

Project:

flickering_Nordex_N163_Stelpe1

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 Shadow receptor: 40940190018001 - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (240)
 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
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	08:13 18:05	08:20 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 18:49	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 18:03	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	05:14 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		07:03 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
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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)	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 & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

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Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 Shadow receptor: Alpi - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (220)
 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	16:50	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	
Total, worst case													158
Sun reduction													0,07
Oper. time red.													1,00
Wind dir. red.													1,00
Total reduction													0,07
Total, real													12

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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment
 Vilandes 3-6
 LV-1010 Riga
 0037167242411
 Laura Kurzemniece / laura.kurzemniece@environment.lv
 Calculated:
 03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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
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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	06:33 20:07	07:33 18:46	07:40 16:31	08:39 15:46
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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	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 (3) 19:56	06:41 18:35	07:42 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	06:40 (3) 19:53	06:43 18:33	07:44 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	06:39 (3) 19:51	06:45 18:30	07:46 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 22:06	05:45 21:08	06:38 (3) 19:48	06:47 18:28	07:48 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	06:37 (3) 19:45	06:49 18:25	07:50 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	06:36 (3) 19:43	06:51 18:23	07:52 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 21:01	06:36 (3) 19:40	06:53 18:20	07:54 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	06:36 (3) 19:37	06:55 18:17	07:56 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	06:36 (3) 19:34	06:57 18:15	07:58 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	06:36 (3) 19:32	06:59 18:12	08:01 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	06:36 (3) 19:29	07:01 18:10	08:03 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	05:01 21:54	06:01 20:48	06:36 (3) 19:26	07:03 18:07	08:05 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	06:37 (3) 19:24	07:05 18:05	08:07 16:01	08:56 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	08:56 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	06:38 (3) 19:18	07:09 18:00	08:11 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	06:40 (3) 19:15	07:11 16:58	07:13 15:57	08:19 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	06:43 (3) 19:13	07:13 16:55	07:16 15:56	08:21 15:47
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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 20:30	07:17 19:07	07:20 16:51	08:25 15:53	08:57 15:49
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30	08:25 16:46	07:00 19:55	05:40 21:00	04:43 21:56	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	06:57 19:57	05:38 21:00	04:42 21:58	04:42 21:58	04:34 22:16	05:19 21:36	06:21 20:23	07:26 19:02	07:26 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				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)	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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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	07:25 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
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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 18:25	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
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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
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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
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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 18:05	08:20 16:58	08:57 15:46
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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	08:57 15:50
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31	08:23 16:48	07:15 19:57	05:57 20:00	05:37 21:00	04:42 21:58	04:32 22:16	05:19 21:36	06:21 20:23	07:23 19:04	08:26 18:03	08:31 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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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
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 21:26	06:31 20:09	07:31 18:48	07:37 16:32	08:37 15:47
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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 18:41	07:44 16:26	08:41 15:45
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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	06:03 20:46	07:05 19:23	08:07 18:05	08:13 16:01	08:55 15:44
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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 18:02	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 15:49
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 18:04	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 18:02	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 18:00	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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 Shadow receptor: Balož i - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (192)
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 22:01	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 18:15	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	04:31 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	07:22 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 18:15	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 18:43		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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 Shadow receptor: Beikapi - Shadow Receptor: $1,0 \times 1,0$ Azimuth: $3,1^\circ$ Slope: $90,0^\circ$ (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	19:23 (3) 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 18:00	06:46 20:05	05:31 21:08	04:38 22:03
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
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
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
8	08:54 16:03	08:06 17:06	06:58 18:08	06:36 20:13	19:24 (3) 19:36 (3)	05:22 21:16
9	08:53 16:04	08:04 17:08	06:56 18:10	06:33 20:15	19:20 (3) 19:39 (3)	05:20 21:18
10	08:52 16:06	08:02 17:11	06:53 18:12	06:30 20:18	19:19 (3) 19:41 (3)	05:18 21:20
11	08:51 16:08	08:00 17:13	06:50 18:15	06:28 20:20	19:16 (3) 19:42 (3)	05:16 21:22
12	08:50 16:10	07:58 17:15	06:48 18:17	06:25 20:22	19:15 (3) 19:43 (3)	05:14 21:24
13	08:49 16:11	07:55 17:17	06:45 18:19	06:22 20:24	19:14 (3) 19:44 (3)	05:12 21:26
14	08:48 16:13	07:53 17:20	06:43 18:21	06:20 20:26	19:13 (3) 19:45 (3)	05:10 21:28
15	08:47 16:15	07:51 17:22	06:40 18:23	06:17 20:28	19:12 (3) 19:45 (3)	05:08 21:30
16	08:46 16:17	07:48 17:24	06:37 18:25	06:15 20:30	19:12 (3) 19:45 (3)	05:06 21:32
17	08:45 16:19	07:46 17:26	06:35 18:27	06:12 20:32	19:11 (3) 19:45 (3)	05:04 21:34
18	08:44 16:21	07:44 17:29	06:32 18:29	06:10 20:34	19:11 (3) 19:45 (3)	05:02 21:35
19	08:42 16:23	07:41 17:31	06:29 18:32	06:07 20:36	19:10 (3) 19:45 (3)	05:00 21:37
20	08:41 16:25	07:39 17:33	06:26 18:34	06:05 20:38	19:10 (3) 19:45 (3)	04:58 21:39
21	08:40 16:27	07:37 17:35	06:24 18:36	06:02 20:41	19:09 (3) 19:44 (3)	04:57 21:41
22	08:38 16:29	07:34 17:38	06:21 18:38	05:59 20:43	19:10 (3) 19:44 (3)	04:55 21:43
23	08:36 16:31	07:32 17:40	06:18 18:40	05:57 20:45	19:10 (3) 19:43 (3)	04:53 21:45
24	08:35 16:33	07:29 17:42	06:16 18:42	05:55 20:47	19:10 (3) 19:42 (3)	04:52 21:46
25	08:33 16:35	07:27 17:44	06:13 18:44	05:52 20:49	19:11 (3) 19:42 (3)	04:50 21:48
26	08:32 16:37	07:24 17:46	06:10 18:46	05:50 20:51	19:12 (3) 19:41 (3)	04:49 21:50
27	08:30 16:39	07:22 17:49	06:08 18:48	05:47 20:53	19:12 (3) 19:39 (3)	04:47 21:51
28	08:28 16:42	07:19 17:51	06:05 18:50	05:45 20:55	19:13 (3) 19:38 (3)	04:46 21:53
29	08:26 16:44		07:02 19:52	05:42 20:57	19:15 (3) 19:37 (3)	04:44 21:54
30	08:25 16:46		07:00 19:55	05:40 20:59	19:17 (3) 19:35 (3)	21:03 (4) 21:56
31	08:23 16:48		06:57 19:57		21:00 (4) 21:57	21:11 (4) 21:14 (4)
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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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)		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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 Shadow receptor: Bikernieki - 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 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 18:05	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		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 18:05	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 18:00		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)	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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 Shadow receptor: Buži - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (226)
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	07:25 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 15:44
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 22:15	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 15:44
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	08:14 18:16	08:20 16:15	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 16:15	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	07:19 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	08:57 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	08:57 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	07:23 19:04	08:26 18:07	08:31 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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 Shadow receptor: Berzes - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (170)
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
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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 18:14	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
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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	04:52 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	08:53 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
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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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 Shadow receptor: Duburi - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (202)
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	08:31 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	07:31 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 16:35	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
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	07:40 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	06:36 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	08:42 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	04:33 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
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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)	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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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	07:31 18:56	07:31 16:39	08:32 15:49
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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
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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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 Shadow receptor: Dzilnas - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (165)
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 22:02	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
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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 15:52
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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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
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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 15:52
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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 Shadow receptor: Dzirnaukieki - 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
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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	08:13 18:05	08:20 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 18:49	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 18:03	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	05:14 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		07:03 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)	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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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
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
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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
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 22:17	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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 Shadow receptor: Grašini - 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) 21:56 (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 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	19:29 (3) 19:50 (3)	04:36 22:05	04:40 21:22 (4)	21:22 (4) 21:22 (4)	05:30 21:23	19:41 (3) 19:59 (3)	06:33 18:46	07:33 16:30	07:39 15:46	
7	08:54 16:01	08:04 17:04	07:01 18:06	06:38 20:11	05:24 21:14	19:31 (3) 19:48 (3)	04:35 22:07	04:41 21:24 (4)	21:22 (4) 21:21 (4)	05:32 22:00 (3)	19:38 (3) 20:00 (3)	06:35 18:43	07:35 16:28	07:42 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	04:42 21:26 (4)	21:24 (4) 21:21 (4)	05:34 21:19	19:37 (3) 20:01 (3)	06:37 18:41	07:37 16:26	07:44 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	04:43 21:26 (4)	21:13 (4) 21:22 (4)	05:36 21:17	19:36 (3) 20:02 (3)	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	19:41 (3) 21:20	04:33 22:10	04:44 21:28 (4)	21:13 (4) 21:28 (4)	05:38 21:14	19:35 (3) 20:03 (3)	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	19:42 (3) 21:16	04:32 22:11	04:46 21:28 (4)	21:12 (4) 21:28 (4)	05:40 21:12	19:34 (3) 20:04 (3)	06:43 19:53	07:44 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 20:22	05:14 21:24	19:43 (3) 21:17	04:32 22:11	04:47 21:29 (4)	21:12 (4) 21:27 (4)	05:42 21:10	19:33 (3) 20:04 (3)	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	19:44 (3) 21:18	04:31 22:12	04:48 21:30 (4)	21:12 (4) 21:22 (4)	05:44 21:08	19:32 (3) 20:04 (3)	19:47 18:28	07:48 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	19:45 (3) 21:19	04:31 22:13	04:50 21:12 (4)	21:22 (4) 21:31 (4)	05:46 21:05	19:31 (3) 20:04 (3)	19:49 18:25	07:50 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	19:46 (3) 19:52 (3)	04:31 22:14	04:51 21:12 (4)	21:26 (4) 22:03	05:48 21:03	19:31 (3) 20:05 (3)	19:52 18:22	07:52 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	19:47 (3) 19:55 (3)	04:30 22:14	04:53 21:12 (4)	22:02 (4) 22:02	05:50 21:00	19:31 (3) 20:05 (3)	19:54 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 21:34	19:50 (3) 19:55 (3)	04:30 22:15	04:54 21:12 (4)	22:00 (4) 22:00	05:52 20:58	19:30 (3) 20:05 (3)	19:56 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	19:51 (3) 19:57 (3)	04:30 22:15	04:56 21:32 (4)	21:59 (4) 21:59	05:54 20:55	19:30 (3) 20:05 (3)	19:57 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	19:52 (3) 19:57 (3)	04:30 22:16	04:57 21:32 (4)	21:57 (4) 21:57	05:56 20:53	19:30 (3) 20:04 (3)	19:59 18:12	08:07 16:06	08:54 15:43	
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22	08:38 16:29	07:34 17:38	06:21 18:38	05:59 20:43	04:55 21:43	19:55 (3) 19:58 (3)	04:30 22:17	05:02 21:33 (4)	22:02 (4) 21:52	06:03 20:46	19:30 (3) 20:02 (3)	19:23 18:05	08:07 16:01	08:55 15:44	
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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	19:59 (3) 19:57 (3)	04:32 22:17	05:11 21:34 (4)	21:44 (4) 21:44	06:13 20:33	19:34 (3) 21:05 (3)	19:15 18:15	08:18 16:04	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	19:59 (3) 19:57 (3)	04:33 22:16	05:13 21:14 (4)	21:42 (4) 21:42	06:15 20:30	19:35 (3) 19:54 (3)	19:17 18:15	08:20 16:03	08:57 15:49	
29	08:26 16:44	07:02 17:52	05:42 18:50	04:44 21:54	04:44 21:54	19:59 (3) 19:57 (3)	04:33 22:16	05:15 21:15 (4)	21:40 (4) 21:40	06:17 20:28	19:38 (3) 19:51 (3)	19:19 18:15	08:22 16:02	08:57 15:50	
30	08:25 16:46	07:00 17:55	05:40 18:55	04:43 21:56	04:43 21:56	19:59 (3) 19:56 (3)	04:34 22:16	05:17 21:16 (4)	21:38 (4) 21:38	06:19 20:25	19:38 (3) 19:51 (3)	19:21 18:15	08:23 16:01	08:57 15:51	
31	08:23 16:48	06:57 17:57	05:37 18:57	04:42 21:57	04:42 21:57	19:59 (3) 19:56 (3)	04:34 22:16	05:19 21:36	21:36 (4) 21:36	06:21 20:22	19:38 (3) 19:51 (3)	19:22 18:15	08:24 16:00	08:57 15:52	
Potential sun hours	235	266	366	426	504	508	529	530	470	385	323	247	216		
Total, worst case					0.47	0.59	0.57	0.48	0.51						
Sun reduction					1.00	1.00	1.00	1.00	1.00						
Oper. time red.					1.00	1.00	1.00	1.00	1.00						
Wind dir. red.					0.47	0.59	0.57	0.48	0.51						
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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 Shadow receptor: Gaguli - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (211)
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 15:55	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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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 16:55	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 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	08:19 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 15:49
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 16:46	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)	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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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) 21:34	05:21 20:20	06:23 18:59	07:23 16:41	07:29 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	05:31 (3) 05:52 (3)	04:36 22:15	05:39 (3) 21:32	05:23 20:17	06:25 18:57	07:25 16:39	07:31 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	05:32 (3) 05:53 (3)	04:37 22:14	05:39 (3) 21:30	05:25 20:15	06:27 18:54	07:27 16:37	07:33 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) 05:53 (3)	04:38 22:14	05:39 (3) 21:28	05:27 20:12	06:29 18:51	07:29 16:35	07:35 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	05:33 (3) 05:53 (3)	04:39 22:13	05:39 (3) 21:26	05:29 20:09	06:31 18:49	07:31 16:33	07:37 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	05:33 (3) 05:52 (3)	04:40 22:12	05:39 (3) 21:24	05:31 20:07	06:33 18:46	07:33 16:31	07:40 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	05:34 (3) 05:53 (3)	04:41 22:12	05:39 (3) 21:21	05:33 20:04	06:35 18:43	07:35 16:28	07:42 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	05:34 (3) 05:52 (3)	04:42 22:11	05:39 (3) 21:19	05:35 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	05:35 (3) 05:53 (3)	04:43 22:10	05:39 (3) 21:17	05:37 20:00	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	05:35 (3) 05:52 (3)	04:44 22:09	05:39 (3) 21:15	05:39 20:00	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	05:36 (3) 05:52 (3)	04:46 22:08	05:39 (3) 21:12	05:41 20:01	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	05:36 (3) 05:52 (3)	04:47 22:07	05:39 (3) 21:10	05:43 20:01	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	05:36 (3) 05:52 (3)	04:48 22:05	05:39 (3) 21:08	05:45 20:01	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	05:37 (3) 05:52 (3)	04:50 22:04	05:39 (3) 21:05	05:47 20:01	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	05:38 (3) 05:52 (3)	04:51 22:03	05:39 (3) 21:03	05:49 20:02	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	05:37 (3) 05:52 (3)	04:53 22:02	05:39 (3) 21:00	05:51 20:00	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	05:38 (3) 05:52 (3)	04:54 22:00	05:40 (3) 20:58	05:53 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 22:15	05:38 (3) 05:52 (3)	04:56 21:59	05:39 (3) 20:56	05:55 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	05:39 (3) 05:53 (3)	04:58 21:57	05:40 (3) 20:53	05:57 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	05:39 (3) 05:53 (3)	04:59 21:56	05:40 (3) 20:51	05:59 19:29	07:01 18:10	08:03 16:04	08:09 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	05:39 (3) 05:53 (3)	05:01 21:54	05:41 (3) 20:48	06:01 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	05:39 (3) 05:53 (3)	05:03 21:53	05:41 (3) 20:46	06:03 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	04:54 21:45	04:31 22:17	05:39 (3) 05:53 (3)	05:04 21:51	05:41 (3) 20:43	06:05 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	05:40 (3) 05:53 (3)	05:06 21:49	05:41 (3) 20:41	06:07 19:18	07:09 18:00	08:11 15:59	08:18 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	05:40 (3) 05:52 (3)	05:08 21:47	05:43 (3) 20:38	06:09 19:15	07:11 16:58	07:13 15:57	08:19 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	05:40 (3) 05:53 (3)	05:10 21:46	05:45 (3) 20:36	06:11 19:13	07:16 16:55	08:21 15:56	08:27 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	05:40 (3) 05:53 (3)	05:12 21:44	05:46 (3) 20:33	06:13 19:10	07:15 16:53	08:23 15:55	08:29 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	05:40 (3) 05:53 (3)	05:13 21:42	05:48 (3) 20:30	06:15 19:07	07:17 16:51	08:25 15:53	08:31 15:49
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) 20:28	06:17 19:05	07:19 16:48	08:27 15:52	08:33 15:50
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	05:55 (3) 20:25	06:19 19:02	07:21 16:46	08:29 15:51	08:35 15:51
31	08:23 16:48		06:57 19:57		04:42 21:58	04:33 22:16	05:41 (3) 05:53 (3)	05:19 21:36	06:21 20:23	07:26 19:02	07:26 16:44	08:31 15:52	08:37 15:52
Potential sun hours	235	266	366	426	508	529	530	553	470	385	324	247	216
Total, worst case					326	487	553	0,48					
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)	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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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
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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	08:58 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 18:44		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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 Shadow receptor: Jaunstamuri - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (199)
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) 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
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
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
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
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
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
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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
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
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
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
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
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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
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
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
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
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	05:33 (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
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
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
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
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
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	08:13 16:58	08:19 15:57
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 20:36	07:13 19:13	08:16 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	05:36 (3) 06:09 (3)	05:12 21:44	06:13 20:33	06:13 20:33	07:15 19:10	08:18 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	05:36 (3) 06:09 (3)	05:13 21:42	06:15 20:30	06:15 20:30	07:17 19:07	08:20 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	05:36 (3) 06:09 (3)	05:15 21:40	06:17 20:28	06:17 20:28	07:19 19:05	08:22 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	05:36 (3) 06:09 (3)	05:17 21:38	06:19 20:25	06:19 20:25	07:21 19:02	08:24 16:46	08:29 15:51
31	08:23 16:48		06:57 19:57		04:42 21:58	04:33 22:16	05:37 (3) 06:02 (3)	05:19 21:36	06:21 20:23	06:21 20:23		08:26 16:44	08:57 15:52
Potential sun hours	235	266	366	426	508	529	530	470	385	323	247	216	
Total, worst case					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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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	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	22:01	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	07:06	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	22:04	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	07:36	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	20:01	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	08:53	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	07:51	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	04:31	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	04:54	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	08:54
	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	08:57
	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	20:55	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		08:57
	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	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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 Shadow receptor: Jaunvilni - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (176)
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	07:25 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 22:12	05:31 21:24	06:33 20:07	07:33 18:46	07:40 16:31	08:39 15:46
7	08:55 16:01	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 20:14	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	08:05 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	04:44 22:09	05:39 21:15	06:41 19:56	07:42 18:35	07:48 16:22	08:44 15:44
11	08:52 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 16:18	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 22:06	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	06:17 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	04:30 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	04:54 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 22:16	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	08:42 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	07:02 19:53	05:43 20:57	05:43 21:55	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	07:00 19:55	05:40 21:00	05:40 21:56	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	06:57 19:57	05:37 20:57	05:37 21:58	04:42 21:58	04:32 22:16	05:19 21:36	06:21 20:23	07:27 16:44	07:27 16:44	08:31 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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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	07:25 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 20:06	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 18:43		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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 Shadow receptor: Kalna Skola - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (179)
 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	07:25 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 20:06	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 18:15	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 19:12	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	06:12 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 18:15	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 18:43		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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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
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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 18:14	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
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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 18:05	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)	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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 Shadow receptor: Kaspari - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (205)
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)	58		08:09 (6)	21:12		22:06	21	05:51 (5)
7	08:55	08:09	07:01							06:38			07:06 (4)	05:24		04:35		05:31 (5)
	16:01	17:04	18:06	15						07:42 (3)	61		08:10 (6)	21:14		22:07	20	05:51 (5)
8	08:54	08:07	06:59							07:25 (3)			07:05 (4)	05:22		04:34		05:31 (5)
	16:03	17:06	18:08	18						07:43 (3)	64		08:10 (6)	21:16		22:08	20	05:51 (5)
9	08:53	08:05	06:56							07:24 (3)			07:05 (4)	05:20		04:33		05:31 (5)
	16:05	17:09	18:10	21						07:45 (3)	65		08:10 (6)	21:18		22:09	19	05:50 (5)
10	08:52	08:02	06:53							07:23 (3)			07:04 (4)	05:18		04:33		05:32 (5)
	16:06	17:11	18:13	22						07:45 (3)	66		08:10 (6)	21:20		22:10	19	05:51 (5)
11	08:52	08:00	06:51							07:22 (3)			07:04 (4)	05:16		04:32		05:33 (5)
	16:08	17:13	18:15	23						07:45 (3)	66		08:10 (6)	21:22		22:11	18	05:51 (5)
12	08:51	07:58	06:48							07:22 (3)			07:04 (4)	05:14		04:32		05:33 (5)
	16:10	17:15	18:17	23						07:45 (3)	66		08:10 (6)	21:24		22:12	18	05:51 (5)
13	08:50	07:56	06:45							07:22 (3)			07:04 (4)	05:12		04:31		05:34 (5)
	16:11	17:18	18:19	23						07:45 (3)	65		08:09 (6)	21:26		22:12	17	05:51 (5)
14	08:49	07:53	06:43							07:21 (3)			07:05 (4)	05:10		04:31		05:34 (5)
	16:13	17:20	18:21	23						07:44 (3)	65		08:10 (6)	21:28		22:13	17	05:51 (5)
15	08:48	07:51	06:40							07:21 (3)			07:05 (4)	05:08		04:31		05:35 (5)
	16:15	17:22	18:23	22						07:43 (3)	62		08:09 (6)	21:30		22:14	16	05:51 (5)
16	08:46	07:49	06:37							07:22 (3)			07:06 (4)	05:06	05:37 (5)	04:30		05:34 (5)
	16:17	17:24	18:25	21						07:43 (3)	60		08:09 (6)	21:32	05:43 (5)	22:15	16	05:50 (5)
17	08:45	07:46	06:35							07:23 (3)			07:08 (4)	05:04	05:35 (5)	04:30		05:35 (5)
	16:19	17:27	18:27	18						07:41 (3)	53		08:07 (6)	21:34	05:45 (5)	22:15	16	05:51 (5)
18	08:44	07:44	06:32							07:23 (3)			07:12 (4)	05:02	05:33 (5)	04:30		05:35 (5)
	16:21	17:29	18:30	16						07:39 (3)	45		08:07 (6)	21:36	05:46 (5)	22:16	16	05:51 (5)
19	08:43	07:42	06:29							07:26 (3)			07:25 (6)	05:00	05:32 (5)	04:30		05:35 (5)
	16:23	17:31	18:32	11						07:37 (3)	41		08:06 (6)	21:38	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	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	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	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	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	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	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	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	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	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	05:51 (5)	22:16	17	05:54 (5)
30	08:25		07:00							05:40				04:43	05:28 (5)	04:34		05:37 (5)
	16:46		19:55	6						07:55 (6)				21:56	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	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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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.

	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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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	08:14 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		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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 Shadow receptor: Klavas - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (181)
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	07:25 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 22:06	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 16:28	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	07:37 18:41	07:44 16:26	08:42 15:45
9	08:53 16:05	08:04 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	04:44 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	07:50 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	06:17 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 21:01	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 18:17	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	07:42 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	05:01 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	04:31 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 19:15	08:13 16:58	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	08:16 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	05:12 21:44	06:13 20:33	07:15 19:10	08:18 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	08:20 16:51	08:25 15:53	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 16:48	08:27 15:52	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 16:46	08:29 15:51	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)	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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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
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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 18:00		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)	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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 Shadow receptor: Laucini - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (191)
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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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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 Shadow receptor: Lejies i - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (197)
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
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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 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 19:55	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 15:50
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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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	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	06:51	05:35	04:39	04:35	05:22	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	08:57	08:17	07:11	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	08:56	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	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	04:35	04:39	05:30	06:33	07:33	07:40	08:39
	16:00	17:01	18:04	20:09	21:12	22:06	22:12	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	08:40
	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	08:07	06:58	06:36	05:22	04:34	04:42	05:34	06:37	07:37	07:44	08:42
	16:03	17:06	18:08	20:13	21:16	22:08	22:11	21:19	20:01	18:40	16:26	15:44
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	19:59	18:38	16:24	15:44
10	08:52	08:02	06:53	06:30	05:18	04:32	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	21:15	19:56	18:35	16:22	15:44
11	08:52	08:00	06:50	06:28	05:15	04:32	04:45	05:40	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	15:43
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	19:50	18:30	16:18	15:43
13	08:50	07:55	06:45	06:22	05:11	04:31	04:48	05:44	06:47	07:48	07:55	08:48
	16:11	17:17	18:19	20:24	21:26	22:12	22:06	21:08	19:48	18:27	16:16	15:43
14	08:49	07:53	06:43	06:20	05:09	04:31	04:50	05:46	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	16:14	15:43
15	08:47	07:51	06:40	06:17	05:07	04:30	04:51	05:48	06:51	07:52	07:59	08:50
	16:15	17:22	18:23	20:28	21:30	22:14	22:03	21:03	19:42	18:22	16:13	15:43
16	08:46	07:49	06:37	06:15	05:06	04:30	04:52	05:50	06:53	07:54	08:01	08:51
	16:17	17:24	18:25	20:30	21:32	22:14	22:02	21:00	19:40	18:20	16:11	15:43
17	08:45	07:46	06:34	06:12	05:04	04:30	04:54	05:52	06:55	07:56	08:03	08:52
	16:19	17:26	18:27	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	06:09	05:02	04:30	04:56	05:54	06:57	07:58	08:05	08:53
	16:21	17:29	18:29	20:34	21:36	22:16	21:59	20:56	19:34	18:15	16:07	15:43
19	08:42	07:41	06:29	06:07	05:00	04:30	04:57	05:56	06:59	08:00	08:07	08:54
	16:23	17:31	18:32	20:36	21:37	22:16	21:57	20:53	19:32	18:12	16:06	15:43
20	08:41	07:39	06:26	06:04	04:58	04:30	04:59	05:58	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	15:43
21	08:40	07:37	06:24	06:02	04:56	04:30	05:01	06:00	07:03	08:05	08:11	08:55
	16:27	17:35	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	05:59	04:55	04:30	05:02	06:02	07:05	08:07	08:14	08:56
	16:29	17:37	18:38	20:43	21:43	22:17	21:53	20:46	19:23	18:05	16:01	15:44
23	08:37	07:32	06:18	05:57	04:53	04:30	05:04	06:04	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	18:02	16:00	15:45
24	08:35	07:29	06:16	05:54	04:52	04:31	05:06	06:06	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	15:58	15:45
25	08:33	07:27	06:13	05:52	04:50	04:31	05:08	06:08	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	17:57	15:57	15:46
26	08:32	07:24	06:10	05:50	04:48	04:31	05:09	06:11	07:13	08:15	08:21	08:57
	16:37	17:46	18:46	20:51	21:50	22:17	21:46	20:35	19:13	17:55	15:55	15:47
27	08:30	07:22	06:08	05:47	04:47	04:32	05:11	06:13	07:15	08:18	08:23	08:57
	16:39	17:49	18:48	20:53	21:51	22:17	21:44	20:33	19:10	17:53	15:54	15:47
28	08:28	07:19	06:05	05:45	04:46	04:32	05:13	06:15	07:17	08:20	08:25	08:57
	16:41	17:51	18:50	20:55	21:53	22:17	21:42	20:30	19:07	17:50	15:53	15:48
29	08:26		07:02	05:42	04:44	04:33	05:15	06:17	07:19	08:22	08:27	08:57
	16:44		19:52	20:57	21:55	22:16	21:40	20:28	19:04	17:48	15:52	15:49
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	20:59	21:56	22:16	21:38	20:25	19:02	17:46	15:51	15:50
31	08:23		06:57		04:42		05:19	06:21		07:26		08:57
	16:48		19:57		21:58		21:36	20:22		16:43		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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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	07:25 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 20:06	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 15:44
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 17:10	06:53 18:12	06:30 20:17	05:18 21:20	04:32 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 17:19	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	07:48 17:24	06:37 18:25	06:15 20:30	05:05 21:32	04:30 22:14	04:52 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	07:32 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 21:45	06:10 20:35	07:13 19:12	08:15 18:05	08:21 15:55	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	08:18 18:05	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	06:14 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	06:16 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	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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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	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 22:00	04:35 22:16	05:21 21:35	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	05:35 21:04	04:40 22:01	04:36 22:16	05:23 21:32	06:25 20:18	07:25 18:57	07:31 16:39	08:33 15:49
3	08:57 15:56	08:17 16:55	07:12 17:58	06:49 20:03	05:33 21:06	04:38 22:02	04:36 22:15	05:25 21:30	06:27 20:15	07:27 18:54	07:33 16:37	08:34 15:48
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	04:37 22:14	05:27 21:28	06:29 20:12	07:29 18:51	07:36 16:35	08:36 15:47
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	04:38 22:14	05:29 21:26	06:31 20:10	07:31 18:49	07:38 16:33	08:38 15:47
6	08:56 16:00	08:11 17:02	07:04 18:04	06:41 20:10	05:26 21:12	04:36 22:06	04:39 22:13	05:31 21:24	06:33 20:07	07:34 18:46	07:40 16:30	08:39 15:46
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	04:41 22:12	05:32 21:22	06:35 20:04	07:36 18:43	07:42 16:28	08:41 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	05:34 21:20	06:37 20:02	07:38 18:41	07:44 16:26	08:42 15:45
9	08:54 16:04	08:05 17:08	06:56 18:11	06:33 20:16	05:20 21:18	04:33 22:09	04:43 22:10	05:36 21:17	06:39 19:59	07:40 18:38	07:46 16:24	08:43 15:44
10	08:53 16:06	08:03 17:11	06:53 18:13	06:31 20:18	05:18 21:20	04:33 22:10	04:44 22:09	05:38 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	04:45 22:08	05:40 21:13	06:43 19:53	07:44 18:33	07:51 16:20	08:46 15:43
12	08:51 16:09	07:58 17:15	06:48 18:17	06:25 20:22	05:14 21:24	04:32 22:12	04:47 22:07	05:42 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 22:13	04:48 22:06	05:44 21:08	06:47 19:48	07:48 18:28	07:55 16:16	08:48 15:43
14	08:49 16:13	07:54 17:20	06:43 18:21	06:20 20:26	05:10 21:28	04:31 22:14	04:50 22:05	05:47 21:06	06:49 19:45	07:50 18:25	07:57 16:15	08:50 15:43
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	04:51 22:03	05:49 21:03	06:51 19:43	07:52 18:23	07:59 16:13	08:51 15:43
16	08:47 16:17	07:49 17:24	06:37 18:25	06:15 20:31	05:06 21:32	04:30 22:15	04:53 22:02	05:51 21:01	06:53 19:40	07:54 18:20	08:02 16:11	08:52 15:43
17	08:46 16:19	07:47 17:27	06:35 18:28	06:12 20:33	05:04 21:34	04:30 22:16	04:54 22:01	05:53 20:58	06:55 19:37	07:57 18:17	08:04 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	04:57 21:58	05:57 20:53	06:59 19:32	08:01 18:12	08:08 16:06	08:54 15:43
20	08:42 16:25	07:39 17:33	06:27 18:34	06:05 20:39	04:58 21:40	04:30 22:17	04:59 21:56	05:59 20:51	07:01 19:29	08:03 18:10	08:10 16:04	08:55 15:43
21	08:40 16:27	07:37 17:36	06:24 18:36	06:02 20:41	04:57 21:42	04:30 22:17	05:01 21:55	06:01 20:49	07:03 19:26	08:05 18:07	08:12 16:03	08:55 15:44
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	05:02 21:53	06:03 20:46	07:05 19:24	08:07 18:05	08:14 16:01	08:56 15:44
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	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	07:30 17:42	06:16 18:42	05:55 20:47	04:52 21:47	04:31 22:17	05:06 21:50	06:07 20:41	07:09 19:18	08:12 18:00	08:18 15:58	08:57 15:45
25	08:34 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:49	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 16:37	07:25 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	08:58 15:47
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	05:11 21:44	06:13 20:33	07:15 19:10	08:18 18:10	08:24 16:53	08:58 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	08:26 16:51	08:58 15:48
29	08:27 16:44		07:03 19:53	05:43 20:58	04:44 21:55	04:33 22:17	05:15 21:40	06:17 20:28	07:19 19:05	08:22 18:05	08:27 16:48	08:58 15:49
30	08:25 16:46		07:00 19:55	05:40 21:00	04:43 21:57	04:34 22:16	05:17 21:39	06:19 20:25	07:21 19:02	08:25 18:00	08:29 16:46	08:58 15:50
31	08:23 16:48		06:57 19:57		04:42 21:58		05:19 21:37	06:21 20:23		07:27 18:55		08:58 15:52
Potential sun hours	234	266	366	426	509	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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 Shadow receptor: Mazmazgi - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (216)
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	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	22:00	22:16	21:35	20:20	18:59	16:41	15:50
2	08:57	08:19	07:14	06:52	05:35	04:40	04:36	05:23	06:25	07:25	07:31	08:33
	15:54	16:53	17:55	20:01	21:04	22:01	22:16	21:32	20:18	18:57	16:39	15:49
3	08:57	08:17	07:12	06:49	05:33	04:38	04:36	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	08:57	08:15	07:09	06:46	05:31	04:37	04:37	05:27	06:29	07:29	07:36	08:36
	15:57	16:57	18:00	20:05	21:08	22:04	22:14	21:28	20:12	18:51	16:35	15:47
5	08:56	08:13	07:07	06:44	05:29	04:37	04:38	05:29	06:31	07:31	07:38	08:38
	15:58	16:59	18:02	20:07	21:10	22:05	22:14	21:26	20:10	18:49	16:33	15:47
6	08:56	08:11	07:04	06:41	05:26	04:36	04:39	05:31	06:33	07:34	07:40	08:39
	16:00	17:02	18:04	20:10	21:12	22:06	22:13	21:24	20:07	18:46	16:30	15:46
7	08:55	08:09	07:01	06:38	05:24	04:35	04:41	05:33	06:35	07:36	07:42	08:41
	16:01	17:04	18:06	20:12	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	07:38	07:44	08:42
	16:03	17:06	18:08	20:14	21:16	22:08	22:11	21:20	20:02	18:41	16:26	15:45
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	17:09	18:11	20:16	21:18	22:09	22:10	21:17	19:59	18:38	16:24	15:44
10	08:53	08:03	06:53	06:31	05:18	04:33	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	18:36	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	19:54	18:33	16:20	15:43
12	08:51	07:58	06:48	06:25	05:14	04:32	04:47	05:42	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	06:46	06:23	05:12	04:31	04:48	05:45	06:47	07:48	07:55	08:48
	16:11	17:18	18:19	20:24	21:26	22:13	22:06	21:08	19:48	18:28	16:16	15:43
14	08:49	07:54	06:43	06:20	05:10	04:31	04:50	05:47	06:49	07:50	07:57	08:50
	16:13	17:20	18:21	20:26	21:28	22:14	22:05	21:06	19:45	18:25	16:15	15:43
15	08:48	07:51	06:40	06:17	05:08	04:30	04:51	05:49	06:51	07:52	07:59	08:51
	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	06:37	06:15	05:06	04:30	04:53	05:51	06:53	07:54	08:02	08:52
	16:17	17:24	18:25	20:31	21:32	22:15	22:02	21:01	19:40	18:20	16:11	15:43
17	08:45	07:47	06:35	06:12	05:04	04:30	04:54	05:53	06:55	07:57	08:04	08:52
	16:19	17:27	18:28	20:33	21:34	22:16	22:01	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	07:59	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	04:57	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	18:12	16:06	15:43
20	08:41	07:39	06:27	06:05	04:58	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	16:04	15:43
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	21:42	22:17	21:55	20:49	19:26	18:07	16:03	15:44
22	08:39	07:34	06:21	06:00	04:55	04:30	05:02	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	15:44
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
	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	07:30	06:16	05:55	04:52	04:31	05:06	06:07	07:09	08:12	08:18	08:57
	16:33	17:42	18:42	20:47	21:47	22:17	21:50	20:41	19:18	18:00	15:58	15:45
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	21:49	22:17	21:48	20:38	19:16	17:58	15:57	15:46
26	08:32	07:25	06:11	05:50	04:49	04:32	05:10	06:11	07:13	08:16	08:22	08:58
	16:37	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	05:11	06:13	07:15	08:18	08:24	08:58
	16:39	17:49	18:49	20:54	21:52	22:17	21:44	20:33	19:10	17:53	15:54	15:48
28	08:29	07:19	06:05	05:45	04:46	04:33	05:13	06:15	07:17	08:20	08:26	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	04:44	04:33	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	15:49
30	08:25		07:00	05:40	04:43	04:34	05:17	06:19	07:21	08:25	08:29	08:58
	16:46		19:55	21:00	21:57	22:16	21:39	20:25	19:02	17:46	15:51	15:50
31	08:23		06:57		04:42		05:19	06:21		07:27		08:58
	16:48		19:57		21:58		21:37	20:23		16:44		15:52
Potential sun hours	234	266	366	426	509	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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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	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	06:52 20:01	05:35 21:04	04:39 22:01	04:35 22:15	05:23 21:32	06:25 20:17	07:31 18:57	07:31 16:39	08:33 15:49
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	04:36 22:15	05:25 21:30	06:27 20:15	07:27 18:54	07:33 16:37	08:34 15:48
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	04:37 22:14	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 16:59	07:07 18:02	06:44 20:07	05:29 21:10	04:36 22:05	04:38 22:14	05:28 21:26	06:31 20:10	07:31 18:49	07:38 16:33	08:38 15:46
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	04:39 22:13	05:30 21:24	06:33 20:07	07:33 18:46	07:40 16:30	08:39 15:46
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	04:40 22:12	05:32 21:22	06:35 20:04	07:36 18:43	07:42 16:28	08:41 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	05:34 21:19	06:37 20:02	07:38 18:41	07:44 16:26	08:42 15:45
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	04:43 22:10	05:36 21:17	06:39 19:59	07:40 18:38	07:46 16:24	08:43 15:44
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	04:44 22:09	05:38 21:15	06:41 19:56	07:42 18:35	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	04:45 22:08	05:40 21:13	06:43 19:53	07:44 18:33	07:51 16:20	08:46 15:43
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	04:47 22:07	05:42 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 17:17	06:45 18:19	06:23 20:24	05:12 21:26	04:31 22:13	04:48 22:06	05:44 21:08	06:47 19:48	07:48 18:28	07:55 16:16	08:48 15:43
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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	04:51 22:03	05:48 21:03	06:51 19:43	07:52 18:23	07:59 16:13	08:51 15:43
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	04:53 22:02	05:50 21:01	06:53 19:40	07:54 18:20	08:01 16:11	08:52 15:43
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	04:54 22:01	05:52 20:58	06:55 19:37	07:56 18:17	08:04 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	08:06 16:07	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	04:57 21:58	05:57 20:53	06:59 19:32	08:01 18:12	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	04:58 21:40	04:30 22:17	04:59 21:56	05:59 20:51	07:01 19:29	08:03 18:10	08:10 16:04	08:55 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 22:17	05:01 21:55	06:01 20:48	07:03 19:26	08:05 18:07	08:12 16:03	08:55 15:44
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	05:02 21:53	06:03 20:46	07:05 19:24	08:07 18:05	08:14 16:01	08:56 15:44
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	05:04 21:51	06:05 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	05:55 20:47	04:52 21:47	04:31 22:17	05:06 21:50	06:07 20:41	07:09 19:18	08:11 18:00	08:18 15:58	08:57 15:45
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 16:37	07:24 17:47	06:11 18:46	05:50 20:51	04:49 21:50	04:31 22:17	05:09 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 16:39	07:22 17:49	06:08 18:49	05:47 20:54	04:47 21:52	04:32 22:17	05:11 21:44	06:13 20:33	07:15 19:10	08:18 18:05	08:24 16:53	08:58 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 18:00	08:26 16:50	08:58 15:48
29	08:27 16:44		07:02 19:53	05:42 20:58	04:44 21:55	04:33 22:17	05:15 21:40	06:17 20:28	07:19 19:05	08:22 18:05	08:27 16:48	08:58 15:49
30	08:25 16:46		07:00 19:55	05:40 21:00	04:43 21:57	04:34 22:16	05:17 21:38	06:19 20:25	07:21 19:02	08:25 18:00	08:29 16:46	08:58 15:50
31	08:23 16:48		06:57 19:57		04:42 21:58		05:19 21:36	06:21 20:23		07:27 18:00	07:27 16:44	08:58 15:51
Potential sun hours	234	266	366	426	509	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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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	07:25 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 22:06	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)	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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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
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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
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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 20:51	07:01 19:29	08:02 18:10	08:09 16:04	08:54 15:43
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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
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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 18:05	08:21 15:55	08:57 15:47
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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 18:04	08:27 16:48	08:57 15:49
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31	08:23 16:48		06:57 19:57		04:42 21:57		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)	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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment
 Vilandes 3-6
 LV-1010 Riga
 0037167242411
 Laura Kurzemniece / laura.kurzemniece@environment.lv
 Calculated:
 03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 Shadow receptor: OŠ i - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (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	18:56 (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	18:57 (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	18:58 (4)	07:26	08:31
	16:48		19:57	8	19:00 (4)		21:57	21:36	20:22		16:43	
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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 Shadow receptor: Papardes - Shadow Receptor: $1,0 \times 1,0$ Azimuth: $3,1^\circ$ Slope: $90,0^\circ$ (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 18:44		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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment
Vilandes 3-6
LV-1010 Riga
0037167242411
Laura Kurzemniece / laura.kurzemniece@environment.lv
Calculated:
03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 Shadow receptor: Pieduri - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (203)
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	22 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 20:55 (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 20:03	05:33 21:06		04:39 22:02	04:37 22:14	05:25 21:30	22 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 20:05	05:31 21:08	20:31 (3)	04:38 22:03	04:37 22:14	05:27 21:28	20 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 20:07	05:29 21:10	4 9	20:35 (3) 20:37 (3)	22:03 22:04	04:38 22:13	20 21:26	20:35 (3) 20:52 (3)	06:31 20:09	07:31 18:48	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	20:27 (3) 12 20:39 (3)	04:36 22:05	04:40 22:12	05:30 21:23	17 14	20:35 (3) 20:49 (3)	06:33 20:07	07:33 18:46	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	20:26 (3) 14 20:40 (3)	04:35 22:06	04:41 22:11	05:32 21:21	10 7	20:37 (3) 20:47 (3)	06:35 20:04	07:35 18:43	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	20:25 (3) 17 20:42 (3)	04:34 22:08	04:42 22:11	05:34 21:19	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 20:15	05:20 21:18	20:24 (3) 20 20:44 (3)	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	20:23 (3) 21 20:44 (3)	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	20:23 (3) 22 20:45 (3)	04:32 22:11	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 16:10	07:58 17:15	06:48 18:17	06:25 20:22	05:14 21:24	20:22 (3) 23 20:45 (3)	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	20:23 (3) 23 20:46 (3)	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	20:23 (3) 22 20:45 (3)	04:31 22:13	04:50 22:04	05:46 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	20:22 (3) 23 20:45 (3)	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	20:22 (3) 23 20:45 (3)	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	20:23 (3) 22 20:45 (3)	04:30 22:15	04:54 22:00	20:42 (3) 20:45 (3)	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	20:23 (3) 21 20:44 (3)	04:30 22:15	04:56 21:59	20:40 (3) 20:48 (3)	05:54 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	20:24 (3) 21 20:45 (3)	04:30 22:16	04:57 21:57	20:38 (3) 20:50 (3)	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	20:24 (3) 20 20:44 (3)	04:30 22:16	04:59 21:56	20:37 (3) 20:51 (3)	05:58 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	20:26 (3) 18 20:44 (3)	04:30 22:16	05:01 21:54	20:36 (3) 20:52 (3)	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	20:26 (3) 16 20:42 (3)	04:30 22:17	05:02 21:52	20:36 (3) 20:53 (3)	06:03 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	20:27 (3) 15 20:42 (3)	04:31 22:17	05:04 21:51	20:34 (3) 20:53 (3)	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	20:28 (3) 12 20:40 (3)	04:31 22:17	05:06 21:49	20:34 (3) 20:54 (3)	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	20:29 (3) 11 20:40 (3)	04:31 22:17	05:08 21:47	20:34 (3) 20:55 (3)	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	20:32 (3) 6 20:38 (3)	04:32 22:17	05:10 21:45	20:33 (3) 20:55 (3)	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	20:38 (3) 22 20:53 (3)	04:32 22:17	05:11 21:44	20:33 (3) 20:55 (3)	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	20:33 (3) 22 20:56 (3)	04:33 22:16	05:13 21:42	20:33 (3) 20:56 (3)	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	20:33 (3) 22 20:55 (3)	04:33 22:16	05:15 21:40	20:33 (3) 20:55 (3)	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	20:33 (3) 23 20:56 (3)	04:34 22:16	05:17 21:38	20:33 (3) 20:56 (3)	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		06:57 19:57		04:42 21:57	20:33 (3) 23 20:56 (3)		05:19 21:36	20:33 (3) 20:56 (3)	06:21 20:22	07:22 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)	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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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
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	08:45 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 22:07	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	07:55 17:18	06:45 18:19	06:23 20:24	05:12 21:26	04:31 22:12	04:48 22:05	05:45 21:08	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 18:22	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 21:35	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	08:53 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	04:53 21:45	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 20:41	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	08:57 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 18:02	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 18:01	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 20:22		07:26 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)	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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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
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	07:41 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
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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 22:09	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
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
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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	06:10 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	07:31 17:40	06:18 18:40	05:57 20:45	04:53 21:44	04:31 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	08:56 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 18:15	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 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	08:22 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	08:28 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 18:00	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)	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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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	07:25 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 22:06	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	08:47 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	04:32 22:17	05:08 21:47	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 18:46	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	08:23 16:55	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	08:25 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	08:27 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	08:29 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	08:31 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)	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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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 16:58	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 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 22:16	05:11 21:44	06:13 20:33	07:15 19:10	08:18 16:53	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 16:51	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 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		06:57 19:57		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)	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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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)	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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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	15:50
2	04:36		21:08 (4)	05:23	06:25		19:02 (3)	07:25	08:32
	22:15	18	21:26 (4)	21:32	20:17	32	19:34 (3)	18:56	15:49
3	04:37		21:09 (4)	05:25	06:27		19:02 (3)	07:27	08:34
	22:14	17	21:26 (4)	21:30	20:15	30	19:32 (3)	18:54	15:48
4	04:37		21:10 (4)	05:27	06:29		19:04 (3)	07:29	08:35
	22:14	16	21:26 (4)	21:28	20:12	26	19:30 (3)	18:51	15:47
5	04:38		21:11 (4)	05:29	06:31		19:05 (3)	07:31	08:37
	22:13	14	21:25 (4)	21:26	20:09	23	19:28 (3)	18:48	15:47
6	04:40		21:12 (4)	05:30	06:33		19:07 (3)	07:33	08:39
	22:12	12	21:24 (4)	21:23	20:07	19	19:26 (3)	18:46	15:46
7	04:41		21:14 (4)	05:32	06:35		19:11 (3)	07:35	08:40
	22:12	9	21:23 (4)	21:21	20:04	11	19:22 (3)	18:43	15:45
8	04:42		21:17 (4)	05:34	06:37			07:37	08:41
	22:11	3	21:20 (4)	21:19	20:01			18:41	15:45
9	04:43			05:36	20:07 (6)	06:39		07:39	08:43
	22:10			21:17	8	20:15 (6)		18:38	15:44
10	04:44			05:38	20:04 (6)	06:41		07:41	08:44
	22:09			21:14	13	20:17 (6)		18:35	15:44
11	04:46			05:40	19:18 (3)	06:43		07:44	08:45
	22:08			21:12	27	20:18 (6)		18:33	15:43
12	04:47			05:42	19:15 (3)	06:45		07:46	08:47
	22:07			21:10	36	20:20 (6)		18:30	15:43
13	04:48			05:44	19:12 (3)	06:47		07:48	08:48
	22:05			21:08	41	20:19 (6)		18:28	15:43
14	04:50			05:46	19:10 (3)	06:49		07:50	08:49
	22:04			21:05	47	20:20 (6)		18:25	15:43
15	04:51			05:48	19:09 (3)	06:51		07:52	08:50
	22:03			21:03	49	20:20 (6)		18:22	15:43
16	04:53			05:50	19:08 (3)	06:53		07:54	08:51
	22:02			21:00	52	20:20 (6)		18:20	15:43
17	04:54			05:52	19:06 (3)	06:55		07:56	08:52
	22:00			20:58	55	20:20 (6)		18:17	15:43
18	04:56			05:54	19:05 (3)	06:57		07:58	08:53
	21:59			20:55	57	20:20 (6)		18:15	15:43
19	04:57			05:56	19:05 (3)	06:59		08:00	08:53
	21:57			20:53	57	20:20 (6)		18:12	15:43
20	04:59			05:59	19:04 (3)	07:01		08:03	08:54
	21:56			20:51	57	20:19 (6)		18:10	15:43
21	05:01			06:01	19:02 (3)	07:03		08:05	08:55
	21:54			20:48	56	20:16 (6)		18:07	15:44
22	05:02			06:03	19:02 (3)	07:05		08:07	08:55
	21:52			20:46	53	20:14 (6)		18:05	15:44
23	05:04			06:05	19:01 (3)	07:07		08:09	08:56
	21:51			20:43	51	20:12 (6)		18:02	15:45
24	05:06			06:07	19:01 (3)	07:09		08:11	08:56
	21:49			20:41	46	20:09 (6)		18:00	15:45
25	05:08			06:09	19:01 (3)	07:11		07:13	08:57
	21:47			20:38	41	20:07 (6)		16:58	15:46
26	05:10			06:11	19:00 (3)	07:13		07:15	08:57
	21:46			20:35	40	19:40 (3)		16:55	15:47
27	05:11			06:13	19:00 (3)	07:15		07:18	08:57
	21:44			20:33	39	19:39 (3)		16:53	15:48
28	05:13			06:15	19:00 (3)	07:17		07:20	08:57
	21:42			20:30	39	19:39 (3)		16:50	15:49
29	05:15			06:17	19:01 (3)	07:19		07:22	08:57
	21:40			20:28	37	19:38 (3)		16:48	15:50
30	05:17			06:19	19:01 (3)	07:21		07:24	08:57
	21:38			20:25	37	19:38 (3)		16:46	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
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)		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)

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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 17 20:36 (4)
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 17 20:36 (4)
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 15 20:37 (4)
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 13 20:39 (4)
5	08:56 15:58	08:13 16:59	07:06 18:02	06:44 20:07 4	05:29 19:34 (3) 21:10	04:37 22:04 13 20:39 (4)
6	08:55 16:00	08:11 17:02	07:04 18:04	06:41 20:09 10	05:26 19:30 (3) 21:12	04:36 22:05 11 20:40 (4)
7	08:54 16:01	08:09 17:04	07:01 18:06	06:38 20:11 15	05:24 19:28 (3) 21:14	04:35 22:07 8 20:41 (4)
8	08:54 16:03	08:06 17:06	06:58 18:08	06:36 20:13 18	05:22 19:26 (3) 21:16	04:34 22:08 6 20:43 (4)
9	08:53 16:04	08:04 17:08	06:56 18:10	06:33 20:15 21	05:20 19:24 (3) 21:18	04:33 22:09 5 20:44 (4)
10	08:52 16:06	08:02 17:11	06:53 18:12	06:30 20:18 24	05:18 19:23 (3) 21:20	04:33 22:10 9 20:46 (4)
11	08:51 16:08	08:00 17:13	06:50 18:15	06:28 20:20 24	05:16 19:22 (3) 21:22	04:32 22:11 12 20:47 (4)
12	08:50 16:09	07:58 17:15	06:48 18:17	06:25 20:22 25	05:14 19:22 (3) 21:24	04:32 22:12 15 20:49 (4)
13	08:49 16:11	07:55 17:17	06:45 18:19	06:22 20:24 25	05:12 19:21 (3) 21:26	04:31 22:13 18 20:52 (4)
14	08:48 16:13	07:53 17:20	06:42 18:21	06:20 20:26 24	05:10 19:22 (3) 21:28	04:31 22:14 20 20:53 (4)
15	08:47 16:15	07:51 17:22	06:40 18:23	06:17 20:28 24	05:08 19:21 (3) 21:30	04:30 22:15 22 20:54 (4)
16	08:46 16:17	07:48 17:24	06:37 18:25	06:15 20:30 23	05:06 19:22 (3) 21:32	04:30 22:16 23 20:55 (4)
17	08:45 16:19	07:46 17:26	06:34 18:27	06:12 20:32 22	05:04 19:22 (3) 21:34	04:30 22:17 24 20:56 (4)
18	08:44 16:21	07:44 17:29	06:32 18:29	06:10 20:34 20	05:02 19:23 (3) 21:35	04:30 22:18 24 20:57 (4)
19	08:42 16:23	07:41 17:31	06:29 18:32	06:07 20:36 18	05:00 19:23 (3) 21:37	04:30 22:19 25 20:58 (4)
20	08:41 16:25	07:39 17:33	06:26 18:34	06:04 20:38 15	04:58 19:25 (3) 21:39	04:30 22:20 24 20:59 (4)
21	08:39 16:27	07:36 17:35	06:24 18:36	06:02 20:41 11	04:57 19:26 (3) 21:41	04:30 22:21 25 20:59 (4)
22	08:38 16:29	07:34 17:38	06:21 18:38	05:59 20:43	04:55 21:43	04:30 22:22 24 20:59 (4)
23	08:36 16:31	07:32 17:40	06:18 18:40	05:57 20:45	04:53 21:44	04:30 22:23 24 20:59 (4)
24	08:35 16:33	07:29 17:42	06:16 18:42	05:54 20:47	04:52 21:46	04:31 22:24 24 20:59 (4)
25	08:33 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:48	04:31 22:25 23 20:59 (4)
26	08:32 16:37	07:24 17:46	06:10 18:46	05:50 20:51	04:49 21:50	04:32 22:26 22 20:59 (4)
27	08:30 16:39	07:22 17:49	06:08 18:48	05:47 20:53	04:47 21:51	04:32 22:27 22 20:59 (4)
28	08:28 16:42	07:19 17:51	06:05 18:50	05:45 20:55	04:46 21:53	04:33 22:28 21 20:59 (4)
29	08:26 16:44		07:02 19:52	05:42 20:57	04:44 21:54	04:33 22:29 20 20:59 (4)
30	08:25 16:46		07:00 19:55	05:40 20:59	04:43 21:56	04:34 22:30 20 20:59 (4)
31	08:23 16:48		06:57 19:57		04:42 21:57	04:35 22:31 19 20:59 (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)

Project:

flickering_Nordex_N163_Stelpe1

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

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Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 Shadow receptor: Priežlejas - 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.

	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	20:53 (4)	21:28	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		07:37
	22:11	20:58 (4)	21:19	20:01		18:41
9	04:43	20:45 (4)	05:36	06:39		07:39
	22:10	20:59 (4)	21:17	19:58		18:38
10	04:44	20:44 (4)	05:38	06:41		07:41
	22:09	21:00 (4)	21:14	19:56		18:35
11	04:46	20:43 (4)	05:40	06:43		07:43
	22:08	21:00 (4)	21:12	19:53		18:33
12	04:47	20:44 (4)	05:42	06:45		07:46
	22:07	21:02 (4)	21:10	19:50		18:30
13	04:48	20:43 (4)	05:44	06:47		07:48
	22:05	21:02 (4)	21:07	19:48		18:27
14	04:50	20:42 (4)	05:46	06:49		07:50
	22:04	21:03 (4)	21:05	19:45		18:25
15	04:51	20:43 (4)	05:48	06:51		07:52
	22:03	21:04 (4)	21:03	19:42		18:22
16	04:53	20:42 (4)	05:50	06:53		07:54
	22:01	21:04 (4)	21:00	19:40		18:20
17	04:54	20:41 (4)	05:52	06:55		07:56
	22:00	21:04 (4)	20:58	19:37		18:17
18	04:56	20:42 (4)	05:54	06:57		07:58
	21:59	21:05 (4)	20:55	19:34		18:15
19	04:57	20:41 (4)	05:56	06:59		08:00
	21:57	21:05 (4)	20:53	19:31		18:12
20	04:59	20:41 (4)	05:58	07:01		08:02
	21:56	21:05 (4)	20:51	19:29		18:10
21	05:01	20:41 (4)	06:00	19:34 (3)		08:05
	21:54	21:05 (4)	20:48	19:38 (3)		18:07
22	05:02	20:41 (4)	06:03	19:30 (3)		08:07
	21:52	21:06 (4)	20:46	19:42 (3)		18:05
23	05:04	20:41 (4)	06:05	19:28 (3)		08:09
	21:51	21:05 (4)	20:43	19:44 (3)		18:02
24	05:06	20:41 (4)	06:07	19:27 (3)		08:11
	21:49	21:06 (4)	20:40	19:45 (3)		18:00
25	05:08	20:42 (4)	06:09	19:25 (3)		07:13
	21:47	21:06 (4)	20:38	19:46 (3)		16:57
26	05:09	20:41 (4)	06:11	19:24 (3)		07:15
	21:46	21:05 (4)	20:35	19:47 (3)		16:55
27	05:11	20:42 (4)	06:13	19:23 (3)		07:18
	21:44	21:05 (4)	20:33	19:47 (3)		16:53
28	05:13	20:43 (4)	06:15	19:23 (3)		07:20
	21:42	21:05 (4)	20:30	19:47 (3)		16:50
29	05:15	20:42 (4)	06:17	19:22 (3)		07:22
	21:40	21:04 (4)	20:28	19:47 (3)		16:48
30	05:17	20:43 (4)	06:19	19:22 (3)		07:24
	21:38	21:03 (4)	20:25	19:47 (3)		16:46
31	05:19	20:44 (4)	06:21	19:21 (3)		07:26
	21:36	21:01 (4)	20:22	19:46 (3)		16:43
Potential sun hours	530	470	385		323	247
Total, worst case	537	253	118			216
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)
	Minutes with flicker		

Project:

flickering_Nordex_N163_Stelpe1

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

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0037167242411

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Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 Shadow receptor: Pukes - Shadow Receptor: $1,0 \times 1,0$ Azimuth: $3,1^\circ$ Slope: $90,0^\circ$ (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	07:25 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 22:12	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
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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												
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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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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 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	08:31 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 22:14	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
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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
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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
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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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 Shadow receptor: Rinki - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (233)
 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
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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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Table layout: For each day in each month the following matrix apply

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	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project:

flickering_Nordex_N163_Stelpe1

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 Shadow receptor: Rogas - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (189)
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 21:06	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 18:05	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	06:11 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 22:17	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 16:42	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 15:49
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 18:04	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)	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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment
 Vilandes 3-6
 LV-1010 Riga
 0037167242411
 Laura Kurzemniece / laura.kurzemniece@environment.lv
 Calculated:
 03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 Shadow receptor: Rukmuli - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (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	08:21	07:16	06:54			05:38		19:51 (3)	04:41	04:35	05:21		06:23	07:23	07:28	08:30
	15:53	16:50	17:53	19:59			21:01	19	20:10 (3)	21:59	22:15	21:34		20:20	18:59	16:41	15:50
2	08:57	08:19	07:14	06:52			05:35		19:51 (3)	04:40	04:36	05:23		06:25	07:25	07:31	08:32
	15:54	16:53	17:55	20:01			21:03	17	20:08 (3)	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		19:52 (3)	04:39	04:37	05:25		06:27	07:27	07:33	08:34
	15:56	16:55	17:57	20:03			21:06	15	20:07 (3)	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		19:54 (3)	04:38	04:37	05:27		06:29	07:29	07:35	08:35
	15:57	16:57	17:59	20:05			21:08	11	20:05 (3)	22:03	22:14	21:28		20:12	18:51	16:35	15:47
5	08:56	08:13	07:06	06:44			05:29		19:58 (3)	04:37	04:38	05:28		06:31	07:31	07:37	08:37
	15:58	16:59	18:02	20:07			21:10	4	20:02 (3)	22:04	22:13	21:26		20:09	18:48	16:32	15:47
6	08:55	08:11	07:04	06:41			05:26			04:36	04:40	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	22:11	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	20:06 (3)	06:37	07:37	07:44	08:41
	16:03	17:06	18:08	20:13			21:16			22:08	22:11	21:19	7 20:13 (3)	20:01	18:41	16:26	15:45
9	08:53	08:04	06:56	06:33			05:20			04:33	04:43	05:36	20:03 (3)	06:39	07:39	07:46	08:43
	16:04	17:08	18:10	20:15			21:18			22:09	22:10	21:17	12 20:15 (3)	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	20:01 (3)	06:41	07:41	07:48	08:44
	16:06	17:11	18:12	20:17			21:20			22:10	22:09	21:14	16 20:17 (3)	19:56	18:35	16:22	15:44
11	08:51	08:00	06:50	06:28			05:16			04:32	04:46	05:40	20:00 (3)	06:43	07:43	07:50	08:45
	16:08	17:13	18:15	20:20			21:22			22:11	22:08	21:12	18 20:18 (3)	19:53	18:33	16:20	15:43
12	08:50	07:58	06:48	06:25			05:14			04:32	04:47	05:42	19:59 (3)	06:45	07:46	07:52	08:47
	16:09	17:15	18:17	20:22			21:24			22:11	22:06	21:10	20 20:19 (3)	19:50	18:30	16:18	15:43
13	08:49	07:55	06:45	06:22			05:12			04:31	04:48	05:44	19:57 (3)	06:47	07:48	07:55	08:48
	16:11	17:17	18:19	20:24			21:26			22:12	22:05	21:07	22 20:19 (3)	19:48	18:27	16:16	15:43
14	08:48	07:53	06:42	06:20			05:10			04:31	04:50	05:46	19:57 (3)	06:49	07:50	07:57	08:49
	16:13	17:20	18:21	20:26			21:28			22:13	22:04	21:05	22 20:19 (3)	19:45	18:25	16:15	15:43
15	08:47	07:51	06:40	06:17			05:08			04:30	04:51	05:48	19:56 (3)	06:51	07:52	07:59	08:50
	16:15	17:22	18:23	20:28			21:30			22:14	22:03	21:03	24 20:20 (3)	19:42	18:22	16:13	15:43
16	08:46	07:48	06:37	06:15			05:06			04:30	04:53	05:50	19:56 (3)	06:53	07:54	08:01	08:51
	16:17	17:24	18:25	20:30			21:32			22:14	22:01	21:00	24 20:20 (3)	19:40	18:20	16:11	15:43
17	08:45	07:46	06:34	06:12			05:04			04:30	04:54	05:52	19:56 (3)	06:55	07:56	08:03	08:52
	16:19	17:26	18:27	20:32			21:34			22:15	22:00	20:58	24 20:20 (3)	19:37	18:17	16:09	15:43
18	08:44	07:44	06:32	06:10	19:58 (3)		05:02			04:30	04:56	05:54	19:56 (3)	06:57	07:58	08:05	08:53
	16:21	17:29	18:29	20:34	6 20:04 (3)		21:35			22:15	21:59	20:55	24 20:20 (3)	19:34	18:15	16:07	15:43
19	08:42	07:41	06:29	06:07	19:55 (3)		05:00			04:30	04:57	05:56	19:56 (3)	06:59	08:00	08:07	08:53
	16:23	17:31	18:32	20:36	11 20:06 (3)		21:37			22:16	21:57	20:53	23 20:19 (3)	19:31	18:12	16:06	15:43
20	08:41	07:39	06:26	06:04	19:53 (3)		04:58			04:30	04:59	05:58	19:56 (3)	07:01	08:02	08:09	08:54
	16:25	17:33	18:34	20:38	15 20:08 (3)		21:39			22:16	21:56	20:51	23 20:19 (3)	19:29	18:10	16:04	15:43
21	08:39	07:36	06:24	06:02	19:52 (3)		04:57			04:30	05:01	06:00	19:56 (3)	07:03	08:05	08:11	08:55
	16:27	17:35	18:36	20:41	17 20:09 (3)		21:41			22:16	21:54	20:48	20 20:16 (3)	19:26	18:07	16:03	15:44
22	08:38	07:34	06:21	05:59	19:51 (3)		04:55			04:30	05:02	06:03	19:56 (3)	07:05	08:07	08:13	08:55
	16:29	17:38	18:38	20:43	21 20:12 (3)		21:43			22:17	21:52	20:46	18 20:14 (3)	19:23	18:05	16:01	15:44
23	08:36	07:32	06:18	05:57	19:51 (3)		04:53			04:30	05:04	06:05	19:57 (3)	07:07	08:09	08:15	08:56
	16:31	17:40	18:40	20:45	22 20:13 (3)		21:44			22:17	21:51	20:43	15 20:12 (3)	19:21	18:02	16:00	15:45
24	08:35	07:29	06:16	05:54	19:49 (3)		04:52			04:31	05:06	06:07	19:59 (3)	07:09	08:11	08:17	08:56
	16:33	17:42	18:42	20:47	24 20:13 (3)		21:46			22:17	21:49	20:40	10 20:09 (3)	19:18	18:00	15:58	15:45
25	08:33	07:27	06:13	05:52	19:49 (3)		04:50			04:31	05:08	06:09	20:01 (3)	07:11	07:13	08:19	08:57
	16:35	17:44	18:44	20:49	24 20:13 (3)		21:48			22:17	21:47	20:38	6 20:07 (3)	19:15	16:58	15:57	15:46
26	08:32	07:24	06:10	05:50	19:49 (3)		04:49			04:32	05:10	06:11		07:13	07:15	08:21	08:57
	16:37	17:46	18:46	20:51	24 20:13 (3)		21:50			22:17	21:45	20:35		19:13	16:55	15:56	15:47
27	08:30	07:22	06:08	05:47	19:49 (3)		04:47			04:32	05:11	06:13		07:15	07:18	08:23	08:57
	16:39	17:49	18:48	20:53	23 20:12 (3)		21:51			22:17	21:44	20:33		19:10	16:53	15:54	15:48
28	08:28	07:19	06:05	05:45	19:49 (3)		04:46			04:33	05:13	06:15		07:17	07:20	08:25	08:57
	16:42	17:51	18:50	20:55	23 20:12 (3)		21:53			22:16	21:42	20:30		19:07	16:50	15:53	15:49
29	08:26		07:02	05:42	19:49 (3)		04:44			04:33	05:15	06:17		07:19	07:22	08:27	08:57
	16:44		19:52	20:57	23 20:12 (3)		21:54			22:16	21:40	20:28		19:04	16:48	15:52	15:49
30	08:24		07:00	05:40	19:50 (3)		04:43			04:34	05:17	06:19		07:21	07:24	08:29	08:57
	16:46		19:55	20:59	21 20:11 (3)		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				21:57				21:36	20:22			16:43		15:52
Potential sun hours	235	266	366	426			508		529	530	470		385	323	247	216	
Total, worst case				254			66					328					
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				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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 Shadow receptor: Rutki - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (239)
 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.

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	15:53	16:51	17:53	19:59	21:02	21:59	22:16	21:34	20:20	18:59	16:42	15:50
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	15:55	16:53	17:55	20:01	21:04	22:01	22:15	21:32	20:18	18:57	16:39	15:49
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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
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	16:05	17:09	18:11	20:16	21:18	22:09	22:10	21:17	19:59	18:38	16:24	15:44
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	16:12	17:18	18:19	20:24	21:26	22:13	22:06	21:08	19:48	18:28	16:17	15:43
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	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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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) 20:28 (4)	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) 18:26 (4)	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) 18:23 (4)	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) 18:21 (4)	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) 18:18 (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) 18:22 (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	18:14 (4) 18:18 (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	18:18 (4) 18:22 (4)	07:44 16:26	08:42 15:45
9	08:53 16:04	08:04 17:08	06:56 18:10	7 06:33 17:41 (4)	05:20 20:15	04:33 22:09	04:43 22:10	05:36 21:17	06:39 19:58	07:39 18:38	18:24 (4) 18:28 (4)	07:46 16:24	08:43 15:44
10	08:52 16:06	08:02 17:11	06:53 18:12	11 06:30 17:44 (4)	05:18 20:18	04:33 22:10	04:44 22:09	05:38 21:14	06:41 19:56	07:41 18:35	18:30 (4) 18:34 (4)	07:48 16:22	08:44 15:44
11	08:51 16:08	08:00 17:13	06:50 18:15	15 06:28 17:46 (4)	05:16 20:20	04:32 22:11	04:45 22:08	05:40 21:12	06:43 19:53	07:44 18:33	18:36 (4) 18:40 (4)	07:50 16:20	08:46 15:43
12	08:50 16:09	07:58 17:15	06:48 18:17	15 06:25 17:48 (4)	05:13 20:22	04:32 22:12	04:47 22:07	05:42 21:10	06:45 19:50	07:46 18:30	18:42 (4) 18:46 (4)	07:52 16:18	08:47 15:43
13	08:49 16:11	07:55 17:17	06:45 18:19	19 06:22 17:50 (4)	05:11 20:24	04:31 22:12	04:48 22:05	05:44 21:08	06:47 19:48	07:48 18:27	18:48 (4) 18:52 (4)	07:55 16:15	08:48 15:43
14	08:48 16:13	07:53 17:20	06:42 18:21	22 06:20 17:50 (4)	05:09 20:26	04:31 22:13	04:50 22:04	05:46 21:05	9 06:49 20:07 (5)	07:50 18:25	18:54 (4) 18:58 (4)	07:57 16:14	08:49 15:43
15	08:47 16:15	07:51 17:22	06:40 18:23	23 06:17 17:27 (4)	05:08 20:28	04:30 22:14	04:51 22:03	05:48 21:03	13 06:51 19:56 (5)	07:52 18:22	19:06 (4) 19:10 (4)	07:59 16:13	08:50 15:43
16	08:46 16:17	07:48 17:24	06:37 18:25	23 06:15 17:26 (4)	05:06 20:30	04:30 22:14	04:53 22:02	05:50 21:00	16 06:53 20:10 (5)	07:54 18:20	19:14 (4) 19:18 (4)	08:01 16:11	08:51 15:43
17	08:45 16:19	07:46 17:26	06:34 18:27	23 06:12 17:27 (4)	05:04 20:32	04:30 22:15	04:54 22:00	05:52 20:58	18 06:55 20:11 (5)	07:56 18:17	19:18 (4) 19:22 (4)	08:03 16:09	08:52 15:43
18	08:44 16:21	07:44 17:29	06:32 18:29	22 06:10 17:29 (4)	05:02 20:34	04:30 22:15	04:56 21:59	05:54 20:55	19 06:57 20:12 (5)	07:58 18:15	19:24 (4) 19:28 (4)	08:05 16:07	08:53 15:43
19	08:42 16:23	07:41 17:31	06:29 18:31	22 06:07 17:27 (4)	05:00 20:36	04:30 22:16	04:57 21:57	05:56 20:53	20 06:59 20:12 (5)	08:00 18:12	19:30 (4) 19:34 (4)	08:07 16:06	08:53 15:43
20	08:41 16:25	07:39 17:33	06:26 18:34	20 06:04 17:29 (4)	04:58 20:38	04:30 22:16	04:59 21:56	05:58 20:51	20 07:01 20:11 (5)	08:02 18:10	19:34 (4) 19:38 (4)	08:09 16:04	08:54 15:43
21	08:40 16:27	07:37 17:35	06:24 18:36	18 06:02 17:30 (4)	04:57 20:41	04:30 22:16	05:01 21:54	06:00 20:48	21 07:03 20:11 (5)	08:05 18:15	19:38 (4) 19:42 (4)	08:11 16:03	08:55 15:44
22	08:38 16:29	07:34 17:37	06:21 18:38	14 05:59 17:32 (4)	04:55 20:43	04:30 22:17	05:02 21:52	06:02 20:46	8 07:05 20:11 (5)	08:07 18:14	19:44 (4) 19:48 (4)	08:13 16:01	08:55 15:44
23	08:37 16:31	07:32 17:40	06:18 18:40	9 05:57 17:41 (4)	04:53 20:45	04:30 22:17	05:04 21:51	06:04 20:43	14 07:07 20:11 (5)	08:09 18:17	19:48 (4) 19:52 (4)	08:15 16:00	08:56 15:45
24	08:35 16:33	07:29 17:42	06:16 18:42	22 05:54 20:47	04:52 21:46	04:31 22:17	05:06 21:49	06:07 20:40	21 07:09 20:09 (5)	08:11 18:20	19:54 (4) 19:58 (4)	08:17 15:58	08:56 15:45
25	08:33 16:35	07:27 17:44	06:13 18:44	20 05:52 20:49	04:50 21:48	04:31 22:17	05:08 21:47	06:09 20:38	19 07:11 20:12 (5)	08:13 18:31	20:04 (4) 20:08 (4)	08:19 15:57	08:57 15:46
26	08:32 16:37	07:24 17:46	06:10 18:46	19 05:50 20:51	04:49 21:50	04:32 22:17	05:09 21:46	06:11 20:35	21 07:13 20:05 (5)	08:15 18:34	20:10 (4) 20:14 (4)	08:21 15:56	08:57 15:47
27	08:30 16:39	07:22 17:49	06:08 18:48	20 05:47 20:53	04:47 21:51	04:32 22:17	05:11 21:44	06:13 20:33	17 07:15 20:02 (5)	08:17 18:34	20:16 (4) 20:20 (4)	08:23 15:53	08:57 15:48
28	08:28 16:42	07:19 17:51	06:05 18:50	15 05:45 20:55	04:46 21:53	04:33 22:16	05:13 21:42	06:15 20:30	10 07:17 20:05 (5)	08:19 18:34	20:22 (4) 20:26 (4)	08:25 15:53	08:57 15:48
29	08:26 16:44	07:17 17:52	06:02 18:52	12 05:42 20:57	04:44 21:54	04:33 22:16	05:15 21:40	06:17 20:28	6 07:19 20:08 (4)	08:21 18:36	20:28 (4) 20:32 (4)	08:27 15:52	08:57 15:49
30	08:25 16:46	07:16 17:55	06:00 18:55	7 05:40 20:59	04:43 21:56	04:34 22:16	05:17 21:38	06:19 20:25	22 07:21 20:02 (4)	08:23 18:38	20:34 (4) 20:38 (4)	08:29 15:51	08:57 15:50
31	08:23 16:48	07:15 17:57	06:07 18:57	05:37 20:57	04:42 21:57	04:35 22:16	05:19 21:36	06:21 20:22	19 07:23 20:04 (4)	08:25 18:40	20:36 (4) 20:40 (4)	08:31 15:51	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) Minutes with flicker Last time (hh:mm) with flicker (WTG causing flicker last time)

Project:

flickering_Nordex_N163_Stelpe1

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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 18:02	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 18:05	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		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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment
Vilandes 3-6
LV-1010 Riga
0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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) 21:59	04:41 22:15	04:35 21:34	05:21 20:20	06:23 18:59	07:23 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	19:56 (4) 22:00	04:40 22:15	04:36 21:32	05:23 20:17	06:25 18:56	07:25 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	22:02 22:14	04:38 21:30	04:36 20:25	05:25 20:14	06:27 18:54	07:27 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 21:28	05:26 20:28	05:26 20:12	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	04:37 22:04	04:38 21:26	05:28 20:09	06:31 20:09	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	04:36 22:05	04:39 21:23	05:30 20:07	06:33 20:07	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	04:35 22:07	04:41 21:21	05:32 20:04	06:35 20:04	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	04:34 22:08	04:42 21:19	05:34 20:01	06:37 20:01	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	04:33 22:09	04:43 21:17	05:36 20:09	06:39 19:58	06:39 18:38	07:39 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 20:09	05:38 21:14	06:41 19:56	06:41 18:35	07:41 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 21:12	05:40 20:08	06:43 19:53	06:43 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 21:10	05:42 20:04 (4)	06:45 19:50	06:45 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	06:47 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	05:46 21:05	06:49 19:45	06:49 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	05:48 21:03	06:51 19:42	06:51 18:35 (3)	07:59 16:13	08:50 15:43
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	05:50 21:00	06:53 19:40	06:53 18:46 (3)	08:01 16:11	08:51 15:43
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	05:52 20:58	06:55 19:37	06:55 18:30 (3)	08:03 16:09	08:52 15:43
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	05:54 20:55	06:57 19:34	06:57 18:48 (3)	08:05 16:07	08:53 15:43
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	05:56 20:53	06:59 19:31	06:59 18:48 (3)	08:07 16:06	08:53 15:43
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	05:58 20:51	07:01 19:29	07:01 18:49 (3)	08:12 16:04	08:54 15:43
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	06:00 20:48	07:03 19:26	07:03 18:48 (3)	08:11 16:03	08:55 15:44
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	06:02 20:46	07:05 19:23	07:05 18:48 (3)	08:07 16:01	08:55 15:44
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	06:05 20:43	07:07 19:21	07:07 18:48 (3)	08:09 16:00	08:56 15:45
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	06:07 20:40	07:09 19:18	07:09 18:47 (3)	08:11 15:58	08:56 15:45
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	06:09 20:38	07:11 19:15	07:11 18:45 (3)	08:19 16:07	08:57 15:46
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	06:11 20:35	07:13 19:13	07:13 18:42 (3)	08:21 16:05	08:57 15:47
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	06:13 20:33	07:15 19:10	07:15 18:39 (3)	08:23 16:03	08:57 15:48
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	06:15 20:30	07:17 19:07	07:17 18:36 (3)	08:25 16:00	08:57 15:48
29	08:26 16:44	07:02 19:52	06:02 20:57	05:42 20:57	20:44 (4) 21:54	19:44 (4) 20:00 (4)	04:44 21:54	06:17 20:28	07:19 19:04	07:19 18:34 (3)	08:27 16:48	08:57 15:50
30	08:25 16:46	07:00 19:55	06:00 20:59	05:40 20:59	20:46 (4) 21:56	19:46 (4) 20:02 (4)	04:43 21:56	06:19 20:25	07:21 19:02	07:21 18:34 (3)	08:29 16:46	08:57 15:52
31	08:23 16:48	06:57 19:57	06:57 20:57	06:42 21:57	20:42 (4) 21:57	19:42 (4) 20:02 (4)	04:42 21:57	06:21 20:22	07:21 19:02	07:21 18:34 (3)	08:29 16:43	08:57 15:52
Potential sun hours	235	266	366	426	508	529	530	470	385	323	247	216
Total, worst case			255	326	7			335	259			
Sun reduction			0,40	0,47	0,59			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			0,40	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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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	07:31 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 17:02	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
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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 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	08:25 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 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 15:51
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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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	07:25 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 22:02	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 18:05	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	08:22 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 18:05	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 18:43		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)	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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 Shadow receptor: Stacija "Goba" - Shadow Receptor: $1,0 \times 1,0$ Azimuth: $3,1^\circ$ Slope: $90,0^\circ$ (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 18:43		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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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
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
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
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
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
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
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
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
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
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
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
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
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
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) 06:10 (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
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
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
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
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
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
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
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
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
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
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
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	08:13 16:58	08:19 15:57
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	08:16 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	05:37 (3) 06:07 (3)	05:12 21:44	05:53 (3) 06:10 (3)	06:13 20:33	07:15 19:10	08:18 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	05:36 (3) 06:07 (3)	05:13 21:42	05:55 (3) 06:09 (3)	06:15 20:30	07:17 19:07	08:20 16:51	08:25 15:53
29	08:26 16:44	07:02 17:53	05:43 20:57	05:43 21:55	04:45 21:56	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	08:22 16:48	08:27 15:52
30	08:25 16:46	07:00 17:55	05:40 20:59	05:40 21:56	04:43 21:58	04:34 22:16	05:37 (3) 06:07 (3)	05:17 21:38	05:57 (3) 06:21	06:19 20:25	07:21 19:02	08:24 16:46	08:29 15:51
31	08:23 16:48	06:57 17:57	06:57 19:57	06:57 21:58	04:42 21:58	04:33 22:16	05:37 (3) 06:07 (3)	05:19 21:36	06:21 20:23	06:25 19:02	07:26 16:44	08:26 15:51	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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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) 06:20 (4)	06:23 20:20	06:59 (3) 07:23 (3)	07:29 18:59	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	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	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	05:59 (4) 06:19 (4)	06:27 20:15	06:59 (3) 07:20 (3)	07:33 18:54	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	06:00 (4) 06:18 (4)	06:29 20:12	07:00 (3) 07:18 (3)	07:29 18:51	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	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)	07:31 18:49	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	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)	07:33 18:46	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	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 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 20:14	05:22 21:16	05:51 (4) 06:07 (4)	04:34 22:08	05:35 21:19	06:37 20:01	06:37 18:41	07:37 16:26	07:44 15:45	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	05:49 (4) 06:08 (4)	04:34 22:09	05:37 21:17	06:39 19:59	06:39 18:38	07:40 16:24	07:46 15:44	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	05:49 (4) 06:09 (4)	04:33 22:09	05:39 21:15	06:41 19:56	06:41 18:35	07:42 16:22	07:48 15:44	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	05:48 (4) 06:09 (4)	04:32 22:08	05:41 21:12	06:43 19:53	06:43 18:33	07:44 16:20	07:50 15:44	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	05:48 (4) 06:10 (4)	04:32 22:07	05:43 21:10	06:45 19:51	06:45 18:30	07:46 16:18	07:53 15:43	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	05:48 (4) 06:10 (4)	04:31 22:06	05:45 21:08	06:47 19:48	06:47 18:28	07:48 16:17	07:55 15:43	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	05:47 (4) 06:10 (4)	04:31 22:04	05:47 21:05	06:49 19:45	06:49 18:25	07:50 16:15	07:57 15:43	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	05:47 (4) 06:10 (4)	04:31 22:03	06:07 (4) 06:10 (4)	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	05:48 (4) 06:11 (4)	04:30 22:02	06:04 (4) 06:12 (4)	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 18:27	06:12 20:32	05:04 21:34	05:48 (4) 06:10 (4)	04:30 22:00	06:03 (4) 06:15 (4)	05:53 20:58	06:55 19:37	08:03 18:17	08:09 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	05:48 (4) 06:10 (4)	04:30 21:59	06:02 (4) 06:16 (4)	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	05:48 (4) 06:10 (4)	04:30 21:57	06:01 (4) 06:16 (4)	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	05:48 (4) 06:09 (4)	04:59 21:56	06:01 (4) 06:17 (4)	05:59 20:51	07:12 (3) 07:17 (3)	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	05:49 (4) 06:09 (4)	05:01 21:54	06:01 (4) 06:18 (4)	06:01 20:48	07:08 (3) 07:20 (3)	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	05:49 (4) 06:08 (4)	05:03 21:53	06:03 (4) 06:19 (4)	06:03 20:46	07:06 (3) 07:22 (3)	08:07 18:05	08:14 16:01	08:56 15:44
23	08:37 16:31	07:32 17:40	06:19 18:40	05:57 20:45	04:53 21:45	05:50 (4) 06:08 (4)	05:04 21:51	06:05 (4) 06:20 (4)	06:05 20:43	07:03 (3) 07:22 (3)	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	05:51 (4) 06:07 (4)	05:06 21:49	06:07 (4) 06:20 (4)	06:07 20:41	07:02 (3) 07:23 (3)	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	05:52 (4) 06:06 (4)	05:08 21:47	06:09 (4) 06:20 (4)	06:09 20:38	07:01 (3) 07:24 (3)	08:13 17:15	08:20 16:58	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	05:53 (4) 06:06 (4)	05:10 21:46	06:11 (4) 06:20 (4)	06:11 20:36	07:00 (3) 07:24 (3)	08:14 17:16	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	05:55 (4) 06:05 (4)	05:12 21:44	06:12 (4) 06:21 (4)	06:13 20:33	07:00 (3) 07:25 (3)	08:15 17:18	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	05:56 (4) 06:02 (4)	05:13 21:42	06:15 (4) 06:21 (4)	06:15 20:30	06:59 (3) 07:25 (3)	08:17 17:20	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	04:45 21:55	04:34 22:16	05:15 21:40	06:17 (4) 06:21 (4)	06:17 20:28	07:19 (3) 07:24 (3)	08:19 17:22	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	04:43 21:56	04:34 22:16	05:17 21:38	06:19 (4) 06:20 (4)	06:19 20:25	07:21 (3) 07:24 (3)	08:20 17:24	08:29 16:46	08:57 15:51
31	08:23 16:48	06:57 19:57	05:42 21:00	04:42 21:58	04:42 21:58	05:19 21:36	05:19 21:36	06:21 (4) 06:20 (4)	06:21 20:23	07:23 (3) 07:24 (3)	08:21 17:26	08:27 16:44	08:57 15:52
Potential sun hours		235	266	366	426	508	529	530	470	385	323	247	216
Total, worst case					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)	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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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	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	07:06	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	22:04	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	07:36	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	08:53	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	04:31	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	04:31	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	07:59	08:05	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	21:57	20:53	19:32	18:13	16:06	15:43
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	16:25	17:33	18:34	20:39	21:39	22:16	21:56	20:51	19:29	18:10	16:05	15:44
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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	08:57
	16:33	17:42	18:42	20:47	21:47	22:17	21:49	20:41	19:18	18:00	15:59	15:46
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	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
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	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	08:57
	16:42	17:51	18:51	20:55	21:53	22:17	21:42	20:31	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	08:58
	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		08:57
	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	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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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	July	August	September	October	November	December
1	08:58 15:53	08:21 16:51	07:17 17:53	06:54 19:59	05:38 21:02	04:41 22:00	04:35 22:16	05:21 21:35	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 22:01	04:36 22:16	05:23 21:32	06:25 20:18	07:25 18:57	07:31 16:39	08:33 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	04:36 22:15	05:25 21:30	06:27 20:15	07:27 18:54	07:33 16:37	08:34 15:48
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	04:37 22:14	05:27 21:28	06:29 20:12	07:29 18:51	07:36 16:35	08:36 15:47
5	08:56 15:58	08:13 16:59	07:07 18:02	06:44 20:07	05:29 21:10	04:37 22:05	04:38 22:14	05:29 21:26	06:31 20:10	07:31 18:49	07:38 16:33	08:38 15:47
6	08:56 16:00	08:11 17:02	07:04 18:04	06:41 20:10	05:26 21:12	04:36 22:06	04:39 22:13	05:31 21:24	06:33 20:07	07:34 18:46	07:40 16:30	08:39 15:46
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	04:41 22:12	05:33 21:22	06:35 20:04	07:36 18:43	07:42 16:28	08:41 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 21:20	06:37 20:02	07:38 18:41	07:44 16:26	08:42 15:45
9	08:54 16:04	08:05 17:09	06:56 18:11	06:33 20:16	05:20 21:18	04:33 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	08:03 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 19:54	07:44 18:33	07:51 16:20	08:46 15:43
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	06:46 18:19	06:23 20:24	05:12 21:26	04:31 22:13	04:48 22:06	05:45 21:08	06:47 19:48	07:48 18:28	07:55 16:16	08:48 15:43
14	08:49 16:13	07:54 17:20	06:43 18:21	06:20 20:26	05:10 21:28	04:31 22:14	04:50 22:05	05:47 21:06	06:49 19:45	07:50 18:25	07:57 16:15	08:50 15:43
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	04:51 22:03	05:49 21:03	06:51 19:43	07:52 18:23	07:59 16:13	08:51 15:43
16	08:47 16:17	07:49 17:24	06:38 18:26	06:15 20:31	05:06 21:32	04:30 22:15	04:53 22:02	05:51 21:01	06:53 19:40	07:54 18:20	08:02 16:11	08:52 15:43
17	08:46 16:19	07:47 17:27	06:35 18:28	06:12 20:33	05:04 21:34	04:30 22:16	04:54 22:01	05:53 20:58	06:55 19:37	07:57 18:17	08:04 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	04:57 21:58	05:57 20:53	06:59 19:32	08:01 18:12	08:08 16:06	08:54 15:43
20	08:42 16:25	07:39 17:33	06:27 18:34	06:05 20:39	04:58 21:40	04:30 22:17	04:59 21:56	05:59 20:51	07:01 19:29	08:03 18:10	08:10 16:04	08:55 15:43
21	08:40 16:27	07:37 17:36	06:24 18:36	06:02 20:41	04:57 21:42	04:30 22:17	05:01 21:55	06:01 20:49	07:03 19:26	08:05 18:07	08:12 16:03	08:55 15:44
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	05:02 21:53	06:03 20:46	07:05 19:24	08:07 18:05	08:14 16:01	08:56 15:44
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	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	07:30 17:42	06:16 18:42	05:55 20:47	04:52 21:47	04:31 22:17	05:06 21:50	06:07 20:41	07:09 19:18	08:12 18:00	08:18 15:58	08:57 15:45
25	08:34 16:35	07:27 17:44	06:13 18:44	05:52 20:49	04:50 21:49	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 16:37	07:25 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	08:58 15:47
27	08:30 16:40	07:22 17:49	06:08 18:49	05:47 20:54	04:47 21:52	04:32 22:17	05:11 21:44	06:13 20:33	07:15 19:10	08:18 18:10	08:24 16:53	08:58 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 18:15	08:26 16:51	08:58 15:49
29	08:27 16:44		07:03 19:53	05:43 20:58	04:44 21:55	04:33 22:17	05:15 21:40	06:17 20:28	07:19 19:05	08:22 18:15	08:27 16:48	08:58 15:49
30	08:25 16:46		07:00 19:55	05:40 21:00	04:43 21:57	04:34 22:16	05:17 21:39	06:19 20:25	07:21 19:02	08:25 18:16	08:29 16:46	08:58 15:51
31	08:23 16:48		06:57 19:57		04:42 21:58		05:19 21:37	06:21 20:23		07:27 18:44		08:58 15:52
Potential sun hours	234	266	366	426	509	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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 Shadow receptor: Vecbirznieki - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (164)
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	05:56 (3) 06:00 (3)	04:35 22:15	05:21 21:34	05:57 (3) 06:18 (3)	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 22:05	05:23 21:32	05:58 (3) 06:17 (3)	06:25 20:17	07:25 18:57	07:31 16:39	07:37 15:49	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	05:58 (3) 06:16 (3)	06:27 20:15	07:27 18:54	07:33 16:37	07:39 15:48	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	06:00 (3) 06:15 (3)	06:29 20:12	07:29 18:51	07:35 16:35	07:41 15:48	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	06:02 (3) 06:14 (3)	06:31 20:09	07:31 18:49	07:37 16:33	07:43 15:47	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	06:04 (3) 06:11 (3)	06:33 20:07	07:33 18:46	07:40 16:31	07:46 15:46	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	07:48 15:45	08:40 15:45	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	07:37 18:41	07:44 16:26	07:50 15:45	08:42 15:45	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 20:13	07:40 18:38	07:46 16:24	07:52 15:44	08:43 15:44	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 20:06	07:42 18:35	07:48 16:22	07:54 15:44	08:44 15:44	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 20:03 (3)	07:44 18:33	07:50 16:20	07:56 15:44	08:46 15:44	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 20:01 (3)	07:46 18:30	07:53 16:18	07:59 15:43	08:47 15:43	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 20:11 (3)	07:48 18:28	07:55 16:17	08:01 15:43	08:48 15:43	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	06:00 (3) 06:12 (3)	07:49 18:25	07:57 16:15	08:03 15:43	08:49 15:43	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	06:03 (3) 06:14 (3)	07:50 18:23	07:57 16:13	08:03 15:43	08:50 15:43	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	06:14 (3) 06:14 (3)	07:51 18:20	08:01 16:11	08:07 15:43	08:51 15:43	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 21:03	06:16 (3) 06:16 (3)	07:52 18:17	08:03 16:09	08:09 15:43	08:52 15:43	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 21:03	06:17 (3) 06:17 (3)	07:53 18:15	08:05 16:08	08:11 15:43	08:53 15:43	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 (3) 06:16 (3)	06:17 (3) 06:16 (3)	07:54 18:12	08:07 16:06	08:13 15:43	08:54 15:43	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 (3) 06:17 (3)	06:17 (3) 06:17 (3)	07:55 18:10	08:09 16:04	08:15 15:43	08:54 15:43	08:54 15:43
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 (3) 06:18 (3)	06:01 (3) 06:18 (3)	07:56 18:08	08:12 16:03	08:20 15:44	08:55 15:44	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 (3) 06:18 (3)	06:03 (3) 06:18 (3)	07:57 18:06	08:14 16:01	08:21 15:45	08:56 15:45	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 (3) 06:19 (3)	06:05 (3) 06:19 (3)	07:58 18:03	08:16 16:00	08:24 15:45	08:56 15:45	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 (3) 06:19 (3)	06:07 (3) 06:19 (3)	07:59 18:01	08:18 15:59	08:26 15:46	08:57 15:46	08:57 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 (3) 06:19 (3)	06:09 (3) 06:19 (3)	07:59 18:03	08:19 15:57	08:27 15:46	08:57 15:46	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 (3) 06:20 (3)	06:11 (3) 06:20 (3)	07:59 18:04	08:21 15:56	08:29 15:47	08:57 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	05:12 21:44	06:13 (3) 06:19 (3)	06:13 (3) 06:19 (3)	07:59 18:05	08:23 15:55	08:31 15:48	08:57 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	05:13 21:42	06:15 (3) 06:19 (3)	06:15 (3) 06:19 (3)	07:59 18:06	08:25 15:53	08:33 15:49	08:57 15:49	08:57 15:49
29	08:27 16:44	07:02 17:53	05:43 20:57	04:45 21:55	04:45 21:55	04:34 22:16	05:15 21:40	06:17 (3) 06:19 (3)	06:17 (3) 06:19 (3)	07:59 18:07	08:27 15:52	08:35 15:50	08:57 15:50	08:57 15:50
30	08:25 16:46	07:00 17:55	05:40 19:55	04:43 21:00	04:43 21:56	04:34 22:16	05:17 21:38	06:19 (3) 06:18 (3)	06:19 (3) 06:21 (3)	07:59 18:08	08:29 15:51	08:37 15:51	08:57 15:51	08:57 15:51
31	08:23 16:48	06:57 19:57	04:42 21:57	04:42 21:58	05:53 (3) 06:02 (3)	22:16	05:19 21:36	06:21 (3) 06:18 (3)	06:21 (3) 20:23	07:59 18:09	08:30 15:52	08:38 15:52	08:57 15:52	08:57 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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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	08:21 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	08:22 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)	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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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	07:25 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
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 18:05	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		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)	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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 Shadow receptor: Viesturu muiža - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (227)
 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	06:55	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
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	16:03	17:06	18:08	20:14	21:16	22:08	22:11	21:19	20:02	18:41	16:26	15:45
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	16:05	17:09	18:11	20:16	21:18	22:09	22:10	21:17	19:59	18:38	16:24	15:44
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	16:08	17:13	18:15	20:20	21:22	22:11	22:08	21:13	19:53	18:33	16:20	15:44
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	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
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	16:17	17:24	18:26	20:30	21:32	22:15	22:02	21:01	19:40	18:20	16:11	15:43
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	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
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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
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	16:25	17:33	18:34	20:39	21:39	22:16	21:56	20:51	19:29	18:10	16:05	15:44
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	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
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	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	19:07	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	22:17	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	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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 Shadow receptor: Virši - Shadow Receptor: $1,0 \times 1,0$ Azimuth: $3,1^\circ$ Slope: $90,0^\circ$ (207)
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	07:31 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 22:05	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				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)	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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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
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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
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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
23	08:36 16:31	07:31 17:40	06:18 18:40	05:57 20:45	04:53 21:44	04:31 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 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 19:13	08:15 16:55	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 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	08:19 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	08:21 16:48	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	08:22 16:46	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)	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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 Shadow receptor: Vitoli - Shadow Receptor: $1,0 \times 1,0$ Azimuth: $3,1^\circ$ Slope: $90,0^\circ$ (238)
 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	07:25 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 22:04	04:39 22:13	05:29 21:26	06:31 20:10	07:31 18:49	07:38 16:33	08:37 15:47
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 15:46
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	08:44 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 22:13	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	06:37 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
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 21:57	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
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 20:55	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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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	23 20:50 (4) 21:13 (4)	04:35 22:15	21 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	23 20:50 (4) 21:13 (4)	04:36 22:15	21 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	23 20:50 (4) 21:13 (4)	04:37 22:14	22 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	23 20:51 (4) 21:14 (4)	04:37 22:14	22 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	23 20:51 (4) 21:14 (4)	04:38 22:13	23 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	23 20:51 (4) 21:14 (4)	04:40 22:12	22 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	23 20:51 (4) 21:13 (4)	04:41 22:11	22 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	22 20:52 (4) 21:14 (4)	04:42 22:11	22 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	21 20:52 (4) 21:13 (4)	04:43 22:10	22 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	21 20:53 (4) 21:14 (4)	04:44 22:09	22 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	21 20:52 (4) 21:13 (4)	04:46 22:08	24 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	21 20:53 (4) 21:14 (4)	04:47 22:06	24 20:58 (4) 21:22 (4)	05:42 21:10	6 19:57 (3) 20:03 (3)	06:45 19:50	07:46 18:46	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	04:31 22:12	20 20:54 (4) 21:14 (4)	04:48 22:05	23 20:58 (4) 21:21 (4)	05:44 21:07	12 19:53 (3) 20:05 (3)	06:47 19:48	07:48 18:27	08:48 16:16
14	08:48 16:13	07:53 17:20	06:42 18:21	06:20 20:26	7 19:50 (3) 19:57 (3)	05:10 21:28	04:31 22:13	04:50 22:04	23 20:58 (4) 21:21 (4)	05:46 21:05	16 19:51 (3) 20:07 (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	11 19:47 (3) 19:58 (3)	05:08 21:30	04:30 22:14	04:51 22:03	23 20:59 (4) 21:22 (4)	05:48 21:03	18 19:50 (3) 20:08 (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	15 19:45 (3) 20:00 (3)	05:06 21:32	04:30 22:14	04:53 22:01	22 20:59 (4) 21:21 (4)	05:50 21:00	20 19:49 (3) 20:09 (3)	06:53 19:40	07:54 18:20	08:51 16:11
17	08:45 16:19	07:46 17:26	06:34 18:27	06:12 20:32	19 19:43 (3) 20:02 (3)	05:04 21:34	1 20:57 (4) 20:58 (4)	04:30 22:15	19 20:55 (4) 21:14 (4)	04:54 22:00	22 20:59 (4) 21:21 (4)	05:52 20:58	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	19 19:43 (3) 20:04 (3)	05:02 21:35	20 20:55 (4) 21:00 (4)	04:56 22:15	22 20:59 (4) 21:14 (4)	05:54 21:59	23 19:47 (3) 20:10 (3)	06:57 19:34	08:05 18:15	08:53 16:07
19	08:42 16:23	07:41 17:31	06:29 18:32	06:07 20:36	21 19:41 (3) 20:04 (3)	05:00 21:37	5 20:54 (4) 21:02 (4)	04:57 22:16	19 20:59 (4) 21:14 (4)	05:56 21:57	22 19:47 (3) 20:10 (3)	06:59 19:31	08:07 18:12	08:53 16:06
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23	08:36 16:31	07:32 17:40	06:18 18:40	05:57 20:45	25 19:41 (3) 20:05 (3)	04:53 21:44	15 20:51 (4) 21:08 (4)	04:30 22:17	20 20:56 (4) 21:15 (4)	06:04 21:51	24 19:45 (3) 20:09 (3)	07:07 19:21	08:09 18:02	08:56 16:00
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27	08:30 16:39	07:22 17:49	06:08 18:48	05:47 20:53	21 19:41 (3) 20:01 (3)	04:47 21:51	20 20:57 (4) 21:12 (4)	04:32 22:17	3 20:57 (4) 21:17 (4)	06:11 21:44	22 19:47 (3) 20:02 (3)	06:11 19:10	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	18 19:42 (3) 20:00 (3)	04:46 21:53	23 20:49 (4) 21:12 (4)	04:33 22:16	20 20:57 (4) 21:17 (4)	06:13 21:42	23 19:49 (3) 20:00 (3)	07:17 19:07	08:25 16:50	08:57 15:49
29	08:26 16:44	07:02 17:52	05:42 18:50	05:42 20:57	18 19:44 (3) 19:59 (3)	04:44 21:54	24 20:49 (4) 21:13 (4)	04:33 22:16	20 20:57 (4) 21:17 (4)	06:15 21:40	24 19:51 (3) 19:57 (3)	07:19 19:04	08:27 16:48	08:57 15:49
30	08:24 16:46	07:00 17:55	05:40 18:50	05:40 20:59	11 19:46 (3) 19:57 (3)	04:43 21:56	23 20:50 (4) 21:13 (4)	04:34 22:16	21 20:57 (4) 21:18 (4)	06:19 21:38	25 07:21 19:02	07:24 16:46	08:29 15:51	08:57 15:50
31	08:23 16:48	06:57 17:57	05:37 18:57	05:27 20:59	11 04:42 21:57	04:22 21:33	23 20:50 (4) 21:13 (4)	04:34 22:16	21 20:57 (4) 21:18 (4)	06:19 21:38	26 07:22 19:02	07:26 16:43	08:31 15:52	08:57 15:52
Potential sun hours	235	266	366	426	508	529	529	530	470	385	323	247	216	
Total, worst case				324	248	620	620	506	329					
Sun reduction				0,47	0,59	0,57	0,57	0,48	0,51					
Oper. time red.				1,00	1,00	1,00	1,00	1,00	1,00					
Wind dir. red.				1,00	1,00	1,00	1,00	1,00	1,00					
Total reduction				0,47	0,59	0,57	0,57	0,48	0,51					
Total, real				151	146	353	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)
	Minutes with flicker		

Project:

flickering_Nordex_N163_Stelpe1

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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 18:00	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 18:00	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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 Shadow receptor: Ziemeļnieki - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (180)
 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	04:40 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
6	08:55 15:59	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	04:41 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 17:10	06:53 18:12	06:30 20:18	05:17 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 15:43
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
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 22:06	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 17:19	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
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 15:42
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
24	08:35 16:33	07:29 17:42	06:16 18:42	05:54 20:47	04:51 21:46	04:30 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	05:07 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 18:15	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 18:43		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)	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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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				04:42 21:57		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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 Shadow receptor: Zviedri - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (196)
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	08:31 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 22:14	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 16:28	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	07:37 18:41	07:44 16:26	08:42 15:45
9	08:53 16:05	08:04 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	04:44 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	07:50 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	06:17 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 21:01	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 18:17	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	07:42 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	05:01 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	04:31 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	08:18 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 19:15	08:13 18:05	08:19 16:58	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	08:16 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		07:26 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)	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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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)	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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

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Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 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		07:46		08:43	09:37 (9)	
	22:10	21:17	19:59	18:38	12 09:41 (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)	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

Licensed user:

SIA Estonian, Latvian & Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Laura Kurzemniece / laura.kurzemniece@environment.lv

Calculated:

03.04.2025 11:19/4.1.254

SHADOW - Calendar

Calculation: Flickering_Nordex_N163 Shadow receptor: Aki - Shadow Receptor: 1,0 × 1,0 Azimuth: 3,1° Slope: 90,0° (228)
 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	06:47 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 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		