

SHADOW - Main Result

Calculation: 7. CUMULATIVE Curtailment Alternative Real Case

Assumptions for shadow calculations

Maximum distance for influence

Calculate only when more than 20 % of sun is covered by the blade
Please look in WTG table

Minimum sun height over horizon for influence 3 °
Day step for calculation 1 days
Time step for calculation 1 minutes

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1,17	2,29	4,58	6,82	8,69	9,44	8,63	7,75	5,49	2,82	0,76	0,60

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
373	431	565	449	510	745	768	916	1 192	1 023	777	489	8 238

Monthly aggregation of real case reduction
Flicker curtailment by stopping specific turbines

A ZVI (Zones of Visual Influence) calculation is performed before flicker calculation so non visible WTG do not contribute to calculated flicker values. A WTG will be visible if it is visible from any part of the receiver window. The ZVI calculation is based on the following assumptions:

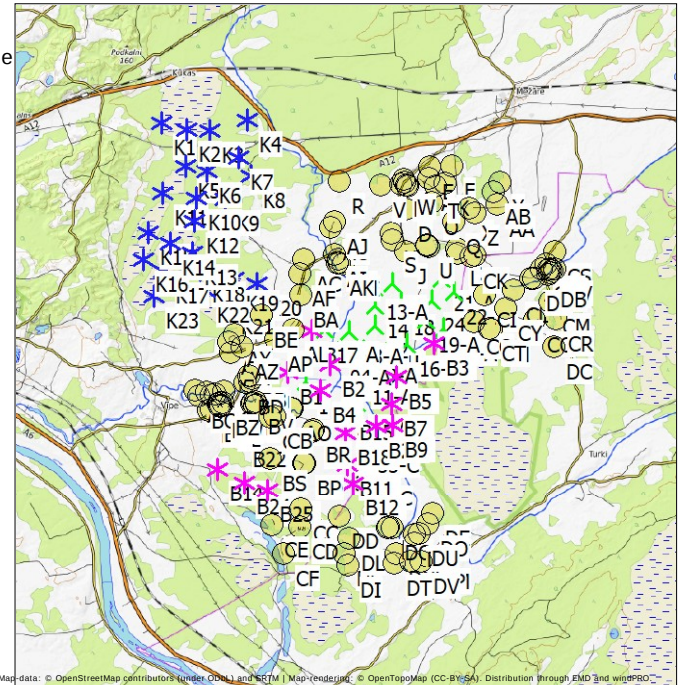
DHM: DTM model
Receptor grid resolution: 1,0 m
Topographic shadow included in calculation

All coordinates are in
Geo [deg]-WGS84

WTGs

	Longitude	Latitude	Z	Row data/Description	WTG type			Shadow data				
					Valid	Manufact.	Type-generator	Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Calculation distance [m]	RPM
			[m]									[RPM]
1	26,147263° E	56,474202° N	86,6	B1	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
2	26,172826° E	56,452404° N	88,6	B11	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
3	26,175218° E	56,447698° N	88,8	B12	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
4	26,116912° E	56,451106° N	89,5	B14	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
5	26,172704° E	56,465904° N	87,5	B15	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
6	26,157352° E	56,484029° N	88,3	B17	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
7	26,172078° E	56,459777° N	87,4	B18	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
8	26,165173° E	56,476191° N	86,9	B2	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
9	26,126903° E	56,459445° N	88,5	B22	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
10	26,185332° E	56,461630° N	86,1	B23	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
11	26,128682° E	56,448011° N	89,6	B24	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
12	26,138586° E	56,446097° N	88,9	B25	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
13	26,209970° E	56,481126° N	87,8	B3	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
14	26,161081° E	56,469909° N	86,3	B4	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
15	26,193913° E	56,473053° N	87,1	B5	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
16	26,191707° E	56,466900° N	88,4	B7	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
17	26,192580° E	56,461771° N	87,0	B9	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
18	26,154944° E	56,472000° N	86,4	1	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	162,0	1 894	10,8
19	26,171545° E	56,464065° N	87,4	2	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	162,0	1 894	10,8
20	26,188797° E	56,477423° N	87,3	10	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	162,0	1 894	10,8
21	26,191766° E	56,482416° N	88,1	15	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	162,0	1 894	10,8
22	26,184830° E	56,485277° N	88,1	12	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	162,0	1 894	10,8
23	26,195723° E	56,490817° N	88,2	18	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	162,0	1 894	10,8
24	26,184789° E	56,490106° N	88,3	14	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	162,0	1 894	10,8
25	26,192600° E	56,495313° N	88,9	17	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	162,0	1 894	10,8
26	26,209173° E	56,491273° N	88,1	24	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	162,0	1 894	10,8
27	26,213491° E	56,496603° N	89,1	21-A	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	162,0	1 894	10,8
28	26,218949° E	56,493438° N	89,5	22-A	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	162,0	1 894	10,8
29	26,214396° E	56,484740° N	88,5	20-A	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	162,0	1 894	10,8
30	26,206995° E	56,486499° N	87,9	19-A	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	162,0	1 894	10,8
31	26,198775° E	56,480846° N	87,4	16-A	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	162,0	1 894	10,8
32	26,184611° E	56,494373° N	88,5	13-A	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	162,0	1 894	10,8
33	26,178446° E	56,474208° N	87,2	11-A	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	162,0	1 894	10,8
34	26,179996° E	56,479330° N	88,4	09-A	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	162,0	1 894	10,8

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SHADOW - Main Result

Calculation: 7. CUMULATIVE Curtailment Alternative Real Case

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Longitude	Latitude	Z	Row data/Description	WTG type		Type-generator	Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
				Valid	Manufact.					Calculation distance [m]	RPM [RPM]
35	26,173625° E	56,483937° N	86,9 08-A	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	162,0	1 894	10,8
36	26,163370° E	56,484575° N	88,4 03-A	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	162,0	1 894	10,8
37	26,168908° E	56,479068° N	86,9 04-A	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	162,0	1 894	10,8
38	26,176971° E	56,466954° N	86,4 06-A	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	162,0	1 894	10,8
39	26,177736° E	56,450016° N	88,6 31-C	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	162,0	1 894	10,8
40	26,170673° E	56,453686° N	88,8 32-C	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	162,0	1 894	10,8
41	26,180636° E	56,458079° N	88,4 33-C	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	162,0	1 894	10,8
42	26,133687° E	56,495255° N	92,4 K20	Yes	ENERCON	E-175 EP5-6 000	6 000	175,0	175,0	1 735	-
43	26,122079° E	56,490850° N	90,8 K21	Yes	ENERCON	E-175 EP5-6 000	6 000	175,0	175,0	1 735	-
44	26,124174° E	56,496394° N	91,0 K19	Yes	ENERCON	E-175 EP5-6 000	6 000	175,0	175,0	1 735	-
45	26,109636° E	56,498504° N	90,7 K18	Yes	ENERCON	E-175 EP5-6 000	6 000	175,0	175,0	1 735	-
46	26,111253° E	56,493739° N	90,3 K22	Yes	ENERCON	E-175 EP5-6 000	6 000	175,0	175,0	1 735	-
47	26,092987° E	56,533585° N	92,2 K1	Yes	ENERCON	E-175 EP5-6 000	6 000	175,0	175,0	1 735	-
48	26,131467° E	56,521036° N	92,6 K8	Yes	ENERCON	E-175 EP5-6 000	6 000	175,0	175,0	1 735	-
49	26,093765° E	56,498252° N	90,2 K17	Yes	ENERCON	E-175 EP5-6 000	6 000	175,0	175,0	1 735	-
50	26,103142° E	56,523214° N	92,5 K5	Yes	ENERCON	E-175 EP5-6 000	6 000	175,0	175,0	1 735	-
51	26,120254° E	56,515533° N	96,3 K9	Yes	ENERCON	E-175 EP5-6 000	6 000	175,0	175,0	1 735	-
52	26,093276° E	56,516918° N	93,0 K11	Yes	ENERCON	E-175 EP5-6 000	6 000	175,0	175,0	1 735	-
53	26,106853° E	56,510195° N	91,2 K12	Yes	ENERCON	E-175 EP5-6 000	6 000	175,0	175,0	1 735	-
54	26,089645° E	56,492430° N	90,5 K23	Yes	ENERCON	E-175 EP5-6 000	6 000	175,0	175,0	1 735	-
55	26,129593° E	56,534258° N	91,8 K4	Yes	ENERCON	E-175 EP5-6 000	6 000	175,0	175,0	1 735	-
56	26,113605° E	56,531660° N	92,4 K3	Yes	ENERCON	E-175 EP5-6 000	6 000	175,0	175,0	1 735	-
57	26,086963° E	56,507489° N	91,9 K15	Yes	ENERCON	E-175 EP5-6 000	6 000	175,0	175,0	1 735	-
58	26,106123° E	56,502711° N	90,6 K13	Yes	ENERCON	E-175 EP5-6 000	6 000	175,0	175,0	1 735	-
59	26,085094° E	56,501058° N	90,6 K16	Yes	ENERCON	E-175 EP5-6 000	6 000	175,0	175,0	1 735	-
60	26,096745° E	56,505013° N	90,7 K14	Yes	ENERCON	E-175 EP5-6 000	6 000	175,0	175,0	1 735	-
61	26,112453° E	56,521917° N	92,4 K6	Yes	ENERCON	E-175 EP5-6 000	6 000	175,0	175,0	1 735	-
62	26,103421° E	56,531927° N	91,9 K2	Yes	ENERCON	E-175 EP5-6 000	6 000	175,0	175,0	1 735	-
63	26,126045° E	56,525271° N	92,8 K7	Yes	ENERCON	E-175 EP5-6 000	6 000	175,0	175,0	1 735	-
64	26,107497° E	56,515765° N	94,0 K10	Yes	ENERCON	E-175 EP5-6 000	6 000	175,0	175,0	1 735	-

Shadow receptor-Input

No.	Name	Longitude	Latitude	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
				[m]	[m]	[m]	[m]	[°]		[m]
A	Aizkalnes	26,207858° E	56,520369° N	94,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
B	Zvirgzdini	26,208124° E	56,504040° N	92,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
C	Uplejas	26,220364° E	56,503587° N	90,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
D	Druku Vecumi	26,198160° E	56,512887° N	93,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
E	Kaijas	26,208687° E	56,522987° N	96,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
F	Cvetkovi	26,217847° E	56,523273° N	96,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
G	Balo ž i	26,198613° E	56,518862° N	93,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
H	Berzi	26,191627° E	56,507246° N	92,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
I	Kropini	26,207134° E	56,504585° N	92,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
J	Ergli	26,198423° E	56,502938° N	91,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
K	Nazari	26,214929° E	56,519219° N	93,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
L	Akoti	26,220549° E	56,502569° N	90,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
M	Linares	26,197407° E	56,520072° N	93,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
N	Lamani 1	26,195936° E	56,518989° N	92,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
O	Ro ž lejas	26,209238° E	56,514630° N	93,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
P	Aizupes	26,199053° E	56,518437° N	92,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
Q	Kumelites	26,218886° E	56,509968° N	93,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
R	Dzila Vada	26,169332° E	56,519514° N	91,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S	Vecumi	26,192519° E	56,505706° N	92,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
T	Rutini	26,211042° E	56,518444° N	93,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
U	Viksnes	26,207029° E	56,504358° N	92,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
V	Dimanti	26,187384° E	56,518664° N	93,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
W	Rudzi š i	26,197546° E	56,519321° N	93,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
X	Podnieki	26,225499° E	56,513205° N	93,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
Y	Stimbinaja	26,238938° E	56,519389° N	93,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
Z	Marsnica	26,227741° E	56,512101° N	91,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
AA	Vilkmui ž a	26,237475° E	56,514054° N	93,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
AB	Vecergli	26,235536° E	56,517157° N	93,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
AC	Kvie š i	26,154412° E	56,500927° N	90,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0

To be continued on next page...

SHADOW - Main Result

Calculation: 7. CUMULATIVE Curtailment Alternative Real Case

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No.	Name	Longitude	Latitude	Z	Width	Height	Elevation	Slope of	Direction mode	Eye height
				[m]	[m]	[m]	a.g.l.	window		(ZVI) a.g.l.
							[m]	[°]		[m]
AD	Me ž a Rasas	26,169055° E	56,501189° N	90,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
AE	Dravnieki	26,171153° E	56,499901° N	90,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
AF	Ogu Purvs	26,152495° E	56,497838° N	90,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
AG	Jaunmedni	26,165627° E	56,508563° N	92,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
AH	Graudini	26,169543° E	56,500262° N	90,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
AI	Birznieki	26,167532° E	56,502200° N	89,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
AJ	Irbites	26,167241° E	56,510128° N	91,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
AK	Ruki	26,168833° E	56,500283° N	90,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
AL	Vipmali	26,149905° E	56,484230° N	91,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
AM	Galvani 1	26,122805° E	56,478966° N	95,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
AN	Pludmales 1	26,148820° E	56,465677° N	87,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
AO	Pludmales	26,149040° E	56,465610° N	87,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
AP	Kalna Galvani	26,142436° E	56,482221° N	98,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
AQ	Ziedini	26,114434° E	56,468966° N	89,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
AR	Strautini	26,112449° E	56,469534° N	89,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
AS	Druvas	26,131471° E	56,473578° N	87,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
AT	Saulkrasti	26,107300° E	56,469842° N	90,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
AU	Jaundruvas 1	26,131987° E	56,472637° N	88,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
AV	Zilites	26,131108° E	56,471880° N	88,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
AW	Avotini	26,121551° E	56,481424° N	95,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
AX	Biksti	26,124410° E	56,483251° N	96,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
AY	Tudalinas	26,119697° E	56,469646° N	90,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
AZ	Kalnares	26,127965° E	56,480344° N	97,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
BA	Su š i	26,153089° E	56,492562° N	90,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
BB	Jaundruvas	26,130673° E	56,473442° N	87,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
BC	Straumenini	26,116258° E	56,469089° N	90,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
BD	Krasta Ozoli	26,128750° E	56,471771° N	88,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
BE	Galvani	26,135926° E	56,487675° N	95,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
BF	Mui ž nieki	26,113280° E	56,465079° N	91,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
BG	Me ž a Mui ž a	26,132979° E	56,466265° N	88,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
BH	Krastini	26,133875° E	56,466527° N	88,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
BI	Strauti	26,118340° E	56,466957° N	86,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
BJ	Purenes	26,117319° E	56,466719° N	87,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
BK	Uplejas	26,118170° E	56,466952° N	86,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
BL	Bazes stacija	26,120683° E	56,464128° N	90,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
BM	Spridi š i	26,114672° E	56,465253° N	91,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
BN	Klavas	26,157722° E	56,460261° N	90,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
BO	Kaupres	26,154481° E	56,452570° N	90,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
BP	Kaupres 1	26,154736° E	56,452617° N	90,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
BQ	Lici š i	26,109041° E	56,468627° N	91,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
BR	Liepšala	26,158460° E	56,460663° N	91,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
BS	Me ž vidi	26,140069° E	56,453828° N	91,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
BT	Me ž a Mui ž a	26,131989° E	56,466718° N	89,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
BU	Vilni š i	26,132310° E	56,466977° N	90,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
BV	Raceni	26,133513° E	56,467240° N	89,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
BW	Vipes skola	26,118133° E	56,466127° N	90,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
BX	Vipes skola	26,118460° E	56,466288° N	90,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
BY	Vipes skola	26,117611° E	56,466358° N	90,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
BZ	Vipes skola 1	26,119453° E	56,467114° N	88,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
CA	Slipie 1	26,139496° E	56,463705° N	87,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
CB	Upmali	26,141987° E	56,463800° N	87,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
CC	Ziemeļnieki	26,152996° E	56,441528° N	92,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
CD	Ezermui ž a	26,152602° E	56,437223° N	92,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
CE	Ezermali	26,140640° E	56,437594° N	90,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
CF	Ozolmui ž a	26,145561° E	56,430795° N	92,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
CG	Vasarnieki	26,261108° E	56,498230° N	91,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
CH	Ata š a	26,251712° E	56,496522° N	91,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
CI	Mui ž nieki	26,231972° E	56,492662° N	89,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
CJ	Rijasvecumi	26,227814° E	56,501950° N	92,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
CK	Kalvani	26,226341° E	56,501709° N	92,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
CL	Uzkalnini	26,244752° E	56,493800° N	92,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
CM	Cakstes	26,260191° E	56,491064° N	93,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
CN	Jaunie Vu š karnieki	26,234910° E	56,484228° N	89,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
CO	Upmalnieki	26,227614° E	56,486271° N	89,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0

To be continued on next page...

SHADOW - Main Result

Calculation: 7. CUMULATIVE Curtailment Alternative Real Case

...continued from previous page

No.	Name	Longitude	Latitude	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
				[m]	[m]	[m]	[m]	[°]		[m]
CP	Gruguli	26,259452° E	56,498488° N	91,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
CQ	Aramsala	26,253669° E	56,486836° N	92,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
CR	Alksni š i	26,262738° E	56,486897° N	94,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
CS	Lejsalie š i	26,262300° E	56,502792° N	93,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
CT	Araji	26,234288° E	56,484761° N	90,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
CU	Plavinas	26,258552° E	56,500071° N	92,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
CV	Zali š i	26,262376° E	56,498812° N	91,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
CW	Grugules	26,256543° E	56,498698° N	92,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
CX	Madaras	26,260204° E	56,498671° N	91,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
CY	Vu š karnieki	26,241183° E	56,489414° N	92,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
CZ	Vecares	26,260016° E	56,497881° N	90,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
DA	Strautmali	26,253233° E	56,496637° N	91,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
DB	Jaunari	26,259494° E	56,497402° N	91,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
DC	Vidsala	26,261621° E	56,480364° N	94,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
DD	Jaunie Robe ž nieki	26,169285° E	56,439743° N	89,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
DE	Smelceja	26,209466° E	56,440532° N	92,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
DF	Kukas	26,171356° E	56,430866° N	92,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
DG	O š ini	26,190535° E	56,437029° N	89,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
DH	O š ini	26,190590° E	56,437181° N	89,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
DI	Robe ž nieki	26,173089° E	56,428132° N	92,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
DJ	Pumpuri	26,202157° E	56,433538° N	91,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
DK	Pumpuri	26,201785° E	56,433455° N	92,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
DL	Berzkalnes	26,173600° E	56,434528° N	89,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
DM	Arsmenieki	26,207754° E	56,430248° N	93,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
DN	Smelceju majas	26,194039° E	56,430891° N	90,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
DO	Zemites	26,207501° E	56,438015° N	91,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
DP	Arsmenieki	26,207477° E	56,430056° N	93,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
DQ	Upi š i	26,192367° E	56,437127° N	90,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
DR	Aizveji	26,201934° E	56,435394° N	92,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
DS	Dzervites	26,200128° E	56,428906° N	91,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
DT	Jaunmasani	26,193181° E	56,428587° N	90,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
DU	Airites	26,203694° E	56,435670° N	91,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
DV	Upmalas	26,204770° E	56,429183° N	92,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0

Calculation Results

Shadow receptor

No.	Name	Shadow, expected values	
		Shadow hours per year [h/year]	Avoided hours per year [h/year]
A	Aizkalnes	0:00	
B*	Zvirgzdini	2:20	8:17
C*	Uplejas	0:25	6:26
D	Druku Vecumi	0:00	
E	Kaijas	0:00	
F	Cvetkovi	0:00	
G	Balo ž i	0:00	
H*	Berzi	0:51	0:37
I*	Kropini	1:48	7:25
J*	Ergli	1:26	12:02
K	Nazari	0:00	
L*	Akoti	0:00	9:55
M	Linares	0:00	
N	Lamani 1	0:00	
O	Ro ž lejas	0:00	
P	Aizupes	0:00	
Q	Kumelites	0:00	
R	Dzila Vada	0:00	
S*	Vecumi	0:10	3:43
T	Rutini	0:00	
U*	Viksnes	1:59	7:41
V	Dimanti	0:00	
W	Rudzi š i	0:00	

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SHADOW - Main Result

Calculation: 7. CUMULATIVE Curtailment Alternative Real Case

...continued from previous page

No.	Name	Shadow, expected values	
		Shadow hours per year [h/year]	Avoided hours per year [h/year]
	X Podnieki	0:00	
	Y Stimbinaja	0:00	
	Z Marsnica	0:00	
	AA Vilkmui ž a	0:00	
	AB Vecergli	0:00	
	AC Kvie š i	2:32	
	AD* Me ž a Rasas	1:55	4:13
	AE* Dravnieki	4:23	5:28
	AF* Ogu Purvs	0:48	4:36
	AG Jaunmedni	0:00	
	AH* Graudini	2:41	4:23
	AI* Birzniece	1:49	3:03
	AJ Irbites	0:00	
	AK* Ruki	2:49	3:50
	AL* Vipmali	3:58	69:12
	AM Galvani 1	2:03	
	AN* Pludmales 1	5:31	16:50
	AO* Pludmales	6:26	15:15
	AP* Kalna Galvani	7:29	22:41
	AQ* Ziedini	0:00	2:12
	AR* Strautini	0:35	1:08
	AS* Druvas	1:41	12:47
	AT* Saulkrasti	0:37	0:29
	AU* Jaundruvas 1	2:38	15:15
	AV* Zilites	6:26	11:11
	AW* Avotini	0:41	0:41
	AX* Biksti	1:14	0:04
	AY* Tudalinas	3:21	2:18
	AZ* Kalnares	1:09	3:56
	BA* Su š i	2:48	12:28
	BB* Jaundruvas	0:29	11:10
	BC* Straumenini	0:34	2:05
	BD* Krasta Ozoli	3:19	8:03
	BE* Galvani	3:51	24:13
	BF* Mui ž nieki	0:00	3:51
	BG* Me ž mui ž a	3:05	13:01
	BH* Krastini	5:13	11:25
	BI* Strauti	0:00	3:41
	BJ* Purenes	0:03	3:22
	BK* Uplejas	0:00	3:36
	BL* Bazes stacija	0:17	8:56
	BM* Spridi š i	0:00	4:01
	BN* Klavas	6:34	41:54
	BO* Kaupres	6:49	31:37
	BP* Kaupres 1	7:35	30:50
	BQ* Lici š i	0:31	0:57
	BR* Liepsala	7:44	44:03
	BS* Me ž vidi	5:13	9:13
	BT* Me ž a Mui ž a	5:25	8:23
	BU* Vilni š i	5:46	7:47
	BV* Raceni	4:58	9:33
	BW* Vipes skola	0:03	4:04
	BX* Vipes skola	0:00	4:08
	BY* Vipes skola	0:09	3:38
	BZ* Vipes skola 1	5:38	2:31
	CA* Slipie 1	5:45	11:22
	CB* Upmali	6:56	12:03
	CC* Ziemeļnieki	5:30	26:19
	CD Ezermui ž a	1:21	
	CE Ezermali	0:00	
	CF Ozolmui ž a	0:00	
	CG Vasarnieki	0:00	
	CH Ata š a	0:00	

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SHADOW - Main Result

Calculation: 7. CUMULATIVE Curtailment Alternative Real Case

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No.	Name	Shadow, expected values	
		Shadow hours per year [h/year]	Avoided hours per year [h/year]
CI*	Mui ž nieki	6:08	26:06
CJ*	Rijasvecumi	1:14	8:00
CK*	Kalvani	1:27	8:58
CL	Uzkalnini	2:45	
CM	Cakstes	0:00	
CN*	Jaunie Vu š karnieki	2:55	11:33
CO*	Upmalnieki	1:24	31:07
CP	Gruguli	0:00	
CQ	Aramsala	0:00	
CR	Alksni š i	0:00	
CS	Lejsalie š i	0:00	
CT*	Araji	5:53	8:58
CU	Plavinas	0:00	
CV	Zali š i	0:00	
CW	Grugules	0:00	
CX	Madaras	0:00	
CY*	Vu š karnieki	3:53	6:25
CZ	Vecares	0:00	
DA	Strautmali	0:00	
DB	Jaunari	0:00	
DC	Vidsala	0:00	
DD	Jaunie Robe ž nieki	0:00	
DE	Smelceja	0:00	
DF	Kukas	0:00	
DG	O š ini	0:00	
DH	O š ini	0:00	
DI	Robe ž nieki	0:00	
DJ	Pumpuri	0:00	
DK	Pumpuri	0:00	
DL	Berzkalnes	0:00	
DM	Arsmenieki	0:00	
DN	Smelceju majas	0:00	
DO	Zemites	0:00	
DP	Arsmenieki	0:00	
DQ	Upi š i	0:00	
DR	Aizveji	0:00	
DS	Dzervites	0:00	
DT	Jaunmasani	0:00	
DU	Airites	0:00	
DV	Upmalas	0:00	

* Receptors where shadow flicker is reduced by curtailment

Total amount of flickering on the shadow receptors caused by each WTG

No.	Name	Stopped due to flicker curtailment [h/year]	Expected [h/year]
1	B1	165:18	16:44
2	B11	43:22	1:16
3	B12	64:23	2:06
4	B14		3:23
5	B15	26:07	3:51
6	B17	269:03	4:09
7	B18	64:08	2:02
8	B2	21:11	1:56
9	B22	301:18	13:48
10	B23		3:44
11	B24	43:47	5:39
12	B25	126:14	0:04
13	B3	18:32	4:44
14	B4	36:30	16:11
15	B5		0:00
16	B7		0:00
17	B9		0:00

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SHADOW - Main Result

Calculation: 7. CUMULATIVE Curtailment Alternative Real Case

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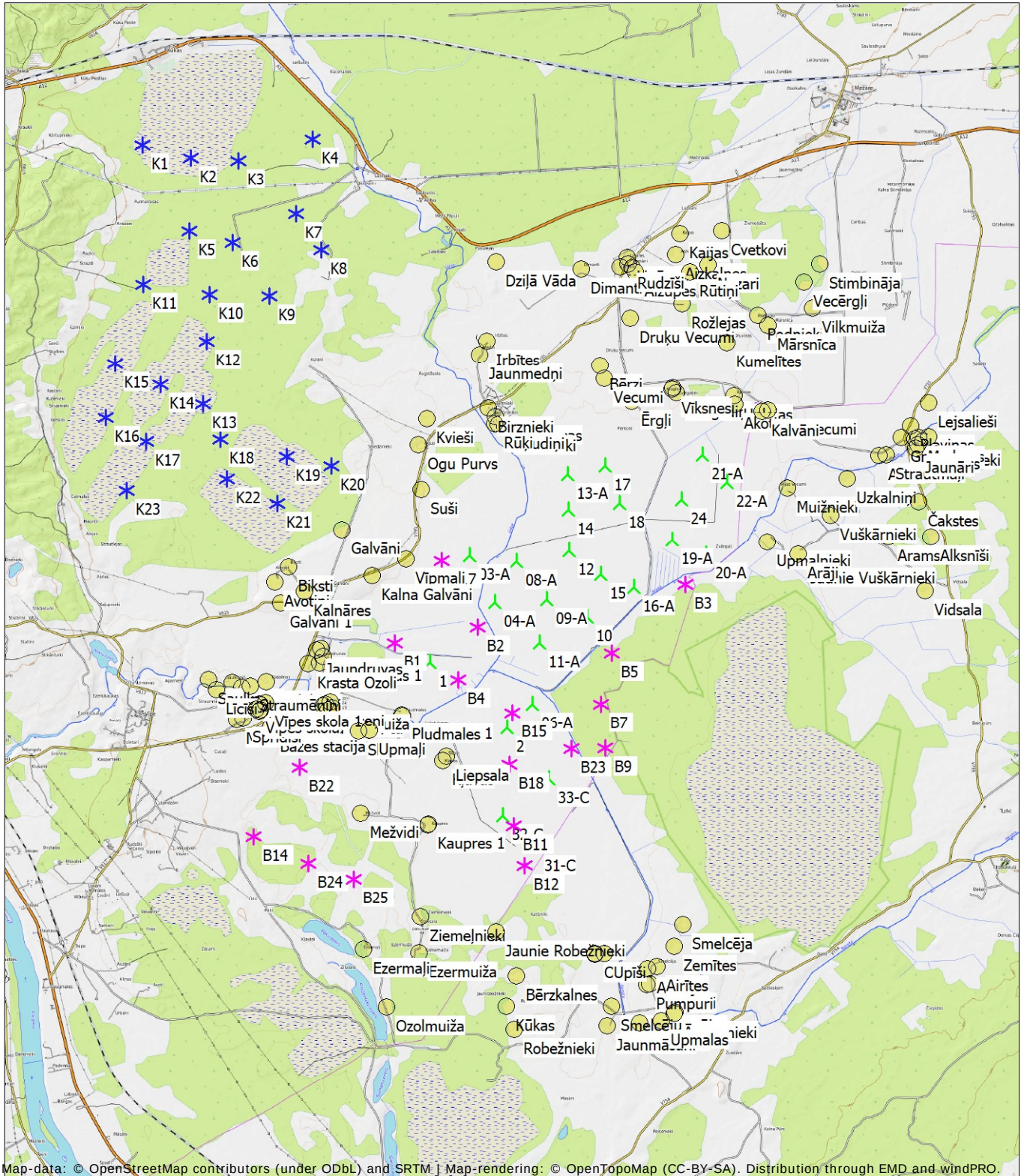
No.	Name	Stopped due to flicker curtailment [h/year]	Expected [h/year]
18	1	97:09	3:21
19	2	86:10	2:05
20	10		0:00
21	15		0:00
22	12		0:40
23	18		2:53
24	14	53:31	0:50
25	17	119:10	4:06
26	24	96:49	6:23
27	21-A	272:33	2:58
28	22-A	220:33	3:58
29	20-A	73:12	3:45
30	19-A	26:38	2:21
31	16-A		1:24
32	13-A	88:02	2:21
33	11-A		0:00
34	09-A		0:00
35	08-A		4:50
36	03-A	115:33	0:48
37	04-A	25:26	1:19
38	06-A	47:02	0:11
39	31-C	37:08	3:33
40	32-C	59:40	3:44
41	33-C	12:08	4:22
42	K20	41:57	2:32
43	K21	66:50	4:24
44	K19		0:00
45	K18		0:00
46	K22	15:47	0:00
47	K1		0:00
48	K8		0:00
49	K17		0:00
50	K5		0:00
51	K9		0:00
52	K11		0:00
53	K12		0:00
54	K23		0:00
55	K4		0:00
56	K3		0:00
57	K15		0:00
58	K13		0:00
59	K16		0:00
60	K14		0:00
61	K6		0:00
62	K2		0:00
63	K7		0:00
64	K10		0:00

Total times in Receptor wise and WTG wise tables can differ, as a WTG can lead to flicker at 2 or more receptors simultaneously and/or receptors may receive flicker from 2 or more WTGs simultaneously.

The calculation of the total expected values for a given receptor assumes a weighted average directional reduction for all WTGs contributing to shadow flicker within the same day. In the case where shadow flicker from different WTGs is not concurrent within the day, the total expected time at a given receptor may deviate marginally from the individual flicker time caused by each turbine separately.

SHADOW - Map

Calculation: 7. CUMULATIVE Curtailment Alternative Real Case



Map-data: © OpenStreetMap contributors (under ODbL) and SRTM | Map-rendering: © OpenTopoMap (CC-BY-SA). Distribution through EMD and windPRO.



▲ New WTG

Map: OpenTopoMap, Print scale 1:75 000, Map center Geo WGS84 East: 26,173920° E North: 56,481193° N

★ Existing WTG

● Shadow receptor

Flicker map level: DTM model