

Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: 40940190018001 - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (240) Sunshine probability S (Average daily sunshine hours) []

Assumptions for shadow calculations

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
0,80 1,82 4,75 6,63 9,63 10,06 8,16 7,72 5,94 2,93 0,63 0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:51	07:17 17:53	06:54 19:59	05:38 21:02	04:41 21:59	04:35 22:16	05:21 21:34	06:23 20:20	07:23 18:59	07:29 16:42	08:31 15:50
2	08:57 15:55	08:19 16:53	07:14 17:55	06:52 20:01	05:36 21:04	04:40 22:00	04:36 22:15	05:23 21:32	06:25 20:17	07:25 18:57	07:31 16:39	08:32 15:49
3	08:57 15:56	08:17 16:55	07:12 17:58	06:49 20:03	05:33 21:06	04:39 22:02	04:37 22:15	05:25 21:30	06:27 20:15	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 18:00	06:46 20:05	05:31 21:08	04:38 22:03	04:38 22:14	05:27 21:28	06:29 20:12	07:29 18:51	07:35 16:35	08:36 15:48
5	08:56 15:59	08:13 17:00	07:06 18:02	06:44 20:07	05:29 21:10	04:37 22:04	04:39 22:13	05:29 21:26	06:31 20:09	07:31 18:49	07:37 16:33	08:37 15:47
6	08:55 16:00	08:11 17:02	07:04 18:04	06:41 20:09	05:27 21:12	04:36 22:06	04:40 22:13	05:31 21:24	06:33 20:07	07:33 18:46	07:40 16:31	08:39 15:46
7	08:55 16:02	08:09 17:04	07:01 18:06	06:39 20:12	05:24 21:14	04:35 22:07	04:41 22:12	05:33 21:21	06:35 20:04	07:35 18:43	07:42 16:29	08:40 15:46
8	08:54 16:03	08:07 17:06	06:59 18:08	06:36 20:14	05:22 21:16	04:34 22:08	04:42 22:11	05:35 21:19	06:37 20:01	07:38 18:41	07:44 16:26	08:42 15:45
9	08:53 16:05	08:05 17:09	06:56 18:11	06:33 20:16	05:20 21:18	04:34 22:09	04:43 22:10	05:37 21:17	06:39 19:59	07:40 18:38	07:46 16:24	08:43 15:45
10	08:52 16:06	08:02 17:11	06:53 18:13	06:31 20:18	05:18 21:20	04:33 22:10	04:45 22:09	05:39 21:15	06:41 19:56	07:42 18:36	07:48 16:22	08:44 15:44
11	08:52 16:08	08:00 17:13	06:51 18:15	06:28 20:20	05:16 21:22	04:32 22:11	04:46 22:08	05:41 21:12	06:43 19:53	07:44 18:33	07:51 16:21	08:46 15:44
12	08:51 16:10	07:58 17:15	06:48 18:17	06:25 20:22	05:14 21:24	04:32 22:12	04:47 22:07	05:43 21:10	06:45 19:51	07:46 18:30	07:53 16:19	08:47 15:43
13	08:50 16:12	07:56 17:18	06:45 18:19	06:23 20:24	05:12 21:26	04:32 22:12	04:49 22:06	05:45 21:08	06:47 19:48	07:48 18:28	07:55 16:17	08:48 15:43
14	08:49 16:13	07:53 17:20	06:43 18:21	06:20 20:26	05:10 21:28	04:31 22:13	04:50 22:04	05:47 21:05	06:49 19:45	07:50 18:25	07:57 16:15	08:49 15:43
15	08:48 16:15	07:51 17:22	06:40 18:23	06:18 20:28	05:08 21:30	04:31 22:14	04:52 22:03	05:49 21:03	06:51 19:43	07:52 18:23	07:59 16:13	08:50 15:43
16	08:46 16:17	07:49 17:24	06:37 18:25	06:15 20:30	05:06 21:32	04:31 22:15	04:53 22:02	05:51 21:01	06:53 19:40	07:54 18:20	08:01 16:11	08:51 15:43
17	08:45 16:19	07:46 17:27	06:35 18:28	06:12 20:32	05:04 21:34	04:30 22:15	04:55 22:00	05:53 20:58	06:55 19:37	07:56 18:18	08:03 16:10	08:52 15:43
18	08:44 16:21	07:44 17:29	06:32 18:30	06:10 20:35	05:02 21:36	04:30 22:16	04:56 21:59	05:55 20:56	06:57 19:34	07:59 18:15	08:05 16:08	08:53 15:43
19	08:43 16:23	07:42 17:31	06:29 18:32	06:07 20:37	05:00 21:38	04:30 22:16	04:58 21:57	05:57 20:53	06:59 19:32	08:01 18:13	08:08 16:06	08:54 15:44
20	08:41 16:25	07:39 17:33	06:27 18:34	06:05 20:39	04:59 21:39	04:30 22:16	04:59 21:56	05:59 20:51	07:01 19:29	08:03 18:10	08:10 16:05	08:54 15:44
21	08:40 16:27	07:37 17:36	06:24 18:36	06:02 20:41	04:57 21:41	04:30 22:17	05:01 21:54	06:01 20:48	07:03 19:26	08:05 18:08	08:12 16:03	08:55 15:44
22	08:38 16:29	07:34 17:38	06:21 18:38	06:00 20:43	04:55 21:43	04:31 22:17	05:03 21:53	06:03 20:46	07:05 19:24	08:07 18:05	08:14 16:02	08:56 15:45
23	08:37 16:31	07:32 17:40	06:19 18:40	05:57 20:45	04:54 21:45	04:31 22:17	05:05 21:51	06:05 20:43	07:07 19:21	08:09 18:03	08:16 16:00	08:56 15:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:55 20:47	04:52 21:46	04:31 22:17	05:06 21:49	06:07 20:41	07:09 19:18	08:11 18:00	08:18 15:59	08:56 15:46
25	08:34 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:32 22:17	05:08 21:48	06:09 20:38	07:11 19:16	08:14 18:16	08:20 15:57	08:57 15:46
26	08:32 16:38	07:24 17:47	06:11 18:46	05:50 20:51	04:49 21:50	04:32 22:17	05:10 21:46	06:11 20:36	07:13 19:13	08:16 18:15	08:21 15:56	08:57 15:47
27	08:30 16:40	07:22 17:49	06:08 18:49	05:48 20:53	04:48 21:51	04:32 22:17	05:12 21:44	06:13 20:33	07:15 19:10	08:18 18:10	08:23 16:53	08:57 15:48
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29	08:27 16:44		07:03 19:53	05:43 20:58	04:45 21:55	04:34 22:16	05:15 21:40	06:17 20:28	07:19 19:05	08:22 18:05	08:27 16:48	08:57 15:50
30	08:25 16:46		07:00 19:55	05:40 21:00	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	08:24 18:05	08:29 16:46	08:57 15:51
31	08:23 16:48		06:57 19:57		04:42 21:58		05:19 21:36	06:21 20:23		07:27 18:44		08:57 15:52
Potential sun hours	235	266	366	426	508	529	530	470	385	324	247	216
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project:

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SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

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Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Alpi - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (220)  
 Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 0,80 1,82 4,75 6,63 9,63 10,06 8,16 7,72 5,94 2,93 0,63 0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December	
1	08:57	08:21	07:17	06:54	05:38	04:41	04:35	05:21	06:23	07:23	07:29	08:31	
	15:53	16:50	17:53	19:59	21:02	21:59	22:16	21:34	20:20	18:59	16:41	15:50	
2	08:57	08:19	07:14	06:52	05:35	04:39	04:35	05:23	06:25	07:25	07:31	08:33	
	15:54	16:53	17:55	20:01	21:04	22:01	22:15	21:32	20:17	18:57	16:39	15:49	
3	08:57	08:17	07:12	06:49	05:33	04:38	04:36	05:24	06:27	07:27	07:33	08:34	
	15:55	16:55	17:57	20:03	21:06	22:02	22:15	21:30	20:15	18:54	16:37	15:48	
4	08:57	08:15	07:09	06:46	05:31	04:37	04:37	05:26	06:29	07:29	07:35	08:36	
	15:57	16:57	18:00	20:05	21:08	22:03	22:14	21:28	20:12	18:51	16:35	15:47	
5	08:56	08:13	07:06	06:44	05:28	04:36	04:38	05:28	06:31	07:31	07:38	08:37	
	15:58	16:59	18:02	20:07	21:10	22:05	22:14	21:26	20:09	18:49	16:32	15:46	
6	08:56	08:11	07:04	06:41	05:26	04:35	04:39	05:30	06:33	07:33	07:40	08:39	
	16:00	17:02	18:04	20:09	21:12	22:06	22:13	21:24	20:07	18:46	16:30	15:46	
7	08:55	08:09	07:01	06:38	05:24	04:35	04:40	05:32	06:35	07:35	07:42	08:41	
	16:01	17:04	18:06	20:11	21:14	22:07	22:12	21:22	20:04	18:43	16:28	15:45	
8	08:54	08:07	06:59	06:36	05:22	04:34	04:42	05:34	06:37	07:37	07:44	08:42	
	16:03	17:06	18:08	20:14	21:16	22:08	22:11	21:19	20:01	18:41	16:26	15:44	
9	08:54	08:05	06:56	06:33	05:20	04:33	04:43	05:36	06:39	07:40	07:46	08:43	
	16:04	17:08	18:10	20:16	21:18	22:09	22:10	21:17	19:59	18:38	16:24	15:44	
10	08:53	08:02	06:53	06:30	05:18	04:32	04:44	05:38	06:41	07:42	07:49	08:45	
	16:06	17:11	18:13	20:18	21:20	22:10	22:09	21:15	19:56	18:35	16:22	15:44	
11	08:52	08:00	06:51	06:28	05:16	04:32	04:45	05:40	06:43	07:44	07:51	08:46	
	16:08	17:13	18:15	20:20	21:22	22:11	22:08	21:13	19:53	18:33	16:20	15:43	
12	08:51	07:58	06:48	06:25	05:13	04:31	04:47	05:42	06:45	07:46	07:53	08:47	
	16:09	17:15	18:17	20:22	21:24	22:12	22:07	21:10	19:51	18:30	16:18	15:43	
13	08:50	07:56	06:45	06:22	05:11	04:31	04:48	05:44	06:47	07:48	07:55	08:48	10:44 (10)
	16:11	17:17	18:19	20:24	21:26	22:13	22:06	21:08	19:48	18:28	16:16	15:43	2 10:46 (10)
14	08:49	07:53	06:43	06:20	05:09	04:31	04:49	05:46	06:49	07:50	07:57	08:49	10:43 (10)
	16:13	17:20	18:21	20:26	21:28	22:14	22:05	21:05	19:45	18:25	16:14	15:43	5 10:48 (10)
15	08:48	07:51	06:40	06:17	05:07	04:30	04:51	05:48	06:51	07:52	07:59	08:50	10:42 (10)
	16:15	17:22	18:23	20:28	21:30	22:14	22:03	21:03	19:43	18:22	16:13	15:43	8 10:50 (10)
16	08:47	07:49	06:37	06:15	05:06	04:30	04:52	05:50	06:53	07:54	08:01	08:51	10:42 (10)
	16:17	17:24	18:25	20:30	21:32	22:15	22:02	21:01	19:40	18:20	16:11	15:43	9 10:51 (10)
17	08:45	07:46	06:35	06:12	05:04	04:30	04:54	05:52	06:55	07:56	08:04	08:52	10:42 (10)
	16:19	17:26	18:27	20:32	21:34	22:15	22:01	20:58	19:37	18:17	16:09	15:43	10 10:52 (10)
18	08:44	07:44	06:32	06:10	05:02	04:30	04:56	05:54	06:57	07:58	08:06	08:53	10:42 (10)
	16:21	17:29	18:30	20:35	21:36	22:16	21:59	20:56	19:34	18:15	16:07	15:43	11 10:53 (10)
19	08:43	07:42	06:29	06:07	05:00	04:30	04:57	05:56	06:59	08:01	08:08	08:54	10:43 (10)
	16:23	17:31	18:32	20:37	21:38	22:16	21:58	20:53	19:32	18:12	16:06	15:43	11 10:54 (10)
20	08:41	07:39	06:27	06:04	04:58	04:30	04:59	05:58	07:01	08:03	08:10	08:55	10:43 (10)
	16:25	17:33	18:34	20:39	21:40	22:17	21:56	20:51	19:29	18:10	16:04	15:43	11 10:54 (10)
21	08:40	07:37	06:24	06:02	04:56	04:30	05:01	06:00	07:03	08:05	08:12	08:55	10:43 (10)
	16:27	17:35	18:36	20:41	21:41	22:17	21:55	20:48	19:26	18:07	16:03	15:44	11 10:54 (10)
22	08:38	07:34	06:21	05:59	04:55	04:30	05:02	06:03	07:05	08:07	08:14	08:56	10:43 (10)
	16:29	17:38	18:38	20:43	21:43	22:17	21:53	20:46	19:24	18:05	16:01	15:44	11 10:54 (10)
23	08:37	07:32	06:19	05:57	04:53	04:30	05:04	06:05	07:07	08:09	08:16	08:56	10:45 (10)
	16:31	17:40	18:40	20:45	21:45	22:17	21:51	20:43	19:21	18:02	16:00	15:45	10 10:55 (10)
24	08:35	07:29	06:16	05:54	04:52	04:31	05:06	06:07	07:09	08:11	08:18	08:57	10:45 (10)
	16:33	17:42	18:42	20:47	21:47	22:17	21:50	20:41	19:18	18:00	15:58	15:45	11 10:56 (10)
25	08:34	07:27	06:13	05:52	04:50	04:31	05:08	06:09	07:11	08:14	08:20	08:57	10:45 (10)
	16:35	17:44	18:44	20:49	21:48	22:17	21:48	20:38	19:15	17:58	15:57	15:46	11 10:56 (10)
26	08:32	07:24	06:10	05:50	04:48	04:31	05:09	06:11	07:13	08:16	08:22	08:57	10:46 (10)
	16:37	17:46	18:46	20:51	21:50	22:17	21:46	20:36	19:13	17:55	15:56	15:47	10 10:56 (10)
27	08:30	07:22	06:08	05:47	04:47	04:32	05:11	06:13	07:15	08:18	08:24	08:58	10:47 (10)
	16:39	17:49	18:48	20:53	21:52	22:17	21:44	20:33	19:10	17:53	15:54	15:47	9 10:56 (10)
28	08:29	07:19	06:05	05:45	04:46	04:32	05:13	06:15	07:17	08:20	08:25	08:58	10:48 (10)
	16:41	17:51	18:51	20:56	21:53	22:17	21:42	20:31	19:07	17:50	15:53	15:48	8 10:56 (10)
29	08:27		07:02	05:42	04:44	04:33	05:15	06:17	07:19	08:22	08:27	08:58	10:49 (10)
	16:44		19:53	20:58	21:55	22:17	21:40	20:28	19:05	17:48	15:52	15:49	6 10:55 (10)
30	08:25		07:00	05:40	04:43	04:34	05:17	06:19	07:21	08:24	08:29	08:58	10:51 (10)
	16:46		19:55	21:00	21:56	22:16	21:38	20:25	19:02	17:46	15:51	15:50	4 10:55 (10)
31	08:23		06:57		04:42		05:19	06:21		07:27		08:58	
	16:48		19:57		21:58		21:36	20:23		16:43		15:51	
Potential sun hours	234	266	366	426	509	530	530	470	385	323	247	215	158
Total, worst case													0,07
Sun reduction													1,00
Oper. time red.													1,00
Wind dir. red.													0,07
Total reduction													12
Total, real													

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian & Lithuanian environment  
Vilandes 3-6  
LV-1010 Riga  
0037167242411  
Laura Kurzemniece / laura.kurzemniece@environment.lv  
Calculated:  
07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Apseni - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (188)  
Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:51	07:17 17:53	06:54 19:59	05:38 21:02	06:31 (3) 21:59	04:41 22:16	04:35 21:34	05:21 20:20	06:23 18:59	07:23 16:41	07:29 15:50
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6	08:55 16:00	08:11 17:02	07:04 18:04	06:41 20:09	05:27 21:12	04:36 22:06	04:40 22:12	05:31 21:24	05:31 20:07	06:33 18:46	07:33 16:31	07:40 15:46
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8	08:54 16:03	08:07 17:06	06:59 18:08	06:36 20:14	05:22 21:16	04:34 22:08	04:42 22:11	05:35 21:19	06:46 (3) 20:01	06:37 18:41	07:37 16:26	07:44 15:45
9	08:53 16:05	08:04 17:09	06:56 18:10	06:33 20:16	05:20 21:18	04:34 22:09	04:43 22:10	05:37 21:17	06:43 (3) 19:59	06:39 18:38	07:40 16:24	07:46 15:44
10	08:52 16:06	08:02 17:11	06:53 18:13	06:30 20:18	05:18 21:20	04:33 22:10	04:44 22:09	05:39 21:15	06:41 (3) 19:56	06:41 18:35	07:42 16:22	07:48 15:44
11	08:52 16:08	08:00 17:13	06:51 18:15	06:28 20:20	05:16 21:22	04:32 22:11	04:46 22:08	05:41 21:12	06:40 (3) 19:53	06:43 18:33	07:44 16:20	07:50 15:44
12	08:51 16:10	07:58 17:15	06:48 18:17	06:25 20:22	05:14 21:24	04:32 22:12	04:47 22:07	05:43 21:10	06:39 (3) 19:51	06:45 18:30	07:46 16:18	07:53 15:43
13	08:50 16:11	07:56 17:18	06:45 18:19	06:23 20:24	05:12 21:26	04:31 22:12	04:48 22:06	05:45 21:08	06:38 (3) 19:48	06:47 18:28	07:48 16:17	07:55 15:43
14	08:49 16:13	07:53 17:20	06:43 18:21	06:20 20:26	05:10 21:28	04:31 22:13	04:50 22:04	05:47 21:05	06:37 (3) 19:45	06:49 18:25	07:50 16:15	07:57 15:43
15	08:47 16:15	07:51 17:22	06:40 18:23	06:17 20:28	05:08 21:30	04:31 22:14	04:51 22:03	05:49 21:03	06:36 (3) 19:43	06:51 18:23	07:52 16:13	07:59 15:43
16	08:46 16:17	07:49 17:24	06:37 18:25	06:15 20:30	05:06 21:32	04:30 22:14	04:53 22:02	05:51 21:01	06:36 (3) 19:40	06:53 18:20	07:54 16:11	08:01 15:43
17	08:45 16:19	07:46 17:27	06:35 18:27	06:12 20:32	05:04 21:34	04:30 22:15	04:54 22:00	05:53 20:58	06:36 (3) 19:37	06:55 18:17	07:56 16:09	08:03 15:43
18	08:44 16:21	07:44 17:29	06:32 18:30	06:10 20:34	05:02 21:36	04:30 22:16	04:56 21:59	05:55 20:56	06:36 (3) 19:34	06:57 18:15	07:58 16:08	08:05 15:43
19	08:42 16:23	07:42 17:31	06:29 18:32	06:07 20:37	05:00 21:37	04:30 22:16	04:58 21:57	05:57 20:53	06:36 (3) 19:32	06:59 18:12	08:01 16:06	08:07 15:43
20	08:41 16:25	07:39 17:33	06:27 18:34	06:05 20:39	04:59 21:39	04:30 22:16	04:59 21:56	05:59 20:51	06:36 (3) 19:29	07:01 18:10	08:03 16:04	08:10 15:44
21	08:40 16:27	07:37 17:36	06:24 18:36	06:02 20:41	04:57 21:41	04:30 22:17	05:01 21:54	06:01 20:48	06:36 (3) 19:26	07:03 18:07	08:05 16:03	08:12 15:44
22	08:38 16:29	07:34 17:38	06:21 18:38	06:00 20:43	04:55 21:43	04:30 22:17	05:03 21:53	06:03 20:46	06:37 (3) 19:24	07:05 18:05	08:07 16:01	08:14 15:45
23	08:37 16:31	07:32 17:40	06:19 18:40	05:57 20:45	04:53 21:45	04:31 22:17	05:04 21:51	06:05 20:43	06:37 (3) 19:21	07:07 18:03	08:09 16:00	08:16 15:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:55 20:47	04:52 21:46	04:31 22:17	05:06 21:49	06:07 20:41	06:38 (3) 19:18	07:09 18:00	08:11 15:59	08:18 15:46
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31	08:23 16:48	07:19 17:57	06:05 19:00	05:40 21:00	04:43 21:56	04:34 22:16	05:19 21:38	06:21 20:25	07:21 19:02	07:24 16:46	08:29 15:51	08:57 15:51
Potential sun hours	235	266	366	426	508	529	530	470	385	323	247	216
Total, worst case				285	60			356				
Sun reduction				0,47	0,59			0,51				
Oper. time red.				1,00	1,00			1,00				
Wind dir. red.				1,00	1,00			1,00				
Total reduction				0,47	0,59			0,51				
Total, real				133	35			181				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Atputas - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (230)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:51	07:17 17:53	06:54 19:59	05:38 21:02	04:41 21:59	04:35 22:16	05:21 21:34	06:23 20:20	07:23 18:59	07:29 16:42	08:31 15:50
2	08:57 15:55	08:19 16:53	07:14 17:55	06:52 20:01	05:36 21:04	04:40 22:00	04:36 22:15	05:23 21:32	06:25 20:17	07:31 18:57	07:31 16:39	08:32 15:49
3	08:57 15:56	08:17 16:55	07:12 17:58	06:49 20:03	05:33 21:06	04:39 22:02	04:37 22:15	05:25 21:30	06:27 20:15	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 18:00	06:46 20:05	05:31 21:08	04:38 22:03	04:38 22:14	05:27 21:28	06:29 20:12	07:29 18:51	07:35 16:35	08:36 15:48
5	08:56 15:59	08:13 17:00	07:06 18:02	06:44 20:07	05:29 21:10	04:37 22:04	04:39 22:13	05:29 21:26	06:31 20:09	07:31 18:49	07:37 16:33	08:37 15:47
6	08:55 16:00	08:11 17:02	07:04 18:04	06:41 20:09	05:27 21:12	04:36 22:06	04:40 22:13	05:31 21:24	06:33 20:07	07:33 18:46	07:40 16:31	08:39 15:46
7	08:55 16:02	08:09 17:04	07:01 18:06	06:39 20:12	05:24 21:14	04:35 22:07	04:41 22:12	05:33 21:21	06:35 20:04	07:35 18:43	07:42 16:29	08:40 15:46
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18	08:44 16:21	07:44 17:29	06:32 18:30	06:10 20:35	05:02 21:36	04:30 22:16	04:56 21:59	05:55 20:56	06:57 19:34	07:58 18:15	08:05 16:08	08:53 15:43
19	08:43 16:23	07:42 17:31	06:29 18:32	06:07 20:37	05:00 21:38	04:30 22:16	04:58 21:57	05:57 20:53	06:59 19:32	08:01 18:13	08:08 16:06	08:54 15:44
20	08:41 16:25	07:39 17:33	06:27 18:34	06:05 20:39	04:59 21:39	04:30 22:16	04:59 21:56	05:59 20:51	07:01 19:29	08:03 18:10	08:10 16:05	08:54 15:44
21	08:40 16:27	07:37 17:36	06:24 18:36	06:02 20:41	04:57 21:41	04:30 22:17	05:01 21:54	06:01 20:48	07:03 19:26	08:05 18:08	08:12 16:03	08:55 15:44
22	08:38 16:29	07:34 17:38	06:21 18:38	06:00 20:43	04:55 21:43	04:31 22:17	05:03 21:53	06:03 20:46	07:05 19:24	08:07 18:05	08:14 16:02	08:56 15:45
23	08:37 16:31	07:32 17:40	06:19 18:40	05:57 20:45	04:54 21:45	04:31 22:17	05:04 21:51	06:05 20:43	07:07 19:21	08:09 18:03	08:16 16:00	08:56 15:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:55 20:47	04:52 21:46	04:31 22:17	05:06 21:49	06:07 20:41	07:09 19:18	08:11 18:00	08:18 15:59	08:56 15:46
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29	08:27 16:44		07:03 19:53	05:43 20:58	04:45 21:55	04:34 22:16	05:15 21:40	06:17 20:28	07:19 19:05	08:22 18:05	08:27 16:48	08:57 15:50
30	08:25 16:46		07:00 19:55	05:40 21:00	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	08:24 18:00	08:29 16:46	08:57 15:51
31	08:23 16:48		06:57 19:57		04:42 21:58		05:19 21:36	06:21 20:23		07:27 16:44		08:57 15:52
Potential sun hours	235	266	366	426	508	529	530	470	385	324	247	216
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Audzespieduri - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (204)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:50	07:16 17:53	06:54 19:59	05:38 21:01	04:41 21:59	04:35 22:15	05:21 21:34	06:23 20:20	07:23 18:59	07:28 16:41	08:30 15:50
2	08:57 15:54	08:19 16:53	07:14 17:55	06:52 20:01	05:35 21:03	04:40 22:00	04:36 22:15	05:23 21:32	06:25 20:17	07:31 18:56	07:31 16:39	08:32 15:49
3	08:56 15:56	08:17 16:55	07:11 17:57	06:49 20:03	05:33 21:06	04:39 22:02	04:37 22:14	05:25 21:30	06:27 20:14	07:27 18:54	07:33 16:37	08:34 15:48
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25	08:33 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:31 22:17	05:08 21:47	06:09 20:38	07:11 19:15	08:13 16:58	08:19 15:57	08:57 15:46
26	08:32 16:37	07:24 17:46	06:10 18:46	05:50 20:51	04:49 21:50	04:32 22:17	05:10 21:45	06:11 20:35	07:13 19:13	08:15 16:55	08:21 15:56	08:57 15:47
27	08:30 16:39	07:22 17:49	06:08 18:48	05:47 20:53	04:47 21:51	04:32 22:17	05:11 21:44	06:13 20:33	07:15 19:10	08:18 16:53	08:23 15:54	08:57 15:48
28	08:28 16:42	07:19 17:51	06:05 18:50	05:45 20:55	04:46 21:53	04:33 22:16	05:13 21:42	06:15 20:30	07:17 19:07	08:20 16:50	08:25 15:53	08:57 15:49
29	08:26 16:44		07:02 19:52	05:42 20:57	04:44 21:54	04:33 22:16	05:15 21:40	06:17 20:28	07:19 19:04	08:22 16:48	08:27 15:52	08:57 15:50
30	08:24 16:46		07:00 19:55	05:40 20:59	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	08:24 16:46	08:29 15:51	08:57 15:51
31	08:23 16:48				04:42 21:57		05:19 21:36	06:21 20:22		07:26 16:44		08:57 15:52
Potential sun hours	235	266	366	426	508	529	530	470	385	324	247	216
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Baloži - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (192)  
 Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 0,80 1,82 4,75 6,63 9,63 10,06 8,16 7,72 5,94 2,93 0,63 0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:50	07:16 17:53	06:54 19:59	05:38 21:01	04:41 21:59	04:35 22:15	05:21 21:34	06:23 20:20	07:23 18:59	07:28 16:41	08:30 15:50
2	08:57 15:54	08:19 16:53	07:14 17:55	06:51 20:01	05:35 21:03	04:39 22:00	04:35 22:15	05:23 21:32	06:25 20:17	07:25 18:56	07:31 16:39	08:32 15:49
3	08:56 15:55	08:17 16:55	07:11 17:57	06:49 20:03	05:33 21:06	04:38 22:02	04:36 22:14	05:24 21:30	06:27 20:14	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 17:59	06:46 20:05	05:31 21:08	04:37 22:03	04:37 22:14	05:26 21:28	06:29 20:12	07:29 18:51	07:35 16:35	08:35 15:47
5	08:56 15:58	08:13 16:59	07:06 18:02	06:43 20:07	05:28 21:10	04:36 22:04	04:38 22:13	05:28 21:26	06:31 20:09	07:31 18:48	07:37 16:32	08:37 15:46
6	08:55 16:00	08:11 17:01	07:04 18:04	06:41 20:09	05:26 21:12	04:36 22:05	04:39 22:12	05:30 21:23	06:33 20:06	07:33 18:46	07:39 16:30	08:39 15:46
7	08:54 16:01	08:09 17:04	07:01 18:06	06:38 20:11	05:24 21:14	04:35 22:07	04:40 22:11	05:32 21:21	06:35 20:04	07:35 18:43	07:42 16:28	08:40 15:45
8	08:54 16:03	08:06 17:06	06:58 18:08	06:35 20:13	05:22 21:16	04:34 22:08	04:42 22:11	05:34 21:19	06:37 20:01	07:37 18:40	07:44 16:26	08:41 15:45
9	08:53 16:04	08:04 17:08	06:56 18:10	06:33 20:15	05:20 21:18	04:33 22:09	04:43 22:10	05:36 21:17	06:39 19:58	07:39 18:38	07:46 16:24	08:43 15:44
10	08:52 16:06	08:02 17:11	06:53 18:12	06:30 20:17	05:18 21:20	04:33 22:10	04:44 22:09	05:38 21:14	06:41 19:56	07:41 18:35	07:48 16:22	08:44 15:44
11	08:51 16:08	08:00 17:13	06:50 18:14	06:28 20:20	05:15 21:22	04:32 22:11	04:45 22:08	05:40 21:12	06:43 19:53	07:43 18:33	07:50 16:20	08:45 15:43
12	08:50 16:09	07:58 17:15	06:48 18:17	06:25 20:22	05:13 21:24	04:31 22:11	04:47 22:07	05:42 21:10	06:45 19:50	07:46 18:30	07:52 16:18	08:47 15:43
13	08:49 16:11	07:55 17:17	06:45 18:19	06:22 20:24	05:11 21:26	04:31 22:12	04:48 22:05	05:44 21:07	06:47 19:48	07:48 18:27	07:55 16:16	08:48 15:43
14	08:48 16:13	07:53 17:20	06:42 18:21	06:20 20:26	05:09 21:28	04:31 22:13	04:50 22:04	05:46 21:05	06:49 19:45	07:50 18:25	07:57 16:14	08:49 15:43
15	08:47 16:15	07:51 17:22	06:40 18:23	06:17 20:28	05:07 21:30	04:30 22:14	04:51 22:03	05:48 21:03	06:51 19:42	07:52 18:22	07:59 16:13	08:50 15:43
16	08:46 16:17	07:48 17:24	06:37 18:25	06:15 20:30	05:06 21:32	04:30 22:14	04:53 22:01	05:50 21:00	06:53 19:40	07:54 18:20	08:01 16:11	08:51 15:43
17	08:45 16:19	07:46 17:26	06:34 18:27	06:12 20:32	05:04 21:34	04:30 22:15	04:54 22:00	05:52 20:58	06:55 19:37	07:56 18:17	08:03 16:09	08:52 15:43
18	08:44 16:21	07:44 17:29	06:32 18:29	06:09 20:34	05:02 21:35	04:30 22:15	04:56 21:59	05:54 20:55	06:57 19:34	07:58 18:15	08:05 16:07	08:53 15:43
19	08:42 16:23	07:41 17:31	06:29 18:31	06:07 20:36	05:00 21:37	04:30 22:16	04:57 21:57	05:56 20:53	06:59 19:31	08:00 18:12	08:07 16:06	08:53 15:43
20	08:41 16:25	07:39 17:33	06:26 18:34	06:04 20:38	04:58 21:39	04:30 22:16	04:59 21:56	05:58 20:50	07:01 19:29	08:02 18:10	08:09 16:04	08:54 15:43
21	08:39 16:27	07:36 17:35	06:24 18:36	06:02 20:40	04:56 21:41	04:30 22:16	05:01 21:54	06:00 20:48	07:03 19:26	08:05 18:07	08:11 16:03	08:55 15:44
22	08:38 16:29	07:34 17:37	06:21 18:38	05:59 20:43	04:55 21:43	04:30 22:17	05:02 21:52	06:02 20:45	07:05 19:23	08:07 18:05	08:13 16:01	08:55 15:44
23	08:36 16:31	07:32 17:40	06:18 18:40	05:57 20:45	04:53 21:44	04:30 22:17	05:04 21:51	06:04 20:43	07:07 19:21	08:09 18:02	08:15 16:00	08:56 15:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:54 20:47	04:52 21:46	04:31 22:17	05:06 21:49	06:06 20:40	07:09 19:18	08:11 18:00	08:17 15:58	08:56 15:45
25	08:33 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:31 22:17	05:08 21:47	06:08 20:38	07:11 19:15	08:13 18:07	08:19 15:57	08:57 15:46
26	08:32 16:37	07:24 17:46	06:10 18:46	05:50 20:51	04:49 21:50	04:31 22:17	05:09 21:45	06:10 20:35	07:13 19:12	08:15 18:05	08:21 15:56	08:57 15:47
27	08:30 16:39	07:22 17:48	06:08 18:48	05:47 20:53	04:47 21:51	04:32 22:17	05:11 21:44	06:13 20:33	07:15 19:10	08:18 18:02	08:23 16:53	08:57 15:48
28	08:28 16:41	07:19 17:51	06:05 18:50	05:45 20:55	04:46 21:53	04:33 22:16	05:13 21:42	06:15 20:30	07:17 19:07	08:20 18:00	08:25 16:50	08:57 15:48
29	08:26 16:44		07:02 19:52	05:42 20:57	04:44 21:54	04:33 22:16	05:15 21:40	06:17 20:28	07:19 19:04	08:22 18:04	08:27 16:48	08:57 15:49
30	08:24 16:46		06:59 19:54	05:40 20:59	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	08:24 18:00	08:29 16:46	08:57 15:50
31	08:23 16:48		06:57 19:57		04:42 21:57		05:19 21:36	06:21 20:22		07:26 18:00		08:57 15:51
Potential sun hours	235	266	366	426	508	529	530	470	385	323	247	216
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		



Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian & Lithuanian environment  
 Vilandes 3-6  
 LV-1010 Riga  
 0037167242411  
 Laura Kurzemniece / laura.kurzemniece@environment.lv  
 Calculated:  
 07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme

Shadow receptor: Beikapi - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (194)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June
1	08:57 15:53	08:21 16:50	07:17 17:53	06:54 19:59	05:38 21:01	19:19 (3) 21:59
2	08:57 15:54	08:19 16:53	07:14 17:55	06:52 20:01	05:35 21:04	19:33 (3) 22:00
3	08:56 15:56	08:17 16:55	07:11 17:57	06:49 20:03	05:33 21:06	19:23 (3) 22:02
4	08:56 15:57	08:15 16:57	07:09 18:00	06:46 20:05	05:31 21:08	19:27 (3) 22:03
5	08:56 15:58	08:13 16:59	07:06 18:02	06:44 20:07	05:29 21:10	19:27 (3) 22:04
6	08:55 16:00	08:11 17:02	07:04 18:04	06:41 20:09	05:26 21:12	19:27 (3) 22:05
7	08:54 16:01	08:09 17:04	07:01 18:06	06:38 20:11	05:24 21:14	19:27 (3) 22:07
8	08:54 16:03	08:06 17:06	06:58 18:08	06:36 20:13	05:22 21:16	19:27 (3) 22:08
9	08:53 16:04	08:04 17:08	06:56 18:10	06:33 20:15	05:20 21:18	19:27 (3) 22:09
10	08:52 16:06	08:02 17:11	06:53 18:12	06:30 20:18	05:18 21:20	19:27 (3) 22:10
11	08:51 16:08	08:00 17:13	06:50 18:15	06:28 20:20	05:16 21:22	19:27 (3) 22:11
12	08:50 16:10	07:58 17:15	06:48 18:17	06:25 20:22	05:14 21:24	19:27 (3) 22:12
13	08:49 16:11	07:55 17:17	06:45 18:19	06:22 20:24	05:12 21:26	19:27 (3) 22:13
14	08:48 16:13	07:53 17:20	06:43 18:21	06:20 20:26	05:10 21:28	19:27 (3) 22:14
15	08:47 16:15	07:51 17:22	06:40 18:23	06:17 20:28	05:08 21:30	19:27 (3) 22:15
16	08:46 16:17	07:48 17:24	06:37 18:25	06:15 20:30	05:06 21:32	19:27 (3) 22:16
17	08:45 16:19	07:46 17:26	06:35 18:27	06:12 20:32	05:04 21:34	19:27 (3) 22:17
18	08:44 16:21	07:44 17:29	06:32 18:29	06:10 20:34	05:02 21:35	19:27 (3) 22:18
19	08:42 16:23	07:41 17:31	06:29 18:32	06:07 20:36	05:00 21:37	19:27 (3) 22:19
20	08:41 16:25	07:39 17:33	06:26 18:34	06:05 20:38	04:58 21:39	19:27 (3) 22:20
21	08:40 16:27	07:37 17:35	06:24 18:36	06:02 20:41	04:57 21:41	19:27 (3) 22:21
22	08:38 16:29	07:34 17:38	06:21 18:38	05:59 20:43	04:55 21:43	19:27 (3) 22:22
23	08:36 16:31	07:32 17:40	06:18 18:40	05:57 20:45	04:53 21:45	19:27 (3) 22:23
24	08:35 16:33	07:29 17:42	06:16 18:42	05:55 20:47	04:52 21:46	19:27 (3) 22:24
25	08:33 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	19:27 (3) 22:25
26	08:32 16:37	07:24 17:46	06:10 18:46	05:50 20:51	04:49 21:50	19:27 (3) 22:26
27	08:30 16:39	07:22 17:49	06:08 18:48	05:47 20:53	04:47 21:51	19:27 (3) 22:27
28	08:28 16:42	07:19 17:51	06:05 18:50	05:45 20:55	04:46 21:53	19:27 (3) 22:28
29	08:26 16:44		07:02 19:52	05:42 20:57	04:44 21:54	19:27 (3) 22:29
30	08:25 16:46		07:00 19:55	05:40 20:59	04:43 21:56	19:27 (3) 22:30
31	08:23 16:48		06:57 19:57		04:42 21:57	19:27 (3) 22:31
Potential sun hours	235	266	366	426	508	529
Total, worst case				659	52	792
Sun reduction				0,47	0,59	0,57
Oper. time red.				1,00	1,00	1,00
Wind dir. red.				1,00	1,00	1,00
Total reduction				0,47	0,59	0,57
Total, real				307	31	452

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Beikapi - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (194)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	July		August		September		October	November	December
1	04:35	20:59 (4)	05:21		06:23	19:15 (3)	07:23	07:29	08:30
	22:15	27	21:26 (4)	21:34		20:20	26	19:41 (3)	18:59
2	04:36	21:00 (4)	05:23		06:25	19:17 (3)	07:25	07:31	08:32
	22:15	27	21:27 (4)	21:32		20:17	22	19:39 (3)	18:56
3	04:37	21:01 (4)	05:25		06:27	19:18 (3)	07:27	07:33	08:34
	22:14	26	21:27 (4)	21:30		20:15	19	19:37 (3)	18:54
4	04:37	21:01 (4)	05:27		06:29	19:21 (3)	07:29	07:35	08:35
	22:14	26	21:27 (4)	21:28		20:12	13	19:34 (3)	18:51
5	04:38	21:02 (4)	05:28		06:31		07:31	07:37	08:37
	22:13	25	21:27 (4)	21:26		20:09		18:48	16:32
6	04:40	21:02 (4)	05:30		06:33		07:33	07:39	08:39
	22:12	24	21:26 (4)	21:23		20:07		18:46	16:30
7	04:41	21:03 (4)	05:32		06:35		07:35	07:42	08:40
	22:12	23	21:26 (4)	21:21		20:04		18:43	16:28
8	04:42	21:04 (4)	05:34		06:37		07:37	07:44	08:41
	22:11	22	21:26 (4)	21:19		20:01		18:41	16:26
9	04:43	21:04 (4)	05:36		06:39		07:39	07:46	08:43
	22:10	21	21:25 (4)	21:17		19:59		18:38	16:24
10	04:44	21:05 (4)	05:38		06:41		07:41	07:48	08:44
	22:09	20	21:25 (4)	21:14		19:56		18:35	16:22
11	04:46	21:06 (4)	05:40		19:30 (3)	06:43	07:44	07:50	08:45
	22:08	18	21:24 (4)	21:12	9	19:39 (3)	18:33	16:20	15:43
12	04:47	21:08 (4)	05:42		19:27 (3)	06:45	07:46	07:52	08:47
	22:07	16	21:24 (4)	21:10	15	19:42 (3)	18:30	16:18	15:43
13	04:48	21:09 (4)	05:44		19:24 (3)	06:47	07:48	07:55	08:48
	22:05	13	21:22 (4)	21:08	19	19:43 (3)	18:28	16:16	15:43
14	04:50	21:10 (4)	05:46		19:22 (3)	06:49	07:50	07:57	08:49
	22:04	10	21:20 (4)	21:05	23	19:45 (3)	18:25	16:15	15:43
15	04:51	21:14 (4)	05:48		19:20 (3)	06:51	07:52	07:59	08:50
	22:03	4	21:18 (4)	21:03	26	19:46 (3)	18:22	16:13	15:43
16	04:53		05:50		19:19 (3)	06:53	07:54	08:01	08:51
	22:02		21:00	28	19:47 (3)	19:40	18:20	16:11	15:43
17	04:54		05:52		19:18 (3)	06:55	07:56	08:03	08:52
	22:00		20:58	30	19:48 (3)	19:37	18:17	16:09	15:43
18	04:56		05:54		19:17 (3)	06:57	07:58	08:05	08:53
	21:59		20:55	31	19:48 (3)	19:34	18:15	16:08	15:43
19	04:57		05:56		19:17 (3)	06:59	08:00	08:07	08:53
	21:57		20:53	32	19:49 (3)	19:32	18:12	16:06	15:43
20	04:59		05:58		19:16 (3)	07:01	08:03	08:09	08:54
	21:56		20:51	33	19:49 (3)	19:29	18:10	16:04	15:43
21	05:01		06:01		19:14 (3)	07:03	08:05	08:11	08:55
	21:54		20:48	34	19:48 (3)	19:26	18:07	16:03	15:44
22	05:02		06:03		19:14 (3)	07:05	08:07	08:13	08:55
	21:52		20:46	34	19:48 (3)	19:23	18:05	16:01	15:44
23	05:04		06:05		19:14 (3)	07:07	08:09	08:15	08:56
	21:51		20:43	34	19:48 (3)	19:21	18:02	16:00	15:45
24	05:06		06:07		19:13 (3)	07:09	08:11	08:17	08:56
	21:49		20:40	35	19:48 (3)	19:18	18:00	15:58	15:45
25	05:08		06:09		19:13 (3)	07:11	07:13	08:19	08:57
	21:47		20:38	35	19:48 (3)	19:15	16:58	15:57	15:46
26	05:10		06:11		19:13 (3)	07:13	07:15	08:21	08:57
	21:46		20:35	35	19:48 (3)	19:13	16:55	15:56	15:47
27	05:11		06:13		19:13 (3)	07:15	07:18	08:23	08:57
	21:44		20:33	34	19:47 (3)	19:10	16:53	15:54	15:48
28	05:13		06:15		19:14 (3)	07:17	07:20	08:25	08:57
	21:42		20:30	32	19:46 (3)	19:07	16:50	15:53	15:49
29	05:15		06:17		19:14 (3)	07:19	07:22	08:27	08:57
	21:40		20:28	32	19:46 (3)	19:05	16:48	15:52	15:49
30	05:17		06:19		19:15 (3)	07:21	07:24	08:29	08:57
	21:38		20:25	30	19:45 (3)	19:02	16:46	15:51	15:51
31	05:19		06:21		19:14 (3)		07:26		08:57
	21:36		20:22	28	19:42 (3)		16:44		15:52
Potential sun hours	530		470		385		323	247	216
Total, worst case		302		609		80			
Sun reduction		0,48		0,51		0,46			
Oper. time red.		1,00		1,00		1,00			
Wind dir. red.		1,00		1,00		1,00			
Total reduction		0,48		0,51		0,46			
Total, real		144		310		37			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------



Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Birknieki - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (212)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:50	07:16 17:53	06:54 19:59	05:38 21:01	04:41 21:59	04:35 22:15	05:21 21:34	06:23 20:20	07:23 18:59	07:28 16:41	08:30 15:50
2	08:57 15:54	08:19 16:53	07:14 17:55	06:51 20:01	05:35 21:03	04:40 22:00	04:36 22:15	05:23 21:32	06:25 20:17	07:31 18:56	07:31 16:39	08:32 15:49
3	08:56 15:55	08:17 16:55	07:11 17:57	06:49 20:03	05:33 21:06	04:38 22:02	04:36 22:14	05:25 21:30	06:27 20:14	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 17:59	06:46 20:05	05:31 21:08	04:37 22:03	04:37 22:14	05:26 21:28	06:29 20:12	07:29 18:51	07:35 16:35	08:35 15:47
5	08:55 15:58	08:13 16:59	07:06 18:02	06:43 20:07	05:28 21:10	04:36 22:04	04:38 22:13	05:28 21:26	06:31 20:09	07:31 18:48	07:37 16:32	08:37 15:46
6	08:55 16:00	08:11 17:02	07:04 18:04	06:41 20:09	05:26 21:12	04:36 22:05	04:39 22:12	05:30 21:23	06:33 20:06	07:33 18:46	07:39 16:30	08:38 15:46
7	08:54 16:01	08:09 17:04	07:01 18:06	06:38 20:11	05:24 21:14	04:35 22:06	04:41 22:11	05:32 21:21	06:35 20:04	07:35 18:43	07:42 16:28	08:40 15:45
8	08:54 16:03	08:06 17:06	06:58 18:08	06:36 20:13	05:22 21:16	04:34 22:08	04:42 22:11	05:34 21:19	06:37 20:01	07:37 18:40	07:44 16:26	08:41 15:45
9	08:53 16:04	08:04 17:08	06:56 18:10	06:33 20:15	05:20 21:18	04:33 22:09	04:43 22:10	05:36 21:17	06:39 19:58	07:39 18:38	07:46 16:24	08:43 15:44
10	08:52 16:06	08:02 17:11	06:53 18:12	06:30 20:17	05:18 21:20	04:33 22:10	04:44 22:09	05:38 21:14	06:41 19:56	07:41 18:35	07:48 16:22	08:44 15:44
11	08:51 16:08	08:00 17:13	06:50 18:15	06:28 20:20	05:16 21:22	04:32 22:11	04:45 22:08	05:40 21:12	06:43 19:53	07:43 18:33	07:50 16:20	08:45 15:43
12	08:50 16:09	07:58 17:15	06:48 18:17	06:25 20:22	05:13 21:24	04:32 22:11	04:47 22:06	05:42 21:10	06:45 19:50	07:46 18:30	07:52 16:18	08:47 15:43
13	08:49 16:11	07:55 17:17	06:45 18:19	06:22 20:24	05:11 21:26	04:31 22:12	04:48 22:05	05:44 21:07	06:47 19:48	07:48 18:27	07:55 16:16	08:48 15:43
14	08:48 16:13	07:53 17:20	06:42 18:21	06:20 20:26	05:09 21:28	04:31 22:13	04:50 22:04	05:46 21:05	06:49 19:45	07:50 18:25	07:57 16:14	08:49 15:43
15	08:47 16:15	07:51 17:22	06:40 18:23	06:17 20:28	05:08 21:30	04:30 22:14	04:51 22:03	05:48 21:03	06:51 19:42	07:52 18:22	07:59 16:13	08:50 15:43
16	08:46 16:17	07:48 17:24	06:37 18:25	06:15 20:30	05:06 21:32	04:30 22:14	04:53 22:01	05:50 21:00	06:53 19:40	07:54 18:20	08:01 16:11	08:51 15:43
17	08:45 16:19	07:46 17:26	06:34 18:27	06:12 20:32	05:04 21:33	04:30 22:15	04:54 22:00	05:52 20:58	06:55 19:37	07:56 18:17	08:03 16:09	08:52 15:43
18	08:44 16:21	07:44 17:29	06:32 18:29	06:09 20:34	05:02 21:35	04:30 22:15	04:56 21:59	05:54 20:55	06:57 19:34	07:58 18:15	08:05 16:07	08:53 15:43
19	08:42 16:23	07:41 17:31	06:29 18:31	06:07 20:36	05:00 21:37	04:30 22:16	04:57 21:57	05:56 20:53	06:59 19:31	08:00 18:12	08:07 16:06	08:53 15:43
20	08:41 16:25	07:39 17:33	06:26 18:34	06:04 20:38	04:58 21:39	04:30 22:16	04:59 21:56	05:58 20:50	07:01 19:29	08:02 18:10	08:09 16:04	08:54 15:43
21	08:39 16:27	07:36 17:35	06:24 18:36	06:02 20:40	04:57 21:41	04:30 22:16	05:01 21:54	06:00 20:48	07:03 19:26	08:05 18:07	08:11 16:03	08:55 15:44
22	08:38 16:29	07:34 17:37	06:21 18:38	05:59 20:43	04:55 21:43	04:30 22:17	05:02 21:52	06:02 20:45	07:05 19:23	08:07 18:05	08:13 16:01	08:55 15:44
23	08:36 16:31	07:32 17:40	06:18 18:40	05:57 20:45	04:53 21:44	04:30 22:17	05:04 21:51	06:04 20:43	07:07 19:21	08:09 18:02	08:15 16:00	08:56 15:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:54 20:47	04:52 21:46	04:31 22:17	05:06 21:49	06:06 20:40	07:09 19:18	08:11 18:00	08:17 15:58	08:56 15:45
25	08:33 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:31 22:17	05:08 21:47	06:09 20:38	07:11 19:15	08:13 17:57	08:19 15:57	08:57 15:46
26	08:32 16:37	07:24 17:46	06:10 18:46	05:50 20:51	04:49 21:50	04:32 22:17	05:09 21:45	06:11 20:35	07:13 19:13	08:15 17:55	08:21 15:56	08:57 15:47
27	08:30 16:39	07:22 17:49	06:08 18:48	05:47 20:53	04:47 21:51	04:32 22:17	05:11 21:44	06:13 20:33	07:15 19:10	08:18 17:53	08:23 15:54	08:57 15:48
28	08:28 16:42	07:19 17:51	06:05 18:50	05:45 20:55	04:46 21:53	04:33 22:16	05:13 21:42	06:15 20:30	07:17 19:07	08:20 17:50	08:25 15:53	08:57 15:48
29	08:26 16:44		07:02 19:52	05:42 20:57	04:44 21:54	04:33 22:16	05:15 21:40	06:17 20:28	07:19 19:04	08:22 17:48	08:27 15:52	08:57 15:49
30	08:24 16:46		07:00 19:54	05:40 20:59	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	08:24 17:46	08:29 15:51	08:57 15:50
31	08:23 16:48		06:57 19:57		04:42 21:57		05:19 21:36	06:21 20:22		07:26 16:43		08:57 15:52
Potential sun hours	235	266	366	426	508	529	530	470	385	323	247	216
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Buži - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (226)  
 Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 0,80 1,82 4,75 6,63 9,63 10,06 8,16 7,72 5,94 2,93 0,63 0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57	08:21	07:17	06:54	05:38	04:41	04:35	05:21	06:23	07:23	07:29	08:31
	15:53	16:51	17:53	19:59	21:02	21:59	22:16	21:34	20:20	18:59	16:42	15:50
2	08:57	08:19	07:14	06:52	05:36	04:40	04:36	05:23	06:25	07:25	07:31	08:32
	15:55	16:53	17:55	20:01	21:04	22:00	22:15	21:32	20:17	18:57	16:39	15:49
3	08:57	08:17	07:12	06:49	05:33	04:39	04:37	05:25	06:27	07:27	07:33	08:34
	15:56	16:55	17:58	20:03	21:06	22:02	22:15	21:30	20:15	18:54	16:37	15:48
4	08:56	08:15	07:09	06:46	05:31	04:38	04:38	05:27	06:29	07:29	07:35	08:36
	15:57	16:57	18:00	20:05	21:08	22:03	22:14	21:28	20:12	18:51	16:35	15:48
5	08:56	08:13	07:06	06:44	05:29	04:37	04:39	05:29	06:31	07:31	07:37	08:37
	15:59	17:00	18:02	20:07	21:10	22:04	22:13	21:26	20:09	18:49	16:33	15:47
6	08:55	08:11	07:04	06:41	05:27	04:36	04:40	05:31	06:33	07:33	07:40	08:39
	16:00	17:02	18:04	20:09	21:12	22:06	22:13	21:24	20:07	18:46	16:31	15:46
7	08:55	08:09	07:01	06:39	05:24	04:35	04:41	05:33	06:35	07:35	07:42	08:40
	16:02	17:04	18:06	20:12	21:14	22:07	22:12	21:21	20:04	18:43	16:29	15:46
8	08:54	08:07	06:59	06:36	05:22	04:34	04:42	05:35	06:37	07:38	07:44	08:42
	16:03	17:06	18:08	20:14	21:16	22:08	22:11	21:19	20:01	18:41	16:26	15:45
9	08:53	08:05	06:56	06:33	05:20	04:34	04:43	05:37	06:39	07:40	07:46	08:43
	16:05	17:09	18:11	20:16	21:18	22:09	22:10	21:17	19:59	18:38	16:24	15:44
10	08:52	08:02	06:53	06:31	05:18	04:33	04:45	05:39	06:41	07:42	07:48	08:44
	16:06	17:11	18:13	20:18	21:20	22:10	22:09	21:15	19:56	18:36	16:22	15:44
11	08:52	08:00	06:51	06:28	05:16	04:32	04:46	05:41	06:43	07:44	07:51	08:46
	16:08	17:13	18:15	20:20	21:22	22:11	22:08	21:12	19:53	18:33	16:20	15:44
12	08:51	07:58	06:48	06:25	05:14	04:32	04:47	05:43	06:45	07:46	07:53	08:47
	16:10	17:15	18:17	20:22	21:24	22:12	22:07	21:10	19:51	18:30	16:19	15:43
13	08:50	07:56	06:45	06:23	05:12	04:32	04:49	05:45	06:47	07:48	07:55	08:48
	16:12	17:18	18:19	20:24	21:26	22:12	22:06	21:08	19:48	18:28	16:17	15:43
14	08:49	07:53	06:43	06:20	05:10	04:31	04:50	05:47	06:49	07:50	07:57	08:49
	16:13	17:20	18:21	20:26	21:28	22:13	22:04	21:05	19:45	18:25	16:15	15:43
15	08:48	07:51	06:40	06:18	05:08	04:31	04:51	05:49	06:51	07:52	07:59	08:50
	16:15	17:22	18:23	20:28	21:30	22:14	22:03	21:03	19:43	18:23	16:13	15:43
16	08:46	07:49	06:37	06:15	05:06	04:31	04:53	05:51	06:53	07:54	08:01	08:51
	16:17	17:24	18:25	20:30	21:32	22:15	22:02	21:01	19:40	18:20	16:11	15:43
17	08:45	07:46	06:35	06:12	05:04	04:30	04:55	05:53	06:55	07:56	08:03	08:52
	16:19	17:27	18:28	20:32	21:34	22:15	22:00	20:58	19:37	18:18	16:09	15:43
18	08:44	07:44	06:32	06:10	05:02	04:30	04:56	05:55	06:57	07:58	08:05	08:53
	16:21	17:29	18:30	20:35	21:36	22:16	21:59	20:56	19:34	18:15	16:08	15:43
19	08:43	07:42	06:29	06:07	05:00	04:30	04:58	05:57	06:59	08:01	08:08	08:54
	16:23	17:31	18:32	20:37	21:38	22:16	21:57	20:53	19:32	18:13	16:06	15:44
20	08:41	07:39	06:27	06:05	04:59	04:30	04:59	05:59	07:01	08:03	08:10	08:54
	16:25	17:33	18:34	20:39	21:39	22:16	21:56	20:51	19:29	18:10	16:05	15:44
21	08:40	07:37	06:24	06:02	04:57	04:30	05:01	06:01	07:03	08:05	08:12	08:55
	16:27	17:36	18:36	20:41	21:41	22:17	21:54	20:48	19:26	18:08	16:03	15:44
22	08:38	07:34	06:21	06:00	04:55	04:31	05:03	06:03	07:05	08:07	08:14	08:56
	16:29	17:38	18:38	20:43	21:43	22:17	21:53	20:46	19:24	18:05	16:01	15:45
23	08:37	07:32	06:19	05:57	04:54	04:31	05:04	06:05	07:07	08:09	08:16	08:56
	16:31	17:40	18:40	20:45	21:45	22:17	21:51	20:43	19:21	18:03	16:00	15:45
24	08:35	07:29	06:16	05:55	04:52	04:31	05:06	06:07	07:09	08:11	08:18	08:56
	16:33	17:42	18:42	20:47	21:46	22:17	21:49	20:41	19:18	18:00	15:59	15:46
25	08:34	07:27	06:13	05:52	04:50	04:32	05:08	06:09	07:11	08:14	08:20	08:57
	16:35	17:44	18:44	20:49	21:48	22:17	21:48	20:38	19:16	17:58	15:57	15:46
26	08:32	07:24	06:11	05:50	04:49	04:32	05:10	06:11	07:13	08:16	08:21	08:57
	16:38	17:47	18:46	20:51	21:50	22:17	21:46	20:36	19:13	17:55	15:56	15:47
27	08:30	07:22	06:08	05:47	04:48	04:32	05:12	06:13	07:15	08:18	08:23	08:57
	16:40	17:49	18:49	20:53	21:51	22:17	21:44	20:33	19:10	17:53	15:55	15:48
28	08:28	07:19	06:05	05:45	04:46	04:33	05:13	06:15	07:17	08:20	08:25	08:57
	16:42	17:51	18:51	20:55	21:53	22:17	21:42	20:30	19:07	17:51	15:54	15:49
29	08:27		07:03	05:43	04:45	04:34	05:15	06:17	07:19	08:22	08:27	08:57
	16:44		19:53	20:58	21:55	22:16	21:40	20:28	19:05	17:48	15:52	15:50
30	08:25		07:00	05:40	04:43	04:34	05:17	06:19	07:21	08:24	08:29	08:57
	16:46		19:55	21:00	21:56	22:16	21:38	20:25	19:02	17:46	15:51	15:51
31	08:23		06:57		04:42		05:19	06:21		07:27		08:57
	16:48		19:57		21:58		21:36	20:23		16:44		15:52
Potential sun hours	235	266	366	426	508	529	530	470	385	324	247	216
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Berzes - Shadow Receptor:  $1,0 \times 1,0$  Azimuth:  $3,1^\circ$  Slope:  $90,0^\circ$  (170)  
Sunshine probability S (Average daily sunshine hours) []

Assumptions for shadow calculations

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
0,80 1,82 4,75 6,63 9,63 10,06 8,16 7,72 5,94 2,93 0,63 0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:50	07:16 17:53	06:54 19:59	05:38 21:01	04:41 21:59	04:35 22:15	05:21 21:34	06:23 20:20	07:23 18:59	07:28 16:41	08:30 15:50
2	08:57 15:54	08:19 16:52	07:14 17:55	06:51 20:01	05:35 21:04	04:39 22:00	04:35 22:15	05:22 21:32	06:25 20:17	07:25 18:56	07:31 16:39	08:32 15:49
3	08:56 15:55	08:17 16:55	07:11 17:57	06:49 20:03	05:33 21:06	04:38 22:02	04:36 22:14	05:24 21:30	06:27 20:14	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 17:59	06:46 20:05	05:31 21:08	04:37 22:03	04:37 22:14	05:26 21:28	06:29 20:12	07:29 18:51	07:35 16:34	08:35 15:47
5	08:56 15:58	08:13 16:59	07:06 18:02	06:43 20:07	05:28 21:10	04:36 22:04	04:38 22:13	05:28 21:26	06:31 20:09	07:31 18:48	07:37 16:32	08:37 15:46
6	08:55 16:00	08:11 17:01	07:04 18:04	06:41 20:09	05:26 21:12	04:35 22:05	04:39 22:12	05:30 21:23	06:33 20:07	07:33 18:46	07:39 16:30	08:39 15:46
7	08:54 16:01	08:09 17:04	07:01 18:06	06:38 20:11	05:24 21:14	04:35 22:07	04:40 22:12	05:32 21:21	06:35 20:04	07:35 18:43	07:42 16:28	08:40 15:45
8	08:54 16:03	08:06 17:06	06:58 18:08	06:35 20:13	05:22 21:16	04:34 22:08	04:42 22:11	05:34 21:19	06:37 20:01	07:37 18:40	07:44 16:26	08:42 15:44
9	08:53 16:04	08:04 17:08	06:56 18:10	06:33 20:15	05:20 21:18	04:33 22:09	04:43 22:10	05:36 21:17	06:39 19:58	07:39 18:38	07:46 16:24	08:43 15:44
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31	08:23 16:48		06:57 19:57		04:42 21:57		05:19 21:36	06:21 20:22		07:26 18:43		08:57 15:51
Potential sun hours	235	266	366	426	508	529	530	470	385	323	247	215
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Duburi - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (202)  
 Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 0,80 1,82 4,75 6,63 9,63 10,06 8,16 7,72 5,94 2,93 0,63 0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:50	07:17 17:53	06:54 19:59	05:38 21:01	04:41 21:59	04:35 22:16	05:21 21:34	06:23 20:20	07:23 18:59	07:29 16:41	08:31 15:50
2	08:57 15:54	08:19 16:53	07:14 17:55	06:51 20:01	05:35 21:04	04:39 22:00	04:35 22:15	05:23 21:32	06:25 20:17	07:25 18:56	07:31 16:39	08:32 15:49
3	08:57 15:55	08:17 16:55	07:11 17:57	06:49 20:03	05:33 21:06	04:38 22:02	04:36 22:14	05:24 21:30	06:27 20:15	07:27 18:54	07:33 16:37	08:34 15:48
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31	08:23 16:48		06:57 19:57		04:42 21:58		05:19 21:36	06:21 20:22		07:26 18:00		08:57 15:51
Potential sun hours	235	266	366	426	508	530	530	470	385	323	247	215
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Dzeni - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (171)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:50	07:16 17:53	06:54 19:59	05:38 21:01	04:41 21:59	04:35 22:15	05:21 21:34	06:23 20:20	07:23 18:59	07:28 16:41	08:30 15:50
2	08:57 15:54	08:19 16:53	07:14 17:55	06:51 20:01	05:35 21:03	04:39 22:00	04:36 22:15	05:23 21:32	06:25 20:17	07:25 18:56	07:31 16:39	08:32 15:49
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25	08:33 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:31 22:17	05:08 21:47	06:08 20:38	07:11 19:15	08:13 18:05	08:19 15:57	08:57 15:46
26	08:32 16:37	07:24 17:46	06:10 18:46	05:50 20:51	04:49 21:50	04:31 22:17	05:09 21:45	06:10 20:35	07:13 19:12	08:15 18:05	08:21 15:56	08:57 15:47
27	08:30 16:39	07:22 17:48	06:08 18:48	05:47 20:53	04:47 21:51	04:32 22:17	05:11 21:44	06:13 20:33	07:15 19:10	08:18 18:05	08:23 16:53	08:57 15:48
28	08:28 16:41	07:19 17:51	06:05 18:50	05:45 20:55	04:46 21:53	04:33 22:16	05:13 21:42	06:15 20:30	07:17 19:07	08:20 18:00	08:25 16:50	08:57 15:48
29	08:26 16:44		07:02 19:52	05:42 20:57	04:44 21:54	04:33 22:16	05:15 21:40	06:17 20:28	07:19 19:04	08:22 18:04	08:27 16:48	08:57 15:49
30	08:24 16:46		06:59 19:54	05:40 20:59	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	08:24 18:05	08:29 16:46	08:57 15:50
31	08:23 16:48		06:57 19:57		04:42 21:57		05:19 21:36	06:21 20:22		07:26 18:06		08:57 15:51
Potential sun hours	235	266	366	426	508	529	530	470	385	323	247	216
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Dzilnas - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (165)  
 Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 0,80 1,82 4,75 6,63 9,63 10,06 8,16 7,72 5,94 2,93 0,63 0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:50	07:16 17:53	06:54 19:59	05:38 21:01	04:41 21:59	04:35 22:15	05:21 21:34	06:23 20:20	07:23 18:59	07:28 16:41	08:30 15:50
2	08:57 15:54	08:19 16:53	07:14 17:55	06:51 20:01	05:35 21:03	04:40 22:00	04:36 22:15	05:23 21:32	06:25 20:17	07:25 18:56	07:31 16:39	08:32 15:49
3	08:56 15:56	08:17 16:55	07:11 17:57	06:49 20:03	05:33 21:05	04:38 22:02	04:36 22:14	05:25 21:30	06:27 20:14	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 17:59	06:46 20:05	05:31 21:08	04:37 22:03	04:37 22:14	05:26 21:28	06:29 20:12	07:29 18:51	07:35 16:35	08:35 15:47
5	08:55 15:58	08:13 16:59	07:06 18:02	06:43 20:07	05:28 21:10	04:36 22:04	04:38 22:13	05:28 21:25	06:31 20:09	07:31 18:48	07:37 16:32	08:37 15:47
6	08:55 16:00	08:11 17:02	07:04 18:04	06:41 20:09	05:26 21:12	04:36 22:05	04:39 22:12	05:30 21:23	06:33 20:06	07:33 18:46	07:39 16:30	08:38 15:46
7	08:54 16:01	08:09 17:04	07:01 18:06	06:38 20:11	05:24 21:14	04:35 22:06	04:41 22:11	05:32 21:21	06:35 20:04	07:35 18:43	07:42 16:28	08:40 15:45
8	08:54 16:03	08:06 17:06	06:58 18:08	06:36 20:13	05:22 21:16	04:34 22:08	04:42 22:11	05:34 21:19	06:37 20:01	07:37 18:40	07:44 16:26	08:41 15:45
9	08:53 16:04	08:04 17:08	06:56 18:10	06:33 20:15	05:20 21:18	04:33 22:09	04:43 22:10	05:36 21:17	06:39 19:58	07:39 18:38	07:46 16:24	08:43 15:44
10	08:52 16:06	08:02 17:11	06:53 18:12	06:30 20:17	05:18 21:20	04:33 22:10	04:44 22:09	05:38 21:14	06:41 19:56	07:41 18:35	07:48 16:22	08:44 15:44
11	08:51 16:08	08:00 17:13	06:50 18:15	06:28 20:20	05:16 21:22	04:32 22:11	04:45 22:08	05:40 21:12	06:43 19:53	07:43 18:33	07:50 16:20	08:45 15:43
12	08:50 16:09	07:58 17:15	06:48 18:17	06:25 20:22	05:13 21:24	04:32 22:11	04:47 22:06	05:42 21:10	06:45 19:50	07:46 18:30	07:52 16:18	08:47 15:43
13	08:49 16:11	07:55 17:17	06:45 18:19	06:22 20:24	05:11 21:26	04:31 22:12	04:48 22:05	05:44 21:07	06:47 19:48	07:48 18:27	07:55 16:16	08:48 15:43
14	08:48 16:13	07:53 17:20	06:42 18:21	06:20 20:26	05:09 21:28	04:31 22:13	04:50 22:04	05:46 21:05	06:49 19:45	07:50 18:25	07:57 16:14	08:49 15:43
15	08:47 16:15	07:51 17:22	06:40 18:23	06:17 20:28	05:08 21:30	04:30 22:14	04:51 22:03	05:48 21:03	06:51 19:42	07:52 18:22	07:59 16:13	08:50 15:43
16	08:46 16:17	07:48 17:24	06:37 18:25	06:15 20:30	05:06 21:32	04:30 22:14	04:53 22:01	05:50 21:00	06:53 19:40	07:54 18:20	08:01 16:11	08:51 15:43
17	08:45 16:19	07:46 17:26	06:34 18:27	06:12 20:32	05:04 21:33	04:30 22:15	04:54 22:00	05:52 20:58	06:55 19:37	07:56 18:17	08:03 16:09	08:52 15:43
18	08:44 16:21	07:44 17:29	06:32 18:29	06:10 20:34	05:02 21:35	04:30 22:15	04:56 21:59	05:54 20:55	06:57 19:34	07:58 18:15	08:05 16:07	08:53 15:43
19	08:42 16:23	07:41 17:31	06:29 18:31	06:07 20:36	05:00 21:37	04:30 22:16	04:57 21:57	05:56 20:53	06:59 19:31	08:00 18:12	08:07 16:06	08:53 15:43
20	08:41 16:25	07:39 17:33	06:26 18:34	06:04 20:38	04:58 21:39	04:30 22:16	04:59 21:56	05:58 20:50	07:01 19:29	08:02 18:10	08:09 16:04	08:54 15:43
21	08:39 16:27	07:36 17:35	06:24 18:36	06:02 20:40	04:57 21:41	04:30 22:16	05:01 21:54	06:00 20:48	07:03 19:26	08:05 18:07	08:11 16:03	08:55 15:44
22	08:38 16:29	07:34 17:37	06:21 18:38	05:59 20:43	04:55 21:43	04:30 22:16	05:02 21:52	06:02 20:45	07:05 19:23	08:07 18:05	08:13 16:01	08:55 15:44
23	08:36 16:31	07:32 17:40	06:18 18:40	05:57 20:45	04:53 21:44	04:30 22:17	05:04 21:51	06:04 20:43	07:07 19:21	08:09 18:02	08:15 16:00	08:56 15:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:54 20:47	04:52 21:46	04:31 22:17	05:06 21:49	06:06 20:40	07:09 19:18	08:11 18:00	08:17 15:58	08:56 15:45
25	08:33 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:31 22:17	05:08 21:47	06:09 20:38	07:11 19:15	08:13 17:57	08:19 15:57	08:57 15:46
26	08:32 16:37	07:24 17:46	06:10 18:46	05:50 20:51	04:49 21:50	04:32 22:17	05:09 21:45	06:11 20:35	07:13 19:13	08:15 17:55	08:21 15:56	08:57 15:47
27	08:30 16:39	07:22 17:49	06:08 18:48	05:47 20:53	04:47 21:51	04:32 22:17	05:11 21:44	06:13 20:33	07:15 19:10	08:18 17:53	08:23 15:54	08:57 15:48
28	08:28 16:42	07:19 17:51	06:05 18:50	05:45 20:55	04:46 21:53	04:33 22:16	05:13 21:42	06:15 20:30	07:17 19:07	08:20 17:50	08:25 15:53	08:57 15:48
29	08:26 16:44		07:02 19:52	05:42 20:57	04:44 21:54	04:33 22:16	05:15 21:40	06:17 20:28	07:19 19:04	08:22 17:48	08:27 15:52	08:57 15:49
30	08:24 16:46		07:00 19:54	05:40 20:59	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	08:24 17:46	08:29 15:51	08:57 15:50
31	08:23 16:48		06:57 19:57		04:42 21:57		05:19 21:36	06:21 20:22		07:26 17:43		08:57 15:52
Potential sun hours	235	266	366	426	508	529	530	470	385	323	247	216
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		



Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Dzintari - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (209)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:50	07:16 17:53	06:54 19:59	05:38 21:01	04:41 21:59	04:35 22:15	05:21 21:34	06:23 20:20	07:23 18:59	07:28 16:41	08:30 15:50
2	08:57 15:54	08:19 16:53	07:14 17:55	06:51 20:01	05:35 21:03	04:40 22:00	04:36 22:15	05:23 21:32	06:25 20:17	07:31 18:56	07:31 16:39	08:32 15:49
3	08:56 15:56	08:17 16:55	07:11 17:57	06:49 20:03	05:33 21:05	04:38 22:02	04:36 22:14	05:25 21:30	06:27 20:14	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 17:59	06:46 20:05	05:31 21:08	04:37 22:03	04:37 22:14	05:26 21:28	06:29 20:12	07:29 18:51	07:35 16:35	08:35 15:47
5	08:55 15:58	08:13 16:59	07:06 18:02	06:43 20:07	05:29 21:10	04:37 22:04	04:38 22:13	05:28 21:25	06:31 20:09	07:31 18:48	07:37 16:32	08:37 15:47
6	08:55 16:00	08:11 17:02	07:04 18:04	06:41 20:09	05:26 21:12	04:36 22:05	04:39 22:12	05:30 21:23	06:33 20:06	07:33 18:46	07:39 16:30	08:38 15:46
7	08:54 16:01	08:09 17:04	07:01 18:06	06:38 20:11	05:24 21:14	04:35 22:06	04:41 22:11	05:32 21:21	06:35 20:04	07:35 18:43	07:42 16:28	08:40 15:45
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9	08:53 16:04	08:04 17:08	06:56 18:10	06:33 20:15	05:20 21:18	04:33 22:09	04:43 22:10	05:36 21:17	06:39 19:58	07:39 18:38	07:46 16:24	08:43 15:44
10	08:52 16:06	08:02 17:11	06:53 18:12	06:30 20:17	05:18 21:20	04:33 22:10	04:44 22:09	05:38 21:14	06:41 19:56	07:41 18:35	07:48 16:22	08:44 15:44
11	08:51 16:08	08:00 17:13	06:50 18:15	06:28 20:20	05:16 21:22	04:32 22:10	04:45 22:08	05:40 21:12	06:43 19:53	07:43 18:33	07:50 16:20	08:45 15:43
12	08:50 16:09	07:58 17:15	06:48 18:17	06:25 20:22	05:14 21:24	04:32 22:11	04:47 22:06	05:42 21:10	06:45 19:50	07:46 18:30	07:52 16:18	08:47 15:43
13	08:49 16:11	07:55 17:17	06:45 18:19	06:22 20:24	05:11 21:26	04:31 22:12	04:48 22:05	05:44 21:07	06:47 19:48	07:48 18:27	07:55 16:16	08:48 15:43
14	08:48 16:13	07:53 17:20	06:42 18:21	06:20 20:26	05:09 21:28	04:31 22:13	04:50 22:04	05:46 21:05	06:49 19:45	07:50 18:25	07:57 16:14	08:49 15:43
15	08:47 16:15	07:51 17:22	06:40 18:23	06:17 20:28	05:08 21:30	04:30 22:14	04:51 22:03	05:48 21:03	06:51 19:42	07:52 18:22	07:59 16:13	08:50 15:43
16	08:46 16:17	07:48 17:24	06:37 18:25	06:15 20:30	05:06 21:32	04:30 22:14	04:53 22:01	05:50 21:00	06:53 19:40	07:54 18:20	08:01 16:11	08:51 15:43
17	08:45 16:19	07:46 17:26	06:34 18:27	06:12 20:32	05:04 21:33	04:30 22:15	04:54 22:00	05:52 20:58	06:55 19:37	07:56 18:17	08:03 16:09	08:52 15:43
18	08:44 16:21	07:44 17:29	06:32 18:29	06:10 20:34	05:02 21:35	04:30 22:15	04:56 21:59	05:54 20:55	06:57 19:34	07:58 18:15	08:05 16:07	08:53 15:43
19	08:42 16:23	07:41 17:31	06:29 18:31	06:07 20:36	05:00 21:37	04:30 22:16	04:57 21:57	05:56 20:53	06:59 19:31	08:00 18:12	08:07 16:06	08:53 15:43
20	08:41 16:25	07:39 17:33	06:26 18:34	06:04 20:38	04:58 21:39	04:30 22:16	04:59 21:56	05:58 20:50	07:01 19:29	08:02 18:10	08:09 16:04	08:54 15:43
21	08:39 16:27	07:36 17:35	06:24 18:36	06:02 20:40	04:57 21:41	04:30 22:16	05:01 21:54	06:00 20:48	07:03 19:26	08:05 18:07	08:11 16:03	08:55 15:44
22	08:38 16:29	07:34 17:37	06:21 18:38	05:59 20:43	04:55 21:43	04:30 22:16	05:02 21:52	06:02 20:45	07:05 19:23	08:07 18:05	08:13 16:01	08:55 15:44
23	08:36 16:31	07:32 17:40	06:18 18:40	05:57 20:45	04:53 21:44	04:30 22:17	05:04 21:51	06:04 20:43	07:07 19:21	08:09 18:02	08:15 16:00	08:56 15:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:54 20:47	04:52 21:46	04:31 22:17	05:06 21:49	06:06 20:40	07:09 19:18	08:11 18:00	08:17 15:58	08:56 15:45
25	08:33 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:31 22:17	05:08 21:47	06:09 20:38	07:11 19:15	08:13 18:05	08:19 15:57	08:57 15:46
26	08:32 16:37	07:24 17:46	06:10 18:46	05:50 20:51	04:49 21:49	04:32 22:17	05:09 21:45	06:11 20:35	07:13 19:13	08:15 18:05	08:21 15:56	08:57 15:47
27	08:30 16:39	07:22 17:49	06:08 18:48	05:47 20:53	04:47 21:51	04:32 22:16	05:11 21:44	06:13 20:33	07:15 19:10	08:18 18:02	08:23 16:53	08:57 15:48
28	08:28 16:42	07:19 17:51	06:05 18:50	05:45 20:55	04:46 21:53	04:33 22:16	05:13 21:42	06:15 20:30	07:17 19:07	08:20 18:00	08:25 16:50	08:57 15:48
29	08:26 16:44		07:02 19:52	05:42 20:57	04:44 21:54	04:33 22:16	05:15 21:40	06:17 20:28	07:19 19:04	08:22 18:04	08:27 16:48	08:57 15:49
30	08:24 16:46		07:00 19:54	05:40 20:59	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	08:24 18:02	08:29 16:46	08:57 15:50
31	08:23 16:48		06:57 19:57		04:42 21:57		05:19 21:36	06:21 20:22		07:26 18:00		08:57 15:52
Potential sun hours	235	266	366	426	508	529	530	470	385	323	247	216
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Dzirnauki - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (224)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:51	07:17 17:53	06:55 19:59	05:38 21:02	04:41 21:59	04:35 22:16	05:21 21:34	06:23 20:20	07:23 18:59	07:29 16:42	08:31 15:50
2	08:57 15:55	08:19 16:53	07:14 17:55	06:52 20:01	05:36 21:04	04:40 22:00	04:36 22:15	05:23 21:32	06:25 20:17	07:31 18:57	07:31 16:39	08:32 15:49
3	08:57 15:56	08:17 16:55	07:12 17:58	06:49 20:03	05:33 21:06	04:39 22:02	04:37 22:15	05:25 21:30	06:27 20:15	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 18:00	06:46 20:05	05:31 21:08	04:38 22:03	04:38 22:14	05:27 21:28	06:29 20:12	07:29 18:51	07:35 16:35	08:36 15:48
5	08:56 15:59	08:13 17:00	07:06 18:02	06:44 20:07	05:29 21:10	04:37 22:04	04:39 22:13	05:29 21:26	06:31 20:09	07:31 18:49	07:38 16:33	08:37 15:47
6	08:55 16:00	08:11 17:02	07:04 18:04	06:41 20:09	05:27 21:12	04:36 22:06	04:40 22:13	05:31 21:24	06:33 20:07	07:33 18:46	07:40 16:31	08:39 15:46
7	08:55 16:02	08:09 17:04	07:01 18:06	06:39 20:12	05:24 21:14	04:35 22:07	04:41 22:12	05:33 21:21	06:35 20:04	07:35 18:43	07:42 16:29	08:40 15:46
8	08:54 16:03	08:07 17:06	06:59 18:08	06:36 20:14	05:22 21:16	04:34 22:08	04:42 22:11	05:35 21:19	06:37 20:01	07:38 18:41	07:44 16:26	08:42 15:45
9	08:53 16:05	08:05 17:09	06:56 18:11	06:33 20:16	05:20 21:18	04:34 22:09	04:43 22:10	05:37 21:17	06:39 19:59	07:40 18:38	07:46 16:24	08:43 15:45
10	08:52 16:06	08:02 17:11	06:53 18:13	06:31 20:18	05:18 21:20	04:33 22:10	04:45 22:09	05:39 21:15	06:41 19:56	07:42 18:36	07:48 16:22	08:44 15:44
11	08:52 16:08	08:00 17:13	06:51 18:15	06:28 20:20	05:16 21:22	04:32 22:11	04:46 22:08	05:41 21:12	06:43 19:53	07:44 18:33	07:51 16:21	08:46 15:44
12	08:51 16:10	07:58 17:15	06:48 18:17	06:25 20:22	05:14 21:24	04:32 22:12	04:47 22:07	05:43 21:10	06:45 19:51	07:46 18:30	07:53 16:19	08:47 15:43
13	08:50 16:12	07:56 17:18	06:45 18:19	06:23 20:24	05:12 21:26	04:32 22:12	04:49 22:06	05:45 21:08	06:47 19:48	07:48 18:28	07:55 16:17	08:48 15:43
14	08:49 16:13	07:53 17:20	06:43 18:21	06:20 20:26	05:10 21:28	04:31 22:13	04:50 22:04	05:47 21:05	06:49 19:45	07:50 18:25	07:57 16:15	08:49 15:43
15	08:48 16:15	07:51 17:22	06:40 18:23	06:18 20:28	05:08 21:30	04:31 22:14	04:52 22:03	05:49 21:03	06:51 19:43	07:52 18:23	07:59 16:13	08:50 15:43
16	08:46 16:17	07:49 17:24	06:37 18:25	06:15 20:30	05:06 21:32	04:31 22:15	04:53 22:02	05:51 21:01	06:53 19:40	07:54 18:20	08:01 16:11	08:51 15:43
17	08:45 16:19	07:46 17:27	06:35 18:28	06:12 20:32	05:04 21:34	04:30 22:15	04:55 22:00	05:53 20:58	06:55 19:37	07:56 18:18	08:03 16:10	08:52 15:43
18	08:44 16:21	07:44 17:29	06:32 18:30	06:10 20:35	05:02 21:36	04:30 22:16	04:56 21:59	05:55 20:56	06:57 19:35	07:59 18:15	08:05 16:08	08:53 15:43
19	08:43 16:23	07:42 17:31	06:29 18:32	06:07 20:37	05:00 21:38	04:30 22:16	04:58 21:57	05:57 20:53	06:59 19:32	08:01 18:13	08:08 16:06	08:54 15:44
20	08:41 16:25	07:39 17:33	06:27 18:34	06:05 20:39	04:59 21:39	04:30 22:16	04:59 21:56	05:59 20:51	07:01 19:29	08:03 18:10	08:10 16:05	08:54 15:44
21	08:40 16:27	07:37 17:36	06:24 18:36	06:02 20:41	04:57 21:41	04:30 22:17	05:01 21:54	06:01 20:48	07:03 19:26	08:05 18:08	08:12 16:03	08:55 15:44
22	08:38 16:29	07:34 17:38	06:21 18:38	06:00 20:43	04:55 21:43	04:31 22:17	05:03 21:53	06:03 20:46	07:05 19:24	08:07 18:05	08:14 16:02	08:56 15:45
23	08:37 16:31	07:32 17:40	06:19 18:40	05:57 20:45	04:54 21:45	04:31 22:17	05:05 21:51	06:05 20:43	07:07 19:21	08:09 18:03	08:16 16:00	08:56 15:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:55 20:47	04:52 21:46	04:31 22:17	05:06 21:49	06:07 20:41	07:09 19:18	08:11 18:00	08:18 15:59	08:56 15:46
25	08:34 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:32 22:17	05:08 21:48	06:09 20:38	07:11 19:16	08:14 18:16	08:20 16:58	08:57 15:46
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27	08:30 16:40	07:22 17:49	06:08 18:49	05:48 20:53	04:48 21:51	04:32 22:17	05:12 21:44	06:13 20:33	07:15 19:10	08:18 18:10	08:23 16:53	08:57 15:48
28	08:28 16:42	07:19 17:51	06:05 18:51	05:45 20:55	04:46 21:53	04:33 22:17	05:14 21:42	06:15 20:30	07:17 19:07	08:20 18:05	08:25 16:51	08:57 15:49
29	08:27 16:44		07:03 19:53	05:43 20:58	04:45 21:55	04:34 22:16	05:15 21:40	06:17 20:28	07:19 19:05	08:22 18:05	08:27 16:48	08:58 15:50
30	08:25 16:46		07:00 19:55	05:40 21:00	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	08:24 18:00	08:29 16:46	08:57 15:51
31	08:23 16:49		06:57 19:57		04:42 21:58		05:19 21:36	06:21 20:23		07:27 18:44		08:57 15:52
Potential sun hours	235	266	366	426	508	529	530	470	385	324	247	216
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Glizdi - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (166)  
 Assumptions for shadow calculations Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 0,80 1,82 4,75 6,63 9,63 10,06 8,16 7,72 5,94 2,93 0,63 0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:50	07:16 17:53	06:54 19:59	05:38 21:01	04:41 21:59	04:35 22:15	05:21 21:34	06:23 20:20	07:23 18:59	07:28 16:41	08:30 15:50
2	08:57 15:54	08:19 16:53	07:14 17:55	06:51 20:01	05:35 21:03	04:40 22:00	04:36 22:15	05:23 21:32	06:25 20:17	07:31 18:56	07:31 16:39	08:32 15:49
3	08:56 15:56	08:17 16:55	07:11 17:57	06:49 20:03	05:33 21:06	04:38 22:02	04:36 22:14	05:25 21:30	06:27 20:14	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 17:59	06:46 20:05	05:31 21:08	04:37 22:03	04:37 22:14	05:26 21:28	06:29 20:12	07:29 18:51	07:35 16:35	08:35 15:47
5	08:56 15:58	08:13 16:59	07:06 18:02	06:43 20:07	05:28 21:10	04:36 22:04	04:38 22:13	05:28 21:26	06:31 20:09	07:31 18:48	07:37 16:32	08:37 15:46
6	08:55 16:00	08:11 17:02	07:04 18:04	06:41 20:09	05:26 21:12	04:36 22:05	04:39 22:12	05:30 21:23	06:33 20:06	07:33 18:46	07:39 16:30	08:38 15:46
7	08:54 16:01	08:09 17:04	07:01 18:06	06:38 20:11	05:24 21:14	04:35 22:06	04:41 22:11	05:32 21:21	06:35 20:04	07:35 18:43	07:42 16:28	08:40 15:45
8	08:54 16:03	08:06 17:06	06:58 18:08	06:36 20:13	05:22 21:16	04:34 22:08	04:42 22:11	05:34 21:19	06:37 20:01	07:37 18:40	07:44 16:26	08:41 15:45
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10	08:52 16:06	08:02 17:11	06:53 18:12	06:30 20:17	05:18 21:20	04:33 22:10	04:44 22:09	05:38 21:14	06:41 19:56	07:41 18:35	07:48 16:22	08:44 15:44
11	08:51 16:08	08:00 17:13	06:50 18:15	06:28 20:20	05:16 21:22	04:32 22:11	04:45 22:08	05:40 21:12	06:43 19:53	07:43 18:33	07:50 16:20	08:45 15:43
12	08:50 16:09	07:58 17:15	06:48 18:17	06:25 20:22	05:13 21:24	04:32 22:11	04:47 22:06	05:42 21:10	06:45 19:50	07:46 18:30	07:52 16:18	08:47 15:43
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18	08:44 16:21	07:44 17:29	06:32 18:29	06:10 20:34	05:02 21:35	04:30 22:15	04:56 21:59	05:54 20:55	06:57 19:34	07:58 18:15	08:05 16:07	08:53 15:43
19	08:42 16:23	07:41 17:31	06:29 18:31	06:07 20:36	05:00 21:37	04:30 22:16	04:57 21:57	05:56 20:53	06:59 19:31	08:00 18:12	08:07 16:06	08:53 15:43
20	08:41 16:25	07:39 17:33	06:26 18:34	06:04 20:38	04:58 21:39	04:30 22:16	04:59 21:56	05:58 20:50	07:01 19:29	08:02 18:10	08:09 16:04	08:54 15:43
21	08:39 16:27	07:36 17:35	06:24 18:36	06:02 20:40	04:57 21:41	04:30 22:16	05:01 21:54	06:00 20:48	07:03 19:26	08:05 18:07	08:11 16:03	08:55 15:44
22	08:38 16:29	07:34 17:37	06:21 18:38	05:59 20:43	04:55 21:43	04:30 22:17	05:02 21:52	06:02 20:45	07:05 19:23	08:07 18:05	08:13 16:01	08:55 15:44
23	08:36 16:31	07:32 17:40	06:18 18:40	05:57 20:45	04:53 21:44	04:30 22:17	05:04 21:51	06:04 20:43	07:07 19:21	08:09 18:02	08:15 16:00	08:56 15:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:54 20:47	04:52 21:46	04:31 22:17	05:06 21:49	06:06 20:40	07:09 19:18	08:11 18:00	08:17 15:58	08:56 15:45
25	08:33 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:31 22:17	05:08 21:47	06:09 20:38	07:11 19:15	08:13 18:15	08:19 15:57	08:57 15:46
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27	08:30 16:39	07:22 17:49	06:08 18:48	05:47 20:53	04:47 21:51	04:32 22:17	05:11 21:44	06:13 20:33	07:15 19:10	08:18 18:10	08:23 16:53	08:57 15:48
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29	08:26 16:44		07:02 19:52	05:42 20:57	04:44 21:54	04:33 22:16	05:15 21:40	06:17 20:28	07:19 19:04	08:22 18:10	08:27 16:48	08:57 15:49
30	08:24 16:46		07:00 19:54	05:40 20:59	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	08:24 18:10	08:29 16:46	08:57 15:50
31	08:23 16:48		06:57 19:57		04:42 21:57		05:19 21:36	06:21 20:22		07:26 18:43		08:57 15:52
Potential sun hours	235	266	366	426	508	529	530	470	385	323	247	216
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Graš ini - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (182)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December		
1	08:57 15:53	08:21 16:50	07:17 17:53	06:54 19:59	05:38 21:01	19:25 (3) 19:56 (3)	04:41 21:59	04:35 22:15	21:16 (4) 21:32 (4)	05:21 21:34	06:23 20:20	07:23 18:59	07:29 16:41	08:30 15:50
2	08:57 15:54	08:19 16:53	07:14 17:55	06:52 20:01	05:35 21:04	19:25 (3) 19:54 (3)	04:40 22:00	04:36 22:15	21:17 (4) 21:32 (4)	05:23 21:32	06:25 20:17	07:25 18:56	07:31 16:39	08:32 15:49
3	08:56 15:56	08:17 16:55	07:11 17:57	06:49 20:03	05:33 21:06	19:26 (3) 19:53 (3)	04:39 22:02	04:37 22:14	21:18 (4) 21:32 (4)	05:25 21:30	06:27 20:15	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 18:00	06:46 20:05	05:31 21:08	19:27 (3) 19:52 (3)	04:38 22:03	04:37 22:14	21:19 (4) 21:31 (4)	05:27 21:28	19:46 (3) 19:54 (3)	06:29 18:51	07:29 16:35	08:35 15:47
5	08:56 15:58	08:13 16:59	07:06 18:02	06:44 20:07	05:29 21:10	19:28 (3) 19:51 (3)	04:37 22:04	04:38 22:13	21:21 (4) 21:31 (4)	05:28 21:26	19:43 (3) 19:57 (3)	06:31 18:48	07:31 16:32	08:37 15:47
6	08:55 16:00	08:11 17:02	07:04 18:04	06:41 20:09	05:26 21:12	19:29 (3) 19:50 (3)	04:36 22:05	21:17 (4) 21:22 (4)	04:40 21:23	04:40 05:30	19:41 (3) 19:59 (3)	06:33 18:46	07:33 16:30	08:39 15:46
7	08:54 16:01	08:09 17:04	07:01 18:06	06:38 20:11	05:24 21:14	19:31 (3) 19:48 (3)	04:35 22:07	21:15 (4) 21:24 (4)	04:41 22:11	05:32 21:21	19:38 (3) 20:00 (3)	06:35 18:43	07:35 16:28	08:40 15:45
8	08:54 16:03	08:06 17:06	06:58 18:08	06:36 20:13	05:22 21:16	19:33 (3) 19:46 (3)	04:34 22:08	21:14 (4) 21:26 (4)	04:42 22:11	05:34 21:19	19:37 (3) 20:01 (3)	06:37 18:41	07:37 16:26	08:41 15:45
9	08:53 16:04	08:04 17:08	06:56 18:10	06:33 20:15	05:20 21:18	19:38 (3) 19:41 (3)	04:33 22:09	21:13 (4) 21:26 (4)	04:43 22:10	05:36 21:17	19:36 (3) 20:02 (3)	06:39 19:59	07:39 18:38	08:43 16:24
10	08:52 16:06	08:02 17:11	06:53 18:12	06:30 20:18	05:18 21:20	19:41 (3) 22:10	04:43 22:09	21:13 (4) 21:28 (4)	04:44 22:09	05:38 21:14	19:35 (3) 20:03 (3)	06:41 19:56	07:41 18:35	08:44 16:22
11	08:51 16:08	08:00 17:13	06:50 18:15	06:28 20:20	05:16 21:22	19:42 (3) 22:11	04:46 22:08	21:12 (4) 21:28 (4)	04:46 22:08	05:40 21:12	19:34 (3) 20:04 (3)	06:43 19:53	07:44 18:33	08:45 16:20
12	08:50 16:10	07:58 17:15	06:48 18:17	06:25 20:22	05:14 21:24	19:43 (3) 22:11	04:47 22:07	21:12 (4) 21:29 (4)	04:47 22:07	05:42 21:10	19:33 (3) 20:04 (3)	06:45 19:50	07:46 18:30	08:47 16:18
13	08:49 16:11	07:55 17:17	06:45 18:19	06:22 20:24	05:12 21:26	19:44 (3) 22:12	04:48 22:05	21:12 (4) 21:30 (4)	04:48 22:05	05:44 21:08	19:56 (3) 20:04 (3)	06:47 19:48	07:48 18:28	08:48 16:16
14	08:48 16:13	07:53 17:20	06:43 18:21	06:20 20:26	05:10 21:28	19:45 (3) 22:13	04:50 22:04	21:12 (4) 21:31 (4)	04:50 22:04	05:46 21:05	19:31 (3) 20:04 (3)	06:49 19:45	07:50 18:25	08:49 16:15
15	08:47 16:15	07:51 17:22	06:40 18:23	06:17 20:28	05:08 21:30	19:46 (3) 22:14	04:51 22:03	21:12 (4) 21:30 (4)	04:51 22:03	05:48 21:03	19:31 (3) 20:05 (3)	06:51 19:42	07:52 18:22	08:50 16:13
16	08:46 16:17	07:48 17:24	06:37 18:25	06:15 20:30	05:06 21:32	19:47 (3) 22:15	04:53 22:02	21:12 (4) 21:31 (4)	04:53 22:02	05:50 21:00	19:31 (3) 20:05 (3)	06:53 19:40	07:54 18:20	08:51 16:11
17	08:45 16:19	07:46 17:26	06:35 18:27	06:12 20:32	05:04 21:34	19:48 (3) 22:15	04:54 22:00	21:12 (4) 21:31 (4)	04:54 22:00	05:52 20:58	19:30 (3) 20:05 (3)	06:55 19:37	07:56 18:17	08:52 16:09
18	08:44 16:21	07:44 17:29	06:32 18:29	06:10 20:34	05:02 21:35	19:49 (3) 22:15	04:56 21:59	21:12 (4) 21:32 (4)	04:56 21:59	05:54 20:55	19:30 (3) 20:05 (3)	06:57 19:34	07:58 18:15	08:53 16:08
19	08:42 16:23	07:41 17:31	06:29 18:32	06:07 20:36	05:00 21:37	19:50 (3) 22:16	04:57 21:57	21:12 (4) 21:32 (4)	04:57 21:57	05:56 20:53	19:30 (3) 20:04 (3)	06:59 19:32	08:00 18:12	08:54 16:06
20	08:41 16:25	07:39 17:33	06:26 18:34	06:05 20:38	04:58 21:39	19:51 (3) 22:16	04:59 21:56	21:12 (4) 21:32 (4)	04:59 21:56	05:58 20:51	19:30 (3) 20:04 (3)	07:01 19:29	08:03 18:10	08:54 16:04
21	08:39 16:27	07:37 17:35	06:24 18:36	06:02 20:41	04:57 21:41	19:52 (3) 22:16	04:57 21:54	21:13 (4) 21:33 (4)	05:01 21:54	06:01 20:48	19:29 (3) 20:03 (3)	07:03 19:26	08:05 18:07	08:55 16:03
22	08:38 16:29	07:34 17:38	06:21 18:38	05:59 20:43	04:55 21:43	19:53 (3) 22:17	05:02 21:52	21:13 (4) 21:33 (4)	05:02 21:52	06:03 20:46	19:30 (3) 20:02 (3)	07:05 19:23	08:07 18:05	08:55 16:01
23	08:36 16:31	07:32 17:40	06:18 18:40	05:57 20:45	04:53 21:44	19:54 (3) 22:17	05:04 21:51	21:13 (4) 21:33 (4)	05:04 21:51	06:05 20:43	19:30 (3) 20:01 (3)	07:07 19:21	08:09 18:02	08:56 16:00
24	08:35 16:33	07:29 17:42	06:16 18:42	05:55 20:47	04:52 21:46	19:55 (3) 22:17	05:06 21:49	21:13 (4) 21:33 (4)	05:06 21:49	06:07 20:40	19:31 (3) 20:00 (3)	07:09 19:18	08:11 18:00	08:56 15:58
25	08:33 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	19:56 (3) 22:17	05:08 21:47	21:14 (4) 21:34 (4)	05:08 21:47	06:09 20:38	19:32 (3) 19:59 (3)	07:11 19:15	07:13 16:58	08:57 15:57
26	08:32 16:37	07:24 17:46	06:10 18:46	05:50 20:51	04:49 21:50	19:57 (3) 22:17	05:10 21:46	21:14 (4) 21:33 (4)	05:10 21:46	06:11 20:35	19:32 (3) 19:58 (3)	07:13 19:13	07:15 16:55	08:57 15:56
27	08:30 16:39	07:22 17:49	06:08 18:48	05:47 20:53	04:47 21:51	19:58 (3) 22:17	04:47 21:44	21:15 (4) 21:34 (4)	05:11 21:44	06:13 20:33	19:34 (3) 19:56 (3)	07:15 19:10	07:18 16:53	08:57 15:54
28	08:28 16:42	07:19 17:51	06:05 18:50	05:45 20:55	04:46 21:53	19:59 (3) 22:16	04:46 21:42	21:14 (4) 21:33 (4)	05:13 21:42	06:15 20:30	19:35 (3) 19:54 (3)	07:17 19:07	07:20 16:50	08:57 15:53
29	08:26 16:44		07:02 19:52	05:42 20:57	04:44 21:54	19:59 (3) 22:16	04:44 21:40	21:15 (4) 21:33 (4)	05:15 21:40	06:17 20:28	19:38 (3) 19:51 (3)	07:19 19:05	07:22 16:48	08:57 15:52
30	08:25 16:46		07:00 19:55	05:40 20:59	04:43 21:56	19:59 (3) 22:16	04:43 21:38	21:16 (4) 21:33 (4)	05:17 21:38	06:19 20:25	19:38 (3) 19:51 (3)	07:21 19:02	07:24 16:46	08:57 15:51
31	08:23 16:48		06:57 19:57	04:42 21:57	04:42 21:57	19:59 (3) 22:16	04:42 21:36	21:17 (4) 21:36	05:19 21:36	06:21 20:22	19:38 (3) 19:51 (3)	07:21 19:02	07:24 16:46	08:57 15:52
Potential sun hours	235	266	366	426	508	529	530	470	385	323	247	216		
Total, worst case				504	189	432	74	705						
Sun reduction				0,47	0,59	0,57	0,48	0,51						
Oper. time red.				1,00	1,00	1,00	1,00	1,00						
Wind dir. red.				1,00	1,00	1,00	1,00	1,00						
Total reduction				0,47	0,59	0,57	0,48	0,51						
Total, real				235	111	246	35	359						

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Gaguli - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (211)  
 Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 0,80 1,82 4,75 6,63 9,63 10,06 8,16 7,72 5,94 2,93 0,63 0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:50	07:16 17:53	06:54 19:59	05:38 21:01	04:41 21:59	04:35 22:15	05:21 21:34	06:23 20:20	07:23 18:59	07:28 16:41	08:30 15:50
2	08:57 15:54	08:19 16:53	07:14 17:55	06:51 20:01	05:35 21:03	04:40 22:00	04:36 22:15	05:23 21:32	06:25 20:17	07:25 18:56	07:31 16:39	08:32 15:49
3	08:56 15:55	08:17 16:55	07:11 17:57	06:49 20:03	05:33 21:06	04:38 22:02	04:36 22:14	05:25 21:30	06:27 20:14	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 17:59	06:46 20:05	05:31 21:08	04:37 22:03	04:37 22:14	05:26 21:28	06:29 20:12	07:29 18:51	07:35 16:35	08:35 15:47
5	08:56 15:58	08:13 16:59	07:06 18:02	06:43 20:07	05:28 21:10	04:36 22:04	04:38 22:13	05:28 21:26	06:31 20:09	07:31 18:48	07:37 16:32	08:37 15:46
6	08:55 16:00	08:11 17:02	07:04 18:04	06:41 20:09	05:26 21:12	04:36 22:05	04:39 22:12	05:30 21:23	06:33 20:06	07:33 18:46	07:39 16:30	08:38 15:46
7	08:54 16:01	08:09 17:04	07:01 18:06	06:38 20:11	05:24 21:14	04:35 22:06	04:41 22:11	05:32 21:21	06:35 20:04	07:35 18:43	07:42 16:28	08:40 15:45
8	08:54 16:03	08:06 17:06	06:58 18:08	06:36 20:13	05:22 21:16	04:34 22:08	04:42 22:11	05:34 21:19	06:37 20:01	07:37 18:40	07:44 16:26	08:41 15:45
9	08:53 16:04	08:04 17:08	06:56 18:10	06:33 20:15	05:20 21:18	04:33 22:09	04:43 22:10	05:36 21:17	06:39 19:58	07:39 18:38	07:46 16:24	08:43 15:44
10	08:52 16:06	08:02 17:11	06:53 18:12	06:30 20:17	05:18 21:20	04:33 22:10	04:44 22:09	05:38 21:14	06:41 19:56	07:41 18:35	07:48 16:22	08:44 15:44
11	08:51 16:08	08:00 17:13	06:50 18:15	06:28 20:20	05:16 21:22	04:32 22:11	04:45 22:08	05:40 21:12	06:43 19:53	07:43 18:33	07:50 16:20	08:45 15:43
12	08:50 16:09	07:58 17:15	06:48 18:17	06:25 20:22	05:13 21:24	04:32 22:11	04:47 22:06	05:42 21:10	06:45 19:50	07:46 18:30	07:52 16:18	08:47 15:43
13	08:49 16:11	07:55 17:17	06:45 18:19	06:22 20:24	05:11 21:26	04:31 22:12	04:48 22:05	05:44 21:07	06:47 19:48	07:48 18:27	07:55 16:16	08:48 15:43
14	08:48 16:13	07:53 17:20	06:42 18:21	06:20 20:26	05:09 21:28	04:31 22:13	04:50 22:04	05:46 21:05	06:49 19:45	07:50 18:25	07:57 16:14	08:49 15:43
15	08:47 16:15	07:51 17:22	06:40 18:23	06:17 20:28	05:08 21:30	04:30 22:14	04:51 22:03	05:48 21:03	06:51 19:42	07:52 18:22	07:59 16:13	08:50 15:43
16	08:46 16:17	07:48 17:24	06:37 18:25	06:15 20:30	05:06 21:32	04:30 22:14	04:53 22:01	05:50 21:00	06:53 19:40	07:54 18:20	08:01 16:11	08:51 15:43
17	08:45 16:19	07:46 17:26	06:34 18:27	06:12 20:32	05:04 21:33	04:30 22:15	04:54 22:00	05:52 20:58	06:55 19:37	07:56 18:17	08:03 16:09	08:52 15:43
18	08:44 16:21	07:44 17:29	06:32 18:29	06:09 20:34	05:02 21:35	04:30 22:15	04:56 21:59	05:54 20:55	06:57 19:34	07:58 18:15	08:05 16:07	08:53 15:43
19	08:42 16:23	07:41 17:31	06:29 18:31	06:07 20:36	05:00 21:37	04:30 22:16	04:57 21:57	05:56 20:53	06:59 19:31	08:00 18:12	08:07 16:06	08:53 15:43
20	08:41 16:25	07:39 17:33	06:26 18:34	06:04 20:38	04:58 21:39	04:30 22:16	04:59 21:56	05:58 20:50	07:01 19:29	08:02 18:10	08:09 16:04	08:54 15:43
21	08:39 16:27	07:36 17:35	06:24 18:36	06:02 20:40	04:57 21:41	04:30 22:16	05:01 21:54	06:00 20:48	07:03 19:26	08:05 18:07	08:11 16:03	08:55 15:44
22	08:38 16:29	07:34 17:37	06:21 18:38	05:59 20:43	04:55 21:43	04:30 22:17	05:02 21:52	06:02 20:45	07:05 19:23	08:07 18:05	08:13 16:01	08:55 15:44
23	08:36 16:31	07:32 17:40	06:18 18:40	05:57 20:45	04:53 21:44	04:30 22:17	05:04 21:51	06:04 20:43	07:07 19:21	08:09 18:02	08:15 16:00	08:56 15:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:54 20:47	04:52 21:46	04:31 22:17	05:06 21:49	06:06 20:40	07:09 19:18	08:11 18:00	08:17 15:58	08:56 15:45
25	08:33 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:31 22:17	05:08 21:47	06:09 20:38	07:11 19:15	08:13 17:57	08:19 15:57	08:57 15:46
26	08:32 16:37	07:24 17:46	06:10 18:46	05:50 20:51	04:49 21:50	04:32 22:17	05:09 21:45	06:11 20:35	07:13 19:13	08:15 17:55	08:21 15:56	08:57 15:47
27	08:30 16:39	07:22 17:49	06:08 18:48	05:47 20:53	04:47 21:51	04:32 22:17	05:11 21:44	06:13 20:33	07:15 19:10	08:18 17:53	08:23 15:54	08:57 15:48
28	08:28 16:42	07:19 17:51	06:05 18:50	05:45 20:55	04:46 21:53	04:33 22:16	05:13 21:42	06:15 20:30	07:17 19:07	08:20 17:50	08:25 15:53	08:57 15:48
29	08:26 16:44		07:02 19:52	05:42 20:57	04:44 21:54	04:33 22:16	05:15 21:40	06:17 20:28	07:19 19:04	08:22 17:48	08:27 15:52	08:57 15:49
30	08:24 16:46		07:00 19:54	05:40 20:59	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	08:24 17:46	08:29 15:51	08:57 15:50
31	08:23 16:48		06:57 19:57		04:42 21:57		05:19 21:36	06:21 20:22		07:26 17:43		08:57 15:52
Potential sun hours	235	266	366	426	508	529	530	470	385	323	247	216
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Indras - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (198)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:50	07:16 17:53	06:54 19:59	05:38 21:01	04:41 21:59	04:35 22:15	05:21 21:34	06:23 20:20	07:23 18:59	07:28 16:41	08:30 15:50
2	08:57 15:54	08:19 16:53	07:14 17:55	06:51 20:01	05:35 21:03	04:40 22:00	04:36 22:15	05:23 21:32	06:25 20:17	07:25 18:56	07:31 16:39	08:32 15:49
3	08:56 15:56	08:17 16:55	07:11 17:57	06:49 20:03	05:33 21:05	04:38 22:01	04:36 22:14	05:25 21:30	06:27 20:14	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 17:59	06:46 20:05	05:31 21:08	04:37 22:03	04:37 22:14	05:26 21:28	06:29 20:12	07:29 18:51	07:35 16:35	08:35 15:47
5	08:55 15:58	08:13 16:59	07:06 18:02	06:43 20:07	05:29 21:10	04:37 22:04	04:38 22:13	05:28 21:25	06:31 20:09	07:31 18:48	07:37 16:32	08:37 15:47
6	08:55 16:00	08:11 17:02	07:03 18:04	06:41 20:09	05:26 21:12	04:36 22:05	04:39 22:12	05:30 21:23	06:33 20:06	07:33 18:46	07:39 16:30	08:38 15:46
7	08:54 16:01	08:08 17:04	07:01 18:06	06:38 20:11	05:24 21:14	04:35 22:06	04:41 22:11	05:32 21:21	06:35 20:04	07:35 18:43	07:41 16:28	08:40 15:45
8	08:54 16:03	08:06 17:06	06:58 18:08	06:35 20:13	05:22 21:16	04:34 22:07	04:42 22:10	05:34 21:19	06:37 20:01	07:37 18:40	07:44 16:26	08:41 15:45
9	08:53 16:04	08:04 17:08	06:56 18:10	06:33 20:15	05:20 21:18	04:33 22:09	04:43 22:10	05:36 21:17	06:39 19:58	07:39 18:38	07:46 16:24	08:43 15:44
10	08:52 16:06	08:02 17:11	06:53 18:12	06:30 20:17	05:18 21:20	04:33 22:10	04:44 22:09	05:38 21:14	06:41 19:56	07:41 18:35	07:48 16:22	08:44 15:44
11	08:51 16:08	08:00 17:13	06:50 18:14	06:28 20:19	05:16 21:22	04:32 22:10	04:46 22:07	05:40 21:12	06:43 19:53	07:43 18:33	07:50 16:20	08:45 15:43
12	08:50 16:09	07:58 17:15	06:48 18:17	06:25 20:22	05:14 21:24	04:32 22:11	04:47 22:06	05:42 21:10	06:45 19:50	07:45 18:30	07:52 16:18	08:47 15:43
13	08:49 16:11	07:55 17:17	06:45 18:19	06:22 20:24	05:11 21:26	04:31 22:12	04:48 22:05	05:44 21:07	06:47 19:48	07:48 18:27	07:54 16:16	08:48 15:43
14	08:48 16:13	07:53 17:20	06:42 18:21	06:20 20:26	05:09 21:28	04:31 22:13	04:50 22:04	05:46 21:05	06:49 19:45	07:50 18:25	07:57 16:14	08:49 15:43
15	08:47 16:15	07:51 17:22	06:40 18:23	06:17 20:28	05:08 21:30	04:30 22:14	04:51 22:03	05:48 21:03	06:51 19:42	07:52 18:22	07:59 16:13	08:50 15:43
16	08:46 16:17	07:48 17:24	06:37 18:25	06:15 20:30	05:06 21:31	04:30 22:14	04:53 22:01	05:50 21:00	06:53 19:40	07:54 18:20	08:01 16:11	08:51 15:43
17	08:45 16:19	07:46 17:26	06:34 18:27	06:12 20:32	05:04 21:33	04:30 22:15	04:54 22:00	05:52 20:58	06:55 19:37	07:56 18:17	08:03 16:09	08:52 15:43
18	08:43 16:21	07:44 17:29	06:32 18:29	06:09 20:34	05:02 21:35	04:30 22:15	04:56 21:59	05:54 20:55	06:57 19:34	07:58 18:15	08:05 16:07	08:53 15:43
19	08:42 16:23	07:41 17:31	06:29 18:31	06:07 20:36	05:00 21:37	04:30 22:16	04:57 21:57	05:56 20:53	06:59 19:31	08:00 18:12	08:07 16:06	08:53 15:43
20	08:41 16:25	07:39 17:33	06:26 18:34	06:04 20:38	04:58 21:39	04:30 22:16	04:59 21:56	05:58 20:50	07:01 19:29	08:02 18:10	08:09 16:04	08:54 15:43
21	08:39 16:27	07:36 17:35	06:24 18:36	06:02 20:40	04:57 21:41	04:30 22:16	05:01 21:54	06:00 20:48	07:03 19:26	08:05 18:07	08:11 16:03	08:55 15:44
22	08:38 16:29	07:34 17:37	06:21 18:38	05:59 20:43	04:55 21:43	04:30 22:16	05:02 21:52	06:02 20:45	07:05 19:23	08:07 18:05	08:13 16:01	08:55 15:44
23	08:36 16:31	07:31 17:40	06:18 18:40	05:57 20:45	04:53 21:44	04:30 22:17	05:04 21:51	06:04 20:43	07:07 19:21	08:09 18:02	08:15 16:00	08:56 15:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:54 20:47	04:52 21:46	04:31 22:17	05:06 21:49	06:06 20:40	07:09 19:18	08:11 18:00	08:17 15:58	08:56 15:45
25	08:33 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:31 22:17	05:08 21:47	06:09 20:38	07:11 19:15	08:13 17:57	08:19 15:57	08:56 15:46
26	08:31 16:37	07:24 17:46	06:10 18:46	05:50 20:51	04:49 21:49	04:32 22:17	05:09 21:45	06:11 20:35	07:13 19:12	08:15 17:55	08:21 15:56	08:57 15:47
27	08:30 16:39	07:21 17:49	06:08 18:48	05:47 20:53	04:47 21:51	04:32 22:16	05:11 21:44	06:13 20:33	07:15 19:10	08:17 17:53	08:23 15:54	08:57 15:48
28	08:28 16:42	07:19 17:51	06:05 18:50	05:45 20:55	04:46 21:53	04:33 22:16	05:13 21:42	06:15 20:30	07:17 19:07	08:19 17:50	08:25 15:53	08:57 15:49
29	08:26 16:44		07:02 19:52	05:42 20:57	04:44 21:54	04:33 22:16	05:15 21:40	06:17 20:28	07:19 19:04	08:22 17:48	08:27 15:52	08:57 15:49
30	08:24 16:46		06:59 19:54	05:40 20:59	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	08:24 17:46	08:28 15:51	08:57 15:50
31	08:23 16:48		06:57 19:57		04:42 21:57		05:19 21:36	06:21 20:22		07:26 16:43		08:57 15:52
Potential sun hours	235	266	366	426	508	529	530	470	385	324	247	216
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian & Lithuanian environment  
Vilandes 3-6  
LV-1010 Riga  
0037167242411  
Laura Kurzemniece / laura.kurzemniece@environment.lv  
Calculated:  
07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Jaunbirznieki - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (185)  
Assumptions for shadow calculations Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December	
1	08:57 15:53	08:21 16:51	07:17 17:53	06:54 19:59	05:38 21:02	04:41 21:59	05:31 (3) 05:53 (3)	04:35 22:15	05:40 (3) 05:57 (3)	05:21 21:34	06:23 20:20	07:23 18:59	07:29 16:41
2	08:57 15:55	08:19 16:53	07:14 17:55	06:52 20:01	05:36 21:04	04:40 22:00	05:31 (3) 05:52 (3)	04:36 22:15	05:39 (3) 05:56 (3)	05:23 21:32	06:25 20:17	07:25 18:57	07:31 16:39
3	08:57 15:56	08:17 16:55	07:12 17:58	06:49 20:03	05:33 21:06	04:39 22:02	05:32 (3) 05:53 (3)	04:37 22:14	05:39 (3) 05:57 (3)	05:25 21:30	06:27 20:15	07:27 18:54	07:33 16:37
4	08:56 15:57	08:15 16:57	07:09 18:00	06:46 20:05	05:31 21:08	04:38 22:03	05:32 (3) 05:53 (3)	04:38 22:14	05:39 (3) 05:58 (3)	05:27 21:28	06:29 20:12	07:29 18:51	07:35 16:35
5	08:56 15:59	08:13 17:00	07:06 18:02	06:44 20:07	05:29 21:10	04:37 22:04	05:33 (3) 05:53 (3)	04:39 22:13	05:39 (3) 05:58 (3)	05:29 21:26	06:31 20:09	07:31 18:49	07:37 16:33
6	08:55 16:00	08:11 17:02	07:04 18:04	06:41 20:09	05:27 21:12	04:36 22:06	05:33 (3) 05:52 (3)	04:40 22:12	05:39 (3) 05:59 (3)	05:31 21:24	06:33 20:07	07:33 18:46	07:40 16:31
7	08:55 16:01	08:09 17:04	07:01 18:06	06:38 20:11	05:24 21:14	04:35 22:07	05:34 (3) 05:53 (3)	04:41 22:12	05:39 (3) 05:59 (3)	05:33 21:21	06:35 20:04	07:35 18:43	07:42 16:28
8	08:54 16:03	08:07 17:06	06:59 18:08	06:36 20:14	05:22 21:16	04:34 22:08	05:34 (3) 05:52 (3)	04:42 22:11	05:39 (3) 05:59 (3)	05:35 21:19	06:37 20:01	07:37 18:41	07:44 16:26
9	08:53 16:05	08:04 17:09	06:56 18:10	06:33 20:16	05:20 21:18	04:34 22:09	05:35 (3) 05:53 (3)	04:43 22:10	05:39 (3) 06:00 (3)	05:37 21:17	06:39 19:59	07:40 18:38	07:46 16:24
10	08:52 16:06	08:02 17:11	06:53 18:13	06:30 20:18	05:18 21:20	04:33 22:10	05:35 (3) 05:52 (3)	04:44 22:09	05:39 (3) 06:00 (3)	05:39 21:15	06:41 19:56	07:42 18:35	07:48 16:22
11	08:52 16:08	08:00 17:13	06:51 18:15	06:28 20:20	05:16 21:22	04:32 22:11	05:36 (3) 05:52 (3)	04:46 22:08	05:39 (3) 06:01 (3)	05:41 21:12	06:43 19:53	07:44 18:33	07:50 16:20
12	08:51 16:10	07:58 17:15	06:48 18:17	06:25 20:22	05:14 21:24	04:32 22:12	05:36 (3) 05:52 (3)	04:47 22:07	05:39 (3) 06:01 (3)	05:43 21:10	06:45 19:51	07:46 18:30	07:53 16:18
13	08:50 16:11	07:56 17:18	06:45 18:19	06:23 20:24	05:12 21:26	04:31 22:12	05:36 (3) 05:52 (3)	04:48 22:05	05:39 (3) 06:01 (3)	05:45 21:08	06:47 19:48	07:48 18:28	07:55 16:17
14	08:49 16:13	07:53 17:20	06:43 18:21	06:20 20:26	05:10 21:28	04:31 22:13	05:37 (3) 05:52 (3)	04:50 22:04	05:39 (3) 06:01 (3)	05:47 21:05	06:49 19:45	07:50 18:25	07:57 16:15
15	08:47 16:15	07:51 17:22	06:40 18:23	06:17 20:28	05:08 21:30	04:31 22:14	05:38 (3) 05:52 (3)	04:51 22:03	05:39 (3) 06:02 (3)	05:49 21:03	06:51 19:43	07:52 18:23	07:59 16:13
16	08:46 16:17	07:49 17:24	06:37 18:25	06:15 20:30	05:06 21:32	04:30 22:14	05:37 (3) 05:47 (3)	04:53 22:02	05:39 (3) 06:02 (3)	05:51 21:00	06:53 19:40	07:54 18:20	08:01 16:11
17	08:45 16:19	07:46 17:27	06:35 18:27	06:12 20:32	05:04 21:34	04:30 22:15	05:38 (3) 05:48 (3)	04:54 22:00	05:40 (3) 06:02 (3)	05:53 20:58	06:55 19:37	07:56 18:17	08:03 16:09
18	08:44 16:21	07:44 17:29	06:32 18:30	06:10 20:34	05:02 21:36	04:30 22:15	05:38 (3) 05:49 (3)	04:56 21:59	05:39 (3) 06:02 (3)	05:55 20:56	06:57 19:34	07:58 18:15	08:05 16:08
19	08:42 16:23	07:42 17:31	06:29 18:32	06:07 20:37	05:00 21:37	04:30 22:16	05:39 (3) 05:53 (3)	04:58 21:57	05:40 (3) 06:02 (3)	05:57 20:53	06:59 19:32	08:01 18:12	08:07 16:06
20	08:41 16:25	07:39 17:33	06:27 18:34	06:05 20:39	04:59 21:39	04:30 22:16	05:39 (3) 05:53 (3)	04:59 21:56	05:40 (3) 06:02 (3)	05:59 20:51	07:01 19:29	08:03 18:10	08:09 16:04
21	08:40 16:27	07:37 17:36	06:24 18:36	06:02 20:41	04:57 21:41	04:30 22:17	05:39 (3) 05:53 (3)	05:01 21:54	05:41 (3) 06:02 (3)	06:01 20:48	07:03 19:26	08:05 18:07	08:12 16:03
22	08:38 16:29	07:34 17:38	06:21 18:38	06:00 20:43	04:55 21:43	04:30 22:17	05:39 (3) 05:53 (3)	05:03 21:53	05:41 (3) 06:01 (3)	06:03 20:46	07:05 19:24	08:07 18:05	08:14 16:01
23	08:37 16:31	07:32 17:40	06:19 18:40	05:57 20:45	04:54 21:45	04:31 22:17	05:39 (3) 05:53 (3)	05:04 21:51	05:41 (3) 06:01 (3)	06:05 20:43	07:07 19:21	08:09 18:03	08:16 16:00
24	08:35 16:33	07:29 17:42	06:16 18:42	05:55 20:47	04:52 21:46	04:31 22:17	05:40 (3) 05:53 (3)	05:06 21:49	05:41 (3) 06:00 (3)	06:07 20:41	07:09 19:18	08:11 18:00	08:18 15:59
25	08:33 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:31 22:17	05:40 (3) 05:52 (3)	05:08 21:47	05:43 (3) 06:00 (3)	06:09 20:38	07:11 19:15	07:13 16:58	08:19 15:57
26	08:32 16:37	07:24 17:47	06:11 18:46	05:50 20:51	04:49 21:50	04:32 22:17	05:40 (3) 05:53 (3)	05:10 21:46	05:45 (3) 06:00 (3)	06:11 20:36	07:13 19:13	07:16 16:55	08:21 15:56
27	08:30 16:40	07:22 17:49	06:08 18:48	05:47 20:53	04:47 21:51	04:32 22:17	05:40 (3) 05:53 (3)	05:12 21:44	05:46 (3) 05:58 (3)	06:13 20:33	07:15 19:10	07:18 16:53	08:23 15:55
28	08:28 16:42	07:19 17:51	06:05 18:51	05:45 20:55	04:46 21:53	04:33 22:17	05:40 (3) 05:53 (3)	05:13 21:42	05:48 (3) 05:57 (3)	06:15 20:30	07:17 19:07	07:20 16:51	08:25 15:53
29	08:26 16:44		07:02 19:53	05:43 20:57	04:45 21:55	04:34 22:16	05:40 (3) 05:53 (3)	05:15 21:40	05:50 (3) 05:55 (3)	06:17 20:28	07:19 19:05	07:22 16:48	08:27 15:52
30	08:25 16:46		07:00 19:55	05:40 20:59	04:43 21:56	04:34 22:16	05:40 (3) 05:53 (3)	05:17 21:38		06:19 20:25	07:21 19:02	07:24 16:46	08:29 15:51
31	08:23 16:48		06:57 19:57		04:42 21:58	05:31 (3) 05:53 (3)	05:19 21:36	05:19 21:36	06:21 20:23		07:26 16:44	07:26 16:44	08:57 15:52
Potential sun hours	235	266	366	426	508	529	530	530	470	385	324	247	216
Total, worst case					326	487		553					
Sun reduction					0,59	0,57		0,48					
Oper. time red.					1,00	1,00		1,00					
Wind dir. red.					1,00	1,00		1,00					
Total reduction					0,59	0,57		0,48					
Total, real					191	278		264					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Jaunpenki - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (190)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:51	07:17 17:53	06:54 19:59	05:38 21:02	04:41 21:59	04:35 22:16	05:21 21:34	06:23 20:20	07:23 18:59	07:29 16:42	08:31 15:50
2	08:57 15:55	08:19 16:53	07:14 17:55	06:52 20:01	05:36 21:04	04:40 22:01	04:36 22:15	05:23 21:32	06:25 20:17	07:31 18:57	07:31 16:39	08:32 15:49
3	08:57 15:56	08:17 16:55	07:12 17:58	06:49 20:03	05:33 21:06	04:39 22:02	04:37 22:15	05:25 21:30	06:27 20:15	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 18:00	06:46 20:05	05:31 21:08	04:38 22:03	04:38 22:14	05:27 21:28	06:29 20:12	07:29 18:51	07:35 16:35	08:36 15:48
5	08:56 15:59	08:13 17:00	07:06 18:02	06:44 20:07	05:29 21:10	04:37 22:04	04:39 22:13	05:29 21:26	06:31 20:09	07:31 18:49	07:38 16:33	08:37 15:47
6	08:55 16:00	08:11 17:02	07:04 18:04	06:41 20:09	05:27 21:12	04:36 22:06	04:40 22:13	05:31 21:24	06:33 20:07	07:33 18:46	07:40 16:31	08:39 15:46
7	08:55 16:02	08:09 17:04	07:01 18:06	06:38 20:12	05:24 21:14	04:35 22:07	04:41 22:12	05:33 21:21	06:35 20:04	07:35 18:43	07:42 16:29	08:40 15:46
8	08:54 16:03	08:07 17:06	06:59 18:08	06:36 20:14	05:22 21:16	04:34 22:08	04:42 22:11	05:35 21:19	06:37 20:01	07:38 18:41	07:44 16:26	08:42 15:45
9	08:53 16:05	08:05 17:09	06:56 18:11	06:33 20:16	05:20 21:18	04:34 22:09	04:43 22:10	05:37 21:17	06:39 19:59	07:40 18:38	07:46 16:24	08:43 15:44
10	08:52 16:06	08:02 17:11	06:53 18:13	06:31 20:18	05:18 21:20	04:33 22:10	04:45 22:09	05:39 21:15	06:41 19:56	07:42 18:36	07:48 16:22	08:44 15:44
11	08:52 16:08	08:00 17:13	06:51 18:15	06:28 20:20	05:16 21:22	04:32 22:11	04:46 22:08	05:41 21:12	06:43 19:53	07:44 18:33	07:51 16:20	08:46 15:44
12	08:51 16:10	07:58 17:15	06:48 18:17	06:25 20:22	05:14 21:24	04:32 22:12	04:47 22:07	05:43 21:10	06:45 19:51	07:46 18:30	07:53 16:19	08:47 15:43
13	08:50 16:12	07:56 17:18	06:45 18:19	06:23 20:24	05:12 21:26	04:31 22:13	04:49 22:06	05:45 21:08	06:47 19:48	07:48 18:28	07:55 16:17	08:48 15:43
14	08:49 16:13	07:53 17:20	06:43 18:21	06:20 20:26	05:10 21:28	04:31 22:13	04:50 22:04	05:47 21:05	06:49 19:45	07:50 18:25	07:57 16:15	08:49 15:43
15	08:48 16:15	07:51 17:22	06:40 18:23	06:18 20:28	05:08 21:30	04:31 22:14	04:51 22:03	05:49 21:03	06:51 19:43	07:52 18:23	07:59 16:13	08:50 15:43
16	08:46 16:17	07:49 17:24	06:37 18:25	06:15 20:30	05:06 21:32	04:31 22:15	04:53 22:02	05:51 21:01	06:53 19:40	07:54 18:20	08:01 16:11	08:51 15:43
17	08:45 16:19	07:46 17:27	06:35 18:28	06:12 20:32	05:04 21:34	04:30 22:15	04:55 22:00	05:53 20:58	06:55 19:37	07:56 18:18	08:03 16:09	08:52 15:43
18	08:44 16:21	07:44 17:29	06:32 18:30	06:10 20:35	05:02 21:36	04:30 22:16	04:56 21:59	05:55 20:56	06:57 19:34	07:58 18:15	08:05 16:08	08:53 15:43
19	08:43 16:23	07:42 17:31	06:29 18:32	06:07 20:37	05:00 21:38	04:30 22:16	04:58 21:57	05:57 20:53	06:59 19:32	08:01 18:13	08:08 16:06	08:54 15:43
20	08:41 16:25	07:39 17:33	06:27 18:34	06:05 20:39	04:59 21:39	04:30 22:16	04:59 21:56	05:59 20:51	07:01 19:29	08:03 18:10	08:10 16:05	08:54 15:44
21	08:40 16:27	07:37 17:36	06:24 18:36	06:02 20:41	04:57 21:41	04:30 22:17	05:01 21:54	06:01 20:48	07:03 19:26	08:05 18:08	08:12 16:03	08:55 15:44
22	08:38 16:29	07:34 17:38	06:21 18:38	06:00 20:43	04:55 21:43	04:31 22:17	05:03 21:53	06:03 20:46	07:05 19:24	08:07 18:05	08:14 16:01	08:56 15:45
23	08:37 16:31	07:32 17:40	06:19 18:40	05:57 20:45	04:54 21:45	04:31 22:17	05:04 21:51	06:05 20:43	07:07 19:21	08:09 18:03	08:16 16:00	08:56 15:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:55 20:47	04:52 21:46	04:31 22:17	05:06 21:49	06:07 20:41	07:09 19:18	08:11 18:00	08:18 15:59	08:56 15:46
25	08:34 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:31 22:17	05:08 21:48	06:09 20:38	07:11 19:16	08:14 18:16	08:20 15:57	08:57 15:46
26	08:32 16:38	07:24 17:47	06:11 18:46	05:50 20:51	04:49 21:50	04:32 22:17	05:10 21:46	06:11 20:36	07:13 19:13	08:16 18:15	08:21 15:56	08:57 15:47
27	08:30 16:40	07:22 17:49	06:08 18:49	05:47 20:53	04:48 21:51	04:32 22:17	05:12 21:44	06:13 20:33	07:15 19:10	08:18 18:10	08:23 16:53	08:57 15:48
28	08:28 16:42	07:19 17:51	06:05 18:51	05:45 20:55	04:46 21:53	04:33 22:17	05:13 21:42	06:15 20:30	07:17 19:07	08:20 18:05	08:25 16:51	08:57 15:49
29	08:27 16:44		07:03 19:53	05:43 20:58	04:45 21:55	04:34 22:16	05:15 21:40	06:17 20:28	07:19 19:05	08:22 18:05	08:27 16:48	08:58 15:50
30	08:25 16:46		07:00 19:55	05:40 21:00	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	08:24 18:05	08:29 16:46	08:57 15:51
31	08:23 16:48		06:57 19:57		04:42 21:58		05:19 21:36	06:21 20:23		07:27 18:05	07:27 16:44	08:57 15:52
Potential sun hours	235	266	366	426	508	529	530	470	385	323	247	216
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian & Lithuanian environment  
Vilandes 3-6  
LV-1010 Riga  
0037167242411  
Laura Kurzemniece / laura.kurzemniece@environment.lv  
Calculated:  
07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Jaunstamuri - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (199)  
Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December		
1	08:57 15:53	08:21 16:51	07:17 17:53	06:54 19:59	05:38 21:02	04:41 21:59	05:31 (3) 06:02 (3)	04:35 22:15	05:37 (3) 06:10 (3)	05:21 21:34	06:23 20:20	07:23 18:59	07:29 16:41	08:31 15:50
2	08:57 15:54	08:19 16:53	07:14 17:55	06:52 20:01	05:36 21:04	04:40 22:00	05:31 (3) 06:02 (3)	04:36 22:15	05:36 (3) 06:09 (3)	05:23 21:32	06:25 20:17	07:25 18:57	07:31 16:39	08:32 15:49
3	08:57 15:56	08:17 16:55	07:12 17:57	06:49 20:03	05:33 21:06	04:39 22:02	05:32 (3) 06:04 (3)	04:37 22:14	05:37 (3) 06:10 (3)	05:25 21:30	06:27 20:15	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 18:00	06:46 20:05	05:31 21:08	04:38 22:03	05:32 (3) 06:04 (3)	04:38 22:14	05:37 (3) 06:10 (3)	05:27 21:28	06:29 20:12	07:29 18:51	07:35 16:35	08:36 15:47
5	08:56 15:58	08:13 17:00	07:06 18:02	06:44 20:07	05:29 21:10	04:37 22:04	05:32 (3) 06:04 (3)	04:39 22:13	05:37 (3) 06:10 (3)	05:29 21:26	06:31 20:09	07:31 18:49	07:37 16:33	08:37 15:47
6	08:55 16:00	08:11 17:02	07:04 18:04	06:41 20:09	05:26 21:12	04:36 22:06	05:31 (3) 06:04 (3)	04:40 22:12	05:38 (3) 06:10 (3)	05:31 21:24	06:33 20:07	07:33 18:46	07:40 16:31	08:39 15:46
7	08:55 16:01	08:09 17:04	07:01 18:06	06:38 20:11	05:24 21:14	04:35 22:07	05:32 (3) 06:05 (3)	04:41 22:12	05:38 (3) 06:10 (3)	05:33 21:21	06:35 20:04	07:35 18:43	07:42 16:28	08:40 15:45
8	08:54 16:03	08:07 17:06	06:59 18:08	06:36 20:13	05:22 21:16	04:34 22:08	05:32 (3) 06:05 (3)	04:42 22:11	05:38 (3) 06:10 (3)	05:35 21:19	06:37 20:01	07:37 18:41	07:44 16:26	08:42 15:45
9	08:53 16:05	08:04 17:09	06:56 18:10	06:33 20:16	05:20 21:18	04:34 22:09	05:32 (3) 06:05 (3)	04:43 22:10	05:38 (3) 06:10 (3)	05:37 21:17	06:39 19:59	07:40 18:38	07:46 16:24	08:43 15:44
10	08:52 16:06	08:02 17:11	06:53 18:13	06:30 20:18	05:18 21:20	04:33 22:10	05:32 (3) 06:05 (3)	04:44 22:09	05:39 (3) 06:10 (3)	05:39 21:15	06:41 19:56	07:42 18:35	07:48 16:22	08:44 15:44
11	08:51 16:08	08:00 17:13	06:51 18:15	06:28 20:20	05:16 21:22	04:32 22:11	05:33 (3) 06:06 (3)	04:46 22:08	05:40 (3) 06:11 (3)	05:41 21:12	06:43 19:53	07:44 18:33	07:50 16:20	08:46 15:44
12	08:51 16:10	07:58 17:15	06:48 18:17	06:25 20:22	05:14 21:24	04:32 22:12	05:32 (3) 06:05 (3)	04:47 22:07	05:40 (3) 06:10 (3)	05:43 21:10	06:45 19:51	07:46 18:30	07:53 16:18	08:47 15:43
13	08:50 16:11	07:56 17:18	06:45 18:19	06:23 20:24	05:12 21:26	04:31 22:12	05:33 (3) 06:06 (3)	04:48 22:05	05:40 (3) 06:10 (3)	05:45 21:08	06:47 19:48	07:48 18:28	07:55 16:17	08:48 15:43
14	08:49 16:13	07:53 17:20	06:43 18:21	06:20 20:26	05:10 21:28	04:31 22:13	05:33 (3) 06:06 (3)	04:50 22:04	05:40 (3) 06:09 (3)	05:47 21:05	06:49 19:45	07:50 18:25	07:57 16:15	08:49 15:43
15	08:47 16:15	07:51 17:22	06:40 18:23	06:17 20:28	05:08 21:30	04:31 22:14	05:33 (3) 06:07 (3)	04:51 22:03	05:41 (3) 06:10 (3)	05:49 21:03	06:51 19:42	07:52 18:23	07:59 16:13	08:50 15:43
16	08:46 16:17	07:49 17:24	06:37 18:25	06:15 20:30	05:06 21:32	04:30 22:14	05:33 (3) 06:06 (3)	04:53 22:02	05:42 (3) 06:09 (3)	05:51 21:00	06:53 19:40	07:54 18:20	08:01 16:11	08:51 15:43
17	08:45 16:19	07:46 17:27	06:35 18:27	06:12 20:32	05:04 21:34	04:30 22:15	05:33 (3) 06:06 (3)	04:54 22:00	05:43 (3) 06:09 (3)	05:53 20:58	06:55 19:37	07:56 18:17	08:03 16:09	08:52 15:43
18	08:44 16:21	07:44 17:29	06:32 18:30	06:10 20:34	05:02 21:36	04:30 22:15	05:33 (3) 06:06 (3)	04:56 21:59	05:43 (3) 06:08 (3)	05:55 20:56	06:57 19:34	07:58 18:15	08:05 16:08	08:53 15:43
19	08:42 16:23	07:41 17:31	06:29 18:32	06:07 20:36	05:00 21:37	04:30 22:16	05:33 (3) 06:07 (3)	04:58 21:57	05:43 (3) 06:07 (3)	05:57 20:53	06:59 19:32	08:01 18:12	08:07 16:06	08:54 15:43
20	08:41 16:25	07:39 17:33	06:27 18:34	06:05 20:39	04:59 21:39	04:30 22:16	05:34 (3) 06:08 (3)	04:59 21:56	05:45 (3) 06:07 (3)	05:59 20:51	07:01 19:29	08:03 18:10	08:09 16:04	08:54 15:44
21	08:40 16:27	07:37 17:35	06:24 18:36	06:02 20:41	04:57 21:41	04:30 22:16	05:35 (3) 06:08 (3)	05:01 21:54	05:45 (3) 06:06 (3)	06:01 20:48	07:03 19:26	08:05 18:07	08:12 16:03	08:55 15:44
22	08:38 16:29	07:34 17:38	06:21 18:38	06:00 20:43	04:55 21:43	04:30 22:17	05:35 (3) 06:08 (3)	05:03 21:53	05:47 (3) 06:05 (3)	06:03 20:46	07:05 19:24	08:07 18:05	08:14 16:01	08:55 15:44
23	08:37 16:31	07:32 17:40	06:19 18:40	05:57 20:45	04:53 21:45	04:31 22:17	05:34 (3) 06:08 (3)	05:04 21:51	05:49 (3) 06:04 (3)	06:05 20:43	07:07 19:21	08:09 18:03	08:16 16:00	08:56 15:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:55 20:47	04:52 21:46	04:31 22:17	05:35 (3) 06:09 (3)	05:06 21:49	05:50 (3) 06:02 (3)	06:07 20:41	07:09 19:18	08:11 18:00	08:18 15:58	08:56 15:46
25	08:33 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:31 22:17	05:35 (3) 06:08 (3)	05:08 21:47	05:55 (3) 05:58 (3)	06:09 20:38	07:11 19:15	07:13 16:58	08:19 15:57	08:57 15:46
26	08:32 16:37	07:24 17:47	06:10 18:46	05:50 20:51	04:49 21:50	04:32 22:17	05:36 (3) 06:09 (3)	05:10 21:46	06:11 20:36	06:11 19:13	07:13 16:55	07:16 15:56	08:21 15:47	08:57 15:47
27	08:30 16:40	07:22 17:49	06:08 18:48	05:47 20:53	04:47 21:51	04:32 22:17	05:36 (3) 06:09 (3)	05:12 21:44	06:13 20:33	06:13 19:10	07:15 16:53	07:18 15:55	08:23 15:48	08:57 15:48
28	08:28 16:42	07:19 17:51	06:05 18:51	05:45 20:55	04:46 21:53	04:33 22:17	05:36 (3) 06:09 (3)	05:13 21:42	06:15 20:30	07:17 19:07	07:20 16:51	08:25 15:53	08:57 15:49	08:57 15:49
29	08:26 16:44		07:02 19:53	05:43 20:57	04:45 21:55	04:34 22:16	05:36 (3) 06:09 (3)	05:15 21:40	06:17 20:28	07:19 19:05	07:22 16:48	08:27 15:52	08:57 15:50	08:57 15:50
30	08:25 16:46		07:00 19:55	05:40 20:59	04:43 21:56	04:34 22:16	05:36 (3) 06:09 (3)	05:17 21:38	06:19 20:25	07:21 19:02	07:24 16:46	08:29 15:51	08:57 15:51	08:57 15:51
31	08:23 16:48		06:57 19:57		04:42 21:58	04:33 06:02 (3)		05:19 21:36	06:21 20:23		07:26 16:44		08:57 15:52	08:57 15:52
Potential sun hours	235	266	366	426	508	529	530	470	385	323	247	216		
Total, worst case					295	988	666							
Sun reduction					0,59	0,57	0,48							
Oper. time red.					1,00	1,00	1,00							
Wind dir. red.					1,00	1,00	1,00							
Total reduction					0,59	0,57	0,48							
Total, real					173	563	318							

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Jaunsetas - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (231)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:51	07:17 17:53	06:54 19:59	05:38 21:02	04:41 21:59	04:35 22:16	05:21 21:34	06:23 20:20	07:23 18:59	07:29 16:42	08:31 15:50
2	08:57 15:55	08:19 16:53	07:14 17:55	06:52 20:01	05:36 21:04	04:40 22:01	04:36 22:15	05:23 21:32	06:25 20:17	07:31 18:57	07:31 16:39	08:32 15:49
3	08:57 15:56	08:17 16:55	07:12 17:58	06:49 20:03	05:33 21:06	04:39 22:02	04:37 22:15	05:25 21:30	06:27 20:15	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 18:00	06:46 20:05	05:31 21:08	04:38 22:03	04:38 22:14	05:27 21:28	06:29 20:12	07:29 18:51	07:35 16:35	08:36 15:48
5	08:56 15:59	08:13 17:00	07:06 18:02	06:44 20:07	05:29 21:10	04:37 22:04	04:39 22:13	05:29 21:26	06:31 20:09	07:31 18:49	07:38 16:33	08:37 15:47
6	08:55 16:00	08:11 17:02	07:04 18:04	06:41 20:09	05:27 21:12	04:36 22:06	04:40 22:13	05:31 21:24	06:33 20:07	07:33 18:46	07:40 16:31	08:39 15:46
7	08:55 16:02	08:09 17:04	07:01 18:06	06:39 20:12	05:24 21:14	04:35 22:07	04:41 22:12	05:33 21:22	06:35 20:04	07:36 18:43	07:42 16:29	08:40 15:45
8	08:54 16:03	08:07 17:06	06:59 18:08	06:36 20:14	05:22 21:16	04:34 22:08	04:42 22:11	05:35 21:19	06:37 20:01	07:38 18:41	07:44 16:26	08:42 15:45
9	08:53 16:05	08:05 17:09	06:56 18:11	06:33 20:16	05:20 21:18	04:34 22:09	04:43 22:10	05:37 21:17	06:39 19:59	07:40 18:38	07:46 16:24	08:43 15:44
10	08:53 16:06	08:02 17:11	06:53 18:13	06:31 20:18	05:18 21:20	04:33 22:10	04:44 22:09	05:39 21:15	06:41 19:56	07:42 18:36	07:48 16:22	08:44 15:44
11	08:52 16:08	08:00 17:13	06:51 18:15	06:28 20:20	05:16 21:22	04:32 22:11	04:46 22:08	05:41 21:12	06:43 19:53	07:44 18:33	07:51 16:20	08:46 15:44
12	08:51 16:10	07:58 17:15	06:48 18:17	06:25 20:22	05:14 21:24	04:32 22:12	04:47 22:07	05:43 21:10	06:45 19:51	07:46 18:30	07:53 16:19	08:47 15:43
13	08:50 16:12	07:56 17:18	06:45 18:19	06:23 20:24	05:12 21:26	04:31 22:13	04:49 22:06	05:45 21:08	06:47 19:48	07:48 18:28	07:55 16:17	08:48 15:43
14	08:49 16:13	07:53 17:20	06:43 18:21	06:20 20:26	05:10 21:28	04:31 22:13	04:50 22:04	05:47 21:05	06:49 19:45	07:50 18:25	07:57 16:15	08:49 15:43
15	08:48 16:15	07:51 17:22	06:40 18:23	06:18 20:28	05:08 21:30	04:31 22:14	04:51 22:03	05:49 21:03	06:51 19:43	07:52 18:23	07:59 16:13	08:50 15:43
16	08:46 16:17	07:49 17:24	06:37 18:25	06:15 20:30	05:06 21:32	04:31 22:15	04:53 22:02	05:51 21:01	06:53 19:40	07:54 18:20	08:01 16:11	08:51 15:43
17	08:45 16:19	07:46 17:27	06:35 18:28	06:12 20:32	05:04 21:34	04:30 22:15	04:54 22:00	05:53 20:58	06:55 19:37	07:56 18:18	08:03 16:09	08:52 15:43
18	08:44 16:21	07:44 17:29	06:32 18:30	06:10 20:35	05:02 21:36	04:30 22:16	04:56 21:59	05:55 20:56	06:57 19:35	07:59 18:15	08:06 16:08	08:53 15:43
19	08:43 16:23	07:42 17:31	06:29 18:32	06:07 20:37	05:00 21:38	04:30 22:16	04:58 21:58	05:57 20:53	06:59 19:32	08:01 18:13	08:08 16:06	08:54 15:43
20	08:41 16:25	07:39 17:33	06:27 18:34	06:05 20:39	04:59 21:39	04:30 22:16	04:59 21:56	05:59 20:51	07:01 19:29	08:03 18:10	08:10 16:05	08:54 15:44
21	08:40 16:27	07:37 17:36	06:24 18:36	06:02 20:41	04:57 21:41	04:30 22:17	05:01 21:54	06:01 20:48	07:03 19:26	08:05 18:08	08:12 16:03	08:55 15:44
22	08:38 16:29	07:34 17:38	06:21 18:38	06:00 20:43	04:55 21:43	04:31 22:17	05:03 21:53	06:03 20:46	07:05 19:24	08:07 18:05	08:14 16:01	08:56 15:45
23	08:37 16:31	07:32 17:40	06:19 18:40	05:57 20:45	04:54 21:45	04:31 22:17	05:04 21:51	06:05 20:43	07:07 19:21	08:09 18:03	08:16 16:00	08:56 15:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:55 20:47	04:52 21:47	04:31 22:17	05:06 21:49	06:07 20:41	07:09 19:18	08:11 18:00	08:18 15:59	08:57 15:46
25	08:34 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:31 22:17	05:08 21:48	06:09 20:38	07:11 19:16	08:14 18:16	08:20 15:57	08:57 15:46
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28	08:28 16:42	07:19 17:51	06:05 18:51	05:45 20:55	04:46 21:53	04:33 22:17	05:13 21:42	06:15 20:31	07:17 19:07	08:20 18:05	08:25 16:51	08:58 15:49
29	08:27 16:44	07:19 19:53	06:03 19:53	05:43 20:58	04:45 21:55	04:34 22:16	05:15 21:40	06:17 20:28	07:19 19:05	08:22 18:05	08:27 16:48	08:58 15:50
30	08:25 16:46	07:00 19:55	05:40 21:00	05:40 21:00	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	08:24 18:05	08:29 16:46	08:58 15:51
31	08:23 16:48	06:57 19:57	05:37 21:00	05:37 21:00	04:42 21:58	04:32 22:16	05:19 21:36	06:21 20:23	07:27 19:02	08:27 18:05	08:32 16:44	08:57 15:52
Potential sun hours	235	266	366	426	508	529	530	470	385	323	247	216
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian & Lithuanian environment  
 Vilandes 3-6  
 LV-1010 Riga  
 0037167242411  
 Laura Kurzemniece / laura.kurzemniece@environment.lv  
 Calculated:  
 07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Jaunvilni - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (176)  
 Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 0,80 1,82 4,75 6,63 9,63 10,06 8,16 7,72 5,94 2,93 0,63 0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:51	07:17 17:53	06:54 19:59	05:38 21:02	04:41 21:59	04:35 22:16	05:21 21:34	06:23 20:20	07:23 18:59	07:29 16:41	08:31 15:50
2	08:57 15:55	08:19 16:53	07:14 17:55	06:52 20:01	05:36 21:04	04:40 22:00	04:36 22:15	05:23 21:32	06:25 20:17	07:25 18:57	07:31 16:39	08:32 15:49
3	08:57 15:56	08:17 16:55	07:12 17:58	06:49 20:03	05:33 21:06	04:39 22:02	04:37 22:15	05:25 21:30	06:27 20:15	07:27 18:54	07:33 16:37	08:34 15:48
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19	08:42 16:23	07:42 17:31	06:29 18:32	06:07 20:37	05:00 21:37	04:30 22:16	04:58 21:57	05:57 20:53	06:59 19:32	08:01 18:12	08:07 16:06	08:54 15:43
20	08:41 16:25	07:39 17:33	06:27 18:34	06:05 20:39	04:59 21:39	04:30 22:16	04:59 21:56	05:59 20:51	07:01 19:29	08:03 18:10	08:10 16:04	08:54 15:44
21	08:40 16:27	07:37 17:36	06:24 18:36	06:02 20:41	04:57 21:41	04:30 22:17	04:59 21:54	06:01 20:48	07:03 19:26	08:05 18:07	08:12 16:03	08:55 15:44
22	08:38 16:29	07:34 17:38	06:21 18:38	06:00 20:43	04:55 21:43	04:30 22:17	05:03 21:53	06:03 20:46	07:05 19:24	08:07 18:05	08:14 16:01	08:56 15:45
23	08:37 16:31	07:32 17:40	06:19 18:40	05:57 20:45	04:54 21:45	04:31 22:17	05:11 21:51	06:05 20:43	07:07 19:21	08:09 18:03	08:16 16:00	08:56 15:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:55 20:47	04:52 21:46	04:31 22:17	05:12 21:49	06:07 20:41	07:09 19:18	08:11 18:00	08:18 15:59	08:56 15:46
25	08:33 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:31 22:17	05:16 21:47	06:09 20:38	07:11 19:15	07:13 16:58	08:20 15:57	08:57 15:46
26	08:32 16:37	07:24 17:47	06:11 18:46	05:50 20:51	04:49 21:50	04:32 22:17	05:13 21:46	06:11 20:36	07:13 19:13	07:16 16:55	08:21 15:56	08:57 15:47
27	08:30 16:40	07:22 17:49	06:08 18:48	05:47 20:53	04:47 21:51	04:32 22:17	05:14 21:44	06:13 20:33	07:15 19:10	07:18 16:53	08:23 15:55	08:57 15:48
28	08:28 16:42	07:19 17:51	06:05 18:51	05:45 20:55	04:46 21:53	04:33 22:17	05:13 21:42	06:15 20:30	07:17 19:07	07:20 16:51	08:25 15:53	08:57 15:49
29	08:27 16:44	07:18 19:53	06:04 19:53	05:44 20:57	04:45 21:55	04:34 22:16	05:15 21:40	06:17 20:28	07:19 19:05	07:22 16:48	08:27 15:52	08:57 15:50
30	08:25 16:46	07:16 19:55	06:03 19:55	05:43 21:00	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	07:24 16:46	08:29 15:51	08:57 15:51
31	08:23 16:48	07:14 19:57	06:02 19:57	05:42 21:58	04:42 21:58	04:32 22:16	05:19 21:36	06:21 20:23	07:22 16:44	07:27 16:44	08:30 15:52	08:57 15:52
Potential sun hours	235	266	366	426	508	529	530	470	385	323	247	216
Total, worst case						80						
Sun reduction						0,57						
Oper. time red.						1,00						
Wind dir. red.						1,00						
Total reduction						0,57						
Total, real						46						

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Kalna Druvas - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (168)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:50	07:16 17:53	06:54 19:59	05:38 21:01	04:41 21:59	04:35 22:15	05:21 21:34	06:23 20:20	07:23 18:59	07:28 16:41	08:30 15:50
2	08:57 15:54	08:19 16:52	07:14 17:55	06:51 20:01	05:35 21:03	04:39 22:00	04:35 22:15	05:23 21:32	06:25 20:17	07:31 18:56	07:31 16:39	08:32 15:49
3	08:56 15:55	08:17 16:55	07:11 17:57	06:49 20:03	05:33 21:06	04:38 22:02	04:36 22:14	05:24 21:30	06:27 20:14	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 17:59	06:46 20:05	05:31 21:08	04:37 22:03	04:37 22:14	05:26 21:28	06:29 20:12	07:29 18:51	07:35 16:34	08:35 15:47
5	08:56 15:58	08:13 16:59	07:06 18:02	06:43 20:07	05:28 21:10	04:36 22:04	04:38 22:13	05:28 21:26	06:31 20:09	07:31 18:48	07:37 16:32	08:37 15:46
6	08:55 16:00	08:11 17:01	07:04 18:04	06:41 20:09	05:26 21:12	04:35 22:05	04:39 22:12	05:30 21:23	06:33 20:06	07:33 18:46	07:39 16:30	08:39 15:46
7	08:54 16:01	08:09 17:04	07:01 18:06	06:38 20:11	05:24 21:14	04:35 22:07	04:40 22:12	05:32 21:21	06:35 20:04	07:35 18:43	07:42 16:28	08:40 15:45
8	08:54 16:03	08:06 17:06	06:58 18:08	06:35 20:13	05:22 21:16	04:34 22:08	04:42 22:11	05:34 21:19	06:37 20:01	07:37 18:40	07:44 16:26	08:41 15:45
9	08:53 16:04	08:04 17:08	06:56 18:10	06:33 20:15	05:20 21:18	04:33 22:09	04:43 22:10	05:36 21:17	06:39 19:58	07:39 18:38	07:46 16:24	08:43 15:44
10	08:52 16:06	08:02 17:11	06:53 18:12	06:30 20:17	05:18 21:20	04:33 22:10	04:44 22:09	05:38 21:14	06:41 19:56	07:41 18:35	07:48 16:22	08:44 15:44
11	08:51 16:08	08:00 17:13	06:50 18:14	06:28 20:20	05:15 21:22	04:32 22:11	04:45 22:08	05:40 21:12	06:43 19:53	07:43 18:33	07:50 16:20	08:45 15:43
12	08:50 16:09	07:58 17:15	06:48 18:17	06:25 20:22	05:13 21:24	04:31 22:11	04:47 22:07	05:42 21:10	06:45 19:50	07:46 18:30	07:52 16:18	08:47 15:43
13	08:49 16:11	07:55 17:17	06:45 18:19	06:22 20:24	05:11 21:26	04:31 22:12	04:48 22:05	05:44 21:07	06:47 19:48	07:48 18:27	07:55 16:16	08:48 15:43
14	08:48 16:13	07:53 17:20	06:42 18:21	06:20 20:26	05:09 21:28	04:31 22:13	04:50 22:04	05:46 21:05	06:49 19:45	07:50 18:25	07:57 16:14	08:49 15:43
15	08:47 16:15	07:51 17:22	06:40 18:23	06:17 20:28	05:07 21:30	04:30 22:14	04:51 22:03	05:48 21:03	06:51 19:42	07:52 18:22	07:59 16:13	08:50 15:43
16	08:46 16:17	07:48 17:24	06:37 18:25	06:15 20:30	05:06 21:32	04:30 22:14	04:53 22:02	05:50 21:00	06:53 19:40	07:54 18:20	08:01 16:11	08:51 15:43
17	08:45 16:19	07:46 17:26	06:34 18:27	06:12 20:32	05:04 21:34	04:30 22:15	04:54 22:00	05:52 20:58	06:55 19:37	07:56 18:17	08:03 16:09	08:52 15:43
18	08:44 16:21	07:44 17:29	06:32 18:29	06:09 20:34	05:02 21:35	04:30 22:15	04:56 21:59	05:54 20:55	06:57 19:34	07:58 18:15	08:05 16:07	08:53 15:43
19	08:42 16:23	07:41 17:31	06:29 18:31	06:07 20:36	05:00 21:37	04:30 22:16	04:57 21:57	05:56 20:53	06:59 19:31	08:00 18:12	08:07 16:06	08:53 15:43
20	08:41 16:25	07:39 17:33	06:26 18:34	06:04 20:38	04:58 21:39	04:30 22:16	04:59 21:56	05:58 20:51	07:01 19:29	08:02 18:10	08:09 16:04	08:54 15:43
21	08:39 16:27	07:36 17:35	06:24 18:36	06:02 20:41	04:56 21:41	04:30 22:16	05:01 21:54	06:00 20:48	07:03 19:26	08:05 18:07	08:11 16:03	08:55 15:44
22	08:38 16:29	07:34 17:37	06:21 18:38	05:59 20:43	04:55 21:43	04:30 22:17	05:02 21:52	06:02 20:46	07:05 19:23	08:07 18:05	08:13 16:01	08:55 15:44
23	08:36 16:31	07:32 17:40	06:18 18:40	05:57 20:45	04:53 21:44	04:30 22:17	05:04 21:51	06:04 20:43	07:07 19:21	08:09 18:02	08:15 16:00	08:56 15:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:54 20:47	04:52 21:46	04:31 22:17	05:06 21:49	06:06 20:40	07:09 19:18	08:11 18:00	08:17 15:58	08:56 15:45
25	08:33 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:31 22:17	05:08 21:47	06:08 20:38	07:11 19:15	08:13 18:15	08:19 15:57	08:57 15:46
26	08:32 16:37	07:24 17:46	06:10 18:46	05:49 20:51	04:48 21:50	04:31 22:17	05:09 21:46	06:10 20:35	07:13 19:13	08:15 18:15	08:21 15:56	08:57 15:47
27	08:30 16:39	07:22 17:48	06:08 18:48	05:47 20:53	04:47 21:51	04:32 22:17	05:11 21:44	06:13 20:33	07:15 19:10	08:18 18:10	08:23 16:53	08:57 15:48
28	08:28 16:41	07:19 17:51	06:05 18:50	05:45 20:55	04:46 21:53	04:33 22:16	05:13 21:42	06:15 20:30	07:17 19:07	08:20 18:10	08:25 16:50	08:57 15:48
29	08:26 16:44		07:02 19:52	05:42 20:57	04:44 21:54	04:33 22:16	05:15 21:40	06:17 20:28	07:19 19:04	08:22 18:10	08:27 16:48	08:57 15:49
30	08:25 16:46		06:59 19:54	05:40 20:59	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	08:24 18:10	08:29 16:46	08:57 15:50
31	08:23 16:48		06:57 19:57		04:42 21:57		05:19 21:36	06:21 20:22		07:26 18:10		08:57 15:51
Potential sun hours	235	266	366	426	508	529	530	470	385	323	247	215
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Kalna Skola - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (179)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:50	07:16 17:53	06:54 19:59	05:38 21:01	04:41 21:59	04:35 22:15	05:21 21:34	06:23 20:20	07:23 18:59	07:28 16:41	08:30 15:50
2	08:57 15:54	08:19 16:52	07:14 17:55	06:51 20:01	05:35 21:03	04:39 22:00	04:35 22:15	05:23 21:32	06:25 20:17	07:31 18:56	07:31 16:39	08:32 15:49
3	08:56 15:55	08:17 16:55	07:11 17:57	06:49 20:03	05:33 21:06	04:38 22:02	04:36 22:14	05:24 21:30	06:27 20:14	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 17:59	06:46 20:05	05:31 21:08	04:37 22:03	04:37 22:14	05:26 21:28	06:29 20:12	07:29 18:51	07:35 16:34	08:35 15:47
5	08:56 15:58	08:13 16:59	07:06 18:02	06:43 20:07	05:28 21:10	04:36 22:04	04:38 22:13	05:28 21:26	06:31 20:09	07:31 18:48	07:37 16:32	08:37 15:46
6	08:55 16:00	08:11 17:01	07:04 18:04	06:41 20:09	05:26 21:12	04:35 22:05	04:39 22:12	05:30 21:23	06:33 20:06	07:33 18:46	07:39 16:30	08:39 15:46
7	08:54 16:01	08:09 17:04	07:01 18:06	06:38 20:11	05:24 21:14	04:35 22:07	04:40 22:12	05:32 21:21	06:35 20:04	07:35 18:43	07:42 16:28	08:40 15:45
8	08:54 16:03	08:06 17:06	06:58 18:08	06:35 20:13	05:22 21:16	04:34 22:08	04:42 22:11	05:34 21:19	06:37 20:01	07:37 18:40	07:44 16:26	08:41 15:45
9	08:53 16:04	08:04 17:08	06:56 18:10	06:33 20:15	05:20 21:18	04:33 22:09	04:43 22:10	05:36 21:17	06:39 19:58	07:39 18:38	07:46 16:24	08:43 15:44
10	08:52 16:06	08:02 17:11	06:53 18:12	06:30 20:17	05:18 21:20	04:33 22:10	04:44 22:09	05:38 21:14	06:41 19:56	07:41 18:35	07:48 16:22	08:44 15:44
11	08:51 16:08	08:00 17:13	06:50 18:14	06:28 20:20	05:15 21:22	04:32 22:11	04:45 22:08	05:40 21:12	06:43 19:53	07:43 18:33	07:50 16:20	08:45 15:43
12	08:50 16:09	07:58 17:15	06:48 18:17	06:25 20:22	05:13 21:24	04:31 22:11	04:47 22:07	05:42 21:10	06:45 19:50	07:46 18:30	07:52 16:18	08:47 15:43
13	08:49 16:11	07:55 17:17	06:45 18:19	06:22 20:24	05:11 21:26	04:31 22:12	04:48 22:05	05:44 21:07	06:47 19:48	07:48 18:27	07:55 16:16	08:48 15:43
14	08:48 16:13	07:53 17:20	06:42 18:21	06:20 20:26	05:09 21:28	04:31 22:13	04:50 22:04	05:46 21:05	06:49 19:45	07:50 18:25	07:57 16:14	08:49 15:43
15	08:47 16:15	07:51 17:22	06:40 18:23	06:17 20:28	05:07 21:30	04:30 22:14	04:51 22:03	05:48 21:03	06:51 19:42	07:52 18:22	07:59 16:13	08:50 15:43
16	08:46 16:17	07:48 17:24	06:37 18:25	06:15 20:30	05:06 21:32	04:30 22:14	04:53 22:02	05:50 21:00	06:53 19:40	07:54 18:20	08:01 16:11	08:51 15:43
17	08:45 16:19	07:46 17:26	06:34 18:27	06:12 20:32	05:04 21:34	04:30 22:15	04:54 22:00	05:52 20:58	06:55 19:37	07:56 18:17	08:03 16:09	08:52 15:43
18	08:44 16:21	07:44 17:29	06:32 18:29	06:09 20:34	05:02 21:35	04:30 22:15	04:56 21:59	05:54 20:55	06:57 19:34	07:58 18:15	08:05 16:07	08:53 15:43
19	08:42 16:23	07:41 17:31	06:29 18:31	06:07 20:36	05:00 21:37	04:30 22:16	04:57 21:57	05:56 20:53	06:59 19:31	08:00 18:12	08:07 16:06	08:53 15:43
20	08:41 16:25	07:39 17:33	06:26 18:34	06:04 20:38	04:58 21:39	04:30 22:16	04:59 21:56	05:58 20:51	07:01 19:29	08:02 18:10	08:09 16:04	08:54 15:43
21	08:39 16:27	07:36 17:35	06:24 18:36	06:02 20:40	04:56 21:41	04:30 22:16	05:01 21:54	06:00 20:48	07:03 19:26	08:05 18:07	08:11 16:03	08:55 15:44
22	08:38 16:29	07:34 17:37	06:21 18:38	05:59 20:43	04:55 21:43	04:30 22:17	05:02 21:52	06:02 20:46	07:05 19:23	08:07 18:05	08:13 16:01	08:55 15:44
23	08:36 16:31	07:32 17:40	06:18 18:40	05:57 20:45	04:53 21:44	04:30 22:17	05:04 21:51	06:04 20:43	07:07 19:21	08:09 18:02	08:15 16:00	08:56 15:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:54 20:47	04:52 21:46	04:31 22:17	05:06 21:49	06:06 20:40	07:09 19:18	08:11 18:00	08:17 15:58	08:56 15:45
25	08:33 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:31 22:17	05:08 21:47	06:08 20:38	07:11 19:15	08:13 18:05	08:19 15:57	08:57 15:46
26	08:32 16:37	07:24 17:46	06:10 18:46	05:49 20:51	04:48 21:50	04:31 22:17	05:09 21:46	06:10 20:35	07:13 19:12	08:15 18:05	08:21 15:56	08:57 15:47
27	08:30 16:39	07:22 17:48	06:08 18:48	05:47 20:53	04:47 21:51	04:32 22:17	05:11 21:44	06:12 20:33	07:15 19:10	08:18 18:05	08:23 15:54	08:57 15:47
28	08:28 16:41	07:19 17:51	06:05 18:50	05:45 20:55	04:46 21:53	04:33 22:16	05:13 21:42	06:15 20:30	07:17 19:07	08:20 18:00	08:25 15:53	08:57 15:48
29	08:26 16:44		07:02 19:52	05:42 20:57	04:44 21:54	04:33 22:16	05:15 21:40	06:17 20:28	07:19 19:04	08:22 18:04	08:27 15:52	08:57 15:49
30	08:24 16:46		06:59 19:54	05:40 20:59	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	08:24 18:00	08:29 15:51	08:57 15:50
31	08:23 16:48		06:57 19:57		04:42 21:57		05:19 21:36	06:21 20:22		07:26 18:00		08:57 15:51
Potential sun hours	235	266	366	426	508	529	530	470	385	323	247	215
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Kalnamuiž as kapi - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (174)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:50	07:16 17:53	06:54 19:59	05:38 21:01	04:41 21:59	04:35 22:15	05:21 21:34	06:23 20:20	07:23 18:59	07:28 16:41	08:30 15:50
2	08:57 15:54	08:19 16:53	07:14 17:55	06:51 20:01	05:35 21:03	04:39 22:00	04:35 22:15	05:23 21:32	06:25 20:17	07:31 18:56	07:31 16:39	08:32 15:49
3	08:56 15:55	08:17 16:55	07:11 17:57	06:49 20:03	05:33 21:06	04:38 22:02	04:36 22:14	05:24 21:30	06:27 20:14	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 17:59	06:46 20:05	05:31 21:08	04:37 22:03	04:37 22:14	05:26 21:28	06:29 20:12	07:29 18:51	07:35 16:35	08:35 15:47
5	08:56 15:58	08:13 16:59	07:06 18:02	06:43 20:07	05:28 21:10	04:36 22:04	04:38 22:13	05:28 21:26	06:31 20:09	07:31 18:48	07:37 16:32	08:37 15:46
6	08:55 16:00	08:11 17:01	07:04 18:04	06:41 20:09	05:26 21:12	04:36 22:05	04:39 22:12	05:30 21:23	06:33 20:06	07:33 18:46	07:39 16:30	08:39 15:46
7	08:54 16:01	08:09 17:04	07:01 18:06	06:38 20:11	05:24 21:14	04:35 22:07	04:40 22:11	05:32 21:21	06:35 20:04	07:35 18:43	07:42 16:28	08:40 15:45
8	08:54 16:03	08:06 17:06	06:58 18:08	06:35 20:13	05:22 21:16	04:34 22:08	04:42 22:11	05:34 21:19	06:37 20:01	07:37 18:40	07:44 16:26	08:41 15:45
9	08:53 16:04	08:04 17:08	06:56 18:10	06:33 20:15	05:20 21:18	04:33 22:09	04:43 22:10	05:36 21:17	06:39 19:58	07:39 18:38	07:46 16:24	08:43 15:44
10	08:52 16:06	08:02 17:11	06:53 18:12	06:30 20:17	05:18 21:20	04:33 22:10	04:44 22:09	05:38 21:14	06:41 19:56	07:41 18:35	07:48 16:22	08:44 15:44
11	08:51 16:08	08:00 17:13	06:50 18:14	06:28 20:20	05:15 21:22	04:32 22:11	04:45 22:08	05:40 21:12	06:43 19:53	07:43 18:33	07:50 16:20	08:45 15:43
12	08:50 16:09	07:58 17:15	06:48 18:17	06:25 20:22	05:13 21:24	04:31 22:11	04:47 22:07	05:42 21:10	06:45 19:50	07:46 18:30	07:52 16:18	08:47 15:43
13	08:49 16:11	07:55 17:17	06:45 18:19	06:22 20:24	05:11 21:26	04:31 22:12	04:48 22:05	05:44 21:07	06:47 19:48	07:48 18:27	07:55 16:16	08:48 15:43
14	08:48 16:13	07:53 17:20	06:42 18:21	06:20 20:26	05:09 21:28	04:31 22:13	04:50 22:04	05:46 21:05	06:49 19:45	07:50 18:25	07:57 16:14	08:49 15:43
15	08:47 16:15	07:51 17:22	06:40 18:23	06:17 20:28	05:07 21:30	04:30 22:14	04:51 22:03	05:48 21:03	06:51 19:42	07:52 18:22	07:59 16:13	08:50 15:43
16	08:46 16:17	07:48 17:24	06:37 18:25	06:15 20:30	05:06 21:32	04:30 22:14	04:53 22:02	05:50 21:00	06:53 19:40	07:54 18:20	08:01 16:11	08:51 15:43
17	08:45 16:19	07:46 17:26	06:34 18:27	06:12 20:32	05:04 21:34	04:30 22:15	04:54 22:00	05:52 20:58	06:55 19:37	07:56 18:17	08:03 16:09	08:52 15:43
18	08:44 16:21	07:44 17:29	06:32 18:29	06:09 20:34	05:02 21:35	04:30 22:15	04:56 21:59	05:54 20:55	06:57 19:34	07:58 18:15	08:05 16:07	08:53 15:43
19	08:42 16:23	07:41 17:31	06:29 18:31	06:07 20:36	05:00 21:37	04:30 22:16	04:57 21:57	05:56 20:53	06:59 19:31	08:00 18:12	08:07 16:06	08:53 15:43
20	08:41 16:25	07:39 17:33	06:26 18:34	06:04 20:38	04:58 21:39	04:30 22:16	04:59 21:56	05:58 20:50	07:01 19:29	08:02 18:10	08:09 16:04	08:54 15:43
21	08:39 16:27	07:36 17:35	06:24 18:36	06:02 20:40	04:56 21:41	04:30 22:16	05:01 21:54	06:00 20:48	07:03 19:26	08:05 18:07	08:11 16:03	08:55 15:44
22	08:38 16:29	07:34 17:37	06:21 18:38	05:59 20:43	04:55 21:43	04:30 22:17	05:02 21:52	06:02 20:45	07:05 19:23	08:07 18:05	08:13 16:01	08:55 15:44
23	08:36 16:31	07:32 17:40	06:18 18:40	05:57 20:45	04:53 21:44	04:30 22:17	05:04 21:51	06:04 20:43	07:07 19:21	08:09 18:02	08:15 16:00	08:56 15:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:54 20:47	04:52 21:46	04:31 22:17	05:06 21:49	06:06 20:40	07:09 19:18	08:11 18:00	08:17 15:58	08:56 15:45
25	08:33 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:31 22:17	05:08 21:47	06:08 20:38	07:11 19:15	08:13 18:05	08:19 15:57	08:57 15:46
26	08:32 16:37	07:24 17:46	06:10 18:46	05:50 20:51	04:49 21:50	04:31 22:17	05:09 21:45	06:10 20:35	07:13 19:13	08:15 18:05	08:21 15:56	08:57 15:47
27	08:30 16:39	07:22 17:48	06:08 18:48	05:47 20:53	04:47 21:51	04:32 22:17	05:11 21:44	06:13 20:33	07:15 19:10	08:18 18:05	08:23 16:53	08:57 15:48
28	08:28 16:41	07:19 17:51	06:05 18:50	05:45 20:55	04:46 21:53	04:33 22:16	05:13 21:42	06:15 20:30	07:17 19:07	08:20 18:00	08:25 16:50	08:57 15:48
29	08:26 16:44		07:02 19:52	05:42 20:57	04:44 21:54	04:33 22:16	05:15 21:40	06:17 20:28	07:19 19:04	08:22 18:04	08:27 16:48	08:57 15:49
30	08:24 16:46		06:59 19:54	05:40 20:59	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	08:24 18:00	08:29 16:46	08:57 15:50
31	08:23 16:48		06:57 19:57		04:42 21:57		05:19 21:36	06:21 20:22		07:26 18:00	07:26 16:43	08:57 15:51
Potential sun hours	235	266	366	426	508	529	530	470	385	323	247	216
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme

Shadow receptor: Kaspari - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (205)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March		April		May		June	
1	08:57	08:21	07:17		06:54	07:40 (6)	05:38		04:41	05:29 (5)
	15:53	16:51	17:53		19:59	24 08:04 (6)	21:02		21:59	22 05:51 (5)
2	08:57	08:19	07:14		06:52	07:37 (6)	05:36		04:40	05:29 (5)
	15:54	16:53	17:55		20:01	28 08:05 (6)	21:04		22:00	22 05:51 (5)
3	08:57	08:17	07:12		06:49	07:14 (4)	05:33		04:39	05:29 (5)
	15:56	16:55	17:58		20:03	38 08:06 (6)	21:06		22:02	22 05:51 (5)
4	08:56	08:15	07:09		06:46	07:12 (4)	05:31		04:38	05:30 (5)
	15:57	16:57	18:00		20:05	46 08:08 (6)	21:08		22:03	21 05:51 (5)
5	08:56	08:13	07:06		06:44	07:09 (4)	05:29		04:37	05:30 (5)
	15:58	17:00	18:02		20:07	52 08:08 (6)	21:10		22:04	21 05:51 (5)
6	08:55	08:11	07:04		06:41	07:07 (4)	05:26		04:36	05:30 (5)
	16:00	17:02	18:04	10	07:40 (3)	20:09	21:12		22:06	21 05:51 (5)
7	08:55	08:09	07:01		07:27 (3)	06:38	07:06 (4)	05:24	04:35	05:31 (5)
	16:01	17:04	18:06	15	07:42 (3)	20:11	08:10 (6)	21:14	22:07	20 05:51 (5)
8	08:54	08:07	06:59		07:25 (3)	06:36	07:05 (4)	05:22	04:34	05:31 (5)
	16:03	17:06	18:08	18	07:43 (3)	20:14	08:10 (6)	21:16	22:08	20 05:51 (5)
9	08:53	08:05	06:56		07:24 (3)	06:33	07:05 (4)	05:20	04:33	05:31 (5)
	16:05	17:09	18:10	21	07:45 (3)	20:16	08:10 (6)	21:18	22:09	19 05:50 (5)
10	08:52	08:02	06:53		07:23 (3)	06:30	07:04 (4)	05:18	04:33	05:32 (5)
	16:06	17:11	18:13	22	07:45 (3)	20:18	08:10 (6)	21:20	22:10	19 05:51 (5)
11	08:52	08:00	06:51		07:22 (3)	06:28	07:04 (4)	05:16	04:32	05:33 (5)
	16:08	17:13	18:15	23	07:45 (3)	20:20	08:10 (6)	21:22	22:11	18 05:51 (5)
12	08:51	07:58	06:48		07:22 (3)	06:25	07:04 (4)	05:14	04:32	05:33 (5)
	16:10	17:15	18:17	23	07:45 (3)	20:22	08:10 (6)	21:24	22:12	18 05:51 (5)
13	08:50	07:56	06:45		07:22 (3)	06:23	07:04 (4)	05:12	04:31	05:34 (5)
	16:11	17:18	18:19	23	07:45 (3)	20:24	08:09 (6)	21:26	22:12	17 05:51 (5)
14	08:49	07:53	06:43		07:21 (3)	06:20	07:05 (4)	05:10	04:31	05:34 (5)
	16:13	17:20	18:21	23	07:44 (3)	20:26	08:10 (6)	21:28	22:13	17 05:51 (5)
15	08:48	07:51	06:40		07:21 (3)	06:17	07:05 (4)	05:08	04:31	05:35 (5)
	16:15	17:22	18:23	22	07:43 (3)	20:28	08:09 (6)	21:30	22:14	16 05:51 (5)
16	08:46	07:49	06:37		07:22 (3)	06:15	07:06 (4)	05:06	05:37 (5)	04:30 05:34 (5)
	16:17	17:24	18:25	21	07:43 (3)	20:30	08:09 (6)	21:32	6 05:43 (5)	22:15 16 05:50 (5)
17	08:45	07:46	06:35		07:23 (3)	06:12	07:08 (4)	05:04	05:35 (5)	04:30 05:35 (5)
	16:19	17:27	18:27	18	07:41 (3)	20:32	53 08:07 (6)	21:34	10 05:45 (5)	22:15 16 05:51 (5)
18	08:44	07:44	06:32		07:23 (3)	06:10	07:12 (4)	05:02	05:33 (5)	04:30 05:35 (5)
	16:21	17:29	18:30	16	07:39 (3)	20:34	45 08:07 (6)	21:36	13 05:46 (5)	22:16 16 05:51 (5)
19	08:43	07:42	06:29		07:26 (3)	06:07	07:25 (6)	05:00	05:32 (5)	04:30 05:35 (5)
	16:23	17:31	18:32	11	07:37 (3)	20:37	41 08:06 (6)	21:38	15 05:47 (5)	22:16 16 05:51 (5)
20	08:41	07:39	06:27		06:05		07:26 (6)	04:59	05:30 (5)	04:30 05:36 (5)
	16:25	17:33	18:34		20:39	39 08:05 (6)	21:39	18 05:48 (5)	22:16	16 05:52 (5)
21	08:40	07:37	06:24		06:02		07:27 (6)	04:57	05:30 (5)	04:30 05:36 (5)
	16:27	17:35	18:36		20:41	38 08:05 (6)	21:41	19 05:49 (5)	22:17	16 05:52 (5)
22	08:38	07:34	06:21		06:00		07:27 (6)	04:55	05:29 (5)	04:30 05:36 (5)
	16:29	17:38	18:38		20:43	36 08:03 (6)	21:43	20 05:49 (5)	22:17	16 05:52 (5)
23	08:37	07:32	06:19		05:57		07:28 (6)	04:53	05:29 (5)	04:31 05:36 (5)
	16:31	17:40	18:40		20:45	34 08:02 (6)	21:45	21 05:50 (5)	22:17	16 05:52 (5)
24	08:35	07:29	06:16		05:55		07:28 (6)	04:52	05:28 (5)	04:31 05:37 (5)
	16:33	17:42	18:42		20:47	32 08:00 (6)	21:46	21 05:49 (5)	22:17	16 05:53 (5)
25	08:33	07:27	06:13		05:52		07:30 (6)	04:50	05:28 (5)	04:31 05:37 (5)
	16:35	17:44	18:44		20:49	28 07:58 (6)	21:48	22 05:50 (5)	22:17	16 05:53 (5)
26	08:32	07:24	06:11		05:50		07:31 (6)	04:49	05:28 (5)	04:32 05:36 (5)
	16:37	17:47	18:46		20:51	26 07:57 (6)	21:50	23 05:51 (5)	22:17	17 05:53 (5)
27	08:30	07:22	06:08		05:47		07:33 (6)	04:47	05:29 (5)	04:32 05:37 (5)
	16:40	17:49	18:48		20:53	22 07:55 (6)	21:51	22 05:51 (5)	22:17	16 05:53 (5)
28	08:28	07:19	06:05		05:45		07:35 (6)	04:46	05:28 (5)	04:33 05:37 (5)
	16:42	17:51	18:51		20:55	16 07:51 (6)	21:53	22 05:50 (5)	22:17	17 05:54 (5)
29	08:27		07:02		05:43		07:40 (6)	04:45	05:28 (5)	04:33 05:37 (5)
	16:44		19:53		20:57	6 07:46 (6)	21:55	23 05:51 (5)	22:16	17 05:54 (5)
30	08:25		07:00		07:49 (6)	05:40		04:43	05:28 (5)	04:34 05:37 (5)
	16:46		19:55	6	07:55 (6)	21:00		21:56	23 05:51 (5)	22:16 18 05:55 (5)
31	08:23		06:57		07:43 (6)			04:42	05:28 (5)	
	16:48		19:57	17	08:00 (6)			21:58	23 05:51 (5)	
Potential sun hours	235	266	366		426		508		529	
Total, worst case				289		1302		301		538
Sun reduction				0,40		0,47		0,59		0,57
Oper. time red.				1,00		1,00		1,00		1,00
Wind dir. red.				1,00		1,00		1,00		1,00
Total reduction				0,40		0,47		0,59		0,57
Total, real				116		607		177		307

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian & Lithuanian environment  
 Vilandes 3-6  
 LV-1010 Riga  
 0037167242411  
 Laura Kurzemniece / laura.kurzemniece@environment.lv  
 Calculated:  
 07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Kaspari - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (205)  
 Sunshine probability S (Average daily sunshine hours) []

Assumptions for shadow calculations

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 0,80 1,82 4,75 6,63 9,63 10,06 8,16 7,72 5,94 2,93 0,63 0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	July			August			September			October			November			December		
1	04:35		05:37 (5)	05:21			06:23		07:03 (4)	07:23		08:01 (3)	07:29		08:31			
	22:16	18	05:55 (5)	21:34			20:20	67	08:10 (6)	18:59	23	08:24 (3)	16:41		15:50			
2	04:36		05:37 (5)	05:23			06:25		07:02 (4)	07:25		08:01 (3)	07:31		08:32			
	22:15	18	05:55 (5)	21:32			20:17	66	08:08 (6)	18:57	23	08:24 (3)	16:39		15:49			
3	04:37		05:37 (5)	05:25			06:27		07:02 (4)	07:27		08:01 (3)	07:33		08:34			
	22:15	19	05:56 (5)	21:30			20:15	65	08:07 (6)	18:54	22	08:23 (3)	16:37		15:48			
4	04:38		05:37 (5)	05:27			06:29		07:02 (4)	07:29		08:01 (3)	07:35		08:36			
	22:14	19	05:56 (5)	21:28			20:12	64	08:07 (6)	18:51	21	08:22 (3)	16:35		15:47			
5	04:39		05:37 (5)	05:29			06:31		07:02 (4)	07:31		08:01 (3)	07:37		08:37			
	22:13	20	05:57 (5)	21:26			20:09	61	08:06 (6)	18:49	20	08:21 (3)	16:33		15:47			
6	04:40		05:37 (5)	05:31			06:33		07:03 (4)	07:33		08:02 (3)	07:40		08:39			
	22:13	20	05:57 (5)	21:24			20:07	58	08:05 (6)	18:46	17	08:19 (3)	16:30		15:46			
7	04:41		05:37 (5)	05:33			06:35		07:04 (4)	07:35		08:04 (3)	07:42		08:40			
	22:12	20	05:57 (5)	21:21			20:04	54	08:04 (6)	18:43	13	08:17 (3)	16:28		15:45			
8	04:42		05:37 (5)	05:35			06:37		07:06 (4)	07:37		08:07 (3)	07:44		08:42			
	22:11	21	05:58 (5)	21:19			20:01	47	08:02 (6)	18:41	6	08:13 (3)	16:26		15:45			
9	04:43		05:37 (5)	05:37			06:39		07:08 (4)	07:40			07:46		08:43			
	22:10	21	05:58 (5)	21:17			19:59	38	08:00 (6)	18:38			16:24		15:44			
10	04:44		05:36 (5)	05:39			06:41		07:30 (6)	07:42			07:48		08:44			
	22:09	22	05:58 (5)	21:15			19:56	28	07:58 (6)	18:35			16:22		15:44			
11	04:46		05:37 (5)	05:41			06:43		07:32 (6)	07:44			07:51		08:46			
	22:08	22	05:59 (5)	21:12			19:53	24	07:56 (6)	18:33			16:20		15:44			
12	04:47		05:37 (5)	05:43			06:45		07:35 (6)	07:46			07:53		08:47			
	22:07	22	05:59 (5)	21:10			19:51	18	07:53 (6)	18:30			16:18		15:43			
13	04:48		05:37 (5)	05:45			06:47		07:39 (6)	07:48			07:55		08:48			
	22:06	22	05:59 (5)	21:08			19:48	9	07:48 (6)	18:28			16:17		15:43			
14	04:50		05:37 (5)	05:47			06:49			07:50			07:57		08:49			
	22:04	22	05:59 (5)	21:05	9	07:55 (6)	19:45			18:25			16:15		15:43			
15	04:51		05:37 (5)	05:49			06:51			07:52			07:59		08:50			
	22:03	23	06:00 (5)	21:03	17	07:59 (6)	19:43			18:23			16:13		15:43			
16	04:53		05:37 (5)	05:51			07:39 (6)	06:53		07:54			08:01		08:51			
	22:02	23	06:00 (5)	21:01	23	08:02 (6)	19:40			18:20			16:11		15:43			
17	04:54		05:38 (5)	05:53			07:37 (6)	06:55		07:56			08:03		08:52			
	22:00	22	06:00 (5)	20:58	27	08:04 (6)	19:37			18:17			16:09		15:43			
18	04:56		05:38 (5)	05:55			07:36 (6)	06:57		07:58			08:05		08:53			
	21:59	22	06:00 (5)	20:56	29	08:05 (6)	19:34			18:15			16:08		15:43			
19	04:58		05:37 (5)	05:57			07:34 (6)	06:59		08:01			08:07		08:54			
	21:57	22	05:59 (5)	20:53	33	08:07 (6)	19:32			18:12			16:06		15:43			
20	04:59		05:38 (5)	05:59			07:33 (6)	07:01		08:03			08:10		08:54			
	21:56	22	06:00 (5)	20:51	35	08:08 (6)	19:29			18:10			16:04		15:44			
21	05:01		05:38 (5)	06:01			07:32 (6)	07:03		08:05			08:12		08:55			
	21:54	21	05:59 (5)	20:48	37	08:09 (6)	19:26			18:07			16:03		15:44			
22	05:03		05:39 (5)	06:03			07:30 (6)	07:05		08:07			08:14		08:56			
	21:53	20	05:59 (5)	20:46	39	08:09 (6)	19:24			18:05			16:01		15:44			
23	05:04		05:40 (5)	06:05			07:29 (6)	07:07		08:09			08:16		08:56			
	21:51	19	05:59 (5)	20:43	40	08:09 (6)	19:21			18:03			16:00		15:45			
24	05:06		05:41 (5)	06:07			07:29 (6)	07:09		08:10 (3)	08:11		08:18		08:56			
	21:49	17	05:58 (5)	20:41	41	08:10 (6)	19:18	9	08:19 (3)	18:00			15:58		15:46			
25	05:08		05:43 (5)	06:09			07:14 (4)	07:11		08:07 (3)	07:13		08:20		08:57			
	21:48	14	05:57 (5)	20:38	47	08:10 (6)	19:15	14	08:21 (3)	16:58			15:57		15:46			
26	05:10		05:44 (5)	06:11			07:10 (4)	07:13		08:05 (3)	07:16		08:21		08:57			
	21:46	12	05:56 (5)	20:36	55	08:10 (6)	19:13	17	08:22 (3)	16:55			15:56		15:47			
27	05:11		05:46 (5)	06:13			07:08 (4)	07:15		08:03 (3)	07:18		08:23		08:57			
	21:44	8	05:54 (5)	20:33	59	08:10 (6)	19:10	20	08:23 (3)	16:53			15:55		15:48			
28	05:13		05:48 (5)	06:15			07:07 (4)	07:17		08:02 (3)	07:20		08:25		08:57			
	21:42	4	05:52 (5)	20:30	62	08:11 (6)	19:07	22	08:24 (3)	16:51			15:53		15:49			
29	05:15			06:17			07:05 (4)	07:19		08:02 (3)	07:22		08:27		08:57			
	21:40			20:28	65	08:10 (6)	19:05	23	08:25 (3)	16:48			15:52		15:50			
30	05:17			06:19			07:05 (4)	07:21		08:02 (3)	07:24		08:29		08:57			
	21:38			20:25	65	08:10 (6)	19:02	23	08:25 (3)	16:46			15:51		15:51			
31	05:19			06:21			07:04 (4)			07:27					08:57			
	21:36			20:23	66	08:10 (6)				16:44					15:52			
Potential sun hours	530			470			385			323			247		216			
Total, worst case		535			749			727			145							
Sun reduction		0,48			0,51			0,46			0,28							
Oper. time red.		1,00			1,00			1,00			1,00							
Wind dir. red.		1,00			1,00			1,00			1,00							
Total reduction		0,48			0,51			0,46			0,28							
Total, real		255			382			337			41							

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Krogsetas - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (232)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:51	07:17 17:53	06:54 19:59	05:38 21:02	04:41 21:59	04:35 22:16	05:21 21:34	06:23 20:20	07:23 18:59	07:29 16:42	08:31 15:50
2	08:57 15:55	08:19 16:53	07:14 17:55	06:52 20:01	05:36 21:04	04:40 22:01	04:36 22:15	05:23 21:32	06:25 20:17	07:31 18:57	07:31 16:39	08:32 15:49
3	08:57 15:56	08:17 16:55	07:12 17:58	06:49 20:03	05:33 21:06	04:39 22:02	04:37 22:15	05:25 21:30	06:27 20:15	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 18:00	06:46 20:05	05:31 21:08	04:38 22:03	04:38 22:14	05:27 21:28	06:29 20:12	07:29 18:51	07:35 16:35	08:36 15:48
5	08:56 15:59	08:13 17:00	07:06 18:02	06:44 20:07	05:29 21:10	04:37 22:04	04:39 22:13	05:29 21:26	06:31 20:09	07:31 18:49	07:38 16:33	08:37 15:47
6	08:55 16:00	08:11 17:02	07:04 18:04	06:41 20:09	05:27 21:12	04:36 22:06	04:40 22:13	05:31 21:24	06:33 20:07	07:33 18:46	07:40 16:31	08:39 15:46
7	08:55 16:02	08:09 17:04	07:01 18:06	06:39 20:12	05:24 21:14	04:35 22:07	04:41 22:12	05:33 21:21	06:35 20:04	07:35 18:43	07:42 16:29	08:40 15:46
8	08:54 16:03	08:07 17:06	06:59 18:08	06:36 20:14	05:22 21:16	04:34 22:08	04:42 22:11	05:35 21:19	06:37 20:01	07:38 18:41	07:44 16:26	08:42 15:45
9	08:53 16:05	08:05 17:09	06:56 18:11	06:33 20:16	05:20 21:18	04:34 22:09	04:43 22:10	05:37 21:17	06:39 19:59	07:40 18:38	07:46 16:24	08:43 15:44
10	08:52 16:06	08:02 17:11	06:53 18:13	06:31 20:18	05:18 21:20	04:33 22:10	04:45 22:09	05:39 21:15	06:41 19:56	07:42 18:36	07:48 16:22	08:44 15:44
11	08:52 16:08	08:00 17:13	06:51 18:15	06:28 20:20	05:16 21:22	04:32 22:11	04:46 22:08	05:41 21:12	06:43 19:53	07:44 18:33	07:51 16:20	08:46 15:44
12	08:51 16:10	07:58 17:15	06:48 18:17	06:25 20:22	05:14 21:24	04:32 22:12	04:47 22:07	05:43 21:10	06:45 19:51	07:46 18:30	07:53 16:19	08:47 15:43
13	08:50 16:12	07:56 17:18	06:45 18:19	06:23 20:24	05:12 21:26	04:32 22:13	04:49 22:06	05:45 21:08	06:47 19:48	07:48 18:28	07:55 16:17	08:48 15:43
14	08:49 16:13	07:53 17:20	06:43 18:21	06:20 20:26	05:10 21:28	04:31 22:13	04:50 22:04	05:47 21:05	06:49 19:45	07:50 18:25	07:57 16:15	08:49 15:43
15	08:48 16:15	07:51 17:22	06:40 18:23	06:18 20:28	05:08 21:30	04:31 22:14	04:51 22:03	05:49 21:03	06:51 19:43	07:52 18:23	07:59 16:13	08:50 15:43
16	08:46 16:17	07:49 17:24	06:37 18:25	06:15 20:30	05:06 21:32	04:31 22:15	04:53 22:02	05:51 21:01	06:53 19:40	07:54 18:20	08:01 16:11	08:51 15:43
17	08:45 16:19	07:46 17:27	06:35 18:28	06:12 20:32	05:04 21:34	04:30 22:15	04:55 22:00	05:53 20:58	06:55 19:37	07:56 18:18	08:03 16:09	08:52 15:43
18	08:44 16:21	07:44 17:29	06:32 18:30	06:10 20:35	05:02 21:36	04:30 22:16	04:56 21:59	05:55 20:56	06:57 19:34	07:59 18:15	08:05 16:08	08:53 15:43
19	08:43 16:23	07:42 17:31	06:29 18:32	06:07 20:37	05:00 21:38	04:30 22:16	04:58 21:57	05:57 20:53	06:59 19:32	08:01 18:13	08:08 16:06	08:54 15:44
20	08:41 16:25	07:39 17:33	06:27 18:34	06:05 20:39	04:59 21:39	04:30 22:16	04:59 21:56	05:59 20:51	07:01 19:29	08:03 18:10	08:10 16:05	08:54 15:44
21	08:40 16:27	07:37 17:36	06:24 18:36	06:02 20:41	04:57 21:41	04:30 22:17	05:01 21:54	06:01 20:48	07:03 19:26	08:05 18:08	08:12 16:03	08:55 15:44
22	08:38 16:29	07:34 17:38	06:21 18:38	06:00 20:43	04:55 21:43	04:31 22:17	05:03 21:53	06:03 20:46	07:05 19:24	08:07 18:05	08:14 16:01	08:56 15:45
23	08:37 16:31	07:32 17:40	06:19 18:40	05:57 20:45	04:54 21:45	04:31 22:17	05:04 21:51	06:05 20:43	07:07 19:21	08:09 18:03	08:16 16:00	08:56 15:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:55 20:47	04:52 21:46	04:31 22:17	05:06 21:49	06:07 20:41	07:09 19:18	08:11 18:00	08:18 15:59	08:56 15:46
25	08:34 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:32 22:17	05:08 21:48	06:09 20:38	07:11 19:16	08:13 18:16	08:20 15:57	08:57 15:46
26	08:32 16:38	07:24 17:47	06:11 18:46	05:50 20:51	04:49 21:50	04:32 22:17	05:10 21:46	06:11 20:36	07:13 19:13	08:16 18:15	08:21 15:56	08:57 15:47
27	08:30 16:40	07:22 17:49	06:08 18:49	05:47 20:53	04:48 21:51	04:32 22:17	05:12 21:44	06:13 20:33	07:15 19:10	08:18 18:10	08:23 16:53	08:57 15:48
28	08:28 16:42	07:19 17:51	06:05 18:51	05:45 20:55	04:46 21:53	04:33 22:17	05:13 21:42	06:15 20:30	07:17 19:07	08:20 18:05	08:25 16:51	08:57 15:49
29	08:27 16:44		07:03 19:53	05:43 20:58	04:45 21:55	04:34 22:16	05:15 21:40	06:17 20:28	07:19 19:05	08:22 18:05	08:27 16:48	08:58 15:50
30	08:25 16:46		07:00 19:55	05:40 21:00	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	08:24 18:00	08:29 16:46	08:57 15:51
31	08:23 16:48		06:57 19:57		04:42 21:58		05:19 21:36	06:21 20:23		07:27 16:44		08:57 15:52
Potential sun hours	235	266	366	426	508	529	530	470	385	324	247	216
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Klavas - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (181)  
Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
0,80 1,82 4,75 6,63 9,63 10,06 8,16 7,72 5,94 2,93 0,63 0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57	08:21	07:17	06:54	05:38	04:41	04:35	05:21	06:23	07:23	07:29	08:31
	15:53	16:51	17:53	19:59	21:02	21:59	22:16	21:34	20:20	18:59	16:41	15:50
2	08:57	08:19	07:14	06:52	05:36	04:40	04:36	05:23	06:25	07:25	07:31	08:32
	15:55	16:53	17:55	20:01	21:04	22:00	22:15	21:32	20:17	18:57	16:39	15:49
3	08:57	08:17	07:12	06:49	05:33	04:39	04:37	05:25	06:27	07:27	07:33	08:34
	15:56	16:55	17:58	20:03	21:06	22:02	22:14	21:30	20:15	18:54	16:37	15:48
4	08:56	08:15	07:09	06:46	05:31	04:38	04:38	05:27	06:29	07:29	07:35	08:36
	15:57	16:57	18:00	20:05	21:08	22:03	22:14	21:28	20:12	18:51	16:35	15:48
5	08:56	08:13	07:06	06:44	05:29	04:37	04:39	05:29	06:31	07:31	07:37	08:37
	15:59	17:00	18:02	20:07	21:10	22:04	22:13	21:26	20:09	18:49	16:33	15:47
6	08:55	08:11	07:04	06:41	05:27	04:36	04:40	05:31	06:33	07:33	07:40	08:39
	16:00	17:02	18:04	20:09	21:12	22:06	22:12	21:24	20:07	18:46	16:31	15:46
7	08:55	08:09	07:01	06:38	05:24	04:35	04:41	05:33	06:35	07:35	07:42	08:40
	16:02	17:04	18:06	20:11	21:14	22:07	22:12	21:21	20:04	18:43	16:28	15:45
8	08:54	08:07	06:59	06:36	05:22	04:34	04:42	05:35	06:37	07:37	07:44	08:42
	16:03	17:06	18:08	20:14	21:16	22:08	22:11	21:19	20:01	18:41	16:26	15:45
9	08:53	08:04	06:56	06:33	05:20	04:34	04:43	05:37	06:39	07:40	07:46	08:43
	16:05	17:09	18:11	20:16	21:18	22:09	22:10	21:17	19:59	18:38	16:24	15:44
10	08:52	08:02	06:53	06:31	05:18	04:33	04:44	05:39	06:41	07:42	07:48	08:44
	16:06	17:11	18:13	20:18	21:20	22:10	22:09	21:15	19:56	18:36	16:22	15:44
11	08:52	08:00	06:51	06:28	05:16	04:32	04:46	05:41	06:43	07:44	07:50	08:46
	16:08	17:13	18:15	20:20	21:22	22:11	22:08	21:12	19:53	18:33	16:20	15:44
12	08:51	07:58	06:48	06:25	05:14	04:32	04:47	05:43	06:45	07:46	07:53	08:47
	16:10	17:15	18:17	20:22	21:24	22:12	22:07	21:10	19:51	18:30	16:19	15:43
13	08:50	07:56	06:45	06:23	05:12	04:31	04:49	05:45	06:47	07:48	07:55	08:48
	16:12	17:18	18:19	20:24	21:26	22:12	22:06	21:08	19:48	18:28	16:17	15:43
14	08:49	07:53	06:43	06:20	05:10	04:31	04:50	05:47	06:49	07:50	07:57	08:49
	16:13	17:20	18:21	20:26	21:28	22:13	22:04	21:05	19:45	18:25	16:15	15:43
15	08:47	07:51	06:40	06:17	05:08	04:31	04:51	05:49	06:51	07:52	07:59	08:50
	16:15	17:22	18:23	20:28	21:30	22:14	22:03	21:03	19:43	18:23	16:13	15:43
16	08:46	07:49	06:37	06:15	05:06	04:31	04:53	05:51	06:53	07:54	08:01	08:51
	16:17	17:24	18:25	20:30	21:32	22:14	22:02	21:01	19:40	18:20	16:11	15:43
17	08:45	07:46	06:35	06:12	05:04	04:30	04:54	05:53	06:55	07:56	08:03	08:52
	16:19	17:27	18:28	20:32	21:34	22:15	22:00	20:58	19:37	18:17	16:09	15:43
18	08:44	07:44	06:32	06:10	05:02	04:30	04:56	05:55	06:57	07:58	08:05	08:53
	16:21	17:29	18:30	20:34	21:36	22:15	21:59	20:56	19:34	18:15	16:08	15:43
19	08:42	07:42	06:29	06:07	05:00	04:30	04:58	05:57	06:59	08:01	08:07	08:54
	16:23	17:31	18:32	20:37	21:37	22:16	21:57	20:53	19:32	18:12	16:06	15:43
20	08:41	07:39	06:27	06:05	04:59	04:30	04:59	05:59	07:01	08:03	08:10	08:54
	16:25	17:33	18:34	20:39	21:39	22:16	21:56	20:51	19:29	18:10	16:04	15:44
21	08:40	07:37	06:24	06:02	04:57	04:30	05:01	06:01	07:03	08:05	08:12	08:55
	16:27	17:36	18:36	20:41	21:41	22:17	21:54	20:48	19:26	18:07	16:03	15:44
22	08:38	07:34	06:21	06:00	04:55	04:31	05:03	06:03	07:05	08:07	08:14	08:56
	16:29	17:38	18:38	20:43	21:43	22:17	21:53	20:46	19:24	18:05	16:01	15:45
23	08:37	07:32	06:19	05:57	04:54	04:31	05:04	06:05	07:07	08:09	08:16	08:56
	16:31	17:40	18:40	20:45	21:45	22:17	21:51	20:43	19:21	18:03	16:00	15:45
24	08:35	07:29	06:16	05:55	04:52	04:31	05:06	06:07	07:09	08:11	08:18	08:56
	16:33	17:42	18:42	20:47	21:46	22:17	21:49	20:41	19:18	18:00	15:59	15:46
25	08:33	07:27	06:13	05:52	04:50	04:31	05:08	06:09	07:11	08:13	08:19	08:57
	16:35	17:44	18:44	20:49	21:48	22:17	21:47	20:38	19:15	16:58	15:57	15:46
26	08:32	07:24	06:11	05:50	04:49	04:32	05:10	06:11	07:13	08:16	08:21	08:57
	16:37	17:47	18:46	20:51	21:50	22:17	21:46	20:36	19:13	16:55	15:56	15:47
27	08:30	07:22	06:08	05:47	04:47	04:32	05:12	06:13	07:15	08:18	08:23	08:57
	16:40	17:49	18:48	20:53	21:51	22:17	21:44	20:33	19:10	16:53	15:55	15:48
28	08:28	07:19	06:05	05:45	04:46	04:33	05:13	06:15	07:17	08:20	08:25	08:57
	16:42	17:51	18:51	20:55	21:53	22:17	21:42	20:30	19:07	16:51	15:53	15:49
29	08:27		07:02	05:43	04:45	04:34	05:15	06:17	07:19	08:22	08:27	08:57
	16:44		19:53	20:57	21:55	22:16	21:40	20:28	19:05	16:48	15:52	15:50
30	08:25		07:00	05:40	04:43	04:34	05:17	06:19	07:21	08:24	08:29	08:57
	16:46		19:55	21:00	21:56	22:16	21:38	20:25	19:02	16:46	15:51	15:51
31	08:23		06:57		04:42		05:19	06:21		07:26		08:57
	16:48		19:57		21:58		21:36	20:23		16:44		15:52
Potential sun hours	235	266	366	426	508	529	530	470	385	324	247	216
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		



Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Laivenieki - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (178)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:50	07:16 17:53	06:54 19:59	05:38 21:01	04:41 21:59	04:35 22:15	05:21 21:34	06:23 20:20	07:23 18:59	07:28 16:41	08:30 15:50
2	08:57 15:54	08:19 16:53	07:14 17:55	06:51 20:01	05:35 21:03	04:39 22:00	04:35 22:15	05:23 21:32	06:25 20:17	07:31 18:56	07:31 16:39	08:32 15:49
3	08:56 15:55	08:17 16:55	07:11 17:57	06:49 20:03	05:33 21:06	04:38 22:02	04:36 22:14	05:24 21:30	06:27 20:14	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 17:59	06:46 20:05	05:31 21:08	04:37 22:03	04:37 22:14	05:26 21:28	06:29 20:12	07:29 18:51	07:35 16:35	08:35 15:47
5	08:56 15:58	08:13 16:59	07:06 18:02	06:43 20:07	05:28 21:10	04:36 22:04	04:38 22:13	05:28 21:26	06:31 20:09	07:31 18:48	07:37 16:32	08:37 15:46
6	08:55 16:00	08:11 17:01	07:04 18:04	06:41 20:09	05:26 21:12	04:35 22:05	04:39 22:12	05:30 21:23	06:33 20:06	07:33 18:46	07:39 16:30	08:39 15:46
7	08:54 16:01	08:09 17:04	07:01 18:06	06:38 20:11	05:24 21:14	04:35 22:07	04:40 22:12	05:32 21:21	06:35 20:04	07:35 18:43	07:42 16:28	08:40 15:45
8	08:54 16:03	08:06 17:06	06:58 18:08	06:35 20:13	05:22 21:16	04:34 22:08	04:42 22:11	05:34 21:19	06:37 20:01	07:37 18:40	07:44 16:26	08:41 15:45
9	08:53 16:04	08:04 17:08	06:56 18:10	06:33 20:15	05:20 21:18	04:33 22:09	04:43 22:10	05:36 21:17	06:39 19:58	07:39 18:38	07:46 16:24	08:43 15:44
10	08:52 16:06	08:02 17:11	06:53 18:12	06:30 20:17	05:18 21:20	04:33 22:10	04:44 22:09	05:38 21:14	06:41 19:56	07:41 18:35	07:48 16:22	08:44 15:44
11	08:51 16:08	08:00 17:13	06:50 18:15	06:28 20:20	05:15 21:22	04:32 22:11	04:45 22:08	05:40 21:12	06:43 19:53	07:43 18:33	07:50 16:20	08:45 15:43
12	08:50 16:09	07:58 17:15	06:48 18:17	06:25 20:22	05:13 21:24	04:31 22:12	04:47 22:07	05:42 21:10	06:45 19:50	07:46 18:30	07:52 16:18	08:47 15:43
13	08:49 16:11	07:55 17:17	06:45 18:19	06:22 20:24	05:11 21:26	04:31 22:12	04:48 22:05	05:44 21:07	06:47 19:48	07:48 18:27	07:55 16:16	08:48 15:43
14	08:48 16:13	07:53 17:20	06:42 18:21	06:20 20:26	05:09 21:28	04:31 22:13	04:50 22:04	05:46 21:05	06:49 19:45	07:50 18:25	07:57 16:14	08:49 15:43
15	08:47 16:15	07:51 17:22	06:40 18:23	06:17 20:28	05:07 21:30	04:30 22:14	04:51 22:03	05:48 21:03	06:51 19:42	07:52 18:22	07:59 16:13	08:50 15:43
16	08:46 16:17	07:48 17:24	06:37 18:25	06:15 20:30	05:06 21:32	04:30 22:14	04:53 22:02	05:50 21:00	06:53 19:40	07:54 18:20	08:01 16:11	08:51 15:43
17	08:45 16:19	07:46 17:26	06:34 18:27	06:12 20:32	05:04 21:34	04:30 22:15	04:54 22:00	05:52 20:58	06:55 19:37	07:56 18:17	08:03 16:09	08:52 15:43
18	08:44 16:21	07:44 17:29	06:32 18:29	06:09 20:34	05:02 21:35	04:30 22:15	04:56 21:59	05:54 20:55	06:57 19:34	07:58 18:15	08:05 16:07	08:53 15:43
19	08:42 16:23	07:41 17:31	06:29 18:31	06:07 20:36	05:00 21:37	04:30 22:16	04:57 21:57	05:56 20:53	06:59 19:31	08:00 18:12	08:07 16:06	08:53 15:43
20	08:41 16:25	07:39 17:33	06:26 18:34	06:04 20:38	04:58 21:39	04:30 22:16	04:59 21:56	05:58 20:51	07:01 19:29	08:02 18:10	08:09 16:04	08:54 15:43
21	08:39 16:27	07:36 17:35	06:24 18:36	06:02 20:41	04:56 21:41	04:30 22:16	05:01 21:54	06:00 20:48	07:03 19:26	08:05 18:07	08:11 16:03	08:55 15:44
22	08:38 16:29	07:34 17:37	06:21 18:38	05:59 20:43	04:55 21:43	04:30 22:17	05:02 21:52	06:02 20:46	07:05 19:23	08:07 18:05	08:13 16:01	08:55 15:44
23	08:36 16:31	07:32 17:40	06:18 18:40	05:57 20:45	04:53 21:45	04:30 22:17	05:04 21:51	06:04 20:43	07:07 19:21	08:09 18:02	08:15 16:00	08:56 15:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:54 20:47	04:52 21:46	04:31 22:17	05:06 21:49	06:06 20:40	07:09 19:18	08:11 18:00	08:17 15:58	08:56 15:45
25	08:33 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:31 22:17	05:08 21:47	06:08 20:38	07:11 19:15	08:13 18:05	08:19 15:57	08:57 15:46
26	08:32 16:37	07:24 17:46	06:10 18:46	05:50 20:51	04:49 21:50	04:31 22:17	05:09 21:46	06:10 20:35	07:13 19:13	08:15 18:05	08:21 15:56	08:57 15:47
27	08:30 16:39	07:22 17:48	06:08 18:48	05:47 20:53	04:47 21:51	04:32 22:17	05:11 21:44	06:13 20:33	07:15 19:10	08:18 18:05	08:23 16:53	08:57 15:48
28	08:28 16:41	07:19 17:51	06:05 18:50	05:45 20:55	04:46 21:53	04:33 22:16	05:13 21:42	06:15 20:30	07:17 19:07	08:20 18:00	08:25 16:50	08:57 15:48
29	08:26 16:44		07:02 19:52	05:42 20:57	04:44 21:54	04:33 22:16	05:15 21:40	06:17 20:28	07:19 19:04	08:22 18:04	08:27 16:48	08:57 15:49
30	08:25 16:46		06:59 19:54	05:40 20:59	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	08:24 18:00	08:29 16:46	08:57 15:50
31	08:23 16:48		06:57 19:57		04:42 21:57		05:19 21:36	06:21 20:22		07:26 18:00		08:57 15:51
Potential sun hours	235	266	366	426	508	529	530	470	385	323	247	215
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Laucini - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (191)  
Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
0,80 1,82 4,75 6,63 9,63 10,06 8,16 7,72 5,94 2,93 0,63 0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:50	07:16 17:53	06:54 19:59	05:38 21:01	04:41 21:59	04:35 22:15	05:21 21:34	06:23 20:20	07:23 18:59	07:28 16:41	08:30 15:50
2	08:57 15:54	08:19 16:53	07:14 17:55	06:51 20:01	05:35 21:03	04:39 22:00	04:36 22:15	05:23 21:32	06:25 20:17	07:25 18:56	07:31 16:39	08:32 15:49
3	08:56 15:55	08:17 16:55	07:11 17:57	06:49 20:03	05:33 21:06	04:38 22:02	04:36 22:14	05:24 21:30	06:27 20:14	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 17:59	06:46 20:05	05:31 21:08	04:37 22:03	04:37 22:14	05:26 21:28	06:29 20:12	07:29 18:51	07:35 16:35	08:35 15:47
5	08:56 15:58	08:13 16:59	07:06 18:02	06:43 20:07	05:28 21:10	04:36 22:04	04:38 22:13	05:28 21:26	06:31 20:09	07:31 18:48	07:37 16:32	08:37 15:46
6	08:55 16:00	08:11 17:02	07:04 18:04	06:41 20:09	05:26 21:12	04:36 22:05	04:39 22:12	05:30 21:23	06:33 20:06	07:33 18:46	07:39 16:30	08:39 15:46
7	08:54 16:01	08:09 17:04	07:01 18:06	06:38 20:11	05:24 21:14	04:35 22:07	04:40 22:11	05:32 21:21	06:35 20:04	07:35 18:43	07:42 16:28	08:40 15:45
8	08:54 16:03	08:06 17:06	06:58 18:08	06:35 20:13	05:22 21:16	04:34 22:08	04:42 22:11	05:34 21:19	06:37 20:01	07:37 18:40	07:44 16:26	08:41 15:45
9	08:53 16:04	08:04 17:08	06:56 18:10	06:33 20:15	05:20 21:18	04:33 22:09	04:43 22:10	05:36 21:17	06:39 19:58	07:39 18:38	07:46 16:24	08:43 15:44
10	08:52 16:06	08:02 17:11	06:53 18:12	06:30 20:17	05:18 21:20	04:33 22:10	04:44 22:09	05:38 21:14	06:41 19:56	07:41 18:35	07:48 16:22	08:44 15:44
11	08:51 16:08	08:00 17:13	06:50 18:14	06:28 20:20	05:16 21:22	04:32 22:11	04:45 22:08	05:40 21:12	06:43 19:53	07:43 18:33	07:50 16:20	08:45 15:43
12	08:50 16:09	07:58 17:15	06:48 18:17	06:25 20:22	05:13 21:24	04:32 22:11	04:47 22:06	05:42 21:10	06:45 19:50	07:46 18:30	07:52 16:18	08:47 15:43
13	08:49 16:11	07:55 17:17	06:45 18:19	06:22 20:24	05:11 21:26	04:31 22:12	04:48 22:05	05:44 21:07	06:47 19:48	07:48 18:27	07:55 16:16	08:48 15:43
14	08:48 16:13	07:53 17:20	06:42 18:21	06:20 20:26	05:09 21:28	04:31 22:13	04:50 22:04	05:46 21:05	06:49 19:45	07:50 18:25	07:57 16:14	08:49 15:43
15	08:47 16:15	07:51 17:22	06:40 18:23	06:17 20:28	05:07 21:30	04:30 22:14	04:51 22:03	05:48 21:03	06:51 19:42	07:52 18:22	07:59 16:13	08:50 15:43
16	08:46 16:17	07:48 17:24	06:37 18:25	06:15 20:30	05:06 21:32	04:30 22:14	04:53 22:01	05:50 21:00	06:53 19:40	07:54 18:20	08:01 16:11	08:51 15:43
17	08:45 16:19	07:46 17:26	06:34 18:27	06:12 20:32	05:04 21:34	04:30 22:15	04:54 22:00	05:52 20:58	06:55 19:37	07:56 18:17	08:03 16:09	08:52 15:43
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20	08:41 16:25	07:39 17:33	06:26 18:34	06:04 20:38	04:58 21:39	04:30 22:16	04:59 21:56	05:58 20:50	07:01 19:29	08:02 18:10	08:09 16:04	08:54 15:43
21	08:39 16:27	07:36 17:35	06:24 18:36	06:02 20:40	04:57 21:41	04:30 22:16	05:01 21:54	06:00 20:48	07:03 19:26	08:05 18:07	08:11 16:03	08:55 15:44
22	08:38 16:29	07:34 17:37	06:21 18:38	05:59 20:43	04:55 21:43	04:30 22:17	05:02 21:52	06:02 20:45	07:05 19:23	08:07 18:05	08:13 16:01	08:55 15:44
23	08:36 16:31	07:32 17:40	06:18 18:40	05:57 20:45	04:53 21:44	04:30 22:17	05:04 21:51	06:04 20:43	07:07 19:21	08:09 18:02	08:15 16:00	08:56 15:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:54 20:47	04:52 21:46	04:31 22:17	05:06 21:49	06:06 20:40	07:09 19:18	08:11 18:00	08:17 15:58	08:56 15:45
25	08:33 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:31 22:17	05:08 21:47	06:08 20:38	07:11 19:15	08:13 18:15	08:19 15:57	08:57 15:46
26	08:32 16:37	07:24 17:46	06:10 18:46	05:50 20:51	04:49 21:50	04:32 22:17	05:09 21:45	06:11 20:35	07:13 19:13	08:15 18:15	08:21 15:56	08:57 15:47
27	08:30 16:39	07:22 17:49	06:08 18:48	05:47 20:53	04:47 21:51	04:32 22:17	05:11 21:44	06:13 20:33	07:15 19:10	08:18 18:10	08:23 16:53	08:57 15:48
28	08:28 16:41	07:19 17:51	06:05 18:50	05:45 20:55	04:46 21:53	04:33 22:16	05:13 21:42	06:15 20:30	07:17 19:07	08:20 18:10	08:25 16:50	08:57 15:48
29	08:26 16:44		07:02 19:52	05:42 20:57	04:44 21:54	04:33 22:16	05:15 21:40	06:17 20:28	07:19 19:04	08:22 18:10	08:27 16:48	08:57 15:49
30	08:24 16:46		06:59 19:54	05:40 20:59	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	08:24 18:10	08:29 16:46	08:57 15:50
31	08:23 16:48		06:57 19:57		04:42 21:57		05:19 21:36	06:21 20:22		07:26 18:43		08:57 15:51
Potential sun hours	235	266	366	426	508	529	530	470	385	323	247	216
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Lejies i - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (197)  
 Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 0,80 1,82 4,75 6,63 9,63 10,06 8,16 7,72 5,94 2,93 0,63 0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:50	07:16 17:53	06:54 19:59	05:38 21:01	04:41 21:59	04:35 22:15	05:21 21:34	06:23 20:20	07:23 18:59	07:28 16:41	08:30 15:50
2	08:57 15:54	08:19 16:53	07:14 17:55	06:51 20:01	05:35 21:03	04:39 22:00	04:36 22:15	05:23 21:32	06:25 20:17	07:25 18:56	07:31 16:39	08:32 15:49
3	08:56 15:55	08:17 16:55	07:11 17:57	06:49 20:03	05:33 21:06	04:38 22:02	04:36 22:14	05:24 21:30	06:27 20:14	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 17:59	06:46 20:05	05:31 21:08	04:37 22:03	04:37 22:14	05:26 21:28	06:29 20:12	07:29 18:51	07:35 16:35	08:35 15:47
5	08:56 15:58	08:13 16:59	07:06 18:02	06:43 20:07	05:28 21:10	04:36 22:04	04:38 22:13	05:28 21:26	06:31 20:09	07:31 18:48	07:37 16:32	08:37 15:46
6	08:55 16:00	08:11 17:02	07:04 18:04	06:41 20:09	05:26 21:12	04:36 22:05	04:39 22:12	05:30 21:23	06:33 20:07	07:33 18:46	07:39 16:30	08:39 15:46
7	08:54 16:01	08:09 17:04	07:01 18:06	06:38 20:11	05:24 21:14	04:35 22:07	04:40 22:12	05:32 21:21	06:35 20:04	07:35 18:43	07:42 16:28	08:40 15:45
8	08:54 16:03	08:06 17:06	06:58 18:08	06:36 20:13	05:22 21:16	04:34 22:08	04:42 22:11	05:34 21:19	06:37 20:01	07:37 18:40	07:44 16:26	08:41 15:45
9	08:53 16:04	08:04 17:08	06:56 18:10	06:33 20:15	05:20 21:18	04:33 22:09	04:43 22:10	05:36 21:17	06:39 19:58	07:39 18:38	07:46 16:24	08:43 15:44
10	08:52 16:06	08:02 17:11	06:53 18:12	06:30 20:17	05:18 21:20	04:33 22:10	04:44 22:09	05:38 21:14	06:41 19:56	07:41 18:35	07:48 16:22	08:44 15:44
11	08:51 16:08	08:00 17:13	06:50 18:15	06:28 20:20	05:16 21:22	04:32 22:11	04:45 22:08	05:40 21:12	06:43 19:53	07:43 18:33	07:50 16:20	08:45 15:43
12	08:50 16:09	07:58 17:15	06:48 18:17	06:25 20:22	05:13 21:24	04:32 22:12	04:47 22:07	05:42 21:10	06:45 19:50	07:46 18:30	07:52 16:18	08:47 15:43
13	08:49 16:11	07:55 17:17	06:45 18:19	06:22 20:24	05:11 21:26	04:31 22:12	04:48 22:05	05:44 21:07	06:47 19:48	07:48 18:27	07:55 16:16	08:48 15:43
14	08:48 16:13	07:53 17:20	06:42 18:21	06:20 20:26	05:09 21:28	04:31 22:13	04:50 22:04	05:46 21:05	06:49 19:45	07:50 18:25	07:57 16:14	08:49 15:43
15	08:47 16:15	07:51 17:22	06:40 18:23	06:17 20:28	05:07 21:30	04:30 22:14	04:51 22:03	05:48 21:03	06:51 19:42	07:52 18:22	07:59 16:13	08:50 15:43
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18	08:44 16:21	07:44 17:29	06:32 18:29	06:09 20:34	05:02 21:35	04:30 22:15	04:56 21:59	05:54 20:55	06:57 19:34	07:58 18:15	08:05 16:07	08:53 15:43
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31	08:23 16:48		06:57 19:57		04:42 21:57		05:19 21:36	06:21 20:22		07:26 17:43		08:57 15:51
Potential sun hours	235	266	366	426	508	529	530	470	385	323	247	216
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Licupes - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (217)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:50	07:17 17:53	06:54 19:59	05:38 21:02	04:41 21:59	04:35 22:16	05:21 21:34	06:23 20:20	07:23 18:59	07:29 16:41	08:31 15:50
2	08:57 15:54	08:19 16:53	07:14 17:55	06:51 20:01	05:35 21:04	04:39 22:00	04:35 22:15	05:22 21:32	06:25 20:17	07:25 18:56	07:31 16:39	08:32 15:49
3	08:57 15:55	08:17 16:55	07:11 17:57	06:49 20:03	05:33 21:06	04:38 22:02	04:36 22:15	05:24 21:30	06:27 20:15	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 17:59	06:46 20:05	05:31 21:08	04:37 22:03	04:37 22:14	05:26 21:28	06:29 20:12	07:29 18:51	07:35 16:35	08:36 15:47
5	08:56 15:58	08:13 16:59	07:06 18:02	06:43 20:07	05:28 21:10	04:36 22:04	04:38 22:13	05:28 21:26	06:31 20:09	07:31 18:48	07:37 16:32	08:37 15:46
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7	08:55 16:01	08:09 17:04	07:01 18:06	06:38 20:11	05:24 21:14	04:35 22:07	04:40 22:12	05:32 21:21	06:35 20:04	07:35 18:43	07:42 16:28	08:40 15:45
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18	08:44 16:21	07:44 17:29	06:32 18:29	06:09 20:34	05:02 21:36	04:30 22:16	04:56 21:59	05:54 20:56	06:57 19:34	07:58 18:15	08:05 16:07	08:53 15:43
19	08:42 16:23	07:41 17:31	06:29 18:32	06:07 20:36	05:00 21:37	04:30 22:16	04:57 21:57	05:56 20:53	06:59 19:32	08:00 18:12	08:07 16:06	08:54 15:43
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22	08:38 16:29	07:34 17:37	06:21 18:38	05:59 20:43	04:55 21:43	04:30 22:17	05:02 21:53	06:02 20:46	07:05 19:23	08:07 18:05	08:14 16:01	08:56 15:44
23	08:37 16:31	07:32 17:40	06:18 18:40	05:57 20:45	04:53 21:45	04:30 22:17	05:04 21:51	06:04 20:43	07:07 19:21	08:09 18:02	08:16 16:00	08:56 15:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:54 20:47	04:52 21:46	04:31 22:17	05:06 21:49	06:06 20:41	07:09 19:18	08:11 18:00	08:18 15:58	08:56 15:45
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29	08:26 16:44		07:02 19:52	05:42 20:57	04:44 21:55	04:33 22:16	05:15 21:40	06:17 20:28	07:19 19:04	08:22 18:04	08:27 16:48	08:57 15:49
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31	08:23 16:48			06:57 19:57	04:42 21:58		05:19 21:36	06:21 20:22		07:26 18:43		08:57 15:51
Potential sun hours	235	266	366	426	508	530	530	470	385	323	247	215
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Maizites - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (215)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:50	07:16 17:53	06:54 19:59	05:38 21:01	04:41 21:59	04:35 22:15	05:21 21:34	06:23 20:20	07:23 18:59	07:28 16:41	08:30 15:50
2	08:57 15:54	08:19 16:52	07:14 17:55	06:51 20:01	05:35 21:03	04:39 22:00	04:35 22:15	05:22 21:32	06:25 20:17	07:31 18:56	07:31 16:39	08:32 15:49
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30	08:24 16:46		06:59 19:54	05:40 20:59	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	08:24 18:15	08:29 16:46	08:57 15:50
31	08:23 16:48		06:57 19:57		04:42 21:57		05:19 21:36	06:21 20:22		07:26 18:15		08:57 15:51
Potential sun hours	235	266	366	426	508	529	530	470	385	323	247	215
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme

Shadow receptor: Mazgi - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (222)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January			February			March			April			May			June		
1	08:58	08:21	07:17							17:19 (1)	06:54		05:38			04:41		21:13 (5)
	15:53	16:50	17:53				5	17:24 (1)	19:59				21:02			22:00	8	21:21 (5)
2	08:57	08:19	07:14					17:18 (1)	06:52				19:21 (2)			04:40		21:12 (5)
	15:54	16:53	17:55				9	17:27 (1)	20:01			6	19:27 (2)			22:01	10	21:22 (5)
3	08:57	08:17	07:12					17:16 (1)	06:49				19:16 (2)			04:38		21:11 (5)
	15:56	16:55	17:58				13	17:29 (1)	20:03			15	19:31 (2)			22:02	12	21:23 (5)
4	08:57	08:15	07:09					17:15 (1)	06:46				19:14 (2)			04:37		21:12 (5)
	15:57	16:57	18:00				15	17:30 (1)	20:05			20	19:34 (2)			22:04	13	21:25 (5)
5	08:56	08:13	07:07					17:15 (1)	06:44				19:11 (2)			04:36		21:11 (5)
	15:58	16:59	18:02				18	17:33 (1)	20:07			24	19:35 (2)			22:05	15	21:26 (5)
6	08:56	08:11	07:04					17:14 (1)	06:41				19:09 (2)			04:36		21:11 (5)
	16:00	17:02	18:04				21	17:35 (1)	20:10			27	19:36 (2)			22:06	16	21:27 (5)
7	08:55	08:09	07:01					17:13 (1)	06:38				19:08 (2)			04:35		21:10 (5)
	16:01	17:04	18:06				22	17:35 (1)	20:12			29	19:37 (2)			22:07	17	21:27 (5)
8	08:54	08:07	06:59					17:14 (1)	06:36				19:07 (2)			04:34		21:10 (5)
	16:03	17:06	18:08				21	17:35 (1)	20:14			30	19:37 (2)			22:08	19	21:29 (5)
9	08:54	08:05	06:56					17:14 (1)	06:33				19:06 (2)			04:33		21:10 (5)
	16:04	17:08	18:11				20	17:34 (1)	20:16			32	19:38 (2)			22:09	19	21:29 (5)
10	08:53	08:03	06:53					17:14 (1)	06:31				19:05 (2)			04:33		21:10 (5)
	16:06	17:11	18:13				19	17:33 (1)	20:18			33	19:38 (2)			22:10	21	21:31 (5)
11	08:52	08:00	06:51					17:15 (1)	06:28				19:04 (2)			04:32		21:10 (5)
	16:08	17:13	18:15				16	17:31 (1)	20:20			34	19:38 (2)			22:11	21	21:31 (5)
12	08:51	07:58	06:48					17:17 (1)	06:25				19:04 (2)			04:32		21:10 (5)
	16:09	17:15	18:17				13	17:30 (1)	20:22			34	19:38 (2)			22:12	22	21:32 (5)
13	08:50	07:56	06:45					17:19 (1)	06:23				19:03 (2)			04:31		21:10 (5)
	16:11	17:18	18:19				7	17:26 (1)	20:24			35	19:38 (2)			22:13	23	21:33 (5)
14	08:49	07:54	06:43						06:20				19:03 (2)			04:31		21:11 (5)
	16:13	17:20	18:21						20:26			35	19:38 (2)			22:14	23	21:34 (5)
15	08:48	07:51	06:40						06:17				19:03 (2)			04:30		21:10 (5)
	16:15	17:22	18:23						20:28			34	19:37 (2)			22:14	24	21:34 (5)
16	08:47	07:49	06:37						06:15				19:03 (2)			04:30		21:10 (5)
	16:17	17:24	18:25						20:31			34	19:37 (2)			22:15	24	21:34 (5)
17	08:46	07:47	06:35						06:12				19:03 (2)			04:30		21:10 (5)
	16:19	17:27	18:28						20:33			33	19:36 (2)			22:16	24	21:34 (5)
18	08:44	07:44	06:32						06:10				19:04 (2)			04:30		21:10 (5)
	16:21	17:29	18:30						20:35			32	19:36 (2)			22:16	25	21:35 (5)
19	08:43	07:42	06:29						06:07				19:04 (2)			04:30		21:11 (5)
	16:23	17:31	18:32						20:37			30	19:34 (2)			22:16	24	21:35 (5)
20	08:42	07:39	06:27						06:05				19:05 (2)			04:30		21:11 (5)
	16:25	17:33	18:34						20:39			28	19:33 (2)			22:17	24	21:35 (5)
21	08:40	07:37	06:24						06:02				19:06 (2)			04:30		21:12 (5)
	16:27	17:36	18:36						20:41			27	19:33 (2)			22:17	24	21:36 (5)
22	08:39	07:34	06:21						06:00				19:07 (2)			04:30		21:12 (5)
	16:29	17:38	18:38						20:43			24	19:31 (2)			22:17	24	21:36 (5)
23	08:37	07:32	06:19						05:57				19:08 (2)			04:30		21:12 (5)
	16:31	17:40	18:40						20:45			21	19:29 (2)			22:17	24	21:36 (5)
24	08:35	07:30	06:16						05:55				19:11 (2)			04:31		21:12 (5)
	16:33	17:42	18:42						20:47			16	19:27 (2)			22:17	24	21:36 (5)
25	08:34	07:27	06:13						05:52				19:13 (2)			04:31		21:12 (5)
	16:35	17:44	18:44						20:49			10	19:23 (2)			22:17	25	21:37 (5)
26	08:32	07:25	06:11						05:50							04:32		21:12 (5)
	16:37	17:47	18:47						20:51							22:17	24	21:36 (5)
27	08:30	07:22	06:08						05:47							04:32		21:13 (5)
	16:39	17:49	18:49						20:54							22:17	24	21:37 (5)
28	08:29	07:19	06:05						05:45							04:33		21:13 (5)
	16:42	17:51	18:51						20:56							22:17	23	21:36 (5)
29	08:27		07:03						05:43							04:33		21:13 (5)
	16:44		19:53						20:58							22:17	23	21:36 (5)
30	08:25		07:00						05:40							04:34		21:14 (5)
	16:46		19:55						21:00							22:16	22	21:36 (5)
31	08:23		06:57													04:42		21:14 (5)
	16:48		19:57													21:58	6	21:20 (5)
Potential sun hours	234	266	366						426				509			530		
Total, worst case							199		643				8			621		
Sun reduction							0,40		0,47				0,59			0,57		
Oper. time red.							1,00		1,00				1,00			1,00		
Wind dir. red.							1,00		1,00				1,00			1,00		
Total reduction							0,40		0,47				0,59			0,57		
Total, real							80		300				5			354		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Mazgi - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (222)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	July				August				September				October				November				December			
1	04:35		21:14 (5)	05:21					06:23		19:04 (2)	07:23		17:57 (1)	07:29	08:31								
	22:16	21	21:35 (5)	21:35					20:20	34	19:38 (2)	18:59	11	18:08 (1)	16:41	15:50								
2	04:36		21:14 (5)	05:23					06:25		19:04 (2)	07:25		17:54 (1)	07:31	08:33								
	22:16	21	21:35 (5)	21:32					20:18	33	19:37 (2)	18:57	15	18:09 (1)	16:39	15:49								
3	04:36		21:15 (5)	05:25					06:27		19:03 (2)	07:27		17:53 (1)	07:33	08:34								
	22:15	20	21:35 (5)	21:30					20:15	32	19:35 (2)	18:54	17	18:10 (1)	16:37	15:48								
4	04:37		21:16 (5)	05:27					06:29		19:04 (2)	07:29		17:51 (1)	07:36	08:36								
	22:14	18	21:34 (5)	21:28					20:12	30	19:34 (2)	18:51	20	18:11 (1)	16:35	15:47								
5	04:38		21:16 (5)	05:29					06:31		19:04 (2)	07:31		17:50 (1)	07:38	08:38								
	22:14	18	21:34 (5)	21:26					20:10	29	19:33 (2)	18:49	21	18:11 (1)	16:33	15:47								
6	04:39		21:17 (5)	05:31					06:33		19:05 (2)	07:34		17:49 (1)	07:40	08:39								
	22:13	16	21:33 (5)	21:24					20:07	27	19:32 (2)	18:46	22	18:11 (1)	16:30	15:46								
7	04:41		21:17 (5)	05:32					06:35		19:06 (2)	07:36		17:49 (1)	07:42	08:41								
	22:12	16	21:33 (5)	21:22					20:04	24	19:30 (2)	18:43	21	18:10 (1)	16:28	15:45								
8	04:42		21:18 (5)	05:34					06:37		19:08 (2)	07:38		17:50 (1)	07:44	08:42								
	22:11	14	21:32 (5)	21:20					20:02	20	19:28 (2)	18:41	20	18:10 (1)	16:26	15:45								
9	04:43		21:19 (5)	05:36					06:39		19:10 (2)	07:40		17:50 (1)	07:46	08:43								
	22:10	12	21:31 (5)	21:17					19:59	15	19:25 (2)	18:38	17	18:07 (1)	16:24	15:44								
10	04:44		21:19 (5)	05:38					06:41		19:14 (2)	07:42		17:50 (1)	07:49	08:45								
	22:09	11	21:30 (5)	21:15					19:56	7	19:21 (2)	18:36	14	18:04 (1)	16:22	15:44								
11	04:45		21:20 (5)	05:40					06:43			07:44		17:50 (1)	07:51	08:46								
	22:08	9	21:29 (5)	21:13					19:53			18:33	11	18:01 (1)	16:20	15:43								
12	04:47		21:22 (5)	05:42					06:45			07:46		17:51 (1)	07:53	08:47								
	22:07	7	21:29 (5)	21:10					19:51			18:30	7	17:58 (1)	16:18	15:43								
13	04:48		21:24 (5)	05:44					06:47			07:48		17:53 (1)	07:55	08:48								
	22:06	3	21:27 (5)	21:08					19:48			18:28	3	17:56 (1)	16:16	15:43								
14	04:50			05:47					06:49			07:50			07:57	08:50								
	22:05			21:06					19:45			18:25			16:15	15:43								
15	04:51			05:49					06:51			07:52			07:59	08:51								
	22:03			21:03					19:43			18:23			16:13	15:43								
16	04:53			05:51					06:53			07:54			08:02	08:52								
	22:02			21:01					19:40			18:20			16:11	15:43								
17	04:54			05:53					06:55			07:57			08:04	08:52								
	22:01			20:58					19:37			18:17			16:09	15:43								
18	04:56			05:55				19:19 (2)	06:57			07:59			08:06	08:53								
	21:59			20:56	12			19:31 (2)	19:35			18:15			16:08	15:43								
19	04:57			05:57				19:16 (2)	06:59			08:01			08:08	08:54								
	21:58			20:53	17			19:33 (2)	19:32			18:12			16:06	15:43								
20	04:59			05:59				19:14 (2)	07:01			08:03			08:10	08:55								
	21:56			20:51	21			19:35 (2)	19:29			18:10			16:04	15:43								
21	05:01			06:01				19:12 (2)	07:03			08:05			08:12	08:55								
	21:55			20:49	24			19:36 (2)	19:26			18:07			16:03	15:44								
22	05:02			06:03				19:11 (2)	07:05			08:07			08:14	08:56								
	21:53			20:46	26			19:37 (2)	19:24			18:05			16:01	15:44								
23	05:04			06:05				19:08 (2)	07:07			08:09			08:16	08:56								
	21:51			20:43	29			19:37 (2)	19:21			18:03			16:00	15:45								
24	05:06			06:07				19:07 (2)	07:09			08:12			08:18	08:57								
	21:50			20:41	31			19:38 (2)	19:18			18:00			15:58	15:45								
25	05:08			06:09				19:06 (2)	07:11			07:14			08:20	08:57								
	21:48			20:38	32			19:38 (2)	19:16			16:58			15:57	15:46								
26	05:10			06:11				19:06 (2)	07:13			07:16			08:22	08:58								
	21:46			20:36	33			19:39 (2)	19:13			16:55			15:56	15:47								
27	05:11			06:13				19:05 (2)	07:15			07:18			08:24	08:58								
	21:44			20:33	34			19:39 (2)	19:10			16:53			15:54	15:48								
28	05:13			06:15				19:05 (2)	07:17			07:20			08:26	08:58								
	21:42			20:31	34			19:39 (2)	19:07			16:51			15:53	15:48								
29	05:15			06:17				19:04 (2)	07:19			07:22			08:27	08:58								
	21:40			20:28	35			19:39 (2)	19:05			16:48			15:52	15:49								
30	05:17			06:19				19:04 (2)	07:21			07:25			08:29	08:58								
	21:39			20:25	35			19:39 (2)	19:02			16:46			15:51	15:50								
31	05:19			06:21				19:04 (2)				07:27				08:58								
	21:37			20:23	34			19:38 (2)				16:44				15:52								
Potential sun hours	530			470				385				323			247	215								
Total, worst case		186			397			251				199												
Sun reduction		0,48			0,51			0,46				0,28												
Oper. time red.		1,00			1,00			1,00				1,00												
Wind dir. red.		1,00			1,00			1,00				1,00												
Total reduction		0,48			0,51			0,46				0,28												
Total, real		89			202			116				56												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian & Lithuanian environment  
 Vilandes 3-6  
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 0037167242411  
 Laura Kurzemniece / laura.kurzemniece@environment.lv  
 Calculated:  
 07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Mazmazgi - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (216)  
 Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 0,80 1,82 4,75 6,63 9,63 10,06 8,16 7,72 5,94 2,93 0,63 0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June
1	08:58 15:53	08:21 16:50	07:17 17:53	06:54 19:59	05:38 21:02	19:34 (2) 22:00
2	08:57 15:54	08:19 16:53	07:14 17:55	06:52 20:01	05:35 21:04	19:34 (2) 22:01
3	08:57 15:56	08:17 16:55	07:12 17:58	06:49 20:03	05:33 21:06	19:33 (2) 22:02
4	08:57 15:57	08:15 16:57	07:09 18:00	06:46 20:05	05:31 21:08	19:33 (2) 22:04
5	08:56 15:58	08:13 16:59	07:07 18:02	06:44 20:07	05:29 21:10	19:33 (2) 22:05
6	08:56 16:00	08:11 17:02	07:04 18:04	06:41 20:10	05:26 21:12	19:34 (2) 22:06
7	08:55 16:01	08:09 17:04	07:01 18:06	06:38 20:12	05:24 21:14	19:34 (2) 22:07
8	08:54 16:03	08:07 17:06	06:59 18:08	06:36 20:14	05:22 21:16	19:34 (2) 22:08
9	08:54 16:04	08:05 17:09	06:56 18:11	17:36 (1) 17:42 (1)	06:33 20:16	19:35 (2) 22:09
10	08:53 16:06	08:03 17:11	06:53 18:13	17:33 (1) 17:44 (1)	06:31 20:18	19:35 (2) 22:10
11	08:52 16:08	08:00 17:13	06:51 18:15	17:32 (1) 17:46 (1)	06:28 20:20	19:36 (2) 22:11
12	08:51 16:10	07:58 17:15	06:48 18:17	17:31 (1) 17:49 (1)	06:25 20:22	19:37 (2) 22:12
13	08:50 16:11	07:56 17:18	06:46 18:19	17:30 (1) 17:51 (1)	06:23 20:24	19:38 (2) 22:13
14	08:49 16:13	07:54 17:20	06:43 18:21	17:29 (1) 17:51 (1)	06:20 20:26	19:39 (2) 22:14
15	08:48 16:15	07:51 17:22	06:40 18:23	17:29 (1) 17:52 (1)	06:17 20:28	19:40 (2) 22:14
16	08:47 16:17	07:49 17:24	06:37 18:25	17:29 (1) 17:51 (1)	06:15 20:31	19:42 (2) 22:15
17	08:45 16:19	07:47 17:27	06:35 18:28	17:28 (1) 17:50 (1)	06:12 20:33	19:43 (2) 22:16
18	08:44 16:21	07:44 17:29	06:32 18:30	17:28 (1) 17:49 (1)	06:10 20:35	19:45 (2) 22:16
19	08:43 16:23	07:42 17:31	06:29 18:32	17:29 (1) 17:49 (1)	06:07 20:37	19:48 (2) 22:16
20	08:41 16:25	07:39 17:33	06:27 18:34	17:30 (1) 17:47 (1)	06:05 20:39	19:50 (2) 22:17
21	08:40 16:27	07:37 17:36	06:24 18:36	17:31 (1) 17:45 (1)	06:02 20:41	19:44 (2) 22:17
22	08:39 16:29	07:34 17:38	06:21 18:38	17:34 (1) 17:43 (1)	06:00 20:43	19:41 (2) 22:17
23	08:37 16:31	07:32 17:40	06:19 18:40	05:57 20:45	19:40 (2) 20:07 (2)	04:53 21:45
24	08:35 16:33	07:30 17:42	06:16 18:42	05:55 20:47	19:39 (2) 20:08 (2)	04:52 21:47
25	08:34 16:35	07:27 17:44	06:13 18:44	05:52 20:49	19:37 (2) 20:08 (2)	04:50 21:49
26	08:32 16:37	07:25 17:47	06:11 18:47	05:50 20:51	19:37 (2) 20:09 (2)	04:49 21:50
27	08:30 16:39	07:22 17:49	06:08 18:49	05:47 20:54	19:36 (2) 20:10 (2)	04:47 21:52
28	08:29 16:42	07:19 17:51	06:05 18:51	05:45 20:56	19:35 (2) 20:10 (2)	04:46 21:53
29	08:27 16:44		07:03 19:53	05:43 20:58	19:34 (2) 20:10 (2)	04:44 21:55
30	08:25 16:46		07:00 19:55	05:40 21:00	19:34 (2) 20:10 (2)	04:43 21:57
31	08:23 16:48		06:57 19:57		04:42 21:58	
Potential sun hours	234	266	366	426	509	530
Total, worst case			240	328	545	
Sun reduction			0,40	0,47	0,59	
Oper. time red.			1,00	1,00	1,00	
Wind dir. red.			1,00	1,00	1,00	
Total reduction			0,40	0,47	0,59	
Total, real			97	153	320	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian & Lithuanian environment  
 Vilandes 3-6  
 LV-1010 Riga  
 0037167242411  
 Laura Kurzemniece / laura.kurzemniece@environment.lv  
 Calculated:  
 07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Mazmazgi - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (216)  
 Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 0,80 1,82 4,75 6,63 9,63 10,06 8,16 7,72 5,94 2,93 0,63 0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	July	August	September	October	November	December
1	04:35 22:16	05:21 21:35	19:47 (2) 20:17 (2)	06:23 20:20	07:23 18:59	18:10 (1) 16:41
2	04:36 22:16	05:23 21:32	19:46 (2) 20:17 (2)	06:25 20:18	18:29 (1) 18:57	16:41 16:39
3	04:36 22:15	05:25 21:30	19:45 (2) 20:18 (2)	06:27 20:15	18:26 (1) 18:54	16:37 16:37
4	04:37 22:14	05:27 21:28	19:45 (2) 20:18 (2)	06:29 20:12	18:11 (1) 18:51	16:33 16:35
5	04:38 22:14	05:29 21:26	19:44 (2) 20:19 (2)	06:31 20:10	18:12 (1) 18:49	16:36 16:33
6	04:39 22:13	05:31 21:24	19:44 (2) 20:19 (2)	06:33 20:07	18:18 (1) 18:46	16:33 16:30
7	04:41 22:12	05:33 21:22	19:43 (2) 20:19 (2)	06:35 20:04	18:18 (1) 18:43	16:33 16:28
8	04:42 22:11	05:34 21:20	19:43 (2) 20:19 (2)	06:37 20:02	18:43 18:41	16:28 16:26
9	04:43 22:10	05:36 21:17	19:43 (2) 20:19 (2)	06:39 19:59	18:41 18:38	16:26 16:24
10	04:44 22:09	05:38 21:15	19:43 (2) 20:19 (2)	06:41 19:56	18:38 18:36	16:24 16:22
11	04:45 22:08	05:40 21:13	19:43 (2) 20:19 (2)	06:43 19:54	18:36 18:33	16:22 16:20
12	04:47 22:07	05:42 21:10	19:43 (2) 20:19 (2)	06:45 19:51	18:33 18:30	16:20 16:18
13	04:48 22:06	05:45 21:08	19:43 (2) 20:19 (2)	06:47 19:48	18:30 18:28	16:18 16:16
14	04:50 22:05	05:47 21:06	19:42 (2) 20:17 (2)	06:49 19:45	18:28 18:25	16:16 16:15
15	04:51 22:03	05:49 21:03	19:42 (2) 20:17 (2)	06:51 19:43	18:25 18:23	16:15 16:13
16	04:53 22:02	05:51 21:01	19:43 (2) 20:16 (2)	06:53 19:40	18:23 18:20	16:13 16:11
17	04:54 22:01	05:53 20:58	19:43 (2) 20:16 (2)	06:55 19:37	18:20 18:17	16:11 16:09
18	04:56 21:59	05:55 20:56	19:44 (2) 20:15 (2)	06:57 19:35	18:17 18:15	16:07 16:08
19	04:57 21:58	05:57 20:53	19:45 (2) 20:14 (2)	06:59 19:32	18:15 18:12	16:09 16:06
20	04:59 21:56	05:59 20:51	19:46 (2) 20:12 (2)	07:01 19:29	18:12 18:10	16:06 16:04
21	05:01 21:55	06:01 20:49	19:47 (2) 20:11 (2)	07:03 19:26	18:09 18:27 (1)	16:04 16:03
22	05:02 21:53	06:03 20:46	19:49 (2) 20:09 (2)	07:05 19:24	18:27 (1) 18:30 (1)	16:03 16:01
23	05:04 21:51	06:05 20:43	19:50 (2) 20:05 (2)	07:07 19:21	18:09 18:31 (1)	16:01 16:00
24	05:06 21:50	06:07 20:41	19:55 (2) 20:00 (2)	07:09 19:18	18:03 18:32 (1)	16:00 15:58
25	05:08 21:48	06:09 20:38	19:57 (2) 20:08 (2)	07:11 19:16	18:01 18:33 (1)	15:58 15:57
26	05:10 21:46	06:11 20:36	19:59 (2) 20:10 (2)	07:13 19:13	18:07 18:33 (1)	15:57 15:56
27	05:11 21:44	06:13 20:33	19:53 (2) 20:11 (2)	07:15 19:10	18:09 18:33 (1)	15:56 15:54
28	05:13 21:42	06:15 20:31	19:55 (2) 20:13 (2)	07:17 19:07	18:07 18:33 (1)	15:54 15:53
29	05:15 21:40	06:17 20:28	19:57 (2) 20:14 (2)	07:19 19:05	18:05 18:32 (1)	15:52 15:52
30	05:17 21:39	06:19 20:25	19:59 (2) 20:15 (2)	07:21 19:02	18:03 18:32 (1)	15:51 15:51
31	05:19 21:37	06:21 20:23	19:58 (2) 20:16 (2)	07:23 19:04	18:01 18:32 (1)	15:50 15:52
Potential sun hours	530	470	385	323	247	215
Total, worst case	145	735	187	58		
Sun reduction	0,48	0,51	0,46	0,28		
Oper. time red.	1,00	1,00	1,00	1,00		
Wind dir. red.	1,00	1,00	1,00	1,00		
Total reduction	0,48	0,51	0,46	0,28		
Total, real	69	374	87	16		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian & Lithuanian environment  
Vilandes 3-6  
LV-1010 Riga  
0037167242411  
Laura Kurzemniece / laura.kurzemniece@environment.lv  
Calculated:  
07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Mazpekš as - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (221)  
Assumptions for shadow calculations Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:58 15:53	08:21 16:50	07:17 17:53	06:54 19:59	05:38 21:02	04:41 21:59	20:49 (3) 21:12 (3)	04:35 21:15 (3)	05:21 21:34	06:23 20:20	07:23 18:59	07:29 16:41
2	08:57 15:54	08:19 16:53	07:14 17:55	06:52 20:01	05:35 21:04	04:39 22:01	20:50 (3) 21:12 (3)	04:35 22:15	05:23 21:32	06:25 20:17	07:25 18:57	07:31 16:39
3	08:57 15:55	08:17 16:55	07:12 17:57	06:49 20:03	05:33 21:06	04:38 22:02	20:50 (3) 21:12 (3)	04:36 22:15	05:25 21:30	06:27 20:15	07:27 18:54	07:33 16:37
4	08:57 15:57	08:15 16:57	07:09 18:00	06:46 20:05	05:31 21:08	04:37 22:04	20:50 (3) 21:11 (3)	04:37 22:14	05:27 21:33	06:29 20:12	07:29 18:51	07:35 16:35
5	08:56 15:58	08:13 16:59	07:07 18:02	06:44 20:07	05:29 21:10	04:36 22:05	20:51 (3) 21:12 (3)	04:38 22:14	05:28 21:33	06:31 20:10	07:31 18:49	07:38 16:33
6	08:56 16:00	08:11 17:02	07:04 18:04	06:41 20:09	05:26 21:12	04:36 22:06	20:51 (3) 21:12 (3)	04:39 22:13	05:30 21:34	06:33 20:07	07:33 18:46	07:40 16:30
7	08:55 16:01	08:09 17:04	07:01 18:06	06:38 20:12	05:24 21:14	04:35 22:07	20:51 (3) 21:11 (3)	04:40 22:12	05:32 21:33	06:35 20:04	07:36 18:43	07:42 16:28
8	08:54 16:03	08:07 17:06	06:59 18:08	06:36 20:14	05:22 21:16	04:34 22:08	20:52 (3) 21:12 (3)	04:42 22:11	05:34 21:39	06:37 20:02	07:38 18:41	07:44 16:26
9	08:54 16:04	08:05 17:08	06:56 18:10	06:33 20:16	05:20 21:18	04:33 22:09	20:52 (3) 21:11 (3)	04:43 22:10	05:36 21:39	06:39 19:59	07:40 18:38	07:46 16:24
10	08:53 16:06	08:03 17:11	06:53 18:13	06:30 20:18	05:18 21:20	04:33 22:10	20:53 (3) 21:12 (3)	04:44 22:09	05:38 21:39	06:41 19:56	07:42 18:35	07:49 16:22
11	08:52 16:08	08:00 17:13	06:51 18:15	06:28 20:20	05:16 21:22	04:32 22:11	20:53 (3) 21:11 (3)	04:45 22:08	05:40 21:39	06:43 19:53	07:44 18:33	07:51 16:20
12	08:51 16:09	07:58 17:15	06:48 18:17	06:25 20:22	05:14 21:24	04:31 22:12	20:54 (3) 21:11 (3)	04:47 22:07	05:42 21:40	06:45 19:51	07:46 18:30	07:53 16:18
13	08:50 16:11	07:56 17:17	06:45 18:19	06:23 20:24	05:12 21:26	04:31 22:13	20:54 (3) 21:12 (3)	04:48 22:06	05:44 21:40	06:47 19:48	07:48 18:28	07:55 16:16
14	08:49 16:13	07:53 17:20	06:43 18:21	06:20 20:26	05:10 21:28	04:31 22:14	20:55 (3) 21:12 (3)	04:50 22:05	05:46 21:40	06:49 19:45	07:50 18:25	07:57 16:15
15	08:48 16:15	07:51 17:22	06:40 18:23	06:17 20:28	05:08 21:30	04:30 22:14	20:55 (3) 21:11 (3)	04:51 22:03	05:48 21:40	06:51 19:43	07:52 18:23	07:59 16:13
16	08:47 16:17	07:49 17:24	06:37 18:25	06:15 20:30	05:06 21:32	04:30 22:15	20:55 (3) 21:11 (3)	04:53 22:02	05:50 21:40	06:53 19:40	07:54 18:20	08:01 16:11
17	08:45 16:19	07:46 17:26	06:35 18:28	06:12 20:33	05:04 21:34	04:30 22:15	20:56 (3) 21:12 (3)	04:54 22:01	05:52 21:40	06:55 19:37	07:56 18:17	08:04 16:09
18	08:44 16:21	07:44 17:29	06:32 18:30	06:10 20:35	05:02 21:36	04:30 22:16	20:56 (3) 21:12 (3)	04:56 21:59	05:55 21:40	06:57 19:34	07:59 18:15	08:06 16:07
19	08:43 16:23	07:42 17:31	06:29 18:32	06:07 20:37	05:00 21:38	04:30 22:16	20:56 (3) 21:12 (3)	04:57 21:58	05:57 21:40	06:59 19:32	08:01 18:12	08:08 16:06
20	08:41 16:25	07:39 17:33	06:27 18:34	06:05 20:39	04:58 21:40	04:30 22:17	20:56 (3) 21:12 (3)	04:59 21:56	05:59 21:40	07:01 19:29	08:03 18:10	08:10 16:04
21	08:40 16:27	07:37 17:35	06:24 18:36	06:02 20:41	04:57 21:41	04:30 22:17	20:57 (3) 21:13 (3)	05:01 21:55	06:01 21:40	07:03 19:26	08:05 18:07	08:12 16:03
22	08:39 16:29	07:34 17:38	06:21 18:38	06:00 20:43	04:55 21:43	04:30 22:17	20:57 (3) 21:13 (3)	05:02 21:53	06:03 21:40	07:05 19:24	08:07 18:05	08:14 16:01
23	08:37 16:31	07:32 17:40	06:19 18:40	05:57 20:45	04:53 21:45	04:30 22:17	20:57 (3) 21:13 (3)	05:04 21:51	06:05 21:40	07:07 19:21	08:09 18:02	08:16 16:00
24	08:35 16:33	07:29 17:42	06:16 18:42	05:55 20:47	04:52 21:47	04:31 22:17	20:57 (3) 21:13 (3)	05:06 21:50	06:07 21:40	07:09 19:18	08:11 18:00	08:18 15:58
25	08:34 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:31 22:17	20:58 (3) 21:14 (3)	05:08 21:48	06:09 21:30	07:11 19:16	07:14 16:58	08:20 15:57
26	08:32 16:37	07:24 17:47	06:11 18:46	05:50 20:51	04:49 21:50	04:31 22:17	20:57 (3) 21:13 (3)	05:09 21:46	06:11 21:30	07:13 19:13	07:16 16:55	08:22 15:56
27	08:30 16:39	07:22 17:49	06:08 18:49	05:47 20:54	04:47 21:52	04:32 22:17	20:58 (3) 21:14 (3)	05:11 21:44	06:13 21:30	07:15 19:10	07:18 16:53	08:24 15:54
28	08:29 16:42	07:19 17:51	06:05 18:51	05:45 20:56	04:46 21:53	04:33 22:17	20:57 (3) 21:14 (3)	05:13 21:42	06:15 21:30	07:17 19:07	07:20 16:50	08:26 15:53
29	08:27 16:44		07:02 19:53	05:42 20:58	04:44 21:55	04:33 22:17	20:58 (3) 21:15 (3)	05:15 21:40	06:17 21:30	07:19 19:05	07:22 16:48	08:27 15:52
30	08:25 16:46		07:00 19:55	05:40 21:00	04:43 21:57	04:34 22:16	20:58 (3) 21:16 (3)	05:17 21:38	06:19 21:30	07:21 19:02	07:25 16:46	08:29 15:51
31	08:23 16:48		06:57 19:57		04:42 21:58	04:33 22:16		05:19 21:36	06:21 20:23		07:27 16:44	08:58 15:51
Potential sun hours	234	266	366	426	509	530	530	506	470	385	323	247
Total, worst case					277	538		506				215
Sun reduction					0,59	0,57		0,48				
Oper. time red.					1,00	1,00		1,00				
Wind dir. red.					1,00	1,00		1,00				
Total reduction					0,59	0,57		0,48				
Total, real					163	307		241				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Mazpukes - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (223)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:51	07:17 17:53	06:54 19:59	05:38 21:02	04:41 21:59	04:35 22:16	05:21 21:34	06:23 20:20	07:23 18:59	07:29 16:41	08:31 15:50
2	08:57 15:55	08:19 16:53	07:14 17:55	06:52 20:01	05:36 21:04	04:40 22:00	04:36 22:15	05:23 21:32	06:25 20:17	07:31 18:57	07:31 16:39	08:32 15:49
3	08:57 15:56	08:17 16:55	07:12 17:58	06:49 20:03	05:33 21:06	04:39 22:02	04:37 22:14	05:25 21:30	06:27 20:15	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 18:00	06:46 20:05	05:31 21:08	04:38 22:03	04:38 22:14	05:27 21:28	06:29 20:12	07:29 18:51	07:35 16:35	08:36 15:48
5	08:56 15:59	08:13 17:00	07:06 18:02	06:44 20:07	05:29 21:10	04:37 22:04	04:39 22:13	05:29 21:26	06:31 20:09	07:31 18:49	07:37 16:33	08:37 15:47
6	08:55 16:00	08:11 17:02	07:04 18:04	06:41 20:09	05:27 21:12	04:36 22:06	04:40 22:12	05:31 21:24	06:33 20:07	07:33 18:46	07:40 16:31	08:39 15:46
7	08:55 16:02	08:09 17:04	07:01 18:06	06:38 20:11	05:24 21:14	04:35 22:07	04:41 22:12	05:33 21:21	06:35 20:04	07:35 18:43	07:42 16:29	08:40 15:46
8	08:54 16:03	08:07 17:06	06:59 18:08	06:36 20:14	05:22 21:16	04:34 22:08	04:42 22:11	05:35 21:19	06:37 20:01	07:38 18:41	07:44 16:26	08:42 15:45
9	08:53 16:05	08:05 17:09	06:56 18:11	06:33 20:16	05:20 21:18	04:34 22:09	04:43 22:10	05:37 21:17	06:39 19:59	07:40 18:38	07:46 16:24	08:43 15:44
10	08:52 16:06	08:02 17:11	06:53 18:13	06:31 20:18	05:18 21:20	04:33 22:10	04:45 22:09	05:39 21:15	06:41 19:56	07:42 18:36	07:48 16:22	08:44 15:44
11	08:52 16:08	08:00 17:13	06:51 18:15	06:28 20:20	05:16 21:22	04:32 22:11	04:46 22:08	05:41 21:12	06:43 19:53	07:44 18:33	07:50 16:20	08:46 15:44
12	08:51 16:10	07:58 17:15	06:48 18:17	06:25 20:22	05:14 21:24	04:32 22:12	04:47 22:07	05:43 21:10	06:45 19:51	07:46 18:30	07:53 16:19	08:47 15:43
13	08:50 16:12	07:56 17:18	06:45 18:19	06:23 20:24	05:12 21:26	04:31 22:12	04:49 22:06	05:45 21:08	06:47 19:48	07:48 18:28	07:55 16:17	08:48 15:43
14	08:49 16:13	07:53 17:20	06:43 18:21	06:20 20:26	05:10 21:28	04:31 22:13	04:50 22:04	05:47 21:05	06:49 19:45	07:50 18:25	07:57 16:15	08:49 15:43
15	08:47 16:15	07:51 17:22	06:40 18:23	06:18 20:28	05:08 21:30	04:31 22:14	04:51 22:03	05:49 21:03	06:51 19:43	07:52 18:23	07:59 16:13	08:50 15:43
16	08:46 16:17	07:49 17:24	06:37 18:25	06:15 20:30	05:06 21:32	04:31 22:14	04:53 22:02	05:51 21:01	06:53 19:40	07:54 18:20	08:01 16:11	08:51 15:43
17	08:45 16:19	07:46 17:27	06:35 18:28	06:12 20:32	05:04 21:34	04:30 22:15	04:55 22:00	05:53 20:58	06:55 19:37	07:56 18:18	08:03 16:09	08:52 15:43
18	08:44 16:21	07:44 17:29	06:32 18:30	06:10 20:34	05:02 21:36	04:30 22:15	04:56 21:59	05:55 20:56	06:57 19:34	07:58 18:15	08:05 16:08	08:53 15:43
19	08:42 16:23	07:42 17:31	06:29 18:32	06:07 20:37	05:00 21:37	04:30 22:16	04:58 21:57	05:57 20:53	06:59 19:32	08:01 18:12	08:07 16:06	08:54 15:43
20	08:41 16:25	07:39 17:33	06:27 18:34	06:05 20:39	04:59 21:39	04:30 22:16	04:59 21:56	05:59 20:51	07:01 19:29	08:03 18:10	08:10 16:05	08:54 15:44
21	08:40 16:27	07:37 17:36	06:24 18:36	06:02 20:41	04:57 21:41	04:30 22:17	05:01 21:54	06:01 20:48	07:03 19:26	08:05 18:08	08:12 16:03	08:55 15:44
22	08:38 16:29	07:34 17:38	06:21 18:38	06:00 20:43	04:55 21:43	04:31 22:17	05:03 21:53	06:03 20:46	07:05 19:24	08:07 18:05	08:14 16:01	08:56 15:45
23	08:37 16:31	07:32 17:40	06:19 18:40	05:57 20:45	04:54 21:45	04:31 22:17	05:04 21:51	06:05 20:43	07:07 19:21	08:09 18:03	08:16 16:00	08:56 15:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:55 20:47	04:52 21:46	04:31 22:17	05:06 21:49	06:07 20:41	07:09 19:18	08:11 18:00	08:18 15:59	08:56 15:46
25	08:33 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:31 22:17	05:08 21:47	06:09 20:38	07:11 19:16	08:13 18:05	08:19 16:58	08:57 15:46
26	08:32 16:38	07:24 17:47	06:11 18:46	05:50 20:51	04:49 21:50	04:32 22:17	05:10 21:46	06:11 20:36	07:13 19:13	08:16 18:05	08:21 16:55	08:57 15:47
27	08:30 16:40	07:22 17:49	06:08 18:48	05:47 20:53	04:47 21:51	04:32 22:17	05:12 21:44	06:13 20:33	07:15 19:10	08:18 18:03	08:23 16:53	08:57 15:48
28	08:28 16:42	07:19 17:51	06:05 18:51	05:45 20:55	04:46 21:53	04:33 22:17	05:13 21:42	06:15 20:30	07:17 19:07	08:20 18:01	08:25 16:51	08:57 15:49
29	08:27 16:44		07:02 19:53	05:43 20:57	04:45 21:55	04:34 22:16	05:15 21:40	06:17 20:28	07:19 19:05	08:22 18:05	08:27 16:48	08:57 15:50
30	08:25 16:46		07:00 19:55	05:40 21:00	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	08:24 18:00	08:29 16:46	08:57 15:51
31	08:23 16:48		06:57 19:57		04:42 21:58		05:19 21:36	06:21 20:23		07:27 18:59		08:57 15:52
Potential sun hours	235	266	366	426	508	529	530	470	385	324	247	216
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Noliktavas - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (173)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:50	07:16 17:53	06:54 19:59	05:38 21:01	04:41 21:59	04:35 22:15	05:21 21:34	06:23 20:20	07:23 18:59	07:28 16:41	08:30 15:50
2	08:57 15:54	08:19 16:52	07:14 17:55	06:51 20:01	05:35 21:04	04:39 22:00	04:35 22:15	05:22 21:32	06:25 20:17	07:25 18:56	07:31 16:39	08:32 15:49
3	08:56 15:55	08:17 16:55	07:11 17:57	06:49 20:03	05:33 21:06	04:38 22:02	04:36 22:14	05:24 21:30	06:27 20:14	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 17:59	06:46 20:05	05:31 21:08	04:37 22:03	04:37 22:14	05:26 21:28	06:29 20:12	07:29 18:51	07:35 16:34	08:35 15:47
5	08:56 15:58	08:13 16:59	07:06 18:02	06:43 20:07	05:28 21:10	04:36 22:04	04:38 22:13	05:28 21:26	06:31 20:09	07:31 18:48	07:37 16:32	08:37 15:46
6	08:55 16:00	08:11 17:01	07:04 18:04	06:41 20:09	05:26 21:12	04:35 22:05	04:39 22:12	05:30 21:23	06:33 20:07	07:33 18:46	07:39 16:30	08:39 15:46
7	08:54 16:01	08:09 17:04	07:01 18:06	06:38 20:11	05:24 21:14	04:35 22:07	04:40 22:12	05:32 21:21	06:35 20:04	07:35 18:43	07:42 16:28	08:40 15:45
8	08:54 16:03	08:06 17:06	06:58 18:08	06:35 20:13	05:22 21:16	04:34 22:08	04:42 22:11	05:34 21:19	06:37 20:01	07:37 18:40	07:44 16:26	08:42 15:44
9	08:53 16:04	08:04 17:08	06:56 18:10	06:33 20:15	05:20 21:18	04:33 22:09	04:43 22:10	05:36 21:17	06:39 19:58	07:39 18:38	07:46 16:24	08:43 15:44
10	08:52 16:06	08:02 17:11	06:53 18:12	06:30 20:17	05:18 21:20	04:33 22:10	04:44 22:09	05:38 21:14	06:41 19:56	07:41 18:35	07:48 16:22	08:44 15:44
11	08:51 16:08	08:00 17:13	06:50 18:14	06:28 20:20	05:15 21:22	04:32 22:11	04:45 22:08	05:40 21:12	06:43 19:53	07:43 18:33	07:50 16:20	08:46 15:43
12	08:50 16:09	07:58 17:15	06:48 18:17	06:25 20:22	05:13 21:24	04:31 22:12	04:47 22:07	05:42 21:10	06:45 19:50	07:46 18:30	07:52 16:18	08:47 15:43
13	08:50 16:11	07:55 17:17	06:45 18:19	06:22 20:24	05:11 21:26	04:31 22:12	04:48 22:05	05:44 21:08	06:47 19:48	07:48 18:27	07:55 16:16	08:48 15:43
14	08:48 16:13	07:53 17:20	06:42 18:21	06:20 20:26	05:09 21:28	04:31 22:13	04:50 22:04	05:46 21:05	06:49 19:45	07:50 18:25	07:57 16:14	08:49 15:43
15	08:47 16:15	07:51 17:22	06:40 18:23	06:17 20:28	05:07 21:30	04:30 22:14	04:51 22:03	05:48 21:03	06:51 19:42	07:52 18:22	07:59 16:13	08:50 15:43
16	08:46 16:17	07:48 17:24	06:37 18:25	06:15 20:30	05:05 21:32	04:30 22:14	04:52 22:02	05:50 21:00	06:53 19:40	07:54 18:20	08:01 16:11	08:51 15:43
17	08:45 16:19	07:46 17:26	06:34 18:27	06:12 20:32	05:04 21:34	04:30 22:15	04:54 22:00	05:52 20:58	06:55 19:37	07:56 18:17	08:03 16:09	08:52 15:43
18	08:44 16:21	07:44 17:29	06:32 18:29	06:09 20:34	05:02 21:35	04:30 22:15	04:56 21:59	05:54 20:55	06:57 19:34	07:58 18:15	08:05 16:07	08:53 15:43
19	08:42 16:23	07:41 17:31	06:29 18:31	06:07 20:36	05:00 21:37	04:30 22:16	04:57 21:57	05:56 20:53	06:59 19:31	08:00 18:12	08:07 16:06	08:54 15:43
20	08:41 16:25	07:39 17:33	06:26 18:34	06:04 20:38	04:58 21:39	04:30 22:16	04:59 21:56	05:58 20:51	07:01 19:29	08:02 18:10	08:09 16:04	08:54 15:43
21	08:40 16:27	07:36 17:35	06:24 18:36	06:02 20:41	04:56 21:41	04:30 22:16	05:01 21:54	06:00 20:48	07:03 19:26	08:05 18:07	08:11 16:03	08:55 15:44
22	08:38 16:29	07:34 17:37	06:21 18:38	05:59 20:43	04:55 21:43	04:30 22:17	05:02 21:53	06:02 20:46	07:05 19:23	08:07 18:05	08:13 16:01	08:55 15:44
23	08:37 16:31	07:32 17:40	06:18 18:40	05:57 20:45	04:53 21:45	04:30 22:17	05:04 21:51	06:04 20:43	07:07 19:21	08:09 18:02	08:15 16:00	08:56 15:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:54 20:47	04:52 21:46	04:31 22:17	05:06 21:49	06:06 20:40	07:09 19:18	08:11 18:00	08:17 15:58	08:56 15:45
25	08:33 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:31 22:17	05:08 21:47	06:08 20:38	07:11 19:15	08:13 18:15	08:19 15:57	08:57 15:46
26	08:32 16:37	07:24 17:46	06:10 18:46	05:49 20:51	04:48 21:50	04:31 22:17	05:09 21:46	06:10 20:35	07:13 19:13	08:15 18:15	08:21 15:55	08:57 15:47
27	08:30 16:39	07:22 17:48	06:08 18:48	05:47 20:53	04:47 21:51	04:32 22:17	05:11 21:44	06:12 20:33	07:15 19:10	08:18 18:10	08:23 16:53	08:57 15:47
28	08:28 16:41	07:19 17:51	06:05 18:50	05:45 20:55	04:46 21:53	04:32 22:16	05:13 21:42	06:15 20:30	07:17 19:07	08:20 18:10	08:25 16:50	08:57 15:48
29	08:26 16:44		07:02 19:52	05:42 20:57	04:44 21:54	04:33 22:16	05:15 21:40	06:17 20:28	07:19 19:04	08:22 18:10	08:27 16:48	08:57 15:49
30	08:25 16:46		06:59 19:54	05:40 20:59	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	08:24 18:10	08:29 16:46	08:57 15:50
31	08:23 16:48		06:57 19:57		04:42 21:57		05:19 21:36	06:21 20:22		07:26 18:43		08:57 15:51
Potential sun hours	235	266	366	426	508	529	530	470	385	323	247	215
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian & Lithuanian environment  
 Vilandes 3-6  
 LV-1010 Riga  
 0037167242411  
 Laura Kurzemniece / laura.kurzemniece@environment.lv  
 Calculated:  
 07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: OŠ i - Shadow Receptor:  $1,0 \times 1,0$  Azimuth:  $3,1^\circ$  Slope:  $90,0^\circ$  (177)  
 Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 0,80 1,82 4,75 6,63 9,63 10,06 8,16 7,72 5,94 2,93 0,63 0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57	08:21	07:16	06:54	05:38	04:41	04:35	05:21	06:23	07:23	07:28	08:30
	15:53	16:50	17:53	19:59	21:01	21:59	22:15	21:34	20:20	18:59	16:41	15:50
2	08:57	08:19	07:14	06:51	05:35	04:40	04:36	05:23	06:25	07:25	07:31	08:32
	15:54	16:53	17:55	20:01	21:04	22:00	22:15	21:32	20:17	18:56	16:39	15:49
3	08:56	08:17	07:11	06:49	05:33	04:38	04:36	05:25	06:27	07:27	07:33	08:34
	15:55	16:55	17:57	20:03	21:06	22:02	22:14	21:30	20:14	18:54	16:37	15:48
4	08:56	08:15	07:09	06:46	05:31	04:37	04:37	05:26	06:29	07:29	07:35	08:35
	15:57	16:57	17:59	20:05	21:08	22:03	22:14	21:28	20:12	18:51	16:35	15:47
5	08:56	08:13	07:06	06:43	05:28	04:36	04:38	05:28	06:31	07:31	07:37	08:37
	15:58	16:59	18:02	20:07	21:10	22:04	22:13	21:26	20:09	18:48	16:32	15:46
6	08:55	08:11	07:04	06:41	05:26	04:36	04:39	05:30	06:33	07:33	07:39	08:39
	16:00	17:02	18:04	20:09	21:12	22:05	22:12	21:23	20:07	18:46	16:30	15:46
7	08:54	08:09	07:01	06:38	05:24	04:35	04:41	05:32	06:35	07:35	07:42	08:40
	16:01	17:04	18:06	20:11	21:14	22:07	22:12	21:21	20:04	18:43	16:28	15:45
8	08:54	08:06	06:58	06:36	05:22	04:34	04:42	05:34	06:37	07:37	07:44	08:41
	16:03	17:06	18:08	20:13	21:16	22:08	22:11	21:19	20:01	18:40	16:26	15:45
9	08:53	08:04	06:56	06:33	05:20	04:33	04:43	05:36	06:39	07:39	07:46	08:43
	16:04	17:08	18:10	20:15	21:18	22:09	22:10	21:17	19:58	18:38	16:24	15:44
10	08:52	08:02	06:53	06:30	05:18	04:33	04:44	05:38	06:41	07:41	07:48	08:44
	16:06	17:11	18:12	20:18	21:20	22:10	22:09	21:14	19:56	18:35	16:22	15:44
11	08:51	08:00	06:50	06:28	05:16	04:32	04:45	05:40	06:43	07:43	07:50	08:45
	16:08	17:13	18:15	20:20	21:22	22:11	22:08	21:12	19:53	18:33	16:20	15:43
12	08:50	07:58	06:48	06:25	05:13	04:32	04:47	05:42	06:45	18:45 (4)	07:46	07:52
	16:09	17:15	18:17	20:22	21:24	22:12	22:07	21:10	19:50	18:52 (4)	18:30	16:18
13	08:49	07:55	06:45	06:22	05:11	04:31	04:48	05:44	06:47	18:40 (4)	07:48	07:55
	16:11	17:17	18:19	20:24	21:26	22:12	22:05	21:07	19:48	18:54 (4)	18:27	16:16
14	08:48	07:53	06:42	06:20	05:09	04:31	04:50	05:46	06:49	18:38 (4)	07:50	07:57
	16:13	17:20	18:21	20:26	21:28	22:13	22:04	21:05	19:45	18:55 (4)	18:25	16:14
15	08:47	07:51	06:40	06:17	05:08	04:30	04:51	05:48	06:51	18:36 (4)	07:52	07:59
	16:15	17:22	18:23	20:28	21:30	22:14	22:03	21:03	19:42	20	18:56 (4)	18:22
16	08:46	07:48	06:37	06:15	05:06	04:30	04:53	05:50	06:53	18:35 (4)	07:54	08:01
	16:17	17:24	18:25	20:30	21:32	22:14	22:02	21:00	19:40	21	18:56 (4)	18:20
17	08:45	07:46	06:34	06:12	05:04	04:30	04:54	05:52	06:55	18:34 (4)	07:56	08:03
	16:19	17:26	18:27	20:32	21:34	22:15	22:00	20:58	19:37	23	18:57 (4)	18:17
18	08:44	07:44	06:32	06:10	05:02	04:30	04:56	05:54	06:57	18:34 (4)	07:58	08:05
	16:21	17:29	18:29	8	18:01 (4)	20:34	21:35	22:15	21:59	20:55	19:34	23
19	08:42	07:41	06:29	06:07	05:00	04:30	04:57	05:56	06:59	18:33 (4)	08:00	08:07
	16:23	17:31	18:31	12	18:03 (4)	20:36	21:37	22:16	21:57	20:53	19:31	24
20	08:41	07:39	06:26	06:04	04:58	04:30	04:59	05:58	07:01	18:33 (4)	08:02	08:09
	16:25	17:33	18:34	16	18:06 (4)	20:38	21:39	22:16	21:56	20:51	19:29	23
21	08:40	07:36	06:24	06:02	04:57	04:30	05:01	06:00	07:03	18:33 (4)	08:05	08:11
	16:27	17:35	18:36	20	18:08 (4)	20:41	21:41	22:16	21:54	20:48	19:26	23
22	08:38	07:34	06:21	05:59	04:55	04:30	05:02	06:02	07:05	18:33 (4)	08:07	08:13
	16:29	17:37	18:38	22	18:09 (4)	20:43	21:43	22:17	21:52	20:46	19:23	20
23	08:36	07:32	06:18	05:57	04:53	04:30	05:04	06:04	07:07	18:33 (4)	08:09	08:15
	16:31	17:40	18:40	23	18:10 (4)	20:45	21:45	22:17	21:51	20:43	19:21	17
24	08:35	07:29	06:16	05:54	04:52	04:31	05:06	06:07	07:09	18:34 (4)	08:11	08:17
	16:33	17:42	18:42	23	18:10 (4)	20:47	21:46	22:17	21:49	20:40	19:18	13
25	08:33	07:27	06:13	05:52	04:50	04:31	05:08	06:09	07:11	18:35 (4)	07:13	08:19
	16:35	17:44	18:44	23	18:09 (4)	20:49	21:48	22:17	21:47	20:38	19:15	10
26	08:32	07:24	06:10	05:50	04:49	04:32	05:09	06:11	07:13	18:37 (4)	07:15	08:21
	16:37	17:46	18:46	22	18:08 (4)	20:51	21:50	22:17	21:46	20:35	19:13	5
27	08:30	07:22	06:08	05:47	04:47	04:32	05:11	06:13	07:15	18:42 (4)	07:18	08:23
	16:39	17:49	18:48	21	18:08 (4)	20:53	21:51	22:17	21:44	20:33	19:10	16:53
28	08:28	07:19	06:05	05:45	04:46	04:33	05:13	06:15	07:17	18:47 (4)	07:20	08:25
	16:42	17:51	18:50	20	18:07 (4)	20:55	21:53	22:16	21:42	20:30	19:07	16:50
29	08:26		07:02	05:42	04:44	04:33	05:15	06:17	07:19	18:45 (4)	07:22	08:27
	16:44		19:52	18	19:05 (4)	20:57	21:54	22:16	21:40	20:28	19:04	16:48
30	08:25		07:00	05:40	04:43	04:34	05:17	06:19	07:21	18:42 (4)	07:24	08:29
	16:46		19:55	14	19:04 (4)	20:59	21:56	22:16	21:38	20:25	19:02	16:46
31	08:23		06:57	05:42	04:42		05:19	06:21	07:23		07:26	08:31
	16:48		19:57	8	19:00 (4)		21:57	21:36	20:22		16:43	15:51
Potential sun hours	235	266	366	426	508	529	530	470	385	323	247	216
Total, worst case			252						260			
Sun reduction			0,40						0,46			
Oper. time red.			1,00						1,00			
Wind dir. red.			1,00						1,00			
Total reduction			0,40						0,46			
Total, real			101						120			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Papardes - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (229)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:51	07:17 17:53	06:54 19:59	05:38 21:02	04:41 21:59	04:35 22:16	05:21 21:34	06:23 20:20	07:23 18:59	07:29 16:42	08:31 15:50
2	08:57 15:55	08:19 16:53	07:14 17:55	06:52 20:01	05:36 21:04	04:40 22:01	04:36 22:15	05:23 21:32	06:25 20:17	07:31 18:57	07:31 16:39	08:32 15:49
3	08:57 15:56	08:17 16:55	07:12 17:58	06:49 20:03	05:33 21:06	04:39 22:02	04:37 22:15	05:25 21:30	06:27 20:15	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 18:00	06:46 20:05	05:31 21:08	04:38 22:03	04:38 22:14	05:27 21:28	06:29 20:12	07:29 18:51	07:35 16:35	08:36 15:48
5	08:56 15:59	08:13 17:00	07:06 18:02	06:44 20:07	05:29 21:10	04:37 22:04	04:39 22:13	05:29 21:26	06:31 20:09	07:31 18:49	07:38 16:33	08:37 15:47
6	08:55 16:00	08:11 17:02	07:04 18:04	06:41 20:09	05:27 21:12	04:36 22:06	04:40 22:13	05:31 21:24	06:33 20:07	07:33 18:46	07:40 16:31	08:39 15:46
7	08:55 16:02	08:09 17:04	07:01 18:06	06:39 20:12	05:24 21:14	04:35 22:07	04:41 22:12	05:33 21:21	06:35 20:04	07:36 18:43	07:42 16:29	08:40 15:46
8	08:54 16:03	08:07 17:06	06:59 18:08	06:36 20:14	05:22 21:16	04:34 22:08	04:42 22:11	05:35 21:19	06:37 20:01	07:38 18:41	07:44 16:26	08:42 15:45
9	08:53 16:05	08:05 17:09	06:56 18:11	06:33 20:16	05:20 21:18	04:34 22:09	04:43 22:10	05:37 21:17	06:39 19:59	07:40 18:38	07:46 16:24	08:43 15:44
10	08:53 16:06	08:02 17:11	06:53 18:13	06:31 20:18	05:18 21:20	04:33 22:10	04:45 22:09	05:39 21:15	06:41 19:56	07:42 18:36	07:48 16:22	08:44 15:44
11	08:52 16:08	08:00 17:13	06:51 18:15	06:28 20:20	05:16 21:22	04:32 22:11	04:46 22:08	05:41 21:12	06:43 19:53	07:44 18:33	07:51 16:20	08:46 15:44
12	08:51 16:10	07:58 17:15	06:48 18:17	06:25 20:22	05:14 21:24	04:32 22:12	04:47 22:07	05:43 21:10	06:45 19:51	07:46 18:30	07:53 16:19	08:47 15:43
13	08:50 16:12	07:56 17:18	06:45 18:19	06:23 20:24	05:12 21:26	04:31 22:13	04:49 22:06	05:45 21:08	06:47 19:48	07:48 18:28	07:55 16:17	08:48 15:43
14	08:49 16:13	07:53 17:20	06:43 18:21	06:20 20:26	05:10 21:28	04:31 22:13	04:50 22:04	05:47 21:05	06:49 19:45	07:50 18:25	07:57 16:15	08:49 15:43
15	08:48 16:15	07:51 17:22	06:40 18:23	06:18 20:28	05:08 21:30	04:31 22:14	04:51 22:03	05:49 21:03	06:51 19:43	07:52 18:23	07:59 16:13	08:50 15:43
16	08:46 16:17	07:49 17:24	06:37 18:25	06:15 20:30	05:06 21:32	04:31 22:15	04:53 22:02	05:51 21:01	06:53 19:40	07:54 18:20	08:01 16:11	08:51 15:43
17	08:45 16:19	07:46 17:27	06:35 18:28	06:12 20:32	05:04 21:34	04:30 22:15	04:55 22:00	05:53 20:58	06:55 19:37	07:56 18:18	08:03 16:09	08:52 15:43
18	08:44 16:21	07:44 17:29	06:32 18:30	06:10 20:35	05:02 21:36	04:30 22:16	04:56 21:59	05:55 20:56	06:57 19:35	07:59 18:15	08:05 16:08	08:53 15:43
19	08:43 16:23	07:42 17:31	06:29 18:32	06:07 20:37	05:00 21:38	04:30 22:16	04:58 21:57	05:57 20:53	06:59 19:32	08:01 18:13	08:08 16:06	08:54 15:43
20	08:41 16:25	07:39 17:33	06:27 18:34	06:05 20:39	04:59 21:39	04:30 22:16	04:59 21:56	05:59 20:51	07:01 19:29	08:03 18:10	08:10 16:05	08:54 15:44
21	08:40 16:27	07:37 17:36	06:24 18:36	06:02 20:41	04:57 21:41	04:30 22:17	05:01 21:54	06:01 20:48	07:03 19:26	08:05 18:08	08:12 16:03	08:55 15:44
22	08:38 16:29	07:34 17:38	06:21 18:38	06:00 20:43	04:55 21:43	04:31 22:17	05:03 21:53	06:03 20:46	07:05 19:24	08:07 18:05	08:14 16:01	08:56 15:45
23	08:37 16:31	07:32 17:40	06:19 18:40	05:57 20:45	04:54 21:45	04:31 22:17	05:04 21:51	06:05 20:43	07:07 19:21	08:09 18:03	08:16 16:00	08:56 15:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:55 20:47	04:52 21:47	04:31 22:17	05:06 21:49	06:07 20:41	07:09 19:18	08:11 18:00	08:18 15:59	08:57 15:46
25	08:34 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:31 22:17	05:08 21:48	06:09 20:38	07:11 19:16	08:14 18:16	08:20 15:57	08:57 15:46
26	08:32 16:38	07:24 17:47	06:11 18:46	05:50 20:51	04:49 21:50	04:32 22:17	05:10 21:46	06:11 20:36	07:13 19:13	08:16 18:15	08:22 15:56	08:57 15:47
27	08:30 16:40	07:22 17:49	06:08 18:49	05:47 20:53	04:47 21:52	04:32 22:17	05:12 21:44	06:13 20:33	07:15 19:10	08:18 18:10	08:23 16:53	08:57 15:48
28	08:28 16:42	07:19 17:51	06:05 18:51	05:45 20:55	04:46 21:53	04:33 22:17	05:13 21:42	06:15 20:31	07:17 19:07	08:20 18:05	08:25 16:51	08:58 15:49
29	08:27 16:44		07:03 19:53	05:43 20:58	04:45 21:55	04:34 22:16	05:15 21:40	06:17 20:28	07:19 19:05	08:22 18:05	08:27 16:48	08:58 15:50
30	08:25 16:46		07:00 19:55	05:40 21:00	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	08:24 18:05	08:29 16:46	08:58 15:51
31	08:23 16:48		06:57 19:57		04:42 21:58		05:19 21:36	06:21 20:23		07:27 18:05	07:27 16:44	08:57 15:52
Potential sun hours	235	266	366	426	508	529	530	470	385	323	247	216
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme

Shadow receptor: Pieduri - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (203)

Sunshine probability S (Average daily sunshine hours) []

Assumptions for shadow calculations

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

		January	February	March	April	May		June	July		August		September	October	November	December	
	1	08:57 15:53	08:21 16:50	07:16 17:53	06:54 19:59	05:38 21:01		04:41 21:59	04:35 22:15		05:21 21:34	22	20:34 (3) 20:56 (3)	06:23 20:20	07:23 18:59	07:28 16:41	08:30 15:50
	2	08:57 15:54	08:19 16:53	07:14 17:55	06:52 20:01	05:35 21:03		04:40 22:00	04:36 22:15		05:23 21:32	22	20:33 (3) 20:55 (3)	06:25 20:17	07:25 18:56	07:31 16:39	08:32 15:49
	3	08:56 15:56	08:17 16:55	07:11 17:57	06:49 21:03	05:33 21:06		04:39 22:02	04:37 22:14		05:25 21:30	20	20:34 (3) 20:54 (3)	06:27 20:14	07:27 18:54	07:33 16:37	08:34 15:48
	4	08:56 15:57	08:15 16:57	07:09 17:59	06:46 21:08	05:31 21:08	20:31 (3)	04:38 22:03	04:37 22:14		05:27 21:28	20	20:34 (3) 20:54 (3)	06:29 20:12	07:29 18:51	07:35 16:35	08:35 15:47
	5	08:56 15:58	08:13 16:59	07:06 18:02	06:44 21:10	05:29 21:10	20:28 (3)	04:37 22:04	04:38 22:13		05:28 21:26	20	20:35 (3) 20:52 (3)	06:31 20:09	07:31 18:48	07:37 16:32	08:37 15:47
	6	08:55 16:00	08:11 17:02	07:04 18:04	06:41 21:12	05:26 21:12	20:27 (3)	04:36 22:05	04:40 22:12		05:30 21:23	17	20:35 (3) 20:49 (3)	06:33 20:07	07:33 18:46	07:39 16:30	08:38 15:46
	7	08:54 16:01	08:09 17:04	07:01 18:06	06:38 21:11	05:24 21:14	20:26 (3)	04:35 22:06	04:41 22:11		05:32 21:21	14	20:37 (3) 20:47 (3)	06:35 20:04	07:35 18:43	07:42 16:28	08:40 15:45
	8	08:54 16:03	08:06 17:06	06:58 18:08	06:36 21:13	05:22 21:16	20:25 (3)	04:34 22:08	04:42 22:11		05:34 21:19	10	20:38 (3) 20:45 (3)	06:37 20:01	07:37 18:41	07:44 16:26	08:41 15:45
	9	08:53 16:04	08:04 17:08	06:56 18:10	06:33 21:15	05:20 21:18	20:24 (3)	04:33 22:09	04:43 22:10		05:36 21:17	7	06:39 20:41	07:39 19:58	07:46 18:38	08:43 16:24	08:43 15:44
	10	08:52 16:06	08:02 17:11	06:53 18:12	06:30 21:17	05:18 21:20	20:23 (3)	04:33 22:10	04:44 22:09		05:38 21:14		06:41 20:56	07:41 18:35	07:48 16:22	08:44 15:44	
	11	08:51 16:08	08:00 17:13	06:50 18:15	06:28 21:20	05:16 21:22	20:23 (3)	04:32 22:11	04:46 22:08		05:40 21:12		06:43 20:53	07:43 18:33	07:50 16:20	08:45 15:43	
	12	08:50 16:10	07:58 17:15	06:48 18:17	06:25 21:22	05:14 21:24	20:22 (3)	04:32 22:11	04:47 22:06		05:42 21:10		06:45 20:50	07:46 18:30	07:52 16:18	08:47 15:43	
	13	08:49 16:11	07:55 17:17	06:45 18:19	06:22 21:26	05:12 21:26	20:23 (3)	04:31 22:12	04:48 22:05		05:44 21:07		06:47 20:56	07:48 18:27	07:55 16:16	08:48 15:43	
	14	08:48 16:13	07:53 17:20	06:42 18:21	06:20 21:28	05:10 21:28	20:23 (3)	04:31 22:13	04:50 22:04		05:46 21:05		06:49 20:58	07:50 18:25	07:57 16:15	08:49 15:43	
	15	08:47 16:15	07:51 17:22	06:40 18:23	06:17 21:30	05:08 21:30	20:22 (3)	04:31 22:14	04:51 22:03		05:48 21:03		06:51 20:50	07:52 18:22	07:59 16:13	08:50 15:43	
	16	08:46 16:17	07:48 17:24	06:37 18:25	06:15 21:32	05:06 21:32	20:22 (3)	04:30 22:14	04:53 22:01		05:50 21:00		06:53 20:55	07:54 18:20	08:01 16:11	08:51 15:43	
	17	08:45 16:19	07:46 17:26	06:34 18:27	06:12 21:33	05:04 21:33	20:23 (3)	04:30 22:15	04:54 22:00	20:42 (3)	05:52 20:58		06:55 20:58	07:56 18:17	08:03 16:09	08:52 15:43	
	18	08:44 16:21	07:44 17:29	06:32 18:29	06:10 21:35	05:02 21:35	20:23 (3)	04:30 22:15	04:56 21:59	20:40 (3)	05:54 20:48		06:57 20:55	07:58 18:15	08:05 16:08	08:53 15:43	
	19	08:42 16:23	07:41 17:31	06:29 18:32	06:07 21:37	05:00 21:37	20:24 (3)	04:30 22:16	04:57 21:57	20:48 (3)	05:56 20:50		06:59 20:53	08:00 18:12	08:07 16:06	08:53 15:43	
	20	08:41 16:25	07:39 17:33	06:26 18:34	06:04 21:38	04:58 21:39	20:24 (3)	04:30 22:16	04:59 21:56	20:37 (3)	05:58 20:51		06:59 20:51	08:02 18:10	08:09 16:04	08:54 15:44	
	21	08:39 16:27	07:36 17:35	06:24 18:36	06:02 21:41	04:57 21:41	20:26 (3)	04:30 22:16	05:01 21:54	20:40 (3)	06:00 20:52		06:59 20:48	08:05 18:07	08:11 16:03	08:55 15:44	
	22	08:38 16:29	07:34 17:38	06:21 18:38	05:59 21:43	04:55 21:43	20:26 (3)	04:30 22:17	05:02 21:52	20:36 (3)	06:03 20:53		06:59 20:46	08:07 18:05	08:13 16:01	08:55 15:44	
	23	08:36 16:31	07:32 17:40	06:18 18:40	05:57 21:44	04:53 21:44	20:27 (3)	04:31 22:17	05:04 21:51	20:34 (3)	06:05 20:53		06:59 20:43	08:09 18:02	08:15 16:00	08:56 15:45	
	24	08:35 16:33	07:29 17:42	06:16 18:42	05:55 21:46	04:52 21:46	20:28 (3)	04:31 22:17	05:06 21:49	20:54 (3)	06:07 20:40		06:59 20:40	08:11 18:00	08:17 15:58	08:56 15:45	
	25	08:33 16:35	07:27 17:44	06:13 18:44	05:52 21:48	04:50 21:48	20:29 (3)	04:31 22:17	05:08 21:47	20:34 (3)	06:09 20:55		06:59 20:38	07:11 18:15	07:13 16:01	08:19 15:47	
	26	08:32 16:37	07:24 17:46	06:10 18:46	05:50 21:50	04:49 21:50	20:32 (3)	04:32 22:17	05:10 21:45	20:55 (3)	06:11 20:35		06:59 20:33	07:15 18:15	07:15 16:01	08:19 15:47	
	27	08:30 16:39	07:22 17:49	06:08 18:48	05:47 21:51	04:47 21:51	20:38 (3)	04:32 22:17	05:11 21:44	20:33 (3)	06:13 20:33		06:59 20:33	07:15 18:15	07:18 16:01	08:23 15:48	
	28	08:28 16:42	07:19 17:51	06:05 18:50	05:45 21:53	04:46 21:53	20:33 (3)	05:13 22:16	05:13 21:42	20:56 (3)	06:15 20:30		06:59 20:28	07:17 18:15	07:20 16:01	08:25 15:49	
	29	08:26 16:44		07:02 19:52	05:42 21:54	04:44 21:54	20:33 (3)	05:15 22:16	05:15 21:40	20:53 (3)	06:17 20:28		06:59 20:28	07:19 19:04	07:22 16:48	08:27 15:52	
	30	08:24 16:46		07:00 19:55	05:40 21:56	04:43 21:56	20:34 (3)	05:17 22:16	05:17 21:38	20:56 (3)	06:19 20:25		06:59 20:25	07:21 19:02	07:24 16:46	08:29 15:51	
	31	08:23 16:48		06:57 19:57	05:42 21:57	04:42 21:57	20:33 (3)	05:19 21:36	05:19 21:36	20:56 (3)	06:21 20:22		06:59 20:22	07:26 16:43	08:26 15:51	08:57 15:52	
Potential sun hours		235	266	366	426	508		529	530		470			385	324	247	216
Total, worst case						395			265		132						
Sun reduction						0,59			0,48		0,51						
Oper. time red.						1,00			1,00		1,00						
Wind dir. red.						1,00			1,00		1,00						
Total reduction						0,59			0,48		0,51						
Total, real						232			127		67						

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Pienenes - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (201)  
 Assumptions for shadow calculations Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 0,80 1,82 4,75 6,63 9,63 10,06 8,16 7,72 5,94 2,93 0,63 0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:51	07:17 17:53	06:54 19:59	05:38 21:01	04:41 21:59	04:35 22:15	05:21 21:34	06:23 20:20	07:23 18:59	07:29 16:41	08:30 15:50
2	08:57 15:54	08:19 16:53	07:14 17:55	06:52 20:01	05:36 21:04	04:40 22:00	04:36 22:15	05:23 21:32	06:25 20:17	07:25 18:57	07:31 16:39	08:32 15:49
3	08:56 15:56	08:17 16:55	07:11 17:57	06:49 20:03	05:33 21:06	04:39 22:02	04:37 22:14	05:25 21:30	06:27 20:15	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 18:00	06:46 20:05	05:31 21:08	04:38 22:03	04:38 22:14	05:27 21:28	06:29 20:12	07:29 18:51	07:35 16:35	08:35 15:48
5	08:56 15:58	08:13 17:00	07:06 18:02	06:44 20:07	05:29 21:10	04:37 22:04	04:39 22:13	05:29 21:26	06:31 20:09	07:31 18:49	07:37 16:33	08:37 15:47
6	08:55 16:00	08:11 17:02	07:04 18:04	06:41 20:09	05:27 21:12	04:36 22:05	04:40 22:12	05:31 21:23	06:33 20:07	07:33 18:46	07:40 16:30	08:39 15:46
7	08:54 16:01	08:09 17:04	07:01 18:06	06:38 20:11	05:24 21:14	04:35 22:07	04:41 22:12	05:33 21:21	06:35 20:04	07:35 18:43	07:42 16:28	08:40 15:45
8	08:54 16:03	08:07 17:06	06:58 18:08	06:36 20:13	05:22 21:16	04:34 22:08	04:42 22:11	05:35 21:19	06:37 20:01	07:37 18:41	07:44 16:26	08:42 15:45
9	08:53 16:05	08:04 17:09	06:56 18:10	06:33 20:16	05:20 21:18	04:34 22:09	04:43 22:10	05:37 21:17	06:39 19:59	07:39 18:38	07:46 16:24	08:43 15:44
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31	08:23 16:48		06:57 19:57		04:42 21:57		05:19 21:36	06:21 20:22		07:26 18:05	07:26 16:44	08:57 15:52
Potential sun hours	235	266	366	426	508	529	530	470	385	324	247	216
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Pildavas - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (218)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:50	07:16 17:53	06:54 19:59	05:38 21:01	04:41 21:59	04:35 22:15	05:21 21:34	06:23 20:20	07:23 18:59	07:28 16:41	08:30 15:50
2	08:57 15:54	08:19 16:53	07:14 17:55	06:51 20:01	05:35 21:03	04:40 22:00	04:36 22:15	05:23 21:32	06:25 20:17	07:31 18:56	07:31 16:39	08:32 15:49
3	08:56 15:56	08:17 16:55	07:11 17:57	06:49 20:03	05:33 21:05	04:39 22:01	04:37 22:14	05:25 21:30	06:27 20:14	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 17:59	06:46 20:05	05:31 21:07	04:38 22:03	04:37 22:14	05:27 21:28	06:29 20:12	07:29 18:51	07:35 16:35	08:35 15:47
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18	08:43 16:21	07:44 17:29	06:32 18:29	06:10 20:34	05:02 21:35	04:30 22:15	04:56 21:59	05:54 20:55	06:57 19:34	07:58 18:15	08:05 16:07	08:53 15:43
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31	08:23 16:48		06:57 19:57		04:42 21:57		05:19 21:36	06:21 20:22		07:26 16:43		08:57 15:52
Potential sun hours	235	266	366	426	508	529	530	470	385	324	247	216
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Platmani - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (225)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:51	07:17 17:53	06:54 19:59	05:38 21:02	04:41 21:59	04:35 22:16	05:21 21:34	06:23 20:20	07:23 18:59	07:29 16:42	08:31 15:50
2	08:57 15:55	08:19 16:53	07:14 17:55	06:52 20:01	05:36 21:04	04:40 22:00	04:36 22:15	05:23 21:32	06:25 20:17	07:31 18:57	07:31 16:39	08:32 15:49
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22	08:38 16:29	07:34 17:38	06:21 18:38	06:00 20:43	04:55 21:43	04:31 22:17	05:03 21:53	06:03 20:46	07:05 19:24	08:07 18:05	08:14 16:01	08:56 15:45
23	08:37 16:31	07:32 17:40	06:19 18:40	05:57 20:45	04:54 21:45	04:31 22:17	05:04 21:51	06:05 20:43	07:07 19:21	08:09 18:03	08:16 16:00	08:56 15:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:55 20:47	04:52 21:46	04:31 22:17	05:06 21:49	06:07 20:41	07:09 19:18	08:11 18:00	08:18 15:59	08:56 15:46
25	08:33 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:32 22:17	05:08 21:47	06:09 20:38	07:11 19:16	08:13 18:16	08:20 15:57	08:57 15:46
26	08:32 16:38	07:24 17:47	06:11 18:46	05:50 20:51	04:49 21:50	04:32 22:17	05:10 21:46	06:11 20:36	07:13 19:13	08:16 18:15	08:21 15:56	08:57 15:47
27	08:30 16:40	07:22 17:49	06:08 18:49	05:47 20:53	04:48 21:51	04:32 22:17	05:12 21:44	06:13 20:33	07:15 19:10	08:18 18:10	08:23 16:53	08:57 15:48
28	08:28 16:42	07:19 17:51	06:05 18:51	05:45 20:55	04:46 21:53	04:33 22:17	05:13 21:42	06:15 20:30	07:17 19:07	08:20 18:05	08:25 16:51	08:57 15:49
29	08:27 16:44		07:03 19:53	05:43 20:57	04:45 21:55	04:34 22:16	05:15 21:40	06:17 20:28	07:19 19:05	08:22 18:05	08:27 16:48	08:57 15:50
30	08:25 16:46		07:00 19:55	05:40 21:00	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	08:24 18:05	08:29 16:46	08:57 15:51
31	08:23 16:48		06:57 19:57		04:42 21:58		05:19 21:36	06:21 20:23		07:27 18:05	07:27 16:44	08:57 15:52
Potential sun hours	235	266	366	426	508	529	530	470	385	324	247	216
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Pludoni - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (236)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:51	07:17 17:53	06:54 19:59	05:38 21:01	04:41 21:59	04:35 22:15	05:21 21:34	06:23 20:20	07:23 18:59	07:28 16:41	08:30 15:50
2	08:57 15:54	08:19 16:53	07:14 17:55	06:52 20:01	05:36 21:03	04:40 22:00	04:36 22:15	05:23 21:32	06:25 20:17	07:25 18:57	07:31 16:39	08:32 15:49
3	08:56 15:56	08:17 16:55	07:11 17:57	06:49 20:03	05:33 21:06	04:39 22:01	04:37 22:14	05:25 21:30	06:27 20:14	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 18:00	06:46 20:05	05:31 21:08	04:38 22:03	04:38 22:14	05:27 21:28	06:29 20:12	07:29 18:51	07:35 16:35	08:35 15:47
5	08:55 15:58	08:13 16:59	07:06 18:02	06:44 20:07	05:29 21:10	04:37 22:04	04:39 22:13	05:29 21:25	06:31 20:09	07:31 18:49	07:37 16:33	08:37 15:47
6	08:55 16:00	08:11 17:02	07:04 18:04	06:41 20:09	05:26 21:12	04:36 22:05	04:40 22:12	05:31 21:23	06:33 20:07	07:33 18:46	07:39 16:30	08:38 15:46
7	08:54 16:01	08:09 17:04	07:01 18:06	06:38 20:11	05:24 21:14	04:35 22:06	04:41 22:11	05:33 21:21	06:35 20:04	07:35 18:43	07:42 16:28	08:40 15:45
8	08:54 16:03	08:06 17:06	06:58 18:08	06:36 20:13	05:22 21:16	04:34 22:08	04:42 22:10	05:35 21:19	06:37 20:01	07:37 18:41	07:44 16:26	08:41 15:45
9	08:53 16:05	08:04 17:08	06:56 18:10	06:33 20:15	05:20 21:18	04:34 22:09	04:43 22:10	05:37 21:17	06:39 19:59	07:39 18:38	07:46 16:24	08:43 15:44
10	08:52 16:06	08:02 17:11	06:53 18:12	06:30 20:18	05:18 21:20	04:33 22:10	04:44 22:09	05:39 21:14	06:41 19:56	07:41 18:35	07:48 16:22	08:44 15:44
11	08:51 16:08	08:00 17:13	06:50 18:15	06:28 20:20	05:16 21:22	04:32 22:10	04:46 22:08	05:41 21:12	06:43 19:53	07:44 18:33	07:50 16:20	08:45 15:44
12	08:50 16:10	07:58 17:15	06:48 18:17	06:25 20:22	05:14 21:24	04:32 22:11	04:47 22:06	05:43 21:10	06:45 19:50	07:46 18:30	07:52 16:18	08:47 15:43
13	08:49 16:11	07:55 17:17	06:45 18:19	06:23 20:24	05:12 21:26	04:31 22:12	04:48 22:05	05:45 21:07	06:47 19:48	07:48 18:28	07:55 16:16	08:48 15:43
14	08:48 16:13	07:53 17:20	06:43 18:21	06:20 20:26	05:10 21:28	04:31 22:13	04:50 22:04	05:47 21:05	06:49 19:45	07:50 18:25	07:57 16:15	08:49 15:43
15	08:47 16:15	07:51 17:22	06:40 18:23	06:17 20:28	05:08 21:30	04:31 22:14	04:51 22:03	05:49 21:03	06:51 19:42	07:52 18:22	07:59 16:13	08:50 15:43
16	08:46 16:17	07:48 17:24	06:37 18:25	06:15 20:30	05:06 21:32	04:30 22:14	04:53 22:01	05:51 21:00	06:53 19:40	07:54 18:20	08:01 16:11	08:51 15:43
17	08:45 16:19	07:46 17:26	06:35 18:27	06:12 20:32	05:04 21:33	04:30 22:15	04:54 22:00	05:53 20:58	06:55 19:37	07:56 18:17	08:03 16:09	08:52 15:43
18	08:44 16:21	07:44 17:29	06:32 18:29	06:10 20:34	05:02 21:35	04:30 22:15	04:56 21:59	05:55 20:55	06:57 19:34	07:58 18:15	08:05 16:08	08:53 15:43
19	08:42 16:23	07:41 17:31	06:29 18:32	06:07 20:36	05:00 21:37	04:30 22:16	04:58 21:57	05:57 20:53	06:59 19:32	08:00 18:12	08:07 16:06	08:53 15:43
20	08:41 16:25	07:39 17:33	06:26 18:34	06:05 20:38	04:59 21:39	04:30 22:16	04:59 21:56	05:59 20:50	07:01 19:29	08:02 18:10	08:09 16:04	08:54 15:44
21	08:39 16:27	07:36 17:35	06:24 18:36	06:02 20:41	04:57 21:41	04:30 22:16	05:01 21:54	06:01 20:48	07:03 19:26	08:05 18:07	08:11 16:03	08:55 15:44
22	08:38 16:29	07:34 17:38	06:21 18:38	06:00 20:43	04:55 21:43	04:30 22:16	05:03 21:52	06:03 20:46	07:05 19:23	08:07 18:05	08:13 16:01	08:55 15:45
23	08:36 16:31	07:32 17:40	06:18 18:40	05:57 20:45	04:53 21:44	04:31 22:17	05:04 21:51	06:05 20:43	07:07 19:21	08:09 18:02	08:15 16:00	08:56 15:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:55 20:47	04:52 21:46	04:31 22:17	05:06 21:49	06:07 20:40	07:09 19:18	08:11 18:00	08:17 15:58	08:56 15:46
25	08:33 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:31 22:17	05:08 21:47	06:09 20:38	07:11 19:15	08:13 18:05	08:19 15:57	08:56 15:46
26	08:32 16:37	07:24 17:46	06:10 18:46	05:50 20:51	04:49 21:49	04:32 22:17	05:10 21:45	06:11 20:35	07:13 19:13	08:15 18:05	08:21 15:56	08:57 15:47
27	08:30 16:40	07:22 17:49	06:08 18:48	05:47 20:53	04:47 21:51	04:32 22:16	05:11 21:44	06:13 20:33	07:15 19:10	08:18 18:05	08:23 15:55	08:57 15:48
28	08:28 16:42	07:19 17:51	06:05 18:50	05:45 20:55	04:46 21:53	04:33 22:16	05:13 21:42	06:15 20:30	07:17 19:07	08:20 18:05	08:25 15:53	08:57 15:49
29	08:26 16:44		07:02 19:52	05:43 20:57	04:45 21:54	04:34 22:16	05:15 21:40	06:17 20:28	07:19 19:05	08:22 18:05	08:27 15:52	08:57 15:50
30	08:24 16:46		07:00 19:55	05:40 20:59	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	08:24 18:05	08:29 15:51	08:57 15:51
31	08:23 16:48		06:57 19:57		04:42 21:57		05:19 21:36	06:21 20:22		07:26 18:05		08:57 15:52
Potential sun hours	235	266	366	426	508	529	530	470	385	324	247	216
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme

Shadow receptor: Porini - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (206)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June
1	08:57 15:53	08:21 16:50	07:17 17:53	06:54 19:59	05:38 21:01	19:07 (3) 20:11 (6)
2	08:57 15:54	08:19 16:53	07:14 17:55	06:52 20:01	05:35 21:04	19:10 (3) 20:09 (6)
3	08:56 15:56	08:17 16:55	07:11 17:57	06:49 20:03	05:33 21:06	19:55 (6) 20:07 (6)
4	08:56 15:57	08:15 16:57	07:09 18:00	06:46 20:05	05:31 21:08	19:58 (6) 20:04 (6)
5	08:56 15:58	08:13 16:59	07:06 18:02	06:44 20:07	19:16 (3) 19:26 (3)	05:29 21:10
6	08:55 16:00	08:11 17:02	07:04 18:04	06:41 20:09	19:11 (3) 19:29 (3)	05:26 21:12
7	08:54 16:01	08:09 17:04	07:01 18:06	06:38 20:11	19:09 (3) 19:32 (3)	05:24 21:14
8	08:54 16:03	08:06 17:06	06:58 18:08	06:36 20:13	19:07 (3) 19:33 (3)	05:22 21:16
9	08:53 16:04	08:04 17:08	06:56 18:10	06:33 20:15	19:04 (3) 19:34 (3)	05:20 21:18
10	08:52 16:06	08:02 17:11	06:53 18:12	06:30 20:18	19:04 (3) 19:36 (3)	05:18 21:20
11	08:51 16:08	08:00 17:13	06:50 18:15	06:28 20:20	19:02 (3) 19:36 (3)	05:16 21:22
12	08:50 16:10	07:58 17:15	06:48 18:17	06:25 20:22	19:01 (3) 19:37 (3)	05:14 21:24
13	08:49 16:11	07:55 17:17	06:45 18:19	06:22 20:24	19:00 (3) 19:37 (3)	05:12 21:26
14	08:48 16:13	07:53 17:20	06:43 18:21	06:20 20:26	19:00 (3) 19:38 (3)	05:10 21:28
15	08:47 16:15	07:51 17:22	06:40 18:23	06:17 20:28	18:59 (3) 19:37 (3)	05:08 21:30
16	08:46 16:17	07:48 17:24	06:37 18:25	06:15 20:30	18:59 (3) 19:38 (3)	05:06 21:32
17	08:45 16:19	07:46 17:26	06:35 18:27	06:12 20:32	18:58 (3) 19:37 (3)	05:04 21:34
18	08:44 16:21	07:44 17:29	06:32 18:29	06:10 20:34	18:58 (3) 20:04 (6)	05:02 21:35
19	08:42 16:23	07:41 17:31	06:29 18:32	06:07 20:36	18:57 (3) 20:06 (6)	05:00 21:37
20	08:41 16:25	07:39 17:33	06:26 18:34	06:05 20:38	18:58 (3) 20:08 (6)	04:58 21:39
21	08:40 16:27	07:37 17:35	06:24 18:36	06:02 20:41	18:57 (3) 20:09 (6)	04:57 21:41
22	08:38 16:29	07:34 17:38	06:21 18:38	05:59 20:43	18:58 (3) 20:12 (6)	04:55 21:43
23	08:37 16:31	07:32 17:40	06:18 18:40	05:57 20:45	18:58 (3) 20:14 (6)	04:53 21:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:55 20:47	18:58 (3) 20:13 (6)	04:52 21:46
25	08:33 16:35	07:27 17:44	06:13 18:44	05:52 20:49	18:59 (3) 20:14 (6)	04:50 21:48
26	08:32 16:37	07:24 17:46	06:10 18:46	05:50 20:51	19:00 (3) 20:14 (6)	04:49 21:50
27	08:30 16:39	07:22 17:49	06:08 18:48	05:47 20:53	19:00 (3) 20:13 (6)	04:47 21:51
28	08:28 16:42	07:19 17:51	06:05 18:50	05:45 20:55	19:02 (3) 20:13 (6)	04:46 21:53
29	08:26 16:44		07:02 19:52	05:42 20:57	19:03 (3) 20:12 (6)	04:44 21:54
30	08:25 16:46		07:00 19:55	05:40 20:59	19:05 (3) 20:12 (6)	04:43 21:56
31	08:23 16:48		06:57 19:57		04:42 21:57	
Potential sun hours	235	266	366	426	508	529
Total, worst case				1058	77	532
Sun reduction				0,47	0,59	0,57
Oper. time red.				1,00	1,00	1,00
Wind dir. red.				1,00	1,00	1,00
Total reduction				0,47	0,59	0,57
Total, real				494	45	303

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Porini - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (206)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	July			August			September			October	November	December
1	04:35		21:07 (4)	05:21			06:23		19:01 (3)	07:23	07:29	08:30
	22:15	19	21:26 (4)	21:34			20:20	34	19:35 (3)	18:59	16:41	15:50
2	04:36		21:08 (4)	05:23			06:25		19:02 (3)	07:25	07:31	08:32
	22:15	18	21:26 (4)	21:32			20:17	32	19:34 (3)	18:56	16:39	15:49
3	04:37		21:09 (4)	05:25			06:27		19:02 (3)	07:27	07:33	08:34
	22:14	17	21:26 (4)	21:30			20:15	30	19:32 (3)	18:54	16:37	15:48
4	04:37		21:10 (4)	05:27			06:29		19:04 (3)	07:29	07:35	08:35
	22:14	16	21:26 (4)	21:28			20:12	26	19:30 (3)	18:51	16:35	15:47
5	04:38		21:11 (4)	05:29			06:31		19:05 (3)	07:31	07:37	08:37
	22:13	14	21:25 (4)	21:26			20:09	23	19:28 (3)	18:48	16:32	15:47
6	04:40		21:12 (4)	05:30			06:33		19:07 (3)	07:33	07:39	08:39
	22:12	12	21:24 (4)	21:23			20:07	19	19:26 (3)	18:46	16:30	15:46
7	04:41		21:14 (4)	05:32			06:35		19:11 (3)	07:35	07:42	08:40
	22:12	9	21:23 (4)	21:21			20:04	11	19:22 (3)	18:43	16:28	15:45
8	04:42		21:17 (4)	05:34			06:37			07:37	07:44	08:41
	22:11	3	21:20 (4)	21:19			20:01			18:41	16:26	15:45
9	04:43			05:36		20:07 (6)	06:39			07:39	07:46	08:43
	22:10			21:17	8	20:15 (6)	19:59			18:38	16:24	15:44
10	04:44			05:38		20:04 (6)	06:41			07:41	07:48	08:44
	22:09			21:14	13	20:17 (6)	19:56			18:35	16:22	15:44
11	04:46			05:40		19:18 (3)	06:43			07:44	07:50	08:45
	22:08			21:12	27	20:18 (6)	19:53			18:33	16:20	15:43
12	04:47			05:42		19:15 (3)	06:45			07:46	07:52	08:47
	22:07			21:10	36	20:20 (6)	19:50			18:30	16:18	15:43
13	04:48			05:44		19:12 (3)	06:47			07:48	07:55	08:48
	22:05			21:08	41	20:19 (6)	19:48			18:28	16:16	15:43
14	04:50			05:46		19:10 (3)	06:49			07:50	07:57	08:49
	22:04			21:05	47	20:20 (6)	19:45			18:25	16:15	15:43
15	04:51			05:48		19:09 (3)	06:51			07:52	07:59	08:50
	22:03			21:03	49	20:20 (6)	19:42			18:22	16:13	15:43
16	04:53			05:50		19:08 (3)	06:53			07:54	08:01	08:51
	22:02			21:00	52	20:20 (6)	19:40			18:20	16:11	15:43
17	04:54			05:52		19:06 (3)	06:55			07:56	08:03	08:52
	22:00			20:58	55	20:20 (6)	19:37			18:17	16:09	15:43
18	04:56			05:54		19:05 (3)	06:57			07:58	08:05	08:53
	21:59			20:55	57	20:20 (6)	19:34			18:15	16:08	15:43
19	04:57			05:56		19:05 (3)	06:59			08:00	08:07	08:53
	21:57			20:53	57	20:20 (6)	19:32			18:12	16:06	15:43
20	04:59			05:59		19:04 (3)	07:01			08:03	08:09	08:54
	21:56			20:51	57	20:19 (6)	19:29			18:10	16:04	15:43
21	05:01			06:01		19:02 (3)	07:03			08:05	08:11	08:55
	21:54			20:48	56	20:16 (6)	19:26			18:07	16:03	15:44
22	05:02			06:03		19:02 (3)	07:05			08:07	08:13	08:55
	21:52			20:46	53	20:14 (6)	19:23			18:05	16:01	15:44
23	05:04			06:05		19:01 (3)	07:07			08:09	08:15	08:56
	21:51			20:43	51	20:12 (6)	19:21			18:02	16:00	15:45
24	05:06			06:07		19:01 (3)	07:09			08:11	08:17	08:56
	21:49			20:41	46	20:09 (6)	19:18			18:00	15:58	15:45
25	05:08			06:09		19:01 (3)	07:11			07:13	08:19	08:57
	21:47			20:38	41	20:07 (6)	19:15			16:58	15:57	15:46
26	05:10			06:11		19:00 (3)	07:13			07:15	08:21	08:57
	21:46			20:35	40	19:40 (3)	19:13			16:55	15:56	15:47
27	05:11			06:13		19:00 (3)	07:15			07:18	08:23	08:57
	21:44			20:33	39	19:39 (3)	19:10			16:53	15:54	15:48
28	05:13			06:15		19:00 (3)	07:17			07:20	08:25	08:57
	21:42			20:30	39	19:39 (3)	19:07			16:50	15:53	15:49
29	05:15			06:17		19:01 (3)	07:19			07:22	08:27	08:57
	21:40			20:28	37	19:38 (3)	19:05			16:48	15:52	15:50
30	05:17			06:19		19:01 (3)	07:21			07:24	08:29	08:57
	21:38			20:25	37	19:38 (3)	19:02			16:46	15:51	15:51
31	05:19			06:21		19:00 (3)				07:26		08:57
	21:36			20:22	36	19:36 (3)				16:44		15:52
Potential sun hours	530			470			385			323	247	216
Total, worst case		108			974			175				
Sun reduction		0,48			0,51			0,46				
Oper. time red.		1,00			1,00			1,00				
Wind dir. red.		1,00			1,00			1,00				
Total reduction		0,48			0,51			0,46				
Total, real		52			496			81				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian & Lithuanian environment  
 Vilandes 3-6  
 LV-1010 Riga  
 0037167242411  
 Laura Kurzemniece / laura.kurzemniece@environment.lv  
 Calculated:  
 07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Priež lejas - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (241)  
 Assumptions for shadow calculations Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 0,80 1,82 4,75 6,63 9,63 10,06 8,16 7,72 5,94 2,93 0,63 0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June
1	08:57 15:53	08:21 16:50	07:16 17:53	06:54 19:59	05:38 21:01	04:41 21:59
2	08:57 15:54	08:19 16:53	07:14 17:55	06:52 20:01	05:35 21:03	04:40 22:00
3	08:56 15:56	08:17 16:55	07:11 17:57	06:49 20:03	05:33 21:06	04:39 22:02
4	08:56 15:57	08:15 16:57	07:09 17:59	06:46 20:05	05:31 21:08	04:37 22:03
5	08:56 15:58	08:13 16:59	07:06 18:02	06:44 20:07	19:34 (3) 19:38 (3)	04:37 22:04
6	08:55 16:00	08:11 17:02	07:04 18:04	06:41 20:09	19:30 (3) 19:40 (3)	04:36 22:05
7	08:54 16:01	08:09 17:04	07:01 18:06	06:38 20:11	19:28 (3) 19:43 (3)	04:35 22:07
8	08:54 16:03	08:06 17:06	06:58 18:08	06:36 20:13	19:26 (3) 19:44 (3)	04:34 22:08
9	08:53 16:04	08:04 17:08	06:56 18:10	06:33 20:15	19:24 (3) 19:45 (3)	04:33 22:09
10	08:52 16:06	08:02 17:11	06:53 18:12	06:30 20:18	19:23 (3) 19:47 (3)	04:33 22:10
11	08:51 16:08	08:00 17:13	06:50 18:15	06:28 20:20	19:22 (3) 19:46 (3)	04:32 22:11
12	08:50 16:09	07:58 17:15	06:48 18:17	06:25 20:22	19:22 (3) 19:47 (3)	04:32 22:12
13	08:49 16:11	07:55 17:17	06:45 18:19	06:22 20:24	19:21 (3) 19:46 (3)	04:31 22:12
14	08:48 16:13	07:53 17:20	06:42 18:21	06:20 20:26	19:22 (3) 19:46 (3)	04:31 22:13
15	08:47 16:15	07:51 17:22	06:40 18:23	06:17 20:28	19:21 (3) 19:45 (3)	04:30 22:14
16	08:46 16:17	07:48 17:24	06:37 18:25	06:15 20:30	19:22 (3) 19:45 (3)	04:30 22:14
17	08:45 16:19	07:46 17:26	06:34 18:27	06:12 20:32	19:22 (3) 19:44 (3)	04:30 22:15
18	08:44 16:21	07:44 17:29	06:32 18:29	06:10 20:34	19:23 (3) 19:43 (3)	04:30 22:15
19	08:42 16:23	07:41 17:31	06:29 18:32	06:07 20:36	19:23 (3) 19:41 (3)	04:30 22:16
20	08:41 16:25	07:39 17:33	06:26 18:34	06:04 20:38	19:25 (3) 19:40 (3)	04:30 22:16
21	08:39 16:27	07:36 17:35	06:24 18:36	06:02 20:41	19:26 (3) 19:37 (3)	04:30 22:16
22	08:38 16:29	07:34 17:38	06:21 18:38	05:59 20:43	04:55 21:43	04:30 22:17
23	08:36 16:31	07:32 17:40	06:18 18:40	05:57 20:45	04:53 21:44	04:30 22:17
24	08:35 16:33	07:29 17:42	06:16 18:42	05:54 20:47	04:52 21:46	04:31 22:17
25	08:33 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:31 22:17
26	08:32 16:37	07:24 17:46	06:10 18:46	05:50 20:51	04:49 21:50	04:32 22:17
27	08:30 16:39	07:22 17:49	06:08 18:48	05:47 20:53	04:47 21:51	04:32 22:17
28	08:28 16:42	07:19 17:51	06:05 18:50	05:45 20:55	04:46 21:53	04:33 22:16
29	08:26 16:44		07:02 19:52	05:42 20:57	04:44 21:54	04:33 22:16
30	08:25 16:46		07:00 19:55	05:40 20:59	04:43 21:56	04:34 22:16
31	08:23 16:48		06:57 19:57		04:42 21:57	04:35 (4) 20:54 (4)
Potential sun hours	235	266	366	426	508	529
Total, worst case				323	465	100
Sun reduction				0,47	0,59	0,57
Oper. time red.				1,00	1,00	1,00
Wind dir. red.				1,00	1,00	1,00
Total reduction				0,47	0,59	0,57
Total, real				151	273	57

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian & Lithuanian environment  
 Vilandes 3-6  
 LV-1010 Riga  
 0037167242411  
 Laura Kurzemniece / laura.kurzemniece@environment.lv  
 Calculated:  
 07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Priež lejas - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (241)  
 Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 0,80 1,82 4,75 6,63 9,63 10,06 8,16 7,72 5,94 2,93 0,63 0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	July	August	September	October	November	December
1	04:35	05:21	20:45 (4)	06:23	19:21 (3)	07:23
	22:15	21:34	21:00 (4)	20:20	19:45 (3)	18:59
2	04:36	05:23	20:46 (4)	06:25	19:21 (3)	07:25
	22:15	21:32	20:57 (4)	20:17	19:44 (3)	18:56
3	04:37	05:25	20:48 (4)	06:27	19:22 (3)	07:27
	22:14	21:30	20:55 (4)	20:14	19:44 (3)	18:54
4	04:37	20:49 (4)	05:27	20:51 (4)	06:29	19:23 (3)
	22:14	21:28	20:54 (4)	20:12	19:41 (3)	18:51
5	04:38	20:48 (4)	05:28	06:31	19:24 (3)	07:31
	22:13	20:55 (4)	21:26	20:09	19:39 (3)	18:48
6	04:39	20:47 (4)	05:30	06:33	19:25 (3)	07:33
	22:12	20:56 (4)	21:23	20:07	19:36 (3)	18:46
7	04:41	20:46 (4)	05:32	06:35	19:29 (3)	07:35
	22:11	20:58 (4)	21:21	20:04	19:34 (3)	18:43
8	04:42	20:45 (4)	05:34	06:37	19:27	07:37
	22:11	20:58 (4)	21:19	20:01	18:41	16:26
9	04:43	20:45 (4)	05:36	06:39	19:29	07:39
	22:10	20:59 (4)	21:17	19:58	18:38	16:24
10	04:44	20:44 (4)	05:38	06:41	19:27	07:41
	22:09	21:00 (4)	21:14	19:56	18:35	16:22
11	04:46	20:43 (4)	05:40	06:43	19:27	07:43
	22:08	21:00 (4)	21:12	19:53	18:33	16:20
12	04:47	20:44 (4)	05:42	06:45	19:26	07:46
	22:07	21:02 (4)	21:10	19:50	18:30	16:18
13	04:48	20:43 (4)	05:44	06:47	19:25	07:48
	22:05	21:02 (4)	21:07	19:48	18:27	16:16
14	04:50	20:42 (4)	05:46	06:49	19:24	07:50
	22:04	21:03 (4)	21:05	19:45	18:25	16:14
15	04:51	20:43 (4)	05:48	06:51	19:23	07:52
	22:03	21:04 (4)	21:03	19:42	18:22	16:13
16	04:53	20:42 (4)	05:50	06:53	19:22	07:54
	22:01	21:04 (4)	21:00	19:40	18:20	16:11
17	04:54	20:41 (4)	05:52	06:55	19:21	07:56
	22:00	21:04 (4)	20:58	19:37	18:17	16:09
18	04:56	20:42 (4)	05:54	06:57	19:20	07:58
	21:59	21:05 (4)	20:55	19:34	18:15	16:07
19	04:57	20:41 (4)	05:56	06:59	19:19	08:00
	21:57	21:05 (4)	20:53	19:31	18:12	16:06
20	04:59	20:41 (4)	05:58	07:01	19:18	08:02
	21:56	21:05 (4)	20:51	19:29	18:10	16:04
21	05:01	20:41 (4)	06:00	19:34 (3)	07:03	08:05
	21:54	21:05 (4)	20:48	19:38 (3)	19:26	18:07
22	05:02	20:41 (4)	06:03	19:30 (3)	07:05	08:07
	21:52	21:06 (4)	20:46	19:42 (3)	19:23	18:05
23	05:04	20:41 (4)	06:05	19:28 (3)	07:07	08:09
	21:51	21:05 (4)	20:43	19:44 (3)	19:21	18:02
24	05:06	20:41 (4)	06:07	19:27 (3)	07:09	08:11
	21:49	21:06 (4)	20:40	19:45 (3)	19:18	18:00
25	05:08	20:42 (4)	06:09	19:25 (3)	07:11	07:13
	21:47	21:06 (4)	20:38	19:46 (3)	19:15	16:57
26	05:09	20:41 (4)	06:11	19:24 (3)	07:13	07:15
	21:46	21:05 (4)	20:35	19:47 (3)	19:13	16:55
27	05:11	20:42 (4)	06:13	19:23 (3)	07:15	07:18
	21:44	21:05 (4)	20:33	19:47 (3)	19:10	16:53
28	05:13	20:43 (4)	06:15	19:23 (3)	07:17	07:20
	21:42	21:05 (4)	20:30	19:47 (3)	19:07	16:50
29	05:15	20:42 (4)	06:17	19:22 (3)	07:19	07:22
	21:40	21:04 (4)	20:28	19:47 (3)	19:04	16:48
30	05:17	20:43 (4)	06:19	19:22 (3)	07:21	07:24
	21:38	21:03 (4)	20:25	19:47 (3)	19:02	16:46
31	05:19	20:44 (4)	06:21	19:21 (3)	07:26	07:26
	21:36	21:01 (4)	20:22	19:46 (3)	16:43	15:52
Potential sun hours	530	470	385	323	247	216
Total, worst case	537	253	118			
Sun reduction	0,48	0,51	0,46			
Oper. time red.	1,00	1,00	1,00			
Wind dir. red.	1,00	1,00	1,00			
Total reduction	0,48	0,51	0,46			
Total, real	256	129	55			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

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0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Pukes - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (234)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:51	07:17 17:53	06:54 19:59	05:38 21:02	04:41 21:59	04:35 22:16	05:21 21:34	06:23 20:20	07:23 18:59	07:29 16:42	08:31 15:50
2	08:57 15:55	08:19 16:53	07:14 17:55	06:52 20:01	05:36 21:04	04:40 22:00	04:36 22:15	05:23 21:32	06:25 20:17	07:31 18:57	07:31 16:39	08:32 15:49
3	08:57 15:56	08:17 16:55	07:12 17:58	06:49 20:03	05:33 21:06	04:39 22:02	04:37 22:15	05:25 21:30	06:27 20:15	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 18:00	06:46 20:05	05:31 21:08	04:38 22:03	04:38 22:14	05:27 21:28	06:29 20:12	07:29 18:51	07:35 16:35	08:36 15:48
5	08:56 15:59	08:13 17:00	07:06 18:02	06:44 20:07	05:29 21:10	04:37 22:04	04:39 22:13	05:29 21:26	06:31 20:09	07:31 18:49	07:37 16:33	08:37 15:47
6	08:55 16:00	08:11 17:02	07:04 18:04	06:41 20:09	05:27 21:12	04:36 22:06	04:40 22:12	05:31 21:24	06:33 20:07	07:33 18:46	07:40 16:31	08:39 15:46
7	08:55 16:02	08:09 17:04	07:01 18:06	06:38 20:11	05:24 21:14	04:35 22:07	04:41 22:12	05:33 21:21	06:35 20:04	07:35 18:43	07:42 16:29	08:40 15:46
8	08:54 16:03	08:07 17:06	06:59 18:08	06:36 20:14	05:22 21:16	04:34 22:08	04:42 22:11	05:35 21:19	06:37 20:01	07:38 18:41	07:44 16:26	08:42 15:45
9	08:53 16:05	08:05 17:09	06:56 18:11	06:33 20:16	05:20 21:18	04:34 22:09	04:43 22:10	05:37 21:17	06:39 19:59	07:40 18:38	07:46 16:24	08:43 15:44
10	08:52 16:06	08:02 17:11	06:53 18:13	06:31 20:18	05:18 21:20	04:33 22:10	04:45 22:09	05:39 21:15	06:41 19:56	07:42 18:36	07:48 16:22	08:44 15:44
11	08:52 16:08	08:00 17:13	06:51 18:15	06:28 20:20	05:16 21:22	04:32 22:11	04:46 22:08	05:41 21:12	06:43 19:53	07:44 18:33	07:51 16:20	08:46 15:44
12	08:51 16:10	07:58 17:15	06:48 18:17	06:25 20:22	05:14 21:24	04:32 22:12	04:47 22:07	05:43 21:10	06:45 19:51	07:46 18:30	07:53 16:19	08:47 15:43
13	08:50 16:12	07:56 17:18	06:45 18:19	06:23 20:24	05:12 21:26	04:32 22:12	04:49 22:06	05:45 21:08	06:47 19:48	07:48 18:28	07:55 16:17	08:48 15:43
14	08:49 16:13	07:53 17:20	06:43 18:21	06:20 20:26	05:10 21:28	04:31 22:13	04:50 22:04	05:47 21:05	06:49 19:45	07:50 18:25	07:57 16:15	08:49 15:43
15	08:48 16:15	07:51 17:22	06:40 18:23	06:18 20:28	05:08 21:30	04:31 22:14	04:51 22:03	05:49 21:03	06:51 19:43	07:52 18:23	07:59 16:13	08:50 15:43
16	08:46 16:17	07:49 17:24	06:37 18:25	06:15 20:30	05:06 21:32	04:31 22:14	04:53 22:02	05:51 21:01	06:53 19:40	07:54 18:20	08:01 16:11	08:51 15:43
17	08:45 16:19	07:46 17:27	06:35 18:28	06:12 20:32	05:04 21:34	04:30 22:15	04:55 22:00	05:53 20:58	06:55 19:37	07:56 18:18	08:03 16:09	08:52 15:43
18	08:44 16:21	07:44 17:29	06:32 18:30	06:10 20:34	05:02 21:36	04:30 22:16	04:56 21:59	05:55 20:56	06:57 19:34	07:58 18:15	08:05 16:08	08:53 15:43
19	08:43 16:23	07:42 17:31	06:29 18:32	06:07 20:37	05:00 21:37	04:30 22:16	04:58 21:57	05:57 20:53	06:59 19:32	08:01 18:13	08:07 16:06	08:54 15:43
20	08:41 16:25	07:39 17:33	06:27 18:34	06:05 20:39	04:59 21:39	04:30 22:16	04:59 21:56	05:59 20:51	07:01 19:29	08:03 18:10	08:10 16:05	08:54 15:44
21	08:40 16:27	07:37 17:36	06:24 18:36	06:02 20:41	04:57 21:41	04:30 22:17	05:01 21:54	06:01 20:48	07:03 19:26	08:05 18:08	08:12 16:03	08:55 15:44
22	08:38 16:29	07:34 17:38	06:21 18:38	06:00 20:43	04:55 21:43	04:31 22:17	05:03 21:53	06:03 20:46	07:05 19:24	08:07 18:05	08:14 16:01	08:56 15:45
23	08:37 16:31	07:32 17:40	06:19 18:40	05:57 20:45	04:54 21:45	04:31 22:17	05:04 21:51	06:05 20:43	07:07 19:21	08:09 18:03	08:16 16:00	08:56 15:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:55 20:47	04:52 21:46	04:31 22:17	05:06 21:49	06:07 20:41	07:09 19:18	08:11 18:00	08:18 15:59	08:56 15:46
25	08:33 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:32 22:17	05:08 21:48	06:09 20:38	07:11 19:16	08:13 18:08	08:20 16:00	08:57 15:46
26	08:32 16:38	07:24 17:47	06:11 18:46	05:50 20:51	04:49 21:50	04:32 22:17	05:10 21:46	06:11 20:36	07:13 19:13	08:16 18:05	08:21 16:00	08:57 15:47
27	08:30 16:40	07:22 17:49	06:08 18:49	05:47 20:53	04:48 21:51	04:32 22:17	05:12 21:44	06:13 20:33	07:15 19:10	08:18 18:03	08:23 16:00	08:57 15:48
28	08:28 16:42	07:19 17:51	06:05 18:51	05:45 20:55	04:46 21:53	04:33 22:17	05:13 21:42	06:15 20:30	07:17 19:07	08:20 18:00	08:25 16:00	08:57 15:49
29	08:27 16:44	07:19 17:53	06:05 19:03	05:45 20:57	04:45 21:55	04:34 22:16	05:15 21:40	06:17 20:28	07:19 19:05	08:22 18:00	08:27 16:00	08:57 15:50
30	08:25 16:46	07:19 17:55	06:05 19:00	05:40 21:00	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	08:24 18:00	08:29 16:00	08:57 15:51
31	08:23 16:48	07:19 17:57	06:05 19:00	05:40 21:00	04:43 21:56	04:34 22:16	05:19 21:38	06:21 20:25	07:23 19:02	08:26 18:00	08:31 16:00	08:57 15:52
Potential sun hours	235	266	366	426	508	529	530	470	385	324	247	216
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Plavinas - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (208)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57	08:21	07:17	06:54	05:38	04:41	04:35	05:21	06:23	07:23	07:29	08:31
	15:53	16:51	17:53	19:59	21:02	21:59	22:15	21:34	20:20	18:59	16:41	15:50
2	08:57	08:19	07:14	06:52	05:36	04:40	04:36	05:23	06:25	07:25	07:31	08:32
	15:55	16:53	17:55	20:01	21:04	22:00	22:15	21:32	20:17	18:57	16:39	15:49
3	08:57	08:17	07:12	06:49	05:33	04:39	04:37	05:25	06:27	07:27	07:33	08:34
	15:56	16:55	17:58	20:03	21:06	22:02	22:14	21:30	20:15	18:54	16:37	15:48
4	08:56	08:15	07:09	06:46	05:31	04:38	04:38	05:27	06:29	07:29	07:35	08:36
	15:57	16:57	18:00	20:05	21:08	22:03	22:14	21:28	20:12	18:51	16:35	15:48
5	08:56	08:13	07:06	06:44	05:29	04:37	04:39	05:29	06:31	07:31	07:37	08:37
	15:59	17:00	18:02	20:07	21:10	22:04	22:13	21:26	20:09	18:49	16:33	15:47
6	08:55	08:11	07:04	06:41	05:27	04:36	04:40	05:31	06:33	07:33	07:40	08:39
	16:00	17:02	18:04	20:09	21:12	22:06	22:12	21:24	20:07	18:46	16:31	15:46
7	08:55	08:09	07:01	06:38	05:24	04:35	04:41	05:33	06:35	07:35	07:42	08:40
	16:02	17:04	18:06	20:11	21:14	22:07	22:12	21:21	20:04	18:43	16:28	15:45
8	08:54	08:07	06:59	06:36	05:22	04:34	04:42	05:35	06:37	07:37	07:44	08:42
	16:03	17:06	18:08	20:14	21:16	22:08	22:11	21:19	20:01	18:41	16:26	15:45
9	08:53	08:04	06:56	06:33	05:20	04:34	04:43	05:37	06:39	07:40	07:46	08:43
	16:05	17:09	18:11	20:16	21:18	22:09	22:10	21:17	19:59	18:38	16:24	15:44
10	08:52	08:02	06:53	06:31	05:18	04:33	04:44	05:39	06:41	07:42	07:48	08:44
	16:06	17:11	18:13	20:18	21:20	22:10	22:09	21:15	19:56	18:36	16:22	15:44
11	08:52	08:00	06:51	06:28	05:16	04:32	04:46	05:41	06:43	07:44	07:50	08:46
	16:08	17:13	18:15	20:20	21:22	22:11	22:08	21:12	19:53	18:33	16:20	15:44
12	08:51	07:58	06:48	06:25	05:14	04:32	04:47	05:43	06:45	07:46	07:53	08:47
	16:10	17:15	18:17	20:22	21:24	22:12	22:07	21:10	19:51	18:30	16:18	15:43
13	08:50	07:56	06:45	06:23	05:12	04:31	04:49	05:45	06:47	07:48	07:55	08:48
	16:12	17:18	18:19	20:24	21:26	22:12	22:05	21:08	19:48	18:28	16:17	15:43
14	08:49	07:53	06:43	06:20	05:10	04:31	04:50	05:47	06:49	07:50	07:57	08:49
	16:13	17:20	18:21	20:26	21:28	22:13	22:04	21:05	19:45	18:25	16:15	15:43
15	08:47	07:51	06:40	06:17	05:08	04:31	04:51	05:49	06:51	07:52	07:59	08:50
	16:15	17:22	18:23	20:28	21:30	22:14	22:03	21:03	19:43	18:23	16:13	15:43
16	08:46	07:49	06:37	06:15	05:06	04:31	04:53	05:51	06:53	07:54	08:01	08:51
	16:17	17:24	18:25	20:30	21:32	22:14	22:02	21:01	19:40	18:20	16:11	15:43
17	08:45	07:46	06:35	06:12	05:04	04:30	04:54	05:53	06:55	07:56	08:03	08:52
	16:19	17:27	18:28	20:32	21:34	22:15	22:00	20:58	19:37	18:17	16:09	15:43
18	08:44	07:44	06:32	06:10	05:02	04:30	04:56	05:55	06:57	07:58	08:05	08:53
	16:21	17:29	18:30	20:34	21:36	22:15	21:59	20:56	19:34	18:15	16:08	15:43
19	08:42	07:42	06:29	06:07	05:00	04:30	04:58	05:57	06:59	08:01	08:07	08:54
	16:23	17:31	18:32	20:37	21:37	22:16	21:57	20:53	19:32	18:12	16:06	15:43
20	08:41	07:39	06:27	06:05	04:59	04:30	04:59	05:59	07:01	08:03	08:09	08:54
	16:25	17:33	18:34	20:39	21:39	22:16	21:56	20:51	19:29	18:10	16:04	15:44
21	08:40	07:37	06:24	06:02	04:57	04:30	05:01	06:01	07:03	08:05	08:12	08:55
	16:27	17:36	18:36	20:41	21:41	22:17	21:54	20:48	19:26	18:07	16:03	15:44
22	08:38	07:34	06:21	06:00	04:55	04:31	05:03	06:03	07:05	08:07	08:14	08:55
	16:29	17:38	18:38	20:43	21:43	22:17	21:53	20:46	19:24	18:05	16:01	15:45
23	08:37	07:32	06:19	05:57	04:54	04:31	05:04	06:05	07:07	08:09	08:16	08:56
	16:31	17:40	18:40	20:45	21:45	22:17	21:51	20:43	19:21	18:03	16:00	15:45
24	08:35	07:29	06:16	05:55	04:52	04:31	05:06	06:07	07:09	08:11	08:18	08:56
	16:33	17:42	18:42	20:47	21:46	22:17	21:49	20:41	19:18	18:00	15:59	15:46
25	08:33	07:27	06:13	05:52	04:50	04:31	05:08	06:09	07:11	08:13	08:19	08:57
	16:35	17:44	18:44	20:49	21:48	22:17	21:47	20:38	19:15	16:58	15:57	15:46
26	08:32	07:24	06:11	05:50	04:49	04:32	05:10	06:11	07:13	08:16	08:21	08:57
	16:37	17:47	18:46	20:51	21:50	22:17	21:46	20:36	19:13	16:55	15:56	15:47
27	08:30	07:22	06:08	05:47	04:47	04:32	05:12	06:13	07:15	08:18	08:23	08:57
	16:40	17:49	18:48	20:53	21:51	22:17	21:44	20:33	19:10	16:53	15:55	15:48
28	08:28	07:19	06:05	05:45	04:46	04:33	05:13	06:15	07:17	08:20	08:25	08:57
	16:42	17:51	18:51	20:55	21:53	22:17	21:42	20:30	19:07	16:51	15:53	15:49
29	08:27		07:02	05:43	04:45	04:34	05:15	06:17	07:19	08:22	08:27	08:57
	16:44		19:53	20:57	21:55	22:16	21:40	20:28	19:05	16:48	15:52	15:50
30	08:25		07:00	05:40	04:43	04:34	05:17	06:19	07:21	08:24	08:29	08:57
	16:46		19:55	21:00	21:56	22:16	21:38	20:25	19:02	16:46	15:51	15:51
31	08:23		06:57		04:42		05:19	06:21		07:26		08:57
	16:48		19:57		21:58		21:36	20:23		16:44		15:52
Potential sun hours	235	266	366	426	508	529	530	470	385	324	247	216
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Rinki - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (233)  
 Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 0,80 1,82 4,75 6,63 9,63 10,06 8,16 7,72 5,94 2,93 0,63 0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57	08:21	07:17	06:55	05:38	04:41	04:35	05:21	06:23	07:23	07:29	08:31
	15:53	16:51	17:53	19:59	21:02	21:59	22:16	21:34	20:20	18:59	16:42	15:50
2	08:57	08:19	07:14	06:52	05:36	04:40	04:36	05:23	06:25	07:25	07:31	08:32
	15:55	16:53	17:55	20:01	21:04	22:01	22:15	21:32	20:17	18:57	16:39	15:49
3	08:57	08:17	07:12	06:49	05:33	04:39	04:37	05:25	06:27	07:27	07:33	08:34
	15:56	16:55	17:58	20:03	21:06	22:02	22:15	21:30	20:15	18:54	16:37	15:48
4	08:56	08:15	07:09	06:46	05:31	04:38	04:38	05:27	06:29	07:29	07:35	08:36
	15:57	16:57	18:00	20:05	21:08	22:03	22:14	21:28	20:12	18:51	16:35	15:48
5	08:56	08:13	07:07	06:44	05:29	04:37	04:39	05:29	06:31	07:31	07:38	08:37
	15:59	17:00	18:02	20:07	21:10	22:05	22:13	21:26	20:10	18:49	16:33	15:47
6	08:55	08:11	07:04	06:41	05:27	04:36	04:40	05:31	06:33	07:33	07:40	08:39
	16:00	17:02	18:04	20:09	21:12	22:06	22:13	21:24	20:07	18:46	16:31	15:46
7	08:55	08:09	07:01	06:39	05:24	04:35	04:41	05:33	06:35	07:36	07:42	08:40
	16:02	17:04	18:06	20:12	21:14	22:07	22:12	21:22	20:04	18:43	16:29	15:45
8	08:54	08:07	06:59	06:36	05:22	04:34	04:42	05:35	06:37	07:38	07:44	08:42
	16:03	17:06	18:08	20:14	21:16	22:08	22:11	21:19	20:02	18:41	16:26	15:45
9	08:53	08:05	06:56	06:33	05:20	04:34	04:43	05:37	06:39	07:40	07:46	08:43
	16:05	17:09	18:11	20:16	21:18	22:09	22:10	21:17	19:59	18:38	16:24	15:44
10	08:53	08:02	06:53	06:31	05:18	04:33	04:44	05:39	06:41	07:42	07:48	08:45
	16:06	17:11	18:13	20:18	21:20	22:10	22:09	21:15	19:56	18:36	16:22	15:44
11	08:52	08:00	06:51	06:28	05:16	04:32	04:46	05:41	06:43	07:44	07:51	08:46
	16:08	17:13	18:15	20:20	21:22	22:11	22:08	21:12	19:53	18:33	16:20	15:44
12	08:51	07:58	06:48	06:25	05:14	04:32	04:47	05:43	06:45	07:46	07:53	08:47
	16:10	17:15	18:17	20:22	21:24	22:12	22:07	21:10	19:51	18:30	16:19	15:43
13	08:50	07:56	06:45	06:23	05:12	04:31	04:49	05:45	06:47	07:48	07:55	08:48
	16:12	17:18	18:19	20:24	21:26	22:13	22:06	21:08	19:48	18:28	16:17	15:43
14	08:49	07:53	06:43	06:20	05:10	04:31	04:50	05:47	06:49	07:50	07:57	08:49
	16:13	17:20	18:21	20:26	21:28	22:13	22:04	21:05	19:45	18:25	16:15	15:43
15	08:48	07:51	06:40	06:18	05:08	04:31	04:51	05:49	06:51	07:52	07:59	08:50
	16:15	17:22	18:23	20:28	21:30	22:14	22:03	21:03	19:43	18:23	16:13	15:43
16	08:46	07:49	06:37	06:15	05:06	04:30	04:53	05:51	06:53	07:54	08:01	08:51
	16:17	17:24	18:25	20:30	21:32	22:15	22:02	21:01	19:40	18:20	16:11	15:43
17	08:45	07:46	06:35	06:12	05:04	04:30	04:54	05:53	06:55	07:56	08:03	08:52
	16:19	17:27	18:28	20:32	21:34	22:15	22:00	20:58	19:37	18:18	16:09	15:43
18	08:44	07:44	06:32	06:10	05:02	04:30	04:56	05:55	06:57	07:59	08:06	08:53
	16:21	17:29	18:30	20:35	21:36	22:16	21:59	20:56	19:35	18:15	16:08	15:43
19	08:43	07:42	06:29	06:07	05:00	04:30	04:58	05:57	06:59	08:01	08:08	08:54
	16:23	17:31	18:32	20:37	21:38	22:16	21:58	20:53	19:32	18:13	16:06	15:43
20	08:41	07:39	06:27	06:05	04:59	04:30	04:59	05:59	07:01	08:03	08:10	08:55
	16:25	17:33	18:34	20:39	21:39	22:16	21:56	20:51	19:29	18:10	16:05	15:44
21	08:40	07:37	06:24	06:02	04:57	04:30	05:01	06:01	07:03	08:05	08:12	08:55
	16:27	17:36	18:36	20:41	21:41	22:17	21:54	20:48	19:26	18:08	16:03	15:44
22	08:38	07:34	06:21	06:00	04:55	04:30	05:03	06:03	07:05	08:07	08:14	08:56
	16:29	17:38	18:38	20:43	21:43	22:17	21:53	20:46	19:24	18:05	16:01	15:45
23	08:37	07:32	06:19	05:57	04:54	04:31	05:04	06:05	07:07	08:09	08:16	08:56
	16:31	17:40	18:40	20:45	21:45	22:17	21:51	20:43	19:21	18:03	16:00	15:45
24	08:35	07:29	06:16	05:55	04:52	04:31	05:06	06:07	07:09	08:11	08:18	08:57
	16:33	17:42	18:42	20:47	21:47	22:17	21:49	20:41	19:18	18:00	15:59	15:46
25	08:34	07:27	06:13	05:52	04:50	04:31	05:08	06:09	07:11	08:14	08:20	08:57
	16:35	17:44	18:44	20:49	21:48	22:17	21:48	20:38	19:16	17:58	15:57	15:46
26	08:32	07:24	06:11	05:50	04:49	04:32	05:10	06:11	07:13	08:16	08:22	08:57
	16:38	17:47	18:46	20:51	21:50	22:17	21:46	20:36	19:13	17:55	15:56	15:47
27	08:30	07:22	06:08	05:47	04:47	04:32	05:12	06:13	07:15	08:18	08:23	08:57
	16:40	17:49	18:49	20:53	21:52	22:17	21:44	20:33	19:10	17:53	15:55	15:48
28	08:28	07:19	06:05	05:45	04:46	04:33	05:13	06:15	07:17	08:20	08:25	08:58
	16:42	17:51	18:51	20:56	21:53	22:17	21:42	20:31	19:07	17:51	15:53	15:49
29	08:27		07:03	05:43	04:45	04:34	05:15	06:17	07:19	08:22	08:27	08:58
	16:44		19:53	20:58	21:55	22:16	21:40	20:28	19:05	17:48	15:52	15:50
30	08:25		07:00	05:40	04:43	04:34	05:17	06:19	07:21	08:24	08:29	08:58
	16:46		19:55	21:00	21:56	22:16	21:38	20:25	19:02	17:46	15:51	15:51
31	08:23		06:57		04:42		05:19	06:21		07:27		08:58
	16:48		19:57		21:58		21:36	20:23		16:44		15:52
Potential sun hours	235	266	366	426	508	529	530	470	385	323	247	216
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Rogas - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (189)  
 Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:50	07:16 17:53	06:54 19:59	05:38 21:01	04:41 21:59	04:35 22:15	05:21 21:34	06:23 20:20	07:23 18:59	07:28 16:41	08:30 15:50
2	08:57 15:54	08:19 16:53	07:14 17:55	06:51 20:01	05:35 21:03	04:40 22:00	04:36 22:15	05:23 21:32	06:25 20:17	07:31 18:56	07:31 16:39	08:32 15:49
3	08:56 15:56	08:17 16:55	07:11 17:57	06:49 20:03	05:33 21:06	04:38 22:02	04:36 22:14	05:25 21:30	06:27 20:14	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 17:59	06:46 20:05	05:31 21:08	04:37 22:03	04:37 22:14	05:26 21:28	06:29 20:12	07:29 18:51	07:35 16:35	08:35 15:47
5	08:56 15:58	08:13 16:59	07:06 18:02	06:43 20:07	05:29 21:10	04:37 22:04	04:38 22:13	05:28 21:26	06:31 20:09	07:31 18:48	07:37 16:32	08:37 15:47
6	08:55 16:00	08:11 17:02	07:04 18:04	06:41 20:09	05:26 21:12	04:36 22:05	04:39 22:12	05:30 21:23	06:33 20:06	07:33 18:46	07:39 16:30	08:38 15:46
7	08:54 16:01	08:09 17:04	07:01 18:06	06:38 20:11	05:24 21:14	04:35 22:07	04:41 22:11	05:32 21:21	06:35 20:04	07:35 18:43	07:42 16:28	08:40 15:45
8	08:54 16:03	08:06 17:06	06:58 18:08	06:36 20:13	05:22 21:16	04:34 22:08	04:42 22:11	05:34 21:19	06:37 20:01	07:37 18:40	07:44 16:26	08:41 15:45
9	08:53 16:04	08:04 17:08	06:56 18:10	06:33 20:15	05:20 21:18	04:33 22:09	04:43 22:10	05:36 21:17	06:39 19:58	07:39 18:38	07:46 16:24	08:43 15:44
10	08:52 16:06	08:02 17:11	06:53 18:12	06:30 20:17	05:18 21:20	04:33 22:10	04:44 22:09	05:38 21:14	06:41 19:56	07:41 18:35	07:48 16:22	08:44 15:44
11	08:51 16:08	08:00 17:13	06:50 18:15	06:28 20:20	05:16 21:22	04:32 22:11	04:45 22:08	05:40 21:12	06:43 19:53	07:43 18:33	07:50 16:20	08:45 15:43
12	08:50 16:09	07:58 17:15	06:48 18:17	06:25 20:22	05:14 21:24	04:32 22:11	04:47 22:06	05:42 21:10	06:45 19:50	07:46 18:30	07:52 16:18	08:47 15:43
13	08:49 16:11	07:55 17:17	06:45 18:19	06:22 20:24	05:11 21:26	04:31 22:12	04:48 22:05	05:44 21:07	06:47 19:48	07:48 18:27	07:55 16:16	08:48 15:43
14	08:48 16:13	07:53 17:20	06:42 18:21	06:20 20:26	05:09 21:28	04:31 22:13	04:50 22:04	05:46 21:05	06:49 19:45	07:50 18:25	07:57 16:14	08:49 15:43
15	08:47 16:15	07:51 17:22	06:40 18:23	06:17 20:28	05:08 21:30	04:30 22:14	04:51 22:03	05:48 21:03	06:51 19:42	07:52 18:22	07:59 16:13	08:50 15:43
16	08:46 16:17	07:48 17:24	06:37 18:25	06:15 20:30	05:06 21:32	04:30 22:14	04:53 22:01	05:50 21:00	06:53 19:40	07:54 18:20	08:01 16:11	08:51 15:43
17	08:45 16:19	07:46 17:26	06:34 18:27	06:12 20:32	05:04 21:33	04:30 22:15	04:54 22:00	05:52 20:58	06:55 19:37	07:56 18:17	08:03 16:09	08:52 15:43
18	08:44 16:21	07:44 17:29	06:32 18:29	06:10 20:34	05:02 21:35	04:30 22:15	04:56 21:59	05:54 20:55	06:57 19:34	07:58 18:15	08:05 16:07	08:53 15:43
19	08:42 16:23	07:41 17:31	06:29 18:31	06:07 20:36	05:00 21:37	04:30 22:16	04:57 21:57	05:56 20:53	06:59 19:31	08:00 18:12	08:07 16:06	08:53 15:43
20	08:41 16:25	07:39 17:33	06:26 18:34	06:04 20:38	04:58 21:39	04:30 22:16	04:59 21:56	05:58 20:50	07:01 19:29	08:02 18:10	08:09 16:04	08:54 15:43
21	08:39 16:27	07:36 17:35	06:24 18:36	06:02 20:40	04:57 21:41	04:30 22:16	05:01 21:54	06:00 20:48	07:03 19:26	08:05 18:07	08:11 16:03	08:55 15:44
22	08:38 16:29	07:34 17:38	06:21 18:38	05:59 20:43	04:55 21:43	04:30 22:17	05:02 21:52	06:02 20:46	07:05 19:23	08:07 18:05	08:13 16:01	08:55 15:44
23	08:36 16:31	07:32 17:40	06:18 18:40	05:57 20:45	04:53 21:44	04:30 22:17	05:04 21:51	06:04 20:43	07:07 19:21	08:09 18:02	08:15 16:00	08:56 15:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:54 20:47	04:52 21:46	04:31 22:17	05:06 21:49	06:07 20:40	07:09 19:18	08:11 18:00	08:17 15:58	08:56 15:45
25	08:33 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:31 22:17	05:08 21:47	06:09 20:38	07:11 19:15	08:13 18:15	08:19 15:57	08:57 15:46
26	08:32 16:37	07:24 17:46	06:10 18:46	05:50 20:51	04:49 21:50	04:32 22:17	05:09 21:45	06:11 20:35	07:13 19:13	08:15 18:15	08:21 15:56	08:57 15:47
27	08:30 16:39	07:22 17:49	06:08 18:48	05:47 20:53	04:47 21:51	04:32 22:17	05:11 21:44	06:13 20:33	07:15 19:10	08:18 18:10	08:23 16:53	08:57 15:48
28	08:28 16:42	07:19 17:51	06:05 18:50	05:45 20:55	04:46 21:53	04:33 22:16	05:13 21:42	06:15 20:30	07:17 19:07	08:20 18:10	08:25 16:50	08:57 15:49
29	08:26 16:44		07:02 19:52	05:42 20:57	04:44 21:54	04:33 22:16	05:15 21:40	06:17 20:28	07:19 19:04	08:22 18:10	08:27 16:48	08:57 15:49
30	08:24 16:46		07:00 19:54	05:40 20:59	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	08:24 18:10	08:29 16:46	08:57 15:50
31	08:23 16:48		06:57 19:57		04:42 21:57		05:19 21:36	06:21 20:22		07:26 18:10		08:57 15:52
Potential sun hours	235	266	366	426	508	529	530	470	385	323	247	216
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian & Lithuanian environment  
 Vilandes 3-6  
 LV-1010 Riga  
 0037167242411  
 Laura Kurzemniece / laura.kurzemniece@environment.lv  
 Calculated:  
 07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Rukmulī - Shadow Receptor:  $1,0 \times 1,0$  Azimuth:  $3,1^\circ$  Slope:  $90,0^\circ$  (213)  
 Sunshine probability S (Average daily sunshine hours) []

Assumptions for shadow calculations

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 0,80 1,82 4,75 6,63 9,63 10,06 8,16 7,72 5,94 2,93 0,63 0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

		January	February	March	April		May		June	July	August		September	October	November	December
1	08:57 15:53	08:21 16:50	07:16 17:53	06:54 19:59			05:38 21:01	19	19:51 (3) 20:10 (3)	04:41 21:59	04:35 22:15	05:21 21:34	06:23 20:20	07:23 18:59	07:28 16:41	08:30 15:50
2	08:57 15:54	08:19 16:53	07:14 17:55	06:52 20:01			05:35 21:03	17	19:51 (3) 20:08 (3)	04:40 22:00	04:36 22:15	05:23 21:32	06:25 20:17	07:25 18:56	07:31 16:39	08:32 15:49
3	08:56 15:56	08:17 16:55	07:11 17:57	06:49 20:03			05:33 21:06	15	19:52 (3) 20:07 (3)	04:39 22:02	04:37 22:14	05:25 21:30	06:27 20:14	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 17:59	06:46 20:05			05:31 21:08	11	19:54 (3) 20:05 (3)	04:38 22:03	04:37 22:14	05:27 21:28	06:29 20:12	07:29 18:51	07:35 16:35	08:35 15:47
5	08:56 15:58	08:13 16:59	07:06 18:02	06:44 20:07			05:29 21:10	4	19:58 (3) 20:02 (3)	04:37 22:04	04:38 22:13	05:28 21:26	06:31 20:09	07:31 18:48	07:37 16:32	08:37 15:47
6	08:55 16:00	08:11 17:02	07:04 18:04	06:41 20:09			05:26 21:12			04:36 22:05	04:40 22:12	05:30 21:23	06:33 20:07	07:33 18:46	07:39 16:30	08:39 15:46
7	08:54 16:01	08:09 17:04	07:01 18:06	06:38 20:11			05:24 21:14			04:35 22:07	04:41 22:11	05:32 21:21	06:35 20:04	07:35 18:43	07:42 16:28	08:40 15:45
8	08:54 16:03	08:06 17:06	06:58 18:08	06:36 20:13			05:22 21:16			04:34 22:08	04:42 22:11	05:34 21:19	20:06 (3) 20:13 (3)	06:37 20:01	07:37 18:41	07:44 16:26
9	08:53 16:04	08:04 17:08	06:56 18:10	06:33 20:15			05:20 21:18			04:33 22:09	04:43 22:10	05:36 21:17	20:03 (3) 20:15 (3)	06:39 19:58	07:39 18:38	07:46 16:24
10	08:52 16:06	08:02 17:11	06:53 18:12	06:30 20:17			05:18 21:20			04:33 22:10	04:44 22:09	05:38 21:14	20:01 (3) 20:17 (3)	06:41 19:56	07:41 18:35	07:48 16:22
11	08:51 16:08	08:00 17:13	06:50 18:15	06:28 20:20			05:16 21:22			04:32 22:11	04:46 22:08	05:40 21:12	20:00 (3) 20:18 (3)	06:43 19:53	07:43 18:33	07:50 16:20
12	08:50 16:09	07:58 17:15	06:48 18:17	06:25 20:22			05:14 21:24			04:32 22:11	04:47 22:06	05:42 21:10	19:59 (3) 20:19 (3)	06:45 19:50	07:46 18:30	07:52 16:18
13	08:49 16:11	07:55 17:17	06:45 18:19	06:22 20:24			05:12 21:26			04:31 22:12	04:48 22:05	05:44 21:07	19:57 (3) 20:19 (3)	06:47 19:48	07:48 18:27	07:55 16:16
14	08:48 16:13	07:53 17:20	06:42 18:21	06:20 20:26			05:10 21:28			04:31 22:13	04:50 22:04	05:46 21:05	19:57 (3) 20:19 (3)	06:49 19:45	07:50 18:25	07:57 16:15
15	08:47 16:15	07:51 17:22	06:40 18:23	06:17 20:28			05:08 21:30			04:30 22:14	04:51 22:03	05:48 21:03	19:56 (3) 20:20 (3)	06:51 19:42	07:52 18:22	07:59 16:13
16	08:46 16:17	07:48 17:24	06:37 18:25	06:15 20:30			05:06 21:32			04:30 22:14	04:53 22:01	05:50 21:00	19:56 (3) 20:20 (3)	06:53 19:40	07:54 18:20	08:01 16:11
17	08:45 16:19	07:46 17:26	06:34 18:27	06:12 20:32			05:04 21:34			04:30 22:15	04:54 22:00	05:52 20:58	19:56 (3) 20:20 (3)	06:55 19:37	07:56 18:17	08:03 16:09
18	08:44 16:21	07:44 17:29	06:32 18:29	06:10 20:34	6	19:58 (3) 20:04 (3)	05:02 21:35			04:30 22:15	04:56 21:59	05:54 20:55	19:56 (3) 20:20 (3)	06:57 19:34	07:58 18:15	08:05 16:07
19	08:42 16:23	07:41 17:31	06:29 18:32	06:07 20:36	11	19:55 (3) 20:06 (3)	05:00 21:37			04:30 22:16	04:57 21:57	05:56 20:53	19:56 (3) 20:19 (3)	06:59 19:31	08:00 18:12	08:07 16:06
20	08:41 16:25	07:39 17:33	06:26 18:34	06:04 20:38	15	19:53 (3) 20:08 (3)	04:58 21:39			04:30 22:16	04:59 21:56	05:58 20:51	19:56 (3) 20:19 (3)	07:01 19:29	08:02 18:10	08:09 16:04
21	08:39 16:27	07:36 17:35	06:24 18:36	06:02 20:41	17	19:52 (3) 20:09 (3)	04:57 21:41			04:30 22:16	05:01 21:54	06:00 20:48	19:56 (3) 20:16 (3)	07:03 19:26	08:05 18:07	08:11 16:03
22	08:38 16:29	07:34 17:38	06:21 18:38	05:59 20:43	21	19:51 (3) 20:12 (3)	04:55 21:43			04:30 22:17	05:02 21:52	06:03 20:46	19:56 (3) 20:14 (3)	07:05 19:23	08:07 18:05	08:13 16:01
23	08:36 16:31	07:32 17:40	06:18 18:40	05:57 20:45	22	19:51 (3) 20:13 (3)	04:53 21:44			04:30 22:17	05:04 21:51	06:05 20:43	19:57 (3) 20:12 (3)	07:07 19:21	08:09 18:02	08:15 16:00
24	08:35 16:33	07:29 17:42	06:16 18:42	05:54 20:47	24	19:49 (3) 20:13 (3)	04:52 21:46			04:31 22:17	05:06 21:49	06:07 20:40	19:59 (3) 20:09 (3)	07:09 19:18	08:11 18:00	08:17 15:58
25	08:33 16:35	07:27 17:44	06:13 18:44	05:52 20:49	24	19:49 (3) 20:13 (3)	04:50 21:48			04:31 22:17	05:08 21:47	06:09 20:38	20:01 (3) 20:07 (3)	07:11 19:15	07:13 16:58	08:19 15:57
26	08:32 16:37	07:24 17:46	06:10 18:46	05:50 20:51	24	19:49 (3) 20:13 (3)	04:49 21:50			04:32 22:17	05:10 21:45	06:11 20:35	07:13 19:13	07:15 16:55	08:21 15:56	08:27 15:47
27	08:30 16:39	07:22 17:49	06:08 18:48	05:47 20:53	23	19:49 (3) 20:12 (3)	04:47 21:51			04:32 22:17	05:11 21:44	06:13 20:33	07:15 19:10	07:18 16:53	08:23 15:54	08:30 15:48
28	08:28 16:42	07:19 17:51	06:05 18:50	05:45 20:55	23	19:49 (3) 20:12 (3)	04:46 21:53			04:33 22:16	05:13 21:42	06:15 20:30	07:17 19:07	07:20 16:50	08:25 15:53	08:37 15:49
29	08:26 16:44		07:02 19:52	05:42 20:57	23	19:49 (3) 20:12 (3)	04:44 21:54			04:33 22:16	05:15 21:40	06:17 20:28	07:19 19:04	07:22 16:48	08:27 15:52	08:37 15:49
30	08:24 16:46		07:00 19:55	05:40 20:59	21	19:50 (3) 20:11 (3)	04:43 21:56			04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	07:24 16:46	08:29 15:51	08:37 15:51
31	08:23 16:48		06:57 19:57				04:42 21:57				05:19 21:36	06:21 20:22		07:26 16:43		08:57 15:52
Potential sun hours	235	266	366	426	254		508	66		529	530	470	328	385	323	247
Total, worst case					0,47			0,59					0,51			
Sun reduction					1,00			1,00					1,00			
Oper. time red.					1,00			1,00					1,00			
Wind dir. red.					0,47			0,59					0,51			
Total reduction					1,00			0,59					0,51			
Total, real					119			39					167			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Rutki - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (239)  
 Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 0,80 1,82 4,75 6,63 9,63 10,06 8,16 7,72 5,94 2,93 0,63 0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57	08:21	07:17	06:55	05:38	04:41	04:35	05:21	06:23	07:23	07:29	08:31
	15:53	16:51	17:53	19:59	21:02	21:59	22:16	21:34	20:20	18:59	16:42	15:50
2	08:57	08:19	07:14	06:52	05:36	04:40	04:36	05:23	06:25	07:25	07:31	08:33
	15:55	16:53	17:55	20:01	21:04	22:01	22:15	21:32	20:18	18:57	16:39	15:49
3	08:57	08:17	07:12	06:49	05:33	04:39	04:37	05:25	06:27	07:27	07:33	08:34
	15:56	16:55	17:58	20:03	21:06	22:02	22:15	21:30	20:15	18:54	16:37	15:48
4	08:56	08:15	07:09	06:47	05:31	04:38	04:38	05:27	06:29	07:29	07:35	08:36
	15:57	16:57	18:00	20:05	21:08	22:03	22:14	21:28	20:12	18:51	16:35	15:48
5	08:56	08:13	07:07	06:44	05:29	04:37	04:39	05:29	06:31	07:31	07:38	08:37
	15:59	17:00	18:02	20:07	21:10	22:05	22:13	21:26	20:10	18:49	16:33	15:47
6	08:55	08:11	07:04	06:41	05:27	04:36	04:40	05:31	06:33	07:33	07:40	08:39
	16:00	17:02	18:04	20:10	21:12	22:06	22:13	21:24	20:07	18:46	16:31	15:46
7	08:55	08:09	07:01	06:39	05:24	04:35	04:41	05:33	06:35	07:36	07:42	08:40
	16:02	17:04	18:06	20:12	21:14	22:07	22:12	21:22	20:04	18:43	16:29	15:45
8	08:54	08:07	06:59	06:36	05:22	04:34	04:42	05:35	06:37	07:38	07:44	08:42
	16:03	17:06	18:08	20:14	21:16	22:08	22:11	21:19	20:02	18:41	16:26	15:45
9	08:53	08:05	06:56	06:33	05:20	04:34	04:43	05:37	06:39	07:40	07:46	08:43
	16:05	17:09	18:11	20:16	21:18	22:09	22:10	21:17	19:59	18:38	16:24	15:44
10	08:53	08:02	06:53	06:31	05:18	04:33	04:44	05:39	06:41	07:42	07:49	08:45
	16:06	17:11	18:13	20:18	21:20	22:10	22:09	21:15	19:56	18:36	16:22	15:44
11	08:52	08:00	06:51	06:28	05:16	04:32	04:46	05:41	06:43	07:44	07:51	08:46
	16:08	17:13	18:15	20:20	21:22	22:11	22:08	21:13	19:53	18:33	16:20	15:44
12	08:51	07:58	06:48	06:25	05:14	04:32	04:47	05:43	06:45	07:46	07:53	08:47
	16:10	17:15	18:17	20:22	21:24	22:12	22:07	21:10	19:51	18:30	16:19	15:43
13	08:50	07:56	06:46	06:23	05:12	04:31	04:49	05:45	06:47	07:48	07:55	08:48
	16:12	17:18	18:19	20:24	21:26	22:13	22:06	21:08	19:48	18:28	16:17	15:43
14	08:49	07:53	06:43	06:20	05:10	04:31	04:50	05:47	06:49	07:50	07:57	08:49
	16:13	17:20	18:21	20:26	21:28	22:13	22:05	21:05	19:45	18:25	16:15	15:43
15	08:48	07:51	06:40	06:18	05:08	04:31	04:51	05:49	06:51	07:52	07:59	08:50
	16:15	17:22	18:23	20:28	21:30	22:14	22:03	21:03	19:43	18:23	16:13	15:43
16	08:47	07:49	06:38	06:15	05:06	04:30	04:53	05:51	06:53	07:54	08:01	08:51
	16:17	17:24	18:26	20:30	21:32	22:15	22:02	21:01	19:40	18:20	16:11	15:43
17	08:45	07:46	06:35	06:12	05:04	04:30	04:54	05:53	06:55	07:56	08:03	08:52
	16:19	17:27	18:28	20:33	21:34	22:15	22:01	20:58	19:37	18:18	16:09	15:43
18	08:44	07:44	06:32	06:10	05:02	04:30	04:56	05:55	06:57	07:59	08:06	08:53
	16:21	17:29	18:30	20:35	21:36	22:16	21:59	20:56	19:35	18:15	16:08	15:43
19	08:43	07:42	06:29	06:07	05:00	04:30	04:58	05:57	06:59	08:01	08:08	08:54
	16:23	17:31	18:32	20:37	21:38	22:16	21:58	20:53	19:32	18:13	16:06	15:43
20	08:41	07:39	06:27	06:05	04:59	04:30	04:59	05:59	07:01	08:03	08:10	08:55
	16:25	17:33	18:34	20:39	21:40	22:17	21:56	20:51	19:29	18:10	16:05	15:44
21	08:40	07:37	06:24	06:02	04:57	04:30	05:01	06:01	07:03	08:05	08:12	08:55
	16:27	17:36	18:36	20:41	21:41	22:17	21:54	20:48	19:26	18:08	16:03	15:44
22	08:38	07:34	06:21	06:00	04:55	04:30	05:03	06:03	07:05	08:07	08:14	08:56
	16:29	17:38	18:38	20:43	21:43	22:17	21:53	20:46	19:24	18:05	16:01	15:45
23	08:37	07:32	06:19	05:57	04:54	04:31	05:04	06:05	07:07	08:09	08:16	08:56
	16:31	17:40	18:40	20:45	21:45	22:17	21:51	20:43	19:21	18:03	16:00	15:45
24	08:35	07:29	06:16	05:55	04:52	04:31	05:06	06:07	07:09	08:11	08:18	08:57
	16:33	17:42	18:42	20:47	21:47	22:17	21:49	20:41	19:18	18:00	15:59	15:46
25	08:34	07:27	06:13	05:52	04:50	04:31	05:08	06:09	07:11	08:14	08:20	08:57
	16:35	17:44	18:44	20:49	21:48	22:17	21:48	20:38	19:16	17:58	15:57	15:46
26	08:32	07:24	06:11	05:50	04:49	04:32	05:10	06:11	07:13	08:16	08:22	08:57
	16:38	17:47	18:47	20:51	21:50	22:17	21:46	20:36	19:13	17:55	15:56	15:47
27	08:30	07:22	06:08	05:47	04:47	04:32	05:12	06:13	07:15	08:18	08:24	08:57
	16:40	17:49	18:49	20:53	21:52	22:17	21:44	20:33	19:10	17:53	15:55	15:48
28	08:29	07:19	06:05	05:45	04:46	04:33	05:13	06:15	07:17	08:20	08:25	08:58
	16:42	17:51	18:51	20:56	21:53	22:17	21:42	20:31	19:08	17:51	15:53	15:49
29	08:27		07:03	05:43	04:45	04:34	05:15	06:17	07:19	08:22	08:27	08:58
	16:44		19:53	20:58	21:55	22:17	21:40	20:28	19:05	17:48	15:52	15:50
30	08:25		07:00	05:40	04:43	04:34	05:17	06:19	07:21	08:24	08:29	08:58
	16:46		19:55	21:00	21:56	22:16	21:38	20:25	19:02	17:46	15:51	15:51
31	08:23		06:57		04:42		05:19	06:21		07:27		08:58
	16:48		19:57		21:58		21:36	20:23		16:44		15:52
Potential sun hours	235	266	366	426	508	529	530	470	385	323	247	215
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian & Lithuanian environment  
Vilandes 3-6  
LV-1010 Riga  
0037167242411  
Laura Kurzemniece / laura.kurzemniece@environment.lv  
Calculated:  
07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Salaskalni - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (195)  
Assumptions for shadow calculations Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
0,80 1,82 4,75 6,63 9,63 10,06 8,16 7,72 5,94 2,93 0,63 0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December	
1	08:57 15:53	08:21 16:50	07:16 17:53	06:54 19:59	05:38 21:01	04:41 21:59	04:35 22:15	05:21 21:34	06:23 20:20	07:23 18:59	18:08 (4) 20	07:29 16:41	08:30 15:50
2	08:57 15:54	08:19 16:53	07:14 17:55	06:51 20:01	05:35 21:04	04:39 22:00	04:36 22:15	05:23 21:32	06:25 20:17	07:25 18:56	18:09 (4) 17	07:31 16:39	08:32 15:49
3	08:56 15:55	08:17 16:55	07:11 17:57	06:49 20:03	05:33 21:06	04:38 22:02	04:36 22:14	05:25 21:30	06:27 20:15	07:27 18:54	18:10 (4) 13	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 17:59	06:46 20:05	05:31 21:08	04:37 22:03	04:37 22:14	05:26 21:28	06:29 20:12	07:29 18:51	18:11 (4) 10	07:35 16:35	08:35 15:47
5	08:56 15:58	08:13 16:59	07:06 18:02	06:43 20:07	05:28 21:10	04:36 22:04	04:38 22:13	05:28 21:26	06:31 20:09	07:31 18:48	18:14 (4) 4	07:37 16:32	08:37 15:46
6	08:55 16:00	08:11 17:02	07:04 18:04	06:41 20:09	05:26 21:12	04:36 22:05	04:39 22:12	05:30 21:23	06:33 20:07	07:33 18:46	18:18 (4) 4	07:39 16:30	08:39 15:46
7	08:54 16:01	08:09 17:04	07:01 18:06	06:38 20:11	05:24 21:14	04:35 22:07	04:41 22:12	05:32 21:21	06:35 20:04	07:35 18:43	18:28 (4) 4	07:42 16:28	08:40 15:45
8	08:54 16:03	08:06 17:06	06:58 18:08	06:36 20:13	05:22 21:16	04:34 22:08	04:42 22:11	05:34 21:19	06:37 20:01	07:37 18:40	18:24 (4) 4	07:44 16:26	08:42 15:45
9	08:53 16:04	08:04 17:08	06:56 18:10	06:33 20:15	05:20 21:18	04:33 22:09	04:43 22:10	05:36 21:17	06:39 19:58	07:39 18:38	18:26 (4) 4	07:46 16:24	08:43 15:44
10	08:52 16:06	08:02 17:11	06:53 18:12	06:30 20:18	05:18 21:20	04:33 22:10	04:44 22:09	05:38 21:14	06:41 19:56	07:41 18:35	18:28 (4) 4	07:48 16:22	08:44 15:44
11	08:51 16:08	08:00 17:13	06:50 18:15	06:28 20:20	05:16 21:22	04:32 22:11	04:45 22:08	05:40 21:12	06:43 19:53	07:44 18:33	18:30 (4) 4	07:50 16:20	08:46 15:43
12	08:50 16:09	07:58 17:15	06:48 18:17	06:25 20:22	05:13 21:24	04:32 22:12	04:47 22:07	05:42 21:10	06:45 19:50	07:46 18:30	18:32 (4) 4	07:48 16:18	08:47 15:43
13	08:49 16:11	07:55 17:17	06:45 18:19	06:22 20:24	05:11 21:26	04:31 22:12	04:48 22:05	05:44 21:08	06:47 19:48	07:48 18:27	18:34 (4) 4	07:55 16:15	08:48 15:43
14	08:48 16:13	07:53 17:20	06:42 18:21	06:20 20:26	05:09 21:28	04:31 22:13	04:50 22:04	05:46 21:05	06:49 19:45	07:50 18:25	18:36 (4) 4	07:57 16:14	08:49 15:43
15	08:47 16:15	07:51 17:22	06:40 18:23	06:17 20:28	05:08 21:30	04:30 22:14	04:51 22:03	05:48 21:03	06:51 19:42	07:52 18:22	18:38 (4) 4	07:59 16:13	08:50 15:43
16	08:46 16:17	07:48 17:24	06:37 18:25	06:15 20:30	05:06 21:32	04:30 22:14	04:53 22:02	05:50 21:00	06:53 19:40	07:54 18:20	18:40 (4) 4	08:01 16:11	08:51 15:43
17	08:45 16:19	07:46 17:26	06:34 18:27	06:12 20:32	05:04 21:34	04:30 22:15	04:54 22:00	05:52 20:58	06:55 19:37	07:55 18:17	18:42 (4) 4	08:03 16:09	08:52 15:43
18	08:44 16:21	07:44 17:29	06:32 18:29	06:10 20:34	05:02 21:35	04:30 22:15	04:56 21:59	05:54 20:55	06:57 19:34	07:58 18:15	18:44 (4) 4	08:05 16:07	08:53 15:43
19	08:42 16:23	07:41 17:31	06:29 18:31	06:07 20:36	05:00 21:37	04:30 22:16	04:57 21:57	05:56 20:53	06:59 19:31	08:00 18:12	18:46 (4) 4	08:07 16:06	08:53 15:43
20	08:41 16:25	07:39 17:33	06:26 18:34	06:04 20:38	04:58 21:39	04:30 22:16	04:59 21:56	05:58 20:51	07:01 19:29	08:02 18:10	18:48 (4) 4	08:09 16:04	08:54 15:43
21	08:40 16:27	07:37 17:35	06:24 18:36	06:02 20:41	04:57 21:41	04:30 22:16	05:01 21:54	06:00 20:48	07:03 19:26	08:05 18:15	18:50 (4) 4	08:11 16:03	08:55 15:44
22	08:38 16:29	07:34 17:37	06:21 18:38	05:59 20:43	04:55 21:43	04:30 22:17	05:02 21:52	06:02 20:46	07:05 19:23	08:07 18:14	18:52 (4) 4	08:13 16:01	08:55 15:44
23	08:37 16:31	07:32 17:40	06:18 18:40	05:57 20:45	04:53 21:45	04:30 22:17	05:04 21:51	06:04 20:43	07:07 19:21	08:09 18:10	18:54 (4) 4	08:15 16:00	08:56 15:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:54 20:47	04:52 21:46	04:31 22:17	05:06 21:49	06:07 20:40	07:09 19:18	08:11 18:10	18:56 (4) 4	08:17 15:58	08:56 15:45
25	08:33 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:31 22:17	05:08 21:47	06:09 20:38	07:11 19:15	08:13 18:09	18:58 (4) 4	08:19 16:01	08:57 15:46
26	08:32 16:37	07:24 17:46	06:10 18:46	05:50 20:51	04:49 21:50	04:32 22:17	05:09 21:46	06:11 20:35	07:13 19:13	08:21 18:08	18:59 (4) 4	08:21 16:05	08:57 15:47
27	08:30 16:39	07:22 17:49	06:08 18:48	05:47 20:53	04:47 21:51	04:32 22:17	05:11 21:44	06:13 20:33	07:15 19:10	08:17 18:08	18:59 (4) 4	08:23 16:03	08:57 15:48
28	08:28 16:42	07:19 17:51	06:05 18:50	05:45 20:55	04:46 21:53	04:33 22:16	05:13 21:42	06:15 20:30	07:17 19:07	08:19 18:31	18:59 (4) 4	08:25 16:05	08:57 15:48
29	08:26 16:44	07:02 17:52	05:57 19:52	05:42 20:57	04:44 21:54	04:33 22:16	05:15 21:40	06:17 20:28	07:19 19:04	08:21 18:30	18:59 (4) 4	08:27 16:04	08:57 15:49
30	08:25 16:46	07:00 17:55	05:55 19:55	05:40 20:59	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	08:23 18:30	18:59 (4) 4	08:29 16:06	08:57 15:50
31	08:23 16:48	06:57 17:57	05:57 19:57	05:42 20:57	04:42 21:57	04:34 22:16	05:19 21:36	06:21 20:22	07:23 19:04	08:25 18:30	18:59 (4) 4	08:31 16:07	08:57 15:51
Potential sun hours	235	266	366	426	508	529	530	470	385	323	247	216	
Total, worst case			247	245				246	192	64			
Sun reduction			0,40	0,47				0,51	0,46	0,28			
Oper. time red.			1,00	1,00				1,00	1,00	1,00			
Wind dir. red.			1,00	1,00				1,00	1,00	1,00			
Total reduction			0,40	0,47				0,51	0,46	0,28			
Total, real			99	114				125	89	18			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		



Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Sauliešis - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (235)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:51	07:17 17:53	06:54 19:59	05:38 21:01	04:41 21:59	04:35 22:15	05:21 21:34	06:23 20:20	07:23 18:59	07:28 16:41	08:30 15:50
2	08:57 15:55	08:19 16:53	07:14 17:55	06:52 20:01	05:36 21:03	04:40 22:00	04:36 22:15	05:23 21:32	06:25 20:17	07:25 18:57	07:31 16:39	08:32 15:49
3	08:56 15:56	08:17 16:55	07:11 17:57	06:49 20:03	05:33 21:06	04:39 22:01	04:37 22:14	05:25 21:30	06:27 20:15	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 18:00	06:46 20:05	05:31 21:08	04:38 22:03	04:38 22:14	05:27 21:28	06:29 20:12	07:29 18:51	07:35 16:35	08:35 15:48
5	08:55 15:59	08:13 16:59	07:06 18:02	06:44 20:07	05:29 21:10	04:37 22:04	04:39 22:13	05:29 21:26	06:31 20:09	07:31 18:49	07:37 16:33	08:37 15:47
6	08:55 16:00	08:11 17:02	07:04 18:04	06:41 20:09	05:26 21:12	04:36 22:05	04:40 22:12	05:31 21:23	06:33 20:07	07:33 18:46	07:39 16:30	08:38 15:46
7	08:54 16:01	08:09 17:04	07:01 18:06	06:38 20:11	05:24 21:14	04:35 22:06	04:41 22:11	05:33 21:21	06:35 20:04	07:35 18:43	07:42 16:28	08:40 15:45
8	08:54 16:03	08:06 17:06	06:58 18:08	06:36 20:13	05:22 21:16	04:34 22:08	04:42 22:10	05:35 21:19	06:37 20:01	07:37 18:41	07:44 16:26	08:41 15:45
9	08:53 16:05	08:04 17:09	06:56 18:10	06:33 20:15	05:20 21:18	04:34 22:09	04:43 22:10	05:37 21:17	06:39 19:59	07:39 18:38	07:46 16:24	08:43 15:44
10	08:52 16:06	08:02 17:11	06:53 18:13	06:30 20:18	05:18 21:20	04:33 22:10	04:44 22:09	05:39 21:14	06:41 19:56	07:41 18:35	07:48 16:22	08:44 15:44
11	08:51 16:08	08:00 17:13	06:51 18:15	06:28 20:20	05:16 21:22	04:32 22:10	04:46 22:08	05:41 21:12	06:43 19:53	07:44 18:33	07:50 16:20	08:45 15:44
12	08:50 16:10	07:58 17:15	06:48 18:17	06:25 20:22	05:14 21:24	04:32 22:11	04:47 22:06	05:43 21:10	06:45 19:50	07:46 18:30	07:52 16:18	08:47 15:43
13	08:49 16:11	07:55 17:18	06:45 18:19	06:23 20:24	05:12 21:26	04:31 22:12	04:48 22:05	05:45 21:07	06:47 19:48	07:48 18:28	07:55 16:17	08:48 15:43
14	08:48 16:13	07:53 17:20	06:43 18:21	06:20 20:26	05:10 21:28	04:31 22:13	04:50 22:04	05:47 21:05	06:49 19:45	07:50 18:25	07:57 16:15	08:49 15:43
15	08:47 16:15	07:51 17:22	06:40 18:23	06:17 20:28	05:08 21:30	04:31 22:14	04:51 22:03	05:49 21:03	06:51 19:42	07:52 18:22	07:59 16:13	08:50 15:43
16	08:46 16:17	07:48 17:24	06:37 18:25	06:15 20:30	05:06 21:32	04:30 22:14	04:53 22:01	05:51 21:00	06:53 19:40	07:54 18:20	08:01 16:11	08:51 15:43
17	08:45 16:19	07:46 17:27	06:35 18:27	06:12 20:32	05:04 21:33	04:30 22:15	04:54 22:00	05:53 20:58	06:55 19:37	07:56 18:17	08:03 16:09	08:52 15:43
18	08:44 16:21	07:44 17:29	06:32 18:29	06:10 20:34	05:02 21:35	04:30 22:15	04:56 21:59	05:55 20:55	06:57 19:34	07:58 18:15	08:05 16:08	08:53 15:43
19	08:42 16:23	07:41 17:31	06:29 18:32	06:07 20:36	05:00 21:37	04:30 22:16	04:58 21:57	05:57 20:53	06:59 19:32	08:00 18:12	08:07 16:06	08:53 15:43
20	08:41 16:25	07:39 17:33	06:27 18:34	06:05 20:38	04:59 21:39	04:30 22:16	04:59 21:56	05:59 20:51	07:01 19:29	08:02 18:10	08:09 16:04	08:54 15:44
21	08:39 16:27	07:36 17:35	06:24 18:36	06:02 20:41	04:57 21:41	04:30 22:16	05:01 21:54	06:01 20:48	07:03 19:26	08:05 18:07	08:11 16:03	08:55 15:44
22	08:38 16:29	07:34 17:38	06:21 18:38	06:00 20:43	04:55 21:43	04:30 22:16	05:03 21:52	06:03 20:46	07:05 19:23	08:07 18:05	08:13 16:01	08:55 15:45
23	08:36 16:31	07:32 17:40	06:18 18:40	05:57 20:45	04:53 21:44	04:31 22:17	05:04 21:51	06:05 20:43	07:07 19:21	08:09 18:02	08:15 16:00	08:56 15:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:55 20:47	04:52 21:46	04:31 22:17	05:06 21:49	06:07 20:40	07:09 19:18	08:11 18:00	08:17 15:58	08:56 15:46
25	08:33 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:31 22:17	05:08 21:47	06:09 20:38	07:11 19:15	08:13 18:05	08:19 15:57	08:56 15:46
26	08:32 16:37	07:24 17:46	06:10 18:46	05:50 20:51	04:49 21:49	04:32 22:17	05:10 21:45	06:11 20:35	07:13 19:13	08:15 18:05	08:21 15:56	08:57 15:47
27	08:30 16:40	07:22 17:49	06:08 18:48	05:47 20:53	04:47 21:51	04:32 22:16	05:12 21:44	06:13 20:33	07:15 19:10	08:18 18:05	08:23 16:53	08:57 15:48
28	08:28 16:42	07:19 17:51	06:05 18:50	05:45 20:55	04:46 21:53	04:33 22:16	05:13 21:42	06:15 20:30	07:17 19:07	08:20 18:05	08:25 16:51	08:57 15:49
29	08:26 16:44		07:02 19:52	05:43 20:57	04:45 21:54	04:34 22:16	05:15 21:40	06:17 20:28	07:19 19:05	08:22 18:05	08:27 16:48	08:57 15:50
30	08:24 16:46		07:00 19:55	05:40 20:59	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	08:24 18:05	08:29 16:46	08:57 15:51
31	08:23 16:48		06:57 19:57		04:42 21:57		05:19 21:36	06:21 20:22		07:26 18:05	07:26 16:44	08:57 15:52
Potential sun hours	235	266	366	426	508	529	530	470	385	324	247	216
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian & Lithuanian environment  
Vilandes 3-6  
LV-1010 Riga  
0037167242411  
Laura Kurzemniece / laura.kurzemniece@environment.lv  
Calculated:  
07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Senci - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (184)  
Assumptions for shadow calculations Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
0,80 1,82 4,75 6,63 9,63 10,06 8,16 7,72 5,94 2,93 0,63 0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December				
1	08:57 15:53	08:21 16:50	07:16 17:53	06:54 19:59	05:38 21:01	19:49 (4) 19:56 (4)	04:41 21:59	04:35 22:15	05:21 21:34	06:23 20:20	07:23 18:59	07:28 16:41	08:30 15:50			
2	08:57 15:54	08:19 16:53	07:14 17:55	06:52 20:01	05:35 21:03		04:40 22:00	04:36 22:15	05:23 21:32	06:25 20:17	07:25 18:56	07:31 16:39	08:32 15:49			
3	08:56 15:56	08:17 16:55	07:11 17:57	06:49 20:03	05:33 21:06		04:38 22:02	04:36 22:14	05:25 21:30	06:27 20:14	07:27 18:54	07:33 16:37	08:34 15:48			
4	08:56 15:57	08:15 16:57	07:09 17:59	06:46 20:05	05:31 21:08		04:37 22:03	04:37 22:14	05:26 21:28	06:29 20:12	07:29 18:51	07:35 16:35	08:35 15:47			
5	08:56 15:58	08:13 16:59	07:06 18:02	06:44 20:07	05:29 21:10		04:37 22:04	04:38 22:13	05:28 21:26	06:31 20:09	07:31 18:48	07:37 16:32	08:37 15:47			
6	08:55 16:00	08:11 17:02	07:04 18:04	06:41 20:09	05:26 21:12		04:36 22:05	04:39 22:12	05:30 21:23	06:33 20:07	07:33 18:46	07:39 16:30	08:39 15:46			
7	08:54 16:01	08:09 17:04	07:01 18:06	06:38 20:11	05:24 21:14		04:35 22:07	04:41 22:11	05:32 21:21	06:35 20:04	07:35 18:43	07:42 16:28	08:40 15:45			
8	08:54 16:03	08:06 17:06	06:58 18:08	06:36 20:13	05:22 21:16		04:34 22:08	04:42 22:11	05:34 21:19	06:37 20:01	07:37 18:41	07:44 16:26	08:41 15:45			
9	08:53 16:04	08:04 17:08	06:56 18:10	06:33 20:15	05:20 21:18		04:33 22:09	04:43 22:10	05:36 21:17	06:39 19:58	07:39 18:38	07:46 16:24	08:43 15:44			
10	08:52 16:06	08:02 17:11	06:53 18:12	06:30 20:18	05:18 21:20		04:33 22:10	04:44 22:09	05:38 21:14	06:41 19:56	07:41 18:35	07:48 16:22	08:44 15:44			
11	08:51 16:08	08:00 17:13	06:50 18:15	06:28 20:20	05:16 21:22		04:32 22:11	04:45 22:08	05:40 21:12	06:43 19:53	07:43 18:33	07:50 16:20	08:45 15:43			
12	08:50 16:09	07:58 17:15	06:48 18:17	06:25 20:22	05:14 21:24		04:32 22:11	04:47 22:07	05:42 21:10	19:56 (4) 20:04 (4)	06:45 19:50	07:52 16:18	08:47 15:43			
13	08:49 16:11	07:55 17:17	06:45 18:19	06:22 20:24	05:11 21:26		04:31 22:12	04:48 22:05	05:44 21:07	19:53 (4) 20:07 (4)	06:47 19:48	07:48 18:27	07:55 16:16	08:48 15:43		
14	08:48 16:13	07:53 17:20	06:42 18:21	17:52 (3) 17:53 (3)	06:20 20:26	19:51 (4) 19:57 (4)	05:09 21:28	04:31 22:13	04:50 22:04	05:46 21:05	19:51 (4) 20:08 (4)	06:49 19:45	07:50 18:25	07:57 16:14	08:49 15:43	
15	08:47 16:15	07:51 17:22	06:40 18:23	17:47 (3) 17:55 (3)	06:17 20:28	19:48 (4) 19:58 (4)	05:08 21:30	04:30 22:14	04:51 22:03	05:48 21:03	19:50 (4) 20:09 (4)	06:51 19:42	8 18:35 (3) 18:43 (3)	07:52 16:13	07:59 15:43	08:50
16	08:46 16:17	07:48 17:24	06:37 18:25	17:45 (3) 17:56 (3)	06:15 20:30	19:46 (4) 20:00 (4)	05:06 21:32	04:30 22:14	04:53 22:02	05:50 21:00	19:49 (4) 20:10 (4)	06:53 19:40	8 18:32 (3) 18:46 (3)	07:54 16:11	08:01 15:43	08:51
17	08:45 16:19	07:46 17:26	06:34 18:27	17:44 (3) 17:59 (3)	06:12 20:32	19:44 (4) 20:02 (4)	05:04 21:34	04:30 22:15	04:54 22:00	05:52 20:58	19:48 (4) 20:11 (4)	06:55 19:37	14 18:30 (3) 18:47 (3)	07:56 16:09	08:03 15:43	08:52
18	08:44 16:21	07:44 17:29	06:32 18:29	17:42 (3) 18:01 (3)	06:10 20:34	19:44 (4) 20:04 (4)	05:02 21:35	04:30 22:15	04:56 21:59	05:54 20:55	19:48 (4) 20:11 (4)	06:57 19:34	23 18:28 (3) 18:48 (3)	07:58 16:07	08:05 15:43	08:53
19	08:42 16:23	07:41 17:31	06:29 18:32	17:41 (3) 18:03 (3)	06:07 20:36	19:42 (4) 20:05 (4)	05:00 21:37	04:30 22:16	04:57 21:57	05:00 20:53	19:47 (4) 20:11 (4)	06:59 19:31	20 18:27 (3) 18:48 (3)	07:59 16:06	08:03 15:43	08:53
20	08:41 16:25	07:39 17:33	06:26 18:34	17:41 (3) 18:04 (3)	06:04 20:38	19:42 (4) 20:06 (4)	04:58 21:39	04:30 22:16	04:59 21:56	05:58 20:51	19:47 (4) 20:11 (4)	07:01 19:29	21 18:26 (3) 18:49 (3)	08:02 16:04	08:09 15:43	08:54
21	08:39 16:27	07:36 17:35	06:24 18:36	17:40 (3) 18:04 (3)	06:02 20:41	19:41 (4) 20:05 (4)	04:57 21:41	04:30 22:16	05:01 21:54	06:00 20:48	19:46 (4) 20:10 (4)	07:03 19:26	22 18:25 (3) 18:48 (3)	08:05 16:03	08:11 15:44	08:55
22	08:38 16:29	07:34 17:38	06:21 18:38	17:40 (3) 18:03 (3)	05:59 20:43	19:41 (4) 20:06 (4)	04:55 21:43	04:30 22:17	05:02 21:52	06:02 20:46	19:46 (4) 20:10 (4)	07:05 19:23	23 18:25 (3) 18:48 (3)	08:07 16:01	08:13 15:44	08:55
23	08:36 16:31	07:32 17:40	06:18 18:40	17:40 (3) 18:03 (3)	05:57 20:45	19:41 (4) 20:06 (4)	04:53 21:44	04:30 22:17	05:04 21:51	06:05 20:43	19:46 (4) 20:10 (4)	07:07 19:21	24 18:24 (3) 18:48 (3)	08:09 16:00	08:15 15:45	08:56
24	08:35 16:33	07:29 17:42	06:16 18:42	17:40 (3) 18:02 (3)	05:54 20:47	19:41 (4) 20:05 (4)	04:52 21:46	04:31 22:17	05:06 21:49	06:07 20:40	19:46 (4) 20:10 (4)	07:09 19:18	25 18:24 (3) 18:47 (3)	08:11 15:58	08:17 15:45	08:56
25	08:33 16:35	07:27 17:44	06:13 18:44	17:40 (3) 18:01 (3)	05:52 20:49	19:41 (4) 20:04 (4)	04:50 21:48	04:31 22:17	05:08 21:47	06:09 20:38	19:46 (4) 20:07 (4)	07:11 19:15	26 18:25 (3) 18:45 (3)	07:13 16:57	08:19 15:46	08:57
26	08:32 16:37	07:24 17:46	06:10 18:46	17:41 (3) 17:59 (3)	05:50 20:51	19:42 (4) 20:04 (4)	04:49 21:50	04:32 22:17	05:09 21:46	06:11 20:35	19:47 (4) 20:04 (4)	07:13 19:13	27 18:25 (3) 18:42 (3)	07:15 16:55	08:21 15:47	08:57
27	08:30 16:39	07:22 17:49	06:08 18:48	17:43 (3) 17:58 (3)	05:47 20:53	19:42 (4) 20:02 (4)	04:47 21:51	04:32 22:17	05:11 21:44	06:13 20:33	19:48 (4) 20:02 (4)	07:15 19:10	28 18:26 (3) 18:39 (3)	07:18 16:53	08:23 15:48	08:57
28	08:28 16:42	07:19 17:51	06:05 18:50	17:45 (3) 17:55 (3)	05:45 20:55	19:43 (4) 20:02 (4)	04:46 21:53	04:33 22:16	05:13 21:42	06:15 20:30	19:50 (4) 20:00 (4)	07:17 19:07	29 18:27 (3) 18:36 (3)	07:20 16:50	08:25 15:48	08:57
29	08:26 16:44	07:02 19:52	06:02 20:57	05:42 20:57	20:55	19:44 (4) 20:00 (4)	04:44 21:54	04:33 22:16	05:15 21:40	06:17 20:28	19:52 (4) 19:57 (4)	07:19 19:04	30 18:30 (3) 18:34 (3)	07:22 16:48	08:27 15:52	08:57
30	08:25 16:46	07:00 19:55	06:00 20:59	05:40 20:59	20:59	19:46 (4) 19:59 (4)	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	07:24 16:46	31 18:32 (3) 18:43 (3)	07:22 16:46	08:29 15:51	08:57
Potential sun hours	235	266	366	426	508	529	530	470	385	259	323	247	216			
Total, worst case																
Sun reduction			255	326	7			335	259	0,46						
Oper. time red.			0,40	0,47	0,59			0,51	0,46							
Wind dir. red.			1,00	1,00	1,00			1,00	1,00							
Total reduction			0,40	0,47	0,59			0,51	0,46							
Total, real			103	152	4			171	120							

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Silini - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (172)  
 Assumptions for shadow calculations Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 0,80 1,82 4,75 6,63 9,63 10,06 8,16 7,72 5,94 2,93 0,63 0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:50	07:16 17:53	06:54 19:59	05:38 21:01	04:41 21:59	04:35 22:15	05:21 21:34	06:23 20:20	07:23 18:59	07:28 16:41	08:30 15:50
2	08:57 15:54	08:19 16:53	07:14 17:55	06:51 20:01	05:35 21:03	04:39 22:00	04:36 22:15	05:23 21:32	06:25 20:17	07:25 18:56	07:31 16:39	08:32 15:49
3	08:56 15:55	08:17 16:55	07:11 17:57	06:49 20:03	05:33 21:06	04:38 22:02	04:36 22:14	05:24 21:30	06:27 20:14	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 17:59	06:46 20:05	05:31 21:08	04:37 22:03	04:37 22:14	05:26 21:28	06:29 20:12	07:29 18:51	07:35 16:35	08:35 15:47
5	08:56 15:58	08:13 16:59	07:06 18:02	06:43 20:07	05:28 21:10	04:36 22:04	04:38 22:13	05:28 21:26	06:31 20:09	07:31 18:48	07:37 16:32	08:37 15:46
6	08:55 16:00	08:11 17:02	07:04 18:04	06:41 20:09	05:26 21:12	04:36 22:05	04:39 22:12	05:30 21:23	06:33 20:06	07:33 18:46	07:39 16:30	08:39 15:46
7	08:54 16:01	08:09 17:04	07:01 18:06	06:38 20:11	05:24 21:14	04:35 22:07	04:41 22:11	05:32 21:21	06:35 20:04	07:35 18:43	07:42 16:28	08:40 15:45
8	08:54 16:03	08:06 17:06	06:58 18:08	06:36 20:13	05:22 21:16	04:34 22:08	04:42 22:11	05:34 21:19	06:37 20:01	07:37 18:40	07:44 16:26	08:41 15:45
9	08:53 16:04	08:04 17:08	06:56 18:10	06:33 20:15	05:20 21:18	04:33 22:09	04:43 22:10	05:36 21:17	06:39 19:58	07:39 18:38	07:46 16:24	08:43 15:44
10	08:52 16:06	08:02 17:11	06:53 18:12	06:30 20:17	05:18 21:20	04:33 22:10	04:44 22:09	05:38 21:14	06:41 19:56	07:41 18:35	07:48 16:22	08:44 15:44
11	08:51 16:08	08:00 17:13	06:50 18:15	06:28 20:20	05:16 21:22	04:32 22:11	04:45 22:08	05:40 21:12	06:43 19:53	07:43 18:33	07:50 16:20	08:45 15:43
12	08:50 16:09	07:58 17:15	06:48 18:17	06:25 20:22	05:13 21:24	04:32 22:11	04:47 22:07	05:42 21:10	06:45 19:50	07:46 18:30	07:52 16:18	08:47 15:43
13	08:49 16:11	07:55 17:17	06:45 18:19	06:22 20:24	05:11 21:26	04:31 22:12	04:48 22:05	05:44 21:07	06:47 19:48	07:48 18:27	07:55 16:16	08:48 15:43
14	08:48 16:13	07:53 17:20	06:42 18:21	06:20 20:26	05:09 21:28	04:31 22:13	04:50 22:04	05:46 21:05	06:49 19:45	07:50 18:25	07:57 16:14	08:49 15:43
15	08:47 16:15	07:51 17:22	06:40 18:23	06:17 20:28	05:07 21:30	04:30 22:14	04:51 22:03	05:48 21:03	06:51 19:42	07:52 18:22	07:59 16:13	08:50 15:43
16	08:46 16:17	07:48 17:24	06:37 18:25	06:15 20:30	05:06 21:32	04:30 22:14	04:53 22:02	05:50 21:00	06:53 19:40	07:54 18:20	08:01 16:11	08:51 15:43
17	08:45 16:19	07:46 17:26	06:34 18:27	06:12 20:32	05:04 21:34	04:30 22:15	04:54 22:00	05:52 20:58	06:55 19:37	07:56 18:17	08:03 16:09	08:52 15:43
18	08:44 16:21	07:44 17:29	06:32 18:29	06:09 20:34	05:02 21:35	04:30 22:15	04:56 21:59	05:54 20:55	06:57 19:34	07:58 18:15	08:05 16:07	08:53 15:43
19	08:42 16:23	07:41 17:31	06:29 18:31	06:07 20:36	05:00 21:37	04:30 22:16	04:57 21:57	05:56 20:53	06:59 19:31	08:00 18:12	08:07 16:06	08:53 15:43
20	08:41 16:25	07:39 17:33	06:26 18:34	06:04 20:38	04:58 21:39	04:30 22:16	04:59 21:56	05:58 20:51	07:01 19:29	08:02 18:10	08:09 16:04	08:54 15:43
21	08:39 16:27	07:36 17:35	06:24 18:36	06:02 20:41	04:57 21:41	04:30 22:16	05:01 21:54	06:00 20:48	07:03 19:26	08:05 18:07	08:11 16:03	08:55 15:44
22	08:38 16:29	07:34 17:37	06:21 18:38	05:59 20:43	04:55 21:43	04:30 22:17	05:02 21:52	06:02 20:46	07:05 19:23	08:07 18:05	08:13 16:01	08:55 15:44
23	08:36 16:31	07:32 17:40	06:18 18:40	05:57 20:45	04:53 21:44	04:30 22:17	05:04 21:51	06:04 20:43	07:07 19:21	08:09 18:02	08:15 16:00	08:56 15:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:54 20:47	04:52 21:46	04:31 22:17	05:06 21:49	06:06 20:40	07:09 19:18	08:11 18:00	08:17 15:58	08:56 15:45
25	08:33 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:31 22:17	05:08 21:47	06:09 20:38	07:11 19:15	08:13 17:57	08:19 15:57	08:57 15:46
26	08:32 16:37	07:24 17:46	06:10 18:46	05:50 20:51	04:49 21:50	04:32 22:17	05:09 21:46	06:11 20:35	07:13 19:13	08:15 16:55	08:21 15:56	08:57 15:47
27	08:30 16:39	07:22 17:49	06:08 18:48	05:47 20:53	04:47 21:51	04:32 22:17	05:11 21:44	06:13 20:33	07:15 19:10	08:18 16:53	08:23 15:54	08:57 15:48
28	08:28 16:41	07:19 17:51	06:05 18:50	05:45 20:55	04:46 21:53	04:33 22:16	05:13 21:42	06:15 20:30	07:17 19:07	08:20 16:50	08:25 15:53	08:57 15:48
29	08:26 16:44		07:02 19:52	05:42 20:57	04:44 21:54	04:33 22:16	05:15 21:40	06:17 20:28	07:19 19:04	08:22 16:48	08:27 15:52	08:57 15:49
30	08:25 16:46		07:00 19:54	05:40 20:59	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	08:24 16:46	08:29 15:51	08:57 15:50
31	08:23 16:48		06:57 19:57		04:42 21:57		05:19 21:36	06:21 20:22		07:26 16:43		08:57 15:51
Potential sun hours	235	266	366	426	508	529	530	470	385	323	247	216
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Skambas - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (167)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:50	07:16 17:53	06:54 19:59	05:38 21:01	04:41 21:59	04:35 22:15	05:21 21:34	06:23 20:20	07:23 18:59	07:28 16:41	08:30 15:50
2	08:57 15:54	08:19 16:53	07:14 17:55	06:51 20:01	05:35 21:03	04:40 22:00	04:36 22:15	05:23 21:32	06:25 20:17	07:31 18:56	07:31 16:39	08:32 15:49
3	08:56 15:56	08:17 16:55	07:11 17:57	06:49 20:03	05:33 21:05	04:39 22:02	04:37 22:14	05:25 21:30	06:27 20:14	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 17:59	06:46 20:05	05:31 21:08	04:38 22:03	04:37 22:14	05:27 21:28	06:29 20:12	07:29 18:51	07:35 16:35	08:35 15:47
5	08:55 15:58	08:13 16:59	07:06 18:02	06:43 20:07	05:29 21:10	04:37 22:04	04:38 22:13	05:28 21:25	06:31 20:09	07:31 18:48	07:37 16:32	08:37 15:47
6	08:55 16:00	08:11 17:02	07:04 18:04	06:41 20:09	05:26 21:12	04:36 22:05	04:40 22:12	05:30 21:23	06:33 20:06	07:33 18:46	07:39 16:30	08:38 15:46
7	08:54 16:01	08:09 17:04	07:01 18:06	06:38 20:11	05:24 21:14	04:35 22:06	04:41 22:11	05:32 21:21	06:35 20:04	07:35 18:43	07:42 16:28	08:40 15:45
8	08:54 16:03	08:06 17:06	06:58 18:08	06:36 20:13	05:22 21:16	04:34 22:08	04:42 22:11	05:34 21:19	06:37 20:01	07:37 18:40	07:44 16:26	08:41 15:45
9	08:53 16:04	08:04 17:08	06:56 18:10	06:33 20:15	05:20 21:18	04:33 22:09	04:43 22:10	05:36 21:17	06:39 19:58	07:39 18:38	07:46 16:24	08:43 15:44
10	08:52 16:06	08:02 17:11	06:53 18:12	06:30 20:17	05:18 21:20	04:33 22:10	04:44 22:09	05:38 21:14	06:41 19:56	07:41 18:35	07:48 16:22	08:44 15:44
11	08:51 16:08	08:00 17:13	06:50 18:15	06:28 20:20	05:16 21:22	04:32 22:10	04:46 22:08	05:40 21:12	06:43 19:53	07:43 18:33	07:50 16:20	08:45 15:43
12	08:50 16:09	07:58 17:15	06:48 18:17	06:25 20:22	05:14 21:24	04:32 22:11	04:47 22:06	05:42 21:10	06:45 19:50	07:46 18:30	07:52 16:18	08:47 15:43
13	08:49 16:11	07:55 17:17	06:45 18:19	06:22 20:24	05:12 21:26	04:31 22:12	04:48 22:05	05:44 21:07	06:47 19:48	07:48 18:27	07:55 16:16	08:48 15:43
14	08:48 16:13	07:53 17:20	06:42 18:21	06:20 20:26	05:10 21:28	04:31 22:13	04:50 22:04	05:46 21:05	06:49 19:45	07:50 18:25	07:57 16:14	08:49 15:43
15	08:47 16:15	07:51 17:22	06:40 18:23	06:17 20:28	05:08 21:30	04:31 22:14	04:51 22:03	05:48 21:03	06:51 19:42	07:52 18:22	07:59 16:13	08:50 15:43
16	08:46 16:17	07:48 17:24	06:37 18:25	06:15 20:30	05:06 21:32	04:30 22:14	04:53 22:01	05:50 21:00	06:53 19:40	07:54 18:20	08:01 16:11	08:51 15:43
17	08:45 16:19	07:46 17:26	06:34 18:27	06:12 20:32	05:04 21:33	04:30 22:15	04:54 22:00	05:52 20:58	06:55 19:37	07:56 18:17	08:03 16:09	08:52 15:43
18	08:44 16:21	07:44 17:29	06:32 18:29	06:10 20:34	05:02 21:35	04:30 22:15	04:56 21:59	05:54 20:55	06:57 19:34	07:58 18:15	08:05 16:07	08:53 15:43
19	08:42 16:23	07:41 17:31	06:29 18:31	06:07 20:36	05:00 21:37	04:30 22:16	04:57 21:57	05:56 20:53	06:59 19:31	08:00 18:12	08:07 16:06	08:53 15:43
20	08:41 16:25	07:39 17:33	06:26 18:34	06:04 20:38	04:58 21:39	04:30 22:16	04:59 21:56	05:58 20:50	07:01 19:29	08:02 18:10	08:09 16:04	08:54 15:43
21	08:39 16:27	07:36 17:35	06:24 18:36	06:02 20:40	04:57 21:41	04:30 22:16	05:01 21:54	06:00 20:48	07:03 19:26	08:05 18:07	08:11 16:03	08:55 15:44
22	08:38 16:29	07:34 17:38	06:21 18:38	05:59 20:43	04:55 21:43	04:30 22:16	05:02 21:52	06:02 20:45	07:05 19:23	08:07 18:05	08:13 16:01	08:55 15:44
23	08:36 16:31	07:32 17:40	06:18 18:40	05:57 20:45	04:53 21:44	04:31 22:17	05:04 21:51	06:05 20:43	07:07 19:21	08:09 18:02	08:15 16:00	08:56 15:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:54 20:47	04:52 21:46	04:31 22:17	05:06 21:49	06:07 20:40	07:09 19:18	08:11 18:00	08:17 15:58	08:56 15:45
25	08:33 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:31 22:17	05:08 21:47	06:09 20:38	07:11 19:15	08:13 18:15	08:19 15:57	08:57 15:46
26	08:32 16:37	07:24 17:46	06:10 18:46	05:50 20:51	04:49 21:49	04:32 22:17	05:10 21:45	06:11 20:35	07:13 19:13	08:15 18:15	08:21 15:56	08:57 15:47
27	08:30 16:39	07:22 17:49	06:08 18:48	05:47 20:53	04:47 21:51	04:32 22:16	05:11 21:44	06:13 20:33	07:15 19:10	08:18 18:10	08:23 16:53	08:57 15:48
28	08:28 16:42	07:19 17:51	06:05 18:50	05:45 20:55	04:46 21:53	04:33 22:16	05:13 21:42	06:15 20:30	07:17 19:07	08:20 18:15	08:25 16:50	08:57 15:49
29	08:26 16:44		07:02 19:52	05:42 20:57	04:44 21:54	04:33 22:16	05:15 21:40	06:17 20:28	07:19 19:04	08:22 18:15	08:27 16:48	08:57 15:49
30	08:24 16:46		07:00 19:54	05:40 20:59	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	08:24 18:15	08:29 16:46	08:57 15:51
31	08:23 16:48		06:57 19:57		04:42 21:57		05:19 21:36	06:21 20:22		07:26 18:15		08:57 15:52
Potential sun hours	235	266	366	426	508	529	530	470	385	324	247	216
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme

Shadow receptor: Stacija "Goba" - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (163)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:50	07:16 17:53	06:54 19:59	05:38 21:01	04:41 21:59	04:35 22:15	05:21 21:34	06:23 20:20	07:23 18:59	07:28 16:41	08:30 15:50
2	08:57 15:54	08:19 16:52	07:14 17:55	06:51 20:01	05:35 21:04	04:39 22:00	04:35 22:15	05:22 21:32	06:25 20:17	07:25 18:56	07:31 16:39	08:32 15:49
3	08:56 15:55	08:17 16:55	07:11 17:57	06:49 20:03	05:33 21:06	04:38 22:02	04:36 22:14	05:24 21:30	06:27 20:14	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 17:59	06:46 20:05	05:31 21:08	04:37 22:03	04:37 22:14	05:26 21:28	06:29 20:12	07:29 18:51	07:35 16:34	08:35 15:47
5	08:56 15:58	08:13 16:59	07:06 18:02	06:43 20:07	05:28 21:10	04:36 22:04	04:38 22:13	05:28 21:26	06:31 20:09	07:31 18:48	07:37 16:32	08:37 15:46
6	08:55 16:00	08:11 17:01	07:04 18:04	06:41 20:09	05:26 21:12	04:35 22:05	04:39 22:12	05:30 21:23	06:33 20:07	07:33 18:46	07:39 16:30	08:39 15:46
7	08:54 16:01	08:09 17:04	07:01 18:06	06:38 20:11	05:24 21:14	04:35 22:07	04:40 22:12	05:32 21:21	06:35 20:04	07:35 18:43	07:42 16:28	08:40 15:45
8	08:54 16:03	08:06 17:06	06:58 18:08	06:35 20:13	05:22 21:16	04:34 22:08	04:42 22:11	05:34 21:19	06:37 20:01	07:37 18:40	07:44 16:26	08:42 15:44
9	08:53 16:04	08:04 17:08	06:56 18:10	06:33 20:15	05:20 21:18	04:33 22:09	04:43 22:10	05:36 21:17	06:39 19:58	07:39 18:38	07:46 16:24	08:43 15:44
10	08:52 16:06	08:02 17:11	06:53 18:12	06:30 20:17	05:18 21:20	04:33 22:10	04:44 22:09	05:38 21:14	06:41 19:56	07:41 18:35	07:48 16:22	08:44 15:44
11	08:51 16:08	08:00 17:13	06:50 18:14	06:28 20:20	05:15 21:22	04:32 22:11	04:45 22:08	05:40 21:12	06:43 19:53	07:43 18:33	07:50 16:20	08:46 15:43
12	08:50 16:09	07:58 17:15	06:48 18:17	06:25 20:22	05:13 21:24	04:31 22:12	04:47 22:07	05:42 21:10	06:45 19:50	07:46 18:30	07:52 16:18	08:47 15:43
13	08:49 16:11	07:55 17:17	06:45 18:19	06:22 20:24	05:11 21:26	04:31 22:12	04:48 22:05	05:44 21:07	06:47 19:48	07:48 18:27	07:55 16:16	08:48 15:43
14	08:48 16:13	07:53 17:20	06:42 18:21	06:20 20:26	05:09 21:28	04:31 22:13	04:50 22:04	05:46 21:05	06:49 19:45	07:50 18:25	07:57 16:14	08:49 15:43
15	08:47 16:15	07:51 17:22	06:40 18:23	06:17 20:28	05:07 21:30	04:30 22:14	04:51 22:03	05:48 21:03	06:51 19:42	07:52 18:22	07:59 16:13	08:50 15:43
16	08:46 16:17	07:48 17:24	06:37 18:25	06:15 20:30	05:05 21:32	04:30 22:14	04:52 22:02	05:50 21:00	06:53 19:40	07:54 18:20	08:01 16:11	08:51 15:43
17	08:45 16:19	07:46 17:26	06:34 18:27	06:12 20:32	05:04 21:34	04:30 22:15	04:54 22:00	05:52 20:58	06:55 19:37	07:56 18:17	08:03 16:09	08:52 15:43
18	08:44 16:21	07:44 17:29	06:32 18:29	06:09 20:34	05:02 21:35	04:30 22:15	04:56 21:59	05:54 20:55	06:57 19:34	07:58 18:15	08:05 16:07	08:53 15:43
19	08:42 16:23	07:41 17:31	06:29 18:31	06:07 20:36	05:00 21:37	04:30 22:16	04:57 21:57	05:56 20:53	06:59 19:31	08:00 18:12	08:07 16:06	08:54 15:43
20	08:41 16:25	07:39 17:33	06:26 18:34	06:04 20:38	04:58 21:39	04:30 22:16	04:59 21:56	05:58 20:51	07:01 19:29	08:02 18:10	08:09 16:04	08:54 15:43
21	08:40 16:27	07:36 17:35	06:24 18:36	06:02 20:41	04:56 21:41	04:30 22:16	05:01 21:54	06:00 20:48	07:03 19:26	08:05 18:07	08:11 16:03	08:55 15:44
22	08:38 16:29	07:34 17:37	06:21 18:38	05:59 20:43	04:55 21:43	04:30 22:17	05:02 21:53	06:02 20:46	07:05 19:23	08:07 18:05	08:13 16:01	08:55 15:44
23	08:37 16:31	07:32 17:40	06:18 18:40	05:57 20:45	04:53 21:45	04:30 22:17	05:04 21:51	06:04 20:43	07:07 19:21	08:09 18:02	08:15 16:00	08:56 15:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:54 20:47	04:52 21:46	04:31 22:17	05:06 21:49	06:06 20:40	07:09 19:18	08:11 18:00	08:17 15:58	08:56 15:45
25	08:33 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:31 22:17	05:08 21:47	06:08 20:38	07:11 19:15	08:13 18:15	08:19 15:57	08:57 15:46
26	08:32 16:37	07:24 17:46	06:10 18:46	05:49 20:51	04:48 21:50	04:31 22:17	05:09 21:46	06:10 20:35	07:13 19:13	08:15 18:15	08:21 15:55	08:57 15:47
27	08:30 16:39	07:22 17:48	06:08 18:48	05:47 20:53	04:47 21:51	04:32 22:17	05:11 21:44	06:12 20:33	07:15 19:10	08:18 18:10	08:23 16:53	08:57 15:47
28	08:28 16:41	07:19 17:51	06:05 18:50	05:45 20:55	04:46 21:53	04:33 22:16	05:13 21:42	06:15 20:30	07:17 19:07	08:20 18:10	08:25 16:50	08:57 15:48
29	08:26 16:44		07:02 19:52	05:42 20:57	04:44 21:54	04:33 22:16	05:15 21:40	06:17 20:28	07:19 19:04	08:22 18:10	08:27 16:48	08:57 15:49
30	08:25 16:46		06:59 19:54	05:40 20:59	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	08:24 18:10	08:29 16:46	08:57 15:50
31	08:23 16:48		06:57 19:57		04:42 21:57		05:19 21:36	06:21 20:22		07:26 18:10		08:57 15:51
Potential sun hours	235	266	366	426	508	529	530	470	385	323	247	215
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Straumes - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (169)  
Assumptions for shadow calculations Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December		
1	08:57 15:53	08:21 16:51	07:17 17:53	06:54 19:59	05:38 21:02	04:41 21:59	05:37 (3) 06:08 (3)	04:35 22:15	05:44 (3) 06:14 (3)	05:21 21:34	06:23 20:20	07:23 18:59	07:29 16:41	08:31 15:50
2	08:57 15:54	08:19 16:53	07:14 17:55	06:52 20:01	05:36 21:04	04:40 22:00	05:37 (3) 06:08 (3)	04:36 22:15	05:43 (3) 06:13 (3)	05:23 21:32	06:25 20:17	07:25 18:57	07:31 16:39	08:32 15:49
3	08:57 15:56	08:17 16:55	07:12 17:57	06:49 20:03	05:33 21:06	04:39 22:02	05:38 (3) 06:09 (3)	04:37 22:14	05:43 (3) 06:14 (3)	05:25 21:30	06:27 20:15	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 18:00	06:46 20:05	05:31 21:08	04:38 22:03	05:38 (3) 06:09 (3)	04:38 22:14	05:44 (3) 06:14 (3)	05:27 21:28	06:29 20:12	07:29 18:51	07:35 16:35	08:36 15:48
5	08:56 15:58	08:13 17:00	07:06 18:02	06:44 20:07	05:29 21:10	04:37 22:04	05:38 (3) 06:09 (3)	04:39 22:13	05:44 (3) 06:14 (3)	05:29 21:26	06:31 20:09	07:31 18:49	07:37 16:33	08:37 15:47
6	08:55 16:00	08:11 17:02	07:04 18:04	06:41 20:09	05:27 21:12	04:36 22:06	05:38 (3) 06:08 (3)	04:40 22:12	05:44 (3) 06:15 (3)	05:31 21:24	06:33 20:07	07:33 18:46	07:40 16:31	08:39 15:46
7	08:55 16:01	08:09 17:04	07:01 18:06	06:38 20:11	05:24 21:14	04:35 22:07	05:39 (3) 06:09 (3)	04:41 22:12	05:44 (3) 06:15 (3)	05:33 21:21	06:35 20:04	07:35 18:43	07:42 16:28	08:40 15:45
8	08:54 16:03	08:07 17:06	06:59 18:08	06:36 20:13	05:22 21:16	04:34 22:08	05:38 (3) 06:09 (3)	04:42 22:11	05:44 (3) 06:15 (3)	05:35 21:19	06:37 20:01	07:37 18:41	07:44 16:26	08:42 15:45
9	08:53 16:05	08:04 17:09	06:56 18:10	06:33 20:16	05:20 21:18	04:34 22:09	05:39 (3) 06:09 (3)	04:43 22:10	05:44 (3) 06:15 (3)	05:37 21:17	06:39 19:59	07:40 18:38	07:46 16:24	08:43 15:44
10	08:52 16:06	08:02 17:11	06:53 18:13	06:30 20:18	05:18 21:20	04:33 22:10	05:39 (3) 06:09 (3)	04:44 22:09	05:44 (3) 06:15 (3)	05:39 21:15	06:41 19:56	07:42 18:35	07:48 16:22	08:44 15:44
11	08:51 16:08	08:00 17:13	06:51 18:15	06:28 20:20	05:16 21:22	04:32 22:11	05:40 (3) 06:10 (3)	04:46 22:08	05:45 (3) 06:16 (3)	05:41 21:12	06:43 19:53	07:44 18:33	07:50 16:20	08:46 15:44
12	08:51 16:10	07:58 17:15	06:48 18:17	06:25 20:22	05:14 21:24	04:32 22:12	05:39 (3) 06:09 (3)	04:47 22:07	05:45 (3) 06:16 (3)	05:43 21:10	06:45 19:51	07:46 18:30	07:53 16:18	08:47 15:43
13	08:50 16:11	07:56 17:18	06:45 18:19	06:23 20:24	05:12 21:26	04:31 22:12	05:40 (3) 06:09 (3)	04:48 22:05	05:45 (3) 06:16 (3)	05:45 21:08	06:47 19:48	07:48 18:28	07:55 16:17	08:48 15:43
14	08:49 16:13	07:53 17:20	06:43 18:21	06:20 20:26	05:10 21:28	04:31 22:13	05:49 (3) 05:54 (3)	04:50 22:04	05:45 (3) 06:16 (3)	05:47 21:05	06:49 19:45	07:50 18:25	07:57 16:15	08:49 15:43
15	08:47 16:15	07:51 17:22	06:40 18:23	06:17 20:28	05:08 21:30	04:31 22:14	05:45 (3) 05:57 (3)	04:51 22:03	05:46 (3) 06:16 (3)	05:49 21:03	06:51 19:42	07:52 18:23	07:59 16:13	08:50 15:43
16	08:46 16:17	07:49 17:24	06:37 18:25	06:15 20:30	05:06 21:32	04:30 22:14	05:44 (3) 06:00 (3)	04:53 22:02	05:46 (3) 06:16 (3)	05:51 21:00	06:53 19:40	07:54 18:20	08:01 16:11	08:51 15:43
17	08:45 16:19	07:46 17:27	06:35 18:27	06:12 20:32	05:04 21:34	04:30 22:15	05:42 (3) 06:01 (3)	04:54 22:00	05:47 (3) 06:16 (3)	05:53 20:58	06:55 19:37	07:56 18:17	08:03 16:09	08:52 15:43
18	08:44 16:21	07:44 17:29	06:32 18:30	06:10 20:34	05:02 21:36	04:30 22:15	05:40 (3) 06:01 (3)	04:56 21:59	05:47 (3) 06:16 (3)	05:55 20:56	06:57 19:34	07:58 18:15	08:05 16:08	08:53 15:43
19	08:42 16:23	07:41 17:31	06:29 18:32	06:07 20:36	05:00 21:37	04:30 22:16	05:40 (3) 06:03 (3)	04:58 21:57	05:46 (3) 06:15 (3)	05:57 20:53	06:59 19:32	08:01 18:12	08:07 16:06	08:54 15:43
20	08:41 16:25	07:39 17:33	06:27 18:34	06:05 20:39	04:59 21:39	04:30 22:16	05:39 (3) 06:03 (3)	04:59 21:56	05:47 (3) 06:15 (3)	05:59 20:51	07:01 19:29	08:03 18:10	08:09 16:04	08:54 15:44
21	08:40 16:27	07:37 17:35	06:24 18:36	06:02 20:41	04:57 21:41	04:30 22:16	05:39 (3) 06:04 (3)	04:58 21:54	05:47 (3) 06:15 (3)	06:01 20:48	07:03 19:26	08:05 18:07	08:12 16:03	08:55 15:44
22	08:38 16:29	07:34 17:38	06:21 18:38	06:00 20:43	04:55 21:43	04:30 22:17	05:38 (3) 06:05 (3)	04:58 21:53	05:48 (3) 06:15 (3)	06:03 20:46	07:05 19:24	08:07 18:05	08:14 16:01	08:55 15:45
23	08:37 16:31	07:32 17:40	06:19 18:40	05:57 20:45	04:53 21:45	04:31 22:17	05:38 (3) 06:05 (3)	04:58 21:51	05:49 (3) 06:14 (3)	06:05 20:43	07:07 19:21	08:09 18:03	08:16 16:00	08:56 15:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:55 20:47	04:52 21:46	04:31 22:17	05:37 (3) 06:05 (3)	05:06 21:49	05:50 (3) 06:13 (3)	06:07 20:41	07:09 19:18	08:11 18:00	08:18 15:58	08:56 15:46
25	08:33 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:31 22:17	05:37 (3) 06:06 (3)	05:08 21:47	05:51 (3) 06:13 (3)	06:09 20:38	07:11 19:15	07:13 16:58	08:19 15:57	08:57 15:46
26	08:32 16:37	07:24 17:47	06:10 18:46	05:50 20:51	04:49 21:50	04:32 22:17	05:37 (3) 06:07 (3)	05:10 21:46	05:51 (3) 06:11 (3)	06:11 20:36	07:13 19:13	07:16 16:55	08:21 15:56	08:57 15:47
27	08:30 16:40	07:22 17:49	06:08 18:48	05:47 20:53	04:47 21:51	04:32 22:17	05:37 (3) 06:07 (3)	05:12 21:44	05:53 (3) 06:10 (3)	06:13 20:33	07:15 19:10	07:18 16:53	08:23 15:55	08:57 15:48
28	08:28 16:42	07:19 17:51	06:05 18:51	05:45 20:55	04:46 21:53	04:33 22:17	05:36 (3) 06:07 (3)	05:13 21:42	05:55 (3) 06:09 (3)	06:15 20:30	07:17 19:07	07:20 16:51	08:25 15:53	08:57 15:49
29	08:26 16:44		07:02 19:53	05:43 20:57	04:45 21:55	04:34 22:16	05:36 (3) 06:07 (3)	05:15 21:40	05:57 (3) 06:07 (3)	06:17 20:28	07:19 19:05	07:22 16:48	08:27 15:52	08:57 15:50
30	08:25 16:46		07:00 19:55	05:40 20:59	04:43 21:56	04:34 22:16	05:37 (3) 06:07 (3)	05:17 21:38		06:19 20:25	07:21 19:02	07:24 16:46	08:29 15:51	08:57 15:51
31	08:23 16:48		06:57 19:57		04:42 21:58	04:33 22:16	05:37 (3) 06:07 (3)	05:19 21:36		06:21 20:23		07:26 16:44	08:57 15:52	
Potential sun hours	235	266	366	426	508	529		530	470	385	323	247	216	
Total, worst case					438	892		791						
Sun reduction					0,59	0,57		0,48						
Oper. time red.					1,00	1,00		1,00						
Wind dir. red.					1,00	1,00		1,00						
Total reduction					0,59	0,57		0,48						
Total, real					257	509		378						

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme

Shadow receptor: Strautmali - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (193)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:51	07:17 17:53	06:54 19:59	05:38 21:02	04:41 21:59	04:35 22:16	05:21 21:34	05:59 (4) 06:23	06:23 21:34	06:59 (3) 07:23 (3)	07:29 18:59
2	08:57 15:54	08:19 16:53	07:14 17:55	06:52 20:01	05:36 21:04	04:40 22:00	04:36 22:15	05:23 21:32	05:59 (4) 06:20 (4)	06:25 20:17	06:59 (3) 07:21 (3)	07:31 18:57
3	08:57 15:56	08:17 16:55	07:12 17:58	06:49 20:03	05:33 21:06	04:39 22:02	04:37 22:15	05:25 21:30	05:59 (4) 06:19 (4)	06:27 20:15	06:59 (3) 07:20 (3)	07:33 18:54
4	08:56 15:57	08:15 16:57	07:09 18:00	06:46 20:05	05:31 21:08	04:38 22:03	04:38 22:14	05:27 21:28	06:00 (4) 06:18 (4)	06:29 20:12	07:00 (3) 07:18 (3)	07:35 18:51
5	08:56 15:58	08:13 17:00	07:06 18:02	06:44 20:07	05:29 21:10	05:57 (4) 06:02 (4)	04:37 22:04	05:29 21:26	06:02 (4) 06:17 (4)	06:31 20:09	07:02 (3) 07:16 (3)	07:37 18:49
6	08:55 16:00	08:11 17:02	07:04 18:04	06:41 20:09	05:27 21:12	05:55 (4) 06:05 (4)	04:36 22:06	05:31 21:24	06:04 (4) 06:16 (4)	06:33 20:07	07:05 (3) 07:13 (3)	07:40 18:46
7	08:55 16:01	08:09 17:04	07:01 18:06	06:38 20:11	05:24 21:14	05:53 (4) 06:06 (4)	04:35 22:07	05:33 21:21	06:05 (4) 06:13 (4)	06:35 20:04	07:35 07:41	07:42 18:43
8	08:54 16:03	08:07 17:06	06:59 18:08	06:36 20:14	05:22 21:16	05:51 (4) 06:07 (4)	04:34 22:08	05:35 21:19	06:00 (4) 06:18 (4)	06:37 20:01	07:37 07:43	07:44 18:41
9	08:53 16:05	08:04 17:09	06:56 18:10	06:33 20:16	05:20 21:18	05:49 (4) 06:08 (4)	04:34 22:09	05:37 21:17	06:39 06:41	06:39 20:03	07:40 07:42	07:46 18:38
10	08:52 16:06	08:02 17:11	06:53 18:13	06:30 20:18	05:18 21:20	05:49 (4) 20:09 (4)	04:33 22:10	05:39 21:15	06:41 19:56	06:41 18:35	07:42 18:35	07:48 16:22
11	08:52 16:08	08:00 17:13	06:51 18:15	06:28 20:20	05:16 21:22	05:48 (4) 20:09 (4)	04:32 22:11	05:41 21:12	06:43 19:53	06:43 18:33	07:44 18:33	07:50 16:20
12	08:51 16:10	07:58 18:17	06:48 19:22	06:25 20:22	05:14 21:24	05:48 (4) 20:10 (4)	04:32 22:12	05:43 21:10	06:45 19:51	06:45 18:30	07:46 18:30	07:53 16:18
13	08:50 16:11	07:56 18:19	06:45 19:24	06:23 20:24	05:12 21:26	05:48 (4) 20:10 (4)	04:31 22:12	05:45 21:08	06:47 19:48	06:47 18:28	07:48 18:28	07:55 16:17
14	08:49 16:13	07:53 18:21	06:43 19:26	06:20 20:26	05:10 21:28	05:47 (4) 20:14 (4)	04:31 22:13	05:47 21:05	06:49 19:45	06:49 18:25	07:50 18:25	07:57 16:15
15	08:47 16:15	07:51 18:23	06:40 19:28	06:17 20:28	05:08 21:30	05:47 (4) 20:10 (4)	04:31 22:14	06:07 (4) 21:03	05:49 21:03	06:51 19:43	07:52 18:23	07:59 16:13
16	08:46 16:17	07:49 18:25	06:37 19:30	06:15 20:30	05:06 21:32	05:48 (4) 20:11 (4)	04:30 22:14	06:04 (4) 21:01	05:51 19:40	06:53 18:20	07:54 18:20	08:01 16:11
17	08:45 16:19	07:46 18:27	06:35 19:32	06:12 20:32	05:04 21:34	05:48 (4) 20:10 (4)	04:30 22:15	06:03 (4) 20:58	05:53 19:37	06:55 18:17	08:03 18:17	08:52 16:09
18	08:44 16:21	07:44 18:30	06:32 19:34	06:10 20:34	05:02 21:36	05:48 (4) 20:10 (4)	04:30 22:16	06:02 (4) 20:56	05:55 19:34	06:57 18:15	07:58 18:15	08:05 16:08
19	08:42 16:23	07:42 18:32	06:29 19:37	06:07 20:37	05:00 21:37	05:48 (4) 20:10 (4)	04:30 22:16	06:01 (4) 20:53	05:57 19:32	06:59 18:12	08:01 18:12	08:07 16:06
20	08:41 16:25	07:39 18:33	06:27 19:39	06:05 20:39	04:59 21:39	05:48 (4) 20:10 (4)	04:30 22:16	06:01 (4) 20:51	05:59 19:29	07:12 (3) 07:17 (3)	08:03 18:10	08:10 16:04
21	08:40 16:27	07:37 18:36	06:24 19:41	06:02 20:41	04:57 21:41	05:49 (4) 20:10 (4)	04:30 22:17	06:01 (4) 20:48	06:01 19:26	07:08 (3) 07:20 (3)	08:05 18:07	08:12 16:03
22	08:38 16:29	07:34 18:38	06:21 19:43	06:00 20:43	04:55 21:43	05:49 (4) 20:10 (4)	04:30 22:17	06:03 20:46	06:03 19:24	07:06 (3) 07:22 (3)	08:07 18:05	08:14 16:01
23	08:37 16:31	07:32 18:40	06:19 19:45	05:57 20:45	04:53 21:45	05:50 (4) 20:10 (4)	04:31 22:17	06:05 21:51	06:05 20:43	07:03 (3) 07:22 (3)	08:09 18:03	08:16 16:00
24	08:35 16:33	07:29 18:42	06:16 19:52	05:55 20:47	04:52 21:46	05:51 (4) 20:10 (4)	04:31 22:17	06:07 21:49	06:07 20:41	07:02 (3) 07:23 (3)	08:11 18:00	08:18 15:58
25	08:33 16:35	07:27 18:44	06:13 19:55	05:52 20:49	04:50 21:48	05:52 (4) 20:10 (4)	04:31 22:17	06:09 21:47	06:09 20:38	07:01 (3) 07:24 (3)	08:13 16:58	08:20 15:57
26	08:32 16:37	07:24 18:46	06:10 19:51	05:50 20:51	04:49 21:50	05:53 (4) 20:10 (4)	04:32 22:17	06:11 21:46	06:11 20:36	07:00 (3) 07:24 (3)	08:16 16:55	08:21 15:56
27	08:30 16:40	07:22 18:48	06:08 19:53	05:47 20:53	04:47 21:51	05:55 (4) 20:10 (4)	04:32 22:17	06:13 21:44	06:13 20:33	07:00 (3) 07:25 (3)	08:18 16:53	08:23 15:55
28	08:28 16:42	07:19 18:51	06:05 19:55	05:45 20:55	04:46 21:53	05:56 (4) 20:10 (4)	04:33 22:17	06:15 21:42	06:15 20:30	06:59 (3) 07:25 (3)	08:19 16:51	08:25 15:53
29	08:27 16:44	07:02 19:53	05:43 20:57	04:45 21:55	04:45 21:55	05:58 (4) 20:10 (4)	04:34 22:16	06:17 21:40	06:17 20:28	07:19 07:24 (3)	08:27 16:48	08:57 15:52
30	08:25 16:46	07:00 19:55	05:40 21:00	04:43 21:56	04:43 21:56	05:58 (4) 20:10 (4)	04:34 22:16	06:19 21:38	06:19 20:25	07:21 07:24 (3)	08:29 16:46	08:57 15:51
31	08:23 16:48	06:57 19:57	05:37 21:00	04:42 21:58	04:42 21:58	05:59 21:36	04:34 22:16	06:21 20:23	06:21 20:23	07:22 (3) 07:24 (3)	08:30 16:44	08:57 15:52
Potential sun hours	235	266	366	426	508	529	530	470	385	323	247	216
Total, worst case				346	420		306		361		107	
Sun reduction				0,47	0,59		0,48		0,51		0,46	
Oper. time red.				1,00	1,00		1,00		1,00		1,00	
Wind dir. red.				1,00	1,00		1,00		1,00		1,00	
Total reduction				0,47	0,59		0,48		0,51		0,46	
Total, real				161	247		146		184		50	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Strautmali - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (237)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:51	07:17 17:53	06:55 19:59	05:38 21:02	04:41 21:59	04:35 22:16	05:21 21:34	06:23 20:20	07:23 18:59	07:29 16:42	08:31 15:50
2	08:57 15:55	08:19 16:53	07:14 17:55	06:52 20:01	05:36 21:04	04:40 22:01	04:36 22:15	05:23 21:32	06:25 20:17	07:31 18:57	07:31 16:39	08:32 15:49
3	08:57 15:56	08:17 16:55	07:12 17:58	06:49 20:03	05:33 21:06	04:39 22:02	04:37 22:15	05:25 21:30	06:27 20:15	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 18:00	06:46 20:05	05:31 21:08	04:38 22:03	04:38 22:14	05:27 21:28	06:29 20:12	07:29 18:51	07:35 16:35	08:36 15:48
5	08:56 15:59	08:13 17:00	07:06 18:02	06:44 20:07	05:29 21:10	04:37 22:04	04:39 22:13	05:29 21:26	06:31 20:09	07:31 18:49	07:38 16:33	08:37 15:47
6	08:55 16:00	08:11 17:02	07:04 18:04	06:41 20:09	05:27 21:12	04:36 22:06	04:40 22:13	05:31 21:24	06:33 20:07	07:33 18:46	07:40 16:31	08:39 15:46
7	08:55 16:02	08:09 17:04	07:01 18:06	06:39 20:12	05:24 21:14	04:35 22:07	04:41 22:12	05:33 21:21	06:35 20:04	07:36 18:43	07:42 16:29	08:40 15:46
8	08:54 16:03	08:07 17:06	06:59 18:08	06:36 20:14	05:22 21:16	04:34 22:08	04:42 22:11	05:35 21:19	06:37 20:01	07:38 18:41	07:44 16:26	08:42 15:45
9	08:53 16:05	08:05 17:09	06:56 18:11	06:33 20:16	05:20 21:18	04:34 22:09	04:43 22:10	05:37 21:17	06:39 19:59	07:40 18:38	07:46 16:24	08:43 15:44
10	08:53 16:06	08:02 17:11	06:53 18:13	06:31 20:18	05:18 21:20	04:33 22:10	04:45 22:09	05:39 21:15	06:41 19:56	07:42 18:36	07:48 16:22	08:44 15:44
11	08:52 16:08	08:00 17:13	06:51 18:15	06:28 20:20	05:16 21:22	04:32 22:11	04:46 22:08	05:41 21:12	06:43 19:53	07:44 18:33	07:51 16:20	08:46 15:44
12	08:51 16:10	07:58 17:15	06:48 18:17	06:25 20:22	05:14 21:24	04:32 22:12	04:47 22:07	05:43 21:10	06:45 19:51	07:46 18:30	07:53 16:19	08:47 15:43
13	08:50 16:12	07:56 17:18	06:45 18:19	06:23 20:24	05:12 21:26	04:31 22:13	04:49 22:06	05:45 21:08	06:47 19:48	07:48 18:28	07:55 16:17	08:48 15:43
14	08:49 16:13	07:53 17:20	06:43 18:21	06:20 20:26	05:10 21:28	04:31 22:13	04:50 22:04	05:47 21:05	06:49 19:45	07:50 18:25	07:57 16:15	08:49 15:43
15	08:48 16:15	07:51 17:22	06:40 18:23	06:18 20:28	05:08 21:30	04:31 22:14	04:51 22:03	05:49 21:03	06:51 19:43	07:52 18:23	07:59 16:13	08:50 15:43
16	08:46 16:17	07:49 17:24	06:37 18:25	06:15 20:30	05:06 21:32	04:31 22:15	04:53 22:02	05:51 21:01	06:53 19:40	07:54 18:20	08:01 16:11	08:51 15:43
17	08:45 16:19	07:46 17:27	06:35 18:28	06:12 20:32	05:04 21:34	04:30 22:15	04:55 22:00	05:53 20:58	06:55 19:37	07:56 18:18	08:03 16:09	08:52 15:43
18	08:44 16:21	07:44 17:29	06:32 18:30	06:10 20:35	05:02 21:36	04:30 22:16	04:56 21:59	05:55 20:56	06:57 19:35	07:59 18:15	08:05 16:08	08:53 15:43
19	08:43 16:23	07:42 17:31	06:29 18:32	06:07 20:37	05:00 21:38	04:30 22:16	04:58 21:57	05:57 20:53	06:59 19:32	08:01 18:13	08:08 16:06	08:54 15:43
20	08:41 16:25	07:39 17:33	06:27 18:34	06:05 20:39	04:59 21:39	04:30 22:16	04:59 21:56	05:59 20:51	07:01 19:29	08:03 18:10	08:10 16:05	08:54 15:44
21	08:40 16:27	07:37 17:36	06:24 18:36	06:02 20:41	04:57 21:41	04:30 22:17	05:01 21:54	06:01 20:48	07:03 19:26	08:05 18:08	08:12 16:03	08:55 15:44
22	08:38 16:29	07:34 17:38	06:21 18:38	06:00 20:43	04:55 21:43	04:31 22:17	05:03 21:53	06:03 20:46	07:05 19:24	08:07 18:05	08:14 16:01	08:56 15:45
23	08:37 16:31	07:32 17:40	06:19 18:40	05:57 20:45	04:54 21:45	04:31 22:17	05:04 21:51	06:05 20:43	07:07 19:21	08:09 18:03	08:16 16:00	08:56 15:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:55 20:47	04:52 21:47	04:31 22:17	05:06 21:49	06:07 20:41	07:09 19:18	08:11 18:00	08:18 15:59	08:57 15:46
25	08:34 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:31 22:17	05:08 21:48	06:09 20:38	07:11 19:16	08:14 18:16	08:20 15:57	08:57 15:46
26	08:32 16:38	07:24 17:47	06:11 18:46	05:50 20:51	04:49 21:50	04:32 22:17	05:10 21:46	06:11 20:36	07:13 19:13	08:16 18:15	08:22 15:56	08:57 15:47
27	08:30 16:40	07:22 17:49	06:08 18:49	05:47 20:53	04:47 21:52	04:32 22:17	05:12 21:44	06:13 20:33	07:15 19:10	08:18 18:10	08:23 16:53	08:57 15:48
28	08:28 16:42	07:19 17:51	06:05 18:51	05:45 20:55	04:46 21:53	04:33 22:17	05:13 21:42	06:15 20:31	07:17 19:07	08:20 18:05	08:25 16:51	08:57 15:49
29	08:27 16:44		07:03 19:53	05:43 20:58	04:45 21:55	04:34 22:16	05:15 21:40	06:17 20:28	07:19 19:05	08:22 18:05	08:27 16:48	08:58 15:50
30	08:25 16:46		07:00 19:55	05:40 21:00	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	08:24 18:05	08:29 16:46	08:58 15:51
31	08:23 16:48		06:57 19:57		04:42 21:58		05:19 21:36	06:21 20:23		07:27 16:44		08:57 15:52
Potential sun hours	235	266	366	426	508	529	530	470	385	323	247	216
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian & Lithuanian environment  
 Vilandes 3-6  
 LV-1010 Riga  
 0037167242411  
 Laura Kurzemniece / laura.kurzemniece@environment.lv  
 Calculated:  
 07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme

Shadow receptor: Svareni - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (214)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January			February			March			April			May			June		
1	08:58	08:21	07:17							06:54		18:44 (1)	05:38			04:41		20:31 (2)
	15:53	16:51	17:53							19:59	18	19:02 (1)	21:02			22:00	35	21:06 (2)
2	08:57	08:19	07:14							06:52		18:46 (1)	05:36			04:40		20:31 (2)
	15:54	16:53	17:55							20:01	14	19:00 (1)	21:04			22:01	36	21:07 (2)
3	08:57	08:17	07:12							06:49		18:49 (1)	05:33			04:39		20:30 (2)
	15:56	16:55	17:58							20:03	6	18:55 (1)	21:06			22:02	37	21:07 (2)
4	08:57	08:15	07:09							06:46			05:31			04:37		20:31 (2)
	15:57	16:57	18:00							20:05			21:08			22:04	37	21:08 (2)
5	08:56	08:13	07:07							06:44			05:29			04:37		20:30 (2)
	15:58	16:59	18:02							20:07			21:10			22:05	39	21:09 (2)
6	08:56	08:11	07:04							06:41			05:26			04:36		20:30 (2)
	16:00	17:02	18:04							20:10			21:12			22:06	39	21:09 (2)
7	08:55	08:09	07:01							06:38			05:24			04:35		20:30 (2)
	16:01	17:04	18:06							20:12			21:14			22:07	39	21:09 (2)
8	08:54	08:07	06:59							06:36			05:22			04:34		20:30 (2)
	16:03	17:06	18:08							20:14			21:16			22:08	40	21:10 (2)
9	08:54	08:05	06:56							06:33			05:20			04:33		20:30 (2)
	16:04	17:09	18:11							20:16			21:18			22:09	40	21:10 (2)
10	08:53	08:03	06:53							06:31			05:18			04:33		20:30 (2)
	16:06	17:11	18:13							20:18			21:20			22:10	41	21:11 (2)
11	08:52	08:00	06:51							06:28			05:16			04:32		20:31 (2)
	16:08	17:13	18:15							20:20			21:22			22:11	40	21:11 (2)
12	08:51	07:58	06:48							06:25			05:14			04:32		20:30 (2)
	16:10	17:15	18:17							20:22			21:24			22:12	41	21:11 (2)
13	08:50	07:56	06:46							06:23			05:12			04:31		20:30 (2)
	16:11	17:18	18:19							20:24			21:26			22:13	42	21:12 (2)
14	08:49	07:54	06:43							06:20			05:10			04:31		20:31 (2)
	16:13	17:20	18:21							20:26			21:28			22:14	41	21:12 (2)
15	08:48	07:51	06:40							06:17			05:08			04:30		20:30 (2)
	16:15	17:22	18:23							20:28			21:30			22:14	42	21:12 (2)
16	08:47	07:49	06:38							06:15			05:06			04:30		20:30 (2)
	16:17	17:24	18:26							20:31			21:32			22:15	42	21:12 (2)
17	08:46	07:47	06:35							06:12			05:04			04:30		20:31 (2)
	16:19	17:27	18:28	4						17:55 (1)			21:34			22:16	42	21:13 (2)
18	08:44	07:44	06:32							17:50 (1)			05:02			04:30		20:31 (2)
	16:21	17:29	18:30	11						18:01 (1)			21:36			22:16	42	21:13 (2)
19	08:43	07:42	06:29							17:48 (1)			05:00			04:30		20:31 (2)
	16:23	17:31	18:32	16						18:04 (1)			21:38			22:16	42	21:13 (2)
20	08:42	07:39	06:27							17:46 (1)			04:58			04:30		20:31 (2)
	16:25	17:33	18:34	20						18:06 (1)			21:40			22:17	42	21:13 (2)
21	08:40	07:37	06:24							17:44 (1)			04:57		20:44 (2)	04:30		20:32 (2)
	16:27	17:36	18:36	24						18:08 (1)			21:42	8	20:52 (2)	22:17	42	21:14 (2)
22	08:39	07:34	06:21							17:44 (1)			04:55		20:40 (2)	04:30		20:32 (2)
	16:29	17:38	18:38	25						18:09 (1)			21:43	15	20:55 (2)	22:17	42	21:14 (2)
23	08:37	07:32	06:19							17:43 (1)			04:53		20:39 (2)	04:30		20:32 (2)
	16:31	17:40	18:40	26						18:09 (1)			21:45	18	20:57 (2)	22:17	42	21:14 (2)
24	08:35	07:30	06:16							17:42 (1)			04:52		20:37 (2)	04:31		20:33 (2)
	16:33	17:42	18:42	27						18:09 (1)			21:47	21	20:58 (2)	22:17	42	21:15 (2)
25	08:34	07:27	06:13							17:41 (1)			04:50		20:36 (2)	04:31		20:33 (2)
	16:35	17:44	18:44	27						18:08 (1)			21:49	24	21:00 (2)	22:17	42	21:15 (2)
26	08:32	07:25	06:11							17:41 (1)			04:49		20:35 (2)	04:32		20:32 (2)
	16:37	17:47	18:47	28						18:09 (1)			21:50	26	21:01 (2)	22:17	42	21:14 (2)
27	08:30	07:22	06:08							17:41 (1)			04:47		20:34 (2)	04:32		20:33 (2)
	16:40	17:49	18:49	27						18:08 (1)			21:52	29	21:03 (2)	22:17	42	21:15 (2)
28	08:29	07:19	06:05							17:41 (1)			04:46		20:33 (2)	04:33		20:33 (2)
	16:42	17:51	18:51	26						18:07 (1)			21:53	30	21:03 (2)	22:17	42	21:15 (2)
29	08:27		07:03							18:42 (1)			04:44		20:32 (2)	04:33		20:34 (2)
	16:44		19:53	25						19:07 (1)			21:55	32	21:04 (2)	22:17	41	21:15 (2)
30	08:25		07:00							18:42 (1)			04:43		20:32 (2)	04:34		20:34 (2)
	16:46		19:55	23						19:05 (1)			21:57	33	21:05 (2)	22:16	41	21:15 (2)
31	08:23		06:57							18:42 (1)			04:42		20:31 (2)			
	16:48		19:57	21						19:03 (1)			21:58	34	21:05 (2)			
Potential sun hours	234	266	366							426			509			530		
Total, worst case				330						38			270			1217		
Sun reduction				0,40						0,47			0,59			0,57		
Oper. time red.				1,00						1,00			1,00			1,00		
Wind dir. red.				1,00						1,00			1,00			1,00		
Total reduction				0,40						0,47			0,59			0,57		
Total, real				133						18			159			693		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian & Lithuanian environment  
 Vilandes 3-6  
 LV-1010 Riga  
 0037167242411  
 Laura Kurzemniece / laura.kurzemniece@environment.lv  
 Calculated:  
 07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Svareni - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (214)  
 Sunshine probability S (Average daily sunshine hours) []

Assumptions for shadow calculations

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 0,80 1,82 4,75 6,63 9,63 10,06 8,16 7,72 5,94 2,93 0,63 0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	July	August	September	October	November	December
1	04:35 22:16 41	20:35 (2) 21:16 (2)	05:21 21:35	06:23 20:20	07:23 18:59	07:29 16:41
2	04:36 22:16 41	20:34 (2) 21:15 (2)	05:23 21:32	06:25 20:18	07:25 18:57	07:31 16:39
3	04:36 22:15 40	20:35 (2) 21:15 (2)	05:25 21:30	06:27 20:15	07:27 18:54	07:33 16:37
4	04:37 22:14 40	20:35 (2) 21:15 (2)	05:27 21:28	06:29 20:12	07:29 18:51	07:36 16:35
5	04:38 22:14 39	20:36 (2) 21:15 (2)	05:29 21:26	06:31 20:10	07:31 18:49	07:38 16:33
6	04:39 22:13 39	20:36 (2) 21:15 (2)	05:31 21:24	06:33 20:07	07:34 18:46	07:40 16:30
7	04:41 22:12 38	20:37 (2) 21:15 (2)	05:33 21:22	06:35 20:04	07:36 18:43	07:42 16:28
8	04:42 22:11 38	20:37 (2) 21:15 (2)	05:35 21:20	06:37 20:02	07:38 18:41	07:44 16:26
9	04:43 22:10 37	20:38 (2) 21:15 (2)	05:37 21:17	06:39 19:59	18:43 (1) 18:49 (1)	07:46 16:24
10	04:44 22:09 36	20:38 (2) 21:14 (2)	05:39 21:15	06:41 19:56	18:39 (1) 18:53 (1)	07:49 16:22
11	04:46 22:08 36	20:39 (2) 21:15 (2)	05:41 21:13	06:43 19:54	18:37 (1) 18:54 (1)	07:51 16:20
12	04:47 22:07 34	20:40 (2) 21:14 (2)	05:43 21:10	06:45 19:51	18:35 (1) 18:56 (1)	07:53 16:18
13	04:48 22:06 34	20:40 (2) 21:14 (2)	05:45 21:08	06:47 19:48	18:33 (1) 18:56 (1)	07:55 16:16
14	04:50 22:05 32	20:41 (2) 21:13 (2)	05:47 21:06	06:49 19:45	18:32 (1) 18:57 (1)	07:57 16:15
15	04:51 22:03 31	20:42 (2) 21:13 (2)	05:49 21:03	06:51 19:43	18:31 (1) 18:57 (1)	07:59 16:13
16	04:53 22:02 30	20:42 (2) 21:12 (2)	05:51 21:01	06:53 19:40	18:30 (1) 18:57 (1)	08:02 16:11
17	04:54 22:01 28	20:43 (2) 21:11 (2)	05:53 20:58	06:55 19:37	18:30 (1) 18:57 (1)	08:04 16:09
18	04:56 21:59 25	20:45 (2) 21:10 (2)	05:55 20:56	06:57 19:35	18:29 (1) 18:57 (1)	08:06 16:08
19	04:57 21:58 23	20:46 (2) 21:09 (2)	05:57 20:53	06:59 19:32	18:29 (1) 18:56 (1)	08:08 16:06
20	04:59 21:56 20	20:48 (2) 21:08 (2)	05:59 20:51	07:01 19:29	18:29 (1) 18:56 (1)	08:10 16:04
21	05:01 21:55 17	20:49 (2) 21:06 (2)	06:01 20:49	07:03 19:26	18:29 (1) 18:55 (1)	08:12 16:03
22	05:02 21:53 11	20:52 (2) 21:03 (2)	06:03 20:46	07:05 19:24	18:30 (1) 18:54 (1)	08:14 16:01
23	05:04 21:51	06:05 20:43	07:07 19:21	18:30 (1) 18:51 (1)	08:09 18:03	08:16 16:00
24	05:06 21:50	06:07 20:41	07:09 19:18	18:31 (1) 18:48 (1)	08:12 18:00	08:18 15:58
25	05:08 21:48	06:09 20:38	07:11 19:16	18:33 (1) 18:46 (1)	07:14 16:58	08:20 15:57
26	05:10 21:46	06:11 20:36	07:13 19:13	18:36 (1) 18:43 (1)	07:16 16:55	08:22 15:56
27	05:11 21:44	06:13 20:33	07:15 19:10	18:36 (1) 18:43 (1)	07:18 16:53	08:24 15:54
28	05:13 21:42	06:15 20:31	07:17 19:07	18:36 (1) 18:43 (1)	07:20 16:51	08:26 15:53
29	05:15 21:40	06:17 20:28	07:19 19:05	18:36 (1) 18:43 (1)	07:22 16:48	08:27 15:52
30	05:17 21:39	06:19 20:25	07:21 19:02	18:36 (1) 18:43 (1)	07:25 16:46	08:29 15:51
31	05:19 21:37	06:21 20:23	07:23 19:04	18:36 (1) 18:43 (1)	07:27 16:44	08:31 15:50
Potential sun hours	530	470	385	323	247	215
Total, worst case	710		376			
Sun reduction	0,48		0,46			
Oper. time red.	1,00		1,00			
Wind dir. red.	1,00		1,00			
Total reduction	0,48		0,46			
Total, real	339		174			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Vecbirznieki - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (164)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December		
1	08:57	08:21	07:17	06:54	05:38	04:41	05:56 (3)	04:35	05:21	05:57 (3)	06:23	07:23	07:29	08:31
	15:53	16:51	17:53	19:59	21:02	21:59	4 06:00 (3)	22:15	21:34	21 06:18 (3)	20:20	18:59	16:41	15:50
2	08:57	08:19	07:14	06:52	05:36	04:40	04:36	05:23	05:58 (3)	06:25	07:25	07:31	08:32	08:32
	15:55	16:53	17:55	20:01	21:04	22:00	22:15	21:32	19 06:17 (3)	20:17	18:57	16:39	15:49	15:49
3	08:57	08:17	07:12	06:49	05:33	04:39	04:37	05:25	05:58 (3)	06:27	07:27	07:33	08:34	08:34
	15:56	16:55	17:58	20:03	21:06	22:02	22:14	21:30	18 06:16 (3)	20:15	18:54	16:37	15:48	15:48
4	08:56	08:15	07:09	06:46	05:31	04:38	04:38	05:27	06:00 (3)	06:29	07:29	07:35	08:36	08:36
	15:57	16:57	18:00	20:05	21:08	22:03	22:14	21:28	15 06:15 (3)	20:12	18:51	16:35	15:48	15:48
5	08:56	08:13	07:06	06:44	05:29	04:37	04:39	05:29	06:02 (3)	06:31	07:31	07:37	08:37	08:37
	15:59	17:00	18:02	20:07	21:10	22:04	22:13	21:26	12 06:14 (3)	20:09	18:49	16:33	15:47	15:47
6	08:55	08:11	07:04	06:41	05:27	04:36	04:40	05:31	06:04 (3)	06:33	07:33	07:40	08:39	08:39
	16:00	17:02	18:04	20:09	21:12	22:06	22:12	21:24	7 06:11 (3)	20:07	18:46	16:31	15:46	15:46
7	08:55	08:09	07:01	06:38	05:24	05:53 (3)	04:35	04:41	05:33	06:35	07:35	07:42	08:40	08:40
	16:01	17:04	18:06	20:11	21:14	9 06:02 (3)	22:07	22:12	21:21	20:04	18:43	16:28	15:45	15:45
8	08:54	08:07	06:59	06:36	05:22	05:51 (3)	04:34	04:42	05:35	06:37	07:37	07:44	08:42	08:42
	16:03	17:06	18:08	20:14	21:16	13 06:04 (3)	22:08	22:11	21:19	20:01	18:41	16:26	15:45	15:45
9	08:53	08:04	06:56	06:33	05:20	05:49 (3)	04:34	04:43	05:37	06:39	07:40	07:46	08:43	08:43
	16:05	17:09	18:10	20:16	21:18	16 06:05 (3)	22:09	22:10	21:17	19:59	18:38	16:24	15:44	15:44
10	08:52	08:02	06:53	06:30	05:18	05:47 (3)	04:33	04:44	05:39	06:41	07:42	07:48	08:44	08:44
	16:06	17:11	18:13	20:18	21:20	19 06:06 (3)	22:10	22:09	21:15	19:56	18:35	16:22	15:44	15:44
11	08:52	08:00	06:51	06:28	05:16	05:46 (3)	04:32	04:46	05:41	06:43	07:44	07:50	08:46	08:46
	16:08	17:13	18:15	20:20	21:22	20 06:06 (3)	22:11	22:08	21:12	19:53	18:33	16:20	15:44	15:44
12	08:51	07:58	06:48	06:25	05:14	05:47 (3)	04:32	04:47	06:03 (3)	05:43	06:45	07:46	07:53	08:47
	16:10	17:15	18:17	20:22	21:24	21 06:08 (3)	22:12	22:07	7 06:10 (3)	21:10	19:51	18:30	16:18	15:43
13	08:50	07:56	06:45	06:23	05:12	05:46 (3)	04:31	04:48	06:01 (3)	05:45	06:47	07:48	07:55	08:48
	16:11	17:18	18:19	20:24	21:26	22 06:08 (3)	22:12	22:05	10 06:11 (3)	21:08	19:48	18:28	16:17	15:43
14	08:49	07:53	06:43	06:20	05:10	05:45 (3)	04:31	04:50	06:00 (3)	05:47	06:49	07:50	07:57	08:49
	16:13	17:20	18:21	20:26	21:28	23 06:08 (3)	22:13	22:04	12 06:12 (3)	21:05	19:45	18:25	16:15	15:43
15	08:47	07:51	06:40	06:17	05:08	05:45 (3)	04:31	04:51	06:00 (3)	05:49	06:51	07:52	07:59	08:50
	16:15	17:22	18:23	20:28	21:30	23 06:08 (3)	22:14	22:03	14 06:14 (3)	21:03	19:43	18:23	16:13	15:43
16	08:46	07:49	06:37	06:15	05:06	05:45 (3)	04:30	04:53	05:58 (3)	05:51	06:53	07:54	08:01	08:51
	16:17	17:24	18:25	20:30	21:32	24 06:09 (3)	22:14	22:02	16 06:14 (3)	21:00	19:40	18:20	16:11	15:43
17	08:45	07:46	06:35	06:12	05:04	05:45 (3)	04:30	04:54	05:58 (3)	05:53	06:55	07:56	08:03	08:52
	16:19	17:27	18:27	20:32	21:34	24 06:09 (3)	22:15	22:00	18 06:16 (3)	20:58	19:37	18:17	16:09	15:43
18	08:44	07:44	06:32	06:10	05:02	05:45 (3)	04:30	04:56	05:57 (3)	05:55	06:57	07:58	08:05	08:53
	16:21	17:29	18:30	20:34	21:36	23 06:08 (3)	22:15	21:59	19 06:16 (3)	20:56	19:34	18:15	16:08	15:43
19	08:42	07:42	06:29	06:07	05:00	05:46 (3)	04:30	04:58	05:57 (3)	05:57	06:59	08:01	08:07	08:54
	16:23	17:31	18:32	20:37	21:37	23 06:09 (3)	22:16	21:57	19 06:16 (3)	20:53	19:32	18:12	16:06	15:43
20	08:41	07:39	06:27	06:05	04:59	05:45 (3)	04:30	04:59	05:57 (3)	05:59	07:01	08:03	08:09	08:54
	16:25	17:33	18:34	20:39	21:39	23 06:08 (3)	22:16	21:56	20 06:17 (3)	20:51	19:29	18:10	16:04	15:44
21	08:40	07:37	06:24	06:02	04:57	05:46 (3)	04:30	05:01	05:57 (3)	06:01	07:03	08:05	08:12	08:55
	16:27	17:36	18:36	20:41	21:41	23 06:09 (3)	22:17	21:54	21 06:18 (3)	20:48	19:26	18:07	16:03	15:44
22	08:38	07:34	06:21	06:00	04:55	05:46 (3)	04:30	05:03	05:56 (3)	06:03	07:05	08:07	08:14	08:55
	16:29	17:38	18:38	20:43	21:43	22 06:08 (3)	22:17	21:53	22 06:18 (3)	20:46	19:24	18:05	16:01	15:45
23	08:37	07:32	06:19	05:57	04:54	05:47 (3)	04:31	05:04	05:56 (3)	06:05	07:07	08:09	08:16	08:56
	16:31	17:40	18:40	20:45	21:45	21 06:08 (3)	22:17	21:51	23 06:19 (3)	20:43	19:21	18:03	16:00	15:45
24	08:35	07:29	06:16	05:55	04:52	05:47 (3)	04:31	05:06	05:55 (3)	06:07	07:09	08:11	08:18	08:56
	16:33	17:42	18:42	20:47	21:46	20 06:07 (3)	22:17	21:49	24 06:19 (3)	20:41	19:18	18:00	15:59	15:46
25	08:33	07:27	06:13	05:52	04:50	05:48 (3)	04:31	05:08	05:56 (3)	06:09	07:11	07:13	08:19	08:57
	16:35	17:44	18:44	20:49	21:48	19 06:07 (3)	22:17	21:47	23 06:19 (3)	20:38	19:15	16:58	15:57	15:46
26	08:32	07:24	06:11	05:50	04:49	05:48 (3)	04:32	05:10	05:56 (3)	06:11	07:13	07:16	08:21	08:57
	16:37	17:47	18:46	20:51	21:50	18 06:06 (3)	22:17	21:46	24 06:20 (3)	20:36	19:13	16:55	15:56	15:47
27	08:30	07:22	06:08	05:47	04:47	05:49 (3)	04:32	05:12	05:55 (3)	06:13	07:15	07:18	08:23	08:57
	16:40	17:49	18:48	20:53	21:51	17 06:06 (3)	22:17	21:44	24 06:19 (3)	20:33	19:10	16:53	15:55	15:48
28	08:28	07:19	06:05	05:45	04:46	05:50 (3)	04:33	05:13	05:56 (3)	06:15	07:17	07:20	08:25	08:57
	16:42	17:51	18:51	20:55	21:53	16 06:06 (3)	22:17	21:42	23 06:19 (3)	20:30	19:07	16:51	15:53	15:49
29	08:27	07:02	05:43	04:45	04:45	05:51 (3)	04:34	05:15	05:56 (3)	06:17	07:19	07:22	08:27	08:57
	16:44	17:53	18:53	20:57	21:55	13 06:04 (3)	22:16	21:40	23 06:19 (3)	20:28	19:05	16:48	15:52	15:50
30	08:25	07:00	05:40	04:43	04:43	05:52 (3)	04:34	05:17	05:56 (3)	06:19	07:21	07:24	08:29	08:57
	16:46	17:55	18:55	21:00	21:56	11 06:03 (3)	22:16	21:38	22 06:18 (3)	20:25	19:02	16:46	15:51	15:51
31	08:23	06:57	04:42	04:42	05:53 (3)	04:34	04:34	05:19	05:56 (3)	06:21	07:23	07:26	08:31	08:57
	16:48	17:57	18:57	21:01	21:58	9 06:02 (3)	22:16	21:36	22 06:18 (3)	20:23	19:00	16:44	15:52	15:52
Potential sun hours	235	266	366	426	508	529	530	470	385	324	247	216		
Total, worst case					472		4			92				
Sun reduction					0,59		0,57			0,51				
Oper. time red.					1,00		1,00			1,00				
Wind dir. red.					1,00		1,00			1,00				
Total reduction					0,59		0,57			0,51				
Total, real					277		2			47				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Vecdimanti - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (186)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:50	07:16 17:53	06:54 19:59	05:38 21:01	04:41 21:59	04:35 22:15	05:21 21:34	06:23 20:20	07:23 18:59	07:28 16:41	08:30 15:50
2	08:57 15:54	08:19 16:52	07:14 17:55	06:51 20:01	05:35 21:03	04:39 22:00	04:35 22:15	05:22 21:32	06:25 20:17	07:25 18:56	07:31 16:39	08:32 15:49
3	08:56 15:55	08:17 16:55	07:11 17:57	06:49 20:03	05:33 21:05	04:38 22:02	04:36 22:14	05:24 21:30	06:27 20:14	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 17:59	06:46 20:05	05:31 21:08	04:37 22:03	04:37 22:14	05:26 21:28	06:29 20:12	07:29 18:51	07:35 16:34	08:35 15:47
5	08:55 15:58	08:13 16:59	07:06 18:02	06:43 20:07	05:28 21:10	04:36 22:04	04:38 22:13	05:28 21:25	06:31 20:09	07:31 18:48	07:37 16:32	08:37 15:46
6	08:55 16:00	08:11 17:01	07:03 18:04	06:41 20:09	05:26 21:12	04:35 22:05	04:39 22:12	05:30 21:23	06:33 20:06	07:33 18:46	07:39 16:30	08:38 15:46
7	08:54 16:01	08:09 17:04	07:01 18:06	06:38 20:11	05:24 21:14	04:35 22:06	04:40 22:11	05:32 21:21	06:35 20:04	07:35 18:43	07:42 16:28	08:40 15:45
8	08:54 16:03	08:06 17:06	06:58 18:08	06:35 20:13	05:22 21:16	04:34 22:08	04:42 22:11	05:34 21:19	06:37 20:01	07:37 18:40	07:44 16:26	08:41 15:45
9	08:53 16:04	08:04 17:08	06:56 18:10	06:33 20:15	05:20 21:18	04:33 22:09	04:43 22:10	05:36 21:17	06:39 19:58	07:39 18:38	07:46 16:24	08:43 15:44
10	08:52 16:06	08:02 17:10	06:53 18:12	06:30 20:17	05:18 21:20	04:33 22:10	04:44 22:09	05:38 21:14	06:41 19:56	07:41 18:35	07:48 16:22	08:44 15:44
11	08:51 16:08	08:00 17:13	06:50 18:14	06:28 20:20	05:15 21:22	04:32 22:11	04:45 22:08	05:40 21:12	06:43 19:53	07:43 18:33	07:50 16:20	08:45 15:43
12	08:50 16:09	07:58 17:15	06:48 18:17	06:25 20:22	05:13 21:24	04:31 22:11	04:47 22:06	05:42 21:10	06:45 19:50	07:45 18:30	07:52 16:18	08:47 15:43
13	08:49 16:11	07:55 17:17	06:45 18:19	06:22 20:24	05:11 21:26	04:31 22:12	04:48 22:05	05:44 21:07	06:47 19:48	07:48 18:27	07:55 16:16	08:48 15:43
14	08:48 16:13	07:53 17:20	06:42 18:21	06:20 20:26	05:09 21:28	04:31 22:13	04:50 22:04	05:46 21:05	06:49 19:45	07:50 18:25	07:57 16:14	08:49 15:43
15	08:47 16:15	07:51 17:22	06:40 18:23	06:17 20:28	05:07 21:30	04:30 22:14	04:51 22:03	05:48 21:03	06:51 19:42	07:52 18:22	07:59 16:13	08:50 15:43
16	08:46 16:17	07:48 17:24	06:37 18:25	06:15 20:30	05:06 21:32	04:30 22:14	04:53 22:01	05:50 21:00	06:53 19:40	07:54 18:20	08:01 16:11	08:51 15:43
17	08:45 16:19	07:46 17:26	06:34 18:27	06:12 20:32	05:04 21:33	04:30 22:15	04:54 22:00	05:52 20:58	06:55 19:37	07:56 18:17	08:03 16:09	08:52 15:43
18	08:44 16:21	07:44 17:28	06:32 18:29	06:09 20:34	05:02 21:35	04:30 22:15	04:56 21:59	05:54 20:55	06:57 19:34	07:58 18:15	08:05 16:07	08:53 15:43
19	08:42 16:23	07:41 17:31	06:29 18:31	06:07 20:36	05:00 21:37	04:30 22:16	04:57 21:57	05:56 20:53	06:59 19:31	08:00 18:12	08:07 16:06	08:53 15:43
20	08:41 16:25	07:39 17:33	06:26 18:34	06:04 20:38	04:58 21:39	04:30 22:16	04:59 21:56	05:58 20:50	07:01 19:29	08:02 18:10	08:09 16:04	08:54 15:43
21	08:39 16:27	07:36 17:35	06:24 18:36	06:02 20:40	04:56 21:41	04:30 22:16	05:01 21:54	06:00 20:48	07:03 19:26	08:05 18:07	08:11 16:03	08:55 15:44
22	08:38 16:29	07:34 17:37	06:21 18:38	05:59 20:43	04:55 21:43	04:30 22:17	05:02 21:52	06:02 20:45	07:05 19:23	08:07 18:05	08:13 16:01	08:55 15:44
23	08:36 16:31	07:31 17:40	06:18 18:40	05:57 20:45	04:53 21:44	04:30 22:17	05:04 21:51	06:04 20:43	07:07 19:21	08:09 18:02	08:15 16:00	08:56 15:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:54 20:47	04:52 21:46	04:31 22:17	05:06 21:49	06:06 20:40	07:09 19:18	08:11 18:00	08:17 15:58	08:56 15:45
25	08:33 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:31 22:17	05:08 21:47	06:08 20:38	07:11 19:15	08:13 18:15	08:19 15:57	08:57 15:46
26	08:32 16:37	07:24 17:46	06:10 18:46	05:49 20:51	04:48 21:50	04:31 22:17	05:09 21:45	06:10 20:35	07:13 19:12	08:15 18:15	08:21 15:56	08:57 15:47
27	08:30 16:39	07:21 17:48	06:08 18:48	05:47 20:53	04:47 21:51	04:32 22:17	05:11 21:44	06:12 20:33	07:15 19:10	08:17 18:10	08:23 16:53	08:57 15:48
28	08:28 16:41	07:19 17:51	06:05 18:50	05:45 20:55	04:46 21:53	04:33 22:16	05:13 21:42	06:14 20:30	07:17 19:07	08:19 18:10	08:25 16:50	08:57 15:48
29	08:26 16:44		07:02 19:52	05:42 20:57	04:44 21:54	04:33 22:16	05:15 21:40	06:17 20:28	07:19 19:04	08:22 18:15	08:27 16:48	08:57 15:49
30	08:24 16:46		06:59 19:54	05:40 20:59	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	08:24 18:15	08:29 16:46	08:57 15:50
31	08:23 16:48		06:57 19:57		04:42 21:57		05:19 21:36	06:21 20:22		07:26 18:15		08:57 15:51
Potential sun hours	235	266	366	426	508	529	530	470	385	323	247	216
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Vecdzilnas - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (210)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:50	07:17 17:53	06:54 19:59	05:38 21:01	04:41 21:59	04:35 22:16	05:21 21:34	06:23 20:20	07:23 18:59	07:29 16:41	08:30 15:50
2	08:57 15:54	08:19 16:52	07:14 17:55	06:51 20:01	05:35 21:04	04:39 22:00	04:35 22:15	05:22 21:32	06:25 20:17	07:31 18:56	07:31 16:39	08:32 15:49
3	08:57 15:55	08:17 16:55	07:11 17:57	06:49 20:03	05:33 21:06	04:38 22:02	04:36 22:14	05:24 21:30	06:27 20:15	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 17:59	06:46 20:05	05:31 21:08	04:37 22:03	04:37 22:14	05:26 21:28	06:29 20:12	07:29 18:51	07:35 16:34	08:36 15:47
5	08:56 15:58	08:13 16:59	07:06 18:02	06:43 20:07	05:28 21:10	04:36 22:04	04:38 22:13	05:28 21:26	06:31 20:09	07:31 18:48	07:37 16:32	08:37 15:46
6	08:55 16:00	08:11 17:01	07:04 18:04	06:41 20:09	05:26 21:12	04:35 22:06	04:39 22:12	05:30 21:23	06:33 20:07	07:33 18:46	07:39 16:30	08:39 15:46
7	08:55 16:01	08:09 17:04	07:01 18:06	06:38 20:11	05:24 21:14	04:35 22:07	04:40 22:12	05:32 21:21	06:35 20:04	07:35 18:43	07:42 16:28	08:40 15:45
8	08:54 16:03	08:07 17:06	06:58 18:08	06:35 20:13	05:22 21:16	04:34 22:08	04:42 22:11	05:34 21:19	06:37 20:01	07:37 18:40	07:44 16:26	08:42 15:44
9	08:53 16:04	08:04 17:08	06:56 18:10	06:33 20:15	05:20 21:18	04:33 22:09	04:43 22:10	05:36 21:17	06:39 19:59	07:39 18:38	07:46 16:24	08:43 15:44
10	08:52 16:06	08:02 17:11	06:53 18:12	06:30 20:18	05:18 21:20	04:32 22:10	04:44 22:09	05:38 21:15	06:41 19:56	07:41 18:35	07:48 16:22	08:44 15:44
11	08:51 16:08	08:00 17:13	06:50 18:15	06:28 20:20	05:15 21:22	04:32 22:11	04:45 22:08	05:40 21:12	06:43 19:53	07:44 18:33	07:50 16:20	08:46 15:43
12	08:51 16:09	07:58 17:15	06:48 18:17	06:25 20:22	05:13 21:24	04:31 22:12	04:47 22:07	05:42 21:10	06:45 19:50	07:46 18:30	07:53 16:18	08:47 15:43
13	08:50 16:11	07:55 17:17	06:45 18:19	06:22 20:24	05:11 21:26	04:31 22:12	04:48 22:05	05:44 21:08	06:47 19:48	07:48 18:27	07:55 16:16	08:48 15:43
14	08:49 16:13	07:53 17:20	06:42 18:21	06:20 20:26	05:09 21:28	04:31 22:13	04:49 22:04	05:46 21:05	06:49 19:45	07:50 18:25	07:57 16:14	08:49 15:43
15	08:47 16:15	07:51 17:22	06:40 18:23	06:17 20:28	05:07 21:30	04:30 22:14	04:51 22:03	05:48 21:03	06:51 19:42	07:52 18:22	07:59 16:13	08:50 15:42
16	08:46 16:17	07:49 17:24	06:37 18:25	06:15 20:30	05:05 21:32	04:30 22:14	04:52 22:02	05:50 21:00	06:53 19:40	07:54 18:20	08:01 16:11	08:51 15:42
17	08:45 16:19	07:46 17:26	06:34 18:27	06:12 20:32	05:04 21:34	04:30 22:15	04:54 22:00	05:52 20:58	06:55 19:37	07:56 18:17	08:03 16:09	08:52 15:43
18	08:44 16:21	07:44 17:29	06:32 18:29	06:09 20:34	05:02 21:36	04:30 22:15	04:56 21:59	05:54 20:56	06:57 19:34	07:58 18:15	08:05 16:07	08:53 15:43
19	08:42 16:23	07:41 17:31	06:29 18:31	06:07 20:36	05:00 21:37	04:30 22:16	04:57 21:57	05:56 20:53	06:59 19:31	08:00 18:12	08:07 16:06	08:54 15:43
20	08:41 16:25	07:39 17:33	06:26 18:34	06:04 20:38	04:58 21:39	04:30 22:16	04:59 21:56	05:58 20:51	07:01 19:29	08:03 18:10	08:09 16:04	08:54 15:43
21	08:40 16:27	07:37 17:35	06:24 18:36	06:02 20:41	04:56 21:41	04:30 22:17	05:01 21:54	06:00 20:48	07:03 19:26	08:05 18:07	08:11 16:03	08:55 15:44
22	08:38 16:29	07:34 17:37	06:21 18:38	05:59 20:43	04:55 21:43	04:30 22:17	05:02 21:53	06:02 20:46	07:05 19:23	08:07 18:05	08:13 16:01	08:55 15:44
23	08:37 16:31	07:32 17:40	06:18 18:40	05:57 20:45	04:53 21:45	04:30 22:17	05:04 21:51	06:04 20:43	07:07 19:21	08:09 18:02	08:15 16:00	08:56 15:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:54 20:47	04:52 21:46	04:31 22:17	05:06 21:49	06:06 20:41	07:09 19:18	08:11 18:00	08:17 15:58	08:56 15:45
25	08:33 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:31 22:17	05:08 21:47	06:08 20:38	07:11 19:15	08:13 18:15	08:19 15:57	08:57 15:46
26	08:32 16:37	07:24 17:46	06:10 18:46	05:49 20:51	04:48 21:50	04:31 22:17	05:09 21:46	06:10 20:35	07:13 19:13	08:15 18:15	08:21 15:55	08:57 15:47
27	08:30 16:39	07:22 17:49	06:08 18:48	05:47 20:53	04:47 21:51	04:32 22:17	05:11 21:44	06:13 20:33	07:15 19:10	08:18 18:10	08:23 16:53	08:57 15:47
28	08:28 16:41	07:19 17:51	06:05 18:50	05:45 20:55	04:46 21:53	04:32 22:17	05:13 21:42	06:15 20:30	07:17 19:07	08:20 18:10	08:25 16:50	08:57 15:48
29	08:26 16:44		07:02 19:52	05:42 20:57	04:44 21:55	04:33 22:16	05:15 21:40	06:17 20:28	07:19 19:04	08:22 18:10	08:27 16:48	08:57 15:49
30	08:25 16:46		07:00 19:55	05:40 20:59	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	08:24 18:10	08:29 16:46	08:57 15:50
31	08:23 16:48				04:42 21:58		05:19 21:36	06:21 20:22		07:26 16:43		08:57 15:51
Potential sun hours	235	266	366	426	508	530	530	470	385	323	247	215
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme

Assumptions for shadow calculations

Shadow receptor: Viesturu muiža - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (227)

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:51	07:17 17:53	06:55 19:59	05:38 21:02	04:41 21:59	04:35 22:16	05:21 21:34	06:23 20:20	07:23 18:59	07:29 16:42	08:31 15:50
2	08:57 15:55	08:19 16:53	07:14 17:55	06:52 20:01	05:36 21:04	04:40 22:01	04:36 22:15	05:23 21:32	06:25 20:17	07:31 18:57	07:31 16:39	08:32 15:49
3	08:57 15:56	08:17 16:55	07:12 17:58	06:49 20:03	05:33 21:06	04:39 22:02	04:37 22:15	05:25 21:30	06:27 20:15	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 18:00	06:46 20:05	05:31 21:08	04:38 22:03	04:38 22:14	05:27 21:28	06:29 20:12	07:29 18:51	07:35 16:35	08:36 15:48
5	08:56 15:59	08:13 17:00	07:07 18:02	06:44 20:07	05:29 21:10	04:37 22:05	04:39 22:13	05:29 21:26	06:31 20:10	07:31 18:49	07:38 16:33	08:37 15:47
6	08:55 16:00	08:11 17:02	07:04 18:04	06:41 20:09	05:27 21:12	04:36 22:06	04:40 22:13	05:31 21:24	06:33 20:07	07:33 18:46	07:40 16:31	08:39 15:46
7	08:55 16:02	08:09 17:04	07:01 18:06	06:39 20:12	05:24 21:14	04:35 22:07	04:41 22:12	05:33 21:22	06:35 20:04	07:36 18:43	07:42 16:29	08:40 15:45
8	08:54 16:03	08:07 17:06	06:59 18:08	06:36 20:14	05:22 21:16	04:34 22:08	04:42 22:11	05:35 21:19	06:37 20:02	07:38 18:41	07:44 16:26	08:42 15:45
9	08:53 16:05	08:05 17:09	06:56 18:11	06:33 20:16	05:20 21:18	04:34 22:09	04:43 22:10	05:37 21:17	06:39 19:59	07:40 18:38	07:46 16:24	08:43 15:44
10	08:53 16:06	08:02 17:11	06:53 18:13	06:31 20:18	05:18 21:20	04:33 22:10	04:44 22:09	05:39 21:15	06:41 19:56	07:42 18:36	07:49 16:22	08:45 15:44
11	08:52 16:08	08:00 17:13	06:51 18:15	06:28 20:20	05:16 21:22	04:32 22:11	04:46 22:08	05:41 21:13	06:43 19:53	07:44 18:33	07:51 16:20	08:46 15:44
12	08:51 16:10	07:58 17:15	06:48 18:17	06:25 20:22	05:14 21:24	04:32 22:12	04:47 22:07	05:43 21:10	06:45 19:51	07:46 18:30	07:53 16:19	08:47 15:43
13	08:50 16:12	07:56 17:18	06:45 18:19	06:23 20:24	05:12 21:26	04:31 22:13	04:49 22:06	05:45 21:08	06:47 19:48	07:48 18:28	07:55 16:17	08:48 15:43
14	08:49 16:13	07:53 17:20	06:43 18:21	06:20 20:26	05:10 21:28	04:31 22:13	04:50 22:05	05:47 21:05	06:49 19:45	07:50 18:25	07:57 16:15	08:49 15:43
15	08:48 16:15	07:51 17:22	06:40 18:23	06:18 20:28	05:08 21:30	04:31 22:14	04:51 22:03	05:49 21:03	06:51 19:43	07:52 18:23	07:59 16:13	08:50 15:43
16	08:47 16:17	07:49 17:24	06:37 18:26	06:15 20:30	05:06 21:32	04:30 22:15	04:53 22:02	05:51 21:01	06:53 19:40	07:54 18:20	08:01 16:11	08:51 15:43
17	08:45 16:19	07:46 17:27	06:35 18:28	06:12 20:33	05:04 21:34	04:30 22:15	04:54 22:01	05:53 20:58	06:55 19:37	07:56 18:18	08:03 16:09	08:52 15:43
18	08:44 16:21	07:44 17:29	06:32 18:30	06:10 20:35	05:02 21:36	04:30 22:16	04:56 21:59	05:55 20:56	06:57 19:35	07:59 18:15	08:06 16:08	08:53 15:43
19	08:43 16:23	07:42 17:31	06:29 18:32	06:07 20:37	05:00 21:38	04:30 22:16	04:58 21:58	05:57 20:53	06:59 19:32	08:01 18:13	08:08 16:06	08:54 15:43
20	08:41 16:25	07:39 17:33	06:27 18:34	06:05 20:39	04:59 21:39	04:30 22:16	04:59 21:56	05:59 20:51	07:01 19:29	08:03 18:10	08:10 16:05	08:55 15:44
21	08:40 16:27	07:37 17:36	06:24 18:36	06:02 20:41	04:57 21:41	04:30 22:17	05:01 21:54	06:01 20:48	07:03 19:26	08:05 18:08	08:12 16:03	08:55 15:44
22	08:38 16:29	07:34 17:38	06:21 18:38	06:00 20:43	04:55 21:43	04:30 22:17	05:03 21:53	06:03 20:46	07:05 19:24	08:07 18:05	08:14 16:01	08:56 15:45
23	08:37 16:31	07:32 17:40	06:19 18:40	05:57 20:45	04:54 21:45	04:31 22:17	05:04 21:51	06:05 20:43	07:07 19:21	08:09 18:03	08:16 16:00	08:56 15:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:55 20:47	04:52 21:47	04:31 22:17	05:06 21:49	06:07 20:41	07:09 19:18	08:11 18:00	08:18 15:59	08:57 15:46
25	08:34 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:31 22:17	05:08 21:48	06:09 20:38	07:11 19:16	08:14 18:16	08:20 15:57	08:57 15:46
26	08:32 16:38	07:24 17:47	06:11 18:47	05:50 20:51	04:49 21:50	04:32 22:17	05:10 21:46	06:11 20:36	07:13 19:13	08:16 18:15	08:22 15:56	08:57 15:47
27	08:30 16:40	07:22 17:49	06:08 18:49	05:47 20:53	04:47 21:52	04:32 22:17	05:12 21:44	06:13 20:33	07:15 19:10	08:18 18:10	08:24 16:53	08:57 15:48
28	08:29 16:42	07:19 17:51	06:05 18:51	05:45 20:56	04:46 21:53	04:33 22:17	05:13 21:42	06:15 20:31	07:17 19:07	08:20 18:05	08:25 16:51	08:58 15:49
29	08:27 16:44		07:03 19:53	05:43 20:58	04:45 21:55	04:34 22:17	05:15 21:40	06:17 20:28	07:19 19:05	08:22 18:05	08:27 16:48	08:58 15:50
30	08:25 16:46		07:00 19:55	05:40 21:00	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	08:24 18:05	08:29 16:46	08:58 15:51
31	08:23 16:48		06:57 19:57		04:42 21:58		05:19 21:36	06:21 20:23		07:27 18:05	07:27 16:44	08:58 15:52
Potential sun hours	235	266	366	426	508	529	530	470	385	323	247	216
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Virši - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (207)  
 Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 0,80 1,82 4,75 6,63 9,63 10,06 8,16 7,72 5,94 2,93 0,63 0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:51	07:17 17:53	06:54 19:59	05:38 21:02	04:41 21:59	04:35 22:15	05:21 21:34	06:23 20:20	07:23 18:59	07:29 16:41	08:30 15:50
2	08:57 15:55	08:19 16:53	07:14 17:55	06:52 20:01	05:36 21:04	04:40 22:00	04:36 22:15	05:23 21:32	06:25 20:17	07:25 18:57	07:31 16:39	08:32 15:49
3	08:57 15:56	08:17 16:55	07:12 17:58	06:49 20:03	05:33 21:06	04:39 22:02	04:37 22:14	05:25 21:30	06:27 20:15	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 18:00	06:46 20:05	05:31 21:08	04:38 22:03	04:38 22:14	05:27 21:28	06:29 20:12	07:29 18:51	07:35 16:35	08:36 15:48
5	08:56 15:59	08:13 17:00	07:06 18:02	06:44 20:07	05:29 21:10	04:37 22:04	04:39 22:13	05:29 21:26	06:31 20:09	07:31 18:49	07:37 16:33	08:37 15:47
6	08:55 16:00	08:11 17:02	07:04 18:04	06:41 20:09	05:27 21:12	04:36 22:05	04:40 22:12	05:31 21:24	06:33 20:07	07:33 18:46	07:40 16:31	08:39 15:46
7	08:55 16:02	08:09 17:04	07:01 18:06	06:38 20:11	05:24 21:14	04:35 22:07	04:41 22:12	05:33 21:21	06:35 20:04	07:35 18:43	07:42 16:28	08:40 15:45
8	08:54 16:03	08:07 17:06	06:59 18:08	06:36 20:13	05:22 21:16	04:34 22:08	04:42 22:11	05:35 21:19	06:37 20:01	07:37 18:41	07:44 16:26	08:42 15:45
9	08:53 16:05	08:04 17:09	06:56 18:10	06:33 20:16	05:20 21:18	04:34 22:09	04:43 22:10	05:37 21:17	06:39 19:59	07:40 18:38	07:46 16:24	08:43 15:44
10	08:52 16:06	08:02 17:11	06:53 18:13	06:31 20:18	05:18 21:20	04:33 22:10	04:45 22:09	05:39 21:15	06:41 19:56	07:42 18:35	07:48 16:22	08:44 15:44
11	08:51 16:08	08:00 17:13	06:51 18:15	06:28 20:20	05:16 21:22	04:32 22:11	04:46 22:08	05:41 21:12	06:43 19:53	07:44 18:33	07:50 16:20	08:46 15:44
12	08:51 16:10	07:58 17:15	06:48 18:17	06:25 20:22	05:14 21:24	04:32 22:12	04:47 22:07	05:43 21:10	06:45 19:51	07:46 18:30	07:53 16:18	08:47 15:43
13	08:50 16:12	07:56 17:18	06:45 18:19	06:23 20:24	05:12 21:26	04:31 22:12	04:49 22:05	05:45 21:08	06:47 19:48	07:48 18:28	07:55 16:17	08:48 15:43
14	08:49 16:13	07:53 17:20	06:43 18:21	06:20 20:26	05:10 21:28	04:31 22:13	04:50 22:04	05:47 21:05	06:49 19:45	07:50 18:25	07:57 16:15	08:49 15:43
15	08:47 16:15	07:51 17:22	06:40 18:23	06:17 20:28	05:08 21:30	04:31 22:14	04:51 22:03	05:49 21:03	06:51 19:43	07:52 18:23	07:59 16:13	08:50 15:43
16	08:46 16:17	07:49 17:24	06:37 18:25	06:15 20:30	05:06 21:32	04:31 22:14	04:53 22:02	05:51 21:00	06:53 19:40	07:54 18:20	08:01 16:11	08:51 15:43
17	08:45 16:19	07:46 17:27	06:35 18:27	06:12 20:32	05:04 21:34	04:30 22:15	04:54 22:00	05:53 20:58	06:55 19:37	07:56 18:17	08:03 16:09	08:52 15:43
18	08:44 16:21	07:44 17:29	06:32 18:30	06:10 20:34	05:02 21:36	04:30 22:15	04:56 21:59	05:55 20:56	06:57 19:34	07:58 18:15	08:05 16:08	08:53 15:43
19	08:42 16:23	07:41 17:31	06:29 18:32	06:07 20:36	05:00 21:37	04:30 22:16	04:58 21:57	05:57 20:53	06:59 19:32	08:01 18:12	08:07 16:06	08:54 15:43
20	08:41 16:25	07:39 17:33	06:27 18:34	06:05 20:39	04:59 21:39	04:30 22:16	04:59 21:56	05:59 20:51	07:01 19:29	08:03 18:10	08:09 16:04	08:54 15:44
21	08:40 16:27	07:37 17:36	06:24 18:36	06:02 20:41	04:57 21:41	04:30 22:16	05:01 21:54	06:01 20:48	07:03 19:26	08:05 18:07	08:11 16:03	08:55 15:44
22	08:38 16:29	07:34 17:38	06:21 18:38	06:00 20:43	04:55 21:43	04:31 22:17	05:03 21:53	06:03 20:46	07:05 19:24	08:07 18:05	08:14 16:01	08:55 15:45
23	08:37 16:31	07:32 17:40	06:19 18:40	05:57 20:45	04:54 21:45	04:31 22:17	05:04 21:51	06:05 20:43	07:07 19:21	08:09 18:03	08:16 16:00	08:56 15:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:55 20:47	04:52 21:46	04:31 22:17	05:06 21:49	06:07 20:41	07:09 19:18	08:11 18:00	08:17 15:59	08:56 15:46
25	08:33 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:31 22:17	05:08 21:47	06:09 20:38	07:11 19:15	08:13 18:05	08:19 15:57	08:57 15:46
26	08:32 16:37	07:24 17:47	06:11 18:46	05:50 20:51	04:49 21:50	04:32 22:17	05:10 21:46	06:11 20:36	07:13 19:13	08:15 18:05	08:21 15:56	08:57 15:47
27	08:30 16:40	07:22 17:49	06:08 18:48	05:47 20:53	04:47 21:51	04:32 22:17	05:12 21:44	06:13 20:33	07:15 19:10	08:18 18:03	08:23 16:53	08:57 15:48
28	08:28 16:42	07:19 17:51	06:05 18:51	05:45 20:55	04:46 21:53	04:33 22:16	05:13 21:42	06:15 20:30	07:17 19:07	08:20 18:01	08:25 16:51	08:57 15:49
29	08:26 16:44		07:02 19:53	05:43 20:57	04:45 21:54	04:34 22:16	05:15 21:40	06:17 20:28	07:19 19:05	08:22 18:05	08:27 16:48	08:57 15:50
30	08:25 16:46		07:00 19:55	05:40 20:59	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	08:24 18:00	08:29 16:46	08:57 15:51
31	08:23 16:48		06:57 19:57		04:42 21:58		05:19 21:36	06:21 20:23		07:26 16:44		08:57 15:52
Potential sun hours	235	266	366	426	508	529	530	470	385	324	247	216
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme

Shadow receptor: Veverzemnieki - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (219)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:50	07:16 17:53	06:54 19:59	05:38 21:01	04:41 21:59	04:35 22:15	05:21 21:34	06:23 20:20	07:23 18:59	07:28 16:41	08:30 15:50
2	08:57 15:54	08:19 16:53	07:14 17:55	06:51 20:01	05:35 21:03	04:40 22:00	04:36 22:15	05:23 21:32	06:25 20:17	07:25 18:56	07:31 16:39	08:32 15:49
3	08:56 15:56	08:17 16:55	07:11 17:57	06:49 20:03	05:33 21:05	04:39 22:01	04:37 22:14	05:25 21:30	06:27 20:14	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 17:59	06:46 20:05	05:31 21:08	04:38 22:03	04:37 22:14	05:27 21:28	06:29 20:12	07:29 18:51	07:35 16:35	08:35 15:47
5	08:55 15:58	08:13 16:59	07:06 18:02	06:43 20:07	05:29 21:10	04:37 22:04	04:38 22:13	05:28 21:25	06:31 20:09	07:31 18:48	07:37 16:32	08:37 15:47
6	08:55 16:00	08:11 17:02	07:04 18:04	06:41 20:09	05:26 21:12	04:36 22:05	04:40 22:12	05:30 21:23	06:33 20:06	07:33 18:46	07:39 16:30	08:38 15:46
7	08:54 16:01	08:08 17:04	07:01 18:06	06:38 20:11	05:24 21:14	04:35 22:06	04:41 22:11	05:32 21:21	06:35 20:04	07:35 18:43	07:42 16:28	08:40 15:45
8	08:54 16:03	08:06 17:06	06:58 18:08	06:36 20:13	05:22 21:16	04:34 22:07	04:42 22:10	05:34 21:19	06:37 20:01	07:37 18:40	07:44 16:26	08:41 15:45
9	08:53 16:04	08:04 17:08	06:56 18:10	06:33 20:15	05:20 21:18	04:33 22:09	04:43 22:10	05:36 21:17	06:39 19:58	07:39 18:38	07:46 16:24	08:43 15:44
10	08:52 16:06	08:02 17:11	06:53 18:12	06:30 20:17	05:18 21:20	04:33 22:10	04:44 22:09	05:38 21:14	06:41 19:56	07:41 18:35	07:48 16:22	08:44 15:44
11	08:51 16:08	08:00 17:13	06:50 18:15	06:28 20:20	05:16 21:22	04:32 22:10	04:46 22:07	05:40 21:12	06:43 19:53	07:43 18:33	07:50 16:20	08:45 15:43
12	08:50 16:09	07:58 17:15	06:48 18:17	06:25 20:22	05:14 21:24	04:32 22:11	04:47 22:06	05:42 21:10	06:45 19:50	07:46 18:30	07:52 16:18	08:47 15:43
13	08:49 16:11	07:55 17:17	06:45 18:19	06:22 20:24	05:12 21:26	04:31 22:12	04:48 22:05	05:44 21:07	06:47 19:48	07:48 18:27	07:54 16:16	08:48 15:43
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15	08:47 16:15	07:51 17:22	06:40 18:23	06:17 20:28	05:08 21:30	04:30 22:14	04:51 22:03	05:48 21:03	06:51 19:42	07:52 18:22	07:59 16:13	08:50 15:43
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17	08:45 16:19	07:46 17:26	06:34 18:27	06:12 20:32	05:04 21:33	04:30 22:15	04:54 22:00	05:52 20:58	06:55 19:37	07:56 18:17	08:03 16:09	08:52 15:43
18	08:44 16:21	07:44 17:29	06:32 18:29	06:10 20:34	05:02 21:35	04:30 22:15	04:56 21:59	05:54 20:55	06:57 19:34	07:58 18:15	08:05 16:07	08:53 15:43
19	08:42 16:23	07:41 17:31	06:29 18:31	06:07 20:36	05:00 21:37	04:30 22:16	04:57 21:57	05:56 20:53	06:59 19:31	08:00 18:12	08:07 16:06	08:53 15:43
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22	08:38 16:29	07:34 17:37	06:21 18:38	05:59 20:43	04:55 21:43	04:30 22:16	05:02 21:52	06:02 20:45	07:05 19:23	08:07 18:05	08:13 16:01	08:55 15:44
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24	08:35 16:33	07:29 17:42	06:16 18:42	05:54 20:47	04:52 21:46	04:31 22:17	05:06 21:49	06:07 20:40	07:09 19:18	08:11 18:00	08:17 15:58	08:56 15:45
25	08:33 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:31 22:17	05:08 21:47	06:09 20:38	07:11 19:15	08:13 18:15	08:19 15:57	08:56 15:46
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27	08:30 16:39	07:21 17:49	06:08 18:48	05:47 20:53	04:47 21:51	04:32 22:16	05:11 21:44	06:13 20:33	07:15 19:10	08:17 18:10	08:23 16:53	08:57 15:48
28	08:28 16:42	07:19 17:51	06:05 18:50	05:45 20:55	04:46 21:53	04:33 22:16	05:13 21:42	06:15 20:30	07:17 19:07	08:19 18:05	08:25 16:50	08:57 15:49
29	08:26 16:44		07:02 19:52	05:42 20:57	04:44 21:54	04:33 22:16	05:15 21:40	06:17 20:28	07:19 19:04	08:21 18:04	08:27 16:48	08:57 15:49
30	08:24 16:46		07:00 19:54	05:40 20:59	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	08:22 18:02	08:28 16:46	08:57 15:50
31	08:23 16:48		06:57 19:57		04:42 21:57		05:19 21:36	06:21 20:22		07:26 18:02	07:26 16:43	08:57 15:52
Potential sun hours	235	266	366	426	508	529	530	470	385	324	247	216
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Vitoli - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (238)  
 Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 0,80 1,82 4,75 6,63 9,63 10,06 8,16 7,72 5,94 2,93 0,63 0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:51	07:17 17:53	06:55 19:59	05:38 21:02	04:41 21:59	04:35 22:16	05:21 21:34	06:23 20:20	07:23 18:59	07:29 16:42	08:31 15:50
2	08:57 15:55	08:19 16:53	07:14 17:55	06:52 20:01	05:36 21:04	04:40 22:01	04:36 22:15	05:23 21:32	06:25 20:17	07:31 18:57	07:31 16:39	08:32 15:49
3	08:57 15:56	08:17 16:55	07:12 17:58	06:49 20:03	05:33 21:06	04:39 22:02	04:37 22:15	05:25 21:30	06:27 20:15	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 18:00	06:47 20:05	05:31 21:08	04:38 22:03	04:38 22:14	05:27 21:28	06:29 20:12	07:29 18:51	07:35 16:35	08:36 15:48
5	08:56 15:59	08:13 17:00	07:07 18:02	06:44 20:07	05:29 21:10	04:37 22:04	04:39 22:13	05:29 21:26	06:31 20:10	07:31 18:49	07:38 16:33	08:37 15:47
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7	08:55 16:02	08:09 17:04	07:01 18:06	06:39 20:12	05:24 21:14	04:35 22:07	04:41 22:12	05:33 21:22	06:35 20:04	07:36 18:43	07:42 16:29	08:40 15:46
8	08:54 16:03	08:07 17:06	06:59 18:08	06:36 20:14	05:22 21:16	04:34 22:08	04:42 22:11	05:35 21:19	06:37 20:02	07:38 18:41	07:44 16:27	08:42 15:45
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11	08:52 16:08	08:00 17:13	06:51 18:15	06:28 20:20	05:16 21:22	04:32 22:11	04:46 22:08	05:41 21:12	06:43 19:53	07:44 18:33	07:51 16:21	08:46 15:44
12	08:51 16:10	07:58 17:15	06:48 18:17	06:25 20:22	05:14 21:24	04:32 22:12	04:47 22:07	05:43 21:10	06:45 19:51	07:46 18:30	07:53 16:19	08:47 15:43
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16	08:46 16:17	07:49 17:24	06:37 18:26	06:15 20:30	05:06 21:32	04:31 22:15	04:53 22:02	05:51 21:01	06:53 19:40	07:54 18:20	08:01 16:11	08:51 15:43
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18	08:44 16:21	07:44 17:29	06:32 18:30	06:10 20:35	05:02 21:36	04:30 22:16	04:56 21:59	05:55 20:56	06:57 19:35	07:59 18:15	08:06 16:08	08:53 15:43
19	08:43 16:23	07:42 17:31	06:29 18:32	06:07 20:37	05:00 21:38	04:30 22:16	04:58 21:57	05:57 20:53	06:59 19:32	08:01 18:13	08:08 16:06	08:54 15:44
20	08:41 16:25	07:39 17:33	06:27 18:34	06:05 20:39	04:59 21:39	04:30 22:16	04:59 21:56	05:59 20:51	07:01 19:29	08:03 18:10	08:10 16:05	08:54 15:44
21	08:40 16:27	07:37 17:36	06:24 18:36	06:02 20:41	04:57 21:41	04:30 22:17	05:01 21:54	06:01 20:48	07:03 19:26	08:05 18:08	08:12 16:03	08:55 15:44
22	08:38 16:29	07:34 17:38	06:21 18:38	06:00 20:43	04:55 21:43	04:31 22:17	05:03 21:53	06:03 20:46	07:05 19:24	08:07 18:05	08:14 16:02	08:56 15:45
23	08:37 16:31	07:32 17:40	06:19 18:40	05:57 20:45	04:54 21:45	04:31 22:17	05:05 21:51	06:05 20:43	07:07 19:21	08:09 18:03	08:16 16:00	08:56 15:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:55 20:47	04:52 21:47	04:31 22:17	05:06 21:49	06:07 20:41	07:09 19:18	08:11 18:00	08:18 15:59	08:57 15:46
25	08:34 16:35	07:27 17:45	06:13 18:44	05:52 20:49	04:50 21:48	04:32 22:17	05:08 21:48	06:09 20:38	07:11 19:16	08:13 18:05	08:20 16:58	08:57 15:46
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28	08:28 16:42	07:19 17:51	06:05 18:51	05:45 20:55	04:46 21:53	04:33 22:17	05:14 21:42	06:15 20:31	07:17 19:08	08:20 18:01	08:25 16:51	08:58 15:49
29	08:27 16:44		07:03 19:53	05:43 20:58	04:45 21:55	04:34 22:16	05:15 21:40	06:17 20:28	07:19 19:05	08:22 18:05	08:27 16:48	08:58 15:50
30	08:25 16:46		07:00 19:55	05:40 21:00	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	08:24 18:00	08:29 16:46	08:58 15:51
31	08:23 16:49		06:57 19:57		04:42 21:58		05:19 21:36	06:21 20:23		07:27 16:44		08:57 15:52
Potential sun hours	235	266	366	426	508	529	530	470	385	323	247	216
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Zarini - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (183)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December		
1	08:57 15:53	08:21 16:50	07:16 17:53	06:54 19:59	05:38 21:01	04:41 21:59	20:50 (4) 21:13 (4)	04:35 22:15	20:57 (4) 21:18 (4)	05:21 21:34	06:23 20:20	07:23 18:59	07:28 16:41	08:30 15:50
2	08:57 15:54	08:19 16:53	07:14 17:55	06:52 20:01	05:35 21:03	04:40 22:00	20:50 (4) 21:13 (4)	04:36 22:15	20:57 (4) 21:18 (4)	05:23 21:32	06:25 20:17	07:25 18:56	07:31 16:39	08:32 15:49
3	08:56 15:56	08:17 16:55	07:11 17:57	06:49 20:03	05:33 21:06	04:39 22:02	20:50 (4) 21:13 (4)	04:37 22:14	20:57 (4) 21:19 (4)	05:25 21:30	06:27 20:14	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 17:59	06:46 20:05	05:31 21:08	04:37 22:03	20:51 (4) 21:14 (4)	04:37 22:14	20:57 (4) 21:19 (4)	05:27 21:28	06:29 20:12	07:29 18:51	07:35 16:35	08:35 15:47
5	08:56 15:58	08:13 16:59	07:06 18:02	06:44 20:07	05:29 21:10	04:37 22:04	20:51 (4) 21:14 (4)	04:38 22:13	20:57 (4) 21:20 (4)	05:28 21:26	06:31 20:09	07:31 18:48	07:37 16:32	08:37 15:47
6	08:55 16:00	08:11 17:02	07:04 18:04	06:41 20:09	05:26 21:12	04:36 22:05	20:51 (4) 21:14 (4)	04:40 22:12	20:58 (4) 21:20 (4)	05:30 21:23	06:33 20:07	07:33 18:46	07:39 16:30	08:39 15:46
7	08:54 16:01	08:09 17:04	07:01 18:06	06:38 20:11	05:24 21:14	04:35 22:07	20:51 (4) 21:13 (4)	04:41 22:11	20:58 (4) 21:20 (4)	05:32 21:21	06:35 20:04	07:35 18:43	07:42 16:28	08:40 15:45
8	08:54 16:03	08:06 17:06	06:58 18:08	06:36 20:13	05:22 21:16	04:34 22:08	20:52 (4) 21:14 (4)	04:42 22:11	20:58 (4) 21:20 (4)	05:34 21:19	06:37 20:01	07:37 18:41	07:44 16:26	08:41 15:45
9	08:53 16:04	08:04 17:08	06:56 18:10	06:33 20:15	05:20 21:18	04:33 22:09	20:52 (4) 21:13 (4)	04:43 22:10	20:58 (4) 21:20 (4)	05:36 21:17	06:39 19:58	07:39 18:38	07:46 16:24	08:43 15:44
10	08:52 16:06	08:02 17:11	06:53 18:12	06:30 20:17	05:18 21:20	04:33 22:10	20:53 (4) 21:14 (4)	04:44 22:09	20:57 (4) 21:21 (4)	05:38 21:14	06:41 19:56	07:41 18:35	07:48 16:22	08:44 15:44
11	08:51 16:08	08:00 17:13	06:50 18:15	06:28 20:20	05:16 21:22	04:32 22:11	20:52 (4) 21:13 (4)	04:46 22:08	20:57 (4) 21:21 (4)	05:40 21:12	06:43 19:53	07:43 18:33	07:50 16:20	08:45 15:43
12	08:50 16:09	07:58 17:15	06:48 18:17	06:25 20:22	05:14 21:24	04:32 22:11	20:53 (4) 21:14 (4)	04:47 22:06	20:58 (4) 21:22 (4)	05:42 21:10	6 06:45 20:03 (3)	07:46 19:50	07:52 16:18	08:47 15:43
13	08:49 16:11	07:55 17:17	06:45 18:19	06:22 20:24	05:12 21:26	04:31 22:12	20:54 (4) 21:14 (4)	04:48 22:05	20:58 (4) 21:21 (4)	05:44 21:07	12 06:47 20:05 (3)	07:48 19:48	07:55 16:16	08:48 15:43
14	08:48 16:13	07:53 17:20	06:42 18:21	06:20 20:26	7 05:10 19:57 (3)	04:31 22:13	20:54 (4) 21:14 (4)	04:50 22:04	20:58 (4) 21:21 (4)	05:46 21:05	16 06:49 20:07 (3)	07:50 19:45	07:57 16:15	08:49 15:43
15	08:47 16:15	07:51 17:22	06:40 18:23	06:17 20:28	11 05:08 19:47 (3)	04:30 22:14	20:54 (4) 21:14 (4)	04:51 22:03	20:59 (4) 21:22 (4)	05:48 21:03	18 06:51 20:08 (3)	07:52 19:42	07:59 16:13	08:50 15:43
16	08:46 16:17	07:48 17:24	06:37 18:25	06:15 20:30	15 05:06 19:45 (3)	04:30 22:14	20:54 (4) 21:14 (4)	04:53 22:01	20:59 (4) 21:21 (4)	05:50 21:00	20 06:53 20:09 (3)	07:54 19:40	08:01 16:11	08:51 15:43
17	08:45 16:19	07:46 17:26	06:34 18:27	06:12 20:32	19 05:04 19:43 (3)	20:57 (4) 20:58 (4)	04:30 22:15	04:54 22:00	20:59 (4) 21:21 (4)	05:52 20:58	21 06:55 20:09 (3)	07:56 19:37	08:03 16:09	08:52 15:43
18	08:44 16:21	07:44 17:29	06:32 18:29	06:10 20:34	19 05:02 19:43 (3)	20:55 (4) 21:00 (4)	04:30 22:15	04:56 21:59	20:59 (4) 21:21 (4)	05:54 20:55	23 06:57 20:10 (3)	07:58 19:34	08:05 16:07	08:53 15:43
19	08:42 16:23	07:41 17:31	06:29 18:32	06:07 20:36	21 05:00 19:41 (3)	20:54 (4) 21:02 (4)	04:30 22:16	04:57 21:57	20:59 (4) 21:20 (4)	05:56 20:53	23 06:59 20:10 (3)	08:00 19:31	08:07 16:06	08:53 15:43
20	08:41 16:25	07:39 17:33	06:26 18:34	06:04 20:38	23 05:00 19:41 (3)	20:54 (4) 21:03 (4)	04:30 22:16	04:59 21:56	21:00 (4) 21:19 (4)	05:58 20:51	24 07:01 20:10 (3)	08:02 19:29	08:09 16:04	08:54 15:43
21	08:39 16:27	07:36 17:35	06:24 18:36	06:02 20:41	24 05:00 19:40 (3)	20:52 (4) 21:04 (3)	04:30 22:16	05:01 21:54	21:00 (4) 21:17 (4)	06:00 20:48	24 07:03 20:09 (3)	08:05 19:26	08:11 16:03	08:55 15:44
22	08:38 16:29	07:34 17:38	06:21 18:38	05:59 20:43	25 05:00 19:40 (3)	20:51 (4) 21:06 (4)	04:30 22:17	05:02 21:52	21:02 (4) 21:16 (4)	06:03 20:46	24 07:05 20:09 (3)	08:07 19:23	08:13 16:01	08:55 15:44
23	08:36 16:31	07:32 17:40	06:18 18:40	05:57 20:45	24 05:00 19:41 (3)	20:51 (4) 21:08 (4)	04:30 22:17	05:04 21:51	21:02 (4) 21:14 (4)	06:05 20:43	24 07:07 20:09 (3)	08:09 19:21	08:15 16:00	08:56 15:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:54 20:47	23 05:00 19:40 (3)	20:50 (4) 21:09 (4)	04:31 22:17	05:06 21:49	21:03 (4) 21:13 (4)	06:07 20:40	24 07:09 20:08 (3)	08:11 19:18	08:17 15:58	08:56 15:45
25	08:33 16:35	07:27 17:44	06:13 18:44	05:52 20:49	22 05:00 19:41 (3)	20:50 (4) 21:11 (4)	04:31 22:17	05:08 21:47	21:05 (4) 21:11 (4)	06:09 20:38	21 07:11 20:07 (3)	08:19 19:15	08:57 16:57	08:57 15:46
26	08:32 16:37	07:24 17:46	06:10 18:46	05:50 20:51	22 05:00 19:41 (3)	20:50 (4) 21:12 (4)	04:32 22:17	05:09 21:45	21:06 (4) 21:16 (4)	06:11 20:35	18 07:13 20:04 (3)	08:21 19:13	08:57 16:55	08:57 15:47
27	08:30 16:39	07:22 17:49	06:08 18:48	05:47 20:53	20 05:00 19:42 (3)	20:49 (4) 21:12 (4)	04:32 22:17	05:11 21:44	20:57 (4) 21:17 (4)	06:13 20:33	15 07:15 20:02 (3)	08:23 19:10	08:57 16:53	08:57 15:48
28	08:28 16:42	07:19 17:51	06:05 18:50	05:45 20:55	18 05:00 19:44 (3)	20:49 (4) 21:12 (4)	04:33 22:16	05:13 21:42	20:57 (4) 21:17 (4)	06:15 20:30	11 07:17 20:00 (3)	08:25 19:07	08:57 16:50	08:57 15:49
29	08:26 16:44	07:02 17:52	05:42 18:50	05:42 20:57	15 05:00 19:44 (3)	20:49 (4) 21:13 (4)	04:33 22:16	05:15 21:40	20:57 (4) 21:17 (4)	06:17 20:28	6 07:19 19:51 (3)	08:27 19:04	08:57 16:48	08:57 15:49
30	08:24 16:46	07:00 17:55	05:40 18:55	05:40 20:59	11 05:00 19:46 (3)	20:49 (4) 21:13 (4)	04:34 22:16	05:17 21:38	20:57 (4) 21:18 (4)	06:19 20:25	19 07:21 19:02	08:29 16:46	08:57 15:51	08:57 15:50
31	08:23 16:48	06:57 17:57	05:39 18:57	05:39 20:59	23 05:00 19:57 (3)	20:50 (4) 21:13 (4)	04:34 22:16	05:19 21:38	20:59 (4) 21:19 (4)	06:21 20:22	20 07:23 19:04	08:30 16:48	08:57 15:52	08:57 15:52
Potential sun hours	235	266	366	426	508	529	620	530	470	385	323	247	216	
Total, worst case				324	248		620		329					
Sun reduction				0,47	0,59		0,57		0,51					
Oper. time red.				1,00	1,00		1,00		1,00					
Wind dir. red.				1,00	1,00		1,00		1,00					
Total reduction				0,47	0,59		0,57		0,48		0,51			
Total, real				151	146		353		242		168			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)



Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Zeltini - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (175)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:50	07:16 17:53	06:54 19:59	05:38 21:01	04:41 21:59	04:35 22:15	05:21 21:34	06:23 20:20	07:23 18:59	07:28 16:41	08:30 15:50
2	08:57 15:54	08:19 16:53	07:14 17:55	06:51 20:01	05:35 21:03	04:39 22:00	04:36 22:15	05:23 21:32	06:25 20:17	07:31 18:56	07:31 16:39	08:32 15:49
3	08:56 15:55	08:17 16:55	07:11 17:57	06:49 20:03	05:33 21:06	04:38 22:02	04:36 22:14	05:24 21:30	06:27 20:14	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 17:59	06:46 20:05	05:31 21:08	04:37 22:03	04:37 22:14	05:26 21:28	06:29 20:12	07:29 18:51	07:35 16:35	08:35 15:47
5	08:56 15:58	08:13 16:59	07:06 18:02	06:43 20:07	05:28 21:10	04:36 22:04	04:38 22:13	05:28 21:26	06:31 20:09	07:31 18:48	07:37 16:32	08:37 15:46
6	08:55 16:00	08:11 17:01	07:04 18:04	06:41 20:09	05:26 21:12	04:36 22:05	04:39 22:12	05:30 21:23	06:33 20:06	07:33 18:46	07:39 16:30	08:38 15:46
7	08:54 16:01	08:09 17:04	07:01 18:06	06:38 20:11	05:24 21:14	04:35 22:06	04:40 22:11	05:32 21:21	06:35 20:04	07:35 18:43	07:42 16:28	08:40 15:45
8	08:54 16:03	08:06 17:06	06:58 18:08	06:35 20:13	05:22 21:16	04:34 22:08	04:42 22:11	05:34 21:19	06:37 20:01	07:37 18:40	07:44 16:26	08:41 15:45
9	08:53 16:04	08:04 17:08	06:56 18:10	06:33 20:15	05:20 21:18	04:33 22:09	04:43 22:10	05:36 21:17	06:39 19:58	07:39 18:38	07:46 16:24	08:43 15:44
10	08:52 16:06	08:02 17:11	06:53 18:12	06:30 20:17	05:18 21:20	04:33 22:10	04:44 22:09	05:38 21:14	06:41 19:56	07:41 18:35	07:48 16:22	08:44 15:44
11	08:51 16:08	08:00 17:13	06:50 18:14	06:28 20:20	05:16 21:22	04:32 22:11	04:45 22:08	05:40 21:12	06:43 19:53	07:43 18:33	07:50 16:20	08:45 15:43
12	08:50 16:09	07:58 17:15	06:48 18:17	06:25 20:22	05:13 21:24	04:31 22:11	04:47 22:06	05:42 21:10	06:45 19:50	07:46 18:30	07:52 16:18	08:47 15:43
13	08:49 16:11	07:55 17:17	06:45 18:19	06:22 20:24	05:11 21:26	04:31 22:12	04:48 22:05	05:44 21:07	06:47 19:48	07:48 18:27	07:55 16:16	08:48 15:43
14	08:48 16:13	07:53 17:20	06:42 18:21	06:20 20:26	05:09 21:28	04:31 22:13	04:50 22:04	05:46 21:05	06:49 19:45	07:50 18:25	07:57 16:14	08:49 15:43
15	08:47 16:15	07:51 17:22	06:40 18:23	06:17 20:28	05:07 21:30	04:30 22:14	04:51 22:03	05:48 21:03	06:51 19:42	07:52 18:22	07:59 16:13	08:50 15:43
16	08:46 16:17	07:48 17:24	06:37 18:25	06:15 20:30	05:06 21:32	04:30 22:14	04:53 22:01	05:50 21:00	06:53 19:40	07:54 18:20	08:01 16:11	08:51 15:43
17	08:45 16:19	07:46 17:26	06:34 18:27	06:12 20:32	05:04 21:33	04:30 22:15	04:54 22:00	05:52 20:58	06:55 19:37	07:56 18:17	08:03 16:09	08:52 15:43
18	08:44 16:21	07:44 17:29	06:32 18:29	06:09 20:34	05:02 21:35	04:30 22:15	04:56 21:59	05:54 20:55	06:57 19:34	07:58 18:15	08:05 16:07	08:53 15:43
19	08:42 16:23	07:41 17:31	06:29 18:31	06:07 20:36	05:00 21:37	04:30 22:16	04:57 21:57	05:56 20:53	06:59 19:31	08:00 18:12	08:07 16:06	08:53 15:43
20	08:41 16:25	07:39 17:33	06:26 18:34	06:04 20:38	04:58 21:39	04:30 22:16	04:59 21:56	05:58 20:50	07:01 19:29	08:02 18:10	08:09 16:04	08:54 15:43
21	08:39 16:27	07:36 17:35	06:24 18:36	06:02 20:40	04:57 21:41	04:30 22:16	05:01 21:54	06:00 20:48	07:03 19:26	08:05 18:07	08:11 16:03	08:55 15:44
22	08:38 16:29	07:34 17:37	06:21 18:38	05:59 20:43	04:55 21:43	04:30 22:17	05:02 21:52	06:02 20:45	07:05 19:23	08:07 18:05	08:13 16:01	08:55 15:44
23	08:36 16:31	07:32 17:40	06:18 18:40	05:57 20:45	04:53 21:44	04:30 22:17	05:04 21:51	06:04 20:43	07:07 19:21	08:09 18:02	08:15 16:00	08:56 15:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:54 20:47	04:52 21:46	04:31 22:17	05:06 21:49	06:06 20:40	07:09 19:18	08:11 18:00	08:17 15:58	08:56 15:45
25	08:33 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:31 22:17	05:08 21:47	06:08 20:38	07:11 19:15	08:13 18:05	08:19 15:57	08:57 15:46
26	08:32 16:37	07:24 17:46	06:10 18:46	05:50 20:51	04:49 21:50	04:32 22:17	05:09 21:45	06:10 20:35	07:13 19:12	08:15 18:05	08:21 15:56	08:57 15:47
27	08:30 16:39	07:22 17:48	06:08 18:48	05:47 20:53	04:47 21:51	04:32 22:17	05:11 21:44	06:13 20:33	07:15 19:10	08:18 18:05	08:23 15:54	08:57 15:48
28	08:28 16:41	07:19 17:51	06:05 18:50	05:45 20:55	04:46 21:53	04:33 22:16	05:13 21:42	06:15 20:30	07:17 19:07	08:20 18:00	08:25 15:53	08:57 15:48
29	08:26 16:44		07:02 19:52	05:42 20:57	04:44 21:54	04:33 22:16	05:15 21:40	06:17 20:28	07:19 19:04	08:22 18:04	08:27 15:52	08:57 15:49
30	08:24 16:46		06:59 19:54	05:40 20:59	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	08:24 18:05	08:29 15:51	08:57 15:50
31	08:23 16:48		06:57 19:57		04:42 21:57		05:19 21:36	06:21 20:22		07:26 18:06		08:57 15:51
Potential sun hours	235	266	366	426	508	529	530	470	385	323	247	216
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Ziemeļnieki - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (180)  
 Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 0,80 1,82 4,75 6,63 9,63 10,06 8,16 7,72 5,94 2,93 0,63 0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:50	07:16 17:53	06:54 19:59	05:38 21:01	04:40 21:59	04:34 22:16	05:20 21:34	06:23 20:20	07:23 18:59	07:29 16:41	08:31 15:50
2	08:57 15:54	08:19 16:52	07:14 17:55	06:51 20:01	05:35 21:04	04:39 22:00	04:35 22:15	05:22 21:32	06:25 20:17	07:25 18:56	07:31 16:39	08:32 15:49
3	08:57 15:55	08:17 16:55	07:11 17:57	06:49 20:03	05:33 21:06	04:38 22:02	04:36 22:15	05:24 21:30	06:27 20:15	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 17:59	06:46 20:05	05:31 21:08	04:37 22:03	04:37 22:14	05:26 21:28	06:29 20:12	07:29 18:51	07:35 16:34	08:36 15:47
5	08:56 15:58	08:13 16:59	07:06 18:02	06:43 20:07	05:28 21:10	04:36 22:04	04:38 22:13	05:28 21:26	06:31 20:09	07:31 18:48	07:37 16:32	08:37 15:46
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7	08:55 16:01	08:09 17:04	07:01 18:06	06:38 20:11	05:24 21:14	04:35 22:07	04:40 22:12	05:32 21:21	06:35 20:04	07:35 18:43	07:42 16:28	08:40 15:45
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11	08:51 16:07	08:00 17:13	06:50 18:14	06:28 20:20	05:15 21:22	04:32 22:11	04:45 22:08	05:40 21:12	06:43 19:53	07:43 18:33	07:50 16:20	08:46 15:43
12	08:51 16:09	07:58 17:15	06:48 18:17	06:25 20:22	05:13 21:24	04:31 22:12	04:47 22:07	05:42 21:10	06:45 19:50	07:46 18:30	07:53 16:18	08:47 15:43
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14	08:49 16:13	07:53 17:19	06:42 18:21	06:20 20:26	05:09 21:28	04:30 22:13	04:49 22:04	05:46 21:05	06:49 19:45	07:50 18:25	07:57 16:14	08:49 15:42
15	08:47 16:15	07:51 17:22	06:40 18:23	06:17 20:28	05:07 21:30	04:30 22:14	04:51 22:03	05:48 21:03	06:51 19:42	07:52 18:22	07:59 16:12	08:50 15:42
16	08:46 16:17	07:48 17:24	06:37 18:25	06:15 20:30	05:05 21:32	04:30 22:14	04:52 22:02	05:50 21:00	06:53 19:40	07:54 18:20	08:01 16:11	08:51 15:42
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18	08:44 16:20	07:44 17:28	06:32 18:29	06:09 20:34	05:02 21:36	04:30 22:16	04:56 21:59	05:54 20:56	06:57 19:34	07:58 18:15	08:05 16:07	08:53 15:43
19	08:42 16:22	07:41 17:31	06:29 18:31	06:07 20:36	05:00 21:37	04:30 22:16	04:57 21:57	05:56 20:53	06:59 19:31	08:00 18:12	08:07 16:06	08:54 15:43
20	08:41 16:24	07:39 17:33	06:26 18:34	06:04 20:38	04:58 21:39	04:30 22:16	04:59 21:56	05:58 20:51	07:01 19:29	08:02 18:10	08:09 16:04	08:54 15:43
21	08:40 16:26	07:37 17:35	06:24 18:36	06:02 20:41	04:56 21:41	04:30 22:17	05:00 21:54	06:00 20:48	07:03 19:26	08:05 18:07	08:11 16:02	08:55 15:44
22	08:38 16:29	07:34 17:37	06:21 18:38	05:59 20:43	04:55 21:43	04:30 22:17	05:02 21:53	06:02 20:46	07:05 19:23	08:07 18:05	08:14 16:01	08:56 15:44
23	08:37 16:31	07:32 17:40	06:18 18:40	05:57 20:45	04:53 21:45	04:30 22:17	05:04 21:51	06:04 20:43	07:07 19:21	08:09 18:02	08:16 15:59	08:56 15:45
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25	08:33 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:31 22:17	05:07 21:47	06:08 20:38	07:11 19:15	08:13 18:15	08:19 15:57	08:57 15:46
26	08:32 16:37	07:24 17:46	06:10 18:46	05:49 20:51	04:48 21:50	04:31 22:17	05:09 21:46	06:10 20:35	07:13 19:13	08:15 18:15	08:21 15:55	08:57 15:47
27	08:30 16:39	07:22 17:48	06:08 18:48	05:47 20:53	04:47 21:51	04:32 22:17	05:11 21:44	06:12 20:33	07:15 19:10	08:18 18:10	08:23 16:53	08:57 15:47
28	08:28 16:41	07:19 17:51	06:05 18:50	05:45 20:55	04:46 21:53	04:32 22:17	05:13 21:42	06:14 20:30	07:17 19:07	08:20 18:10	08:25 16:50	08:57 15:48
29	08:26 16:44		07:02 19:52	05:42 20:57	04:44 21:55	04:33 22:16	05:15 21:40	06:16 20:28	07:19 19:04	08:22 18:15	08:27 16:48	08:57 15:49
30	08:25 16:46		06:59 19:55	05:40 20:59	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	08:24 18:15	08:29 16:46	08:57 15:50
31	08:23 16:48		06:57 19:57		04:42 21:58		05:19 21:36	06:21 20:22		07:26 18:15		08:57 15:51
Potential sun hours	235	266	366	426	508	530	530	470	385	323	247	215
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Zustreni - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (187)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:51	07:17 17:53	06:54 19:59	05:38 21:02	04:41 21:59	04:35 22:15	05:21 21:34	06:23 20:20	07:23 18:59	07:29 16:41	08:30 15:50
2	08:57 15:55	08:19 16:53	07:14 17:55	06:52 20:01	05:36 21:04	04:40 22:00	04:36 22:15	05:23 21:32	06:25 20:17	07:25 18:57	07:31 16:39	08:32 15:49
3	08:56 15:56	08:17 16:55	07:12 17:57	06:49 20:03	05:33 21:06	04:39 22:02	04:37 22:14	05:25 21:30	06:27 20:15	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 18:00	06:46 20:05	05:31 21:08	04:38 22:03	04:38 22:14	05:27 21:28	06:29 20:12	07:29 18:51	07:35 16:35	08:35 15:48
5	08:56 15:59	08:13 17:00	07:06 18:02	06:44 20:07	05:29 21:10	04:37 22:04	04:39 22:13	05:29 21:26	06:31 20:09	07:31 18:49	07:37 16:33	08:37 15:47
6	08:55 16:00	08:11 17:02	07:04 18:04	06:41 20:09	05:27 21:12	04:36 22:05	04:40 22:12	05:31 21:23	06:33 20:07	07:33 18:46	07:40 16:31	08:39 15:46
7	08:55 16:01	08:09 17:04	07:01 18:06	06:38 20:11	05:24 21:14	04:35 22:07	04:41 22:12	05:33 21:21	06:35 20:04	07:35 18:43	07:42 16:28	08:40 15:45
8	08:54 16:03	08:07 17:06	06:59 18:08	06:36 20:13	05:22 21:16	04:34 22:08	04:42 22:11	05:35 21:19	06:37 20:01	07:37 18:41	07:44 16:26	08:42 15:45
9	08:53 16:05	08:04 17:09	06:56 18:10	06:33 20:16	05:20 21:18	04:34 22:09	04:43 22:10	05:37 21:17	06:39 19:59	07:39 18:38	07:46 16:24	08:43 15:44
10	08:52 16:06	08:02 17:11	06:53 18:13	06:30 20:18	05:18 21:20	04:33 22:10	04:44 22:09	05:39 21:15	06:41 19:56	07:42 18:35	07:48 16:22	08:44 15:44
11	08:51 16:08	08:00 17:13	06:51 18:15	06:28 20:20	05:16 21:22	04:32 22:11	04:46 22:08	05:41 21:12	06:43 19:53	07:44 18:33	07:50 16:20	08:46 15:44
12	08:51 16:10	07:58 17:15	06:48 18:17	06:25 20:22	05:14 21:24	04:32 22:12	04:47 22:07	05:43 21:10	06:45 19:51	07:46 18:30	07:53 16:18	08:47 15:43
13	08:50 16:11	07:56 17:18	06:45 18:19	06:23 20:24	05:12 21:26	04:31 22:12	04:48 22:05	05:45 21:08	06:47 19:48	07:48 18:28	07:55 16:17	08:48 15:43
14	08:48 16:13	07:53 17:20	06:43 18:21	06:20 20:26	05:10 21:28	04:31 22:13	04:50 22:04	05:47 21:05	06:49 19:45	07:50 18:25	07:57 16:15	08:49 15:43
15	08:47 16:15	07:51 17:22	06:40 18:23	06:17 20:28	05:08 21:30	04:31 22:14	04:51 22:03	05:49 21:03	06:51 19:42	07:52 18:23	07:59 16:13	08:50 15:43
16	08:46 16:17	07:49 17:24	06:37 18:25	06:15 20:30	05:06 21:32	04:30 22:14	04:53 22:02	05:51 21:00	06:53 19:40	07:54 18:20	08:01 16:11	08:51 15:43
17	08:45 16:19	07:46 17:27	06:35 18:27	06:12 20:32	05:04 21:34	04:30 22:15	04:54 22:00	05:53 20:58	06:55 19:37	07:56 18:17	08:03 16:09	08:52 15:43
18	08:44 16:21	07:44 17:29	06:32 18:30	06:10 20:34	05:02 21:36	04:30 22:15	04:56 21:59	05:55 20:56	06:57 19:34	07:58 18:15	08:05 16:08	08:53 15:43
19	08:42 16:23	07:41 17:31	06:29 18:32	06:07 20:36	05:00 21:37	04:30 22:16	04:58 21:57	05:57 20:53	06:59 19:32	08:00 18:12	08:07 16:06	08:54 15:43
20	08:41 16:25	07:39 17:33	06:27 18:34	06:05 20:39	04:59 21:39	04:30 22:16	04:59 21:56	05:59 20:51	07:01 19:29	08:03 18:10	08:09 16:04	08:54 15:44
21	08:40 16:27	07:37 17:35	06:24 18:36	06:02 20:41	04:57 21:41	04:30 22:16	05:01 21:54	06:01 20:48	07:03 19:26	08:05 18:07	08:11 16:03	08:55 15:44
22	08:38 16:29	07:34 17:38	06:21 18:38	06:00 20:43	04:55 21:43	04:30 22:17	05:03 21:53	06:03 20:46	07:05 19:24	08:07 18:05	08:13 16:01	08:55 15:45
23	08:37 16:31	07:32 17:40	06:19 18:40	05:57 20:45	04:54 21:45	04:31 22:17	05:04 21:51	06:05 20:43	07:07 19:21	08:09 18:03	08:15 16:00	08:56 15:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:55 20:47	04:52 21:46	04:31 22:17	05:06 21:49	06:07 20:41	07:09 19:18	08:11 18:00	08:17 15:59	08:56 15:46
25	08:33 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:31 22:17	05:08 21:47	06:09 20:38	07:11 19:15	08:13 18:05	08:19 15:57	08:57 15:46
26	08:32 16:37	07:24 17:47	06:10 18:46	05:50 20:51	04:49 21:50	04:32 22:17	05:10 21:46	06:11 20:35	07:13 19:13	08:16 18:05	08:21 15:56	08:57 15:47
27	08:30 16:40	07:22 17:49	06:08 18:48	05:47 20:53	04:47 21:51	04:32 22:17	05:12 21:44	06:13 20:33	07:15 19:10	08:18 18:03	08:23 16:53	08:57 15:48
28	08:28 16:42	07:19 17:51	06:05 18:51	05:45 20:55	04:46 21:53	04:33 22:16	05:13 21:42	06:15 20:30	07:17 19:07	08:20 18:01	08:25 16:51	08:57 15:49
29	08:26 16:44		07:02 19:53	05:43 20:57	04:45 21:54	04:34 22:16	05:15 21:40	06:17 20:28	07:19 19:05	08:22 18:05	08:27 16:48	08:57 15:50
30	08:25 16:46		07:00 19:55	05:40 20:59	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	08:24 18:00	08:29 16:46	08:57 15:51
31	08:23 16:48		06:57 19:57		04:42 21:57		05:19 21:36	06:21 20:23		07:26 18:59	07:26 16:44	08:57 15:52
Potential sun hours	235	266	366	426	508	529	530	470	385	324	247	216
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Zviedri - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (196)  
 Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 0,80 1,82 4,75 6,63 9,63 10,06 8,16 7,72 5,94 2,93 0,63 0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57	08:21	07:17	06:54	05:38	04:41	04:35	05:21	06:23	07:23	07:29	08:31
	15:53	16:51	17:53	19:59	21:02	21:59	22:15	21:34	20:20	18:59	16:41	15:50
2	08:57	08:19	07:14	06:52	05:36	04:40	04:36	05:23	06:25	07:25	07:31	08:32
	15:55	16:53	17:55	20:01	21:04	22:00	22:15	21:32	20:17	18:57	16:39	15:49
3	08:57	08:17	07:12	06:49	05:33	04:39	04:37	05:25	06:27	07:27	07:33	08:34
	15:56	16:55	17:58	20:03	21:06	22:02	22:14	21:30	20:15	18:54	16:37	15:48
4	08:56	08:15	07:09	06:46	05:31	04:38	04:38	05:27	06:29	07:29	07:35	08:36
	15:57	16:57	18:00	20:05	21:08	22:03	22:14	21:28	20:12	18:51	16:35	15:48
5	08:56	08:13	07:06	06:44	05:29	04:37	04:39	05:29	06:31	07:31	07:37	08:37
	15:59	17:00	18:02	20:07	21:10	22:04	22:13	21:26	20:09	18:49	16:33	15:47
6	08:55	08:11	07:04	06:41	05:27	04:36	04:40	05:31	06:33	07:33	07:40	08:39
	16:00	17:02	18:04	20:09	21:12	22:06	22:12	21:24	20:07	18:46	16:31	15:46
7	08:55	08:09	07:01	06:38	05:24	04:35	04:41	05:33	06:35	07:35	07:42	08:40
	16:02	17:04	18:06	20:11	21:14	22:07	22:12	21:21	20:04	18:43	16:28	15:45
8	08:54	08:07	06:59	06:36	05:22	04:34	04:42	05:35	06:37	07:37	07:44	08:42
	16:03	17:06	18:08	20:14	21:16	22:08	22:11	21:19	20:01	18:41	16:26	15:45
9	08:53	08:04	06:56	06:33	05:20	04:34	04:43	05:37	06:39	07:40	07:46	08:43
	16:05	17:09	18:11	20:16	21:18	22:09	22:10	21:17	19:59	18:38	16:24	15:44
10	08:52	08:02	06:53	06:31	05:18	04:33	04:44	05:39	06:41	07:42	07:48	08:44
	16:06	17:11	18:13	20:18	21:20	22:10	22:09	21:15	19:56	18:36	16:22	15:44
11	08:52	08:00	06:51	06:28	05:16	04:32	04:46	05:41	06:43	07:44	07:50	08:46
	16:08	17:13	18:15	20:20	21:22	22:11	22:08	21:12	19:53	18:33	16:20	15:44
12	08:51	07:58	06:48	06:25	05:14	04:32	04:47	05:43	06:45	07:46	07:53	08:47
	16:10	17:15	18:17	20:22	21:24	22:12	22:07	21:10	19:51	18:30	16:19	15:43
13	08:50	07:56	06:45	06:23	05:12	04:31	04:49	05:45	06:47	07:48	07:55	08:48
	16:12	17:18	18:19	20:24	21:26	22:12	22:06	21:08	19:48	18:28	16:17	15:43
14	08:49	07:53	06:43	06:20	05:10	04:31	04:50	05:47	06:49	07:50	07:57	08:49
	16:13	17:20	18:21	20:26	21:28	22:13	22:04	21:05	19:45	18:25	16:15	15:43
15	08:47	07:51	06:40	06:17	05:08	04:31	04:51	05:49	06:51	07:52	07:59	08:50
	16:15	17:22	18:23	20:28	21:30	22:14	22:03	21:03	19:43	18:23	16:13	15:43
16	08:46	07:49	06:37	06:15	05:06	04:31	04:53	05:51	06:53	07:54	08:01	08:51
	16:17	17:24	18:25	20:30	21:32	22:14	22:02	21:01	19:40	18:20	16:11	15:43
17	08:45	07:46	06:35	06:12	05:04	04:30	04:54	05:53	06:55	07:56	08:03	08:52
	16:19	17:27	18:28	20:32	21:34	22:15	22:00	20:58	19:37	18:17	16:09	15:43
18	08:44	07:44	06:32	06:10	05:02	04:30	04:56	05:55	06:57	07:58	08:05	08:53
	16:21	17:29	18:30	20:34	21:36	22:15	21:59	20:56	19:34	18:15	16:08	15:43
19	08:42	07:42	06:29	06:07	05:00	04:30	04:58	05:57	06:59	08:01	08:07	08:54
	16:23	17:31	18:32	20:37	21:37	22:16	21:57	20:53	19:32	18:12	16:06	15:43
20	08:41	07:39	06:27	06:05	04:59	04:30	04:59	05:59	07:01	08:03	08:10	08:54
	16:25	17:33	18:34	20:39	21:39	22:16	21:56	20:51	19:29	18:10	16:04	15:44
21	08:40	07:37	06:24	06:02	04:57	04:30	05:01	06:01	07:03	08:05	08:12	08:55
	16:27	17:36	18:36	20:41	21:41	22:17	21:54	20:48	19:26	18:07	16:03	15:44
22	08:38	07:34	06:21	06:00	04:55	04:31	05:03	06:03	07:05	08:07	08:14	08:55
	16:29	17:38	18:38	20:43	21:43	22:17	21:53	20:46	19:24	18:05	16:01	15:45
23	08:37	07:32	06:19	05:57	04:54	04:31	05:04	06:05	07:07	08:09	08:16	08:56
	16:31	17:40	18:40	20:45	21:45	22:17	21:51	20:43	19:21	18:03	16:00	15:45
24	08:35	07:29	06:16	05:55	04:52	04:31	05:06	06:07	07:09	08:11	08:18	08:56
	16:33	17:42	18:42	20:47	21:46	22:17	21:49	20:41	19:18	18:00	15:59	15:46
25	08:33	07:27	06:13	05:52	04:50	04:31	05:08	06:09	07:11	08:13	08:19	08:57
	16:35	17:44	18:44	20:49	21:48	22:17	21:47	20:38	19:15	17:58	15:57	15:46
26	08:32	07:24	06:11	05:50	04:49	04:32	05:10	06:11	07:13	08:16	08:21	08:57
	16:37	17:47	18:46	20:51	21:50	22:17	21:46	20:36	19:13	17:55	15:56	15:47
27	08:30	07:22	06:08	05:47	04:47	04:32	05:12	06:13	07:15	08:18	08:23	08:57
	16:40	17:49	18:48	20:53	21:51	22:17	21:44	20:33	19:10	17:53	15:55	15:48
28	08:28	07:19	06:05	05:45	04:46	04:33	05:13	06:15	07:17	08:20	08:25	08:57
	16:42	17:51	18:51	20:55	21:53	22:17	21:42	20:30	19:07	17:51	15:53	15:49
29	08:27		07:02	05:43	04:45	04:34	05:15	06:17	07:19	08:22	08:27	08:57
	16:44		19:53	20:57	21:55	22:16	21:40	20:28	19:05	17:48	15:52	15:50
30	08:25		07:00	05:40	04:43	04:34	05:17	06:19	07:21	08:24	08:29	08:57
	16:46		19:55	21:00	21:56	22:16	21:38	20:25	19:02	17:46	15:51	15:51
31	08:23		06:57		04:42		05:19	06:21		07:26		08:57
	16:48		19:57		21:58		21:36	20:23		16:44		15:52
Potential sun hours	235	266	366	426	508	529	530	470	385	324	247	216
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Atini - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (200)  
 Assumptions for shadow calculations Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January			February			March			April			May			June		
1	08:57		09:48 (9)	08:21			07:17			08:58 (10)	06:54		05:38			04:41		
	15:53	69	12:36 (8)	16:50			17:53	30		09:28 (10)	19:59		21:02			21:59		
2	08:57		09:49 (9)	08:19			07:14			08:59 (10)	06:52		05:35			04:39		
	15:54	69	12:37 (8)	16:53			17:55	27		09:26 (10)	20:01		21:04			22:01		
3	08:57		09:49 (9)	08:17			07:12			09:01 (10)	06:49		05:33			04:38		
	15:55	69	12:37 (8)	16:55			17:57	23		09:24 (10)	20:03		21:06			22:02		
4	08:56		09:49 (9)	08:15		09:09 (10)	07:09			09:04 (10)	06:46		05:31			04:37		
	15:57	69	12:37 (8)	16:57	10		09:19 (10)	18:00	16		09:20 (10)	20:05	21:08			22:03		
5	08:56		09:50 (9)	08:13		09:06 (10)	07:06			09:09 (10)	06:44		05:29			04:36		
	15:58	70	12:38 (8)	16:59	17		09:23 (10)	18:02	5		09:14 (10)	20:07	21:10			22:05		
6	08:55		09:50 (9)	08:11		09:04 (10)	07:04				06:41		05:26			04:36		
	16:00	70	12:39 (8)	17:02	22		09:26 (10)	18:04			20:09		21:12			22:06		
7	08:55		09:50 (9)	08:09		09:01 (10)	07:01				06:38		05:24			04:35		
	16:01	71	12:39 (8)	17:04	26		09:27 (10)	18:06			20:11		21:14			22:07		
8	08:54		09:50 (9)	08:07		09:00 (10)	06:59				06:36		05:22			04:34		
	16:03	72	12:39 (8)	17:06	29		09:29 (10)	18:08			20:14		21:16			22:08		
9	08:53		09:50 (9)	08:05		08:59 (10)	06:56				06:33		05:20			04:33		
	16:04	71	12:39 (8)	17:08	32		09:31 (10)	18:10			20:16		21:18			22:09		
10	08:53		09:50 (9)	08:02		08:57 (10)	06:53				06:30		05:18			04:33		
	16:06	72	12:40 (8)	17:11	35		09:32 (10)	18:13			20:18		21:20			22:10		
11	08:52		09:51 (9)	08:00		08:57 (10)	06:51				06:28		05:16			04:32		
	16:08	72	12:40 (8)	17:13	36		09:33 (10)	18:15			20:20		21:22			22:11		
12	08:51		09:50 (9)	07:58		08:57 (10)	06:48				06:25		05:14			04:31		
	16:09	72	12:40 (8)	17:15	37		09:34 (10)	18:17			20:22		21:24			22:12		
13	08:50		09:51 (9)	07:56		08:55 (10)	06:45				06:23		05:11			04:31		
	16:11	71	12:40 (8)	17:17	39		09:34 (10)	18:19			20:24		21:26			22:13		
14	08:49		09:51 (9)	07:53		08:55 (10)	06:43				06:20		05:09			04:31		
	16:13	72	12:41 (8)	17:20	40		09:35 (10)	18:21			20:26		21:28			22:13		
15	08:48		09:51 (9)	07:51		08:54 (10)	06:40				06:17		05:08			04:30		
	16:15	71	12:40 (8)	17:22	41		09:35 (10)	18:23			20:28		21:30			22:14		
16	08:47		09:52 (9)	07:49		08:54 (10)	06:37				06:15		05:06			04:30		
	16:17	71	12:41 (8)	17:24	42		09:36 (10)	18:25			20:30		21:32			22:15		
17	08:45		09:52 (9)	07:46		08:53 (10)	06:35				06:12		05:04			04:30		
	16:19	70	12:40 (8)	17:26	43		09:36 (10)	18:27			20:32		21:34			22:15		
18	08:44		09:53 (9)	07:44		08:54 (10)	06:32				06:10		05:02			04:30		
	16:21	68	12:41 (8)	17:29	42		09:36 (10)	18:30			20:35		21:36			22:16		
19	08:43		09:53 (9)	07:42		08:53 (10)	06:29				06:07		05:00			04:30		
	16:23	67	12:40 (8)	17:31	43		09:36 (10)	18:32			20:37		21:38			22:16		
20	08:41		09:53 (9)	07:39		08:54 (10)	06:27				06:05		04:58			04:30		
	16:25	66	12:40 (8)	17:33	42		09:36 (10)	18:34			20:39		21:40			22:17		
21	08:40		09:55 (9)	07:37		08:53 (10)	06:24				06:02		04:57			04:30		
	16:27	64	12:40 (8)	17:35	43		09:36 (10)	18:36			20:41		21:41			22:17		
22	08:38		09:55 (9)	07:34		08:53 (10)	06:21				06:00		04:55			04:30		
	16:29	61	12:39 (8)	17:38	42		09:35 (10)	18:38			20:43		21:43			22:17		
23	08:37		09:56 (9)	07:32		08:54 (10)	06:19				05:57		04:53			04:30		
	16:31	58	12:38 (8)	17:40	41		09:35 (10)	18:40			20:45		21:45			22:17		
24	08:35		09:56 (9)	07:29		08:54 (10)	06:16				05:55		04:52			04:31		
	16:33	56	12:38 (8)	17:42	40		09:34 (10)	18:42			20:47		21:47			22:17		
25	08:34		09:57 (9)	07:27		08:55 (10)	06:13				05:52		04:50			04:31		
	16:35	52	12:37 (8)	17:44	39		09:34 (10)	18:44			20:49		21:48			22:17		
26	08:32		09:58 (9)	07:24		08:55 (10)	06:10				05:50		04:49			04:31		
	16:37	47	12:35 (8)	17:46	37		09:32 (10)	18:46			20:51		21:50			22:17		
27	08:30		10:00 (9)	07:22		08:55 (10)	06:08				05:47		04:47			04:32		
	16:39	41	12:34 (8)	17:49	36		09:31 (10)	18:48			20:53		21:52			22:17		
28	08:28		10:02 (9)	07:19		08:57 (10)	06:05				05:45		04:46			04:33		
	16:42	33	12:32 (8)	17:51	33		09:30 (10)	18:51			20:55		21:53			22:17		
29	08:27		10:04 (9)				07:02				05:42		04:44			04:33		
	16:44	21	12:28 (8)				19:53				20:58		21:55			22:17		
30	08:25						07:00				05:40		04:43			04:34		
	16:46						19:55				21:00		21:56			22:16		
31	08:23						06:57						04:42					
	16:48						19:57						21:58					
Potential sun hours	234			266			366			426			508			530		
Total, worst case		1835			887			101										
Sun reduction		0,11			0,19			0,40										
Oper. time red.		1,00			1,00			1,00										
Wind dir. red.		1,00			1,00			1,00										
Total reduction		0,11			0,19			0,40										
Total, real		194			170			41										

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme

Shadow receptor: Atini - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (200)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,80	1,82	4,75	6,63	9,63	10,06	8,16	7,72	5,94	2,93	0,63	0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	July	August	September	October		November		December	
1	04:35	05:21	06:23	07:23		07:29	08:27 (10)	08:31	09:33 (9)
	22:16	21:34	20:20	18:59		16:41	34 09:01 (10)	15:50	72 12:22 (8)
2	04:35	05:23	06:25	07:25		07:31	08:29 (10)	08:33	09:33 (9)
	22:15	21:32	20:17	18:57		16:39	31 09:00 (10)	15:49	72 12:23 (8)
3	04:36	05:25	06:27	07:27		07:33	08:30 (10)	08:34	09:33 (9)
	22:15	21:30	20:15	18:54		16:37	29 08:59 (10)	15:48	72 12:23 (8)
4	04:37	05:26	06:29	07:29		07:35	08:31 (10)	08:36	09:34 (9)
	22:14	21:28	20:12	18:51		16:35	26 08:57 (10)	15:47	71 12:23 (8)
5	04:38	05:28	06:31	07:31		07:38	08:33 (10)	08:37	09:35 (9)
	22:14	21:26	20:09	18:49		16:32	22 08:55 (10)	15:46	71 12:24 (8)
6	04:39	05:30	06:33	07:33		07:40	08:36 (10)	08:39	09:36 (9)
	22:13	21:24	20:07	18:46		16:30	17 08:53 (10)	15:46	71 12:25 (8)
7	04:40	05:32	06:35	07:35		07:42	08:40 (10)	08:40	09:36 (9)
	22:12	21:22	20:04	18:43		16:28	9 08:49 (10)	15:45	70 12:24 (8)
8	04:42	05:34	06:37	07:37		07:44		08:42	09:37 (9)
	22:11	21:19	20:01	18:41		16:26		15:45	70 12:25 (8)
9	04:43	05:36	06:39	07:40	09:41 (10)	07:46		08:43	09:37 (9)
	22:10	21:17	19:59	18:38	12 09:53 (10)	16:24		15:44	69 12:25 (8)
10	04:44	05:38	06:41	07:42	09:37 (10)	07:48		08:45	09:38 (9)
	22:09	21:15	19:56	18:35	20 09:57 (10)	16:22		15:44	69 12:26 (8)
11	04:45	05:40	06:43	07:44	09:34 (10)	07:51		08:46	09:39 (9)
	22:08	21:12	19:53	18:33	25 09:59 (10)	16:20		15:43	68 12:26 (8)
12	04:47	05:42	06:45	07:46	09:32 (10)	07:53		08:47	09:40 (9)
	22:07	21:10	19:51	18:30	29 10:01 (10)	16:18		15:43	68 12:27 (8)
13	04:48	05:44	06:47	07:48	09:30 (10)	07:55	09:36 (9)	08:48	09:40 (9)
	22:06	21:08	19:48	18:28	32 10:02 (10)	16:16	21 12:00 (8)	15:43	69 12:28 (8)
14	04:50	05:46	06:49	07:50	09:29 (10)	07:57	09:34 (9)	08:49	09:41 (9)
	22:05	21:05	19:45	18:25	35 10:04 (10)	16:14	34 12:05 (8)	15:43	67 12:28 (8)
15	04:51	05:48	06:51	07:52	09:28 (10)	07:59	09:33 (9)	08:50	09:42 (9)
	22:03	21:03	19:43	18:22	36 10:04 (10)	16:13	41 12:07 (8)	15:43	66 12:28 (8)
16	04:53	05:50	06:53	07:54	09:27 (10)	08:01	09:31 (9)	08:51	09:42 (9)
	22:02	21:01	19:40	18:20	38 10:05 (10)	16:11	47 12:08 (8)	15:43	66 12:29 (8)
17	04:54	05:52	06:55	07:56	09:26 (10)	08:03	09:31 (9)	08:52	09:43 (9)
	22:01	20:58	19:37	18:17	39 10:05 (10)	16:09	52 12:11 (8)	15:43	65 12:29 (8)
18	04:56	05:54	06:57	07:58	09:25 (10)	08:06	09:30 (9)	08:53	09:44 (9)
	21:59	20:56	19:34	18:15	40 10:05 (10)	16:07	56 12:12 (8)	15:43	65 12:30 (8)
19	04:57	05:56	06:59	08:01	09:25 (10)	08:08	09:31 (9)	08:54	09:44 (9)
	21:58	20:53	19:32	18:12	41 10:06 (10)	16:06	58 12:13 (8)	15:43	64 12:30 (8)
20	04:59	05:59	07:01	08:03	09:24 (10)	08:10	09:30 (9)	08:55	09:44 (9)
	21:56	20:51	19:29	18:10	42 10:06 (10)	16:04	61 12:14 (8)	15:43	65 12:30 (8)
21	05:01	06:01	07:03	08:05	09:23 (10)	08:12	09:30 (9)	08:55	09:45 (9)
	21:55	20:48	19:26	18:07	43 10:06 (10)	16:03	64 12:15 (8)	15:44	65 12:31 (8)
22	05:02	06:03	07:05	08:07	09:24 (10)	08:14	09:29 (9)	08:56	09:45 (9)
	21:53	20:46	19:24	18:05	43 10:07 (10)	16:01	66 12:16 (8)	15:44	65 12:31 (8)
23	05:04	06:05	07:07	08:09	09:23 (10)	08:16	09:30 (9)	08:56	09:46 (9)
	21:51	20:43	19:21	18:02	43 10:06 (10)	16:00	67 12:17 (8)	15:45	65 12:32 (8)
24	05:06	06:07	07:09	08:11	09:23 (10)	08:18	09:30 (9)	08:57	09:46 (9)
	21:49	20:41	19:18	18:00	43 10:06 (10)	15:58	68 12:18 (8)	15:45	65 12:32 (8)
25	05:08	06:09	07:11	07:14	08:24 (10)	08:20	09:30 (9)	08:57	09:47 (9)
	21:48	20:38	19:15	16:58	42 09:06 (10)	15:57	70 12:18 (8)	15:46	65 12:33 (8)
26	05:09	06:11	07:13	07:16	08:24 (10)	08:22	09:30 (9)	08:57	09:47 (9)
	21:46	20:36	19:13	16:55	41 09:05 (10)	15:56	71 12:19 (8)	15:47	65 12:33 (8)
27	05:11	06:13	07:15	07:18	08:24 (10)	08:24	09:30 (9)	08:58	09:47 (9)
	21:44	20:33	19:10	16:53	41 09:05 (10)	15:54	71 12:19 (8)	15:48	66 12:33 (8)
28	05:13	06:15	07:17	07:20	08:25 (10)	08:25	09:32 (9)	08:58	09:47 (9)
	21:42	20:30	19:07	16:50	40 09:05 (10)	15:53	71 12:21 (8)	15:48	66 12:34 (8)
29	05:15	06:17	07:19	07:22	08:25 (10)	08:27	09:32 (9)	08:58	09:48 (9)
	21:40	20:28	19:05	16:48	39 09:04 (10)	15:52	71 12:21 (8)	15:49	66 12:35 (8)
30	05:17	06:19	07:21	07:24	08:25 (10)	08:29	09:32 (9)	08:58	09:48 (9)
	21:38	20:25	19:02	16:46	38 09:03 (10)	15:51	73 12:22 (8)	15:50	67 12:35 (8)
31	05:19	06:21		07:27	08:27 (10)			08:58	09:49 (9)
	21:36	20:23		16:44	35 09:02 (10)			15:51	67 12:36 (8)
Potential sun hours	530	470	385	323		247		215	
Total, worst case				837		1230		2092	
Sun reduction				0,28		0,08		0,07	
Oper. time red.				1,00		1,00		1,00	
Wind dir. red.				1,00		1,00		1,00	
Total reduction				0,28		0,08		0,07	
Total, real				235		94		157	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

flickering\_Nordex\_N163\_Stelpe1\_kumulativa\_ietekme

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

07.04.2025 13:03/4.1.254

## SHADOW - Calendar

Calculation: Flickering\_Nordex\_N163\_kumulativa\_ietekme Shadow receptor: Aki - Shadow Receptor:  $1,0 \times 1,0$  Azimuth:  $3,1^\circ$  Slope:  $90,0^\circ$  (228)  
 Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
 0,80 1,82 4,75 6,63 9,63 10,06 8,16 7,72 5,94 2,93 0,63 0,52

No operational time reduction. It is assumed the WTGs are always running with worst case wind direction.

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:57 15:53	08:21 16:51	07:17 17:53	06:55 19:59	05:38 21:02	04:41 21:59	04:35 22:16	05:21 21:34	06:23 20:20	07:23 18:59	07:29 16:42	08:31 15:50
2	08:57 15:55	08:19 16:53	07:14 17:55	06:52 20:01	05:36 21:04	04:40 22:01	04:36 22:15	05:23 21:32	06:25 20:17	07:25 18:57	07:31 16:39	08:32 15:49
3	08:57 15:56	08:17 16:55	07:12 17:58	06:49 20:03	05:33 21:06	04:39 22:02	04:37 22:15	05:25 21:30	06:27 20:15	07:27 18:54	07:33 16:37	08:34 15:48
4	08:56 15:57	08:15 16:57	07:09 18:00	06:47 20:05	05:31 21:08	04:38 22:03	04:38 22:14	05:27 21:28	06:29 20:12	07:29 18:51	07:35 16:35	08:36 15:48
5	08:56 15:59	08:13 17:00	07:07 18:02	06:44 20:07	05:29 21:10	04:37 22:05	04:39 22:13	05:29 21:26	06:31 20:10	07:31 18:49	07:38 16:33	08:37 15:47
6	08:55 16:00	08:11 17:02	07:04 18:04	06:41 20:09	05:27 21:12	04:36 22:06	04:40 22:13	05:31 21:24	06:33 20:07	07:33 18:46	07:40 16:31	08:39 15:46
7	08:55 16:02	08:09 17:04	07:01 18:06	06:39 20:12	05:24 21:14	04:35 22:07	04:41 22:12	05:33 21:22	06:35 20:04	07:36 18:44	07:42 16:29	08:40 15:46
8	08:54 16:03	08:07 17:06	06:59 18:08	06:36 20:14	05:22 21:16	04:34 22:08	04:42 22:11	05:35 21:19	06:37 20:02	07:38 18:41	07:44 16:27	08:42 15:45
9	08:53 16:05	08:05 17:09	06:56 18:11	06:33 20:16	05:20 21:18	04:34 22:09	04:43 22:10	05:37 21:17	06:39 19:59	07:40 18:38	07:46 16:24	08:43 15:45
10	08:53 16:06	08:02 17:11	06:53 18:13	06:31 20:18	05:18 21:20	04:33 22:10	04:45 22:09	05:39 21:15	06:41 19:56	07:42 18:36	07:48 16:22	08:45 15:44
11	08:52 16:08	08:00 17:13	06:51 18:15	06:28 20:20	05:16 21:22	04:32 22:11	04:46 22:08	05:41 21:12	06:43 19:53	07:44 18:33	07:51 16:21	08:46 15:44
12	08:51 16:10	07:58 17:15	06:48 18:17	06:25 20:22	05:14 21:24	04:32 22:12	04:47 22:07	05:43 21:10	06:45 19:51	07:46 18:30	07:53 16:19	08:47 15:43
13	08:50 16:12	07:56 17:18	06:46 18:19	06:23 20:24	05:12 21:26	04:32 22:13	04:49 22:06	05:45 21:08	06:47 19:48	07:48 18:28	07:55 16:17	08:48 15:43
14	08:49 16:13	07:53 17:20	06:43 18:21	06:20 20:26	05:10 21:28	04:31 22:13	04:50 22:04	05:47 21:05	06:49 19:45	07:50 18:25	07:57 16:15	08:49 15:43
15	08:48 16:15	07:51 17:22	06:40 18:23	06:18 20:28	05:08 21:30	04:31 22:14	04:52 22:03	05:49 21:03	06:51 19:43	07:52 18:23	07:59 16:13	08:50 15:43
16	08:46 16:17	07:49 17:24	06:38 18:26	06:15 20:30	05:06 21:32	04:31 22:15	04:53 22:02	05:51 21:01	06:53 19:40	07:54 18:20	08:01 16:11	08:51 15:43
17	08:45 16:19	07:46 17:27	06:35 18:28	06:12 20:32	05:04 21:34	04:30 22:15	04:55 22:00	05:53 20:58	06:55 19:37	07:56 18:18	08:03 16:10	08:52 15:43
18	08:44 16:21	07:44 17:29	06:32 18:30	06:10 20:35	05:02 21:36	04:30 22:16	04:56 21:59	05:55 20:56	06:57 19:35	07:59 18:15	08:06 16:08	08:53 15:43
19	08:43 16:23	07:42 17:31	06:29 18:32	06:07 20:37	05:00 21:38	04:30 22:16	04:58 21:58	05:57 20:53	06:59 19:32	08:01 18:13	08:08 16:06	08:54 15:44
20	08:41 16:25	07:39 17:33	06:27 18:34	06:05 20:39	04:59 21:39	04:30 22:16	04:59 21:56	05:59 20:51	07:01 19:29	08:03 18:10	08:10 16:05	08:54 15:44
21	08:40 16:27	07:37 17:36	06:24 18:36	06:02 20:41	04:57 21:41	04:30 22:17	05:01 21:54	06:01 20:48	07:03 19:26	08:05 18:08	08:12 16:03	08:55 15:44
22	08:38 16:29	07:34 17:38	06:21 18:38	06:00 20:43	04:55 21:43	04:31 22:17	05:03 21:53	06:03 20:46	07:05 19:24	08:07 18:05	08:14 16:02	08:56 15:45
23	08:37 16:31	07:32 17:40	06:19 18:40	05:57 20:45	04:54 21:45	04:31 22:17	05:05 21:51	06:05 20:43	07:07 19:21	08:09 18:03	08:16 16:00	08:56 15:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:55 20:47	04:52 21:47	04:31 22:17	05:06 21:49	06:07 20:41	07:09 19:18	08:11 18:00	08:18 15:59	08:57 15:46
25	08:34 16:35	07:27 17:45	06:13 18:44	05:52 20:49	04:50 21:48	04:32 22:17	05:08 21:48	06:09 20:38	07:11 19:16	08:13 18:05	08:20 16:58	08:57 15:46
26	08:32 16:38	07:24 17:47	06:11 18:47	05:50 20:51	04:49 21:50	04:32 22:17	05:10 21:46	06:11 20:36	07:13 19:13	08:16 18:05	08:22 16:55	08:57 15:47
27	08:30 16:40	07:22 17:49	06:08 18:49	05:48 20:53	04:48 21:52	04:32 22:17	05:12 21:44	06:13 20:33	07:15 19:10	08:18 18:03	08:23 16:53	08:57 15:48
28	08:28 16:42	07:19 17:51	06:05 18:51	05:45 20:56	04:46 21:53	04:33 22:17	05:14 21:42	06:15 20:31	07:17 19:08	08:20 18:01	08:25 16:51	08:58 15:49
29	08:27 16:44		07:03 19:53	05:43 20:58	04:45 21:55	04:34 22:16	05:15 21:40	06:17 20:28	07:19 19:05	08:22 18:05	08:27 16:48	08:58 15:50
30	08:25 16:46		07:00 19:55	05:40 21:00	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	08:24 18:00	08:29 16:46	08:58 15:51
31	08:23 16:49		06:57 19:57		04:42 21:58		05:19 21:36	06:21 20:23		07:27 18:59		08:57 15:52
Potential sun hours	235	266	366	426	508	529	530	470	385	323	247	216
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		