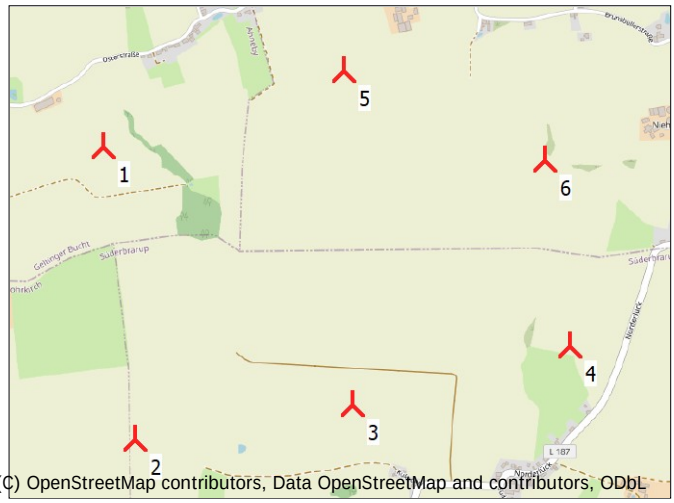


PARK - WTG distances

Calculation: AEP_Enercon_Curtainment

WTG distances

	Z [m]	Nearest WTG	Z [m]	Horizontal distance [m]	Distance in rotor diameters
1	60.0	5	60.0	838	5.7
2	60.0	3	60.0	728	4.9
3	60.0	2	60.0	728	4.9
4	60.0	6	60.0	617	4.2
5	60.0	6	60.0	727	4.9
6	60.0	4	60.0	617	4.2
Min	60.0		60.0	617	4.2
Max	60.0		60.0	838	5.7



Scale 1:25,000

New WTG

PARK - Time varying AEP

Calculation: AEP_Enercon_Curtainment

Windfarm: 30.0 MW based on 6 turbines with 5.0 MW (in average).
Selection: All new WTGs
Calculated mean yield per month and hour [MWh]. The result includes wake losses and any curtailment losses.
Values are scaled to a full year, see correction factors at main result page.

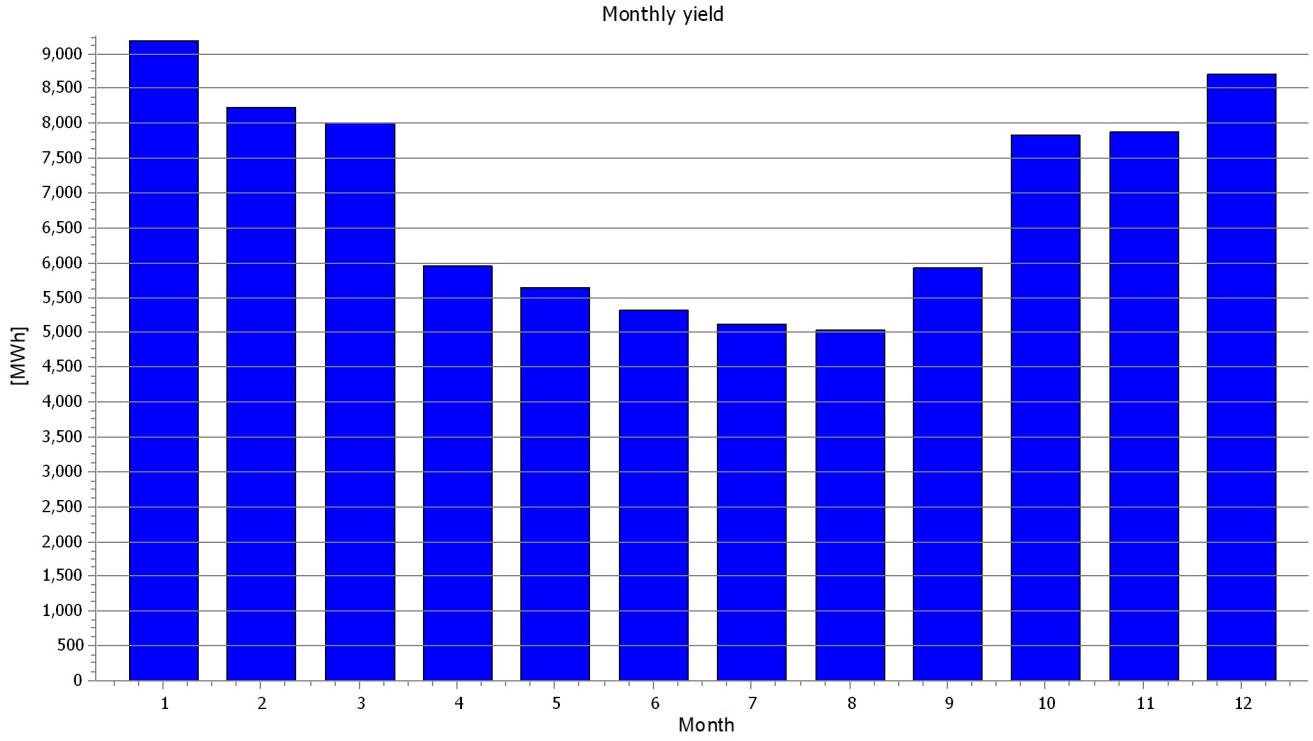
Hour/Month [MWh]	1	2	3	4	5	6	7	8	9	10	11	12	Grand Total
0	406	363	354	262	252	228	217	216	257	354	354	384	3,647
1	399	361	354	261	241	216	203	219	250	336	357	380	3,576
2	398	357	351	260	234	214	205	214	249	334	353	390	3,559
3	395	357	340	252	241	204	209	210	242	339	354	376	3,518
4	404	357	345	257	236	216	207	210	249	336	349	381	3,547
5	397	361	342	247	257	240	232	206	247	333	338	383	3,581
6	395	352	337	256	251	225	221	230	248	340	334	377	3,566
7	387	348	335	253	225	217	208	206	250	328	331	370	3,457
8	384	343	311	219	218	206	202	193	240	318	318	360	3,311
9	371	331	301	218	201	206	206	189	221	297	305	353	3,200
10	371	318	301	221	205	210	207	200	243	295	306	346	3,222
11	361	312	301	223	208	206	202	196	232	289	285	336	3,149
12	354	322	307	236	227	227	221	214	250	302	306	341	3,308
13	366	334	326	255	239	241	231	226	268	318	306	344	3,452
14	366	333	336	264	252	255	244	240	261	320	316	343	3,531
15	369	342	339	265	256	255	243	233	270	322	306	345	3,543
16	367	329	328	264	249	244	231	232	260	313	314	345	3,475
17	369	323	319	254	245	238	225	224	245	305	317	353	3,417
18	369	329	325	235	234	224	218	204	217	311	320	356	3,340
19	387	339	332	229	223	219	207	183	223	331	329	354	3,357
20	389	347	346	244	231	184	183	182	234	335	334	365	3,373
21	395	358	359	250	224	207	190	191	247	346	347	366	3,482
22	396	362	361	264	245	209	199	203	250	360	353	377	3,578
23	394	358	352	263	243	215	208	219	271	360	347	377	3,606
Grand Total	9,187	8,235	8,001	5,951	5,639	5,305	5,118	5,039	5,922	7,821	7,878	8,701	82,797

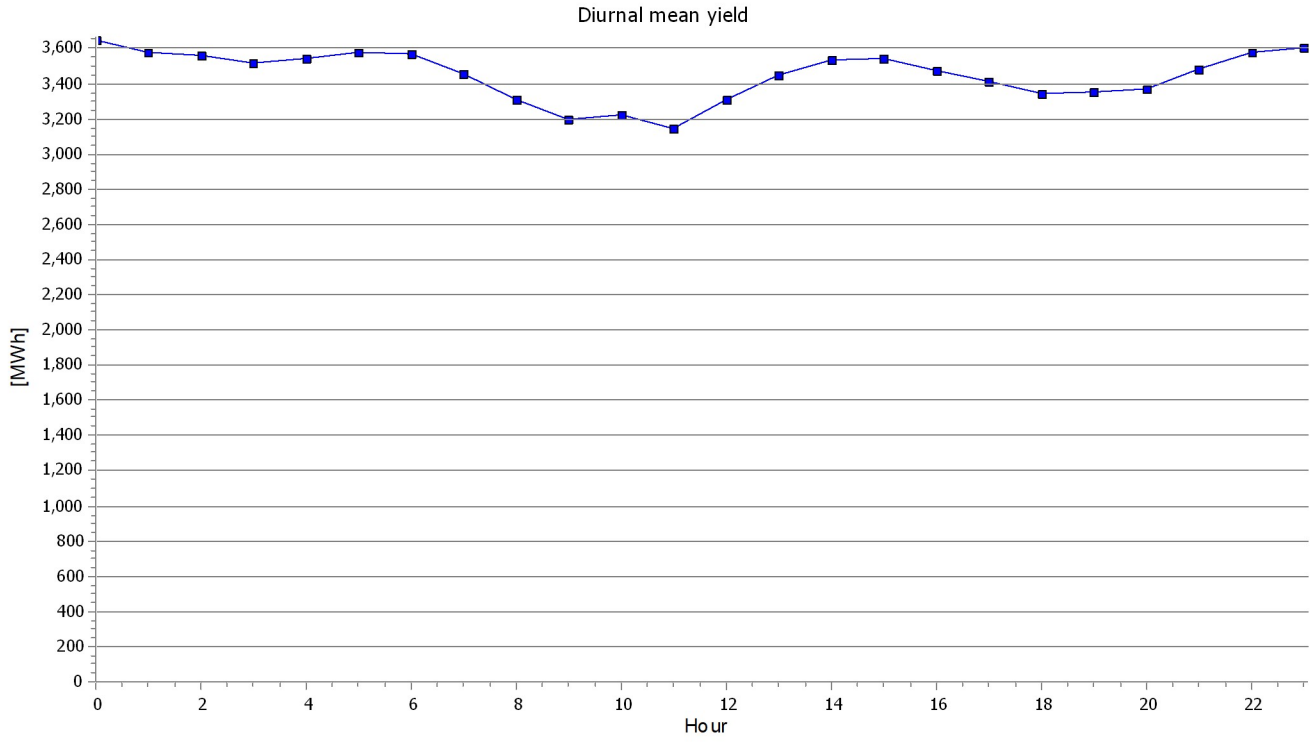
Hour/Month [MW]	1	2	3	4	5	6	7	8	9	10	11	12	Grand Total
0	13.1	13.0	11.4	8.7	8.1	7.6	7.0	7.0	8.6	11.4	11.8	12.4	10.0
1	12.9	12.9	11.4	8.7	7.8	7.2	6.5	7.0	8.3	10.8	11.9	12.2	9.8
2	12.9	12.7	11.3	8.7	7.5	7.1	6.6	6.9	8.3	10.8	11.8	12.6	9.8
3	12.7	12.7	11.0	8.4	7.8	6.8	6.7	6.8	8.1	10.9	11.8	12.1	9.6
4	13.0	12.8	11.1	8.6	7.6	7.2	6.7	6.8	8.3	10.8	11.6	12.3	9.7
5	12.8	12.9	11.0	8.2	8.3	8.0	7.5	6.6	8.2	10.7	11.3	12.4	9.8
6	12.7	12.6	10.9	8.5	8.1	7.5	7.1	7.4	8.3	11.0	11.1	12.1	9.8
7	12.5	12.4	10.8	8.4	7.3	7.2	6.7	6.7	8.3	10.6	11.0	11.9	9.5
8	12.4	12.2	10.0	7.3	7.0	6.9	6.5	6.2	8.0	10.3	10.6	11.6	9.1
9	12.0	11.8	9.7	7.3	6.5	6.9	6.6	6.1	7.4	9.6	10.2	11.4	8.8
10	12.0	11.3	9.7	7.4	6.6	7.0	6.7	6.4	8.1	9.5	10.2	11.2	8.8
11	11.6	11.1	9.7	7.4	6.7	6.9	6.5	6.3	7.7	9.3	9.5	10.8	8.6
12	11.4	11.5	9.9	7.9	7.3	7.6	7.1	6.9	8.3	9.8	10.2	11.0	9.1
13	11.8	11.9	10.5	8.5	7.7	8.0	7.4	7.3	8.9	10.3	10.2	11.1	9.5
14	11.8	11.9	10.8	8.8	8.1	8.5	7.9	7.8	8.7	10.3	10.5	11.1	9.7
15	11.9	12.2	10.9	8.8	8.3	8.5	7.8	7.5	9.0	10.4	10.2	11.1	9.7
16	11.8	11.8	10.6	8.8	8.0	8.1	7.4	7.5	8.7	10.1	10.5	11.1	9.5
17	11.9	11.5	10.3	8.5	7.9	7.9	7.3	7.2	8.2	9.8	10.6	11.4	9.4
18	11.9	11.7	10.5	7.8	7.5	7.5	7.0	6.6	7.2	10.0	10.7	11.5	9.2
19	12.5	12.1	10.7	7.6	7.2	7.3	6.7	5.9	7.4	10.7	11.0	11.4	9.2
20	12.5	12.4	11.2	8.1	7.4	6.1	5.9	5.9	7.8	10.8	11.1	11.8	9.2
21	12.7	12.8	11.6	8.3	7.2	6.9	6.1	6.2	8.2	11.2	11.6	11.8	9.5
22	12.8	12.9	11.6	8.8	7.9	7.0	6.4	6.6	8.3	11.6	11.8	12.2	9.8
23	12.7	12.8	11.4	8.8	7.8	7.2	6.7	7.1	9.0	11.6	11.6	12.1	9.9
Grand Total	12.3	12.3	10.8	8.3	7.6	7.4	6.9	6.8	8.2	10.5	10.9	11.7	9.5

PARK - Time varying AEP

Calculation: AEP_Enercon_Curtainment

Windfarm: 30.0 MW based on 6 turbines with 5.0 MW (in average).
Selection: All new WTGs
Calculated mean yield per month and hour [MWh]. The result includes wake losses and any curtailment losses.
Values are scaled to a full year, see correction factors at main result page.





Project:
Exam_16.01

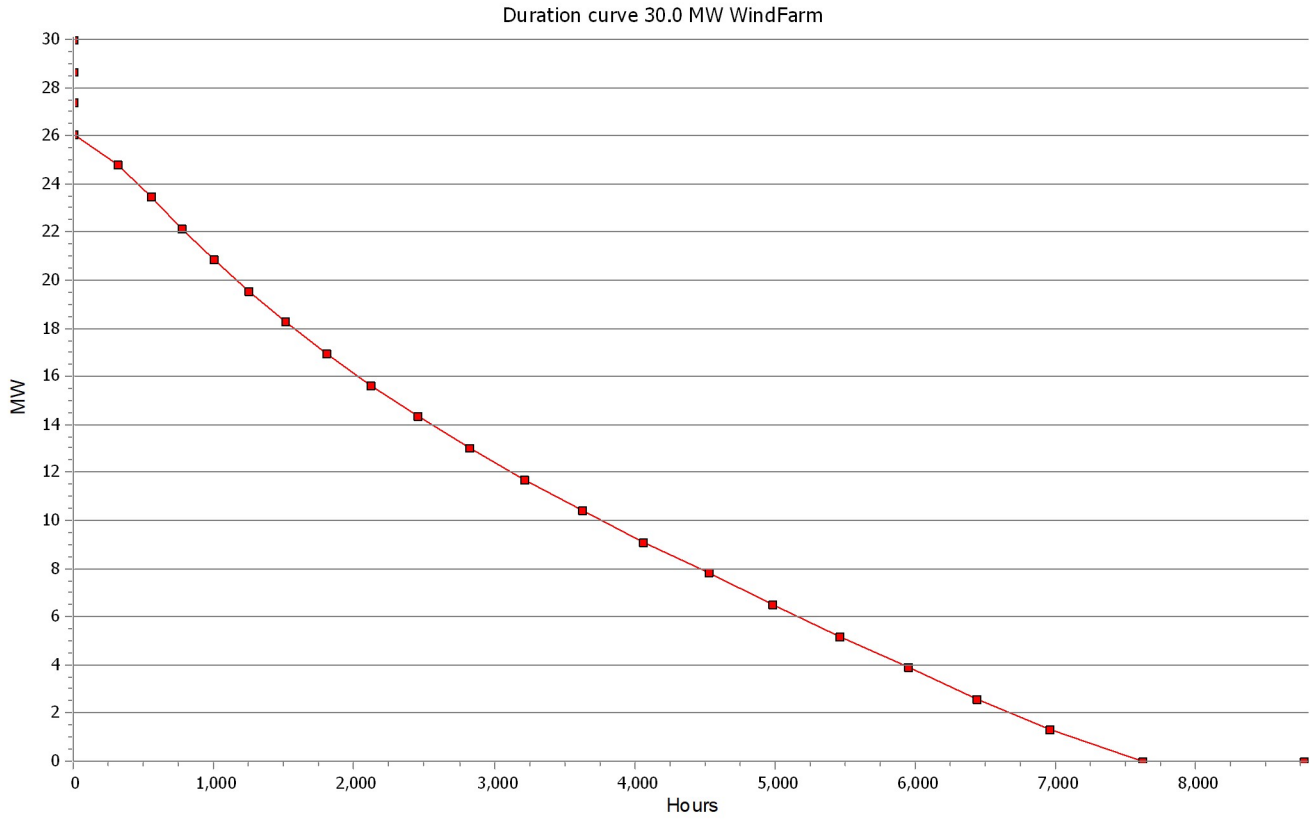
Calculated:
1/16/2025 5:23 PM/4.0.547

PARK - Time varying AEP

Calculation: AEP_Enercon_Curtainment

Windfarm: 30.0 MW based on 6 turbines with 5.0 MW (in average).
Selection: All new WTGs
Calculated mean yield per month and hour [MWh]. The result includes wake losses and any curtailment losses.

Hours	Hours [%]	Hours accumulated	Power [MW]	Power (MW/WTG)
0	0.0	0	30.0	5.0
0	0.0	0	28.7 - 30.0	4.8 - 5.0
0	0.0	0	27.4 - 28.7	4.6 - 4.8
0	0.0	0	26.1 - 27.4	4.3 - 4.6
310	3.5	310	24.8 - 26.1	4.1 - 4.3
244	2.8	554	23.5 - 24.8	3.9 - 4.1
218	2.5	772	22.2 - 23.5	3.7 - 3.9
229	2.6	1001	20.9 - 22.2	3.5 - 3.7
245	2.8	1247	19.6 - 20.9	3.3 - 3.5
264	3.0	1511	18.3 - 19.6	3.0 - 3.3
293	3.3	1804	17.0 - 18.3	2.8 - 3.0
313	3.6	2118	15.7 - 17.0	2.6 - 2.8
337	3.8	2454	14.3 - 15.7	2.4 - 2.6
368	4.2	2823	13.0 - 14.3	2.2 - 2.4
386	4.4	3209	11.7 - 13.0	2.0 - 2.2
416	4.7	3625	10.4 - 11.7	1.7 - 2.0
436	5.0	4061	9.1 - 10.4	1.5 - 1.7
458	5.2	4519	7.8 - 9.1	1.3 - 1.5
463	5.3	4982	6.5 - 7.8	1.1 - 1.3
472	5.4	5455	5.2 - 6.5	0.9 - 1.1
493	5.6	5947	3.9 - 5.2	0.7 - 0.9
489	5.6	6436	2.6 - 3.9	0.4 - 0.7
514	5.9	6950	1.3 - 2.6	0.2 - 0.4
662	7.5	7611	0.0 - 1.3	0.0 - 0.2
1155	13.2	8766	0.0	0.0



PARK - Scaling info

Calculation: AEP_Enercon_Curtainment

Scaler settings

Name	EMD Default Measurement Mast Scaler
Terrain scaling	Measured Data Scaling (WAsP Stability / A-Parameter)
RIX correction	No RIX correction
Displacement height	from objects
Micro terrain flow model	Site data: RESGEN (5)

Site Data: Site data: RESGEN (5)

Obstacles:

All obstacles used

Roughness:

Terrain data files used in calculation:
C:\Users\student\Desktop\Exam_16_01_2025\Windpro_exam_16.01\ROUGHNESSLINE_ONLINEDATA_0.wpo
Min X: 518,359, Max X: 578,403, Min Y: 6,030,681, Max Y: 6,091,978, Width: 60,044 m, Height: 61,297 m

Orography:

Terrain data files used in calculation:
C:\Users\student\Desktop\Exam_16_01_2025\Windpro_exam_16.01\CONTOURLINE_ONLINEDATA_0.wpo
Min X: 538,612, Max X: 558,177, Min Y: 6,051,218, Max Y: 6,071,644, Width: 19,565 m, Height: 20,426 m

Post calibration

Overall factor	1.0000
Overall offset	0.0000
By sector	No
By month	No
By hour	No
By wind speed	No

PARK - Curtailment assumptions

Calculation: AEP_Enercon_Curtainment

Curtailment signals

Signal	Signal source
Mean wind speed	Scaler

WTG Curtailments

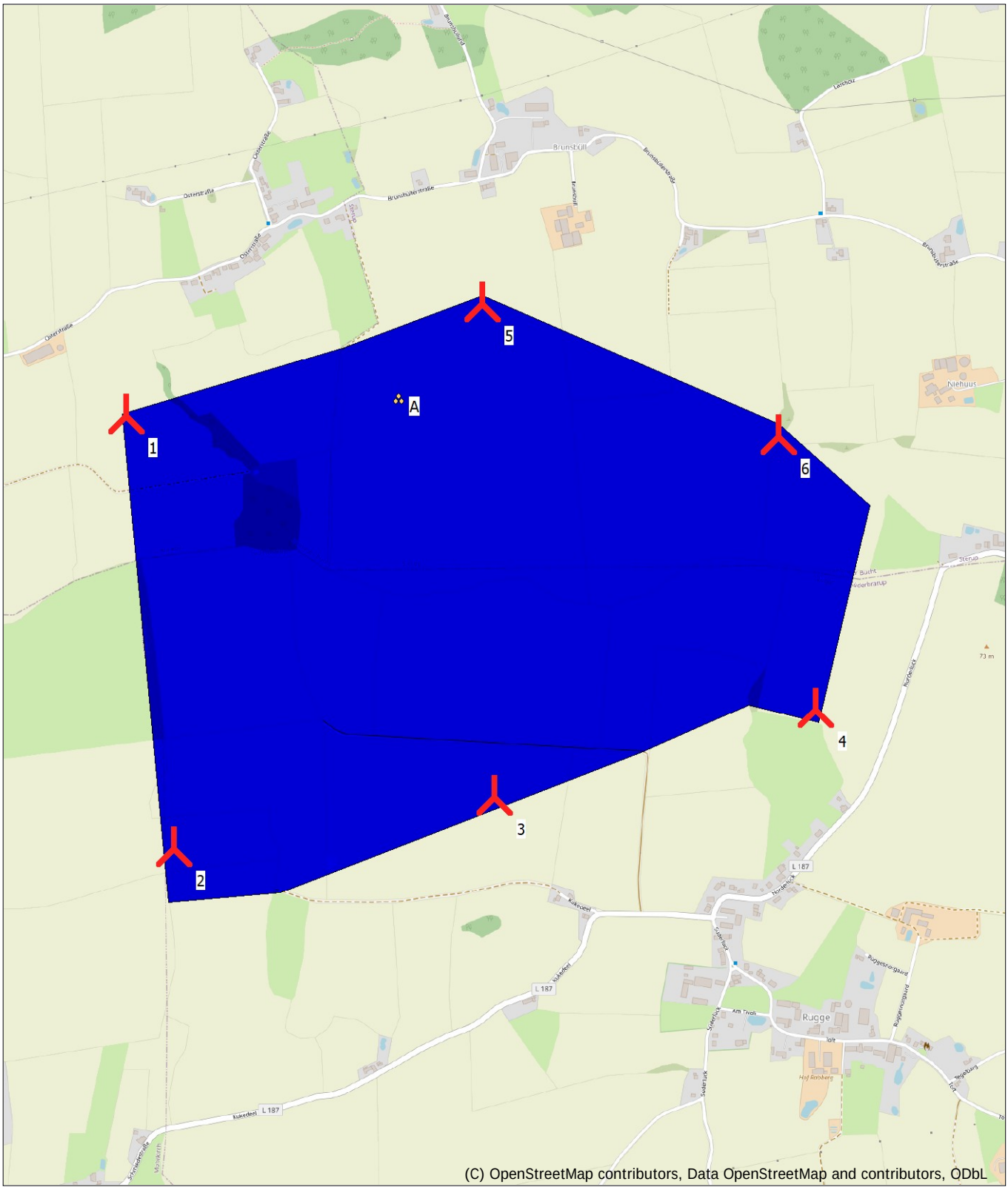
WTG	Name	Index	Priority	Type	Action	Conditions	Times fully applied	Time partially applied	Times skipped
1	Bats	1	1	Bats	Shut down	Date [4/1;9/30], SunRiseSet [1:00h before sunset;1:00h after sunrise], WS [0;6]	24058	0	0
2	Bats	1	1	Bats	Shut down	Date [4/1;9/30], SunRiseSet [1:00h before sunset;1:00h after sunrise], WS [0;6]	23685	0	0
3	Bats	1	1	Bats	Shut down	Date [4/1;9/30], SunRiseSet [1:00h before sunset;1:00h after sunrise], WS [0;6]	25134	0	0
4	Bats	1	1	Bats	Shut down	Date [4/1;9/30], SunRiseSet [1:00h before sunset;1:00h after sunrise], WS [0;6]	24702	0	0
5	Bats	1	1	Bats	Shut down	Date [4/1;9/30], SunRiseSet [1:00h before sunset;1:00h after sunrise], WS [0;6]	24985	0	0
6	Bats	1	1	Bats	Shut down	Date [4/1;9/30], SunRiseSet [1:00h before sunset;1:00h after sunrise], WS [0;6]	24946	0	0

WTG curtailments using wind speeds interacts with the wake losses.

Multiple curtailment rules may have been sequentially applied in each time step

PARK - Map

Calculation: AEP_Enercon_Curtainment



0 250 500 750 1000m

Map: EMD OpenStreetMap , Print scale 1:12,500, Map center UTM (north)-ETRS89 Zone: 32 East: 548,534 North: 6,061,313

New WTG WTG area