

9 PRIEDAS

Šešėliavimo sklaidos modeliavimo rezultatai

**Prognozuojamas PŪV šėšėliavimo
vertinimas "1" alternatyva**

SHADOW - Main Result

Calculation: Seseliavimas

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) [KAUNAS]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
1,41 2,36 4,03 5,55 8,35 8,36 8,16 7,72 5,06 3,23 1,33 0,98

Operational hours are calculated from WTGs in calculation and wind distribution:

Site data: ATLAS 12 sectors; Radius: 30 500 m (7)

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
907 462 218 271 537 594 718 938 1 113 950 721 511 7 940

Idle start wind speed: Cut in wind speed from power curve

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:

Height contours used: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)

Receptor grid resolution: 1,0 m

All coordinates are in

Lithuanian TM LKS94-LKS94 (LT)

WTGs

WTG	Y	X	Z	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.	Type-generator				Calculation distance [m]	RPM [RPM]
RV01	453 868	6 135 039	102,9	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV02	453 407	6 134 505	104,5	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV03	453 203	6 135 212	103,1	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV04	452 568	6 134 952	101,7	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV05	451 645	6 134 901	101,0	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV06	451 457	6 135 909	98,9	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV07	450 825	6 135 371	98,1	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV08	450 503	6 136 375	98,3	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV09	449 999	6 135 880	97,3	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV10	449 885	6 136 804	101,8	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV11	449 095	6 136 483	104,6	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV12	448 350	6 137 597	104,0	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV13	447 086	6 138 092	105,9	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV14	453 441	6 137 724	106,1	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV15	451 203	6 139 337	111,6	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV16	449 502	6 139 367	107,4	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV17	448 523	6 139 188	105,0	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV18	448 230	6 139 887	103,1	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV19	449 141	6 140 182	109,6	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV20	449 264	6 140 998	107,0	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV21	448 636	6 141 273	109,9	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV22	447 106	6 142 740	116,4	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV23	441 100	6 138 325	77,1	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV24	441 272	6 139 092	80,9	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV25	440 561	6 139 438	88,0	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV26	445 018	6 143 790	111,5	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV27	445 313	6 145 441	112,0	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV28	444 795	6 145 509	119,0	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV29	444 406	6 145 020	113,4	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV30	443 437	6 145 283	118,6	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV31	443 619	6 144 173	110,9	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV32	442 989	6 144 064	107,0	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

	Y	X	Z	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.	Type-generator				Calculation distance [m]	RPM
RV33	441 445	6 143 796	106,1	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV34	440 823	6 143 768	104,2	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV35	441 038	6 144 466	104,9	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV36	441 706	6 145 180	110,9	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV37	442 190	6 145 703	113,1	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV38	441 628	6 145 943	115,4	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV39	441 860	6 146 591	119,7	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV40	441 772	6 147 276	123,6	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV41	441 007	6 146 940	120,1	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV42	435 457	6 143 037	104,5	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV43	434 653	6 143 206	103,2	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV44	429 843	6 145 279	107,2	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV45	430 858	6 145 962	112,0	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV46	429 547	6 145 964	107,8	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV47	428 898	6 145 911	105,5	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV48	429 377	6 146 473	109,7	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV49	430 131	6 147 299	113,2	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV50	430 097	6 148 065	115,9	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV51	430 989	6 147 206	115,0	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV52	432 724	6 147 028	116,1	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV53	432 836	6 147 815	121,0	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV54	433 174	6 148 528	127,1	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV55	433 839	6 148 125	128,3	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV56	434 043	6 148 785	126,3	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV57	434 569	6 148 337	126,9	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	

Shadow receptor-Input

No.	Y	X	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
			[m]	[m]	[m]	[m]	[°]		[m]
S01	450 043	6 137 499	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S02	449 224	6 137 081	103,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S03	448 751	6 135 985	102,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S04	448 585	6 135 967	109,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S05	448 573	6 136 006	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S06	447 646	6 138 441	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S07	447 633	6 138 553	104,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S08	453 591	6 138 330	98,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S09	453 741	6 137 400	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S10	453 750	6 137 393	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S11	453 202	6 138 009	104,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S12	448 091	6 138 813	103,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S13	449 932	6 140 871	108,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S14	449 904	6 140 839	109,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S15	449 881	6 140 803	110,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S16	445 607	6 144 035	113,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S17	443 957	6 144 585	114,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S18	442 773	6 144 681	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S19	442 417	6 144 159	107,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S20	442 394	6 144 116	105,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S21	441 242	6 143 270	106,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S22	441 303	6 143 272	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S23	441 264	6 143 226	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S24	441 328	6 143 216	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S25	441 316	6 143 144	107,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S26	441 372	6 143 158	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S27	440 438	6 143 298	106,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S28	440 282	6 143 882	106,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S29	440 326	6 143 930	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S30	440 631	6 144 514	110,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S31	441 067	6 145 854	117,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S32	441 772	6 139 583	90,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0

To be continued on next page...

Project:

UAB Raseiniu vejas 57 VE

Licensed user:

UAB ARCHSTUDIJA
Konstitucijos pr. 9-41
LT-09308 Vilnius

Calculated:

2024-02-26 10:17/3.6.355

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

No.	Y	X	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
			[m]	[m]	[m]	[m]	[°]		[m]
S33	441 074	6 139 866	89,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S34	429 681	6 144 640	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S35	428 367	6 145 810	103,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S36	428 466	6 146 089	104,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S37	428 768	6 146 376	107,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S38	431 508	6 147 720	119,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S39	432 332	6 148 310	120,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0

Calculation Results

Shadow receptor

Shadow, expected values

No. Shadow hours

per year

[h/year]

S01	16:19
S02	37:48
S03	8:55
S04	9:45
S05	10:46
S06	14:35
S07	13:38
S08	12:09
S09	0:00
S10	0:00
S11	29:13
S12	10:11
S13	36:50
S14	38:35
S15	38:01
S16	13:03
S17	28:56
S18	36:14
S19	34:35
S20	36:19
S21	0:00
S22	4:03
S23	0:00
S24	4:40
S25	0:00
S26	6:39
S27	12:54
S28	24:08
S29	24:20
S30	73:22
S31	44:56
S32	14:55
S33	17:10
S34	0:00
S35	47:14
S36	45:37
S37	62:13
S38	25:49
S39	34:57

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

No.	Name	Expected [h/year]
RV01	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (1)	0:00
RV02	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (2)	0:00
RV03	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (3)	0:00
RV04	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (4)	0:00
RV05	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (8)	0:00

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

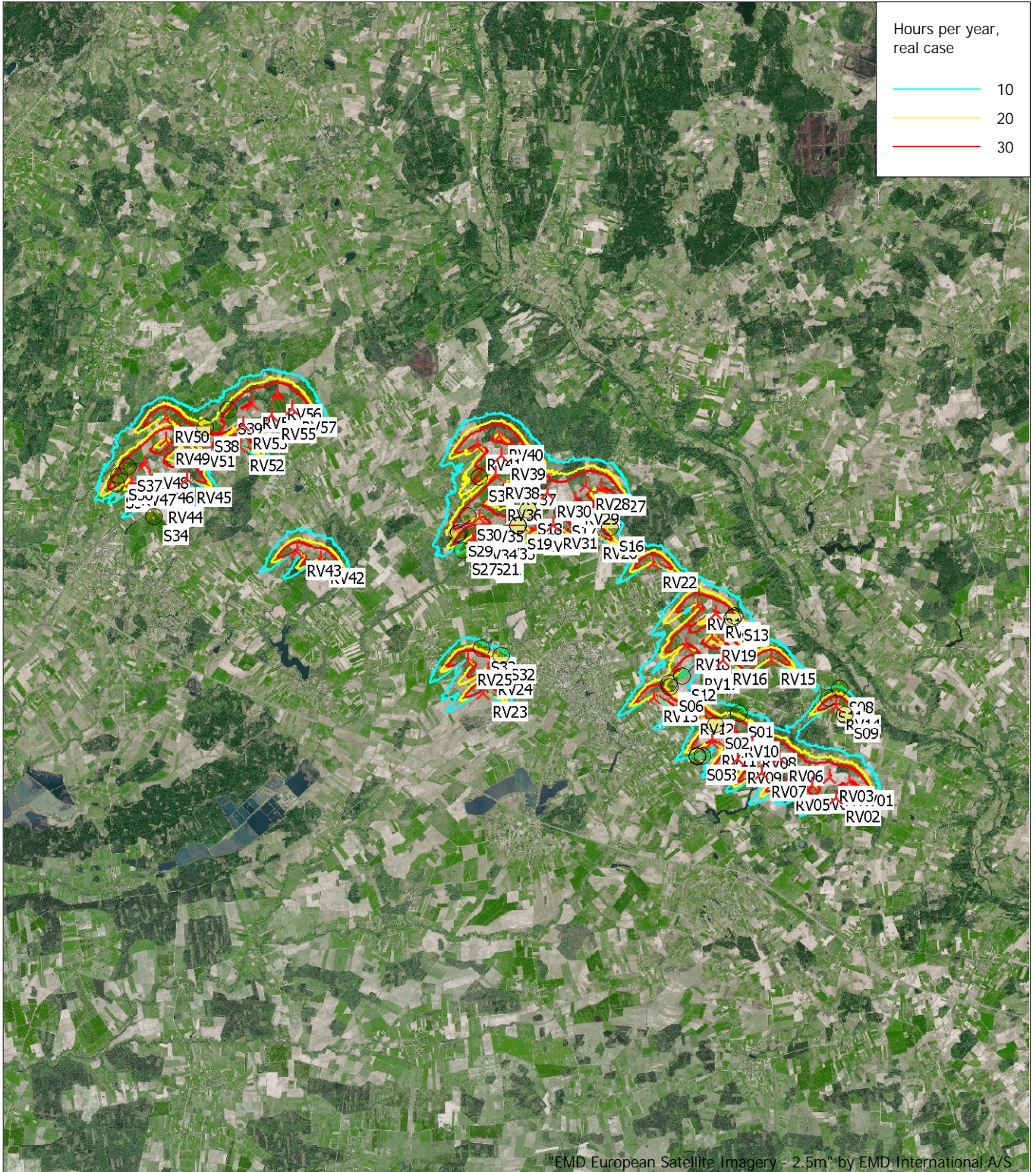
No.	Name	Expected [h/year]
RV06	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (15)	0:00
RV07	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (16)	0:00
RV08	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (17)	7:22
RV09	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (66)	7:27
RV10	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (18)	28:37
RV11	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (19)	14:58
RV12	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (20)	18:55
RV13	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (21)	17:59
RV14	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (22)	41:23
RV15	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (23)	0:00
RV16	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (24)	5:37
RV17	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (25)	1:15
RV18	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (26)	1:18
RV19	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (27)	5:12
RV20	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (28)	39:09
RV21	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (29)	9:42
RV22	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (30)	0:00
RV23	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (31)	2:06
RV24	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (32)	15:58
RV25	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (33)	13:53
RV26	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (34)	15:07
RV27	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (35)	6:55
RV28	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (36)	0:00
RV29	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (37)	3:25
RV30	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (38)	0:00
RV31	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (39)	26:14
RV32	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (40)	52:17
RV33	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (41)	30:40
RV34	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (42)	38:11
RV35	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (43)	61:46
RV36	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (44)	25:28
RV37	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (45)	4:25
RV38	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (46)	35:23
RV39	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (47)	0:00
RV40	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (48)	0:00
RV41	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (49)	0:00
RV42	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (50)	0:00
RV43	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (51)	0:00
RV44	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (52)	5:40
RV45	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (53)	0:00
RV46	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (54)	16:44
RV47	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (55)	76:46
RV48	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (56)	52:29
RV49	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (57)	7:05
RV50	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (58)	4:00
RV51	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (59)	9:40
RV52	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (60)	3:42
RV53	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (61)	12:44
RV54	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (62)	23:32
RV55	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (63)	2:25
RV56	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (64)	2:53
RV57	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (65)	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

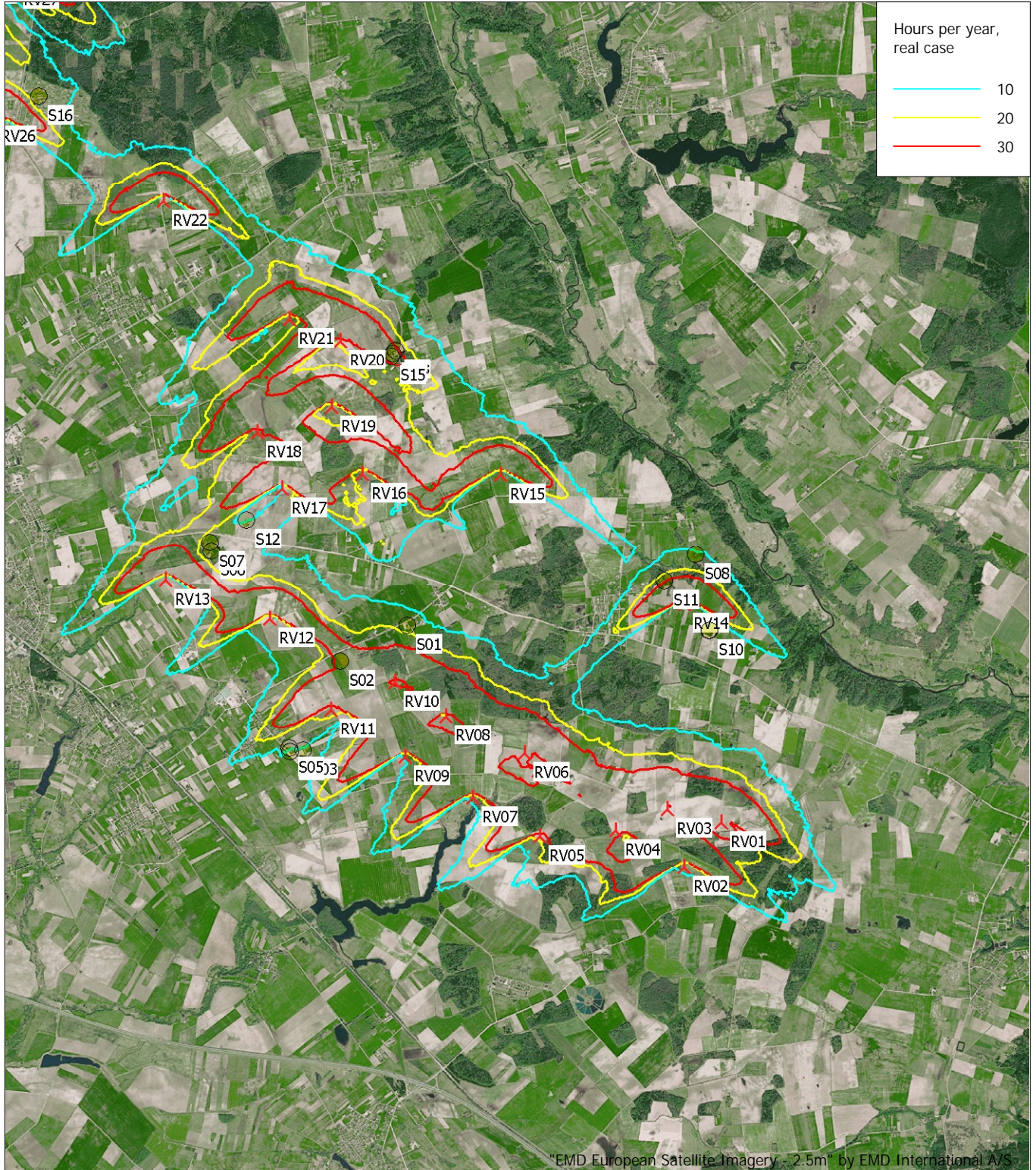
Calculation: Seseliavimas



Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:200 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 441 685 North: 6 141 462
New WTG Shadow receptor
Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)
Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Map

Calculation: Seseliavimas



Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:70 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 451 146 North: 6 137 782

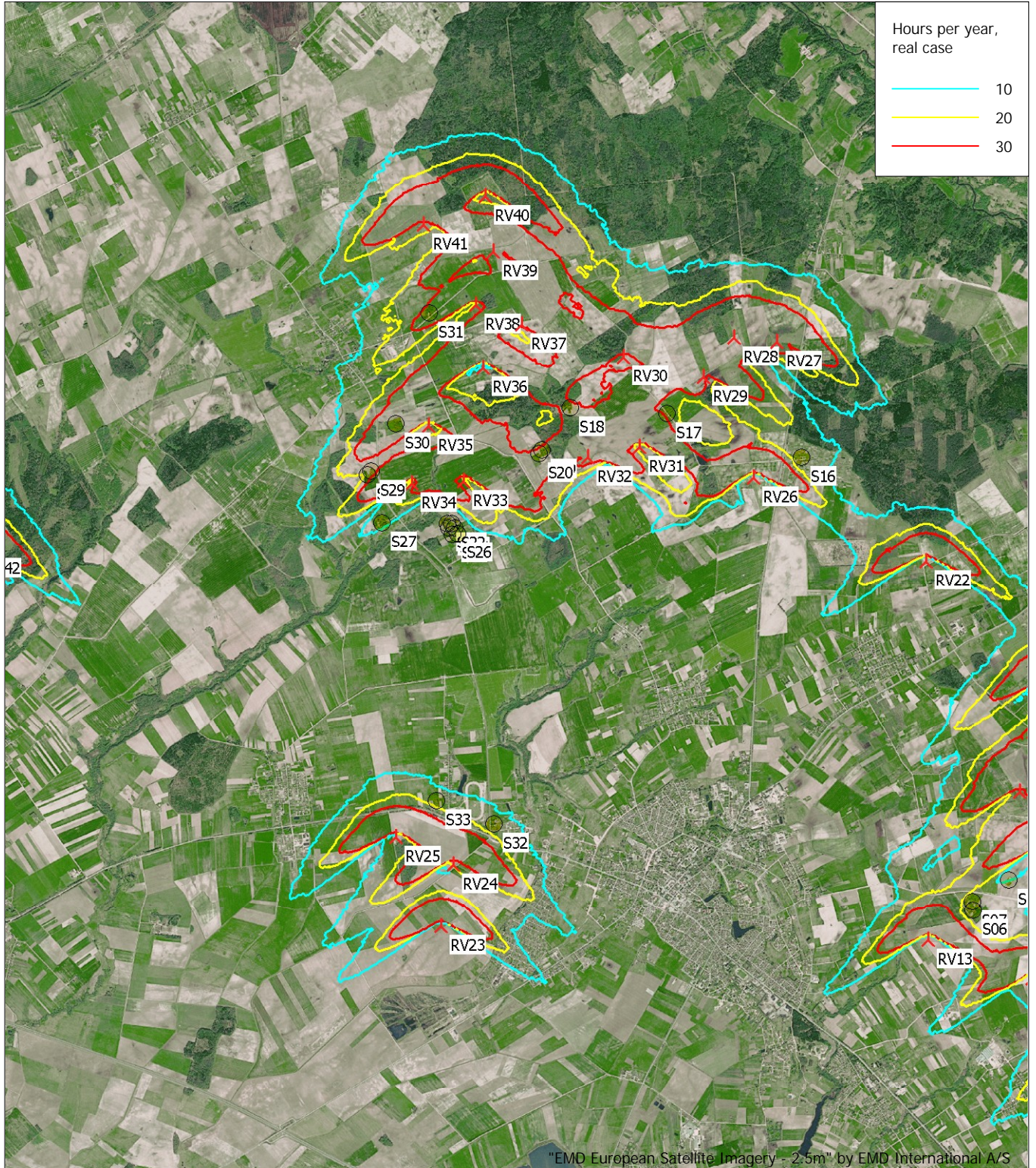
▲ New WTG ● Shadow receptor

Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)

Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Map

Calculation: Seseliavimas



Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:70 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 441 855 North: 6 142 329

▲ New WTG

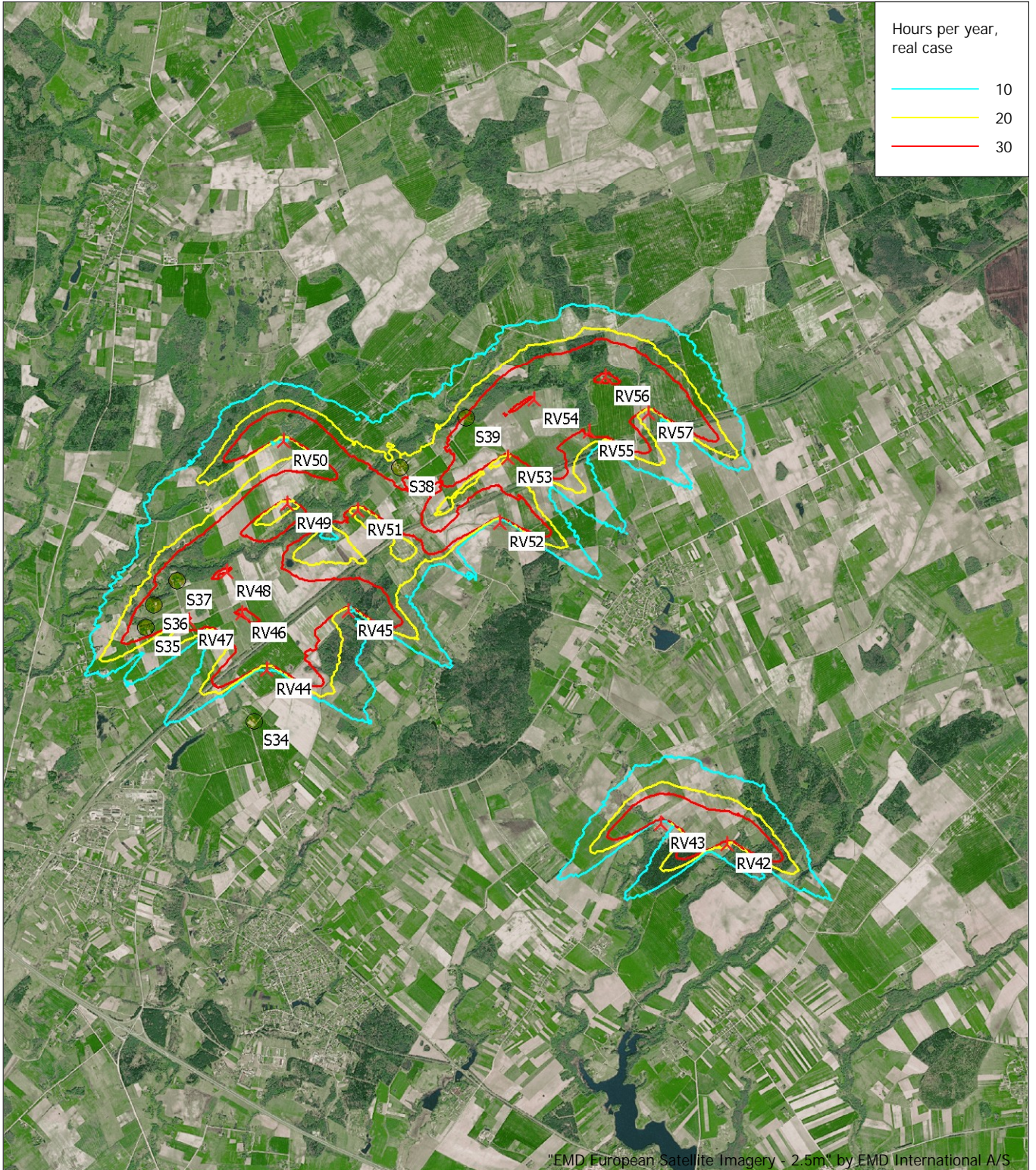
● Shadow receptor

Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)

Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Map

Calculation: Seseliavimas



Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:70 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 432 696 North: 6 146 078
▲ New WTG ● Shadow receptor
Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)
Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Main Result

Calculation: Seseliavimas

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) [KAUNAS]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
1,41 2,36 4,03 5,55 8,35 8,36 8,16 7,72 5,06 3,23 1,33 0,98

Operational hours are calculated from WTGs in calculation and wind distribution:

Site data: ATLAS 12 sectors; Radius: 30 500 m (7)

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
907 462 218 271 537 594 718 938 1 113 950 721 511 7 940

Idle start wind speed: Cut in wind speed from power curve

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:

Height contours used: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)

Receptor grid resolution: 1,0 m

All coordinates are in

Lithuanian TM LKS94-LKS94 (LT)

WTGs

	Y	X	Z	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.	Type-generator				Calculation distance [m]	RPM
RV01	453 868	6 135 039	102,9	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV02	453 407	6 134 505	104,5	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV03	453 203	6 135 212	103,1	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV04	452 568	6 134 952	101,7	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV05	451 645	6 134 901	101,0	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV06	451 457	6 135 909	98,9	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV07	450 825	6 135 371	98,1	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV08	450 503	6 136 375	98,3	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV09	449 999	6 135 880	97,3	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV10	449 885	6 136 804	101,8	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV11	449 095	6 136 483	104,6	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV12	448 350	6 137 597	104,0	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV13	447 086	6 138 092	105,9	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV14	453 441	6 137 724	106,1	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV15	451 203	6 139 337	111,6	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV16	449 502	6 139 367	107,4	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV17	448 523	6 139 188	105,0	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV18	448 230	6 139 887	103,1	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV19	449 141	6 140 182	109,6	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV20	449 264	6 140 998	107,0	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV21	448 636	6 141 273	109,9	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV22	447 106	6 142 740	116,4	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV23	441 100	6 138 325	77,1	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV24	441 272	6 139 092	80,9	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV25	440 561	6 139 438	88,0	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV26	445 018	6 143 790	111,5	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV27	445 313	6 145 441	112,0	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV28	444 795	6 145 509	119,0	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV29	444 406	6 145 020	113,4	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV30	443 437	6 145 283	118,6	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

	Y	X	Z	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.	Type-generator				Calculation distance [m]	RPM [RPM]
RV31	443 619	6 144 173	110,9	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV32	442 989	6 144 064	107,0	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV33	441 445	6 143 796	106,1	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV34	440 823	6 143 768	104,2	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV35	441 038	6 144 466	104,9	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV36	441 706	6 145 180	110,9	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV37	442 190	6 145 703	113,1	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV38	441 628	6 145 943	115,4	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV39	441 860	6 146 591	119,7	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV40	441 772	6 147 276	123,6	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV41	441 007	6 146 940	120,1	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV42	435 457	6 143 037	104,5	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV43	434 653	6 143 307	103,2	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV44	429 843	6 145 279	107,2	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV45	430 858	6 145 962	112,0	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV46	429 547	6 145 964	107,8	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV47	428 898	6 145 891	105,5	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV48	429 377	6 146 473	109,7	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV49	430 131	6 147 290	113,2	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV50	430 097	6 148 065	115,9	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV51	430 989	6 147 206	115,0	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV52	432 724	6 147 028	116,1	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV53	432 836	6 147 815	121,0	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV54	433 174	6 148 528	127,1	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV55	433 839	6 148 125	128,3	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV56	434 043	6 148 785	126,3	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV57	434 569	6 148 337	126,9	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	

Shadow receptor-Input

No.	Y	X	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
	[m]	[m]	[m]	[m]	[m]	[m]	[°]		[m]
S01	450 043	6 137 499	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S02	449 224	6 137 081	103,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S03	448 751	6 135 985	102,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S04	448 585	6 135 967	109,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S05	448 573	6 136 006	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S06	447 646	6 138 441	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S07	447 633	6 138 553	104,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S08	453 591	6 138 330	98,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S09	453 741	6 137 400	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S10	453 750	6 137 393	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S11	453 202	6 138 009	104,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S12	448 091	6 138 813	103,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S13	449 932	6 140 871	108,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S14	449 904	6 140 839	109,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S15	449 881	6 140 803	110,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S16	445 607	6 144 035	113,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S17	443 957	6 144 585	114,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S18	442 773	6 144 681	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S19	442 417	6 144 159	107,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S20	442 394	6 144 116	105,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S21	441 242	6 143 270	106,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S22	441 303	6 143 272	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S23	441 264	6 143 226	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S24	441 328	6 143 216	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S25	441 316	6 143 144	107,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S26	441 372	6 143 158	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S27	440 438	6 143 298	106,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S28	440 282	6 143 882	106,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S29	440 326	6 143 930	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S30	440 631	6 144 514	110,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

No.	Y	X	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
			[m]	[m]	[m]	[m]	[°]		[m]
S31	441 067	6 145 854	117,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S32	441 772	6 139 583	90,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S33	441 074	6 139 866	89,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S34	429 681	6 144 640	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S35	428 367	6 145 810	103,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S36	428 466	6 146 089	104,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S37	428 768	6 146 376	107,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S38	431 508	6 147 720	119,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S39	432 332	6 148 310	120,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0

Calculation Results

Shadow receptor

Shadow, expected values

No.	Shadow hours per year [h/year]	Avoided hours per year [h/year]
S01	16:19	
S02*	24:58	12:34
S03	8:55	
S04	9:45	
S05	10:46	
S06	14:35	
S07	13:38	
S08	12:09	
S09	0:00	
S10	0:00	
S11	29:13	
S12	10:11	
S13*	14:31	22:16
S14*	10:37	27:53
S15*	16:28	21:26
S16	13:03	
S17	28:56	
S18*	24:35	11:19
S19*	21:20	13:15
S20*	16:06	20:14
S21	0:00	
S22	4:03	
S23	0:00	
S24	4:40	
S25	0:00	
S26	6:39	
S27	12:54	
S28	24:08	
S29	24:20	
S30*	18:45	54:11
S31*	9:25	35:23
S32	14:55	
S33	17:10	
S34	0:00	
S35*	12:08	35:03
S36*	6:46	38:50
S37*	12:39	49:33
S38	25:49	
S39*	26:09	8:45

* 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]
RV01	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (1)		0:00
RV02	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (2)		0:00

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

No.	Name	Stopped due to flicker curtailment [h/year]	Expected [h/year]
RV03	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (3)		0:00
RV04	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (4)		0:00
RV05	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (8)		0:00
RV06	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (15)		0:00
RV07	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (16)		0:00
RV08	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (17)		7:22
RV09	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (66)		7:27
RV10	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (18)		28:37
RV11	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (19)	114:52	2:23
RV12	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (20)		18:55
RV13	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (21)		17:59
RV14	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (22)		41:23
RV15	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (23)		0:00
RV16	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (24)		5:37
RV17	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (25)		1:15
RV18	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (26)		1:18
RV19	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (27)		5:12
RV20	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (28)	108:26	10:12
RV21	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (29)		9:42
RV22	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (30)		0:00
RV23	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (31)		2:06
RV24	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (32)		15:58
RV25	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (33)		13:53
RV26	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (34)		15:07
RV27	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (35)		6:55
RV28	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (36)		0:00
RV29	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (37)		3:25
RV30	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (38)		0:00
RV31	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (39)		26:14
RV32	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (40)	185:35	20:23
RV33	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (41)		30:40
RV34	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (42)		38:11
RV35	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (43)	203:44	7:35
RV36	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (44)		25:28
RV37	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (45)		4:25
RV38	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (46)	131:48	0:00
RV39	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (47)		0:00
RV40	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (48)		0:00
RV41	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (49)		0:00
RV42	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (50)		0:00
RV43	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (51)		0:00
RV44	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (52)		5:40
RV45	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (53)		0:00
RV46	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (54)		16:44
RV47	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (55)	374:08	0:00
RV48	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (56)	176:07	4:33
RV49	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (57)		7:05
RV50	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (58)		4:00
RV51	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (59)		9:40
RV52	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (60)		3:42
RV53	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (61)	56:24	3:59
RV54	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (62)		23:32
RV55	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (63)		2:25
RV56	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (64)		2:53
RV57	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (65)		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.

**Prognozuojamas PŪV šėšėliavimo
vertinimas "2" alternatyva**

SHADOW - Main Result

Calculation: Seseliavimas

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) [KAUNAS]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1,41	2,36	4,03	5,55	8,35	8,36	8,16	7,72	5,06	3,23	1,33	0,98

Operational hours are calculated from WTGs in calculation and wind distribution:

Site data: ATLAS 12 sectors; Radius: 30 500 m (7)

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
961	489	231	287	569	629	760	993	1 178	1 006	763	541	8 408

Idle start wind speed: Cut in wind speed from power curve

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:

Height contours used: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)
Receptor grid resolution: 1,0 m

All coordinates are in
Lithuanian TM LKS94-LKS94 (LT)

WTGs

	Y	X	Z	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.	Type-generator				Calculation distance [m]	RPM [RPM]
RV01	453 868	6 135 039	102,9	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV02	453 407	6 134 505	104,5	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV03	453 203	6 135 212	103,1	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV04	452 568	6 134 952	101,7	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV05	451 645	6 134 901	101,0	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV06	451 457	6 135 909	98,9	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV07	450 825	6 135 371	98,1	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV08	450 503	6 136 375	98,3	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV09	449 999	6 135 880	97,3	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV10	449 885	6 136 804	101,8	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV11	449 095	6 136 483	104,6	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV12	448 350	6 137 597	104,0	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV13	447 086	6 138 092	105,9	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV14	453 441	6 137 724	106,1	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV15	451 203	6 139 337	111,6	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV16	449 502	6 139 367	107,4	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV17	448 523	6 139 188	105,0	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV18	448 230	6 139 887	103,1	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV19	449 141	6 140 182	109,6	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV20	449 264	6 140 998	107,0	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV21	448 636	6 141 273	109,9	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV22	447 106	6 142 740	116,4	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV23	441 100	6 138 325	77,1	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV24	441 272	6 139 092	80,9	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV25	440 561	6 139 438	88,0	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV26	445 018	6 143 790	111,5	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV27	445 313	6 145 441	112,0	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV28	444 795	6 145 509	119,0	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV29	444 406	6 145 020	113,4	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV30	443 437	6 145 283	118,6	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV31	443 619	6 144 173	110,9	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV32	442 989	6 144 064	107,0	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

	Y	X	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
RV33	441 445	6 143 796	106,1	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV34	440 823	6 143 768	104,2	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV35	441 038	6 144 466	104,9	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV36	441 706	6 145 180	110,9	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV37	442 190	6 145 703	113,1	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV38	441 628	6 145 943	115,4	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV39	441 860	6 146 591	119,7	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV40	441 772	6 147 276	123,6	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV41	441 007	6 146 940	120,1	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV42	435 457	6 143 037	104,5	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV43	434 653	6 143 307	103,2	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV44	429 843	6 145 279	107,2	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV45	430 858	6 145 962	112,0	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV46	429 547	6 145 964	107,8	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV47	428 898	6 145 891	105,5	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV48	429 377	6 146 473	109,7	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV49	430 131	6 147 299	113,2	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV50	430 097	6 148 065	115,9	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV51	430 989	6 147 206	115,0	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV52	432 724	6 147 028	116,1	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV53	432 836	6 147 815	121,0	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV54	433 174	6 148 528	127,1	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV55	433 839	6 148 125	128,3	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV56	434 043	6 148 785	126,3	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV57	434 569	6 148 337	126,9	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0

Shadow receptor-Input

No.	Y	X	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
	[m]	[m]	[m]	[m]	[m]	[m]	[°]		[m]
S01	450 043	6 137 499	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S02	449 224	6 137 081	103,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S03	448 751	6 135 985	102,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S04	448 585	6 135 967	109,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S05	448 573	6 136 006	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S06	447 646	6 138 441	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S07	447 633	6 138 553	104,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S08	453 591	6 138 330	98,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S09	453 741	6 137 400	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S10	453 750	6 137 393	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S11	453 202	6 138 009	104,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S12	448 091	6 138 813	103,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S13	449 932	6 140 871	108,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S14	449 904	6 140 839	109,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S15	449 881	6 140 803	110,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S16	445 607	6 144 035	113,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S17	443 957	6 144 585	114,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S18	442 773	6 144 681	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S19	442 417	6 144 159	107,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S20	442 394	6 144 116	105,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S21	441 242	6 143 270	106,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S22	441 303	6 143 272	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S23	441 264	6 143 226	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S24	441 328	6 143 216	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S25	441 316	6 143 144	107,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S26	441 372	6 143 158	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S27	440 438	6 143 298	106,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S28	440 282	6 143 882	106,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S29	440 326	6 143 930	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S30	440 631	6 144 514	110,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S31	441 067	6 145 854	117,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S32	441 772	6 139 583	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: Seseliavimas

...continued from previous page

No.	Y	X	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
			[m]	[m]	[m]	[m]	[°]		[m]
S33	441 074	6 139 866	89,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S34	429 681	6 144 640	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S35	428 367	6 145 810	103,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S36	428 466	6 146 089	104,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S37	428 768	6 146 376	107,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S38	431 508	6 147 720	119,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S39	432 332	6 148 310	120,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0

Calculation Results

Shadow receptor

Shadow, expected values

No. Shadow hours
per year
[h/year]

S01	16:35
S02	39:13
S03	9:20
S04	10:12
S05	11:16
S06	14:57
S07	14:23
S08	12:28
S09	0:00
S10	0:00
S11	30:00
S12	10:13
S13	37:31
S14	39:54
S15	39:37
S16	13:34
S17	29:51
S18	37:07
S19	35:07
S20	36:51
S21	0:00
S22	4:04
S23	0:00
S24	4:41
S25	0:00
S26	6:38
S27	13:37
S28	24:30
S29	24:52
S30	75:40
S31	46:41
S32	15:10
S33	17:28
S34	0:00
S35	49:29
S36	46:57
S37	64:56
S38	26:13
S39	35:12

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

No.	Name	Expected [h/year]
RV01	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (1)	0:00
RV02	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (2)	0:00
RV03	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (3)	0:00
RV04	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (4)	0:00
RV05	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (8)	0:00

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

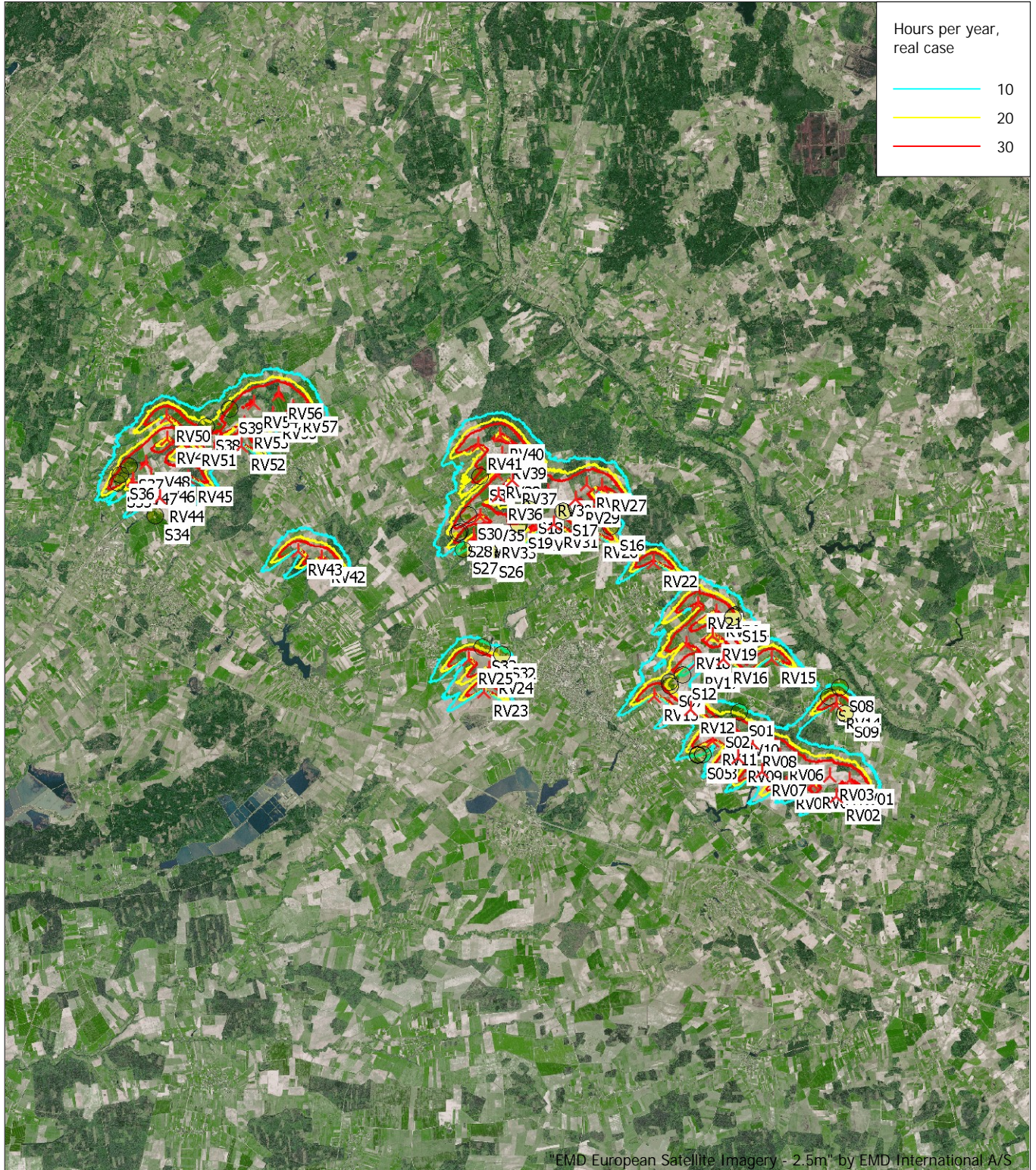
No.	Name	Expected [h/year]
RV06	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (15)	0:00
RV07	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (16)	0:00
RV08	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (17)	7:24
RV09	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (66)	7:37
RV10	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (18)	29:37
RV11	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (19)	15:20
RV12	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (20)	19:47
RV13	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (21)	18:30
RV14	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (22)	42:28
RV15	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (23)	0:00
RV16	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (24)	5:42
RV17	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (25)	1:39
RV18	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (26)	1:18
RV19	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (27)	5:19
RV20	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (28)	41:01
RV21	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (29)	9:52
RV22	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (30)	0:00
RV23	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (31)	2:03
RV24	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (32)	16:13
RV25	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (33)	14:12
RV26	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (34)	15:28
RV27	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (35)	7:21
RV28	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (36)	0:00
RV29	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (37)	3:41
RV30	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (38)	0:00
RV31	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (39)	26:50
RV32	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (40)	53:03
RV33	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (41)	31:50
RV34	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (42)	38:52
RV35	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (43)	63:23
RV36	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (44)	26:33
RV37	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (45)	4:29
RV38	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (46)	36:56
RV39	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (47)	0:00
RV40	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (48)	0:00
RV41	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (49)	0:00
RV42	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (50)	0:00
RV43	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (51)	0:00
RV44	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (52)	5:46
RV45	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (53)	0:00
RV46	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (54)	17:03
RV47	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (55)	79:48
RV48	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (56)	54:59
RV49	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (57)	7:31
RV50	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (58)	4:03
RV51	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (59)	9:51
RV52	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (60)	3:39
RV53	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (61)	12:59
RV54	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (62)	23:40
RV55	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (63)	2:28
RV56	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (64)	2:53
RV57	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (65)	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

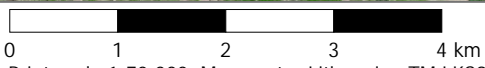
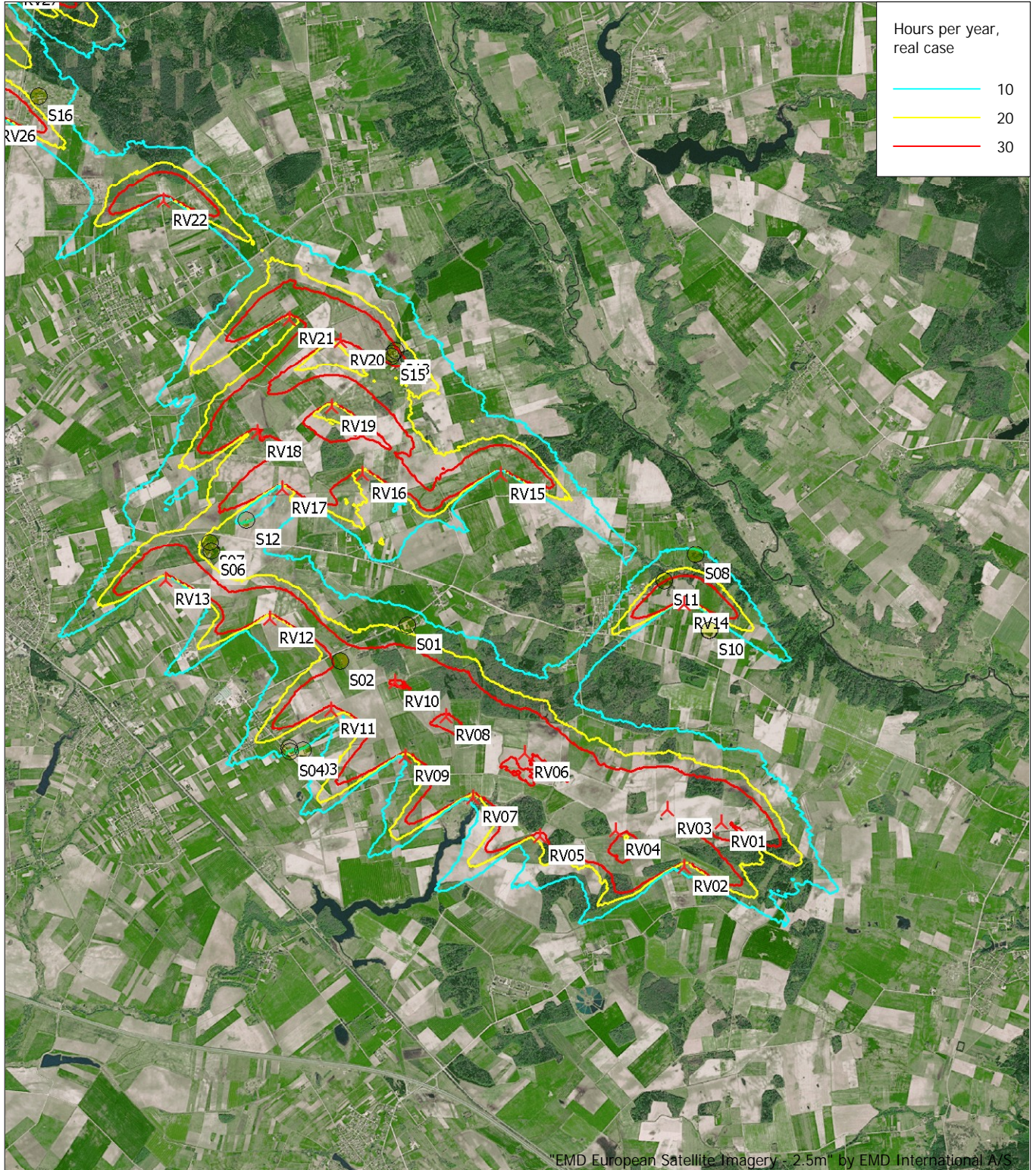
Calculation: Seseliavimas



Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:200 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 441 685 North: 6 141 462
New WTG Shadow receptor
Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)
Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Map

Calculation: Seseliavimas



Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:70 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 451 146 North: 6 137 782

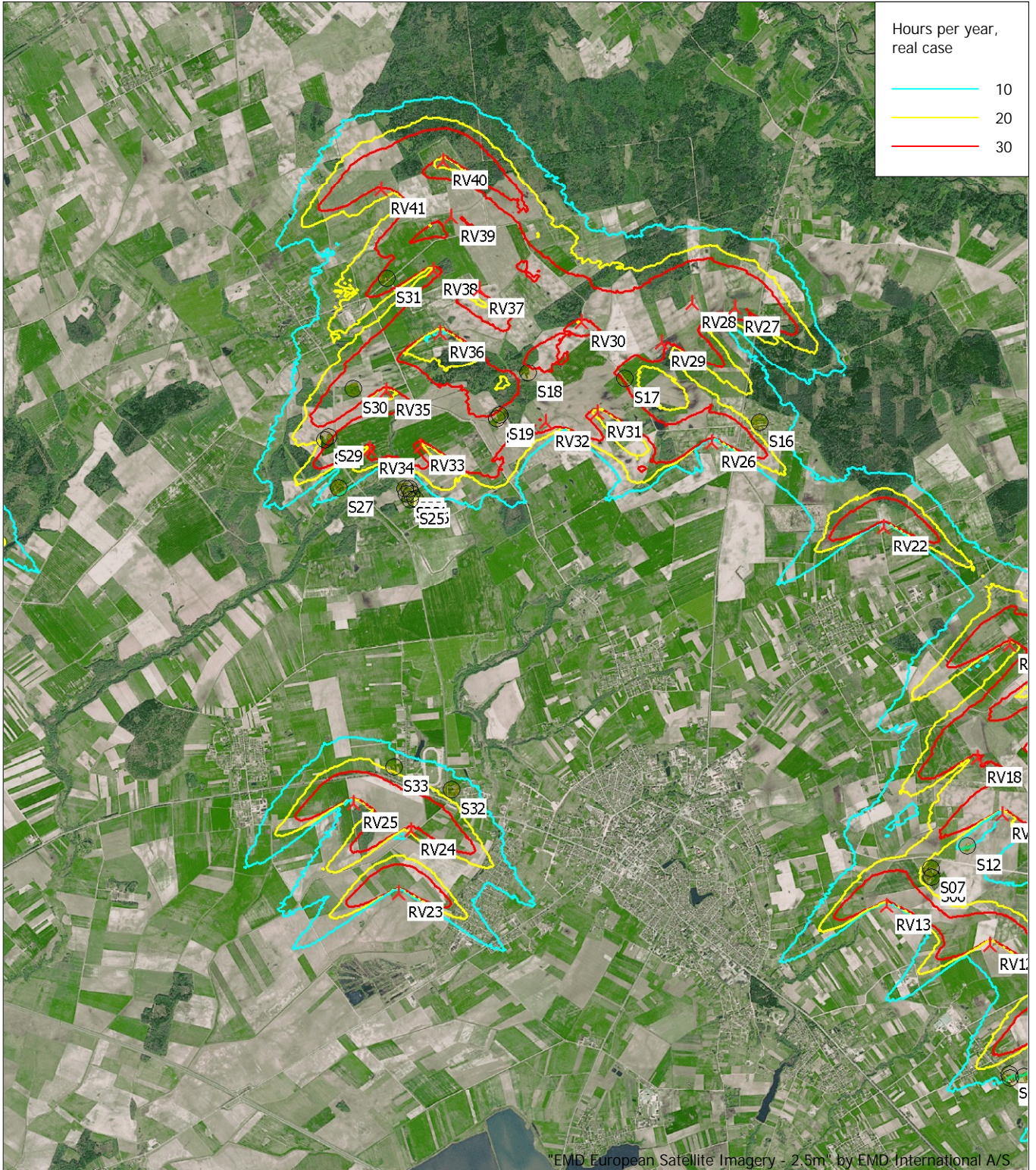
▲ New WTG ● Shadow receptor

Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)

Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Map

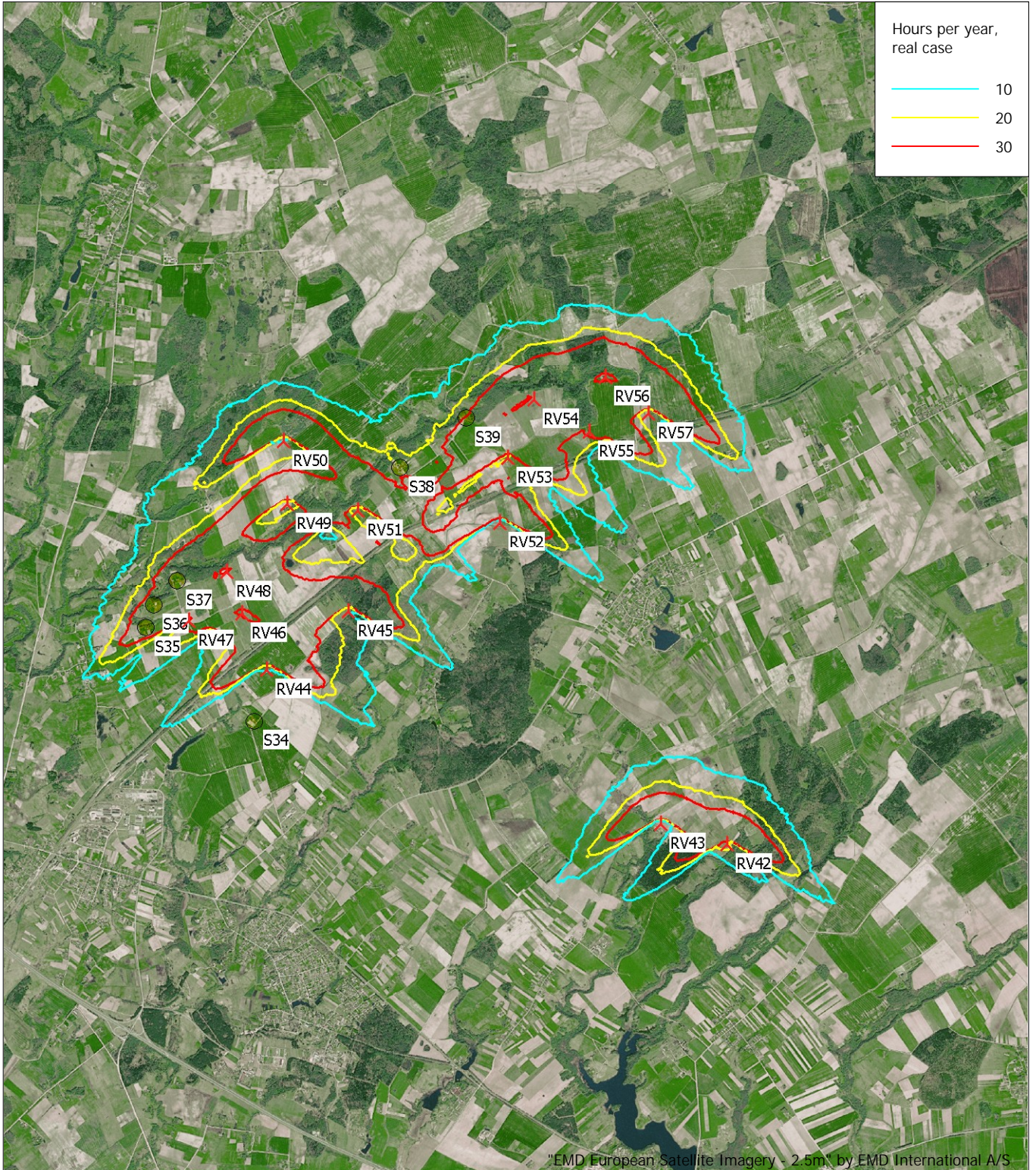
Calculation: Seseliavimas



Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:70 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 442 363 North: 6 141 886
▲ New WTG ● Shadow receptor
Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)
Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Map

Calculation: Seseliavimas



Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:70 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 432 696 North: 6 146 078
▲ New WTG ● Shadow receptor
Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)
Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Main Result

Calculation: Seseliavimas

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) [KAUNAS]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
1,41 2,36 4,03 5,55 8,35 8,36 8,16 7,72 5,06 3,23 1,33 0,98

Operational hours are calculated from WTGs in calculation and wind distribution:

Site data: ATLAS 12 sectors; Radius: 30 500 m (7)

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
961	489	231	287	569	629	760	993	1 178	1 006	763	541	8 408

Idle start wind speed: Cut in wind speed from power curve

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:
Height contours used: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)
Receptor grid resolution: 1,0 m

All coordinates are in
Lithuanian TM LKS94-LKS94 (LT)

WTGs

	Y	X	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
RV01	453 868	6 135 039	102,9	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV02	453 407	6 134 505	104,5	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV03	453 203	6 135 212	103,1	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV04	452 568	6 134 952	101,7	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV05	451 645	6 134 901	101,0	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV06	451 457	6 135 909	98,9	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV07	450 825	6 135 371	98,1	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV08	450 503	6 136 375	98,3	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV09	449 999	6 135 880	97,3	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV10	449 885	6 136 804	101,8	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV11	449 095	6 136 483	104,6	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV12	448 350	6 137 597	104,0	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV13	447 086	6 138 092	105,9	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV14	453 441	6 137 724	106,1	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV15	451 203	6 139 337	111,6	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV16	449 502	6 139 367	107,4	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV17	448 523	6 139 188	105,0	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV18	448 230	6 139 887	103,1	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV19	449 141	6 140 182	109,6	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV20	449 264	6 140 998	107,0	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV21	448 636	6 141 273	109,9	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV22	447 106	6 142 740	116,4	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV23	441 100	6 138 325	77,1	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV24	441 272	6 139 092	80,9	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV25	440 561	6 139 438	88,0	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV26	445 018	6 143 790	111,5	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV27	445 313	6 145 441	112,0	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV28	444 795	6 145 509	119,0	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV29	444 406	6 145 020	113,4	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

	Y	X	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 [RPM]	
			[m]										
RV30	443 437	6 145 283	118,6	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0	
RV31	443 619	6 144 173	110,9	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0	
RV32	442 989	6 144 064	107,0	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0	
RV33	441 445	6 143 796	106,1	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0	
RV34	440 823	6 143 768	104,2	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0	
RV35	441 038	6 144 466	104,9	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0	
RV36	441 706	6 145 180	110,9	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0	
RV37	442 190	6 145 703	113,1	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0	
RV38	441 628	6 145 943	115,4	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0	
RV39	441 860	6 146 591	119,7	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0	
RV40	441 772	6 147 276	123,6	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0	
RV41	441 007	6 146 940	120,1	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0	
RV42	435 457	6 143 037	104,5	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0	
RV43	434 653	6 143 307	103,2	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0	
RV44	429 843	6 145 279	107,2	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0	
RV45	430 858	6 145 962	112,0	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0	
RV46	429 547	6 145 964	107,8	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0	
RV47	428 898	6 145 891	105,5	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0	
RV48	429 377	6 146 473	109,7	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0	
RV49	430 131	6 147 299	113,2	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0	
RV50	430 097	6 148 065	115,9	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0	
RV51	430 989	6 147 206	115,0	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0	
RV52	432 724	6 147 028	116,1	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0	
RV53	432 836	6 147 815	121,0	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0	
RV54	433 174	6 148 528	127,1	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0	
RV55	433 839	6 148 125	128,3	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0	
RV56	434 043	6 148 785	126,3	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0	
RV57	434 569	6 148 337	126,9	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0	

Shadow receptor-Input

No.	Y	X	Z	Width	Height	Elevation	Slope of	Direction mode	Eye height
			[m]	[m]	[m]	a.g.l.	of window		(ZVI) a.g.l.
						[m]	[°]		[m]
S01	450 043	6 137 499	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S02	449 224	6 137 081	103,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S03	448 751	6 135 985	102,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S04	448 585	6 135 967	109,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S05	448 573	6 136 006	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S06	447 646	6 138 441	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S07	447 633	6 138 553	104,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S08	453 591	6 138 330	98,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S09	453 741	6 137 400	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S10	453 750	6 137 393	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S11	453 202	6 138 009	104,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S12	448 091	6 138 813	103,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S13	449 932	6 140 871	108,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S14	449 904	6 140 839	109,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S15	449 881	6 140 803	110,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S16	445 607	6 144 035	113,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S17	443 957	6 144 585	114,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S18	442 773	6 144 681	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S19	442 417	6 144 159	107,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S20	442 394	6 144 116	105,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S21	441 242	6 143 270	106,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S22	441 303	6 143 272	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S23	441 264	6 143 226	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S24	441 328	6 143 216	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S25	441 316	6 143 144	107,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S26	441 372	6 143 158	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S27	440 438	6 143 298	106,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S28	440 282	6 143 882	106,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S29	440 326	6 143 930	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

No.	Y	X	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.	
			[m]	[m]	[m]	[m]	[°]		[m]	
S30	440	631	6 144 514	110,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S31	441	067	6 145 854	117,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S32	441	772	6 139 583	90,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S33	441	074	6 139 866	89,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S34	429	681	6 144 640	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S35	428	367	6 145 810	103,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S36	428	466	6 146 089	104,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S37	428	768	6 146 376	107,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S38	431	508	6 147 720	119,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S39	432	332	6 148 310	120,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0

Calculation Results

Shadow receptor

Shadow, expected values

No.	Shadow hours per year [h/year]	Avoided hours per year [h/year]
S01	16:35	
S02*	26:05	12:51
S03	9:20	
S04	10:12	
S05	11:16	
S06	14:57	
S07	14:23	
S08	12:28	
S09	0:00	
S10	0:00	
S11	30:00	
S12	10:13	
S13*	9:47	27:40
S14*	16:57	22:54
S15*	23:43	15:49
S16	13:34	
S17	29:51	
S18*	23:18	13:37
S19*	15:38	19:28
S20*	23:30	13:21
S21	0:00	
S22	4:04	
S23	0:00	
S24	4:41	
S25	0:00	
S26	6:38	
S27	13:37	
S28	24:30	
S29	24:52	
S30*	19:32	55:42
S31*	9:36	36:56
S32	15:10	
S33	17:28	
S34	0:00	
S35*	12:41	36:46
S36*	23:38	23:19
S37*	26:04	38:13
S38	26:13	
S39*	17:00	18:00

* Receptors where shadow flicker is reduced by curtailment

SHADOW - Main Result

Calculation: Seseliavimas

Total amount of flickering on the shadow receptors caused by each WTG
No. Name

No.	Name	Stopped due to flicker curtailment [h/year]	Expected [h/year]
RV01	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (1)		0:00
RV02	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (2)		0:00
RV03	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (3)		0:00
RV04	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (4)		0:00
RV05	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (8)		0:00
RV06	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (15)		0:00
RV07	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (16)		0:00
RV08	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (17)		7:24
RV09	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (66)		7:37
RV10	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (18)		29:37
RV11	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (19)	112:21	2:29
RV12	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (20)		19:47
RV13	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (21)		18:30
RV14	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (22)		42:28
RV15	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (23)		0:00
RV16	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (24)		5:42
RV17	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (25)		1:39
RV18	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (26)		1:18
RV19	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (27)		5:19
RV20	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (28)	98:08	13:18
RV21	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (29)		9:52
RV22	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (30)		0:00
RV23	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (31)		2:03
RV24	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (32)		16:13
RV25	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (33)		14:12
RV26	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (34)		15:28
RV27	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (35)		7:21
RV28	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (36)		0:00
RV29	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (37)		3:41
RV30	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (38)		0:00
RV31	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (39)		26:50
RV32	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (40)	77:25	33:28
RV33	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (41)		31:50
RV34	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (42)		38:52
RV35	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (43)	198:18	7:40
RV36	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (44)	46:22	12:56
RV37	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (45)		4:29
RV38	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (46)	130:01	0:00
RV39	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (47)		0:00
RV40	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (48)		0:00
RV41	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (49)		0:00
RV42	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (50)		0:00
RV43	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (51)		0:00
RV44	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (52)		5:46
RV45	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (53)		0:00
RV46	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (54)		17:03
RV47	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (55)	236:36	17:47
RV48	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (56)	116:43	21:48
RV49	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (57)	16:57	2:29
RV50	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (58)		4:03
RV51	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (59)		9:51
RV52	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (60)		3:39
RV53	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (61)		12:59
RV54	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (62)	66:44	4:35
RV55	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (63)		2:28
RV56	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (64)		2:53
RV57	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (65)		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.

**Prognozuojamas PŪV šėšėliavimo
vertinimas "3" alternatyva**

SHADOW - Main Result

Calculation: Seseliavimas

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) [KAUNAS]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
1,41 2,36 4,03 5,55 8,35 8,36 8,16 7,72 5,06 3,23 1,33 0,98

Operational hours are calculated from WTGs in calculation and wind distribution:

Site data: ATLAS 12 sectors; Radius: 30 500 m (7)

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
960 488 230 287 568 629 759 992 1 177 1 005 762 540 8 399

Idle start wind speed: Cut in wind speed from power curve

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:

Height contours used: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)

Receptor grid resolution: 1,0 m

All coordinates are in

Lithuanian TM LKS94-LKS94 (LT)

WTGs

	Y	X	Z	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.	Type-generator				Calculation distance [m]	RPM [RPM]
RV01	453 868	6 135 039	102,9	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV02	453 407	6 134 505	104,5	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV03	453 203	6 135 212	103,1	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV04	452 568	6 134 952	101,7	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV05	451 645	6 134 901	101,0	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV06	451 457	6 135 909	98,9	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV07	450 825	6 135 371	98,1	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV08	450 503	6 136 375	98,3	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV09	449 999	6 135 880	97,3	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV10	449 885	6 136 804	101,8	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV11	449 095	6 136 483	104,6	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV12	448 350	6 137 597	104,0	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV13	447 086	6 138 092	105,9	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV14	453 441	6 137 724	106,1	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV15	451 203	6 139 337	111,6	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV16	449 502	6 139 367	107,4	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV17	448 523	6 139 188	105,0	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV18	448 230	6 139 887	103,1	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV19	449 141	6 140 182	109,6	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV20	449 264	6 140 998	107,0	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV21	448 636	6 141 273	109,9	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV22	447 106	6 142 740	116,4	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV23	441 100	6 138 325	77,1	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV24	441 272	6 139 092	80,9	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV25	440 561	6 139 438	88,0	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV26	445 018	6 143 790	111,5	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV27	445 313	6 145 441	112,0	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV28	444 795	6 145 509	119,0	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV29	444 406	6 145 020	113,4	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV30	443 437	6 145 283	118,6	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV31	443 619	6 144 173	110,9	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV32	442 989	6 144 064	107,0	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

	Y	X	Z	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.	Type-generator				Calculation distance [m]	RPM
			[m]									
RV33	441 445	6 143 796	106,1	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV34	440 823	6 143 768	104,2	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV35	441 038	6 144 466	104,9	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV36	441 706	6 145 180	110,9	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV37	442 190	6 145 703	113,1	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV38	441 628	6 145 943	115,4	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV39	441 860	6 146 591	119,7	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV40	441 772	6 147 276	123,6	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV41	441 007	6 146 940	120,1	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV42	435 457	6 143 037	104,5	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV43	434 653	6 143 206	103,2	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV44	429 843	6 145 279	107,2	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV45	430 858	6 145 962	112,0	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV46	429 547	6 145 964	107,8	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV47	428 898	6 145 911	105,5	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV48	429 377	6 146 473	109,7	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV49	430 131	6 147 299	113,2	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV50	430 097	6 148 065	115,9	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV51	430 989	6 147 206	115,0	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV52	432 724	6 147 028	116,1	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV53	432 836	6 147 815	121,0	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV54	433 174	6 148 528	127,1	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV55	433 839	6 148 125	128,3	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV56	434 043	6 148 785	126,3	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV57	434 569	6 148 337	126,9	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8

Shadow receptor-Input

No.	Y	X	Z	Width	Height	Elevation	Slope of	Direction mode	Eye height
			[m]	[m]	[m]	a.g.l. [m]	window [°]		(ZVI) a.g.l. [m]
S01	450 043	6 137 499	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S02	449 224	6 137 081	103,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S03	448 751	6 135 985	102,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S04	448 585	6 135 967	109,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S05	448 573	6 136 006	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S06	447 646	6 138 441	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S07	447 633	6 138 553	104,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S08	453 591	6 138 330	98,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S09	453 741	6 137 400	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S10	453 750	6 137 393	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S11	453 202	6 138 009	104,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S12	448 091	6 138 813	103,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S13	449 932	6 140 871	108,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S14	449 904	6 140 839	109,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S15	449 881	6 140 803	110,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S16	445 607	6 144 035	113,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S17	443 957	6 144 585	114,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S18	442 773	6 144 681	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S19	442 417	6 144 159	107,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S20	442 394	6 144 116	105,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S21	441 242	6 143 270	106,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S22	441 303	6 143 272	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S23	441 264	6 143 226	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S24	441 328	6 143 216	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S25	441 316	6 143 144	107,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S26	441 372	6 143 158	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S27	440 438	6 143 298	106,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S28	440 282	6 143 882	106,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S29	440 326	6 143 930	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S30	440 631	6 144 514	110,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S31	441 067	6 145 854	117,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S32	441 772	6 139 583	90,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0

To be continued on next page...

Project:

UAB Raseiniu vejas 57 VE

Licensed user:

UAB ARCHSTUDIJA
Konstitucijos pr. 9-41
LT-09308 Vilnius

Calculated:

2024-02-26 10:43/3.6.355

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

No.	Y	X	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
			[m]	[m]	[m]	[m]	[°]		[m]
S33	441 074	6 139 866	89,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S34	429 681	6 144 640	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S35	428 367	6 145 810	103,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S36	428 466	6 146 089	104,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S37	428 768	6 146 376	107,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S38	431 508	6 147 720	119,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S39	432 332	6 148 310	120,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0

Calculation Results

Shadow receptor

Shadow, expected values

No. Shadow hours

per year

[h/year]

S01	15:30
S02	39:00
S03	9:52
S04	11:56
S05	12:50
S06	14:42
S07	15:42
S08	12:03
S09	0:00
S10	0:00
S11	29:35
S12	9:24
S13	37:27
S14	41:40
S15	40:41
S16	16:11
S17	29:29
S18	35:55
S19	33:41
S20	35:12
S21	3:18
S22	3:47
S23	3:36
S24	4:13
S25	4:38
S26	5:41
S27	13:53
S28	23:25
S29	23:58
S30	75:34
S31	46:28
S32	14:32
S33	16:40
S34	0:00
S35	50:19
S36	46:19
S37	64:44
S38	25:14
S39	31:43

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

No.	Name	Expected [h/year]
RV01	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (1)	0:00
RV02	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (2)	0:00
RV03	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (3)	0:00
RV04	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (4)	0:00
RV05	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (8)	0:00

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

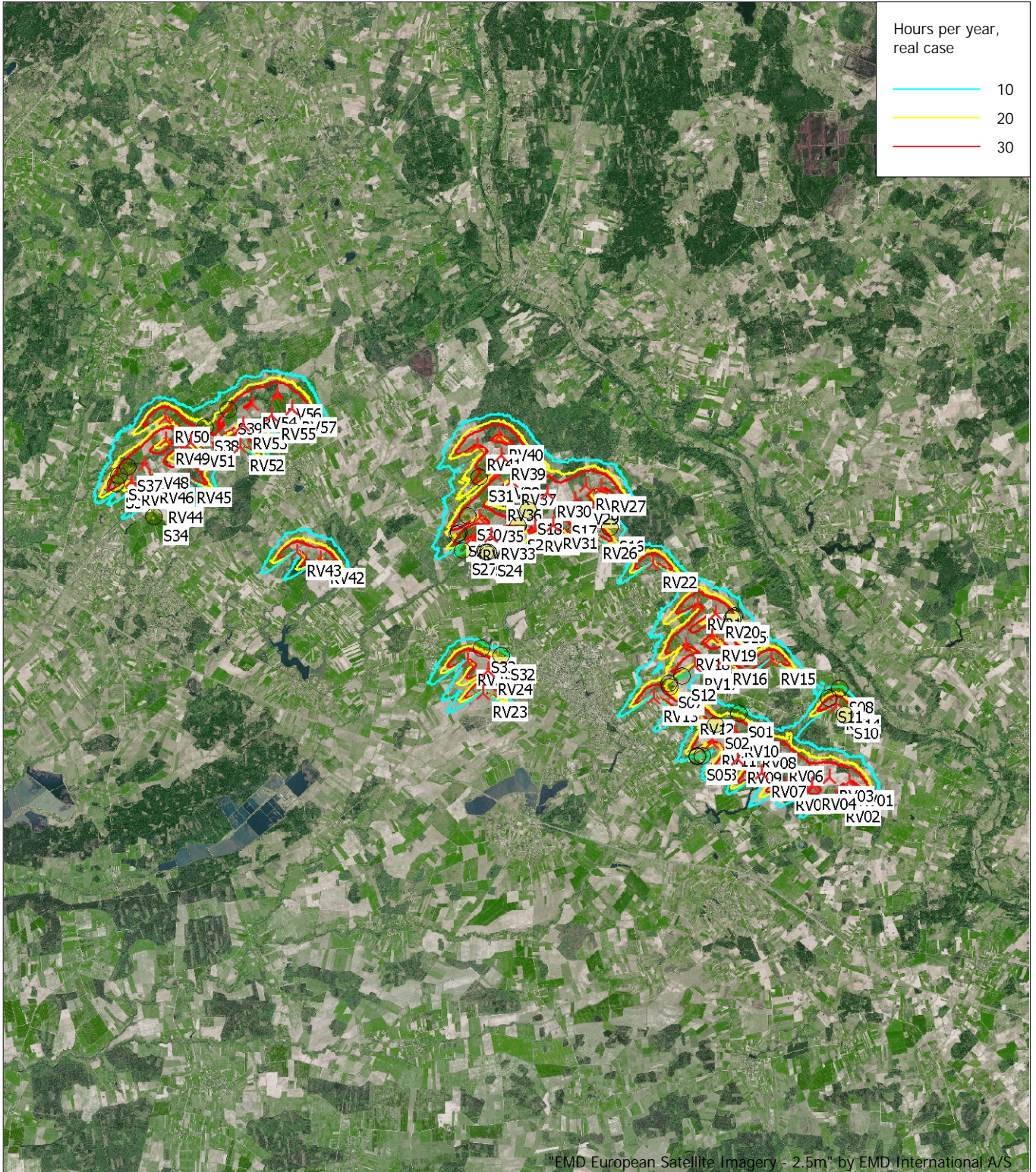
No.	Name	Expected [h/year]
RV06	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (15)	0:00
RV07	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (16)	0:00
RV08	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (17)	7:20
RV09	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (66)	7:11
RV10	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (18)	29:12
RV11	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (19)	14:50
RV12	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (20)	20:23
RV13	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (21)	17:58
RV14	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (22)	41:39
RV15	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (23)	2:11
RV16	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (24)	5:23
RV17	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (25)	2:55
RV18	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (26)	1:26
RV19	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (27)	5:11
RV20	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (28)	41:07
RV21	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (29)	9:26
RV22	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (30)	0:58
RV23	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (31)	1:45
RV24	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (32)	15:28
RV25	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (33)	13:50
RV26	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (34)	15:04
RV27	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (35)	7:30
RV28	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (36)	0:00
RV29	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (37)	4:09
RV30	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (38)	0:00
RV31	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (39)	27:30
RV32	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (40)	50:32
RV33	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (41)	31:31
RV34	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (42)	37:11
RV35	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (43)	60:58
RV36	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (44)	26:47
RV37	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (45)	6:23
RV38	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (46)	36:56
RV39	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (47)	0:00
RV40	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (48)	0:00
RV41	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (49)	0:00
RV42	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (50)	0:00
RV43	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (51)	0:00
RV44	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (52)	5:42
RV45	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (53)	0:00
RV46	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (54)	16:25
RV47	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (55)	79:39
RV48	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (56)	55:38
RV49	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (57)	7:51
RV50	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (58)	3:53
RV51	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (59)	9:31
RV52	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (60)	3:13
RV53	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (61)	12:39
RV54	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (62)	20:52
RV55	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (63)	2:24
RV56	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (64)	2:44
RV57	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (65)	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

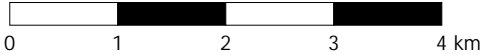
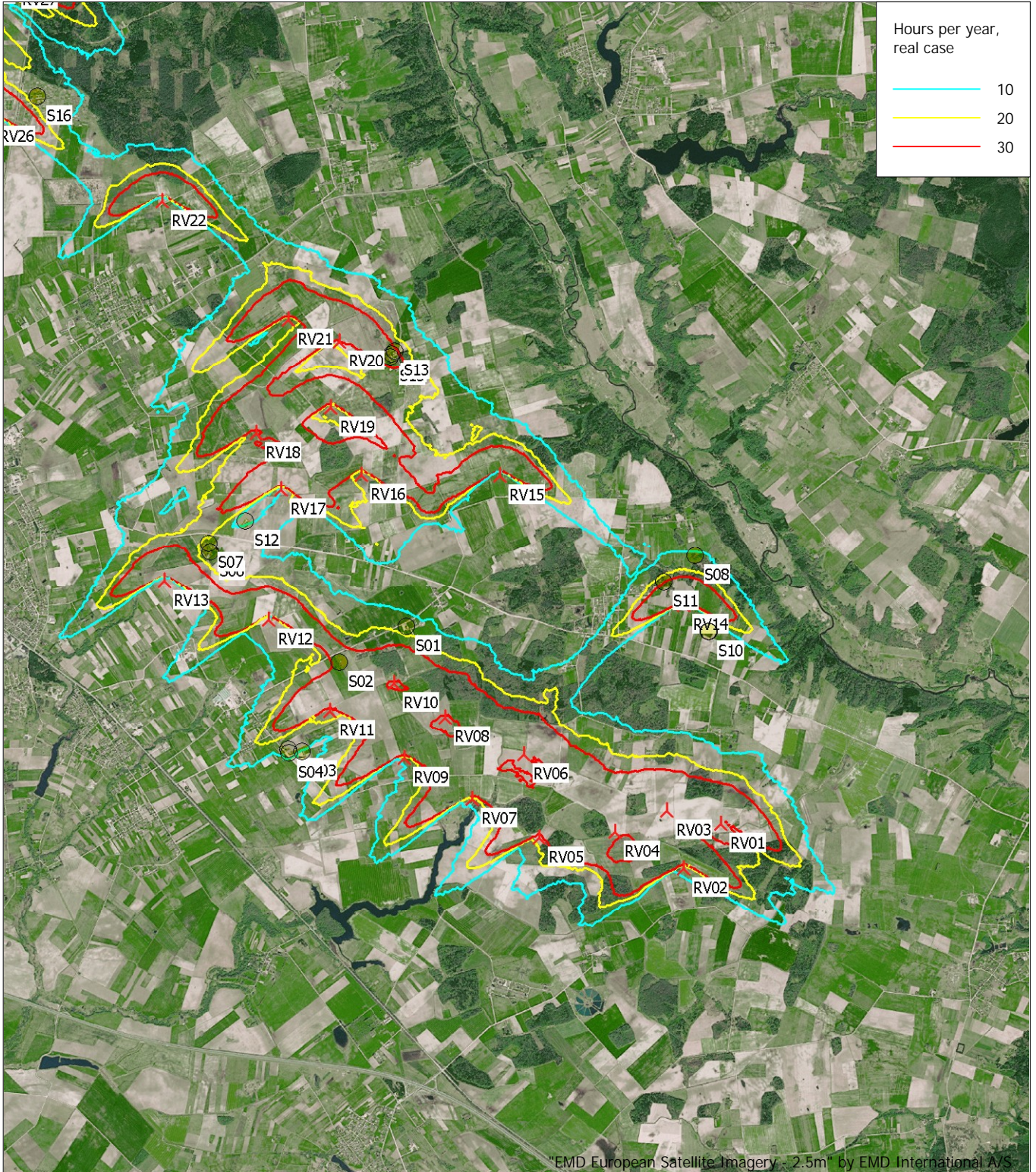
Calculation: Seseliavimas



Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:200 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 441 685 North: 6 141 462
New WTG Shadow receptor
Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)
Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Map

Calculation: Seseliavimas



Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:70 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 451 146 North: 6 137 782

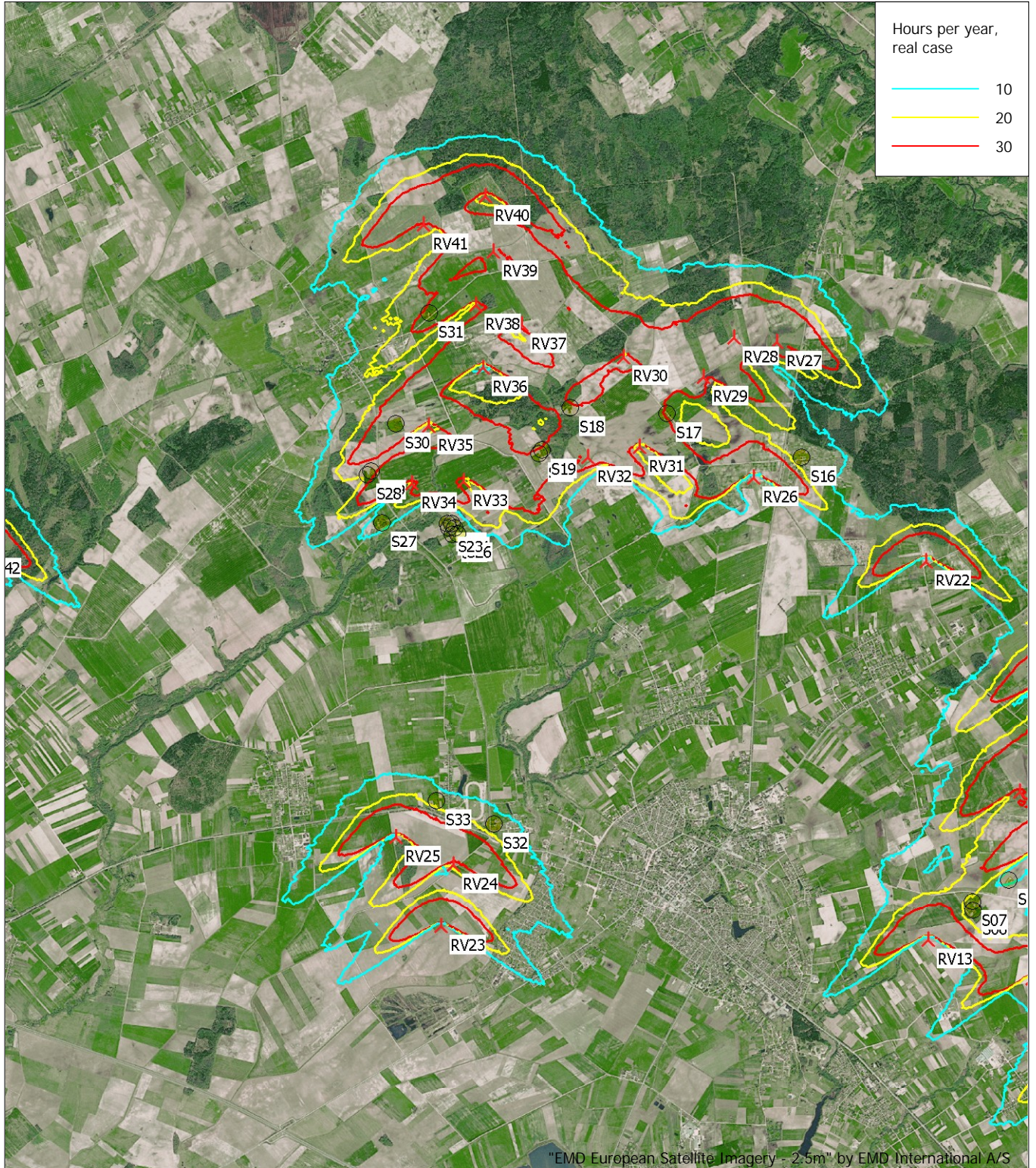
▲ New WTG ● Shadow receptor

Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)

Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Map

Calculation: Seseliavimas



0 1 2 3 4 km

Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:70 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 441 855 North: 6 142 329

▲ New WTG

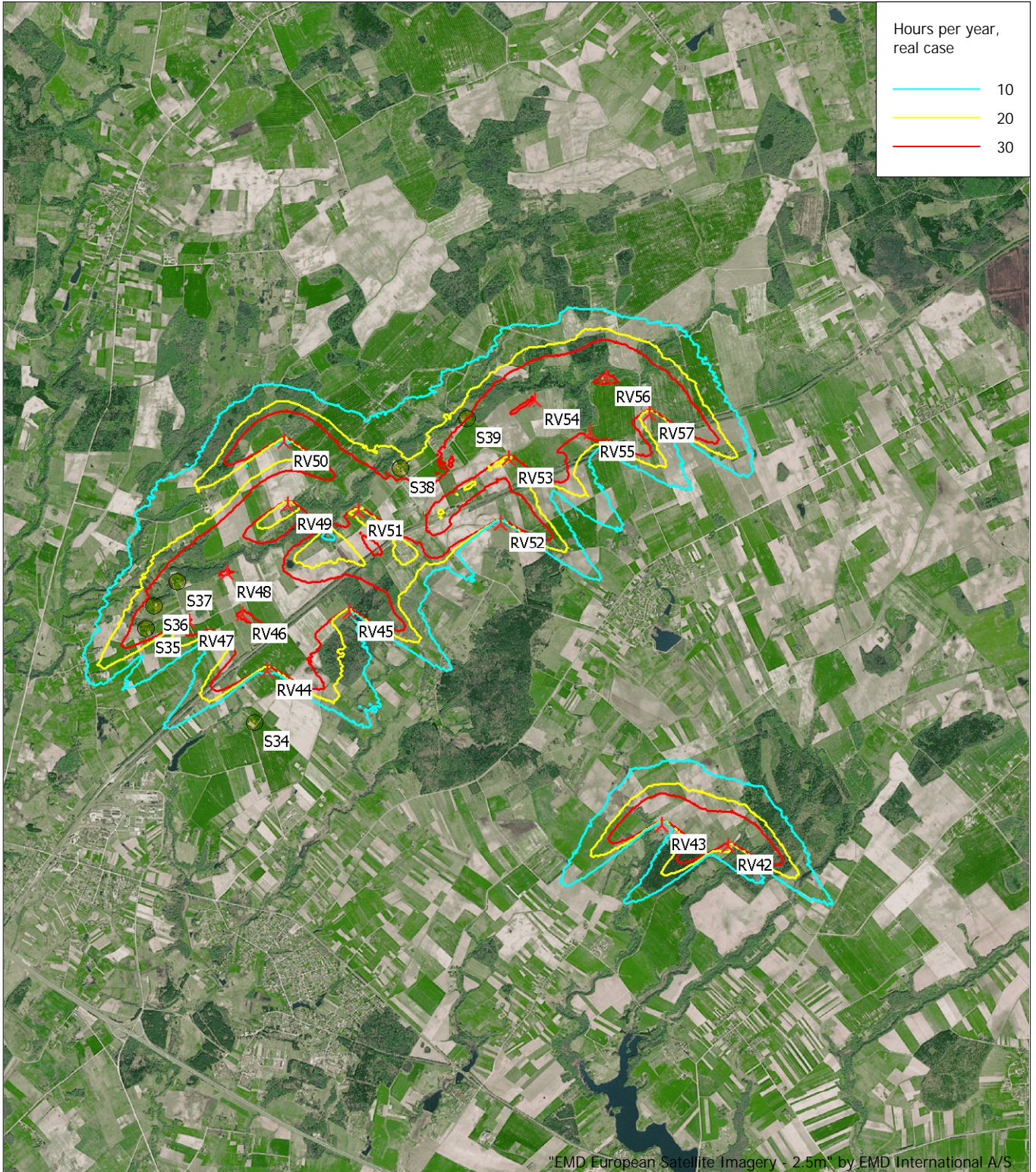
● Shadow receptor

Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)

Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Map

Calculation: Seseliavimas



Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:70 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 432 696 North: 6 146 078
▲ New WTG ● Shadow receptor
Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)
Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Main Result

Calculation: Seseliavimas

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) [KAUNAS]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
1,41 2,36 4,03 5,55 8,35 8,36 8,16 7,72 5,06 3,23 1,33 0,98

Operational hours are calculated from WTGs in calculation and wind distribution:

Site data: ATLAS 12 sectors; Radius: 30 500 m (7)

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
960 488 230 287 568 629 759 992 1 177 1 005 762 540 8 399

Idle start wind speed: Cut in wind speed from power curve

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:

Height contours used: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)

Receptor grid resolution: 1,0 m

All coordinates are in

Lithuanian TM LKS94-LKS94 (LT)

WTGs

	Y	X	Z	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.	Type-generator				Calculation distance [m]	RPM [RPM]
RV01	453 868	6 135 039	102,9	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV02	453 407	6 134 505	104,5	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV03	453 203	6 135 212	103,1	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV04	452 568	6 134 952	101,7	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV05	451 645	6 134 901	101,0	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV06	451 457	6 135 909	98,9	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV07	450 825	6 135 371	98,1	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV08	450 503	6 136 375	98,3	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV09	449 999	6 135 880	97,3	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV10	449 885	6 136 804	101,8	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV11	449 095	6 136 483	104,6	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV12	448 350	6 137 597	104,0	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV13	447 086	6 138 092	105,9	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV14	453 441	6 137 724	106,1	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV15	451 203	6 139 337	111,6	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV16	449 502	6 139 367	107,4	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV17	448 523	6 139 188	105,0	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV18	448 230	6 139 887	103,1	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV19	449 141	6 140 182	109,6	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV20	449 264	6 140 998	107,0	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV21	448 636	6 141 273	109,9	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV22	447 106	6 142 740	116,4	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV23	441 100	6 138 325	77,1	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV24	441 272	6 139 092	80,9	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV25	440 561	6 139 438	88,0	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV26	445 018	6 143 790	111,5	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV27	445 313	6 145 441	112,0	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV28	444 795	6 145 509	119,0	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV29	444 406	6 145 020	113,4	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV30	443 437	6 145 283	118,6	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

	Y	X	Z	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.	Type-generator				Calculation distance [m]	RPM [RPM]
RV31	443 619	6 144 173	110,9	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV32	442 989	6 144 064	107,0	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV33	441 445	6 143 796	106,1	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV34	440 823	6 143 768	104,2	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV35	441 038	6 144 466	104,9	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV36	441 706	6 145 180	110,9	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV37	442 190	6 145 703	113,1	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV38	441 628	6 145 943	115,4	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV39	441 860	6 146 591	119,7	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV40	441 772	6 147 276	123,6	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV41	441 007	6 146 940	120,1	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV42	435 457	6 143 037	104,5	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV43	434 653	6 143 307	103,2	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV44	429 843	6 145 279	107,2	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV45	430 858	6 145 962	112,0	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV46	429 547	6 145 964	107,8	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV47	428 898	6 145 891	105,5	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV48	429 377	6 146 473	109,7	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV49	430 131	6 147 299	113,2	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV50	430 097	6 148 065	115,9	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV51	430 989	6 147 206	115,0	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV52	432 724	6 147 028	116,1	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV53	432 836	6 147 815	121,0	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV54	433 174	6 148 528	127,1	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV55	433 839	6 148 125	128,3	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV56	434 043	6 148 785	126,3	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV57	434 569	6 148 337	126,9	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8

Shadow receptor-Input

No.	Y	X	Z	Width	Height	Elevation	Slope of	Direction mode	Eye height
			[m]	[m]	[m]	a.g.l.	window		(ZVI) a.g.l.
			[m]	[m]	[m]	[m]	[°]		[m]
S01	450 043	6 137 499	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S02	449 224	6 137 081	103,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S03	448 751	6 135 985	102,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S04	448 585	6 135 967	109,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S05	448 573	6 136 006	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S06	447 646	6 138 441	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S07	447 633	6 138 553	104,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S08	453 591	6 138 330	98,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S09	453 741	6 137 400	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S10	453 750	6 137 393	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S11	453 202	6 138 009	104,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S12	448 091	6 138 813	103,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S13	449 932	6 140 871	108,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S14	449 904	6 140 839	109,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S15	449 881	6 140 803	110,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S16	445 607	6 144 035	113,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S17	443 957	6 144 585	114,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S18	442 773	6 144 681	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S19	442 417	6 144 159	107,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S20	442 394	6 144 116	105,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S21	441 242	6 143 270	106,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S22	441 303	6 143 272	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S23	441 264	6 143 226	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S24	441 328	6 143 216	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S25	441 316	6 143 144	107,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S26	441 372	6 143 158	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S27	440 438	6 143 298	106,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S28	440 282	6 143 882	106,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S29	440 326	6 143 930	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S30	440 631	6 144 514	110,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

No.	Y	X	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
			[m]	[m]	[m]	[m]	[°]		[m]
S31	441 067	6 145 854	117,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S32	441 772	6 139 583	90,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S33	441 074	6 139 866	89,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S34	429 681	6 144 640	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S35	428 367	6 145 810	103,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S36	428 466	6 146 089	104,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S37	428 768	6 146 376	107,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S38	431 508	6 147 720	119,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S39	432 332	6 148 310	120,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0

Calculation Results

Shadow receptor

Shadow, expected values

No.	Shadow hours per year [h/year]	Avoided hours per year [h/year]
S01	15:30	
S02*	26:24	12:19
S03	9:52	
S04	11:56	
S05	12:50	
S06	14:42	
S07	15:42	
S08	12:03	
S09	0:00	
S10	0:00	
S11	29:35	
S12	9:24	
S13*	12:07	25:13
S14*	20:46	20:49
S15*	26:11	14:26
S16	16:11	
S17	29:29	
S18*	24:25	11:09
S19*	15:03	18:38
S20*	22:30	12:42
S21	3:18	
S22	3:47	
S23	3:36	
S24	4:13	
S25	4:38	
S26	5:41	
S27	13:53	
S28	23:25	
S29	23:58	
S30*	21:35	53:35
S31*	9:23	36:56
S32	14:32	
S33	16:40	
S34	0:00	
S35*	13:18	36:59
S36*	29:21	17:00
S37*	25:55	38:09
S38	25:14	
S39*	29:18	2:24

* 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]
RV01	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (1)		0:00
RV02	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (2)		0:00

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

No.	Name	Stopped due to flicker curtailment [h/year]	Expected [h/year]
RV03	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (3)		0:00
RV04	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (4)		0:00
RV05	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (8)		0:00
RV06	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (15)		0:00
RV07	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (16)		0:00
RV08	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (17)		7:20
RV09	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (66)		7:11
RV10	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (18)		29:12
RV11	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (19)	111:03	2:31
RV12	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (20)		20:23
RV13	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (21)		17:58
RV14	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (22)		41:39
RV15	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (23)		2:11
RV16	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (24)		5:23
RV17	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (25)		2:55
RV18	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (26)		1:26
RV19	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (27)		5:11
RV20	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (28)	90:16	15:41
RV21	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (29)		9:26
RV22	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (30)		0:58
RV23	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (31)		1:45
RV24	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (32)		15:28
RV25	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (33)		13:50
RV26	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (34)		15:04
RV27	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (35)		7:30
RV28	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (36)		0:00
RV29	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (37)		4:09
RV30	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (38)		0:00
RV31	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (39)		27:30
RV32	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (40)	177:04	20:38
RV33	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (41)		31:31
RV34	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (42)		37:11
RV35	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (43)	192:41	7:22
RV36	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (44)		26:47
RV37	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (45)		6:23
RV38	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (46)	130:24	0:00
RV39	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (47)		0:00
RV40	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (48)		0:00
RV41	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (49)		0:00
RV42	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (50)		0:00
RV43	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (51)		0:00
RV44	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (52)		5:42
RV45	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (53)		0:00
RV46	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (54)		16:25
RV47	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (55)	137:50	40:29
RV48	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (56)	172:41	5:56
RV49	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (57)	18:25	2:22
RV50	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (58)		3:53
RV51	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (59)		9:31
RV52	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (60)		3:13
RV53	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (61)		12:39
RV54	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (62)		20:52
RV55	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (63)	11:01	0:00
RV56	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (64)		2:44
RV57	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (65)		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.

**Prognozuojamas PŪV šėšėliavimo
vertinimas "H" alternatyva**

SHADOW - Main Result

Calculation: Seseliavimas

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) [KAUNAS]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
1,41 2,36 4,03 5,55 8,35 8,36 8,16 7,72 5,06 3,23 1,33 0,98

Operational hours are calculated from WTGs in calculation and wind distribution:

Site data: ATLAS 12 sectors; Radius: 30 500 m (7)

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
908 462 218 271 538 594 718 938 1 113 950 721 511 7 942

Idle start wind speed: Cut in wind speed from power curve

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:

Height contours used: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)

Receptor grid resolution: 1,0 m

All coordinates are in

Lithuanian TM LKS94-LKS94 (LT)

WTGs

	Y	X	Z	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.	Type-generator				Calculation distance [m]	RPM [RPM]
RV01	453 868	6 135 039	102,9	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV02	453 407	6 134 505	104,5	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV03	453 203	6 135 212	103,1	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV04	452 568	6 134 952	101,7	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV05	451 645	6 134 901	101,0	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV06	451 457	6 135 909	98,9	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV07	450 825	6 135 371	98,1	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV08	450 503	6 136 375	98,3	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV09	449 999	6 135 880	97,3	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV10	449 885	6 136 804	101,8	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV11	449 095	6 136 483	104,6	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV12	448 350	6 137 597	104,0	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV13	447 086	6 138 092	105,9	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV14	453 441	6 137 724	106,1	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV15	451 203	6 139 337	111,6	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV16	449 502	6 139 367	107,4	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV17	448 523	6 139 188	105,0	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV18	448 230	6 139 887	103,1	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV19	449 141	6 140 182	109,6	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV20	449 264	6 140 998	107,0	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV21	448 636	6 141 273	109,9	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV22	447 106	6 142 740	116,4	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV23	441 100	6 138 325	77,1	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV24	441 272	6 139 092	80,9	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV25	440 561	6 139 438	88,0	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV26	445 018	6 143 790	111,5	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV27	445 313	6 145 441	112,0	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV28	444 795	6 145 509	119,0	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV29	444 406	6 145 020	113,4	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV30	443 437	6 145 283	118,6	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV31	443 619	6 144 173	110,9	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV32	442 989	6 144 064	107,0	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

	Y	X	Z	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.	Type-generator				Calculation distance [m]	RPM
RV33	441 445	6 143 796	106,1	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV34	440 823	6 143 768	104,2	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV35	441 038	6 144 466	104,9	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV36	441 706	6 145 180	110,9	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV37	442 190	6 145 703	113,1	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV38	441 628	6 145 943	115,4	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV39	441 860	6 146 591	119,7	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV40	441 772	6 147 276	123,6	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV41	441 007	6 146 940	120,1	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV42	435 457	6 143 037	104,5	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV43	434 653	6 143 307	103,2	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV44	429 843	6 145 279	107,2	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV45	430 858	6 145 962	112,0	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV46	429 547	6 145 964	107,8	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV47	428 898	6 145 991	105,5	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV48	429 377	6 146 473	109,7	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV49	430 131	6 147 299	113,2	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV50	430 097	6 148 065	115,9	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV51	430 989	6 147 206	115,0	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV52	432 724	6 147 028	116,1	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV53	432 836	6 147 815	121,0	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV54	433 174	6 148 528	127,1	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV55	433 839	6 148 125	128,3	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV56	434 043	6 148 785	126,3	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV57	434 569	6 148 337	126,9	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0

Shadow receptor-Input

No.	Y	X	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
			[m]	[m]	[m]	[m]	[°]		[m]
S01	450 043	6 137 499	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S02	449 224	6 137 081	103,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S03	448 751	6 135 985	102,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S04	448 585	6 135 967	109,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S05	448 573	6 136 006	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S06	447 646	6 138 441	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S07	447 633	6 138 553	104,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S08	453 591	6 138 330	98,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S09	453 741	6 137 400	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S10	453 750	6 137 393	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S11	453 202	6 138 009	104,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S12	448 091	6 138 813	103,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S13	449 932	6 140 871	108,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S14	449 904	6 140 839	109,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S15	449 881	6 140 803	110,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S16	445 607	6 144 035	113,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S17	443 957	6 144 585	114,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S18	442 773	6 144 681	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S19	442 417	6 144 159	107,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S20	442 394	6 144 116	105,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S21	441 242	6 143 270	106,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S22	441 303	6 143 272	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S23	441 264	6 143 226	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S24	441 328	6 143 216	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S25	441 316	6 143 144	107,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S26	441 372	6 143 158	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S27	440 438	6 143 298	106,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S28	440 282	6 143 882	106,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S29	440 326	6 143 930	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S30	440 631	6 144 514	110,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S31	441 067	6 145 854	117,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S32	441 772	6 139 583	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: Seseliavimas

...continued from previous page

No.	Y	X	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
			[m]	[m]	[m]	[m]	[°]		[m]
S33	441 074	6 139 866	89,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S34	429 681	6 144 640	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S35	428 367	6 145 810	103,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S36	428 466	6 146 089	104,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S37	428 768	6 146 376	107,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S38	431 508	6 147 720	119,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S39	432 332	6 148 310	120,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0

Calculation Results

Shadow receptor

Shadow, expected values

No. Shadow hours
per year
[h/year]

S01	21:53
S02	50:48
S03	13:21
S04	15:10
S05	16:11
S06	24:26
S07	23:33
S08	15:17
S09	0:00
S10	0:00
S11	43:25
S12	13:37
S13	50:56
S14	51:37
S15	49:21
S16	21:06
S17	45:07
S18	50:26
S19	48:00
S20	49:43
S21	4:37
S22	6:42
S23	5:04
S24	7:57
S25	7:27
S26	10:17
S27	15:32
S28	31:04
S29	31:54
S30	93:48
S31	56:02
S32	19:25
S33	21:49
S34	0:00
S35	57:59
S36	62:32
S37	82:16
S38	36:02
S39	47:39

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

No.	Name	Expected [h/year]
RV01	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (1)	0:00
RV02	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (2)	0:00
RV03	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (3)	0:00
RV04	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (4)	0:00
RV05	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (8)	0:00

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

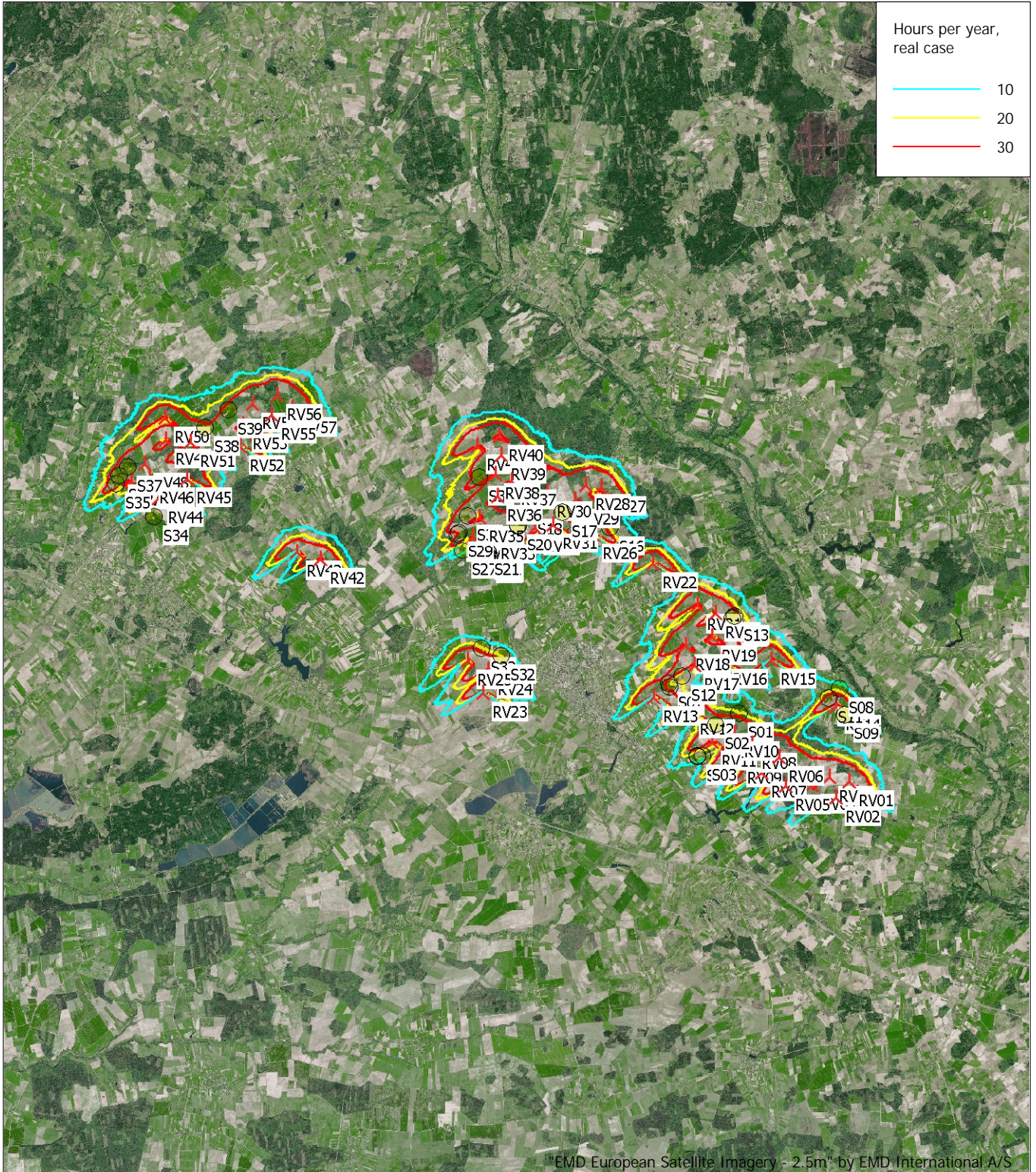
No.	Name	Expected [h/year]
RV06	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (15)	1:19
RV07	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (16)	2:24
RV08	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (17)	10:00
RV09	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (66)	9:09
RV10	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (18)	35:24
RV11	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (19)	20:17
RV12	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (20)	24:34
RV13	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (21)	24:18
RV14	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (22)	53:40
RV15	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (23)	7:39
RV16	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (24)	11:43
RV17	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (25)	5:17
RV18	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (26)	1:51
RV19	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (27)	6:40
RV20	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (28)	45:53
RV21	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (29)	12:17
RV22	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (30)	1:18
RV23	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (31)	2:40
RV24	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (32)	20:14
RV25	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (33)	18:08
RV26	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (34)	20:36
RV27	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (35)	8:18
RV28	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (36)	3:00
RV29	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (37)	9:08
RV30	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (38)	0:54
RV31	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (39)	39:32
RV32	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (40)	67:21
RV33	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (41)	38:13
RV34	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (42)	49:22
RV35	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (43)	76:18
RV36	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (44)	33:24
RV37	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (45)	14:25
RV38	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (46)	42:41
RV39	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (47)	0:00
RV40	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (48)	0:00
RV41	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (49)	0:00
RV42	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (50)	0:00
RV43	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (51)	0:00
RV44	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (52)	7:24
RV45	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (53)	3:36
RV46	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (54)	21:58
RV47	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (55)	97:09
RV48	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (56)	65:03
RV49	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (57)	10:47
RV50	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (58)	6:25
RV51	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (59)	14:28
RV52	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (60)	5:02
RV53	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (61)	16:33
RV54	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (62)	30:02
RV55	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (63)	4:41
RV56	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (64)	3:42
RV57	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (65)	1:23

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

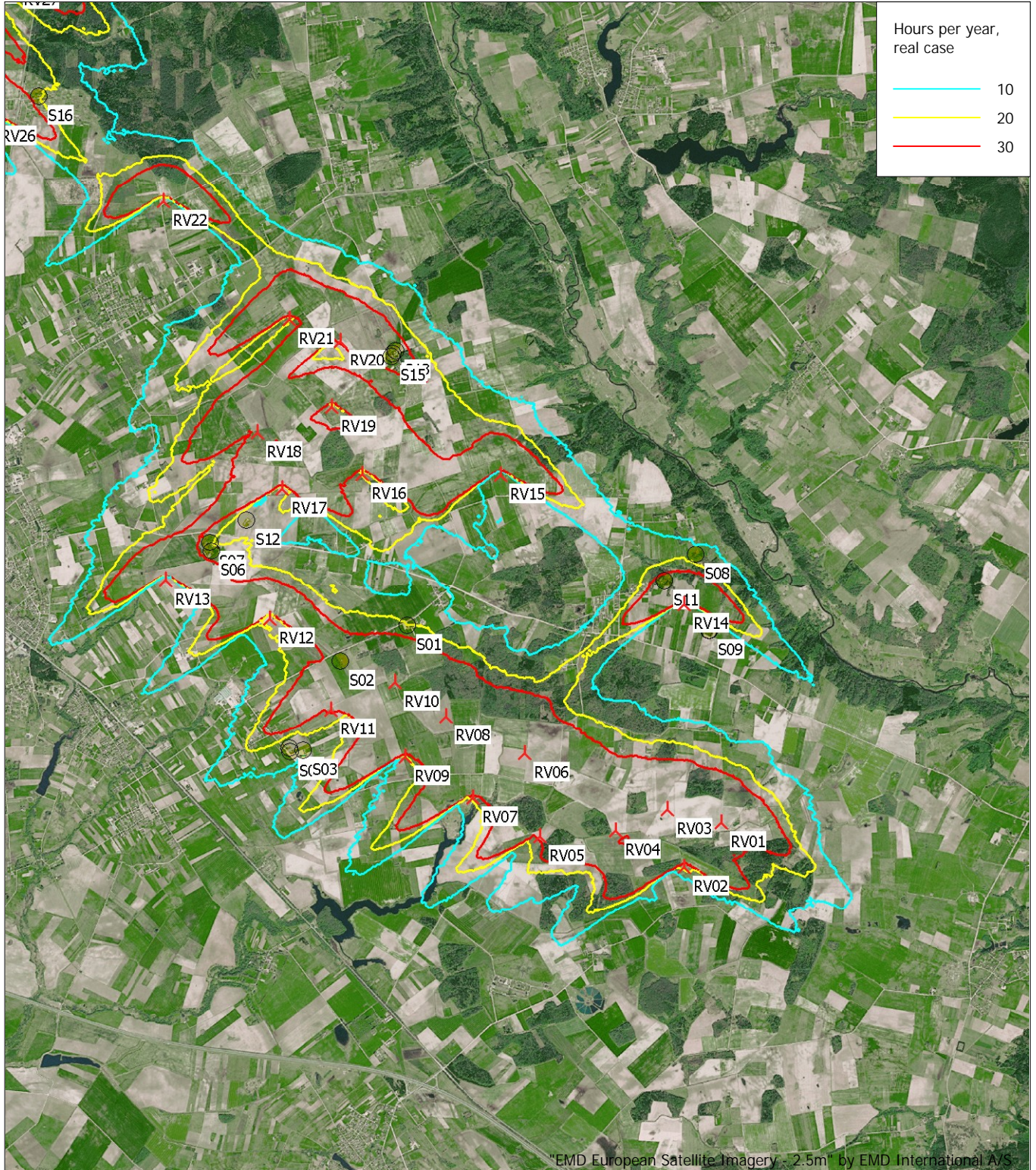
Calculation: Seseliavimas



Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:200 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 441 685 North: 6 141 462
New WTG Shadow receptor
Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)
Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Map

Calculation: Seseliavimas



0 1 2 3 4 km

Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:70 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 451 146 North: 6 137 782

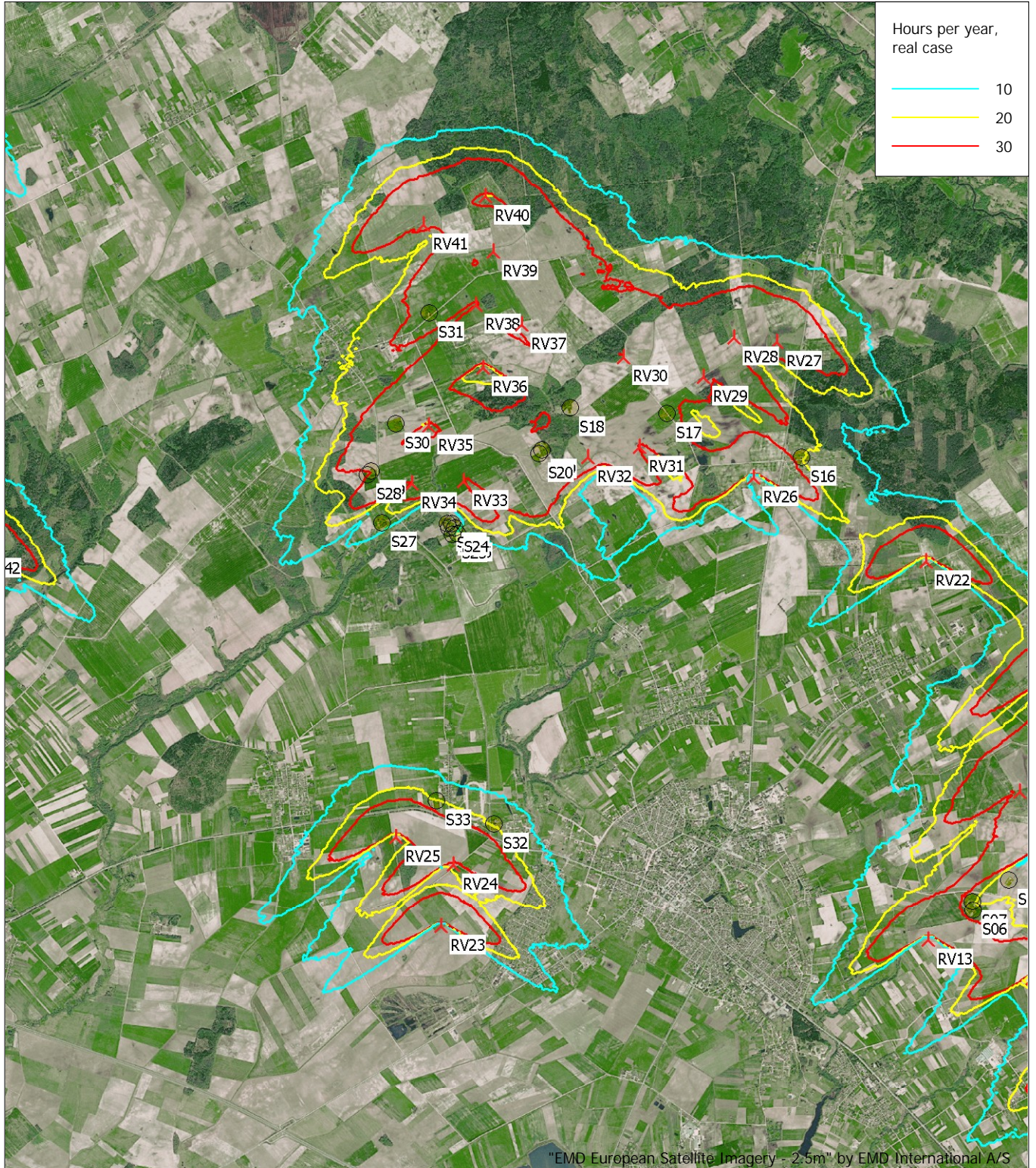
▲ New WTG ● Shadow receptor

Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)

Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Map

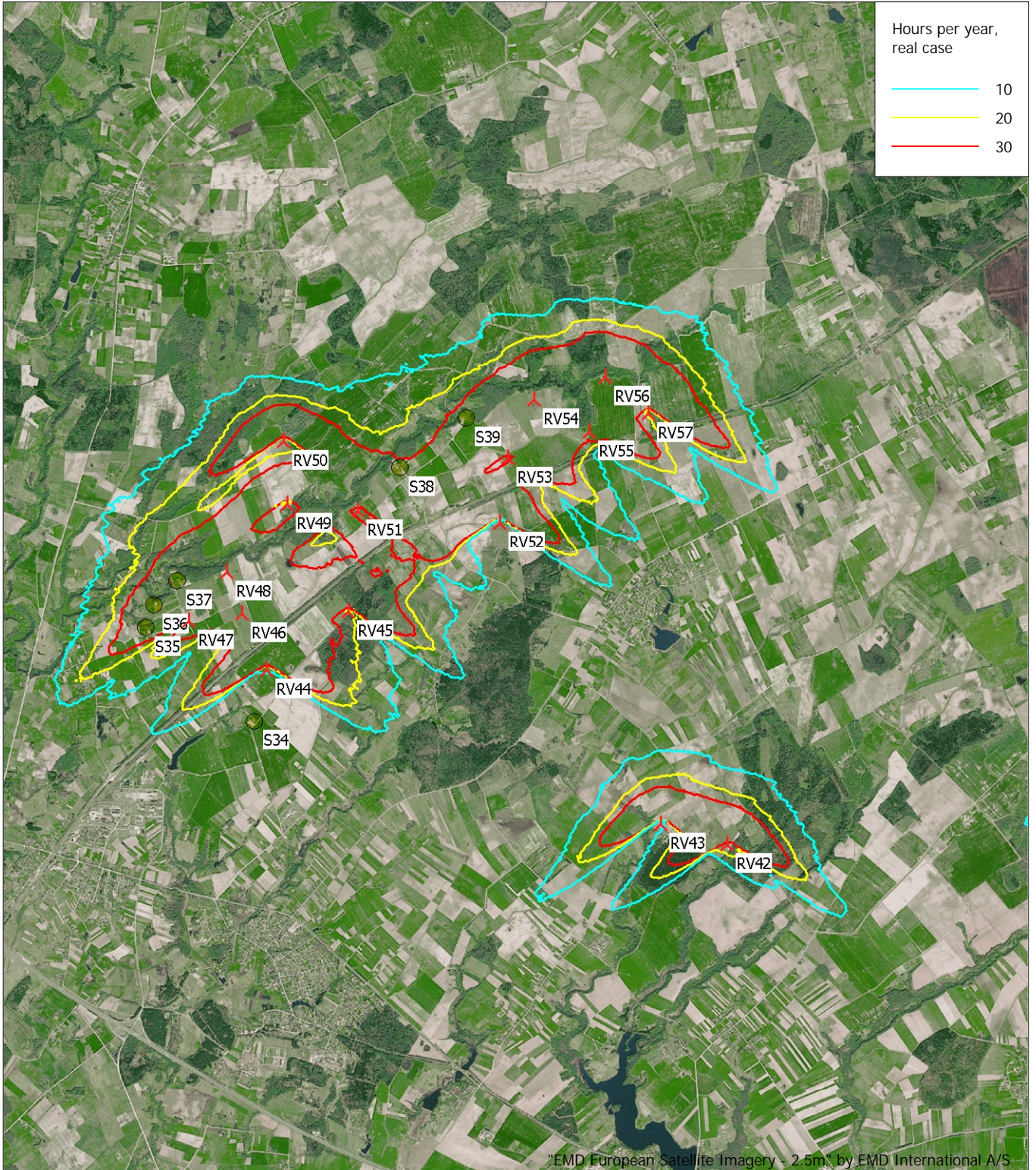
Calculation: Seseliavimas



Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:70 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 441 855 North: 6 142 329
▲ New WTG ● Shadow receptor
Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)
Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Map

Calculation: Seseliavimas



Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:70 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 432 696 North: 6 146 078
▲ New WTG ● Shadow receptor
Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)
Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Main Result

Calculation: Seseliavimas

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) [KAUNAS]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
1,41 2,36 4,03 5,55 8,35 8,36 8,16 7,72 5,06 3,23 1,33 0,98

Operational hours are calculated from WTGs in calculation and wind distribution:

Site data: ATLAS 12 sectors; Radius: 30 500 m (7)

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
908 462 218 271 538 594 718 938 1 113 950 721 511 7 942

Idle start wind speed: Cut in wind speed from power curve

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:

Height contours used: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)

Receptor grid resolution: 1,0 m

All coordinates are in
Lithuanian TM LKS94-LKS94 (LT)

WTGs

	Y	X	Z	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.	Type-generator				Calculation distance [m]	RPM
RV01	453 868	6 135 039	102,9	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV02	453 407	6 134 505	104,5	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV03	453 203	6 135 212	103,1	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV04	452 568	6 134 952	101,7	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV05	451 645	6 134 901	101,0	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV06	451 457	6 135 909	98,9	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV07	450 825	6 135 371	98,1	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV08	450 503	6 136 375	98,3	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV09	449 999	6 135 880	97,3	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV10	449 885	6 136 804	101,8	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV11	449 095	6 136 483	104,6	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV12	448 350	6 137 597	104,0	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV13	447 086	6 138 092	105,9	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV14	453 441	6 137 724	106,1	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV15	451 203	6 139 337	111,6	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV16	449 502	6 139 367	107,4	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV17	448 523	6 139 188	105,0	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV18	448 230	6 139 887	103,1	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV19	449 141	6 140 182	109,6	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV20	449 264	6 140 998	107,0	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV21	448 636	6 141 273	109,9	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV22	447 106	6 142 740	116,4	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV23	441 100	6 138 325	77,1	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV24	441 272	6 139 092	80,9	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV25	440 561	6 139 438	88,0	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV26	445 018	6 143 790	111,5	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV27	445 313	6 145 441	112,0	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV28	444 795	6 145 509	119,0	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV29	444 406	6 145 020	113,4	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV30	443 437	6 145 283	118,6	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

	Y	X	Z	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.	Type-generator				Calculation distance [m]	RPM
RV31	443 619	6 144 173	110,9	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV32	442 989	6 144 064	107,0	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV33	441 445	6 143 796	106,1	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV34	440 823	6 143 768	104,2	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV35	441 038	6 144 466	104,9	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV36	441 706	6 145 180	110,9	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV37	442 190	6 145 703	113,1	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV38	441 628	6 145 943	115,4	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV39	441 860	6 146 591	119,7	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV40	441 772	6 147 276	123,6	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV41	441 007	6 146 940	120,1	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV42	435 457	6 143 037	104,5	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV43	434 653	6 143 307	103,2	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV44	429 843	6 145 279	107,2	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV45	430 858	6 145 962	112,0	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV46	429 547	6 145 964	107,8	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV47	428 898	6 145 891	105,5	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV48	429 377	6 146 473	109,7	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV49	430 131	6 147 299	113,2	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV50	430 097	6 148 065	115,9	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV51	430 989	6 147 206	115,0	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV52	432 724	6 147 028	116,1	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV53	432 836	6 147 815	121,0	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV54	433 174	6 148 528	127,1	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV55	433 839	6 148 125	128,3	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV56	434 043	6 148 785	126,3	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV57	434 569	6 148 337	126,9	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0

Shadow receptor-Input

No.	Y	X	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
	[m]	[m]	[m]	[m]	[m]	[m]	[°]		[m]
S01	450 043	6 137 499	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S02	449 224	6 137 081	103,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S03	448 751	6 135 985	102,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S04	448 585	6 135 967	109,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S05	448 573	6 136 006	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S06	447 646	6 138 441	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S07	447 633	6 138 553	104,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S08	453 591	6 138 330	98,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S09	453 741	6 137 400	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S10	453 750	6 137 393	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S11	453 202	6 138 009	104,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S12	448 091	6 138 813	103,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S13	449 932	6 140 871	108,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S14	449 904	6 140 839	109,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S15	449 881	6 140 803	110,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S16	445 607	6 144 035	113,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S17	443 957	6 144 585	114,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S18	442 773	6 144 681	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S19	442 417	6 144 159	107,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S20	442 394	6 144 116	105,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S21	441 242	6 143 270	106,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S22	441 303	6 143 272	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S23	441 264	6 143 226	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S24	441 328	6 143 216	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S25	441 316	6 143 144	107,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S26	441 372	6 143 158	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S27	440 438	6 143 298	106,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S28	440 282	6 143 882	106,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S29	440 326	6 143 930	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S30	440 631	6 144 514	110,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

No.	Y	X	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
			[m]	[m]	[m]	[m]	[°]		[m]
S31	441 067	6 145 854	117,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S32	441 772	6 139 583	90,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S33	441 074	6 139 866	89,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S34	429 681	6 144 640	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S35	428 367	6 145 810	103,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S36	428 466	6 146 089	104,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S37	428 768	6 146 376	107,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S38	431 508	6 147 720	119,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S39	432 332	6 148 310	120,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0

Calculation Results

Shadow receptor

Shadow, expected values

No.	Shadow hours per year [h/year]	Avoided hours per year [h/year]
S01	21:53	
S02*	22:05	28:40
S03	13:21	
S04	15:10	
S05	16:11	
S06	24:26	
S07	23:33	
S08	15:17	
S09	0:00	
S10	0:00	
S11*	5:02	38:22
S12	13:37	
S13*	17:59	32:43
S14*	19:14	32:06
S15*	20:55	28:06
S16	21:06	
S17*	24:55	20:03
S18*	29:25	20:39
S19*	22:52	25:08
S20*	23:45	25:58
S21	4:37	
S22	6:42	
S23	5:04	
S24	7:57	
S25	7:27	
S26	10:17	
S27	15:32	
S28*	14:08	16:56
S29*	5:52	26:01
S30*	26:38	66:41
S31*	13:11	42:41
S32	19:25	
S33	21:49	
S34	0:00	
S35*	17:17	40:39
S36*	13:11	49:20
S37*	20:05	62:11
S38*	25:03	10:50
S39*	25:03	22:21

* 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]
RV01	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (1)		0:00
RV02	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (2)		0:00

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

No.	Name	Stopped due to flicker curtailment [h/year]	Expected [h/year]
RV03	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (3)		0:00
RV04	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (4)		0:00
RV05	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (8)		0:00
RV06	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (15)		1:19
RV07	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (16)		2:24
RV08	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (17)		10:00
RV09	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (66)		9:09
RV10	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (18)		35:24
RV11	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (19)	141:05	4:35
RV12	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (20)	45:59	11:46
RV13	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (21)		24:18
RV14	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (22)	198:57	15:17
RV15	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (23)		7:39
RV16	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (24)		11:43
RV17	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (25)		5:17
RV18	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (26)		1:51
RV19	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (27)		6:40
RV20	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (28)	172:22	0:00
RV21	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (29)		12:17
RV22	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (30)		1:18
RV23	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (31)		2:40
RV24	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (32)		20:14
RV25	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (33)		18:08
RV26	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (34)		20:36
RV27	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (35)		8:18
RV28	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (36)		3:00
RV29	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (37)		9:08
RV30	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (38)		0:54
RV31	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (39)	160:25	13:07
RV32	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (40)	267:20	18:55
RV33	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (41)		38:13
RV34	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (42)	119:19	23:15
RV35	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (43)	252:31	9:37
RV36	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (44)		33:24
RV37	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (45)		14:25
RV38	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (46)	159:28	0:00
RV39	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (47)		0:00
RV40	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (48)		0:00
RV41	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (49)		0:00
RV42	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (50)		0:00
RV43	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (51)		0:00
RV44	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (52)		7:24
RV45	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (53)		3:36
RV46	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (54)		21:58
RV47	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (55)	482:37	0:00
RV48	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (56)	213:19	7:17
RV49	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (57)		10:47
RV50	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (58)		6:25
RV51	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (59)	73:15	3:38
RV52	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (60)		5:02
RV53	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (61)		16:33
RV54	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (62)	89:25	5:59
RV55	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (63)		4:41
RV56	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (64)		3:42
RV57	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (65)		1:23

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.

**Prognozuojamas PŪV šėšėliavimo vertinimas po PAV
ataskaitos viešinio suinteresuotai visuomenei
"1" alternatyva**

SHADOW - Main Result

Calculation: Seseliavimas

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) [KAUNAS]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1,41	2,36	4,03	5,55	8,35	8,36	8,16	7,72	5,06	3,23	1,33	0,98

Operational hours are calculated from WTGs in calculation and wind distribution:

Site data: ATLAS 12 sectors; Radius: 30 500 m (7)

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
907	462	218	271	537	594	718	938	1 113	950	702	511	7 940

Idle start wind speed: Cut in wind speed from power curve

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:

Height contours used: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)

Receptor grid resolution: 1,0 m

All coordinates are in

Lithuanian TM LKS94-LKS94 (LT)

WTGs

WTG	Y	X	Z	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.	Type-generator				Calculation distance [m]	RPM [RPM]
RV01	453 868	6 135 039	102,9	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV02	453 407	6 134 505	104,5	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV03	453 203	6 135 212	103,1	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV04	452 568	6 134 952	101,7	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV05	451 645	6 134 901	101,0	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV06	451 457	6 135 909	98,9	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV07	450 825	6 135 371	98,1	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV08	450 503	6 136 375	98,3	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV09	449 999	6 135 880	97,3	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV14	453 441	6 137 724	106,1	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV22	447 106	6 142 740	116,4	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV27	445 313	6 145 441	112,0	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV28	444 795	6 145 509	119,0	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV29	444 406	6 145 020	113,4	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV30	443 437	6 145 283	118,6	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV31	443 619	6 144 173	110,9	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV32	442 989	6 144 064	107,0	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV33	441 445	6 143 796	106,1	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV34	440 823	6 143 768	104,2	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV35	441 038	6 144 466	104,9	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV36	441 706	6 145 180	110,9	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV37	442 190	6 145 703	113,1	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV38	441 628	6 145 943	115,4	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV39	441 860	6 146 591	119,7	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV41	441 007	6 146 940	120,1	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV42	435 457	6 143 037	104,5	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV43	434 653	6 143 307	103,2	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV44	429 843	6 145 279	107,2	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV45	430 858	6 146 940	112,0	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV50	430 097	6 148 065	115,9	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV51	430 989	6 147 206	115,0	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV52	432 724	6 147 028	116,1	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

	Y	X	Z	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.	Type-generator				Calculation distance [m]	RPM
RV53	432 836	6 147 815	121,0	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV54	433 174	6 148 528	127,1	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV55	433 839	6 148 125	128,3	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV56	434 043	6 148 785	126,3	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV57	434 569	6 148 337	126,9	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	

Shadow receptor-Input

No.	Y	X	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
			[m]	[m]	[m]	[m]	[°]		[m]
S01	450 043	6 137 499	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S02	449 224	6 137 081	103,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S03	448 751	6 135 985	102,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S04	448 585	6 135 967	109,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S05	448 573	6 136 006	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S06	447 646	6 138 441	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S07	447 633	6 138 553	104,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S08	453 591	6 138 330	98,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S09	453 741	6 137 400	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S10	453 750	6 137 393	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S11	453 202	6 138 009	104,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S12	448 091	6 138 813	103,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S13	449 932	6 140 871	108,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S14	449 904	6 140 839	109,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S15	449 881	6 140 803	110,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S16	445 607	6 144 035	113,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S17	443 957	6 144 585	114,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S18	442 773	6 144 681	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S19	442 417	6 144 159	107,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S20	442 394	6 144 116	105,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S21	441 242	6 143 270	106,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S22	441 303	6 143 272	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S23	441 264	6 143 226	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S24	441 328	6 143 216	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S25	441 316	6 143 144	107,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S26	441 372	6 143 158	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S27	440 438	6 143 298	106,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S28	440 282	6 143 882	106,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S29	440 326	6 143 930	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S30	440 631	6 144 514	110,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S31	441 067	6 145 854	117,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S32	441 772	6 139 583	90,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S33	441 074	6 139 866	89,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S34	429 681	6 144 640	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S35	428 367	6 145 810	103,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S36	428 466	6 146 089	104,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S37	428 768	6 146 376	107,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S38	431 508	6 147 720	119,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S39	432 332	6 148 310	120,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0

Calculation Results

Shadow receptor

Shadow, expected values

No.	Shadow hours per year [h/year]
S01	2:46
S02	5:12
S03	6:07
S04	2:53
S05	2:45

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

Shadow, expected values

No. Shadow hours

No.	Shadow hours per year [h/year]
S06	0:00
S07	0:00
S08	12:09
S09	0:00
S10	0:00
S11	29:13
S12	0:00
S13	0:00
S14	0:00
S15	0:00
S16	0:33
S17	26:20
S18	36:14
S19	34:35
S20	36:19
S21	0:00
S22	4:03
S23	0:00
S24	4:40
S25	0:00
S26	6:39
S27	12:54
S28	24:08
S29	24:20
S30	73:22
S31	44:56
S32	0:00
S33	0:00
S34	0:00
S35	2:00
S36	1:51
S37	1:47
S38	23:23
S39	34:57

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

No.	Name	Expected [h/year]
RV01	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (1)	0:00
RV02	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (2)	0:00
RV03	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (3)	0:00
RV04	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (4)	0:00
RV05	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (8)	0:00
RV06	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (15)	0:00
RV07	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (16)	0:00
RV08	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (17)	7:22
RV09	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (66)	7:27
RV14	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (22)	41:23
RV22	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (30)	0:00
RV27	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (35)	6:55
RV28	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (36)	0:00
RV29	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (37)	3:25
RV30	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (38)	0:00
RV31	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (39)	26:14
RV32	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (40)	52:17
RV33	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (41)	30:40
RV34	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (42)	38:11
RV35	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (43)	61:46
RV36	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (44)	25:28
RV37	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (45)	4:25
RV38	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (46)	35:23
RV39	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (47)	0:00

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

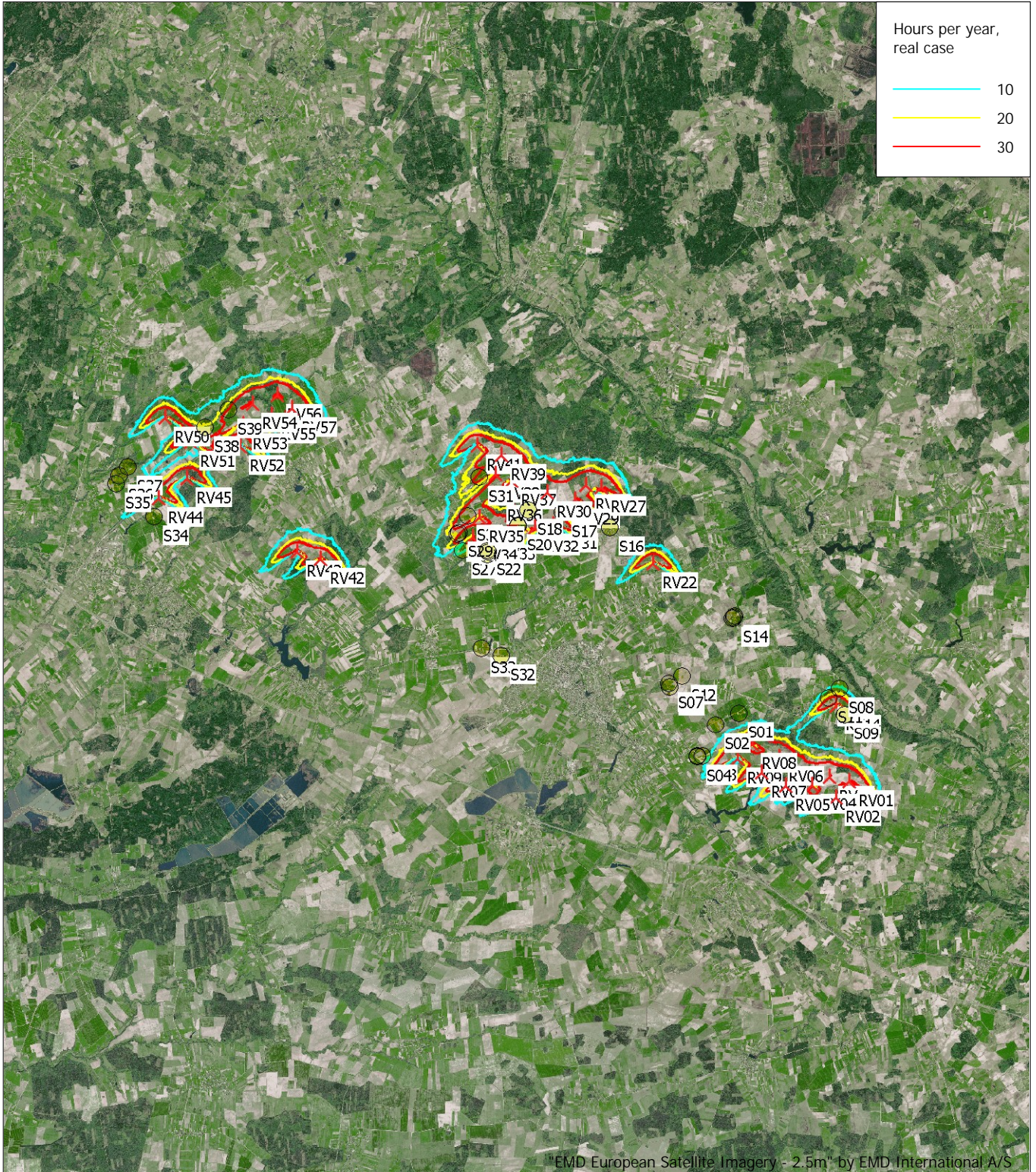
No.	Name	Expected [h/year]
RV41	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (49)	0:00
RV42	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (50)	0:00
RV43	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (51)	0:00
RV44	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (52)	5:40
RV45	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (53)	0:00
RV50	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (58)	4:00
RV51	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (59)	9:40
RV52	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (60)	3:42
RV53	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (61)	12:44
RV54	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (62)	23:32
RV55	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (63)	2:25
RV56	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (64)	2:53
RV57	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (65)	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

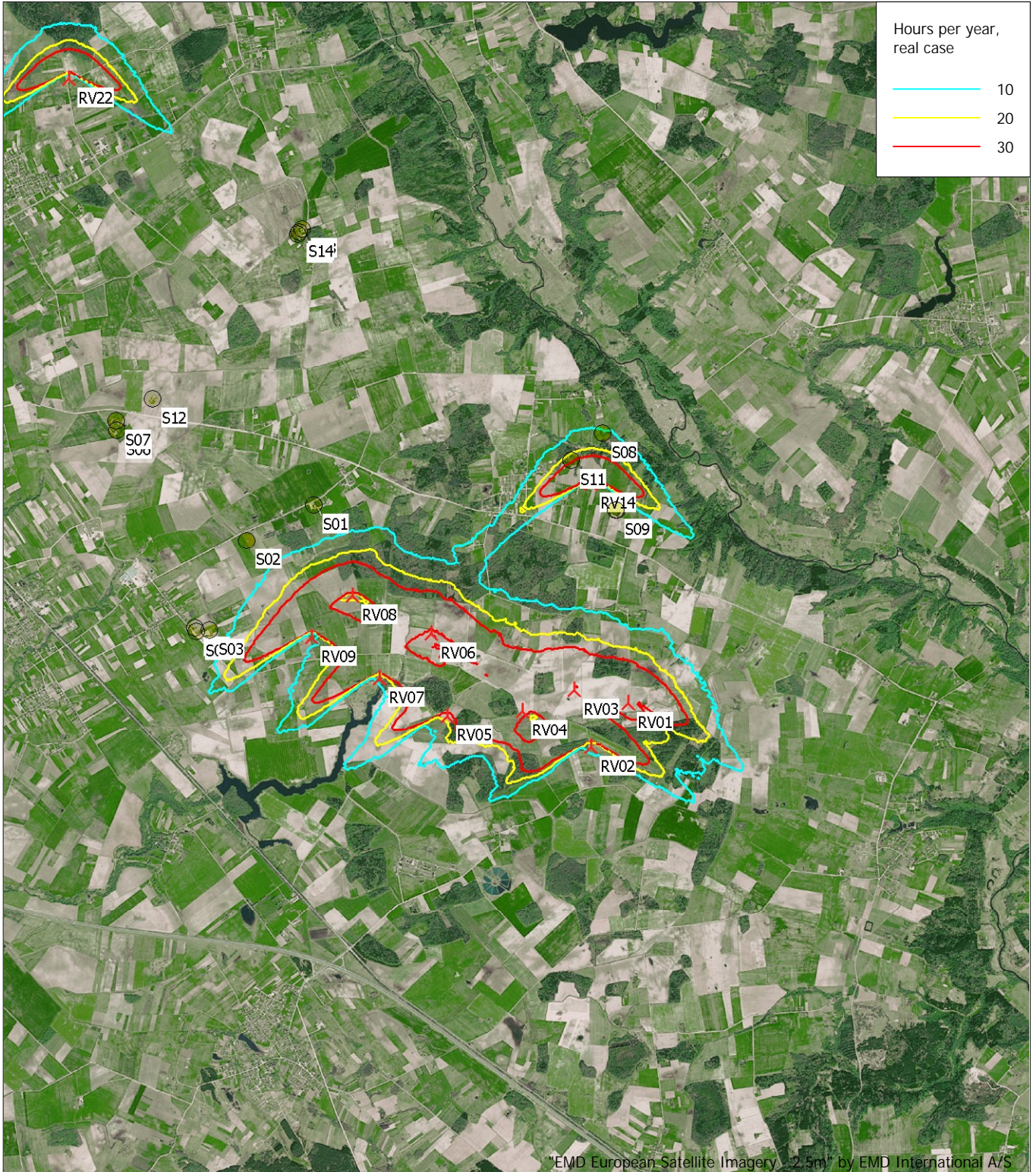
Calculation: Seseliavimas



Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:200 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 441 685 North: 6 141 462
New WTG Shadow receptor
Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)
Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Map

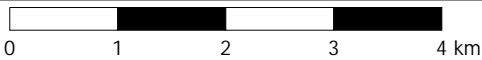
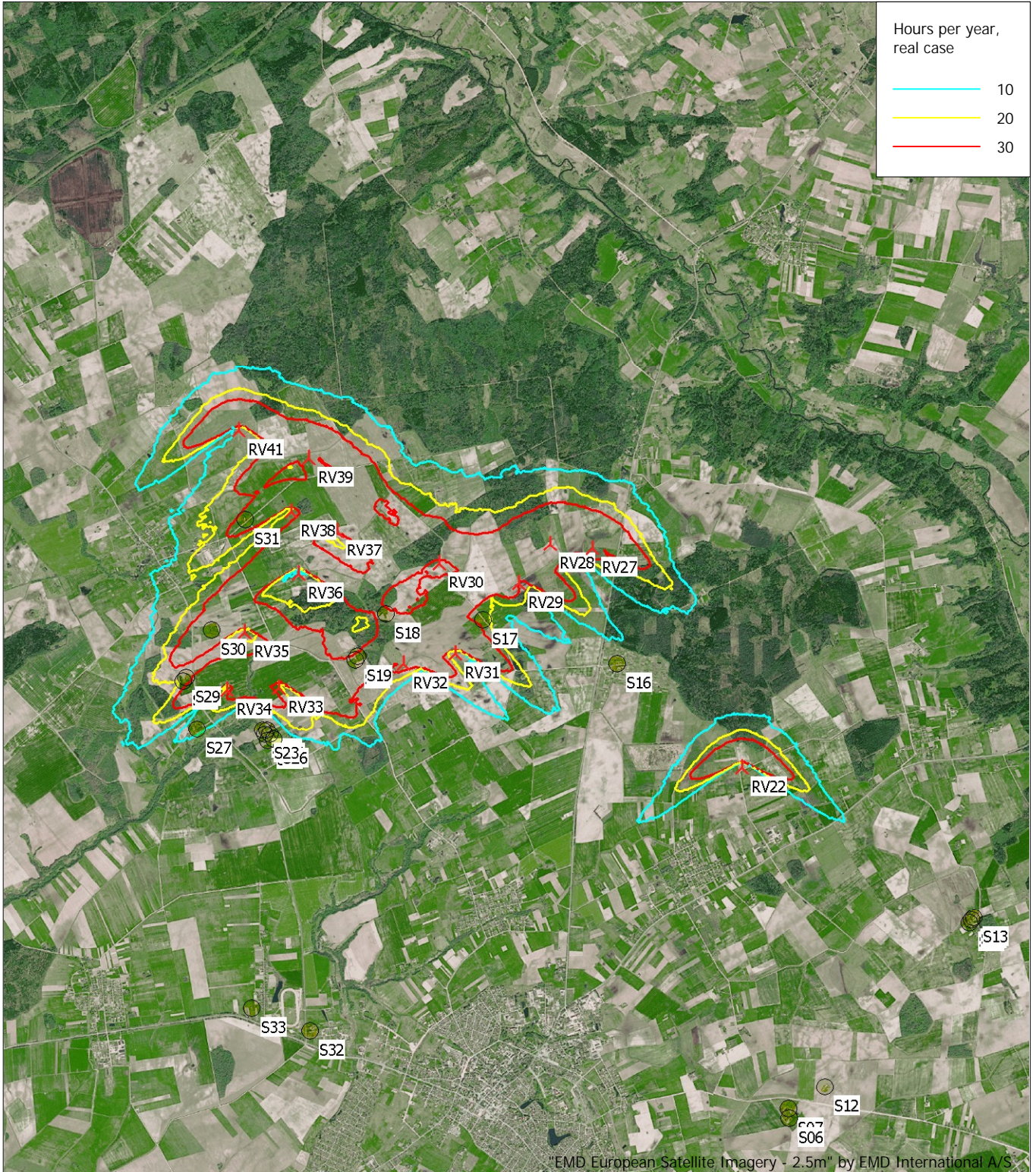
Calculation: Seseliavimas



Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:70 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 452 267 North: 6 136 270
▲ New WTG ● Shadow receptor
Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)
Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Map

Calculation: Seseliavimas



Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:70 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 444 133 North: 6 144 800

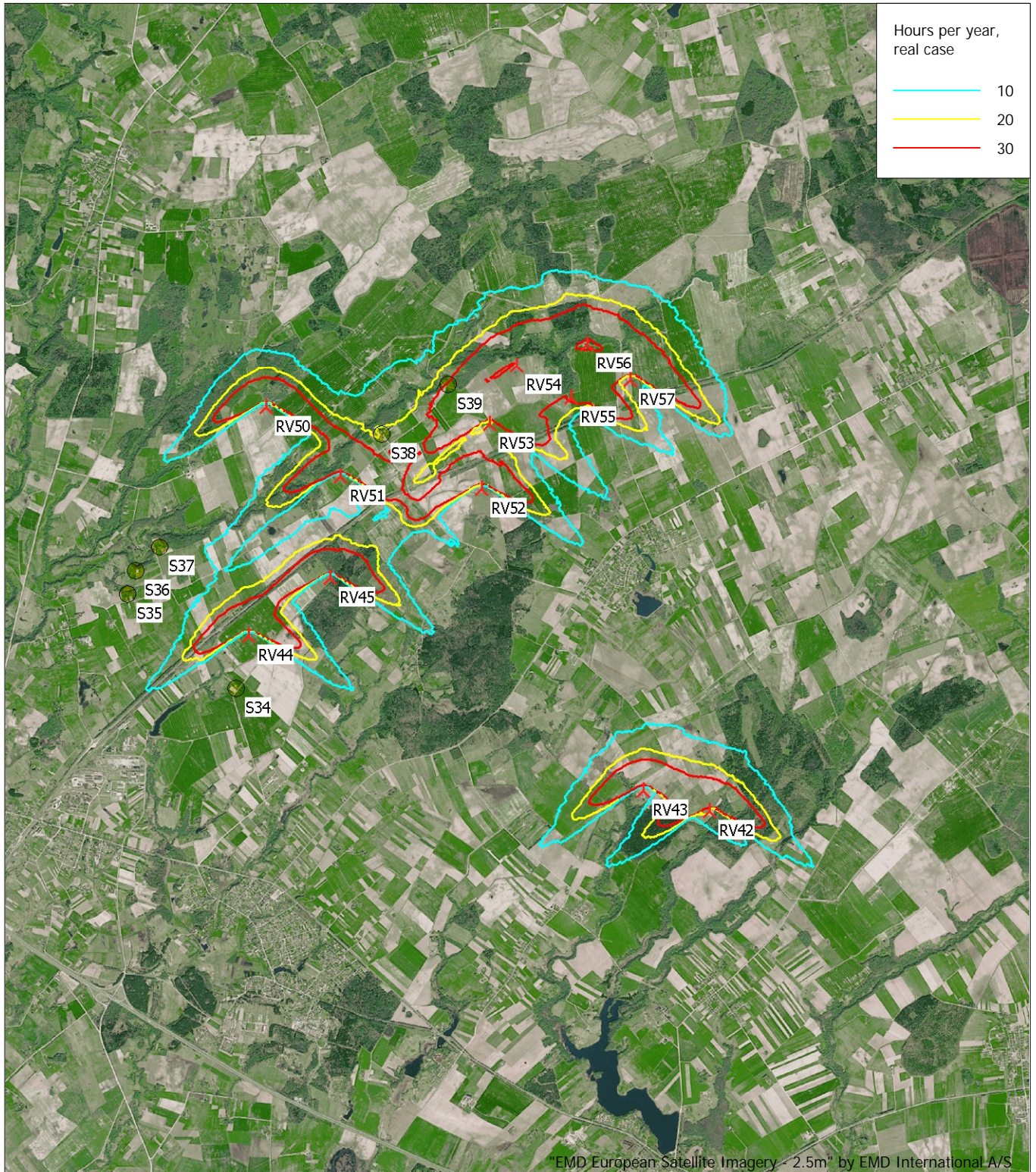
▲ New WTG ● Shadow receptor

Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)

Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Map

Calculation: Seseliavimas



Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:70 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 432 927 North: 6 145 651
▲ New WTG ● Shadow receptor
Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)
Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Main Result

Calculation: Seseliavimas

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) [KAUNAS]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1,41	2,36	4,03	5,55	8,35	8,36	8,16	7,72	5,06	3,23	1,33	0,98

Operational hours are calculated from WTGs in calculation and wind distribution:

Site data: ATLAS 12 sectors; Radius: 30 500 m (7)

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
907	462	218	271	537	594	718	938	1 113	950	702	511	7 940

Idle start wind speed: Cut in wind speed from power curve

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:
Height contours used: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)
Receptor grid resolution: 1,0 m

All coordinates are in
Lithuanian TM LKS94-LKS94 (LT)

WTGs

	Y	X	Z	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.	Type-generator				Calculation distance [m]	RPM
RV01	453 868	6 135 039	102,9	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV02	453 407	6 134 505	104,5	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV03	453 203	6 135 212	103,1	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV04	452 568	6 134 952	101,7	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV05	451 645	6 134 901	101,0	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV06	451 457	6 135 909	98,9	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV07	450 825	6 135 371	98,1	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV08	450 503	6 136 375	98,3	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV09	449 999	6 135 880	97,3	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV11	453 441	6 137 724	106,1	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV22	447 106	6 142 740	116,4	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV27	445 313	6 145 441	112,0	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV28	444 795	6 145 509	119,0	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV29	444 406	6 145 020	113,4	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV30	443 437	6 145 283	118,6	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV31	443 619	6 144 173	110,9	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV32	442 989	6 144 064	107,0	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV33	441 445	6 143 796	106,1	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV34	440 823	6 143 943	104,2	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV35	441 038	6 144 466	104,9	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV36	441 706	6 145 180	110,9	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV37	442 190	6 145 703	113,1	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV38	441 628	6 145 943	115,4	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV39	441 860	6 146 591	119,7	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV41	441 007	6 146 940	120,1	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV42	435 457	6 143 037	104,5	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV43	434 653	6 143 307	103,2	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV44	429 843	6 145 279	107,2	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV45	430 858	6 145 962	112,0	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV50	430 097	6 148 065	115,9	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

	Y	X	Z	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.	Type-generator				Calculation distance [m]	RPM
			[m]									
RV51	430 989	6 147 206	115,0	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV52	432 724	6 147 028	116,1	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV53	432 836	6 147 815	121,0	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV54	433 174	6 148 528	127,1	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV55	433 839	6 148 125	128,3	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV56	434 043	6 148 785	126,3	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV57	434 569	6 148 337	126,9	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	

Shadow receptor-Input

No.	Y	X	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
			[m]	[m]	[m]	[m]	[°]		[m]
S01	450 043	6 137 499	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S02	449 224	6 137 081	103,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S03	448 751	6 135 985	102,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S04	448 585	6 135 967	109,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S05	448 573	6 136 006	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S06	447 646	6 138 441	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S07	447 633	6 138 553	104,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S08	453 591	6 138 330	98,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S09	453 741	6 137 400	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S10	453 750	6 137 393	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S11	453 202	6 138 009	104,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S12	448 091	6 138 813	103,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S13	449 932	6 140 871	108,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S14	449 904	6 140 839	109,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S15	449 881	6 140 803	110,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S16	445 607	6 144 035	113,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S17	443 957	6 144 585	114,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S18	442 773	6 144 681	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S19	442 417	6 144 159	107,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S20	442 394	6 144 116	105,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S21	441 242	6 143 270	106,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S22	441 303	6 143 272	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S23	441 264	6 143 226	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S24	441 328	6 143 216	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S25	441 316	6 143 144	107,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S26	441 372	6 143 158	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S27	440 438	6 143 298	106,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S28	440 282	6 143 882	106,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S29	440 326	6 143 930	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S30	440 631	6 144 514	110,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S31	441 067	6 145 854	117,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S32	441 772	6 139 583	90,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S33	441 074	6 139 866	89,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S34	429 681	6 144 640	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S35	428 367	6 145 810	103,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S36	428 466	6 146 089	104,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S37	428 768	6 146 376	107,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S38	431 508	6 147 720	119,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S39	432 332	6 148 310	120,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0

Calculation Results

Shadow receptor

Shadow, expected values

No.	Shadow hours per year [h/year]	Avoided hours per year [h/year]
S01	2:46	
S02	5:12	
S03	6:07	

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

Shadow, expected values

No.	Shadow hours per year [h/year]	Avoided hours per year [h/year]
S04	2:53	
S05	2:45	
S06	0:00	
S07	0:00	
S08	12:09	
S09	0:00	
S10	0:00	
S11	29:13	
S12	0:00	
S13	0:00	
S14	0:00	
S15	0:00	
S16	0:33	
S17	26:20	
S18*	29:37	6:35
S19*	26:16	8:18
S20*	28:25	7:54
S21	0:00	
S22	4:03	
S23	0:00	
S24	4:40	
S25	0:00	
S26	6:39	
S27	12:54	
S28	24:08	
S29	24:20	
S30*	18:45	54:11
S31*	9:25	35:23
S32	0:00	
S33	0:00	
S34	0:00	
S35	2:00	
S36	1:51	
S37	1:47	
S38	23:23	
S39*	26:09	8:45

* 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]
RV01	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (1)		0:00
RV02	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (2)		0:00
RV03	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (3)		0:00
RV04	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (4)		0:00
RV05	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (8)		0:00
RV06	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (15)		0:00
RV07	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (16)		0:00
RV08	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (17)		7:22
RV09	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (66)		7:27
RV14	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (22)		41:23
RV22	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (30)		0:00
RV27	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (35)		6:55
RV28	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (36)		0:00
RV29	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (37)		3:25
RV30	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (38)		0:00
RV31	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (39)	48:11	16:47
RV32	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (40)		52:17
RV33	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (41)	26:07	25:34
RV34	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (42)		38:11
RV35	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (43)	212:21	5:50
RV36	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (44)		25:28

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

No.	Name	Stopped due to flicker curtailment [h/year]	Expected [h/year]
RV37	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (45)		4:25
RV38	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (46)	131:48	0:00
RV39	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (47)		0:00
RV41	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (49)		0:00
RV42	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (50)		0:00
RV43	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (51)		0:00
RV44	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (52)		5:40
RV45	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (53)		0:00
RV50	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (58)		4:00
RV51	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (59)		9:40
RV52	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (60)		3:42
RV53	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (61)	56:24	3:59
RV54	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (62)		23:32
RV55	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (63)		2:25
RV56	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (64)		2:53
RV57	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (65)		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.

**Prognozuojamas PŪV šėšėliavimo vertinimas po PAV
ataskaitos viešinio suinteresuotai visuomenei
"2" alternatyva**

SHADOW - Main Result

Calculation: Seseliavimas

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) [KAUNAS]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
1,41 2,36 4,03 5,55 8,35 8,36 8,16 7,72 5,06 3,23 1,33 0,98

Operational hours are calculated from WTGs in calculation and wind distribution:

Site data: ATLAS 12 sectors; Radius: 30 500 m (7)

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
961 489 999 6 135 880 101,0 VESTAS V172-7.2 7200 172.0 !... Yes

Idle start wind speed: Cut in wind speed from power curve

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:

Height contours used: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)

Receptor grid resolution: 1,0 m

All coordinates are in

Lithuanian TM LKS94-LKS94 (LT)

WTGs

WTG	Y	X	Z	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.	Type-generator				Calculation distance [m]	RPM [RPM]
RV01	453 868	6 135 039	102,9	VESTAS V172-7.2 7200 172.0 !... Yes	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV02	453 407	6 134 505	104,5	VESTAS V172-7.2 7200 172.0 !... Yes	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV03	453 203	6 135 212	103,1	VESTAS V172-7.2 7200 172.0 !... Yes	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV04	452 568	6 134 952	101,7	VESTAS V172-7.2 7200 172.0 !... Yes	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV05	451 645	6 134 901	101,0	VESTAS V172-7.2 7200 172.0 !... Yes	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV06	451 457	6 135 909	98,9	VESTAS V172-7.2 7200 172.0 !... Yes	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV07	450 825	6 135 371	98,1	VESTAS V172-7.2 7200 172.0 !... Yes	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV08	450 503	6 136 375	98,3	VESTAS V172-7.2 7200 172.0 !... Yes	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV09	449 999	6 135 880	97,3	VESTAS V172-7.2 7200 172.0 !... Yes	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV14	453 441	6 137 724	106,1	VESTAS V172-7.2 7200 172.0 !... Yes	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV22	447 106	6 142 740	116,4	VESTAS V172-7.2 7200 172.0 !... Yes	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV27	445 313	6 145 441	112,0	VESTAS V172-7.2 7200 172.0 !... Yes	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV28	444 795	6 145 509	119,0	VESTAS V172-7.2 7200 172.0 !... Yes	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV29	444 406	6 145 020	113,4	VESTAS V172-7.2 7200 172.0 !... Yes	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV30	443 437	6 145 283	118,6	VESTAS V172-7.2 7200 172.0 !... Yes	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV31	443 619	6 144 173	110,9	VESTAS V172-7.2 7200 172.0 !... Yes	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV32	442 989	6 144 064	107,0	VESTAS V172-7.2 7200 172.0 !... Yes	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV33	441 445	6 143 796	106,1	VESTAS V172-7.2 7200 172.0 !... Yes	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV34	440 823	6 143 768	104,2	VESTAS V172-7.2 7200 172.0 !... Yes	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV35	441 038	6 144 466	104,9	VESTAS V172-7.2 7200 172.0 !... Yes	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV36	441 706	6 145 180	110,9	VESTAS V172-7.2 7200 172.0 !... Yes	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV37	442 190	6 145 703	113,1	VESTAS V172-7.2 7200 172.0 !... Yes	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV38	441 628	6 145 943	115,4	VESTAS V172-7.2 7200 172.0 !... Yes	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV39	441 860	6 146 591	119,7	VESTAS V172-7.2 7200 172.0 !... Yes	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV41	441 007	6 146 940	120,1	VESTAS V172-7.2 7200 172.0 !... Yes	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV42	435 457	6 143 037	104,5	VESTAS V172-7.2 7200 172.0 !... Yes	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV43	434 653	6 143 307	103,2	VESTAS V172-7.2 7200 172.0 !... Yes	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV44	429 843	6 145 279	107,2	VESTAS V172-7.2 7200 172.0 !... Yes	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV45	430 858	6 145 962	112,0	VESTAS V172-7.2 7200 172.0 !... Yes	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV50	430 097	6 148 065	115,9	VESTAS V172-7.2 7200 172.0 !... Yes	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV51	430 989	6 147 206	115,0	VESTAS V172-7.2 7200 172.0 !... Yes	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

	Y	X	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 [RPM]
RV52	432 724	6 147 028	116,1	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV53	432 836	6 147 815	121,0	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV54	433 174	6 148 528	127,1	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV55	433 839	6 148 125	128,3	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV56	434 043	6 148 785	126,3	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV57	434 569	6 148 337	126,9	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0

Shadow receptor-Input

No.	Y	X	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
			[m]	[m]	[m]	[m]	[°]		[m]
S01	450 043	6 137 499	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S02	449 224	6 137 081	103,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S03	448 751	6 135 985	102,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S04	448 585	6 135 967	109,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S05	448 573	6 136 006	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S06	447 646	6 138 441	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S07	447 633	6 138 553	104,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S08	453 591	6 138 330	98,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S09	453 741	6 137 400	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S10	453 750	6 137 393	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S11	453 202	6 138 009	104,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S12	448 091	6 138 813	103,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S13	449 932	6 140 871	108,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S14	449 904	6 140 839	109,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S15	449 881	6 140 803	110,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S16	445 607	6 144 035	113,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S17	443 957	6 144 585	114,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S18	442 773	6 144 681	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S19	442 417	6 144 159	107,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S20	442 394	6 144 116	105,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S21	441 242	6 143 270	106,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S22	441 303	6 143 272	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S23	441 264	6 143 226	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S24	441 328	6 143 216	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S25	441 316	6 143 144	107,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S26	441 372	6 143 158	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S27	440 438	6 143 298	106,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S28	440 282	6 143 882	106,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S29	440 326	6 143 930	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S30	440 631	6 144 514	110,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S31	441 067	6 145 854	117,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S32	441 772	6 139 583	90,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S33	441 074	6 139 866	89,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S34	429 681	6 144 640	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S35	428 367	6 145 810	103,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S36	428 466	6 146 089	104,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S37	428 768	6 146 376	107,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S38	431 508	6 147 720	119,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S39	432 332	6 148 310	120,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0

Calculation Results

Shadow receptor

Shadow, expected values

No.	Shadow hours per year [h/year]
S01	2:43
S02	5:20
S03	6:12
S04	2:55

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page
Shadow, expected values

No.	Shadow hours per year [h/year]
S05	2:51
S06	0:00
S07	0:00
S08	12:28
S09	0:00
S10	0:00
S11	30:00
S12	0:00
S13	0:00
S14	0:00
S15	0:00
S16	0:47
S17	27:10
S18	37:07
S19	35:07
S20	36:51
S21	0:00
S22	4:04
S23	0:00
S24	4:41
S25	0:00
S26	6:38
S27	13:37
S28	24:30
S29	24:52
S30	75:40
S31	46:41
S32	0:00
S33	0:00
S34	0:00
S35	2:00
S36	1:54
S37	1:51
S38	23:44
S39	35:12

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

No.	Name	Expected [h/year]
RV01	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (1)	0:00
RV02	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (2)	0:00
RV03	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (3)	0:00
RV04	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (4)	0:00
RV05	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (8)	0:00
RV06	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (15)	0:00
RV07	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (16)	0:00
RV08	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (17)	7:24
RV09	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (66)	7:37
RV14	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (22)	42:28
RV22	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (30)	0:00
RV27	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (35)	7:21
RV28	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (36)	0:00
RV29	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (37)	3:41
RV30	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (38)	0:00
RV31	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (39)	26:50
RV32	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (40)	53:03
RV33	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (41)	31:50
RV34	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (42)	38:52
RV35	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (43)	63:23
RV36	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (44)	26:33
RV37	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (45)	4:29
RV38	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (46)	36:56

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

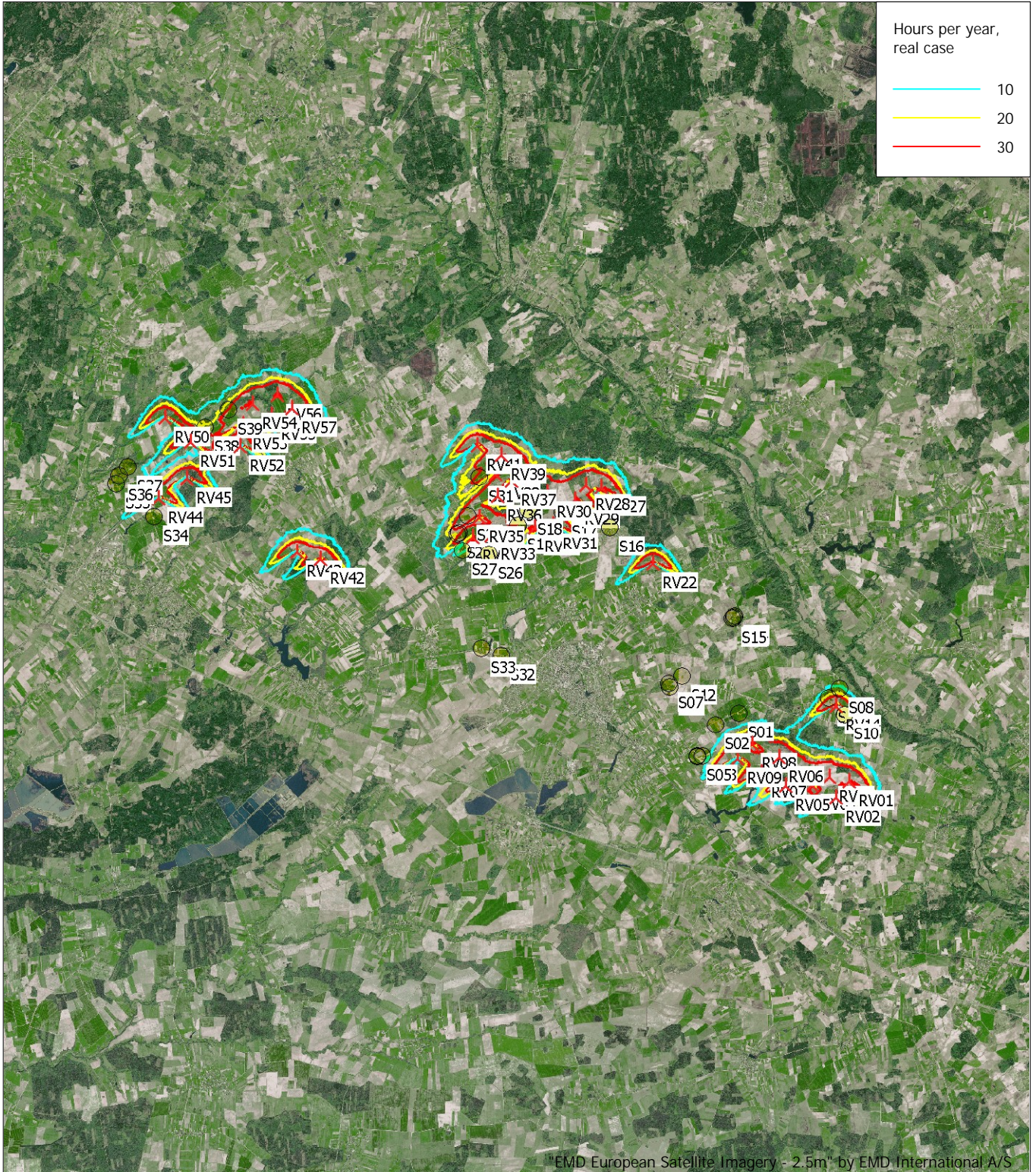
No.	Name	Expected [h/year]
RV39	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (47)	0:00
RV41	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (49)	0:00
RV42	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (50)	0:00
RV43	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (51)	0:00
RV44	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (52)	5:46
RV45	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (53)	0:00
RV50	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (58)	4:03
RV51	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (59)	9:51
RV52	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (60)	3:39
RV53	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (61)	12:59
RV54	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (62)	23:40
RV55	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (63)	2:28
RV56	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (64)	2:53
RV57	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (65)	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

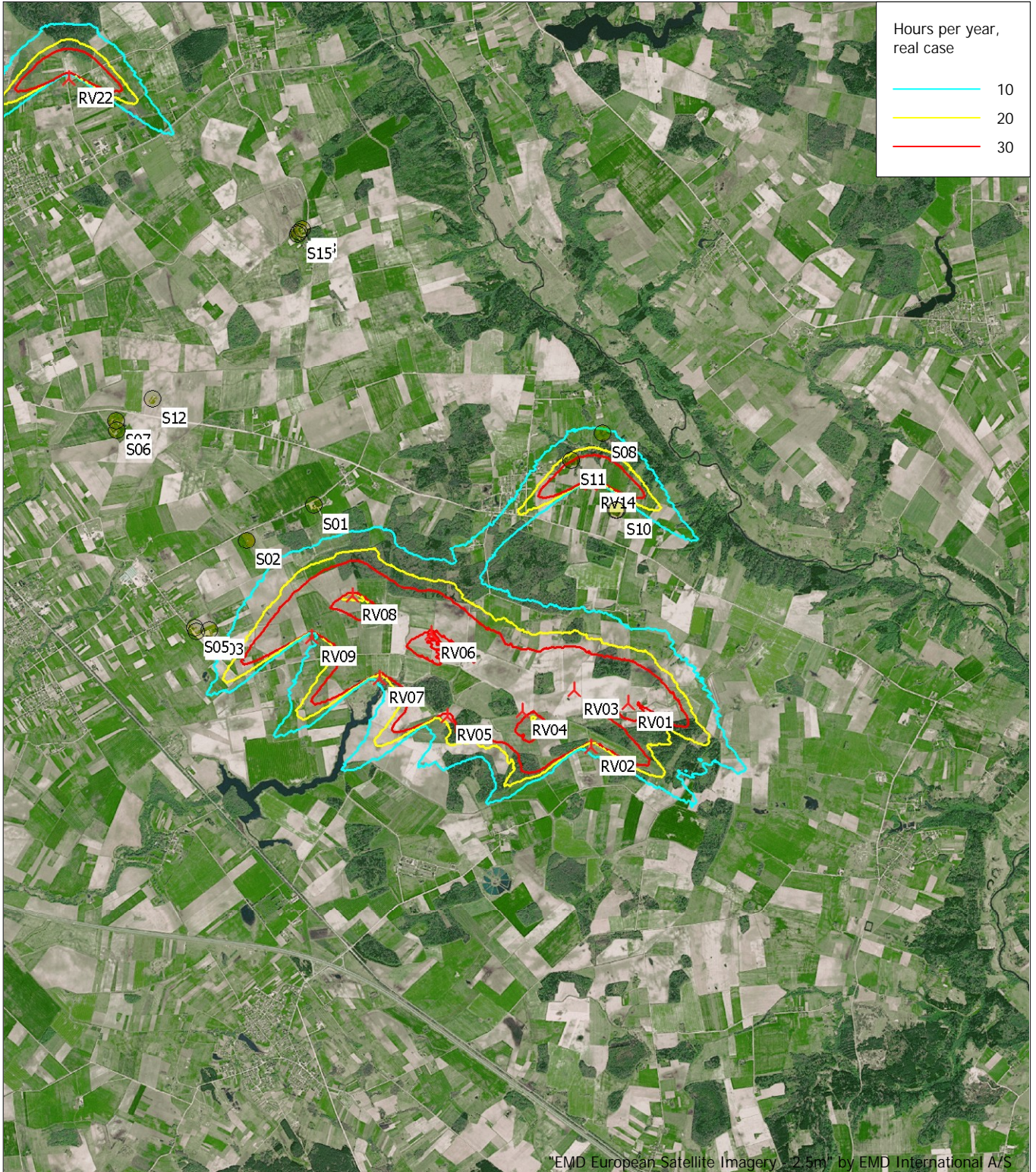
Calculation: Seseliavimas



Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:200 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 441 685 North: 6 141 462
New WTG Shadow receptor
Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)
Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Map

Calculation: Seseliavimas



Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:70 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 452 267 North: 6 136 270

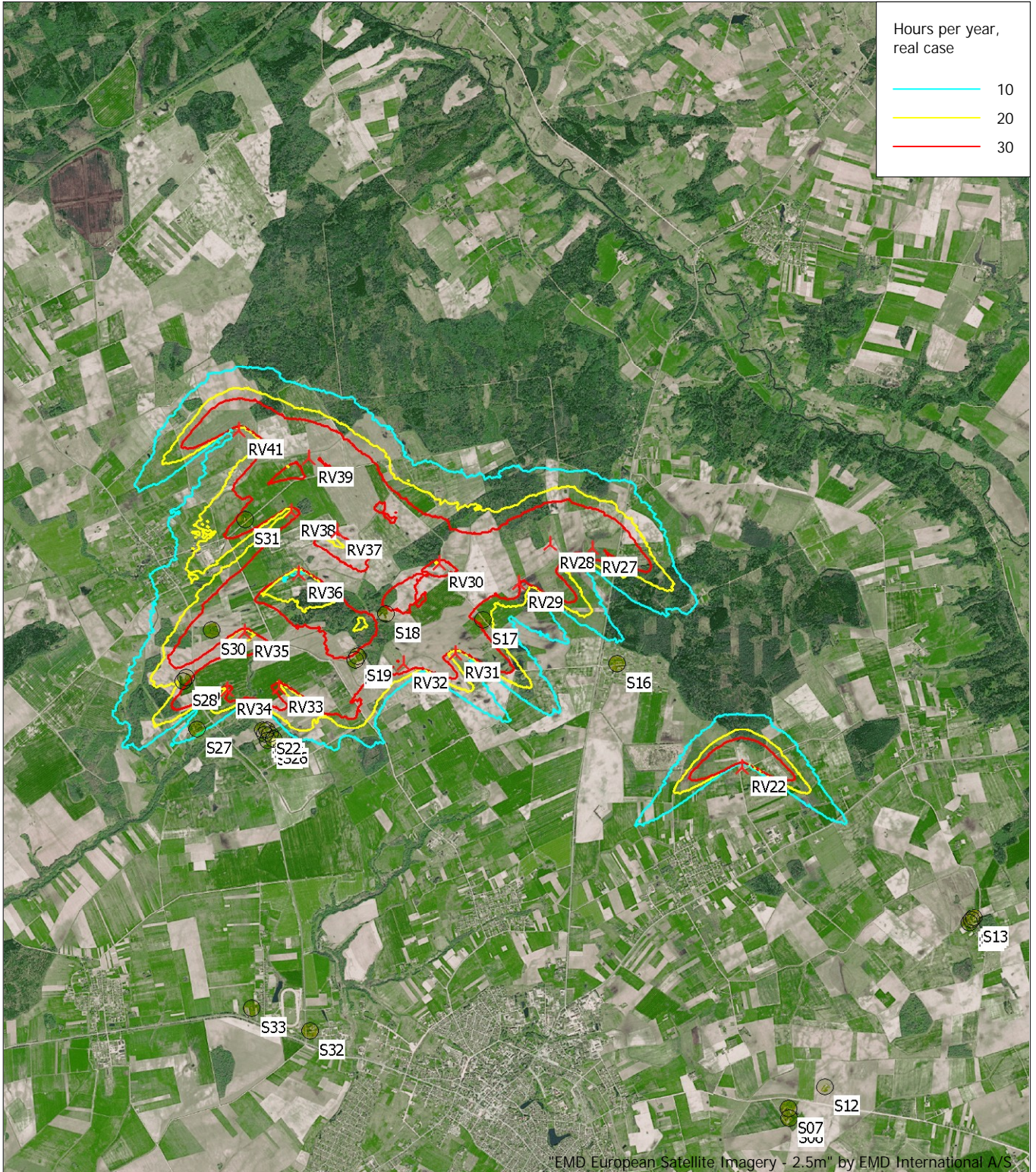
▲ New WTG ● Shadow receptor

Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)

Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Map

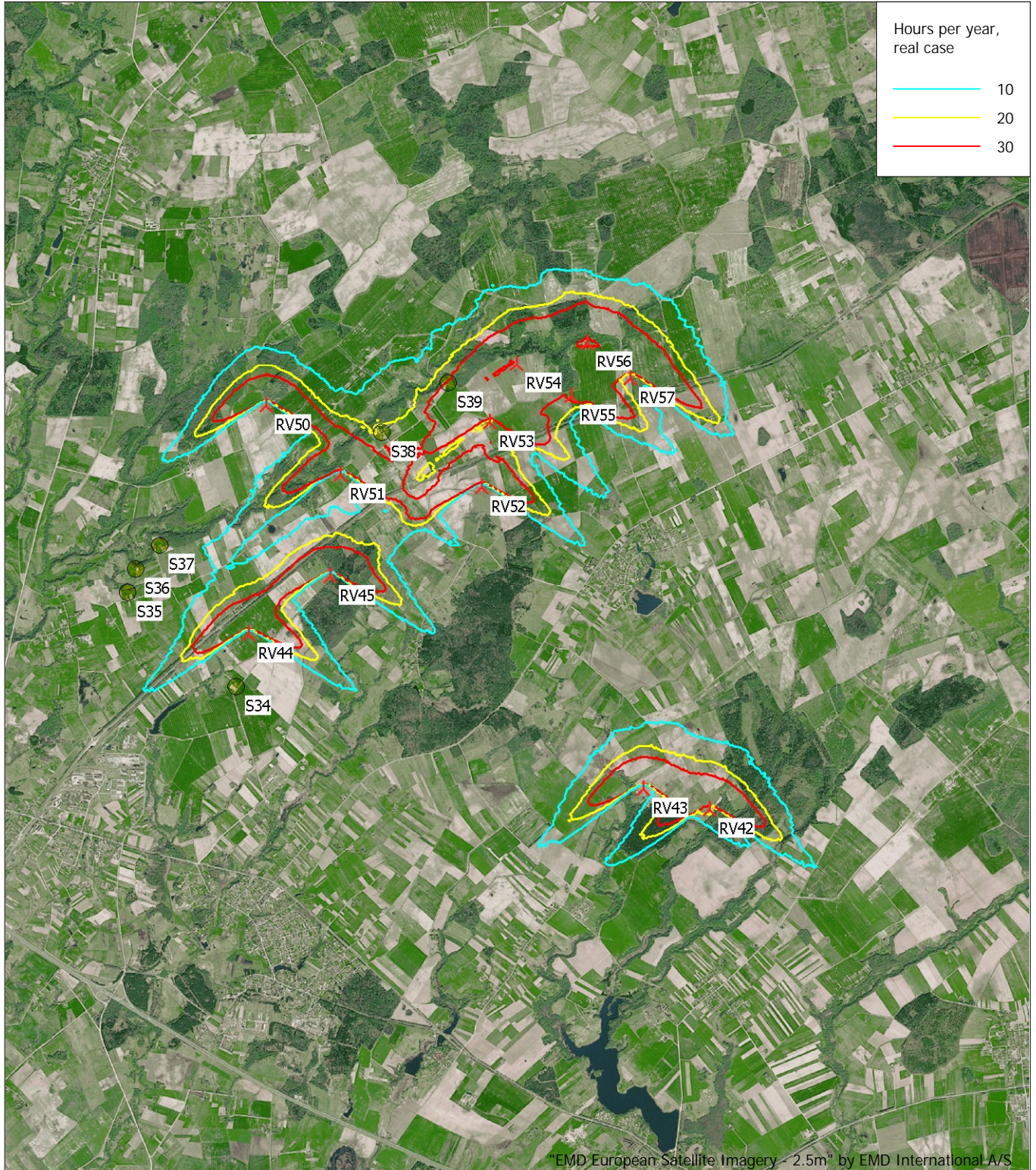
Calculation: Seseliavimas



Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:70 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 444 133 North: 6 144 800
▲ New WTG ● Shadow receptor
Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)
Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Map

Calculation: Seseliavimas



Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:70 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 432 927 North: 6 145 651
▲ New WTG ● Shadow receptor
Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)
Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Main Result

Calculation: Seseliavimas

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) [KAUNAS]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
1,41 2,36 4,03 5,55 8,35 8,36 8,16 7,72 5,06 3,23 1,33 0,98

Operational hours are calculated from WTGs in calculation and wind distribution:

Site data: ATLAS 12 sectors; Radius: 30 500 m (7)

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
961 489 231 287 569 629 760 993 1 178 1 006 763 541 8 408

Idle start wind speed: Cut in wind speed from power curve

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:

Height contours used: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)

Receptor grid resolution: 1,0 m

All coordinates are in

Lithuanian TM LKS94-LKS94 (LT)

WTGs

	Y	X	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
RV01	453 868	6 135 039	102,9	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV02	453 407	6 134 505	104,5	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV03	453 203	6 135 212	103,1	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV04	452 568	6 134 952	101,7	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV05	451 645	6 134 901	101,0	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV06	451 457	6 135 909	98,9	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV07	450 825	6 135 371	98,1	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV08	450 503	6 136 375	98,3	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV09	449 999	6 135 880	97,3	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV14	453 441	6 137 724	106,1	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV22	447 106	6 142 740	116,4	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV27	445 313	6 145 441	112,0	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV28	444 795	6 145 509	119,0	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV29	444 406	6 145 020	113,4	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV30	443 437	6 145 283	118,6	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV31	443 619	6 144 173	110,9	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV32	442 989	6 144 064	107,0	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV33	441 445	6 143 796	106,1	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV34	440 823	6 143 768	104,2	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV35	441 038	6 144 466	104,9	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV36	441 706	6 145 180	110,9	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV37	442 190	6 145 703	113,1	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV38	441 628	6 145 943	115,4	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV39	441 860	6 144 591	119,7	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV41	441 007	6 146 940	120,1	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV42	435 457	6 143 037	104,5	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV43	434 653	6 143 307	103,2	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV44	429 843	6 145 279	107,2	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV45	430 858	6 145 962	112,0	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

	Y	X	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]										
RV50	430 097	6 148 065	115,9	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0	
RV51	430 989	6 147 206	115,0	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0	
RV52	432 724	6 147 028	116,1	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0	
RV53	432 836	6 147 815	121,0	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0	
RV54	433 174	6 148 528	127,1	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0	
RV55	433 839	6 148 125	128,3	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0	
RV56	434 043	6 148 785	126,3	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0	
RV57	434 569	6 148 337	126,9	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0	

Shadow receptor-Input

No.	Y	X	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
			[m]	[m]	[m]	[m]	[°]		[m]
S01	450 043	6 137 499	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S02	449 224	6 137 081	103,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S03	448 751	6 135 985	102,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S04	448 585	6 135 967	109,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S05	448 573	6 136 006	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S06	447 646	6 138 441	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S07	447 633	6 138 553	104,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S08	453 591	6 138 330	98,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S09	453 741	6 137 400	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S10	453 750	6 137 393	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S11	453 202	6 138 009	104,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S12	448 091	6 138 813	103,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S13	449 932	6 140 871	108,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S14	449 904	6 140 839	109,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S15	449 881	6 140 803	110,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S16	445 607	6 144 035	113,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S17	443 957	6 144 585	114,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S18	442 773	6 144 681	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S19	442 417	6 144 159	107,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S20	442 394	6 144 116	105,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S21	441 242	6 143 270	106,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S22	441 303	6 143 272	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S23	441 264	6 143 226	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S24	441 328	6 143 216	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S25	441 316	6 143 144	107,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S26	441 372	6 143 158	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S27	440 438	6 143 298	106,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S28	440 282	6 143 882	106,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S29	440 326	6 143 930	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S30	440 631	6 144 514	110,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S31	441 067	6 145 854	117,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S32	441 772	6 139 583	90,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S33	441 074	6 139 866	89,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S34	429 681	6 144 640	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S35	428 367	6 145 810	103,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S36	428 466	6 146 089	104,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S37	428 768	6 146 376	107,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S38	431 508	6 147 720	119,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S39	432 332	6 148 310	120,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0

Calculation Results

Shadow receptor

Shadow, expected values

No.	Shadow hours per year [h/year]	Avoided hours per year [h/year]
S01	2:43	
S02	5:20	

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

Shadow, expected values

No.	Shadow hours per year [h/year]	Avoided hours per year [h/year]
S03	6:12	
S04	2:55	
S05	2:51	
S06	0:00	
S07	0:00	
S08	12:28	
S09	0:00	
S10	0:00	
S11*	0:00	30:00
S12	0:00	
S13	0:00	
S14	0:00	
S15	0:00	
S16	0:47	
S17	27:10	
S18*	25:11	11:35
S19*	12:46	22:20
S20*	18:55	17:56
S21	0:00	
S22	4:04	
S23	0:00	
S24	4:41	
S25	0:00	
S26	6:38	
S27	13:37	
S28	24:30	
S29	24:52	
S30*	19:32	55:42
S31*	9:36	36:56
S32	0:00	
S33	0:00	
S34	0:00	
S35	2:00	
S36	1:54	
S37	1:51	
S38	23:44	
S39*	17:00	18:00

* 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]
RV01	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (1)		0:00
RV02	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (2)		0:00
RV03	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (3)		0:00
RV04	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (4)		0:00
RV05	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (8)		0:00
RV06	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (15)		0:00
RV07	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (16)		0:00
RV08	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (17)		7:24
RV09	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (66)		7:37
RV14	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (22)	147:41	12:28
RV22	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (30)		0:00
RV27	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (35)		7:21
RV28	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (36)		0:00
RV29	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (37)		3:41
RV30	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (38)		0:00
RV31	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (39)		26:50
RV32	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (40)	179:44	21:53
RV33	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (41)		31:50
RV34	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (42)		38:52
RV35	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (43)	214:59	3:06

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

No.	Name	Stopped due to flicker curtailment [h/year]	Expected [h/year]
RV36	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (44)		26:33
RV37	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (45)		4:29
RV38	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (46)	130:01	0:00
RV39	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (47)		0:00
RV41	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (49)		0:00
RV42	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (50)		0:00
RV43	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (51)		0:00
RV44	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (52)		5:46
RV45	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (53)		0:00
RV50	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (58)		4:03
RV51	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (59)		9:51
RV52	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (60)		3:39
RV53	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (61)		12:59
RV54	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (62)	66:44	4:35
RV55	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (63)		2:28
RV56	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (64)		2:53
RV57	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (65)		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.

**Prognozuojamas PŪV šėšėliavimo vertinimas po PAV
ataskaitos viešinio suinteresuotai visuomenei
"3" alternatyva**

SHADOW - Main Result

Calculation: Seseliavimas

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) [KAUNAS]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1,41	2,36	4,03	5,55	8,35	8,36	8,16	7,72	5,06	3,23	1,33	0,98

Operational hours are calculated from WTGs in calculation and wind distribution:

Site data: ATLAS 12 sectors; Radius: 30 500 m (7)

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
960	488	230	287	568	629	759	992	1 177	1 005	762	540	8 399

Idle start wind speed: Cut in wind speed from power curve

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:

Height contours used: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)
Receptor grid resolution: 1,0 m

All coordinates are in
Lithuanian TM LKS94-LKS94 (LT)

WTGs

Y	X	Z	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
				Valid	Manufact.	Type-generator				Calculation distance [m]	RPM [RPM]
RV01	453 868	6 135 039	102,9 Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV02	453 407	6 134 505	104,5 Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV03	453 203	6 135 212	103,1 Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV04	452 568	6 134 952	101,7 Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV05	451 645	6 134 901	101,0 Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV06	451 457	6 135 909	98,9 Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV07	450 825	6 135 371	98,1 Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV08	450 503	6 136 375	98,3 Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV09	449 999	6 135 880	97,3 Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV14	453 441	6 137 724	106,1 Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV22	447 106	6 142 740	116,4 Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV27	445 313	6 145 441	112,0 Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV28	444 795	6 145 509	119,0 Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV30	443 437	6 145 283	118,6 Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV31	443 619	6 144 173	110,9 Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV32	442 989	6 144 064	107,0 Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV33	441 445	6 143 796	106,1 Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV34	440 823	6 143 768	104,2 Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV35	441 038	6 144 466	104,9 Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV36	441 706	6 145 180	110,9 Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV37	442 190	6 145 703	113,1 Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV38	441 628	6 145 943	115,4 Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV39	441 860	6 146 591	119,7 Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV40	441 772	6 147 276	123,6 Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV41	441 007	6 146 940	120,1 Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV42	435 457	6 143 037	104,5 Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV43	434 653	6 143 307	103,2 Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV44	429 843	6 145 279	107,2 Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV45	430 858	6 145 962	112,0 Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV50	430 097	6 148 065	115,9 Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV51	430 989	6 147 206	115,0 Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV52	432 724	6 147 028	116,1 Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

	Y	X	Z	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.	Type-generator				Calculation distance [m]	RPM
			[m]									
RV53	432 836	6 147 815	121,0	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV54	433 174	6 148 528	127,1	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV55	433 839	6 148 125	128,3	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV56	434 043	6 148 785	126,3	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV57	434 569	6 148 337	126,9	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8

Shadow receptor-Input

No.	Y	X	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
			[m]	[m]	[m]	[m]	[°]		[m]
S01	450 043	6 137 499	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S02	449 224	6 137 081	103,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S03	448 751	6 135 985	102,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S04	448 585	6 135 967	109,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S05	448 573	6 136 006	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S06	447 646	6 138 441	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S07	447 633	6 138 553	104,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S08	453 591	6 138 330	98,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S09	453 741	6 137 400	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S10	453 750	6 137 393	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S11	453 202	6 138 009	104,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S12	448 091	6 138 813	103,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S13	449 932	6 140 871	108,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S14	449 904	6 140 839	109,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S15	449 881	6 140 803	110,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S16	445 607	6 144 035	113,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S17	443 957	6 144 585	114,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S18	442 773	6 144 681	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S19	442 417	6 144 159	107,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S20	442 394	6 144 116	105,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S21	441 242	6 143 270	106,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S22	441 303	6 143 272	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S23	441 264	6 143 226	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S24	441 328	6 143 216	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S25	441 316	6 143 144	107,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S26	441 372	6 143 158	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S27	440 438	6 143 298	106,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S28	440 282	6 143 882	106,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S29	440 326	6 143 930	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S30	440 631	6 144 514	110,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S31	441 067	6 145 854	117,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S32	441 772	6 139 583	90,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S33	441 074	6 139 866	89,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S34	429 681	6 144 640	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S35	428 367	6 145 810	103,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S36	428 466	6 146 089	104,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S37	428 768	6 146 376	107,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S38	431 508	6 147 720	119,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S39	432 332	6 148 310	120,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0

Calculation Results

Shadow receptor

Shadow, expected values

No.	Shadow hours per year [h/year]
S01	2:22
S02	5:05
S03	5:55
S04	4:28
S05	4:22

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page
Shadow, expected values

No.	Shadow hours per year [h/year]
S06	0:00
S07	0:00
S08	12:03
S09	0:00
S10	0:00
S11	29:35
S12	0:00
S13	0:00
S14	0:00
S15	0:00
S16	2:21
S17	26:53
S18	33:04
S19	33:41
S20	35:12
S21	3:18
S22	3:47
S23	3:36
S24	4:13
S25	4:38
S26	5:41
S27	13:53
S28	23:25
S29	23:58
S30	75:34
S31	46:28
S32	0:00
S33	0:00
S34	0:00
S35	1:58
S36	1:52
S37	1:50
S38	22:51
S39	31:43

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

No.	Name	Expected [h/year]
RV01	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (1)	0:00
RV02	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (2)	0:00
RV03	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (3)	0:00
RV04	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (4)	0:00
RV05	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (8)	0:00
RV06	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (15)	0:00
RV07	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (16)	0:00
RV08	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (17)	7:20
RV09	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (66)	7:11
RV14	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (22)	41:39
RV22	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (30)	0:58
RV27	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (35)	7:30
RV28	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (36)	0:00
RV30	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (38)	0:00
RV31	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (39)	27:30
RV32	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (40)	50:32
RV33	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (41)	31:31
RV34	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (42)	37:11
RV35	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (43)	60:58
RV36	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (44)	26:47
RV37	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (45)	6:23
RV38	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (46)	36:56
RV39	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (47)	0:00
RV40	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (48)	0:00

To be continued on next page...

Project:

UAB Raseiniu vejas 57 VE

Licensed user:

UAB ARCHSTUDIJA
Konstitucijos pr. 9-41
LT-09308 Vilnius

Calculated:

2024-04-14 19:58/3.6.355

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

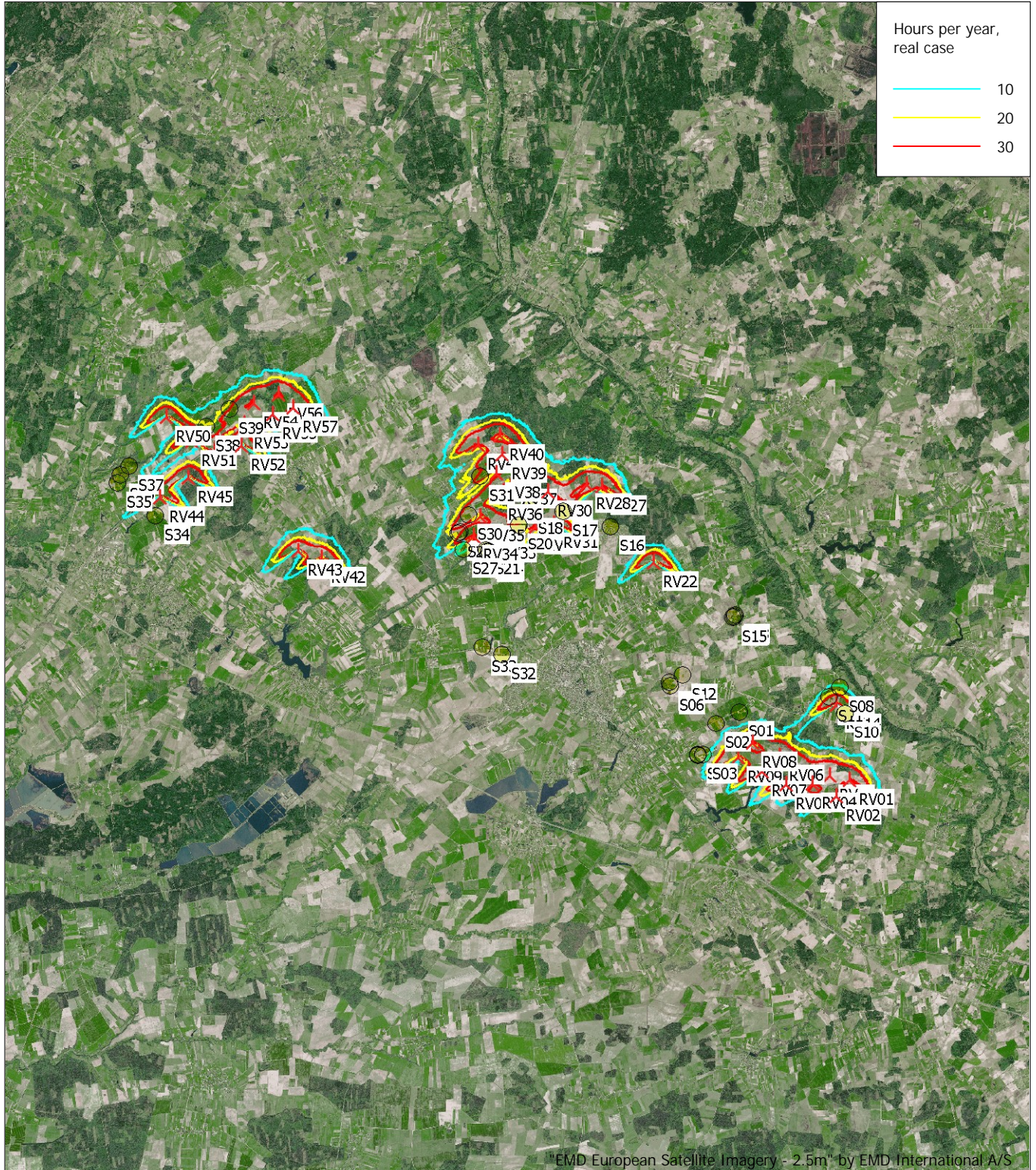
No.	Name	Expected [h/year]
RV41	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (49)	0:00
RV42	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (50)	0:00
RV43	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (51)	0:00
RV44	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (52)	5:42
RV45	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (53)	0:00
RV50	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (58)	3:53
RV51	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (59)	9:31
RV52	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (60)	3:13
RV53	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (61)	12:39
RV54	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (62)	20:52
RV55	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (63)	2:24
RV56	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (64)	2:44
RV57	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (65)	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

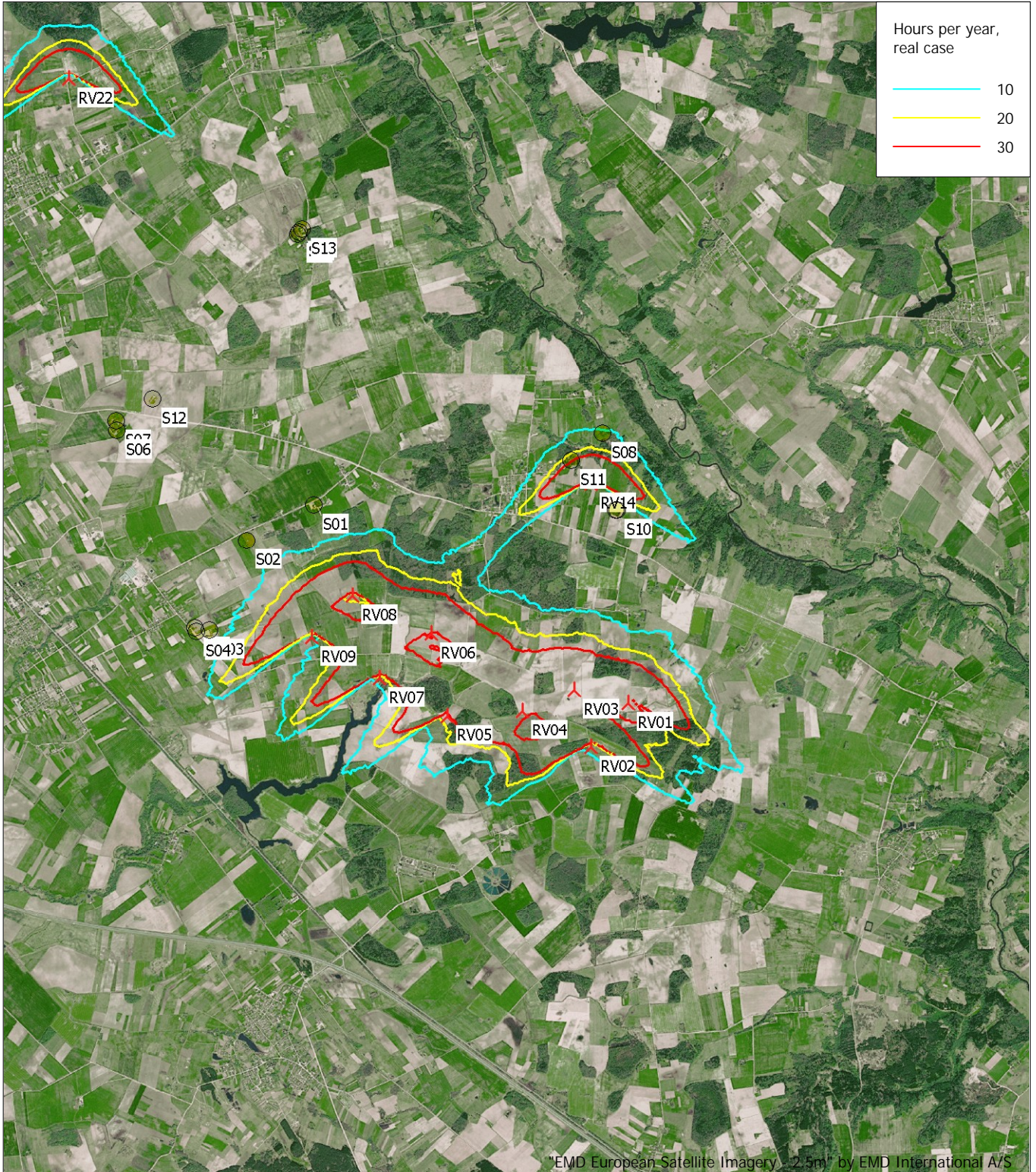
Calculation: Seseliavimas



Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:200 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 441 685 North: 6 141 462
New WTG Shadow receptor
Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)
Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Map

Calculation: Seseliavimas



Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:70 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 452 267 North: 6 136 270

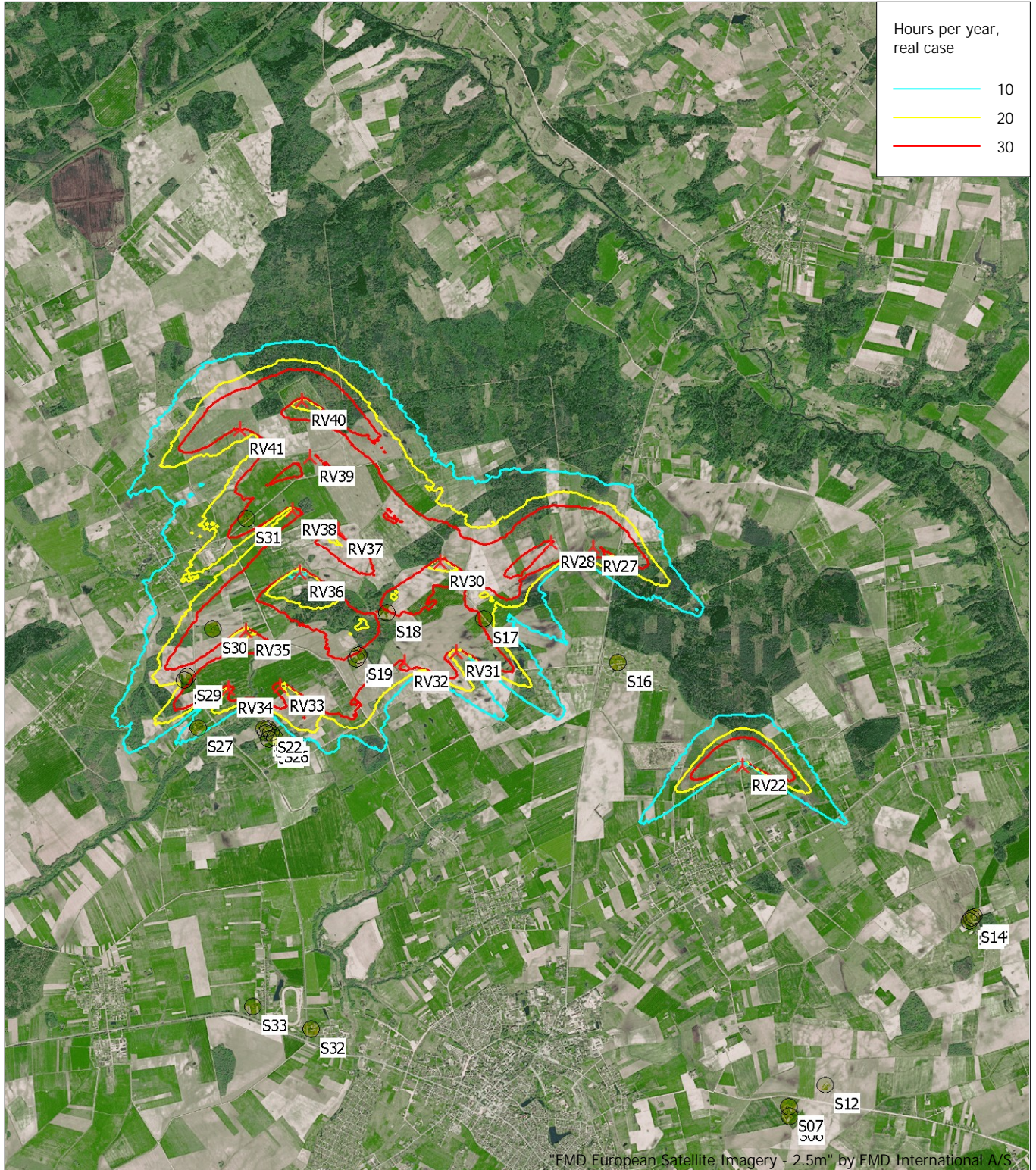
▲ New WTG ● Shadow receptor

Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)

Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Map

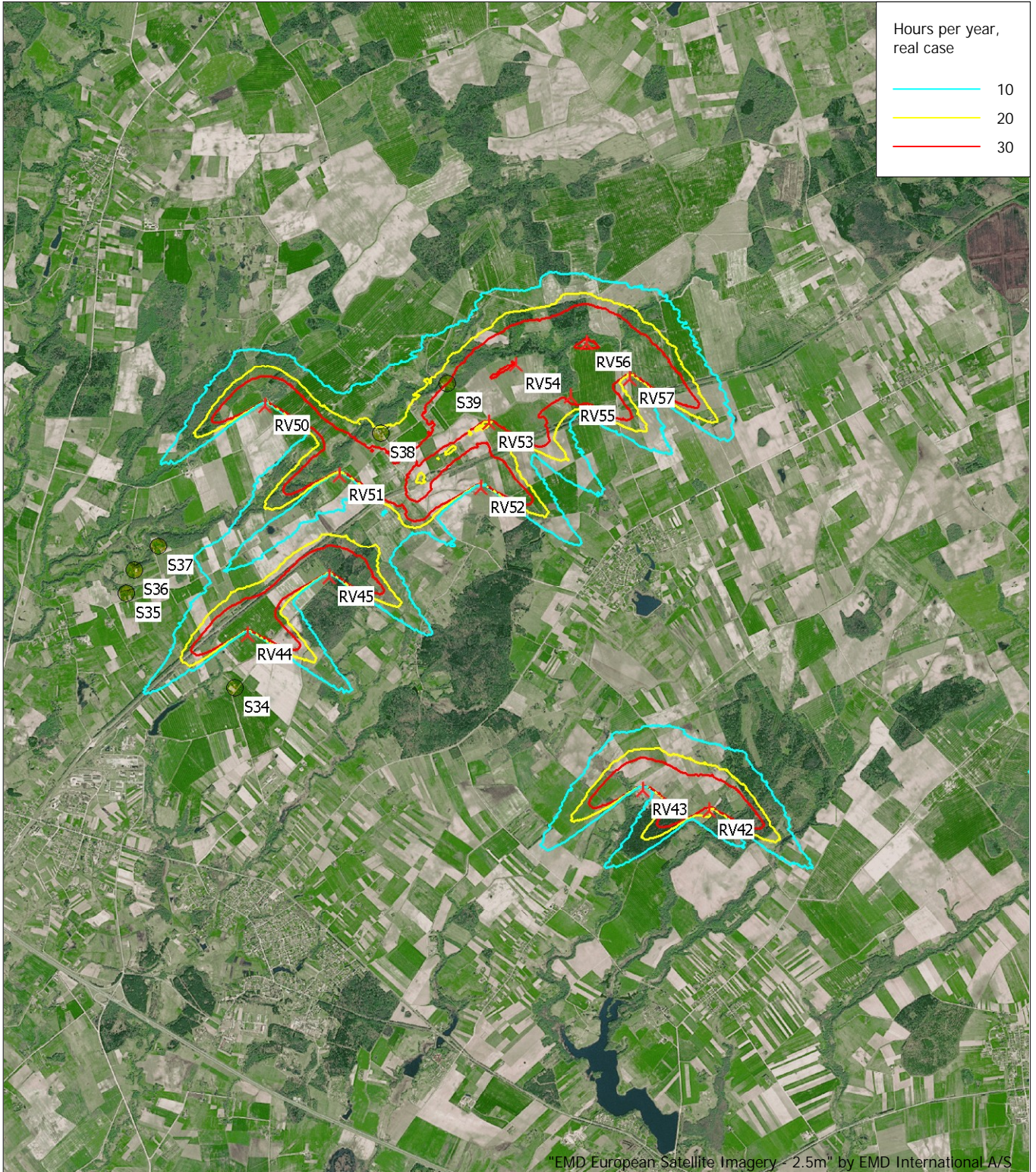
Calculation: Seseliavimas



Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:70 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 444 133 North: 6 144 800
▲ New WTG ● Shadow receptor
Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)
Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Map

Calculation: Seseliavimas



Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:70 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 432 927 North: 6 145 651
▲ New WTG ● Shadow receptor
Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)
Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Main Result

Calculation: Seseliavimas

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) [KAUNAS]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
1,41 2,36 4,03 5,55 8,35 8,36 8,16 7,72 5,06 3,23 1,33 0,98

Operational hours are calculated from WTGs in calculation and wind distribution:

Site data: ATLAS 12 sectors; Radius: 30 500 m (7)

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
960 488 230 287 568 629 759 992 1 177 1 005 762 540 8 399

Idle start wind speed: Cut in wind speed from power curve

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:

Height contours used: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)

Receptor grid resolution: 1,0 m

All coordinates are in

Lithuanian TM LKS94-LKS94 (LT)

WTGs

	Y	X	Z	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.	Type-generator				Calculation distance [m]	RPM [RPM]
RV01	453 868	6 135 039	102,9	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV02	453 407	6 134 505	104,5	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV03	453 203	6 135 212	103,1	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV04	452 568	6 134 952	101,7	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV05	451 645	6 134 901	101,0	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV06	451 457	6 135 909	98,9	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV07	450 825	6 135 371	98,1	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV08	450 503	6 136 375	98,3	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV09	449 999	6 135 880	97,3	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV14	453 441	6 137 724	106,1	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV22	447 106	6 142 740	116,4	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV27	445 313	6 145 441	112,0	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV28	444 795	6 145 509	119,0	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV30	443 437	6 145 283	118,6	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV31	443 619	6 144 173	110,9	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV32	442 989	6 144 064	107,0	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV33	441 445	6 143 796	106,1	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV34	440 823	6 143 768	104,2	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV35	441 038	6 144 466	104,9	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV36	441 706	6 145 180	110,9	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV37	442 190	6 145 703	113,1	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV38	441 628	6 145 943	115,4	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV39	441 860	6 146 591	119,7	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV40	441 772	6 147 276	123,6	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV41	441 007	6 146 940	120,1	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV42	435 457	6 143 037	104,5	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV43	434 653	6 143 307	103,2	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV44	429 843	6 145 279	107,2	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV45	430 858	6 145 962	112,0	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV50	430 097	6 148 065	115,9	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

	Y	X	Z	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.	Type-generator				Calculation distance [m]	RPM
			[m]									
RV51	430 989	6 147 206	115,0	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV52	432 724	6 147 028	116,1	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV53	432 836	6 147 815	121,0	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV54	433 174	6 148 528	127,1	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV55	433 839	6 148 125	128,3	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV56	434 043	6 148 785	126,3	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV57	434 569	6 148 337	126,9	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8

Shadow receptor-Input

No.	Y	X	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
			[m]	[m]	[m]	[m]	[°]		[m]
S01	450 043	6 137 499	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S02	449 224	6 137 081	103,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S03	448 751	6 135 985	102,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S04	448 585	6 135 967	109,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S05	448 573	6 136 006	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S06	447 646	6 138 441	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S07	447 633	6 138 553	104,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S08	453 591	6 138 330	98,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S09	453 741	6 137 400	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S10	453 750	6 137 393	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S11	453 202	6 138 009	104,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S12	448 091	6 138 813	103,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S13	449 932	6 140 871	108,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S14	449 904	6 140 839	109,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S15	449 881	6 140 803	110,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S16	445 607	6 144 035	113,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S17	443 957	6 144 585	114,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S18	442 773	6 144 681	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S19	442 417	6 144 159	107,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S20	442 394	6 144 116	105,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S21	441 242	6 143 270	106,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S22	441 303	6 143 272	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S23	441 264	6 143 226	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S24	441 328	6 143 216	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S25	441 316	6 143 144	107,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S26	441 372	6 143 158	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S27	440 438	6 143 298	106,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S28	440 282	6 143 882	106,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S29	440 326	6 143 930	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S30	440 631	6 144 514	110,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S31	441 067	6 145 854	117,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S32	441 772	6 139 583	90,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S33	441 074	6 139 866	89,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S34	429 681	6 144 640	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S35	428 367	6 145 810	103,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S36	428 466	6 146 089	104,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S37	428 768	6 146 376	107,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S38	431 508	6 147 720	119,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S39	432 332	6 148 310	120,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0

Calculation Results

Shadow receptor

Shadow, expected values

No.	Shadow hours per year [h/year]	Avoided hours per year [h/year]
S01	2:22	
S02	5:05	
S03	5:55	

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

Shadow, expected values

No.	Shadow hours per year [h/year]	Avoided hours per year [h/year]
S04	4:28	
S05	4:22	
S06	0:00	
S07	0:00	
S08	12:03	
S09	0:00	
S10	0:00	
S11	29:35	
S12	0:00	
S13	0:00	
S14	0:00	
S15	0:00	
S16	2:21	
S17	26:53	
S18*	28:13	4:51
S19*	27:48	5:53
S20*	29:15	5:58
S21	3:18	
S22	3:47	
S23	3:36	
S24	4:13	
S25	4:38	
S26	5:41	
S27	13:53	
S28	23:25	
S29	23:58	
S30*	21:35	53:35
S31*	9:23	36:56
S32	0:00	
S33	0:00	
S34	0:00	
S35	1:58	
S36	1:52	
S37	1:50	
S38	22:51	
S39*	29:18	2:24

* 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]
RV01	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (1)		0:00
RV02	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (2)		0:00
RV03	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (3)		0:00
RV04	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (4)		0:00
RV05	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (8)		0:00
RV06	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (15)		0:00
RV07	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (16)		0:00
RV08	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (17)		7:20
RV09	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (66)		7:11
RV14	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (22)		41:39
RV22	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (30)		0:58
RV27	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (35)		7:30
RV28	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (36)		0:00
RV30	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (38)		0:00
RV31	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (39)	51:23	16:43
RV32	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (40)		50:32
RV33	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (41)		31:31
RV34	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (42)	9:33	35:17
RV35	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (43)	192:41	7:22
RV36	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (44)		26:47
RV37	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (45)		6:23

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

No.	Name	Stopped due to flicker curtailment [h/year]	Expected [h/year]
RV38	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (46)	130:24	0:00
RV39	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (47)		0:00
RV40	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (48)		0:00
RV41	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (49)		0:00
RV42	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (50)		0:00
RV43	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (51)		0:00
RV44	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (52)		5:42
RV45	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (53)		0:00
RV50	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (58)		3:53
RV51	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (59)		9:31
RV52	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (60)		3:13
RV53	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (61)		12:39
RV54	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (62)		20:52
RV55	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (63)	11:01	0:00
RV56	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (64)		2:44
RV57	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (65)		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.

**Prognozuojamas PŪV šėšėliavimo vertinimas po PAV
ataskaitos viešinio suinteresuotai visuomenei
"H" alternatyva**

SHADOW - Main Result

Calculation: Seseliavimas

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) [KAUNAS]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
1,41 2,36 4,03 5,55 8,35 8,36 8,16 7,72 5,06 3,23 1,33 0,98

Operational hours are calculated from WTGs in calculation and wind distribution:

Site data: ATLAS 12 sectors; Radius: 30 500 m (7)

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
908 462 218 271 538 594 718 938 1 113 950 721 511 7 942

Idle start wind speed: Cut in wind speed from power curve

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:

Height contours used: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)

Receptor grid resolution: 1,0 m

All coordinates are in

Lithuanian TM LKS94-LKS94 (LT)

WTGs

	Y	X	Z	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.	Type-generator				Calculation distance [m]	RPM [RPM]
RV01	453 868	6 135 039	102,9	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV02	453 407	6 134 505	104,5	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV03	453 203	6 135 212	103,1	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV04	452 568	6 134 952	101,7	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV05	451 645	6 134 901	101,0	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV06	451 457	6 135 909	98,9	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV07	450 825	6 135 371	98,1	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV08	450 503	6 136 375	98,3	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV09	449 999	6 145 509	97,3	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV14	453 441	6 137 724	106,1	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV22	447 106	6 142 740	116,4	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV27	445 313	6 145 441	112,0	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV28	444 795	6 145 509	119,0	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV29	444 406	6 145 020	113,4	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV30	443 437	6 145 283	118,6	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV31	443 619	6 144 173	110,9	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV32	442 989	6 144 064	107,0	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV33	441 445	6 143 796	106,1	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV34	440 823	6 143 768	104,2	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV35	441 038	6 144 466	104,9	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV36	441 706	6 145 180	110,9	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV37	442 190	6 145 703	113,1	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV38	441 628	6 145 943	115,4	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV39	441 860	6 146 591	119,7	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV41	441 007	6 146 940	120,0	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV42	435 457	6 143 037	104,5	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV43	434 653	6 143 307	103,2	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV44	429 843	6 145 279	107,2	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV45	430 858	6 145 962	112,0	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV50	430 097	6 148 065	115,9	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV51	430 989	6 147 206	115,0	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV52	432 724	6 147 028	116,1	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

	Y	X	Z	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.	Type-generator				Calculation distance [m]	RPM
			[m]									
RV53	432 836	6 147 815	121,0	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV54	433 174	6 148 528	127,1	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV55	433 839	6 148 125	128,3	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV56	434 043	6 148 785	126,3	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV57	434 569	6 148 337	126,9	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0

Shadow receptor-Input

No.	Y	X	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
			[m]	[m]	[m]	[m]	[°]		[m]
S01	450 043	6 137 499	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S02	449 224	6 137 081	103,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S03	448 751	6 135 985	102,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S04	448 585	6 135 967	109,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S05	448 573	6 136 006	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S06	447 646	6 138 441	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S07	447 633	6 138 553	104,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S08	453 591	6 138 330	98,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S09	453 741	6 137 400	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S10	453 750	6 137 393	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S11	453 202	6 138 009	104,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S12	448 091	6 138 813	103,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S13	449 932	6 140 871	108,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S14	449 904	6 140 839	109,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S15	449 881	6 140 803	110,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S16	445 607	6 144 035	113,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S17	443 957	6 144 585	114,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S18	442 773	6 144 681	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S19	442 417	6 144 159	107,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S20	442 394	6 144 116	105,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S21	441 242	6 143 270	106,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S22	441 303	6 143 272	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S23	441 264	6 143 226	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S24	441 328	6 143 216	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S25	441 316	6 143 144	107,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S26	441 372	6 143 158	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S27	440 438	6 143 298	106,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S28	440 282	6 143 882	106,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S29	440 326	6 143 930	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S30	440 631	6 144 514	110,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S31	441 067	6 145 854	117,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S32	441 772	6 139 583	90,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S33	441 074	6 139 866	89,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S34	429 681	6 144 640	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S35	428 367	6 145 810	103,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S36	428 466	6 146 089	104,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S37	428 768	6 146 376	107,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S38	431 508	6 147 720	119,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S39	432 332	6 148 310	120,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0

Calculation Results

Shadow receptor

Shadow, expected values

No.	Shadow hours per year [h/year]
S01	4:49
S02	7:29
S03	9:01
S04	6:59
S05	6:44

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

Shadow, expected values

No. Shadow hours

No.	Shadow hours per year [h/year]
S06	0:00
S07	0:00
S08	15:17
S09	0:00
S10	0:00
S11	38:22
S12	0:00
S13	0:00
S14	0:00
S15	0:00
S16	4:48
S17	41:43
S18	49:34
S19	48:00
S20	49:43
S21	4:37
S22	6:42
S23	5:04
S24	7:57
S25	7:27
S26	10:17
S27	15:32
S28	31:04
S29	31:54
S30	93:48
S31	56:02
S32	0:00
S33	0:00
S34	0:00
S35	3:41
S36	3:32
S37	5:58
S38	32:06
S39	46:51

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

No.	Name	Expected [h/year]
RV01	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (1)	0:00
RV02	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (2)	0:00
RV03	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (3)	0:00
RV04	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (4)	0:00
RV05	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (8)	0:00
RV06	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (15)	1:19
RV07	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (16)	2:24
RV08	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (17)	10:00
RV09	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (66)	9:09
RV14	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (22)	53:40
RV22	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (30)	1:18
RV27	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (35)	8:18
RV28	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (36)	3:00
RV29	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (37)	9:08
RV30	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (38)	0:54
RV31	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (39)	39:32
RV32	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (40)	67:21
RV33	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (41)	38:13
RV34	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (42)	49:22
RV35	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (43)	76:18
RV36	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (44)	33:24
RV37	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (45)	14:25
RV38	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (46)	42:41
RV39	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (47)	0:00

To be continued on next page...

SHADOW - Main Result

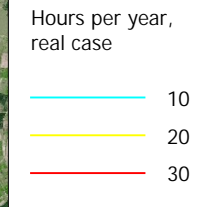
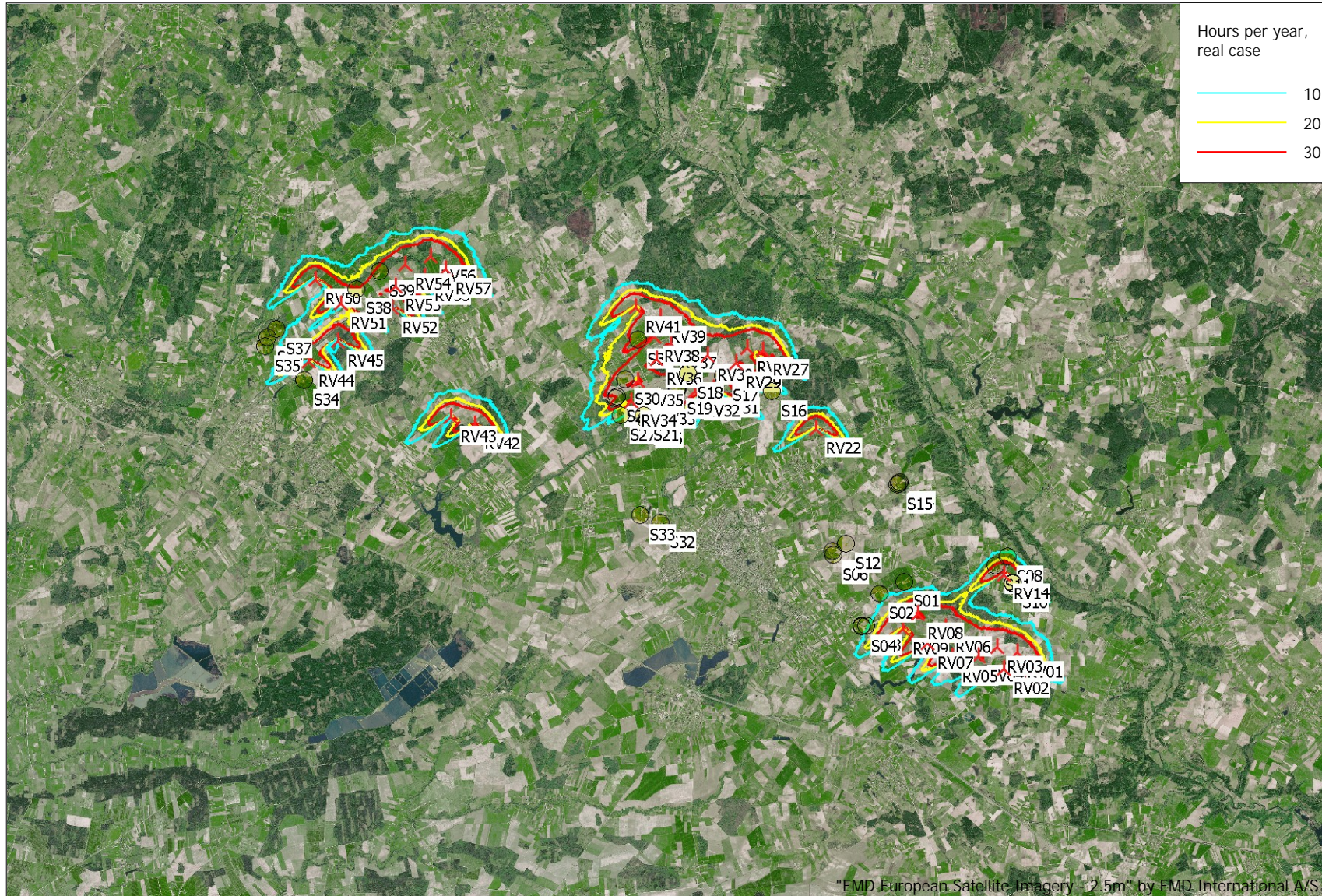
Calculation: Seseliavimas

...continued from previous page

No.	Name	Expected [h/year]
RV41	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (49)	0:00
RV42	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (50)	0:00
RV43	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (51)	0:00
RV44	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (52)	7:24
RV45	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (53)	3:36
RV50	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (58)	6:25
RV51	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (59)	14:28
RV52	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (60)	5:02
RV53	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (61)	16:33
RV54	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (62)	30:02
RV55	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (63)	4:41
RV56	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (64)	3:42
RV57	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (65)	1:23

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:
Seseliavimas

Licensed user:
UAB ARCHSTUDIJA
Konstitucijos pr. 9-41
LT-09308 Vilnius

Calculated:
2024-04-19 13:03/3.6.355



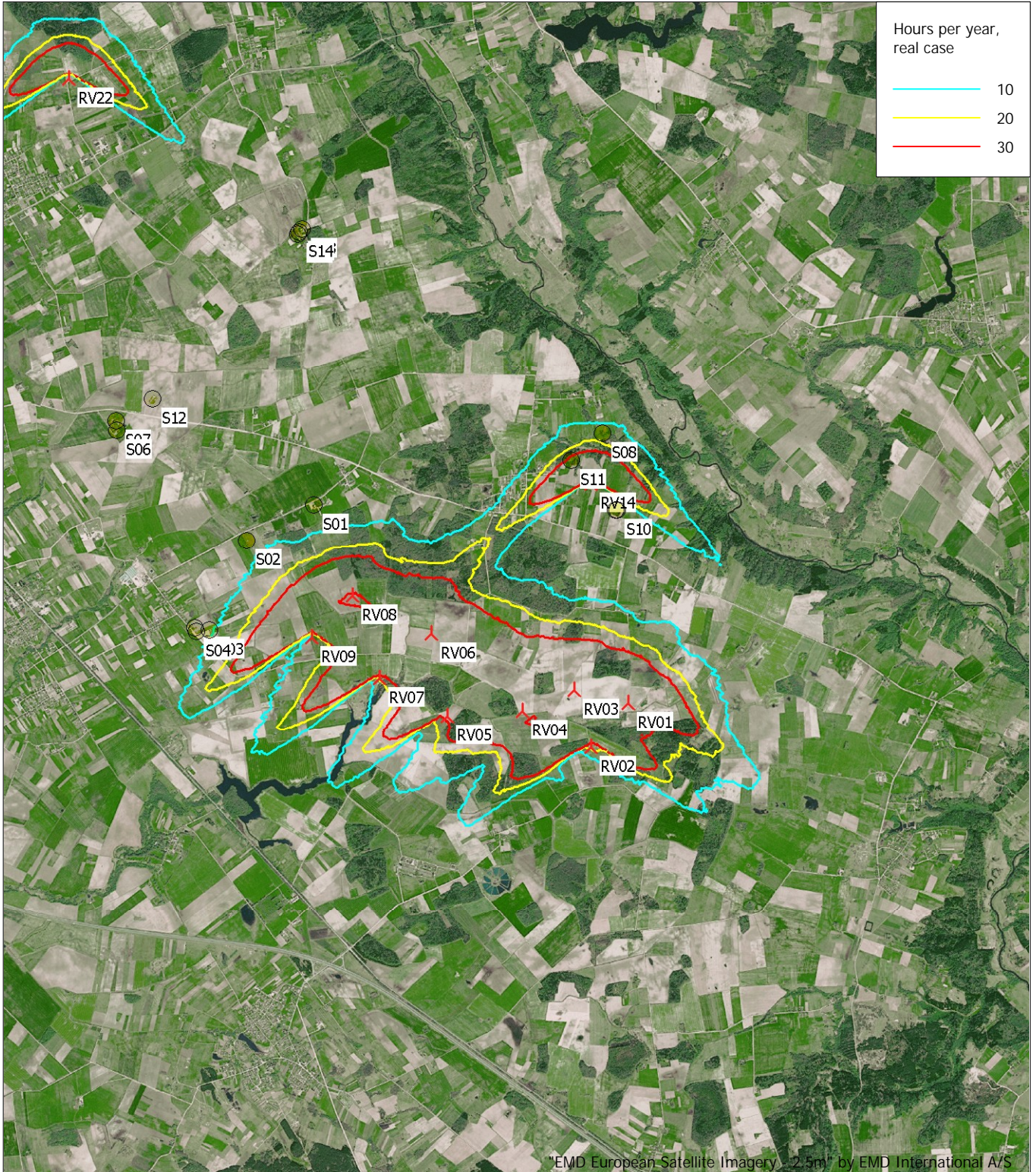
Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:200 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 441 685 North: 6 141 462

▲ New WTG ● Shadow receptor

Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)
Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Map

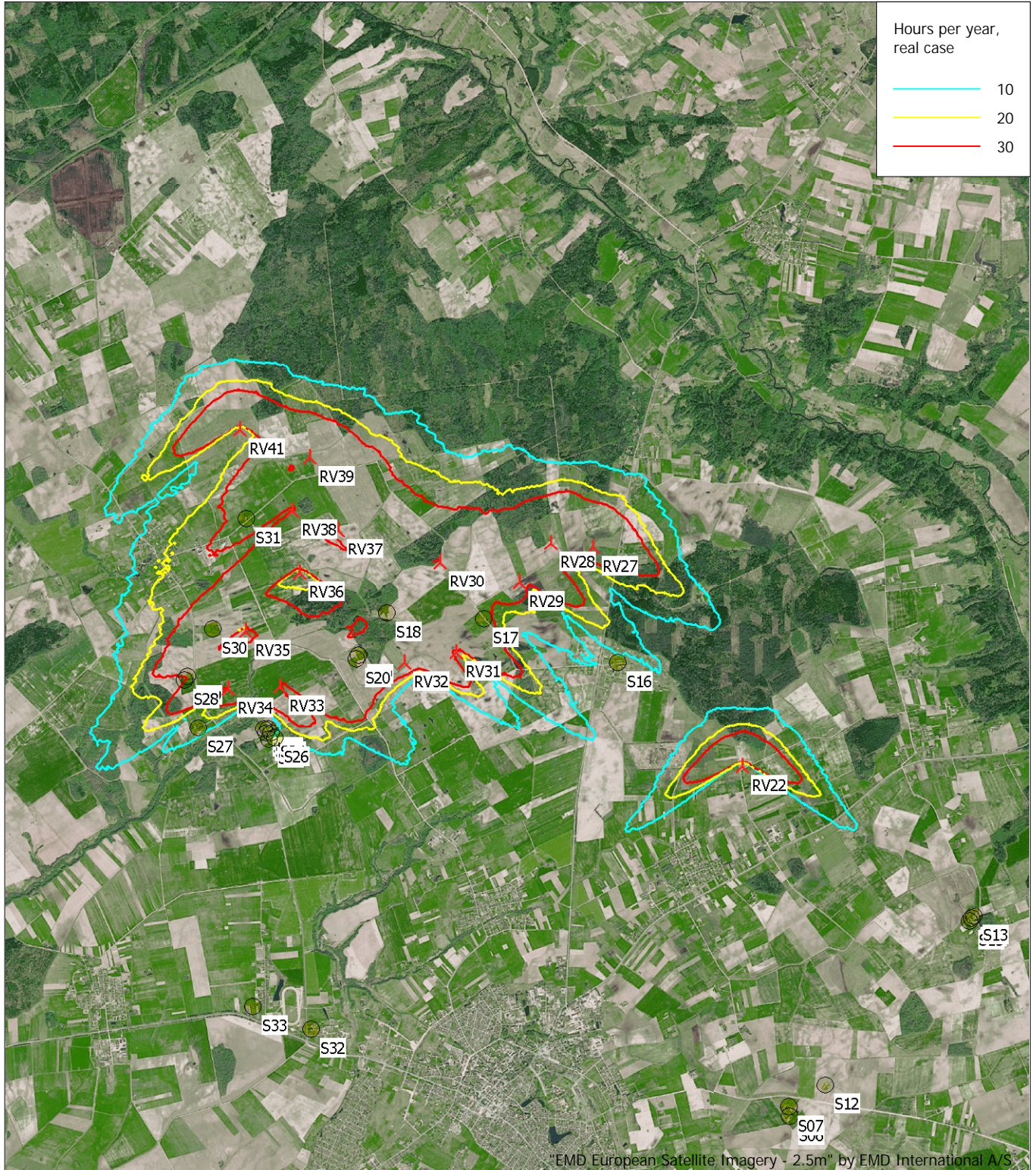
Calculation: Seseliavimas



Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:70 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 452 267 North: 6 136 270
▲ New WTG ● Shadow receptor
Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)
Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Map

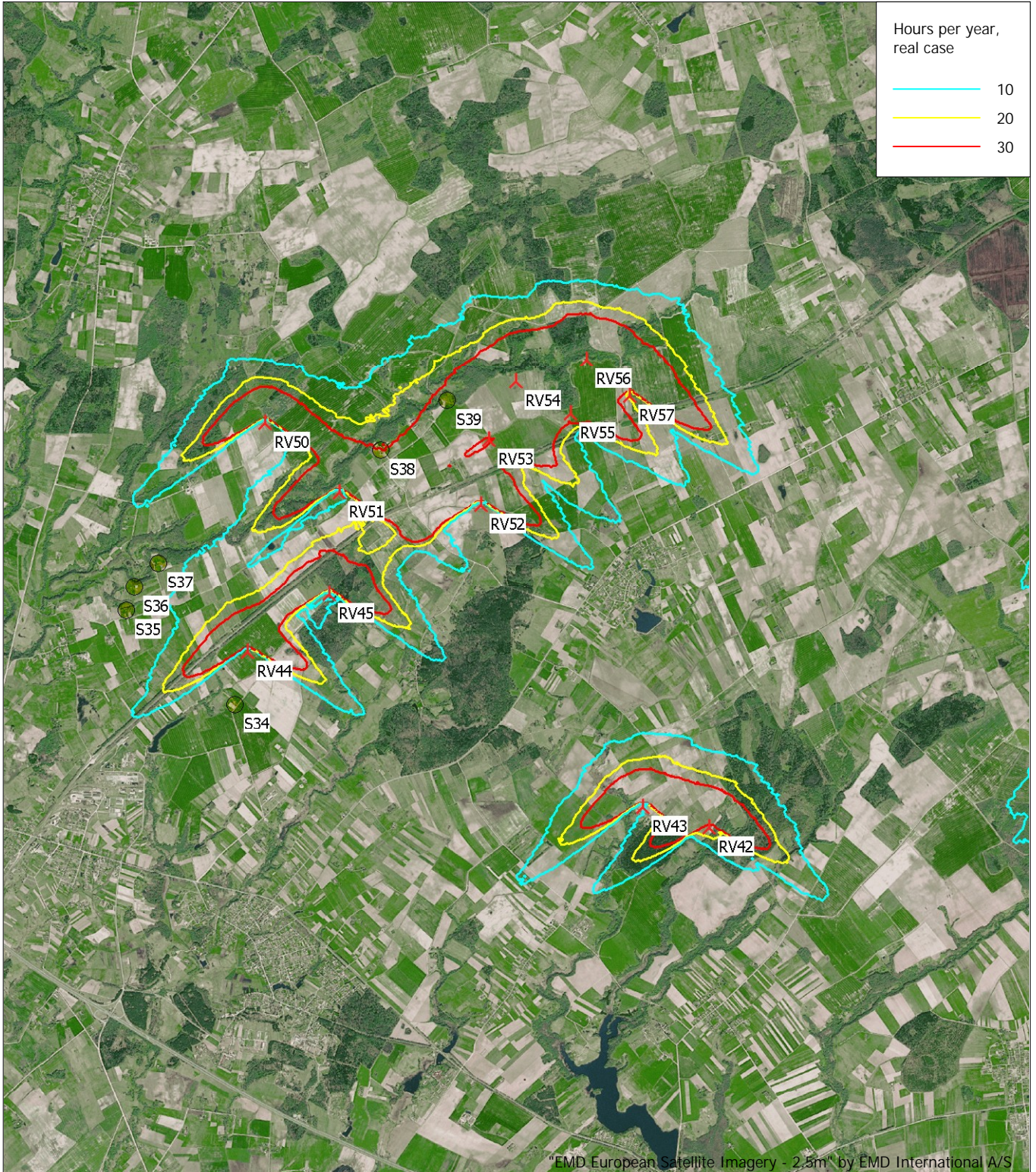
Calculation: Seseliavimas



Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:70 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 444 133 North: 6 144 800
▲ New WTG ● Shadow receptor
Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)
Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Map

Calculation: Seseliavimas



Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:70 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 432 927 North: 6 145 851
▲ New WTG ● Shadow receptor
Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)
Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Main Result

Calculation: Seseliavimas

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) [KAUNAS]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
1,41 2,36 4,03 5,55 8,35 8,36 8,16 7,72 5,06 3,23 1,33 0,98

Operational hours are calculated from WTGs in calculation and wind distribution:

Site data: ATLAS 12 sectors; Radius: 30 500 m (7)

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
908 462 218 271 538 594 718 938 1 113 950 721 511 7 942

Idle start wind speed: Cut in wind speed from power curve

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:

Height contours used: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)

Receptor grid resolution: 1,0 m

All coordinates are in

Lithuanian TM LKS94-LKS94 (LT)

WTGs

	Y	X	Z	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.	Type-generator				Calculation distance [m]	RPM
RV01	453 868	6 135 039	102,9	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV02	453 407	6 134 505	104,5	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV03	453 203	6 135 212	103,1	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV04	452 568	6 134 952	101,7	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV05	451 645	6 134 901	101,0	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV06	451 457	6 135 909	98,9	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV07	450 825	6 135 371	98,1	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV08	450 503	6 136 375	98,3	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV09	449 999	6 135 880	97,3	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV11	453 441	6 137 724	106,1	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV22	447 106	6 142 740	116,4	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV27	445 313	6 145 441	112,0	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV28	444 795	6 145 509	119,0	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV29	444 406	6 145 020	113,4	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV30	443 437	6 145 283	118,6	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV31	443 619	6 144 173	110,9	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV32	442 989	6 144 064	107,0	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV33	441 445	6 143 796	106,1	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV34	440 823	6 143 768	104,2	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV35	441 038	6 144 466	104,9	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV36	441 706	6 145 180	110,9	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV37	442 190	6 145 703	113,1	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV38	441 628	6 145 943	115,4	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV39	441 860	6 146 591	119,7	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV41	441 007	6 146 940	120,1	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV42	435 457	6 143 037	104,5	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV43	434 653	6 143 307	103,2	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV44	429 843	6 145 279	107,2	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV45	430 858	6 145 962	112,0	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV50	430 097	6 148 065	115,9	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

	Y	X	Z	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.	Type-generator				Calculation distance [m]	RPM
			[m]									
RV51	430 989	6 147 206	115,0	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV52	432 724	6 147 028	116,1	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV53	432 836	6 147 815	121,0	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV54	433 174	6 148 528	127,1	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV55	433 839	6 148 125	128,3	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV56	434 043	6 148 785	126,3	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV57	434 569	6 148 337	126,9	Hypothetical 10000 200.0 !O...	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0

Shadow receptor-Input

No.	Y	X	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
			[m]	[m]	[m]	[m]	[°]		[m]
S01	450 043	6 137 499	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S02	449 224	6 137 081	103,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S03	448 751	6 135 985	102,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S04	448 585	6 135 967	109,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S05	448 573	6 136 006	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S06	447 646	6 138 441	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S07	447 633	6 138 553	104,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S08	453 591	6 138 330	98,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S09	453 741	6 137 400	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S10	453 750	6 137 393	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S11	453 202	6 138 009	104,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S12	448 091	6 138 813	103,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S13	449 932	6 140 871	108,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S14	449 904	6 140 839	109,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S15	449 881	6 140 803	110,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S16	445 607	6 144 035	113,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S17	443 957	6 144 585	114,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S18	442 773	6 144 681	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S19	442 417	6 144 159	107,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S20	442 394	6 144 116	105,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S21	441 242	6 143 270	106,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S22	441 303	6 143 272	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S23	441 264	6 143 226	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S24	441 328	6 143 216	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S25	441 316	6 143 144	107,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S26	441 372	6 143 158	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S27	440 438	6 143 298	106,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S28	440 282	6 143 882	106,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S29	440 326	6 143 930	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S30	440 631	6 144 514	110,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S31	441 067	6 145 854	117,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S32	441 772	6 139 583	90,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S33	441 074	6 139 866	89,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S34	429 681	6 144 640	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S35	428 367	6 145 810	103,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S36	428 466	6 146 089	104,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S37	428 768	6 146 376	107,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S38	431 508	6 147 720	119,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S39	432 332	6 148 310	120,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0

Calculation Results

Shadow receptor

Shadow, expected values

No.	Shadow hours per year [h/year]	Avoided hours per year [h/year]
S01	4:49	
S02	7:29	
S03	9:01	

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

Shadow, expected values

No.	Shadow hours per year [h/year]	Avoided hours per year [h/year]
S04	6:59	
S05	6:44	
S06	0:00	
S07	0:00	
S08	15:17	
S09	0:00	
S10	0:00	
S11*	0:00	38:22
S12	0:00	
S13	0:00	
S14	0:00	
S15	0:00	
S16	4:48	
S17*	21:30	20:03
S18*	26:57	22:26
S19*	18:25	29:34
S20*	26:14	23:29
S21	4:37	
S22	6:42	
S23	5:04	
S24	7:57	
S25	7:27	
S26	10:17	
S27	15:32	
S28*	26:41	4:21
S29*	28:01	3:52
S30*	26:38	66:41
S31*	13:11	42:41
S32	0:00	
S33	0:00	
S34	0:00	
S35	3:41	
S36	3:32	
S37	5:58	
S38*	28:57	3:09
S39*	24:35	22:01

* 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]
RV01	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (1)		0:00
RV02	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (2)		0:00
RV03	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (3)		0:00
RV04	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (4)		0:00
RV05	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (8)		0:00
RV06	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (15)		1:19
RV07	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (16)		2:24
RV08	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (17)		10:00
RV09	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (66)		9:09
RV14	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (22)	198:57	15:17
RV22	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (30)		1:18
RV27	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (35)		8:18
RV28	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (36)		3:00
RV29	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (37)		9:08
RV30	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (38)		0:54
RV31	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (39)	185:44	7:05
RV32	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (40)	105:57	41:41
RV33	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (41)	26:12	32:30
RV34	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (42)		49:22
RV35	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (43)	252:31	9:37
RV36	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (44)	57:52	17:20

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

No.	Name	Stopped due to flicker curtailment [h/year]	Expected [h/year]
RV37	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (45)		14:25
RV38	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (46)	159:28	0:00
RV39	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (47)		0:00
RV41	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (49)		0:00
RV42	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (50)		0:00
RV43	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (51)		0:00
RV44	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (52)		7:24
RV45	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (53)		3:36
RV50	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (58)		6:25
RV51	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (59)		14:28
RV52	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (60)	19:25	1:52
RV53	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (61)		16:33
RV54	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (62)	89:25	5:59
RV55	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (63)		4:41
RV56	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (64)		3:42
RV57	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (65)		1:23

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.

**Prognozuojamas PŪV SUMINIS šešėliavimo vertinimas
"1" alternatyva**

SHADOW - Main Result

Calculation: Seseliavimas

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) [KAUNAS]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1,41	2,36	4,03	5,55	8,35	8,36	8,16	7,72	5,06	3,23	1,33	0,98

Operational hours are calculated from WTGs in calculation and wind distribution:

Site data: ATLAS 12 sectors; Radius: 30 500 m (7)

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
906	461	218	271	537	593	717	937	1 111	949	720	510	7 929

Idle start wind speed: Cut in wind speed from power curve

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:

Height contours used: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)

Receptor grid resolution: 1,0 m

All coordinates are in

Lithuanian TM LKS94-LKS94 (LT)

WTGs

	Y	X	Z	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.	Type-generator				Calculation distance [m]	RPM [RPM]
RV01	453 868	6 135 039	102,9	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV02	453 407	6 134 505	104,5	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV03	453 203	6 135 212	103,1	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV04	452 568	6 134 952	101,7	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV05	451 645	6 134 901	101,0	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV06	451 457	6 135 909	98,9	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV07	450 825	6 135 371	98,1	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV08	450 503	6 136 375	98,3	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV09	449 999	6 135 880	97,3	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV14	453 441	6 137 724	106,1	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV22	447 106	6 142 740	116,4	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV27	445 313	6 145 441	112,0	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV28	444 795	6 145 509	119,0	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV29	444 406	6 145 020	113,4	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV30	443 437	6 145 283	118,6	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV31	443 619	6 144 173	110,9	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV32	442 989	6 144 064	107,0	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV33	441 445	6 143 796	106,1	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV34	440 823	6 143 768	104,2	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV35	441 038	6 144 466	104,9	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV36	441 706	6 145 180	110,9	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV37	442 190	6 145 703	113,1	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV38	441 628	6 145 943	115,4	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV39	441 860	6 146 591	119,7	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV41	441 007	6 146 940	120,1	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV42	435 457	6 143 037	104,5	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV43	434 653	6 143 307	103,2	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV44	429 843	6 145 279	107,2	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV45	430 858	6 145 940	112,0	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV50	430 097	6 148 065	115,9	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV51	430 989	6 147 206	115,0	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV52	432 724	6 147 028	116,1	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

	Y	X	Z	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.	Type-generator				Calculation distance [m]	RPM
RV53	432 836	6 147 815	121,0	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV54	433 174	6 148 528	127,1	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV55	433 839	6 148 125	128,3	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV56	434 043	6 148 785	126,3	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
RV57	434 569	6 148 337	126,9	NORDEX N175/6.X 6800 175.0 !...Yes	Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8
VE01	435 366	6 144 214	113,1	VE model 7000 170.0 !-! hub: ...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE02	435 761	6 144 534	115,9	VE model 7000 170.0 !-! hub: ...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE03	435 930	6 145 798	117,9	VE model 7000 170.0 !-! hub: ...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE04	435 752	6 146 302	125,5	VE model 7000 170.0 !-! hub: ...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE06	436 488	6 145 544	118,5	VE model 7000 170.0 !-! hub: ...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE07	437 445	6 145 522	116,7	VE model 7000 170.0 !-! hub: ...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE08	437 066	6 144 948	113,8	VE model 7000 170.0 !-! hub: ...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE09	437 386	6 146 692	121,8	VE model 7000 170.0 !-! hub: ...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE10	439 605	6 146 917	113,9	VE model 7000 170.0 !-! hub: ...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE11	439 798	6 147 581	120,3	VE model 7000 170.0 !-! hub: ...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE12	438 012	6 149 278	126,4	VE model 7000 170.0 !-! hub: ...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE13	439 978	6 148 482	127,9	VE model 7000 170.0 !-! hub: ...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE14	440 344	6 148 989	131,8	VE model 7000 170.0 !-! hub: ...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE15	440 461	6 147 534	130,9	VE model 7000 170.0 !-! hub: ...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE16	440 715	6 148 517	128,1	VE model 7000 170.0 !-! hub: ...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE17	440 995	6 149 095	131,2	VE model 7000 170.0 !-! hub: ...	No	VE model	-7 000	7 000	170,0	135,0	2 500	14,0
VE18	440 852	6 147 169	124,1	VE model 7000 170.0 !-! hub: ...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE5	436 541	6 146 182	122,6	VE model 7000 170.0 !-! hub: ...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0

Shadow receptor-Input

No.	Y	X	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
	[m]	[m]	[m]	[m]	[m]	[m]	[°]		[m]
S01	450 043	6 137 499	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S02	449 224	6 137 081	103,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S03	448 751	6 135 985	102,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S04	448 585	6 135 967	109,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S05	448 573	6 136 006	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S06	447 646	6 138 441	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S07	447 633	6 138 553	104,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S08	453 591	6 138 330	98,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S09	453 741	6 137 400	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S10	453 750	6 137 393	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S11	453 202	6 138 009	104,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S12	448 091	6 138 813	103,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S13	449 932	6 140 871	108,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S14	449 904	6 140 839	109,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S15	449 881	6 140 803	110,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S16	445 607	6 144 035	113,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S17	443 957	6 144 585	114,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S18	442 773	6 144 681	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S19	442 417	6 144 159	107,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S20	442 394	6 144 116	105,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S21	441 242	6 143 270	106,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S22	441 303	6 143 272	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S23	441 264	6 143 226	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S24	441 328	6 143 216	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S25	441 316	6 143 144	107,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S26	441 372	6 143 158	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S27	440 438	6 143 298	106,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S28	440 282	6 143 882	106,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S29	440 326	6 143 930	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S30	440 631	6 144 514	110,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S31	441 067	6 145 854	117,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S32	441 772	6 139 583	90,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S33	441 074	6 139 866	89,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S34	429 681	6 144 640	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

No.	Y	X	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
			[m]	[m]	[m]	[m]	[°]		[m]
S35	428 367	6 145 810	103,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S36	428 466	6 146 089	104,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S37	428 768	6 146 376	107,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S38	431 508	6 147 720	119,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S39	432 332	6 148 310	120,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0

Calculation Results

Shadow receptor

Shadow, expected values

No. Shadow hours

per year
[h/year]

S01	2:46
S02	5:12
S03	6:06
S04	2:53
S05	2:45
S06	0:00
S07	0:00
S08	12:08
S09	0:00
S10	0:00
S11	29:10
S12	0:00
S13	0:00
S14	0:00
S15	0:00
S16	0:33
S17	26:17
S18	36:11
S19	34:32
S20	36:16
S21	0:00
S22	4:03
S23	0:00
S24	4:39
S25	0:00
S26	6:38
S27	12:53
S28	24:06
S29	24:18
S30	73:16
S31	49:39
S32	0:00
S33	0:00
S34	0:00
S35	2:00
S36	1:51
S37	1:47
S38	23:21
S39	34:54

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

No.	Name	Expected [h/year]
RV01	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (1)	0:00
RV02	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (2)	0:00
RV03	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (3)	0:00
RV04	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (4)	0:00
RV05	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (8)	0:00
RV06	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (15)	0:00
RV07	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (16)	0:00

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

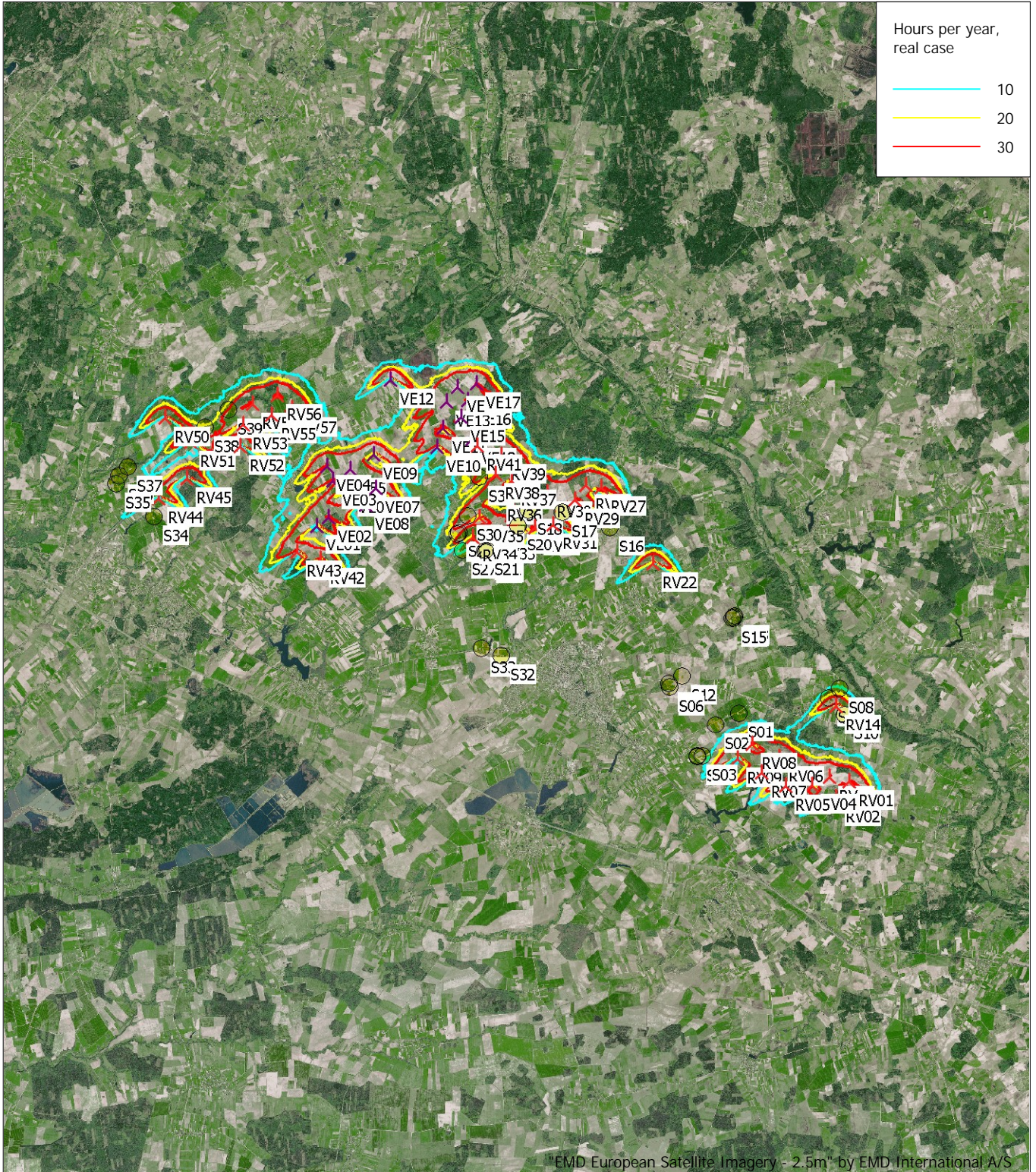
No.	Name	Expected [h/year]
RV08	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (17)	7:22
RV09	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (66)	7:26
RV14	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (22)	41:19
RV22	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (30)	0:00
RV27	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (35)	6:55
RV28	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (36)	0:00
RV29	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (37)	3:25
RV30	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (38)	0:00
RV31	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (39)	26:12
RV32	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (40)	52:12
RV33	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (41)	30:37
RV34	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (42)	38:07
RV35	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (43)	61:41
RV36	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (44)	25:26
RV37	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (45)	4:25
RV38	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (46)	35:20
RV39	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (47)	0:00
RV41	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (49)	0:00
RV42	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (50)	0:00
RV43	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (51)	0:00
RV44	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (52)	5:39
RV45	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (53)	0:00
RV50	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (58)	4:00
RV51	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (59)	9:39
RV52	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (60)	3:42
RV53	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (61)	12:43
RV54	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (62)	23:30
RV55	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (63)	2:25
RV56	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (64)	2:53
RV57	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (65)	0:00
VE01	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (85)	0:00
VE02	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (86)	0:00
VE03	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (87)	0:00
VE04	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (88)	0:00
VE06	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (90)	0:00
VE07	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (91)	0:00
VE08	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (92)	0:00
VE09	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (93)	0:00
VE10	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (94)	4:48
VE11	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (95)	0:00
VE12	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (96)	0:00
VE13	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (97)	0:00
VE14	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (98)	0:00
VE15	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (99)	0:00
VE16	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (100)	0:00
VE17	VE model 7000 170.0 !-! hub: 135,0 m (TOT: 220,0 m) (101)	0:00
VE18	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (102)	0:00
VE5	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (89)	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

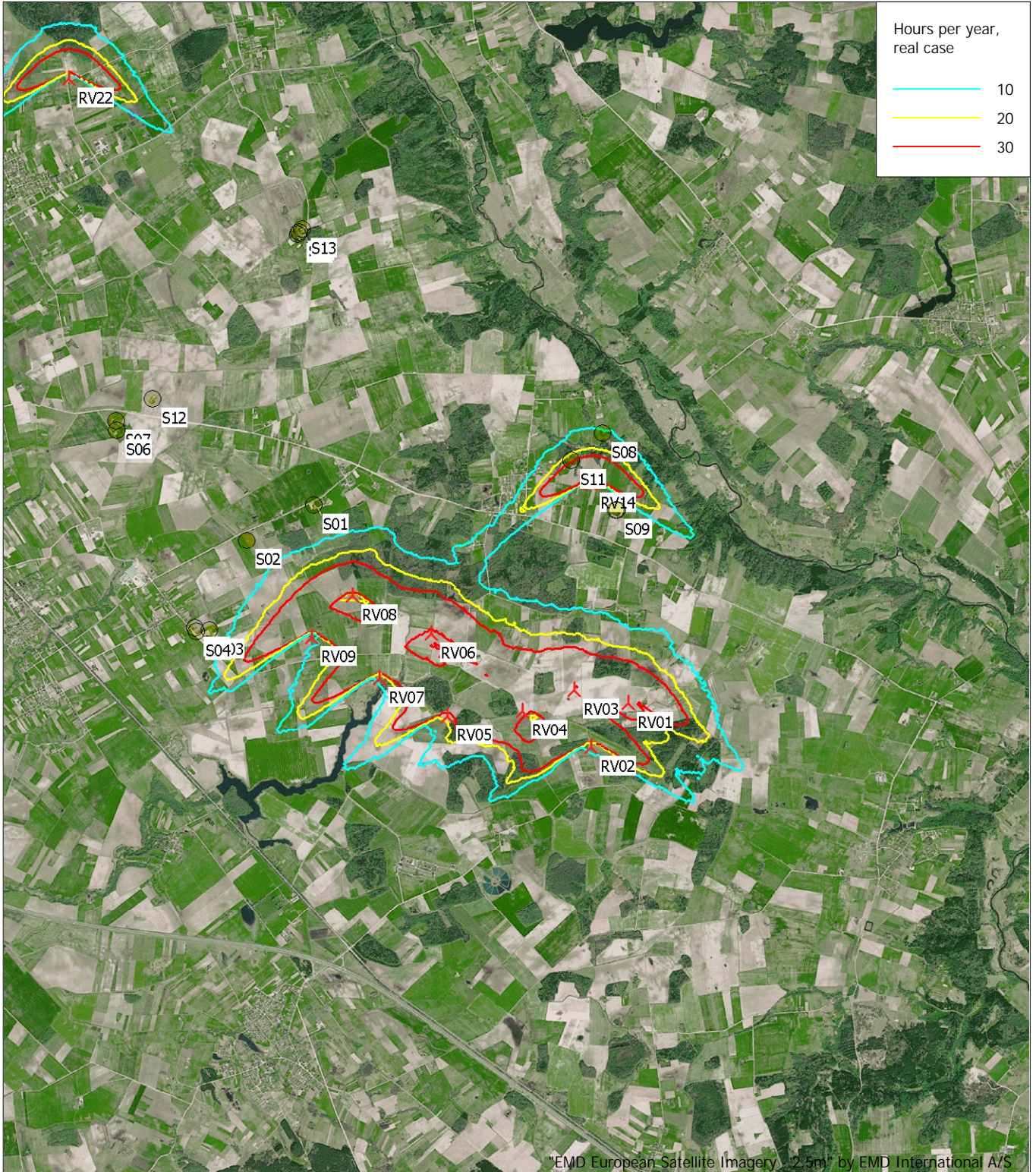
Calculation: Seseliavimas



Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:200 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 441 685 North: 6 141 462
New WTG Shadow receptor
Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)
Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Map

Calculation: Seseliavimas



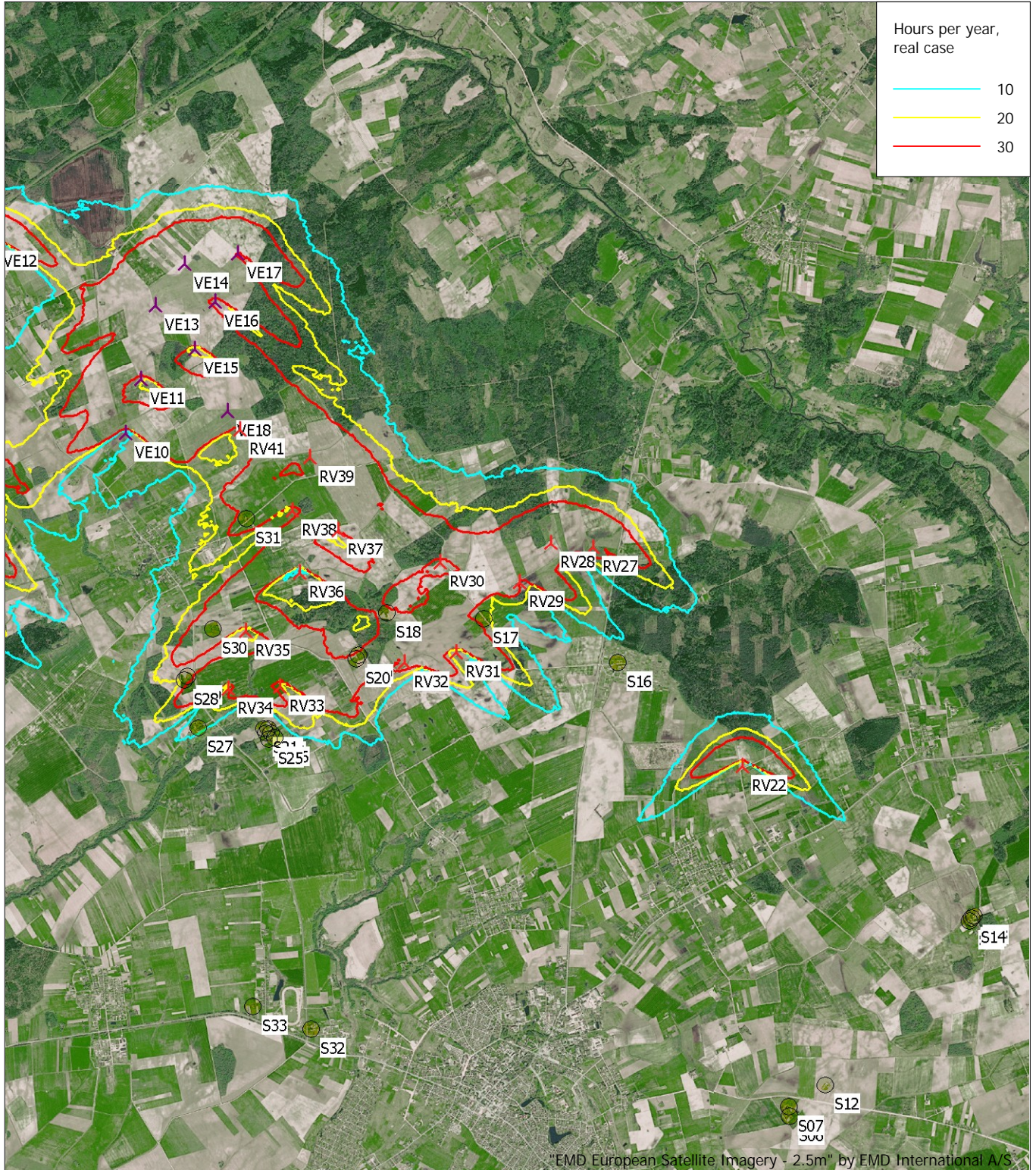
0 1 2 3 4 km

Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:70 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 452 267 North: 6 136 270
New WTG Shadow receptor

Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)
Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Map

Calculation: Seseliavimas



Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:70 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 444 133 North: 6 144 800

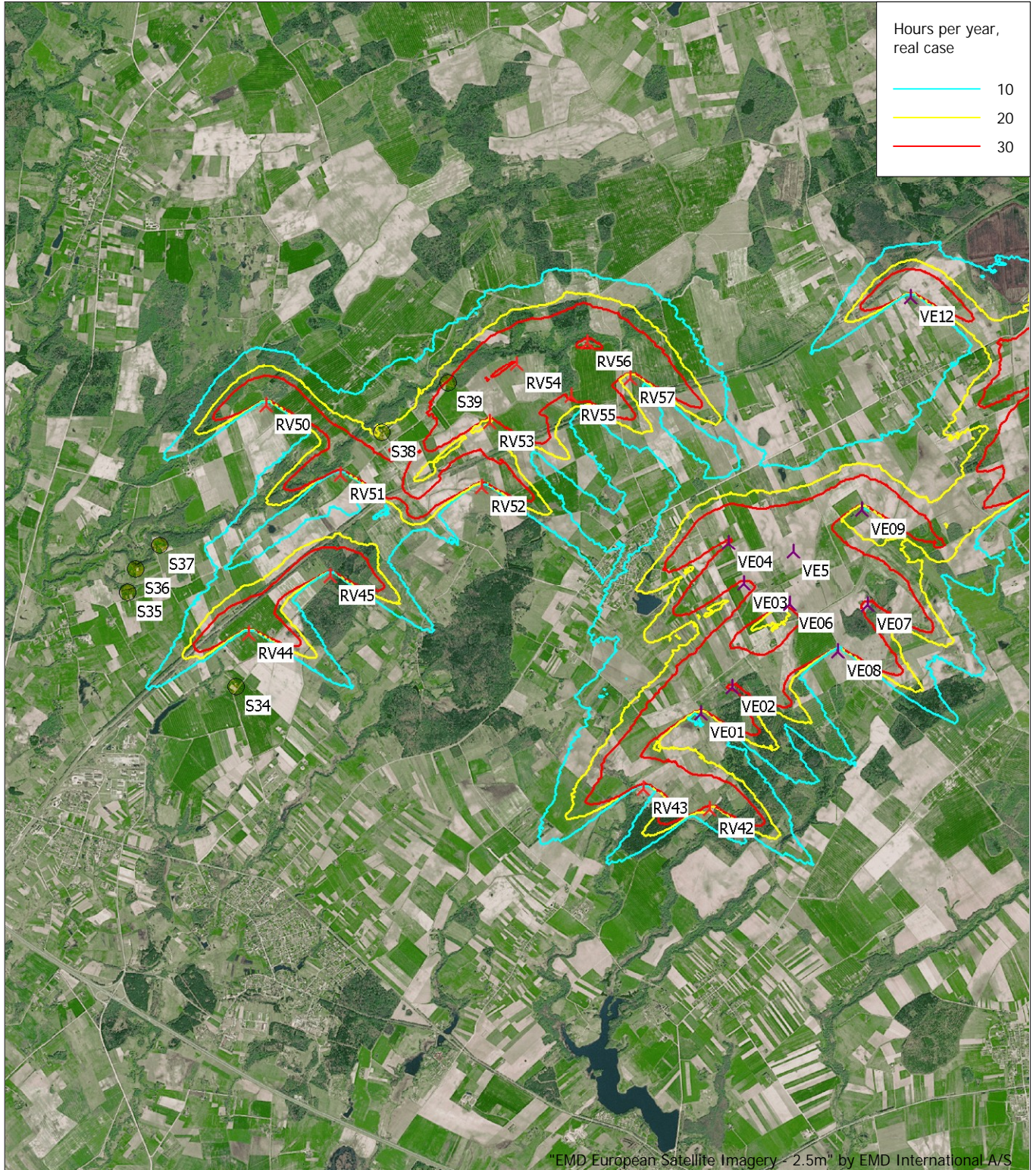
▲ New WTG ● Shadow receptor

Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)

Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Map

Calculation: Seseliavimas



Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:70 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 432 927 North: 6 145 651
▲ New WTG ● Shadow receptor
Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)
Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Main Result

Calculation: Seseliavimas

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) [KAUNAS]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
1,41 2,36 4,03 5,55 8,35 8,36 8,16 7,72 5,06 3,23 1,33 0,98

Operational hours are calculated from WTGs in calculation and wind distribution:

Site data: ATLAS 12 sectors; Radius: 30 500 m (7)

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
906 461 218 271 537 593 717 937 1 111 949 720 510 7 929

Idle start wind speed: Cut in wind speed from power curve

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:

Height contours used: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)

Receptor grid resolution: 1,0 m

All coordinates are in

Lithuanian TM LKS94-LKS94 (LT)

WTGs

	Y	X	Z	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.	Type-generator				Calculation distance [m]	RPM
RV01	453 868	6 135 039	102,9	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV02	453 407	6 134 505	104,5	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV03	453 203	6 135 212	103,1	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV04	452 568	6 134 952	101,7	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV05	451 645	6 134 901	101,0	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV06	451 457	6 135 909	98,9	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV07	450 825	6 135 371	98,1	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV08	450 503	6 136 375	98,3	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV09	449 999	6 135 880	97,3	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV14	453 441	6 137 724	106,1	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV22	447 106	6 142 740	116,4	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV27	445 313	6 145 441	112,0	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV28	444 795	6 145 509	119,0	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV29	444 406	6 145 020	113,4	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV30	443 437	6 145 283	118,6	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV31	443 619	6 144 173	110,9	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV32	442 989	6 144 064	107,0	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV33	441 445	6 143 796	106,1	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV34	440 823	6 143 768	104,2	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV35	441 038	6 144 466	104,9	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV36	441 706	6 145 180	110,9	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV37	442 190	6 145 703	113,1	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV38	441 628	6 145 943	115,4	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV39	441 860	6 146 591	119,7	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV41	441 007	6 146 940	120,1	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV42	435 457	6 143 037	104,5	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV43	434 653	6 143 307	103,2	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV44	429 843	6 145 279	107,2	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV45	430 858	6 145 962	112,0	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV50	430 097	6 148 065	115,9	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

	Y	X	Z	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.	Type-generator				Calculation distance [m]	RPM
			[m]									
RV51	430 989	6 147 206	115,0	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV52	432 724	6 147 028	116,1	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV53	432 836	6 147 815	121,0	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV54	433 174	6 148 528	127,1	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV55	433 839	6 148 125	128,3	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV56	434 043	6 148 785	126,3	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
RV57	434 569	6 148 337	126,9	NORDEX N175/6.X 6800 175.0 !...Yes	NORDEX	N175/6.X-6 800	6 800	175,0	179,0	1 893	10,8	
VE01	435 366	6 144 214	113,1	VE model 7000 170.0 !-! hub: ... No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0	
VE02	435 761	6 144 534	115,9	VE model 7000 170.0 !-! hub: ... No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0	
VE03	435 930	6 145 798	117,9	VE model 7000 170.0 !-! hub: ... No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0	
VE04	435 752	6 146 302	125,5	VE model 7000 170.0 !-! hub: ... No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0	
VE06	436 488	6 145 544	118,5	VE model 7000 170.0 !-! hub: ... No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0	
VE07	437 445	6 145 522	116,7	VE model 7000 170.0 !-! hub: ... No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0	
VE08	437 066	6 144 948	113,8	VE model 7000 170.0 !-! hub: ... No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0	
VE09	437 386	6 146 692	121,8	VE model 7000 170.0 !-! hub: ... No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0	
VE10	439 605	6 146 917	113,9	VE model 7000 170.0 !-! hub: ... No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0	
VE11	439 798	6 147 581	120,3	VE model 7000 170.0 !-! hub: ... No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0	
VE12	438 012	6 149 278	126,4	VE model 7000 170.0 !-! hub: ... No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0	
VE13	439 978	6 148 482	121,9	VE model 7000 170.0 !-! hub: ... No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0	
VE14	440 344	6 148 989	131,8	VE model 7000 170.0 !-! hub: ... No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0	
VE15	440 461	6 147 934	130,9	VE model 7000 170.0 !-! hub: ... No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0	
VE16	440 715	6 148 517	128,1	VE model 7000 170.0 !-! hub: ... No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0	
VE17	440 995	6 149 095	131,2	VE model 7000 170.0 !-! hub: ... No	VE model	-7 000	7 000	170,0	135,0	2 500	14,0	
VE18	440 852	6 147 169	124,1	VE model 7000 170.0 !-! hub: ... No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0	
VE5	436 541	6 146 182	122,6	VE model 7000 170.0 !-! hub: ... No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0	

Shadow receptor-Input

No.	Y	X	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
			[m]	[m]	[m]	[m]	[°]		[m]
S01	450 043	6 137 499	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S02	449 224	6 137 081	103,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S03	448 751	6 135 985	102,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S04	448 585	6 135 967	109,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S05	448 573	6 136 006	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S06	447 646	6 138 441	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S07	447 633	6 138 553	104,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S08	453 591	6 138 330	98,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S09	453 741	6 137 400	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S10	453 750	6 137 393	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S11	453 202	6 138 009	104,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S12	448 091	6 138 813	103,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S13	449 932	6 140 871	108,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S14	449 904	6 140 839	109,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S15	449 881	6 140 803	110,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S16	445 607	6 144 035	113,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S17	443 957	6 144 585	114,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S18	442 773	6 144 681	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S19	442 417	6 144 159	107,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S20	442 394	6 144 116	105,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S21	441 242	6 143 270	106,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S22	441 303	6 143 272	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S23	441 264	6 143 226	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S24	441 328	6 143 216	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S25	441 316	6 143 144	107,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S26	441 372	6 143 158	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S27	440 438	6 143 298	106,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S28	440 282	6 143 882	106,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S29	440 326	6 143 930	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S30	440 631	6 144 514	110,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S31	441 067	6 145 854	117,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S32	441 772	6 139 583	90,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0

To be continued on next page...

Project:

UAB Raseiniu vejas 57 VE

Licensed user:

UAB ARCHSTUDIJA
Konstitucijos pr. 9-41
LT-09308 Vilnius

Calculated:

2024-04-17 16:55/3.6.355

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

No.	Y	X	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
			[m]	[m]	[m]	[m]	[°]		[m]
S33	441 074	6 139 866	89,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S34	429 681	6 144 640	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S35	428 367	6 145 810	103,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S36	428 466	6 146 089	104,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S37	428 768	6 146 376	107,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S38	431 508	6 147 720	119,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S39	432 332	6 148 310	120,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0

Calculation Results

Shadow receptor

Shadow, expected values

No.	Shadow hours per year [h/year]	Avoided hours per year [h/year]
S01	2:46	
S02	5:12	
S03	6:06	
S04	2:53	
S05	2:45	
S06	0:00	
S07	0:00	
S08	12:08	
S09	0:00	
S10	0:00	
S11	29:10	
S12	0:00	
S13	0:00	
S14	0:00	
S15	0:00	
S16	0:33	
S17	26:17	
S18*	29:35	6:35
S19*	26:14	8:18
S20*	28:22	7:53
S21	0:00	
S22	4:03	
S23	0:00	
S24	4:39	
S25	0:00	
S26	6:38	
S27	12:53	
S28	24:06	
S29	24:18	
S30*	18:44	54:07
S31*	9:24	40:09
S32	0:00	
S33	0:00	
S34	0:00	
S35	2:00	
S36	1:51	
S37	1:47	
S38	23:21	
S39*	26:07	8:44

* 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]
RV01	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (1)		0:00
RV02	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (2)		0:00
RV03	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (3)		0:00
RV04	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (4)		0:00

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

No.	Name	Stopped due to flicker curtailment [h/year]	Expected [h/year]
RV05	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (8)		0:00
RV06	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (15)		0:00
RV07	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (16)		0:00
RV08	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (17)		7:22
RV09	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (66)		7:26
RV14	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (22)		41:19
RV22	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (30)		0:00
RV27	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (35)		6:55
RV28	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (36)		0:00
RV29	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (37)		3:25
RV30	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (38)		0:00
RV31	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (39)	48:11	16:45
RV32	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (40)		52:12
RV33	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (41)	26:07	25:32
RV34	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (42)		38:07
RV35	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (43)	212:21	5:49
RV36	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (44)		25:26
RV37	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (45)		4:25
RV38	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (46)	131:48	0:00
RV39	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (47)		0:00
RV41	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (49)		0:00
RV42	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (50)		0:00
RV43	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (51)		0:00
RV44	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (52)		5:39
RV45	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (53)		0:00
RV50	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (58)		4:00
RV51	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (59)		9:39
RV52	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (60)		3:42
RV53	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (61)	56:24	3:58
RV54	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (62)		23:30
RV55	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (63)		2:25
RV56	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (64)		2:53
RV57	NORDEX N175/6.X 6800 175.0 !-! hub: 179,0 m (TOT: 266,5 m) (65)		0:00
VE01	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (85)		0:00
VE02	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (86)		0:00
VE03	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (87)		0:00
VE04	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (88)		0:00
VE06	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (90)		0:00
VE07	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (91)		0:00
VE08	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (92)		0:00
VE09	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (93)		0:00
VE10	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (94)	17:23	0:00
VE11	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (95)		0:00
VE12	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (96)		0:00
VE13	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (97)		0:00
VE14	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (98)		0:00
VE15	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (99)		0:00
VE16	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (100)		0:00
VE17	VE model 7000 170.0 !-! hub: 135,0 m (TOT: 220,0 m) (101)		0:00
VE18	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (102)		0:00
VE5	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (89)		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.

**Prognozuojamas PŪV SUMINIS šėšėliavimo vertinimas
"2" alternatyva**

SHADOW - Main Result

Calculation: Seseliavimas

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) [KAUNAS]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
1,41 2,36 4,03 5,55 8,35 8,36 8,16 7,72 5,06 3,23 1,33 0,98

Operational hours are calculated from WTGs in calculation and wind distribution:

Site data: ATLAS 12 sectors; Radius: 30 500 m (7)

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
942 479 226 282 558 617 745 974 1 155 986 748 530 8 244

Idle start wind speed: Cut in wind speed from power curve

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:

Height contours used: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)

Receptor grid resolution: 1,0 m

All coordinates are in

Lithuanian TM LKS94-LKS94 (LT)

WTGs

	Y	X	Z	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.	Type-generator				Calculation distance [m]	RPM [RPM]
RV01	453 868	6 135 039	102,9	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV02	453 407	6 134 505	104,5	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV03	453 203	6 135 212	103,1	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV04	452 568	6 134 952	101,7	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV05	451 645	6 134 901	101,0	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV06	451 457	6 135 909	98,9	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV07	450 825	6 135 371	98,1	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV08	450 503	6 136 375	98,3	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV09	449 999	6 135 880	97,3	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV14	453 441	6 137 724	106,1	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV22	447 106	6 142 740	116,4	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV27	445 313	6 145 441	112,0	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV28	444 795	6 145 509	119,0	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV29	444 406	6 145 020	113,4	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV30	443 437	6 145 283	118,6	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV31	443 619	6 144 173	110,9	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV32	442 989	6 144 064	107,0	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV33	441 445	6 143 796	106,1	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV34	440 823	6 143 768	104,2	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV35	441 038	6 144 466	104,9	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV36	441 706	6 145 180	110,9	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV37	442 190	6 145 703	113,1	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV38	441 628	6 145 943	115,4	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV39	441 860	6 146 591	119,7	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV41	441 007	6 146 940	120,1	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV42	435 457	6 143 037	104,5	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV43	434 653	6 143 307	103,2	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV44	429 843	6 145 279	107,2	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV45	430 858	6 145 962	112,0	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV50	430 097	6 148 065	115,9	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV51	430 989	6 147 206	115,0	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

	Y	X	Z	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.	Type-generator				Calculation distance [m]	RPM [RPM]
RV52	432 724	6 147 028	116,1	VESTAS V172-7.2 7200 172.0 !-! ...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV53	432 836	6 147 815	121,0	VESTAS V172-7.2 7200 172.0 !-! ...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV54	433 174	6 148 528	127,1	VESTAS V172-7.2 7200 172.0 !-! ...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV55	433 839	6 148 125	128,3	VESTAS V172-7.2 7200 172.0 !-! ...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV56	434 043	6 148 785	126,3	VESTAS V172-7.2 7200 172.0 !-! ...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV57	434 569	6 148 337	126,9	VESTAS V172-7.2 7200 172.0 !-! ...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
VE01	435 366	6 144 214	113,1	VE model 7000 170.0 !-! hub: ...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE02	435 761	6 144 534	115,9	VE model 7000 170.0 !-! hub: ...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE03	435 930	6 145 798	117,9	VE model 7000 170.0 !-! hub: ...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE04	435 752	6 146 302	125,5	VE model 7000 170.0 !-! hub: ...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE06	436 488	6 145 544	118,5	VE model 7000 170.0 !-! hub: ...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE07	437 445	6 145 522	116,7	VE model 7000 170.0 !-! hub: ...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE08	437 066	6 144 948	113,8	VE model 7000 170.0 !-! hub: ...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE09	437 386	6 146 692	121,8	VE model 7000 170.0 !-! hub: ...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE10	439 605	6 146 917	113,9	VE model 7000 170.0 !-! hub: ...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE11	439 798	6 147 581	120,3	VE model 7000 170.0 !-! hub: ...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE12	438 012	6 149 278	126,4	VE model 7000 170.0 !-! hub: ...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE13	439 978	6 148 482	127,9	VE model 7000 170.0 !-! hub: ...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE14	440 344	6 148 989	131,8	VE model 7000 170.0 !-! hub: ...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE15	440 461	6 147 934	130,9	VE model 7000 170.0 !-! hub: ...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE16	440 715	6 148 517	128,1	VE model 7000 170.0 !-! hub: ...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE17	440 995	6 149 095	131,2	VE model 7000 170.0 !-! hub: ...	No	VE model	-7 000	7 000	170,0	135,0	2 500	14,0
VE18	440 852	6 147 169	124,1	VE model 7000 170.0 !-! hub: ...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE5	436 541	6 146 182	122,6	VE model 7000 170.0 !-! hub: ...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0

Shadow receptor-Input

No.	Y	X	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
	[m]	[m]	[m]	[m]	[m]	[m]	[°]		[m]
S01	450 043	6 137 499	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S02	449 224	6 137 081	103,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S03	448 751	6 135 985	102,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S04	448 585	6 135 967	109,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S05	448 573	6 136 006	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S06	447 646	6 138 441	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S07	447 633	6 138 553	104,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S08	453 591	6 138 330	98,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S09	453 741	6 137 400	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S10	453 750	6 137 393	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S11	453 202	6 138 009	104,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S12	448 091	6 138 813	103,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S13	449 932	6 140 871	108,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S14	449 904	6 140 839	109,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S15	449 881	6 140 803	110,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S16	445 607	6 144 035	113,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S17	443 957	6 144 585	114,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S18	442 773	6 144 681	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S19	442 417	6 144 159	107,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S20	442 394	6 144 116	105,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S21	441 242	6 143 270	106,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S22	441 303	6 143 272	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S23	441 264	6 143 226	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S24	441 328	6 143 216	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S25	441 316	6 143 144	107,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S26	441 372	6 143 158	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S27	440 438	6 143 298	106,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S28	440 282	6 143 882	106,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S29	440 326	6 143 930	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S30	440 631	6 144 514	110,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S31	441 067	6 145 854	117,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S32	441 772	6 139 583	90,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S33	441 074	6 139 866	89,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

No.	Y	X	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
			[m]	[m]	[m]	[m]	[°]		[m]
S34	429 681	6 144 640	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S35	428 367	6 145 810	103,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S36	428 466	6 146 089	104,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S37	428 768	6 146 376	107,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S38	431 508	6 147 720	119,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S39	432 332	6 148 310	120,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0

Calculation Results

Shadow receptor

Shadow, expected values

No. Shadow hours

per year
[h/year]

S01	2:40
S02	5:14
S03	6:05
S04	2:52
S05	2:48
S06	0:00
S07	0:00
S08	12:13
S09	0:00
S10	0:00
S11	29:25
S12	0:00
S13	0:00
S14	0:00
S15	0:00
S16	0:46
S17	26:39
S18	36:23
S19	34:26
S20	36:08
S21	0:00
S22	3:59
S23	0:00
S24	4:36
S25	0:00
S26	6:30
S27	13:21
S28	24:01
S29	24:23
S30	74:12
S31	50:45
S32	0:00
S33	0:00
S34	0:00
S35	1:58
S36	1:51
S37	1:48
S38	23:16
S39	34:31

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

No.	Name	Expected [h/year]
RV01	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (1)	0:00
RV02	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (2)	0:00
RV03	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (3)	0:00
RV04	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (4)	0:00
RV05	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (8)	0:00
RV06	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (15)	0:00

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

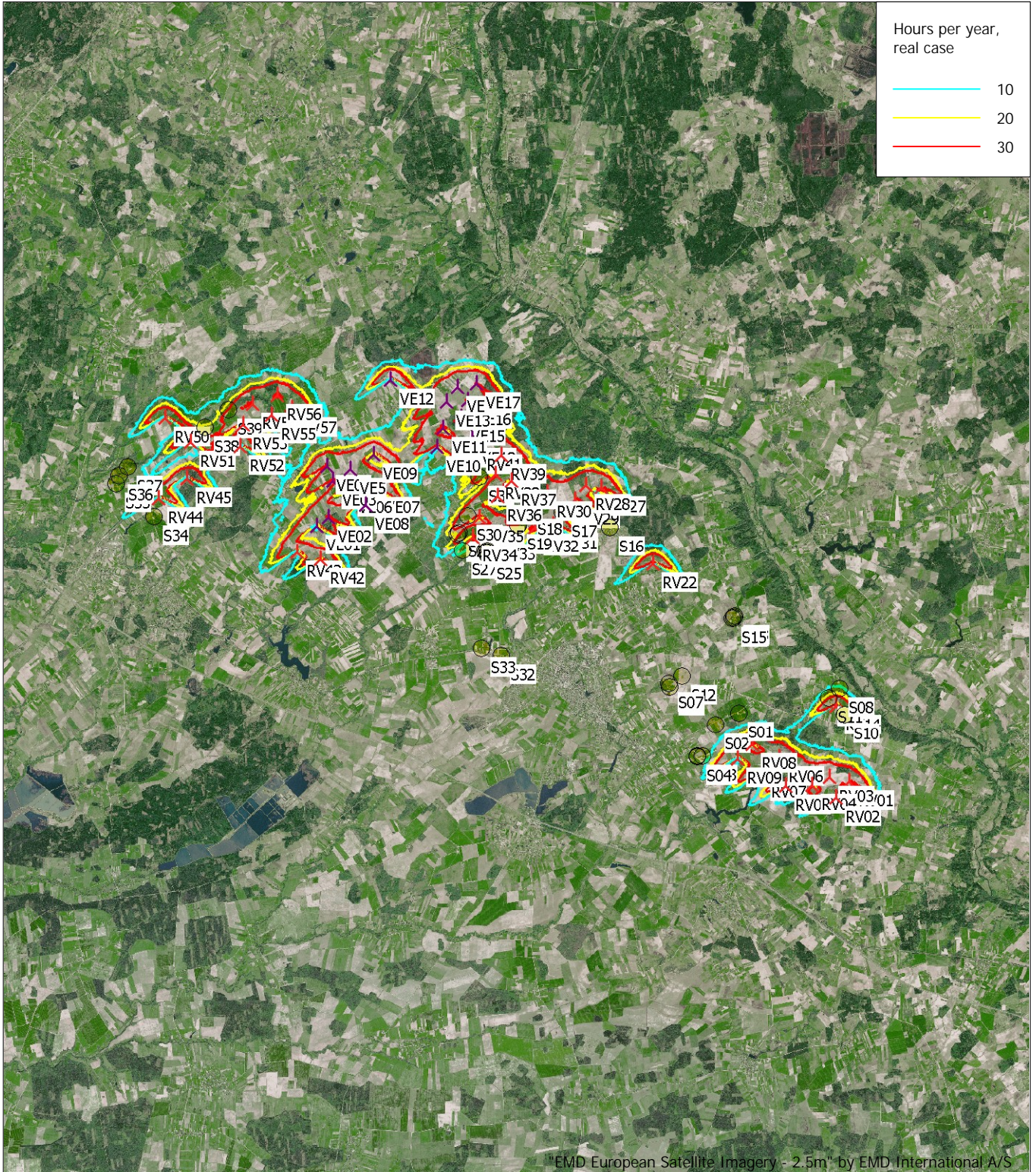
No.	Name	Expected [h/year]
RV07	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (16)	0:00
RV08	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (17)	7:16
RV09	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (66)	7:28
RV14	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (22)	41:38
RV22	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (30)	0:00
RV27	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (35)	7:12
RV28	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (36)	0:00
RV29	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (37)	3:36
RV30	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (38)	0:00
RV31	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (39)	26:19
RV32	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (40)	52:01
RV33	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (41)	31:12
RV34	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (42)	38:07
RV35	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (43)	62:08
RV36	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (44)	26:02
RV37	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (45)	4:24
RV38	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (46)	36:13
RV39	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (47)	0:00
RV41	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (49)	0:00
RV42	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (50)	0:00
RV43	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (51)	0:00
RV44	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (52)	5:39
RV45	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (53)	0:00
RV50	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (58)	3:58
RV51	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (59)	9:39
RV52	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (60)	3:34
RV53	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (61)	12:44
RV54	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (62)	23:12
RV55	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (63)	2:25
RV56	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (64)	2:50
RV57	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (65)	0:00
VE01	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (67)	0:00
VE02	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (68)	0:00
VE03	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (69)	0:00
VE04	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (70)	0:00
VE06	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (72)	0:00
VE07	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (73)	0:00
VE08	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (74)	0:00
VE09	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (75)	0:00
VE10	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (76)	5:00
VE11	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (77)	0:00
VE12	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (78)	0:00
VE13	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (79)	0:00
VE14	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (80)	0:00
VE15	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (81)	0:00
VE16	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (82)	0:00
VE17	VE model 7000 170.0 !-! hub: 135,0 m (TOT: 220,0 m) (83)	0:00
VE18	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (84)	0:00
VE5	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (71)	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

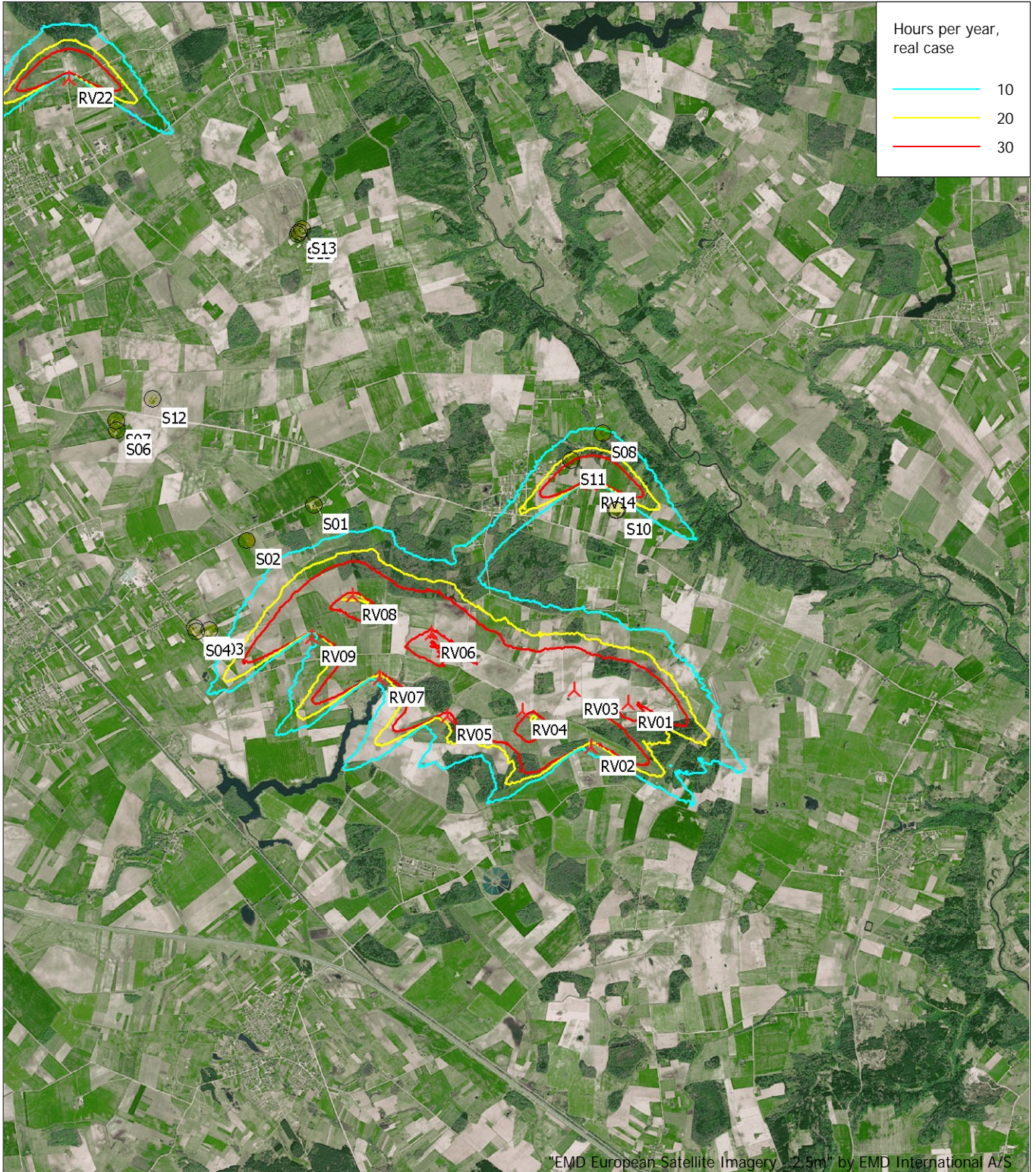
Calculation: Seseliavimas



Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:200 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 441 685 North: 6 141 462
▲ New WTG 🟡 Shadow receptor
Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)
Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Map

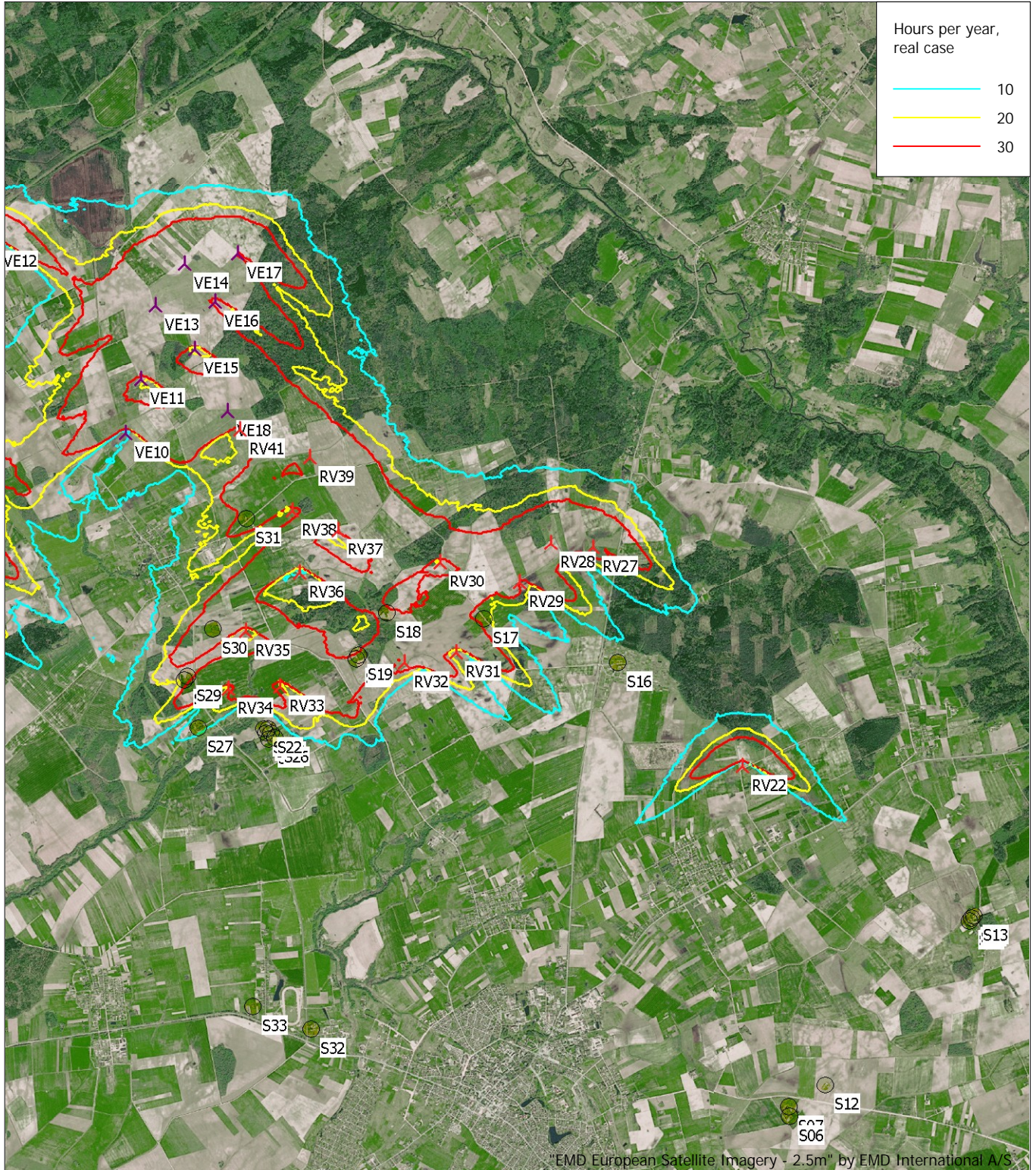
Calculation: Seseliavimas



Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:70 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 452 267 North: 6 136 270
▲ New WTG ● Shadow receptor
Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)
Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Map

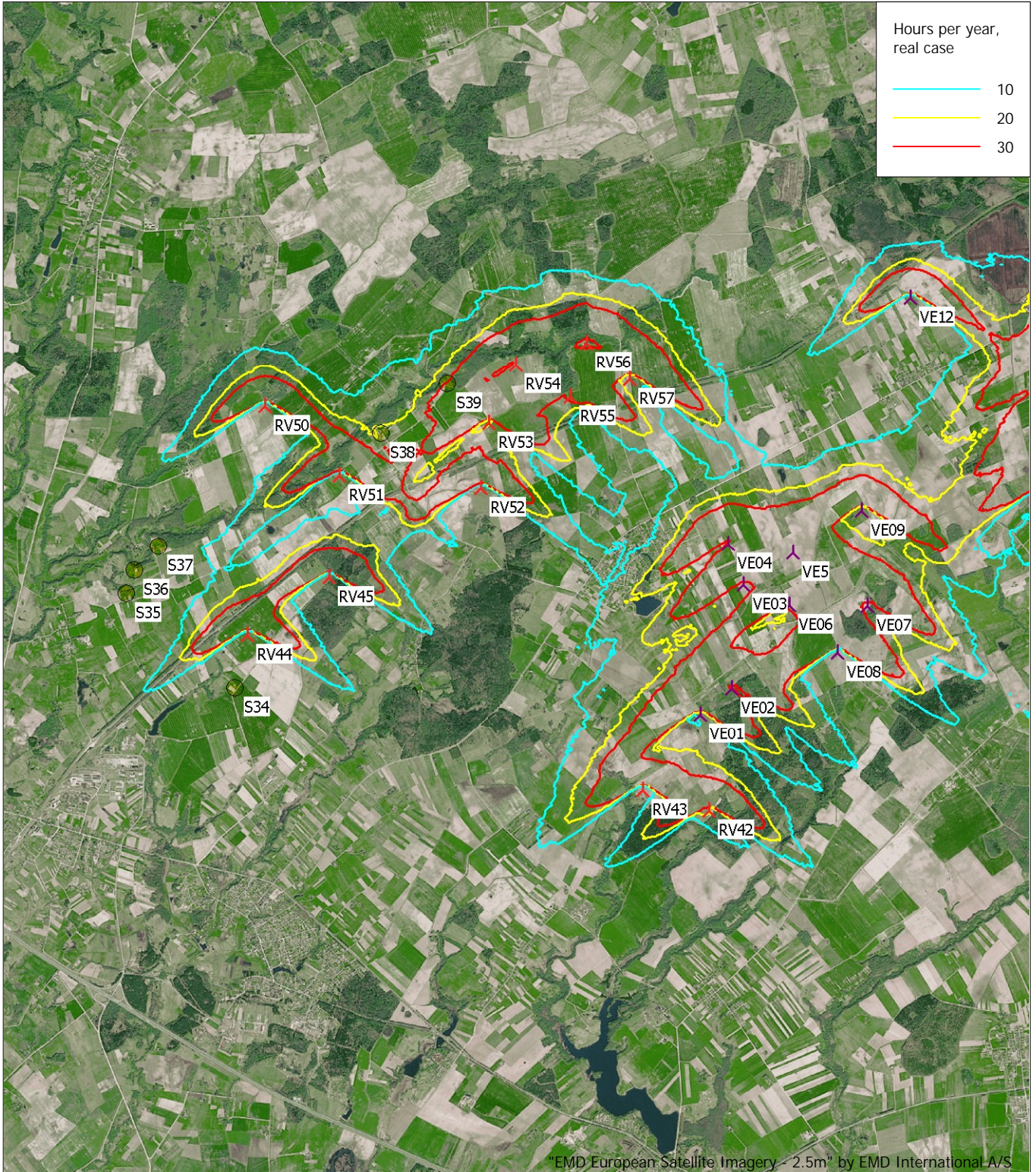
Calculation: Seseliavimas



Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:70 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 444 133 North: 6 144 800
▲ New WTG ● Shadow receptor
Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)
Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Map

Calculation: Seseliavimas



Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:70 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 432 927 North: 6 145 651
▲ New WTG ● Shadow receptor
Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)
Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Main Result

Calculation: Seseliavimas

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) [KAUNAS]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
1,41 2,36 4,03 5,55 8,35 8,36 8,16 7,72 5,06 3,23 1,33 0,98

Operational hours are calculated from WTGs in calculation and wind distribution:

Site data: ATLAS 12 sectors; Radius: 30 500 m (7)

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
942 479 226 282 558 617 745 974 1 155 986 748 530 8 244

Idle start wind speed: Cut in wind speed from power curve

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:

Height contours used: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)

Receptor grid resolution: 1,0 m

All coordinates are in

Lithuanian TM LKS94-LKS94 (LT)

WTGs

	Y	X	Z	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.	Type-generator				Calculation distance [m]	RPM [RPM]
RV01	453 868	6 135 039	102,9	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV02	453 407	6 134 505	104,5	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV03	453 203	6 135 212	103,1	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV04	452 568	6 134 952	101,7	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV05	451 645	6 134 901	101,0	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV06	451 457	6 135 909	98,9	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV07	450 825	6 135 371	98,1	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV08	450 503	6 136 375	98,3	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV09	449 999	6 135 880	97,3	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV14	453 441	6 137 724	106,1	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV22	447 106	6 142 740	116,4	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV27	445 313	6 145 441	112,0	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV28	444 795	6 145 509	119,0	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV29	444 406	6 145 020	113,4	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV30	443 437	6 145 283	118,6	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV31	443 619	6 144 173	110,9	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV32	442 989	6 144 064	107,0	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV33	441 445	6 143 796	106,1	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV34	440 823	6 143 768	104,2	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV35	441 038	6 144 466	104,9	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV36	441 706	6 145 180	110,9	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV37	442 190	6 145 703	113,1	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV38	441 628	6 145 943	115,4	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV39	441 860	6 146 591	119,7	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV41	441 007	6 146 940	120,1	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV42	435 457	6 143 037	104,5	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV43	434 653	6 143 307	103,2	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV44	429 843	6 145 279	107,2	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV45	430 858	6 145 962	112,0	VESTAS V172-7.2 7200 172.0 !...	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

	Y	X	Z	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.	Type-generator				Calculation distance [m]	RPM
			[m]									
RV50	430 097	6 148 065	115,9	VESTAS V172-7.2 7200 172.0 !... Yes	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV51	430 989	6 147 206	115,0	VESTAS V172-7.2 7200 172.0 !... Yes	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV52	432 724	6 147 028	116,1	VESTAS V172-7.2 7200 172.0 !... Yes	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV53	432 836	6 147 815	121,0	VESTAS V172-7.2 7200 172.0 !... Yes	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV54	433 174	6 148 528	127,1	VESTAS V172-7.2 7200 172.0 !... Yes	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV55	433 839	6 148 125	128,3	VESTAS V172-7.2 7200 172.0 !... Yes	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV56	434 043	6 148 785	126,3	VESTAS V172-7.2 7200 172.0 !... Yes	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
RV57	434 569	6 148 337	126,9	VESTAS V172-7.2 7200 172.0 !... Yes	Yes	VESTAS	V172-7.2-7 200	7 200	172,0	175,0	1 903	0,0
VE01	435 366	6 144 214	113,1	VE model 7000 170.0 !-! hub: ... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE02	435 761	6 144 534	115,9	VE model 7000 170.0 !-! hub: ... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE03	435 930	6 145 798	117,9	VE model 7000 170.0 !-! hub: ... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE04	435 752	6 146 692	125,5	VE model 7000 170.0 !-! hub: ... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE06	436 488	6 145 544	118,5	VE model 7000 170.0 !-! hub: ... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE07	437 445	6 145 522	116,7	VE model 7000 170.0 !-! hub: ... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE08	437 066	6 144 948	113,8	VE model 7000 170.0 !-! hub: ... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE09	437 386	6 146 692	121,8	VE model 7000 170.0 !-! hub: ... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE10	439 605	6 146 917	113,9	VE model 7000 170.0 !-! hub: ... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE11	439 798	6 147 581	120,3	VE model 7000 170.0 !-! hub: ... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE12	438 012	6 149 278	126,4	VE model 7000 170.0 !-! hub: ... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE13	439 978	6 148 482	127,9	VE model 7000 170.0 !-! hub: ... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE14	440 344	6 148 989	131,8	VE model 7000 170.0 !-! hub: ... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE15	440 461	6 147 934	130,9	VE model 7000 170.0 !-! hub: ... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE16	440 715	6 148 517	128,1	VE model 7000 170.0 !-! hub: ... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE17	440 995	6 149 095	131,2	VE model 7000 170.0 !-! hub: ... No	No	VE model	-7 000	7 000	170,0	135,0	2 500	14,0
VE18	440 852	6 147 169	124,1	VE model 7000 170.0 !-! hub: ... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE5	436 541	6 146 182	122,6	VE model 7000 170.0 !-! hub: ... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0

Shadow receptor-Input

No.	Y	X	Z	Width	Height	Elevation	Slope of	Direction mode	Eye height
			[m]	[m]	[m]	a.g.l. [m]	window [°]		(ZVI) a.g.l. [m]
S01	450 043	6 137 499	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S02	449 224	6 137 081	103,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S03	448 751	6 135 985	102,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S04	448 585	6 135 967	109,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S05	448 573	6 136 006	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S06	447 646	6 138 441	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S07	447 633	6 138 553	104,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S08	453 591	6 138 330	98,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S09	453 741	6 137 400	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S10	453 750	6 137 393	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S11	453 202	6 138 009	104,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S12	448 091	6 138 813	103,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S13	449 932	6 140 871	108,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S14	449 904	6 140 839	109,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S15	449 881	6 140 803	110,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S16	445 607	6 144 035	113,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S17	443 957	6 144 585	114,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S18	442 773	6 144 681	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S19	442 417	6 144 159	107,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S20	442 394	6 144 116	105,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S21	441 242	6 143 270	106,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S22	441 303	6 143 272	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S23	441 264	6 143 226	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S24	441 328	6 143 216	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S25	441 316	6 143 144	107,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S26	441 372	6 143 158	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S27	440 438	6 143 298	106,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S28	440 282	6 143 882	106,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S29	440 326	6 143 930	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S30	440 631	6 144 514	110,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S31	441 067	6 145 854	117,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

No.	Y	X	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
			[m]	[m]	[m]	[m]	[°]		[m]
S32	441 772	6 139 583	90,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S33	441 074	6 139 866	89,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S34	429 681	6 144 640	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S35	428 367	6 145 810	103,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S36	428 466	6 146 089	104,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S37	428 768	6 146 376	107,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S38	431 508	6 147 720	119,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S39	432 332	6 148 310	120,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0

Calculation Results

Shadow receptor

Shadow, expected values

No.	Shadow hours per year [h/year]	Avoided hours per year [h/year]
S01	2:40	
S02	5:14	
S03	6:05	
S04	2:52	
S05	2:48	
S06	0:00	
S07	0:00	
S08	12:13	
S09	0:00	
S10	0:00	
S11*	0:00	29:25
S12	0:00	
S13	0:00	
S14	0:00	
S15	0:00	
S16	0:46	
S17	26:39	
S18*	24:42	11:21
S19*	21:23	13:02
S20*	16:02	20:06
S21	0:00	
S22	3:59	
S23	0:00	
S24	4:36	
S25	0:00	
S26	6:30	
S27	13:21	
S28	24:01	
S29	24:23	
S30*	19:09	54:37
S31*	9:25	41:13
S32	0:00	
S33	0:00	
S34	0:00	
S35	1:58	
S36	1:51	
S37	1:48	
S38	23:16	
S39*	25:41	8:46

* 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]
RV01	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (1)		0:00
RV02	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (2)		0:00
RV03	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (3)		0:00

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

No.	Name	Stopped due to flicker curtailment [h/year]	Expected [h/year]
RV04	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (4)		0:00
RV05	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (8)		0:00
RV06	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (15)		0:00
RV07	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (16)		0:00
RV08	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (17)		7:16
RV09	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (66)		7:28
RV14	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (22)	147:41	12:13
RV22	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (30)		0:00
RV27	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (35)		7:12
RV28	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (36)		0:00
RV29	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (37)		3:36
RV30	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (38)		0:00
RV31	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (39)		26:19
RV32	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (40)	180:20	20:15
RV33	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (41)		31:12
RV34	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (42)		38:07
RV35	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (43)	198:18	7:31
RV36	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (44)		26:02
RV37	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (45)		4:24
RV38	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (46)	130:01	0:00
RV39	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (47)		0:00
RV41	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (49)		0:00
RV42	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (50)		0:00
RV43	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (51)		0:00
RV44	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (52)		5:39
RV45	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (53)		0:00
RV50	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (58)		3:58
RV51	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (59)		9:39
RV52	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (60)		3:34
RV53	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (61)	54:59	3:57
RV54	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (62)		23:12
RV55	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (63)		2:25
RV56	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (64)		2:50
RV57	VESTAS V172-7.2 7200 172.0 !O! hub: 175,0 m (TOT: 261,0 m) (65)		0:00
VE01	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (67)		0:00
VE02	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (68)		0:00
VE03	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (69)		0:00
VE04	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (70)		0:00
VE06	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (72)		0:00
VE07	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (73)		0:00
VE08	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (74)		0:00
VE09	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (75)		0:00
VE10	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (76)	17:23	0:00
VE11	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (77)		0:00
VE12	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (78)		0:00
VE13	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (79)		0:00
VE14	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (80)		0:00
VE15	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (81)		0:00
VE16	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (82)		0:00
VE17	VE model 7000 170.0 !-! hub: 135,0 m (TOT: 220,0 m) (83)		0:00
VE18	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (84)		0:00
VE5	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (71)		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.

**Prognozuojamas PŪV SUMINIS šėšėliavimo vertinimas
"3" alternatyva**

SHADOW - Main Result

Calculation: Seseliavimas

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) [KAUNAS]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
1,41 2,36 4,03 5,55 8,35 8,36 8,16 7,72 5,06 3,23 1,33 0,98

Operational hours are calculated from WTGs in calculation and wind distribution:

Site data: ATLAS 12 sectors; Radius: 30 500 m (7)

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
941	479	226	281	558	617	745	973	1 154	985	748	530	8 238

Idle start wind speed: Cut in wind speed from power curve

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:
Height contours used: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)
Receptor grid resolution: 1,0 m

All coordinates are in
Lithuanian TM LKS94-LKS94 (LT)

WTGs

Row	Y	X	Z	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.	Type-generator				Calculation distance [m]	RPM [RPM]
RV01	453 868	6 135 039	102,9	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV02	453 407	6 134 505	104,5	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV03	453 203	6 135 212	103,1	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV04	452 568	6 134 952	101,7	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV05	451 645	6 134 901	101,0	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV06	451 457	6 135 909	98,9	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV07	450 825	6 135 371	98,1	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV08	450 503	6 136 375	98,3	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV09	449 999	6 135 880	97,3	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV14	453 441	6 137 724	106,1	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV22	447 106	6 142 740	116,4	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV27	445 313	6 145 441	112,0	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV28	444 795	6 145 509	119,0	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV30	443 437	6 145 283	118,6	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV31	443 619	6 144 173	110,9	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV32	442 989	6 144 064	107,0	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV33	441 445	6 143 796	106,1	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV34	440 823	6 143 768	104,2	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV35	441 038	6 144 466	104,9	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV36	441 706	6 145 180	110,9	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV37	442 190	6 145 703	113,1	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV38	441 628	6 145 943	115,4	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV39	441 860	6 146 591	119,7	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV40	441 772	6 147 276	123,6	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV41	441 007	6 146 940	120,1	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV42	435 457	6 143 037	104,5	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV43	434 653	6 143 307	103,2	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV44	429 843	6 145 279	107,2	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV45	430 858	6 145 962	112,0	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV50	430 097	6 148 065	115,9	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV51	430 989	6 147 206	115,0	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV52	432 724	6 147 028	116,1	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

	Y	X	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]
			[m]									
RV53	432 836	6 147 815	121,0	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV54	433 174	6 148 528	127,1	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV55	433 839	6 148 125	128,3	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV56	434 043	6 148 785	126,3	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV57	434 569	6 148 337	126,9	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
VE01	435 366	6 144 214	113,1	VE model 7000 170.0...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE02	435 761	6 144 534	115,9	VE model 7000 170.0...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE03	435 930	6 145 798	117,9	VE model 7000 170.0...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE04	435 752	6 146 302	125,5	VE model 7000 170.0...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE06	436 488	6 145 544	118,5	VE model 7000 170.0...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE07	437 445	6 145 522	116,7	VE model 7000 170.0...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE08	437 066	6 144 948	113,8	VE model 7000 170.0...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE09	437 386	6 146 692	121,8	VE model 7000 170.0...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE10	439 605	6 146 917	113,9	VE model 7000 170.0...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE11	439 798	6 147 581	120,3	VE model 7000 170.0...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE12	438 012	6 149 278	126,4	VE model 7000 170.0...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE13	439 978	6 148 482	127,9	VE model 7000 170.0...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE14	440 344	6 148 989	131,8	VE model 7000 170.0...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE15	440 461	6 147 934	120,3	VE model 7000 170.0...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE16	440 715	6 148 517	128,1	VE model 7000 170.0...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE17	440 995	6 149 095	131,2	VE model 7000 170.0...	No	VE model	-7 000	7 000	170,0	135,0	2 500	14,0
VE18	440 852	6 147 169	124,1	VE model 7000 170.0...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE5	436 541	6 146 182	122,6	VE model 7000 170.0...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0

Shadow receptor-Input

No.	Y	X	Z	Width	Height	Elevation	Slope of	Direction mode	Eye height
			[m]	[m]	[m]	a.g.l. [m]	wind window [°]		(ZVI) a.g.l. [m]
S01	450 043	6 137 499	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S02	449 224	6 137 081	103,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S03	448 751	6 135 985	102,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S04	448 585	6 135 967	109,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S05	448 573	6 136 006	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S06	447 646	6 138 441	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S07	447 633	6 138 553	104,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S08	453 591	6 138 330	98,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S09	453 741	6 137 400	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S10	453 750	6 137 393	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S11	453 202	6 138 009	104,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S12	448 091	6 138 813	103,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S13	449 932	6 140 871	108,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S14	449 904	6 140 839	109,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S15	449 881	6 140 803	110,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S16	445 607	6 144 035	113,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S17	443 957	6 144 585	114,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S18	442 773	6 144 681	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S19	442 417	6 144 159	107,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S20	442 394	6 144 116	105,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S21	441 242	6 143 270	106,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S22	441 303	6 143 272	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S23	441 264	6 143 226	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S24	441 328	6 143 216	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S25	441 316	6 143 144	107,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S26	441 372	6 143 158	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S27	440 438	6 143 298	106,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S28	440 282	6 143 882	106,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S29	440 326	6 143 930	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S30	440 631	6 144 514	110,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S31	441 067	6 145 854	117,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S32	441 772	6 139 583	90,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S33	441 074	6 139 866	89,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S34	429 681	6 144 640	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

No.	Y	X	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
			[m]	[m]	[m]	[m]	[°]		[m]
S35	428 367	6 145 810	103,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S36	428 466	6 146 089	104,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S37	428 768	6 146 376	107,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S38	431 508	6 147 720	119,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S39	432 332	6 148 310	120,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0

Calculation Results

Shadow receptor

Shadow, expected values

No. Shadow hours

per year
[h/year]

S01	2:19
S02	5:00
S03	5:48
S04	4:23
S05	4:17
S06	0:00
S07	0:00
S08	11:49
S09	0:00
S10	0:00
S11	29:01
S12	0:00
S13	0:00
S14	0:00
S15	0:00
S16	2:18
S17	26:22
S18	32:26
S19	33:03
S20	34:32
S21	3:14
S22	3:42
S23	3:32
S24	4:08
S25	4:33
S26	5:34
S27	13:37
S28	22:58
S29	23:30
S30	74:07
S31	50:33
S32	0:00
S33	0:00
S34	0:00
S35	1:56
S36	1:50
S37	1:48
S38	22:25
S39	31:06

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

No.	Name	Expected [h/year]
RV01	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (1)	0:00
RV02	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (2)	0:00
RV03	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (3)	0:00
RV04	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (4)	0:00
RV05	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (8)	0:00
RV06	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (15)	0:00
RV07	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (16)	0:00

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

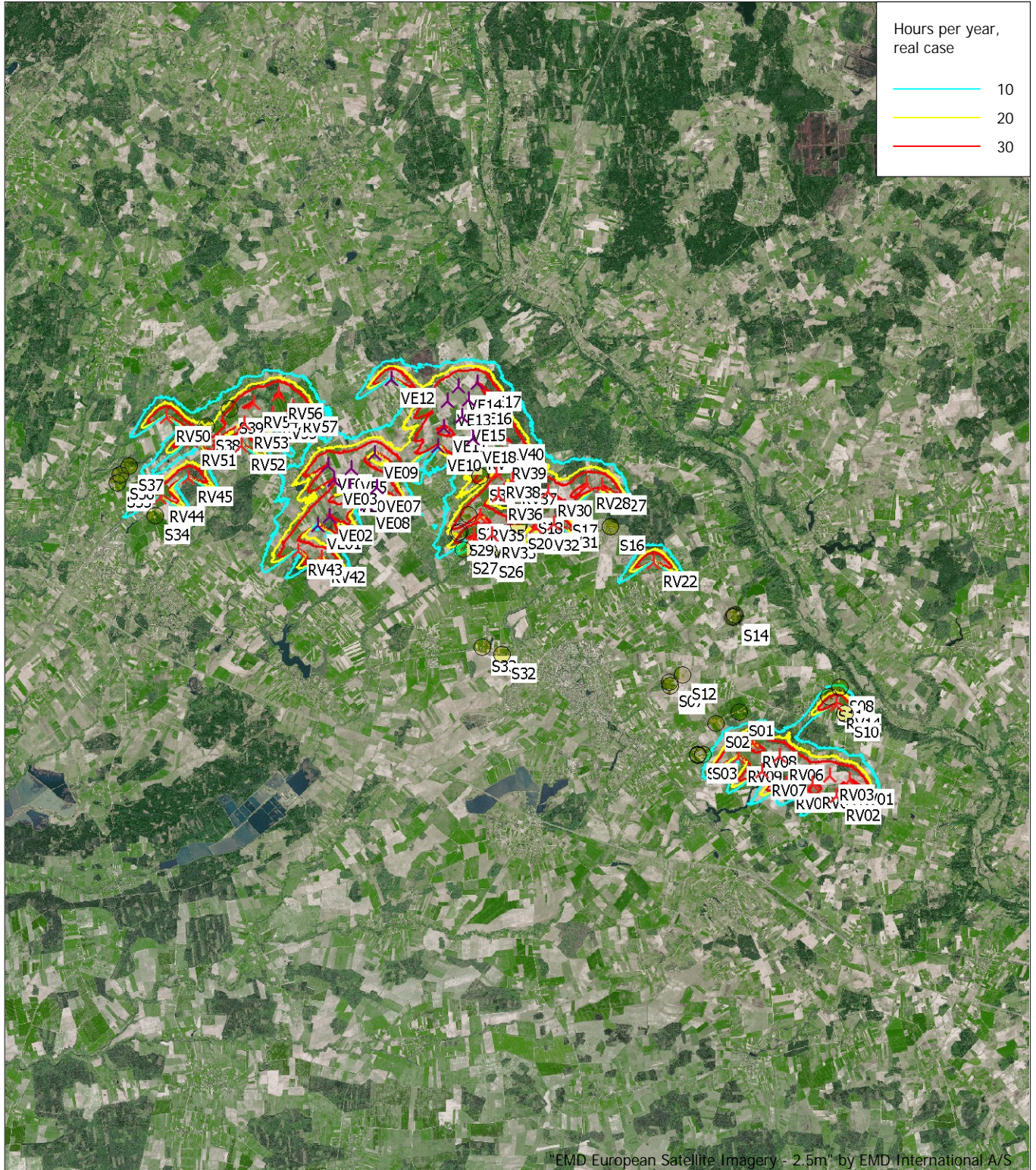
No.	Name	Expected [h/year]
RV08	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (17)	7:11
RV09	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (66)	7:03
RV14	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (22)	40:51
RV22	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (30)	0:57
RV27	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (35)	7:22
RV28	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (36)	0:00
RV30	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (38)	0:00
RV31	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (39)	26:59
RV32	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (40)	49:33
RV33	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (41)	30:55
RV34	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (42)	36:28
RV35	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (43)	59:48
RV36	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (44)	26:16
RV37	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (45)	6:15
RV38	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (46)	36:14
RV39	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (47)	0:00
RV40	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (48)	0:00
RV41	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (49)	0:00
RV42	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (50)	0:00
RV43	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (51)	0:00
RV44	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (52)	5:35
RV45	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (53)	0:00
RV50	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (58)	3:49
RV51	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (59)	9:20
RV52	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (60)	3:10
RV53	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (61)	12:25
RV54	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (62)	20:28
RV55	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (63)	2:21
RV56	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (64)	2:41
RV57	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (65)	0:00
VE01	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (103)	0:00
VE02	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (104)	0:00
VE03	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (105)	0:00
VE04	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (106)	0:00
VE06	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (108)	0:00
VE07	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (109)	0:00
VE08	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (110)	0:00
VE09	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (111)	0:00
VE10	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (112)	4:59
VE11	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (113)	0:00
VE12	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (114)	0:00
VE13	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (115)	0:00
VE14	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (116)	0:00
VE15	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (117)	0:00
VE16	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (118)	0:00
VE17	VE model 7000 170.0 !-! hub: 135,0 m (TOT: 220,0 m) (119)	0:00
VE18	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (120)	0:00
VE5	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (107)	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

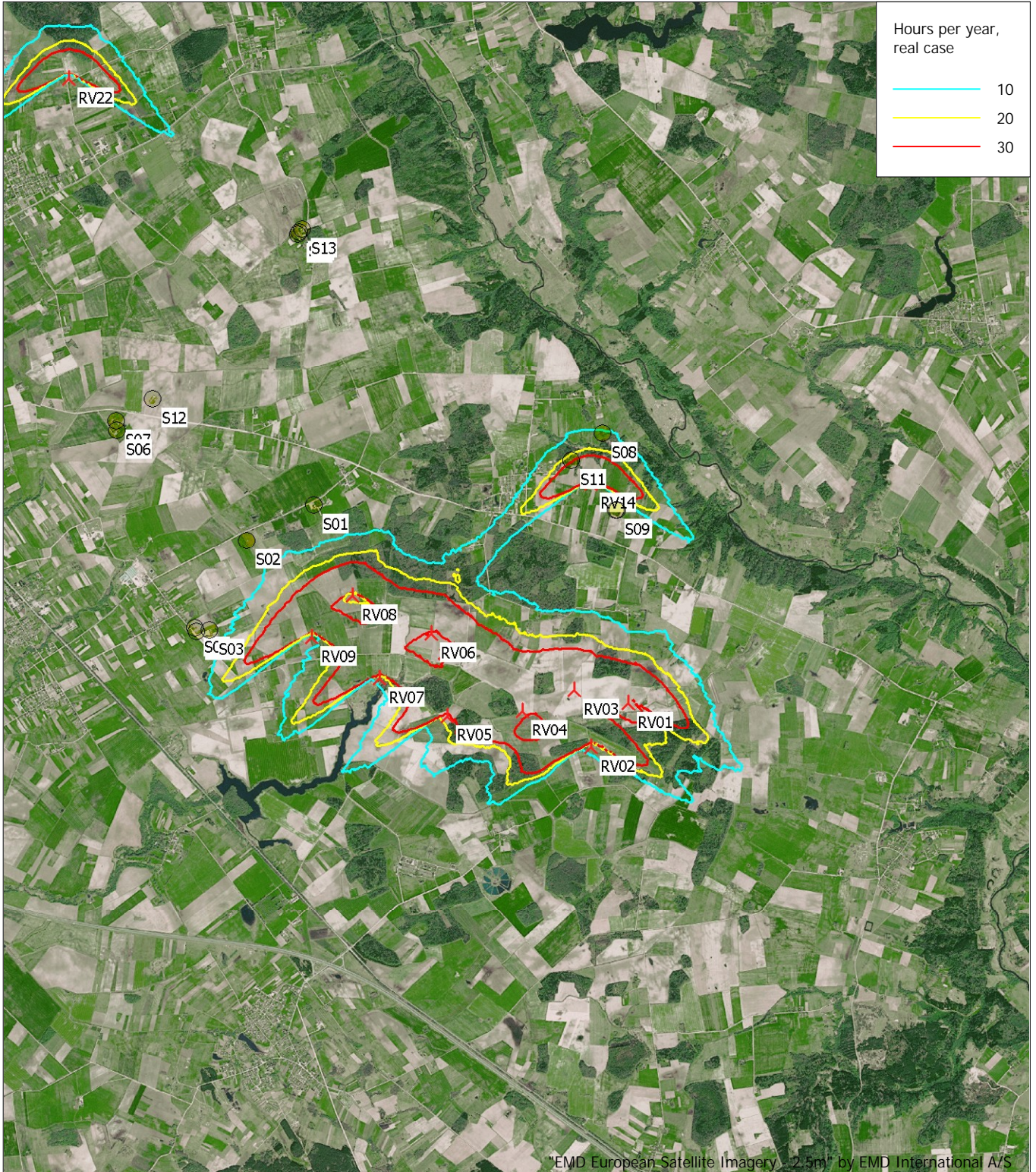
Calculation: Seseliavimas



Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:200 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 441 685 North: 6 141 462
 ▲ New WTG ● Shadow receptor
 Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)
 Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Map

Calculation: Seseliavimas



Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:70 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 452 267 North: 6 136 270

▲ New WTG

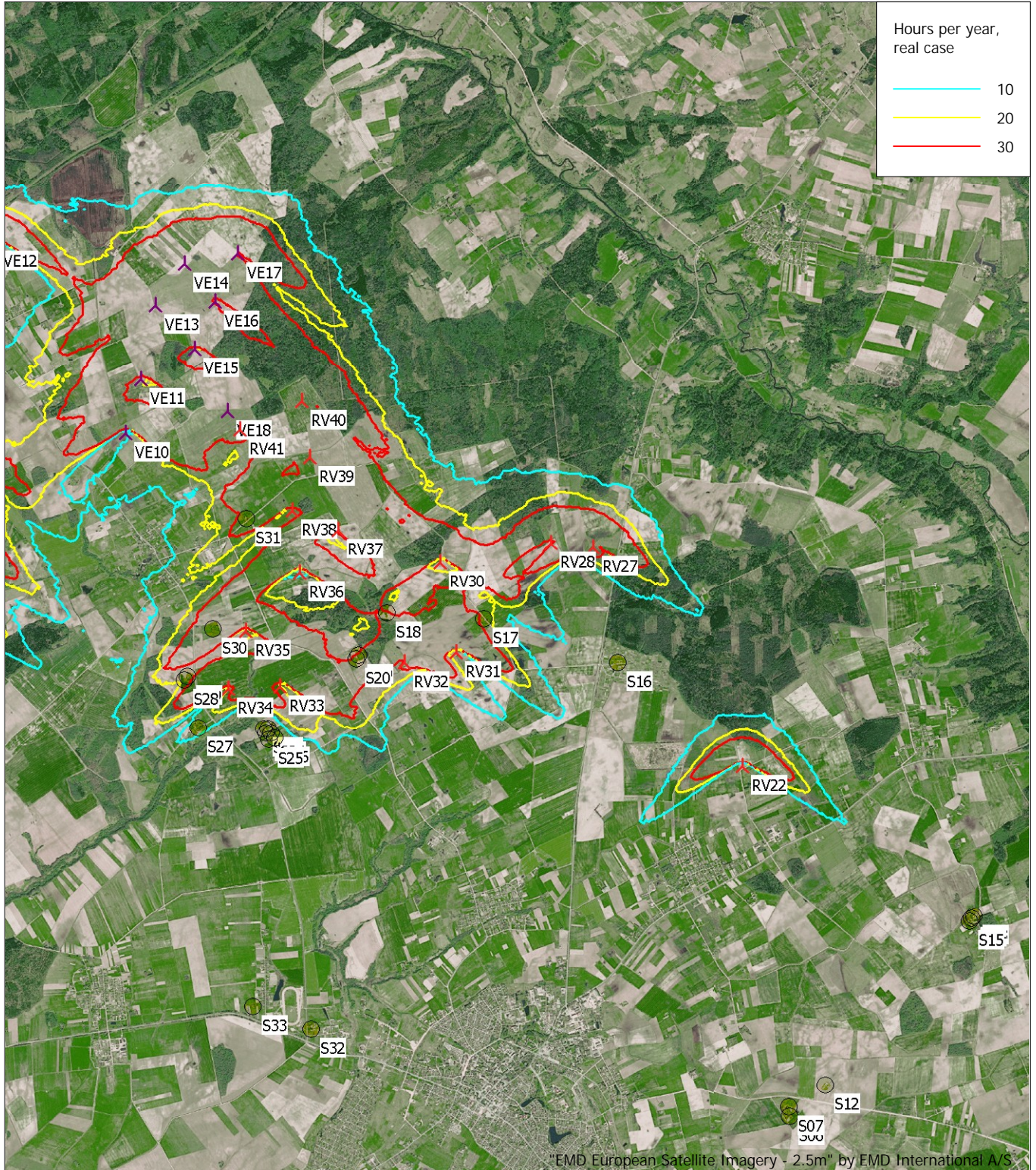
● Shadow receptor

Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)

Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Map

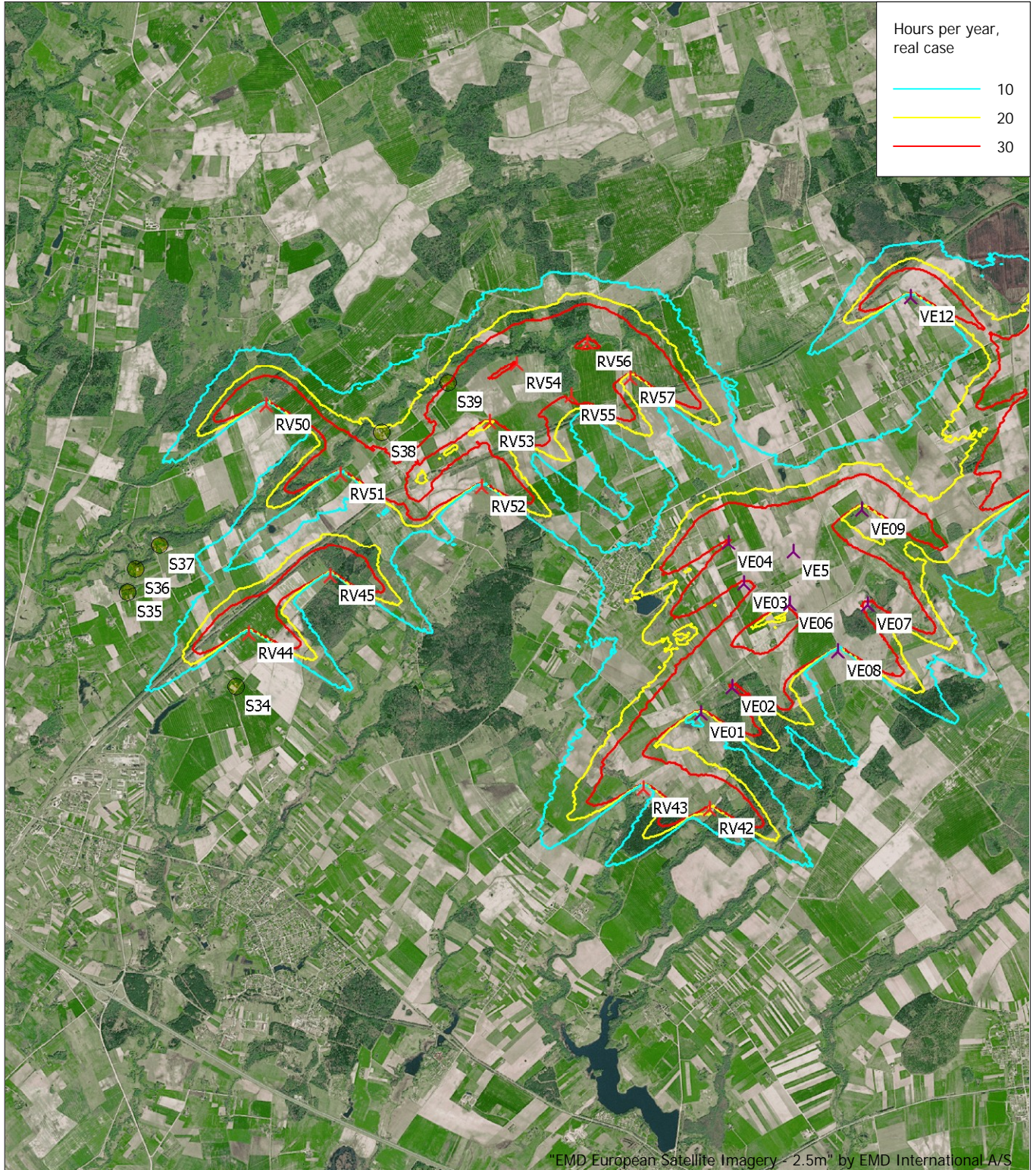
Calculation: Seseliavimas



Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:70 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 444 133 North: 6 144 800
▲ New WTG ● Shadow receptor
Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)
Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Map

Calculation: Seseliavimas



Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:70 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 432 927 North: 6 145 651
▲ New WTG ● Shadow receptor
Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)
Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Main Result

Calculation: Seseliavimas

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) [KAUNAS]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
1,41 2,36 4,03 5,55 8,35 8,36 8,16 7,72 5,06 3,23 1,33 0,98

Operational hours are calculated from WTGs in calculation and wind distribution:

Site data: ATLAS 12 sectors; Radius: 30 500 m (7)

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
941 479 226 281 558 617 745 973 1 154 985 748 530 8 238

Idle start wind speed: Cut in wind speed from power curve

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:

Height contours used: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)

Receptor grid resolution: 1,0 m

All coordinates are in

Lithuanian TM LKS94-LKS94 (LT)

WTGs

	Y	X	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]
RV01	453 868	6 135 039	102,9	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV02	453 407	6 134 505	104,5	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV03	453 203	6 135 212	103,1	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV04	452 568	6 134 952	101,7	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV05	451 645	6 134 901	101,0	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV06	451 457	6 135 909	98,9	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV07	450 825	6 135 371	98,1	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV08	450 503	6 136 375	98,3	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV09	449 999	6 135 880	97,3	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV14	453 441	6 137 724	106,1	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV22	447 106	6 142 740	116,4	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV27	445 313	6 145 441	112,0	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV28	444 795	6 145 509	119,0	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV30	443 437	6 145 283	118,6	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV31	443 619	6 144 173	110,9	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV32	442 989	6 144 064	107,0	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV33	441 445	6 143 796	106,1	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV34	440 823	6 143 768	104,2	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV35	441 038	6 144 466	104,9	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV36	441 706	6 145 180	110,9	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV37	442 190	6 145 703	113,1	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV38	441 628	6 145 943	115,4	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV39	441 860	6 146 591	119,7	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV40	441 772	6 147 276	123,6	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV41	441 007	6 146 940	120,1	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV42	435 457	6 143 037	104,5	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV43	434 653	6 143 307	103,2	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV44	429 843	6 145 279	107,2	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV45	430 858	6 145 962	112,0	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV50	430 097	6 148 065	115,9	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

	Y	X	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
			[m]									
RV51	430 989	6 147 206	115,0	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV52	432 724	6 147 028	116,1	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV53	432 836	6 147 815	121,0	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV54	433 174	6 148 528	127,1	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV55	433 839	6 148 125	128,3	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV56	434 043	6 148 785	126,3	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
RV57	434 569	6 148 337	126,9	Siemens Gamesa SG 6...	Yes	Siemens Gamesa	SG 6.6-170-6 600	6 600	170,0	165,0	2 037	8,8
VE01	435 366	6 144 214	113,1	VE model 7000 170.0...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE02	435 761	6 144 534	115,9	VE model 7000 170.0...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE03	435 930	6 145 798	117,9	VE model 7000 170.0...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE04	435 752	6 146 302	125,5	VE model 7000 170.0...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE06	436 488	6 145 544	118,5	VE model 7000 170.0...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE07	437 445	6 145 522	116,7	VE model 7000 170.0...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE08	437 066	6 144 948	113,8	VE model 7000 170.0...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE09	437 386	6 146 692	127,9	VE model 7000 170.0...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE10	439 605	6 146 917	113,9	VE model 7000 170.0...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE11	439 798	6 147 581	120,3	VE model 7000 170.0...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE12	438 012	6 149 278	126,4	VE model 7000 170.0...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE13	439 978	6 148 482	127,9	VE model 7000 170.0...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE14	440 344	6 148 989	131,8	VE model 7000 170.0...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE15	440 461	6 147 934	130,9	VE model 7000 170.0...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE16	440 715	6 148 517	128,1	VE model 7000 170.0...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE17	440 995	6 149 095	131,2	VE model 7000 170.0...	No	VE model	-7 000	7 000	170,0	135,0	2 500	14,0
VE18	440 852	6 147 169	124,1	VE model 7000 170.0...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE5	436 541	6 146 182	122,6	VE model 7000 170.0...	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0

Shadow receptor-Input

No.	Y	X	Z	Width	Height	Elevation	Slope of	Direction mode	Eye height
			[m]	[m]	[m]	a.g.l. [m]	window [°]		(ZVI) a.g.l. [m]
S01	450 043	6 137 499	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S02	449 224	6 137 081	103,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S03	448 751	6 135 985	102,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S04	448 585	6 135 967	109,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S05	448 573	6 136 006	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S06	447 646	6 138 441	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S07	447 633	6 138 553	104,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S08	453 591	6 138 330	98,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S09	453 741	6 137 400	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S10	453 750	6 137 393	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S11	453 202	6 138 009	104,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S12	448 091	6 138 813	103,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S13	449 932	6 140 871	108,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S14	449 904	6 140 839	109,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S15	449 881	6 140 803	110,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S16	445 607	6 144 035	113,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S17	443 957	6 144 585	114,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S18	442 773	6 144 681	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S19	442 417	6 144 159	107,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S20	442 394	6 144 116	105,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S21	441 242	6 143 270	106,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S22	441 303	6 143 272	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S23	441 264	6 143 226	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S24	441 328	6 143 216	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S25	441 316	6 143 144	107,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S26	441 372	6 143 158	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S27	440 438	6 143 298	106,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S28	440 282	6 143 882	106,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S29	440 326	6 143 930	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S30	440 631	6 144 514	110,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S31	441 067	6 145 854	117,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S32	441 772	6 139 583	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: Seseliavimas

...continued from previous page

No.	Y	X	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
			[m]	[m]	[m]	[m]	[°]		[m]
S33	441 074	6 139 866	89,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S34	429 681	6 144 640	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S35	428 367	6 145 810	103,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S36	428 466	6 146 089	104,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S37	428 768	6 146 376	107,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S38	431 508	6 147 720	119,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S39	432 332	6 148 310	120,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0

Calculation Results

Shadow receptor

Shadow, expected values

No.	Shadow hours per year [h/year]	Avoided hours per year [h/year]
S01	2:19	
S02	5:00	
S03	5:48	
S04	4:23	
S05	4:17	
S06	0:00	
S07	0:00	
S08	11:49	
S09	0:00	
S10	0:00	
S11	29:01	
S12	0:00	
S13	0:00	
S14	0:00	
S15	0:00	
S16	2:18	
S17	26:22	
S18*	27:40	4:45
S19*	28:37	4:25
S20*	28:41	5:51
S21	3:14	
S22	3:42	
S23	3:32	
S24	4:08	
S25	4:33	
S26	5:34	
S27	13:37	
S28	22:58	
S29	23:30	
S30*	21:10	52:33
S31*	9:13	41:14
S32	0:00	
S33	0:00	
S34	0:00	
S35	1:56	
S36	1:50	
S37	1:48	
S38	22:25	
S39*	28:44	2:21

* 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]
RV01	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (1)		0:00
RV02	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (2)		0:00
RV03	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (3)		0:00
RV04	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (4)		0:00

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

No.	Name	Stopped due to flicker curtailment [h/year]	Expected [h/year]
RV05	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (8)		0:00
RV06	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (15)		0:00
RV07	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (16)		0:00
RV08	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (17)		7:11
RV09	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (66)		7:03
RV14	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (22)		40:51
RV22	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (30)		0:57
RV27	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (35)		7:22
RV28	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (36)		0:00
RV30	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (38)		0:00
RV31	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (39)	45:31	17:45
RV32	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (40)		49:33
RV33	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (41)		30:55
RV34	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (42)	9:33	34:36
RV35	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (43)	192:41	7:14
RV36	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (44)		26:16
RV37	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (45)		6:15
RV38	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (46)	130:24	0:00
RV39	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (47)		0:00
RV40	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (48)		0:00
RV41	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (49)		0:00
RV42	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (50)		0:00
RV43	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (51)		0:00
RV44	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (52)		5:35
RV45	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (53)		0:00
RV50	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (58)		3:49
RV51	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (59)		9:20
RV52	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (60)		3:10
RV53	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (61)		12:25
RV54	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (62)		20:28
RV55	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (63)	11:01	0:00
RV56	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (64)		2:41
RV57	Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165,0 m (TOT: 250,0 m) (65)		0:00
VE01	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (103)		0:00
VE02	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (104)		0:00
VE03	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (105)		0:00
VE04	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (106)		0:00
VE06	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (108)		0:00
VE07	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (109)		0:00
VE08	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (110)		0:00
VE09	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (111)		0:00
VE10	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (112)	17:23	0:00
VE11	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (113)		0:00
VE12	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (114)		0:00
VE13	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (115)		0:00
VE14	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (116)		0:00
VE15	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (117)		0:00
VE16	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (118)		0:00
VE17	VE model 7000 170.0 !-! hub: 135,0 m (TOT: 220,0 m) (119)		0:00
VE18	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (120)		0:00
VE5	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (107)		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.

**Prognozuojamas PŪV SUMINIS šėšėliavimo vertinimas
"H" alternatyva**

SHADOW - Main Result

Calculation: Seseliavimas

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) [KAUNAS]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
 1,41 2,36 4,03 5,55 8,35 8,36 8,16 7,72 5,06 3,23 1,33 0,98

Operational hours are calculated from WTGs in calculation and wind distribution:

Site data: ATLAS 12 sectors; Radius: 30 500 m (7)

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
 906 461 218 271 537 594 717 937 1 111 949 720 510 7 930

Idle start wind speed: Cut in wind speed from power curve

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:

Height contours used: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)
 Receptor grid resolution: 1,0 m

All coordinates are in

Lithuanian TM LKS94-LKS94 (LT)

WTGs

	Y	X	Z	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.	Type-generator				Calculation distance [m]	RPM [RPM]
			[m]									
RV01	453 868	6 135 039	102,9	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV02	453 407	6 134 505	104,5	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV03	453 203	6 135 212	103,1	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV04	452 568	6 134 952	101,7	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV05	451 645	6 134 901	101,0	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV06	451 457	6 135 909	98,9	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV07	450 825	6 135 371	98,1	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV08	450 503	6 136 375	98,3	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV09	449 999	6 145 880	97,3	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV14	453 441	6 137 724	106,1	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV22	447 106	6 142 740	116,4	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV27	445 313	6 145 441	112,0	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV28	444 795	6 145 509	119,0	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV29	444 406	6 145 020	113,4	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV30	443 437	6 145 283	118,6	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV31	443 619	6 144 173	110,9	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV32	442 989	6 144 064	107,0	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV33	441 445	6 143 796	106,1	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV34	440 823	6 143 768	104,2	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV35	441 038	6 144 466	104,9	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV36	441 706	6 145 180	110,9	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV37	442 190	6 145 703	113,1	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV38	441 628	6 145 943	115,4	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV39	441 860	6 146 591	119,7	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV41	441 007	6 146 940	120,1	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV42	435 457	6 143 037	104,5	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV43	434 653	6 143 307	103,2	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV44	429 843	6 145 279	107,2	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV45	430 858	6 145 962	112,0	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV50	430 097	6 148 065	115,9	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV51	430 989	6 147 206	115,0	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV52	432 724	6 147 028	116,1	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

	Y	X	Z	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.	Type-generator				Calculation distance [m]	RPM
			[m]									
RV53	432 836	6 147 815	121,0	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV54	433 174	6 148 528	127,1	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV55	433 839	6 148 125	128,3	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV56	434 043	6 148 785	126,3	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV57	434 569	6 148 337	126,9	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
VE01	435 366	6 144 214	113,1	VE model 7000 170.0 !-! hub... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE02	435 761	6 144 534	115,9	VE model 7000 170.0 !-! hub... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE03	435 930	6 145 798	117,9	VE model 7000 170.0 !-! hub... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE04	435 752	6 146 302	125,5	VE model 7000 170.0 !-! hub... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE06	436 488	6 145 544	118,5	VE model 7000 170.0 !-! hub... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE07	437 445	6 145 522	116,7	VE model 7000 170.0 !-! hub... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE08	437 066	6 144 948	113,8	VE model 7000 170.0 !-! hub... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE09	437 386	6 146 692	121,8	VE model 7000 170.0 !-! hub... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE10	439 605	6 146 917	113,9	VE model 7000 170.0 !-! hub... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE11	439 798	6 147 581	120,3	VE model 7000 170.0 !-! hub... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE12	438 012	6 149 278	126,4	VE model 7000 170.0 !-! hub... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE13	439 978	6 148 482	127,9	VE model 7000 170.0 !-! hub... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE14	440 344	6 148 989	131,8	VE model 7000 170.0 !-! hub... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE15	440 461	6 147 934	130,9	VE model 7000 170.0 !-! hub... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE16	440 715	6 148 517	128,1	VE model 7000 170.0 !-! hub... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE17	440 995	6 149 095	131,2	VE model 7000 170.0 !-! hub... No	No	VE model	-7 000	7 000	170,0	135,0	2 500	14,0
VE18	440 852	6 147 169	124,1	VE model 7000 170.0 !-! hub... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE5	436 541	6 146 182	122,6	VE model 7000 170.0 !-! hub... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0

Shadow receptor-Input

No.	Y	X	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
			[m]	[m]	[m]	[m]	[°]		[m]
S01	450 043	6 137 499	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S02	449 224	6 137 081	103,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S03	448 751	6 135 985	102,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S04	448 585	6 135 967	109,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S05	448 573	6 136 006	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S06	447 646	6 138 441	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S07	447 633	6 138 553	104,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S08	453 591	6 138 330	98,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S09	453 741	6 137 400	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S10	453 750	6 137 393	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S11	453 202	6 138 009	104,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S12	448 091	6 138 813	103,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S13	449 932	6 140 871	108,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S14	449 904	6 140 839	109,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S15	449 881	6 140 803	110,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S16	445 607	6 144 035	113,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S17	443 957	6 144 585	114,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S18	442 773	6 144 681	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S19	442 417	6 144 159	107,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S20	442 394	6 144 116	105,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S21	441 242	6 143 270	106,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S22	441 303	6 143 272	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S23	441 264	6 143 226	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S24	441 328	6 143 216	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S25	441 316	6 143 144	107,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S26	441 372	6 143 158	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S27	440 438	6 143 298	106,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S28	440 282	6 143 882	106,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S29	440 326	6 143 930	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S30	440 631	6 144 514	110,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S31	441 067	6 145 854	117,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S32	441 772	6 139 583	90,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S33	441 074	6 139 866	89,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S34	429 681	6 144 640	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

No.	Y	X	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
			[m]	[m]	[m]	[m]	[°]		[m]
S35	428 367	6 145 810	103,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S36	428 466	6 146 089	104,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S37	428 768	6 146 376	107,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S38	431 508	6 147 720	119,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S39	432 332	6 148 310	120,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0

Calculation Results

Shadow receptor

Shadow, expected values

No. Shadow hours

per year

[h/year]

S01	4:49
S02	7:28
S03	9:01
S04	6:58
S05	6:43
S06	0:00
S07	0:00
S08	15:16
S09	0:00
S10	0:00
S11	38:19
S12	0:00
S13	0:00
S14	0:00
S15	0:00
S16	4:47
S17	41:39
S18	49:30
S19	47:56
S20	49:38
S21	4:37
S22	6:41
S23	5:03
S24	7:56
S25	7:26
S26	10:16
S27	15:31
S28	31:01
S29	31:51
S30	93:40
S31	60:44
S32	0:00
S33	0:00
S34	0:00
S35	3:41
S36	3:32
S37	5:58
S38	32:03
S39	46:47

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

No.	Name	Expected [h/year]
RV01	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (1)	0:00
RV02	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (2)	0:00
RV03	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (3)	0:00
RV04	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (4)	0:00
RV05	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (8)	0:00
RV06	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (15)	1:19
RV07	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (16)	2:24

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

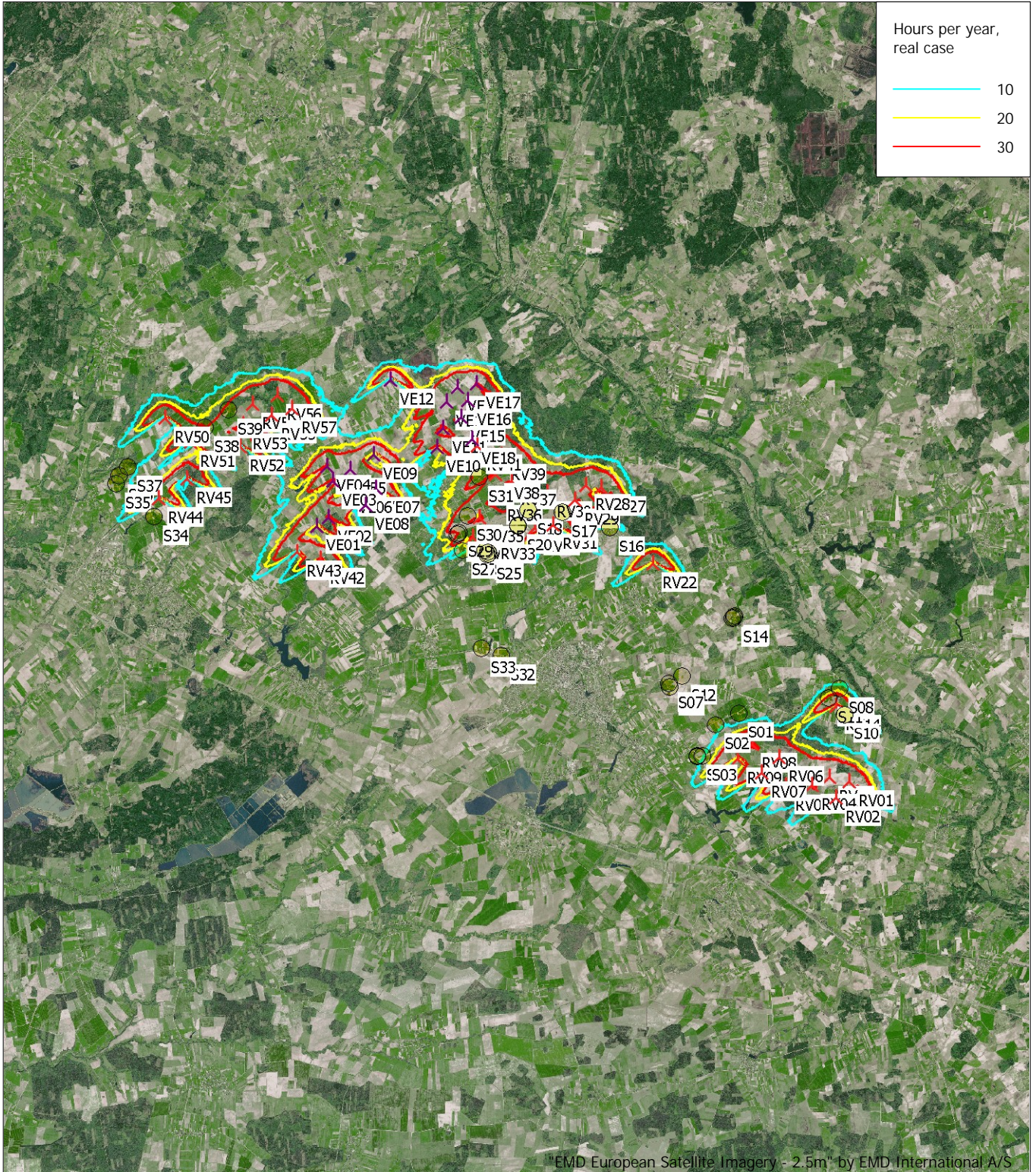
No.	Name	Expected [h/year]
RV08	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (17)	9:59
RV09	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (66)	9:08
RV14	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (22)	53:35
RV22	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (30)	1:18
RV27	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (35)	8:17
RV28	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (36)	2:59
RV29	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (37)	9:07
RV30	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (38)	0:53
RV31	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (39)	39:29
RV32	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (40)	67:15
RV33	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (41)	38:10
RV34	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (42)	49:17
RV35	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (43)	76:11
RV36	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (44)	33:21
RV37	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (45)	14:24
RV38	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (46)	42:37
RV39	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (47)	0:00
RV41	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (49)	0:00
RV42	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (50)	0:00
RV43	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (51)	0:00
RV44	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (52)	7:23
RV45	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (53)	3:35
RV50	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (58)	6:24
RV51	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (59)	14:27
RV52	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (60)	5:02
RV53	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (61)	16:31
RV54	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (62)	29:59
RV55	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (63)	4:40
RV56	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (64)	3:42
RV57	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (65)	1:23
VE01	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (85)	0:00
VE02	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (86)	0:00
VE03	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (87)	0:00
VE04	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (88)	0:00
VE06	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (90)	0:00
VE07	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (91)	0:00
VE08	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (92)	0:00
VE09	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (93)	0:00
VE10	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (94)	4:48
VE11	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (95)	0:00
VE12	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (96)	0:00
VE13	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (97)	0:00
VE14	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (98)	0:00
VE15	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (99)	0:00
VE16	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (100)	0:00
VE17	VE model 7000 170.0 !-! hub: 135,0 m (TOT: 220,0 m) (101)	0:00
VE18	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (102)	0:00
VE5	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (89)	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

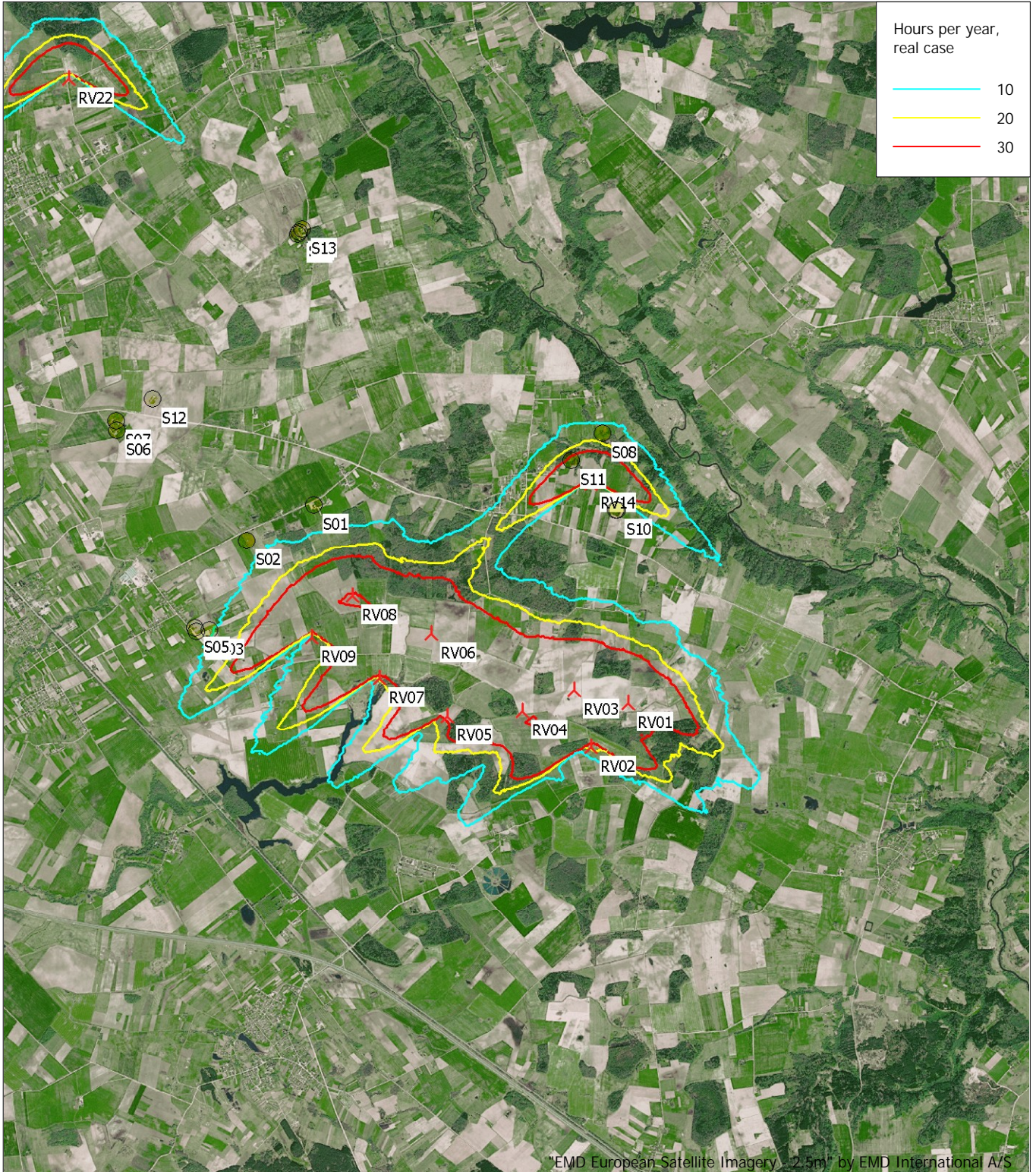
Calculation: Seseliavimas



Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:200 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 441 685 North: 6 141 462
 🚧 New WTG 📍 Shadow receptor
 Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)
 Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Map

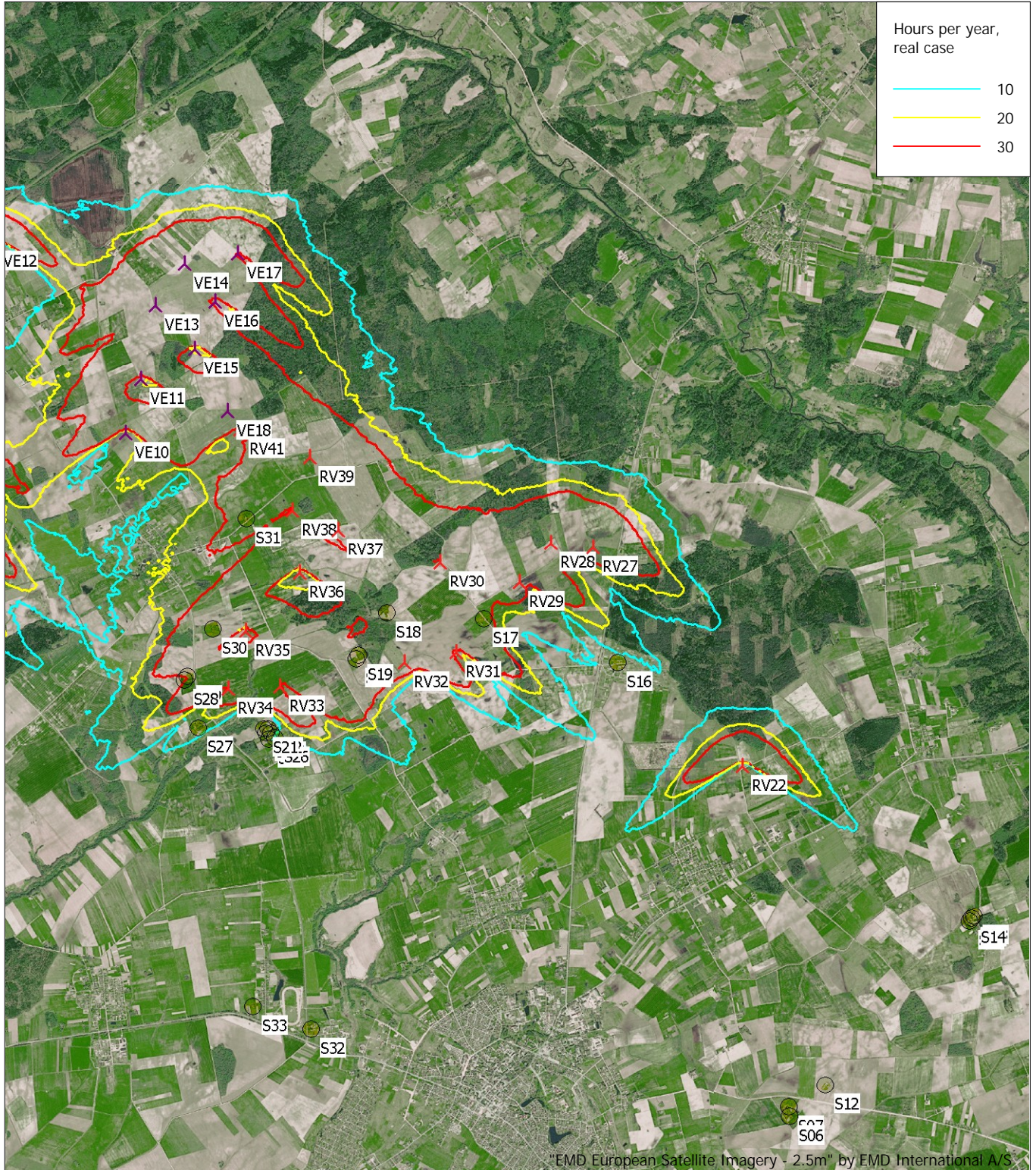
Calculation: Seseliavimas



Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:70 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 452 267 North: 6 136 270
▲ New WTG ● Shadow receptor
Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)
Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Map

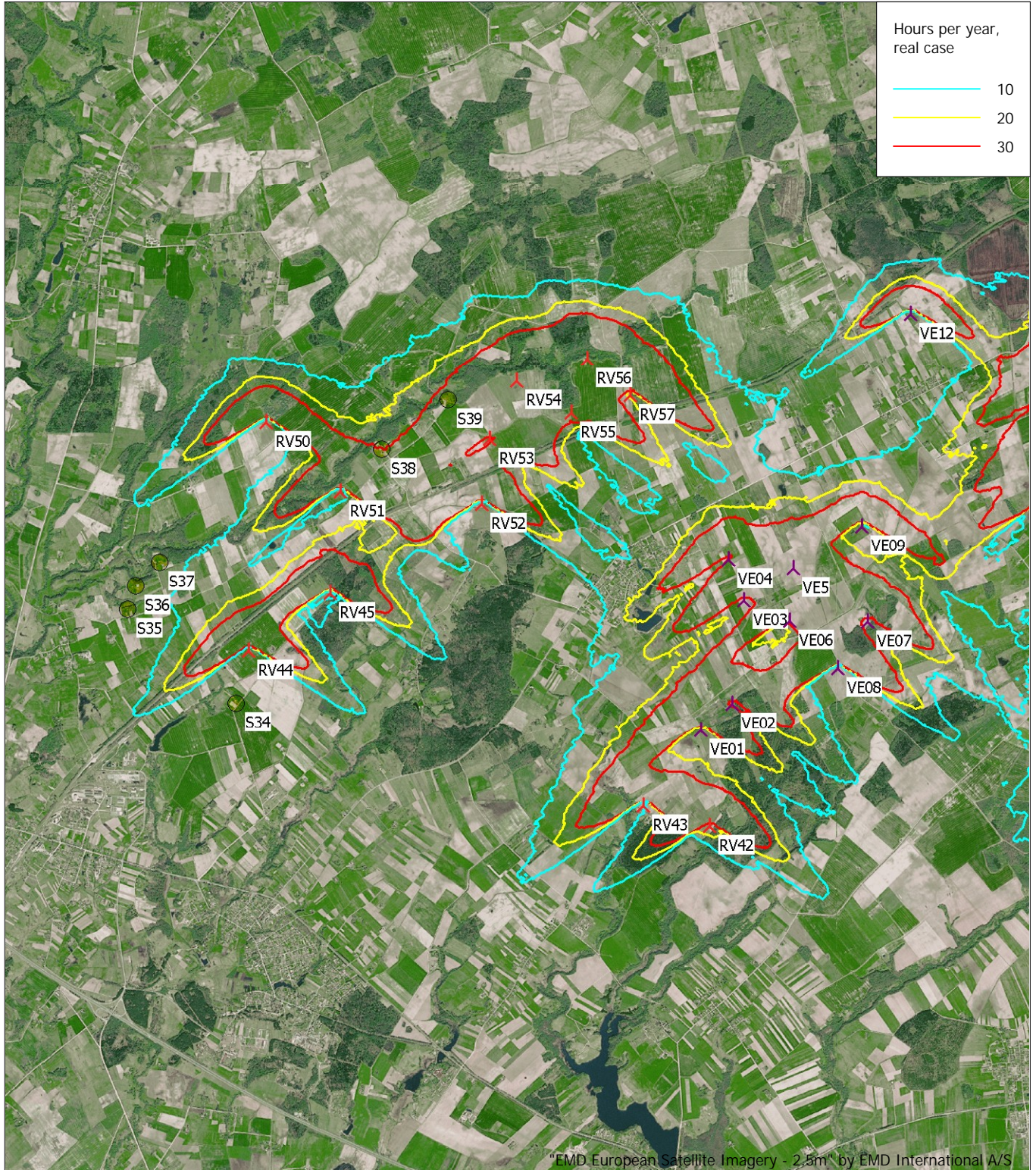
Calculation: Seseliavimas



Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:70 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 444 133 North: 6 144 800
▲ New WTG ● Shadow receptor
Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)
Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Map

Calculation: Seseliavimas



Map: windPRO European Satellite Imagery - 2.5m , Print scale 1:70 000, Map center Lithuanian TM LKS94-LKS94 (LT) East: 432 927 North: 6 145 851
▲ New WTG ● Shadow receptor
Flicker map level: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)
Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

SHADOW - Main Result

Calculation: Seseliavimas

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) [KAUNAS]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1,41	2,36	4,03	5,55	8,35	8,36	8,16	7,72	5,06	3,23	1,33	0,98

Operational hours are calculated from WTGs in calculation and wind distribution:

Site data: ATLAS 12 sectors; Radius: 30 500 m (7)

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
906	461	218	271	537	594	717	937	1 111	949	720	510	7 930

Idle start wind speed: Cut in wind speed from power curve

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:

Height contours used: Elevation Grid Data Object: 2023-11-22_EMDGrid_1.wpg (3)

Receptor grid resolution: 1,0 m

All coordinates are in

Lithuanian TM LKS94-LKS94 (LT)

WTGs

	Y	X	Z	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.	Type-generator				Calculation distance [m]	RPM
RV01	453 868	6 135 039	102,9	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV02	453 407	6 134 505	104,5	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV03	453 203	6 135 212	103,1	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV04	452 568	6 134 952	101,7	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV05	451 645	6 134 901	101,0	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV06	451 457	6 135 909	98,9	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV07	450 825	6 135 371	98,1	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV08	450 503	6 136 375	98,3	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV09	449 999	6 135 880	97,3	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV14	453 441	6 137 724	106,1	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV22	447 106	6 142 740	116,4	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV27	445 313	6 145 441	112,0	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV28	444 795	6 145 509	119,0	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV29	444 406	6 145 020	113,4	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV30	443 437	6 145 283	118,6	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV31	443 619	6 144 173	110,9	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV32	442 989	6 144 064	107,0	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV33	441 445	6 143 796	106,1	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV34	440 823	6 143 768	104,2	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV35	441 038	6 144 466	104,9	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV36	441 706	6 145 180	110,9	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV37	442 190	6 145 703	113,1	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV38	441 628	6 145 943	115,4	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV39	441 860	6 146 591	119,7	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV41	441 007	6 146 940	120,1	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV42	435 457	6 143 037	104,5	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV43	434 653	6 143 307	103,2	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV44	429 843	6 145 279	107,2	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV45	430 858	6 145 962	112,0	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV50	430 097	6 148 065	115,9	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

	Y	X	Z	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.	Type-generator				Calculation distance [m]	RPM
			[m]									
RV51	430 989	6 147 206	115,0	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV52	432 724	6 147 028	116,1	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV53	432 836	6 147 815	121,0	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV54	433 174	6 148 528	127,1	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV55	433 839	6 148 125	128,3	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV56	434 043	6 148 785	126,3	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
RV57	434 569	6 148 337	126,9	Hypothetical 10000 200.0 !O... Yes	Yes	Hypothetical	-10 000	10 000	200,0	180,0	2 500	0,0
VE01	435 366	6 144 214	113,1	VE model 7000 170.0 !-! hub... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE02	435 761	6 144 534	115,9	VE model 7000 170.0 !-! hub... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE03	435 930	6 145 798	117,9	VE model 7000 170.0 !-! hub... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE04	435 752	6 146 302	125,5	VE model 7000 170.0 !-! hub... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE06	436 488	6 145 544	118,5	VE model 7000 170.0 !-! hub... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE07	437 445	6 145 522	116,7	VE model 7000 170.0 !-! hub... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE08	437 066	6 144 948	113,8	VE model 7000 170.0 !-! hub... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE09	437 386	6 146 692	121,8	VE model 7000 170.0 !-! hub... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE10	439 605	6 146 917	113,9	VE model 7000 170.0 !-! hub... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE11	439 798	6 147 581	120,3	VE model 7000 170.0 !-! hub... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE12	438 012	6 149 278	126,4	VE model 7000 170.0 !-! hub... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE13	439 978	6 148 482	127,9	VE model 7000 170.0 !-! hub... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE14	440 344	6 148 989	131,8	VE model 7000 170.0 !-! hub... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE15	440 461	6 147 934	130,9	VE model 7000 170.0 !-! hub... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE16	440 715	6 148 517	128,1	VE model 7000 170.0 !-! hub... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE17	440 995	6 149 095	131,2	VE model 7000 170.0 !-! hub... No	No	VE model	-7 000	7 000	170,0	135,0	2 500	14,0
VE18	440 852	6 147 169	124,1	VE model 7000 170.0 !-! hub... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0
VE5	436 541	6 146 182	122,6	VE model 7000 170.0 !-! hub... No	No	VE model	-7 000	7 000	170,0	166,0	2 500	14,0

Shadow receptor-Input

No.	Y	X	Z	Width	Height	Elevation a.g.l.	Slope of window [°]	Direction mode	Eye height (ZVI) a.g.l. [m]
S01	450 043	6 137 499	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S02	449 224	6 137 081	103,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S03	448 751	6 135 985	102,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S04	448 585	6 135 967	109,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S05	448 573	6 136 006	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S06	447 646	6 138 441	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S07	447 633	6 138 553	104,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S08	453 591	6 138 330	98,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S09	453 741	6 137 400	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S10	453 750	6 137 393	111,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S11	453 202	6 138 009	104,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S12	448 091	6 138 813	103,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S13	449 932	6 140 871	108,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S14	449 904	6 140 839	109,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S15	449 881	6 140 803	110,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S16	445 607	6 144 035	113,3	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S17	443 957	6 144 585	114,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S18	442 773	6 144 681	109,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S19	442 417	6 144 159	107,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S20	442 394	6 144 116	105,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S21	441 242	6 143 270	106,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S22	441 303	6 143 272	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S23	441 264	6 143 226	106,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S24	441 328	6 143 216	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S25	441 316	6 143 144	107,5	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S26	441 372	6 143 158	108,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S27	440 438	6 143 298	106,4	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S28	440 282	6 143 882	106,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S29	440 326	6 143 930	107,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S30	440 631	6 144 514	110,2	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S31	441 067	6 145 854	117,6	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S32	441 772	6 139 583	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: Seseliavimas

...continued from previous page

No.	Y	X	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
			[m]	[m]	[m]	[m]	[°]		[m]
S33	441 074	6 139 866	89,8	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S34	429 681	6 144 640	106,7	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S35	428 367	6 145 810	103,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S36	428 466	6 146 089	104,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S37	428 768	6 146 376	107,0	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S38	431 508	6 147 720	119,1	1,0	1,0	1,0	90,0	"Green house mode"	2,0
S39	432 332	6 148 310	120,9	1,0	1,0	1,0	90,0	"Green house mode"	2,0

Calculation Results

Shadow receptor

Shadow, expected values

No.	Shadow hours per year [h/year]	Avoided hours per year [h/year]
S01	4:49	
S02	7:28	
S03	9:01	
S04	6:58	
S05	6:43	
S06	0:00	
S07	0:00	
S08	15:16	
S09	0:00	
S10	0:00	
S11*	0:00	38:19
S12	0:00	
S13	0:00	
S14	0:00	
S15	0:00	
S16	4:47	
S17*	21:28	20:02
S18*	26:54	22:24
S19*	18:23	29:32
S20*	26:11	23:27
S21	4:37	
S22	6:41	
S23	5:03	
S24	7:56	
S25	7:26	
S26	10:16	
S27	15:31	
S28*	26:39	4:21
S29*	27:58	3:52
S30*	26:36	66:35
S31*	13:10	47:26
S32	0:00	
S33	0:00	
S34	0:00	
S35	3:41	
S36	3:32	
S37	5:58	
S38*	28:54	3:09
S39*	24:33	21:59

* 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]
RV01	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (1)		0:00
RV02	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (2)		0:00
RV03	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (3)		0:00
RV04	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (4)		0:00

To be continued on next page...

SHADOW - Main Result

Calculation: Seseliavimas

...continued from previous page

No.	Name	Stopped due to flicker curtailment [h/year]	Expected [h/year]
RV05	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (8)		0:00
RV06	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (15)		1:19
RV07	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (16)		2:24
RV08	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (17)		9:59
RV09	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (66)		9:08
RV14	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (22)	198:57	15:16
RV22	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (30)		1:18
RV27	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (35)		8:17
RV28	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (36)		2:59
RV29	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (37)		9:07
RV30	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (38)		0:53
RV31	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (39)	185:44	7:04
RV32	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (40)	105:57	41:37
RV33	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (41)	26:12	32:27
RV34	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (42)		49:17
RV35	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (43)	252:31	9:36
RV36	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (44)	57:52	17:19
RV37	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (45)		14:24
RV38	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (46)	159:28	0:00
RV39	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (47)		0:00
RV41	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (49)		0:00
RV42	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (50)		0:00
RV43	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (51)		0:00
RV44	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (52)		7:23
RV45	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (53)		3:35
RV50	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (58)		6:24
RV51	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (59)		14:27
RV52	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (60)	19:25	1:52
RV53	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (61)		16:31
RV54	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (62)	89:25	5:58
RV55	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (63)		4:40
RV56	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (64)		3:42
RV57	Hypothetical 10000 200.0 !O! hub: 180,0 m (TOT: 280,0 m) (65)		1:23
VE01	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (85)		0:00
VE02	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (86)		0:00
VE03	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (87)		0:00
VE04	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (88)		0:00
VE06	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (90)		0:00
VE07	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (91)		0:00
VE08	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (92)		0:00
VE09	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (93)		0:00
VE10	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (94)	17:23	0:00
VE11	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (95)		0:00
VE12	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (96)		0:00
VE13	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (97)		0:00
VE14	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (98)		0:00
VE15	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (99)		0:00
VE16	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (100)		0:00
VE17	VE model 7000 170.0 !-! hub: 135,0 m (TOT: 220,0 m) (101)		0:00
VE18	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (102)		0:00
VE5	VE model 7000 170.0 !-! hub: 166,0 m (TOT: 251,0 m) (89)		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.