

Project:

Flickering\_Valka\_Nordex163

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Baiba / baiba.ozolina@environment.lv

Calculated:

16/01/2026 15:04/4.1.254

## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Nordex163 WTG: 1 - NORDEX N163/6.X 7000 163.0 !O! hub: 164.0 m (TOT: 245.5 m) (37)  
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	6.09	9.67	10.05	8.16	7.72	5.94	2.93	0.63	0.41

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

	January	February	March	April	May	June
1	09:00 10:06-10:23/17 15:39	08:21 09:34-10:00/26 16:40 10:03-10:45/42	07:13 17:46	06:48 19:55	05:28 21:01	04:27 22:03
2	09:00 10:06-10:25/19 15:41	08:19 09:35-09:59/24 16:42 10:04-10:45/41	07:11 17:48	06:45 19:57	05:25 21:04	04:26 22:04
3	09:00 09:42-09:43/1 15:42 10:05-10:26/21	08:17 09:37-09:57/20 16:45 10:05-10:45/40	07:08 17:50	06:42 19:59	05:23 21:06	04:24 22:06
4	08:59 09:41-09:45/4 15:43 10:05-10:26/21	08:15 09:39-09:47/8 10:05-10:44/39 16:47 09:48-09:53/5	07:05 17:53	06:39 20:02	05:20 21:08	04:23 22:07
5	08:59 09:40-09:47/7 15:45 10:04-10:28/24	08:13 10:06-10:44/38 16:49	07:03 17:55	06:37 20:04	05:18 21:10	04:22 22:08
6	08:58 09:39-09:48/9 15:46 10:04-10:29/25	08:10 10:08-10:44/36 16:52	07:00 17:57	06:34 20:06	05:16 21:12	04:21 22:10
7	08:57 09:38-09:50/12 15:48 10:03-10:30/27	08:08 10:08-10:42/34 16:54	06:57 18:00	06:31 20:08	05:13 21:14	04:20 22:11
8	08:57 09:37-09:51/14 15:50 10:03-10:31/28	08:06 10:10-10:42/32 16:56	06:55 18:02	06:28 20:10	05:11 21:17	04:19 22:12
9	08:56 09:36-09:53/17 15:51 10:03-10:32/29	08:04 10:11-10:40/29 16:59	06:52 18:04	06:26 20:13	05:09 21:19	04:19 22:13
10	08:55 09:35-09:54/19 15:53 10:03-10:34/31	08:01 10:13-10:39/26 17:01	06:49 18:06	06:23 20:15	05:06 21:21	04:18 22:14
11	08:54 09:34-09:55/21 15:55 10:03-10:35/32	07:59 10:14-10:36/22 17:04 16:22-16:30/8	06:46 18:09	06:20 20:17	05:04 21:23	04:17 22:15
12	08:53 09:32-09:56/24 15:57 10:02-10:35/33	07:57 10:17-10:33/16 17:06 16:19-16:32/13	06:44 18:11	06:17 20:19	05:02 21:25	04:17 22:16
13	08:52 09:31-09:57/26 15:59 10:03-10:37/34	07:54 10:23-10:28/5 17:08 16:18-16:35/17	06:41 18:13	06:15 20:21	05:00 21:27	04:16 22:17
14	08:51 09:29-09:58/29 16:00 10:02-10:37/35	07:52 16:17-16:37/20 17:11	06:38 18:15	06:12 20:24	04:58 21:29	04:16 22:18
15	08:50 09:28-09:59/31 16:02 10:02-10:39/37	07:49 16:17-16:39/22 17:13	06:35 18:17	06:09 20:26	04:56 21:31	04:15 22:19
16	08:48 09:28-09:59/31 16:04 10:02-10:39/37	07:47 16:16-16:39/23 17:15	06:32 18:20	06:06 20:28	04:54 21:33	04:15 22:19
17	08:47 09:27-10:00/33 16:06 10:01-10:40/39	07:44 16:15-16:39/24 17:18	06:30 18:22	06:04 20:30	04:52 21:35	04:15 22:20
18	08:46 09:28-10:01/33 16:09 10:02-10:41/39	07:42 16:15-16:40/25 17:20	06:27 18:24	06:01 20:33	04:50 21:38	04:15 22:20
19	08:44 09:28-10:01/33 16:11 10:02-10:42/40	07:39 16:15-16:40/25 17:23	06:24 18:26	05:58 20:35	04:48 21:39	04:15 22:21
20	08:43 09:27-10:42/75 16:13	07:37 16:14-16:39/25 17:25	06:21 18:29	05:56 20:37	04:46 21:41	04:15 22:21
21	08:41 09:27-10:43/76 16:15	07:34 16:15-16:40/25 17:27	06:18 18:31	05:53 20:39	04:44 21:43	04:15 22:21
22	08:39 09:28-10:43/75 16:17	07:32 16:15-16:39/24 17:30	06:16 18:33	05:51 20:41	04:42 21:45	04:15 22:22
23	08:38 09:28-10:44/76 16:19	07:29 16:16-16:38/22 17:32	06:13 18:35	05:48 20:44	04:40 21:47	04:15 22:22
24	08:36 09:28-10:44/76 16:22	07:27 16:16-16:36/20 17:34	06:10 18:37	05:45 20:46	04:39 21:49	04:16 22:22
25	08:34 09:28-10:45/77 16:24	07:24 16:18-16:36/18 17:37	06:07 18:40	05:43 20:48	04:37 21:51	04:16 22:22
26	08:33 09:29-10:45/76 16:26	07:21 16:20-16:33/13 17:39	06:04 18:42	05:40 20:50	04:35 21:53	04:16 22:22
27	08:31 09:29-10:46/77 16:28	07:19 16:23-16:30/7 17:41	06:02 18:44	05:38 20:52	04:34 21:54	04:17 22:21
28	08:29 09:30-10:46/76 16:31	07:16 17:44	05:59 18:46	05:35 20:55	04:32 21:56	04:18 22:21
29	08:27 09:30-10:45/75 16:33		06:56 19:48	05:33 20:57	04:31 21:58	04:18 22:21
30	08:25 09:31-10:02/31 16:35 10:03-10:46/43		06:53 19:51	05:30 20:59	04:29 21:59	04:19 22:20
31	08:23 09:32-10:02/30 16:38 10:04-10:46/42		06:50 19:53		04:28 22:01	
Potential sun hours	227	262	365	429	515	539
Sum of minutes with flicker	1817	814	0	0	0	0

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	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

Project:

Flickering\_Valka\_Nordex163

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Baiba / baiba.ozolina@environment.lv

Calculated:

16/01/2026 15:04/4.1.254

## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Nordex163 WTG: 1 - NORDEX N163/6.X 7000 163.0 !O! hub: 164.0 m (TOT: 245.5 m) (37)

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	6.09	9.67	10.05	8.16	7.72	5.94	2.93	0.63	0.41

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

	July	August	September	October	November	December
1	04:20 22:20	05:09 21:35	06:15 20:17	07:18 18:53	07:27 09:41-10:08/27 16:32	08:33 09:16-09:38/22 15:37 09:44-10:16/32
2	04:21 22:19	05:11 21:33	06:17 20:15	07:21 18:51	07:30 09:40-10:10/30 16:30	08:35 09:18-09:37/19 15:36 09:46-10:17/31
3	04:22 22:19	05:13 21:31	06:19 20:12	07:23 18:48	07:32 09:39-10:12/33 16:27	08:36 09:20-09:37/17 15:35 09:47-10:17/30
4	04:23 22:18	05:15 21:29	06:21 20:09	07:25 18:45	07:34 09:38-10:12/34 16:25	08:38 09:22-09:36/14 15:34 09:48-10:16/28
5	04:24 22:17	05:17 21:26	06:23 20:06	07:27 18:42	07:37 09:37-10:14/37 16:23	08:40 09:24-09:36/12 15:33 09:48-10:15/27
6	04:25 22:17	05:19 21:24	06:25 20:03	07:29 18:39	07:39 09:36-10:14/38 16:20	08:41 09:25-09:35/10 15:33 09:50-10:15/25
7	04:26 22:16	05:22 21:22	06:28 20:01	07:31 18:37	07:41 09:09-09:24/15 16:18 09:36-10:15/39	08:43 09:27-09:34/7 15:32 09:51-10:15/24
8	04:27 22:15	05:24 21:19	06:30 19:58	07:34 18:34	07:44 09:06-09:27/21 16:16 09:35-10:15/40	08:45 09:29-09:34/5 15:31 09:53-10:15/22
9	04:29 22:14	05:26 21:17	06:32 19:55	07:36 18:31	07:46 09:05-09:30/25 16:14 09:35-10:16/41	08:46 09:30-09:31/1 15:31 09:53-10:14/21
10	04:30 22:13	05:28 21:15	06:34 19:52	07:38 18:29	07:48 09:04-09:32/28 16:12 09:35-10:17/42	08:47 09:55-10:14/19 15:30
11	04:31 22:11	05:30 21:12	06:36 19:50	07:40 18:26	07:51 09:03-09:32/29 16:10 09:34-10:17/43	08:49 09:56-10:13/17 15:30
12	04:33 22:10	05:32 21:10	06:38 19:47	07:42 18:23	07:53 09:03-09:34/31 16:08 09:35-10:17/42	08:50 09:57-10:13/16 15:29
13	04:34 22:09	05:34 21:07	06:40 19:44	07:44 18:20	07:55 09:02-10:17/75 16:06	08:51 09:58-10:12/14 15:29
14	04:36 22:08	05:36 21:05	06:42 19:41	07:47 18:18	07:57 09:02-10:18/76 16:04	08:52 10:00-10:12/12 15:29
15	04:37 22:06	05:39 21:02	06:44 19:38	07:49 16:54-17:04/10 18:15	08:00 09:01-10:17/76 16:02	08:53 10:02-10:12/10 15:29
16	04:39 22:05	05:41 21:00	06:47 19:35	07:51 16:51-17:06/15 18:12	08:02 09:02-10:18/76 16:00	08:54 10:03-10:12/9 15:29
17	04:41 22:03	05:43 20:57	06:49 19:33	07:53 16:49-17:07/18 18:10	08:04 09:02-10:18/76 15:58	08:55 10:05-10:11/6 15:29
18	04:42 22:02	05:45 20:55	06:51 19:30	07:56 16:48-17:09/21 18:07	08:06 09:02-10:18/76 15:56	08:56 10:05-10:10/5 15:29
19	04:44 22:00	05:47 20:52	06:53 19:27	07:58 16:46-17:09/23 18:04	08:08 09:03-10:18/75 15:54	08:57 15:29
20	04:46 21:58	05:49 20:49	06:55 19:24	08:00 16:45-17:09/24 18:02	08:11 09:03-10:18/75 15:53	08:58 15:30
21	04:48 21:57	05:51 20:47	06:57 19:21	08:02 16:45-17:10/25 17:59	08:13 09:03-10:18/75 15:51	08:58 15:30
22	04:49 21:55	05:53 20:44	06:59 19:19	08:05 16:44-17:09/25 17:57	08:15 09:04-10:18/74 15:49	08:59 15:30
23	04:51 21:53	05:56 20:42	07:01 19:16	08:07 16:45-17:10/25 17:54	08:17 09:04-10:18/74 15:48	09:00 15:31
24	04:53 21:51	05:58 20:39	07:03 19:13	08:09 16:44-17:09/25 17:52	08:19 09:05-09:38/33 15:46 09:39-10:18/39	09:00 15:31
25	04:55 21:50	06:00 20:36	07:06 19:10	07:11 15:45-16:09/24 16:49	08:21 09:05-09:38/33 15:45 09:40-10:18/38	09:00 10:10-10:13/3 15:32
26	04:57 21:48	06:02 20:34	07:08 19:07	07:14 15:45-16:08/23 16:47	08:23 09:06-09:37/31 15:43 09:40-10:17/37	09:01 10:09-10:15/6 15:33
27	04:59 21:46	06:04 20:31	07:10 19:05	07:16 15:46-16:08/22 16:44	08:25 09:07-09:38/31 15:42 09:41-10:18/37	09:01 10:08-10:16/8 15:34
28	05:01 21:44	06:06 20:28	07:12 19:02	07:18 15:46-16:06/20 16:42	08:27 09:09-09:38/29 15:41 09:42-10:17/35	09:01 10:08-10:18/10 15:35
29	05:03 21:42	06:08 20:25	07:14 18:59	07:21 09:50-09:59/9 16:39 15:48-16:04/16	08:29 09:11-09:37/26 15:40 09:43-10:17/34	09:01 10:08-10:19/11 15:36
30	05:05 21:40	06:11 20:23	07:16 18:56	07:23 09:46-10:03/17 16:37 15:49-16:01/12	08:31 09:13-09:37/24 15:38 09:43-10:17/34	09:01 10:06-10:20/14 15:37
31	05:07 21:37	06:13 20:20		07:25 09:43-10:06/23 16:34 15:52-15:59/7		09:01 10:06-10:21/15 15:38
Potential sun hours	538	474	386	321	241	207
Sum of minutes with flicker	0	0	0	384	1884	522

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

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

Project:

Flickering\_Valka\_Nordex163

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Baiba / baiba.ozolina@environment.lv

Calculated:

16/01/2026 15:04/4.1.254

## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Nordex163 WTG: 2 - NORDEX N163/6.X 7000 163.0 !O! hub: 164.0 m (TOT: 245.5 m) (36)  
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	6.09	9.67	10.05	8.16	7.72	5.94	2.93	0.63	0.41

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

	January		February		March		April		May		June	
1	09:00	12:41-13:05/24	08:21	15:50-16:03/13	07:13	16:30-16:53/23	06:48	18:15-19:00/45	05:28	19:57-20:22/25	04:27	
	15:39		16:40		17:46		19:55		21:01		22:03	
2	09:00	12:43-13:06/23	08:19	15:50-16:06/16	07:11	16:32-16:51/19	06:45	18:14-18:59/45	05:25	19:58-20:22/24	04:26	
	15:41		16:42		17:48		19:57		21:03		22:04	
3	09:00	12:43-13:05/22	08:17	15:50-16:09/19	07:08	16:35-16:48/13	06:42	18:13-18:59/46	05:23	19:58-20:22/24	04:24	
	15:42		16:45		17:50		19:59		21:06		22:05	
4	08:59	12:44-13:05/21	08:15	15:48-16:11/23	07:05	16:39-16:44/5	06:39	18:13-18:59/46	05:20	19:59-20:21/22	04:23	21:23-21:25/2
	15:43		16:47		17:53		20:02		21:08		22:07	
5	08:59	12:45-13:05/20	08:12	15:48-16:14/26	07:03		06:36	18:13-18:59/46	05:18	20:00-20:21/21	04:22	21:22-21:27/5
	15:45		16:49		17:55		20:04		21:10		22:08	
6	08:58	12:46-13:05/19	08:10	15:47-16:16/29	07:00		06:34	18:13-18:58/45	05:16	20:00-20:19/19	04:21	21:21-21:28/7
	15:46		16:52		17:57		20:06		21:12		22:10	
7	08:57	12:47-13:04/17	08:08	15:47-16:19/32	06:57		06:31	18:13-18:57/44	05:13	20:02-20:17/15	04:20	21:20-21:29/9
	15:48		16:54		17:59		20:08		21:14		22:11	
8	08:57	12:48-13:04/16	08:06	15:47-16:22/35	06:54		06:28	18:12-18:57/45	05:11	20:04-20:16/12	04:19	21:19-21:29/10
	15:50		16:56		18:02		20:10		21:17		22:12	
9	08:56	12:50-13:03/13	08:03	15:47-16:25/38	06:52		06:25	18:13-18:57/44	05:09	20:09-20:12/3	04:19	21:19-21:31/12
	15:51		16:59		18:04		20:13		21:19		22:13	
10	08:55	12:52-13:02/10	08:01	15:47-16:27/40	06:49		06:23	18:13-18:55/42	05:06		04:18	21:19-21:31/12
	15:53		17:01		18:06		20:15		21:21		22:14	
11	08:54	12:55-13:00/5	07:59	15:48-16:30/42	06:46		06:20	18:13-18:54/41	05:04		04:17	21:19-21:33/14
	15:55		17:04		18:08		20:17		21:23		22:15	
12	08:53		07:56	15:47-16:32/45	06:43		06:17	18:15-18:54/39	05:02		04:17	21:19-21:34/15
	15:57		17:06		18:11		20:19		21:25		22:16	
13	08:52		07:54	15:49-16:35/46	06:41		06:15	18:15-18:52/37	05:00		04:16	21:19-21:34/15
	15:59		17:08		18:13		20:21		21:27		22:17	
14	08:51		07:52	15:49-16:38/49	06:38		06:12	18:16-18:51/35	04:58		04:16	21:19-21:35/16
	16:00		17:11		18:15		20:24		21:29		22:18	
15	08:49		07:49	15:49-16:40/51	06:35		06:09	18:17-18:50/33	04:56		04:15	21:19-21:36/17
	16:02		17:13		18:17		20:26		21:31		22:18	
16	08:48		07:47	15:51-16:43/52	06:32		06:06	18:18-18:47/29	04:54		04:15	21:19-21:36/17
	16:04		17:15		18:20		20:28		21:33		22:19	
17	08:47		07:44	15:52-16:45/53	06:30		06:04	18:21-18:46/25	04:52		04:15	21:19-21:37/18
	16:06		17:18		18:22		20:30		21:35		22:20	
18	08:45		07:42	15:55-16:48/53	06:27		06:01	18:23-18:43/20	04:50		04:15	21:20-21:37/17
	16:08		17:20		18:24		20:32		21:37		22:20	
19	08:44		07:39	15:59-16:51/52	06:24		05:58	18:25-18:39/14	04:48		04:15	21:20-21:38/18
	16:11		17:22		18:26		20:35		21:39		22:21	
20	08:43		07:37	16:03-16:53/50	06:21		05:56		04:46		04:15	21:20-21:38/18
	16:13		17:25		18:29		20:37		21:41		22:21	
21	08:41		07:34	16:06-16:55/49	06:18	17:36-17:44/8	05:53		04:44		04:15	21:20-21:38/18
	16:15		17:27		18:31		20:39		21:43		22:21	
22	08:39		07:32	16:11-16:56/45	06:16	17:31-17:50/19	05:50	20:04-20:09/5	04:42		04:15	21:20-21:38/18
	16:17		17:30		18:33		20:41		21:45		22:21	
23	08:38		07:29	16:14-16:56/42	06:13	17:28-17:52/24	05:48	20:02-20:11/9	04:40		04:15	21:20-21:38/18
	16:19		17:32		18:35		20:44		21:47		22:22	
24	08:36		07:27	16:15-16:55/40	06:10	17:25-17:54/29	05:45	20:01-20:13/12	04:39		04:16	21:21-21:39/18
	16:21		17:34		18:37		20:46		21:49		22:22	
25	08:34		07:24	16:16-16:56/40	06:07	17:23-17:55/32	05:43	20:00-20:16/16	04:37		04:16	21:20-21:38/18
	16:24		17:36		18:40		20:48		21:51		22:22	
26	08:32		07:21	16:17-16:55/38	06:04	17:21-17:56/35	05:40	19:59-20:17/18	04:35		04:16	21:21-21:39/18
	16:26		17:39		18:42		20:50		21:53		22:21	
27	08:31		07:19	16:19-16:54/35	06:02	17:19-17:57/38	05:38	19:59-20:20/21	04:34		04:17	21:21-21:38/17
	16:28		17:41		18:44		20:52		21:54		22:21	
28	08:29		07:16	16:23-16:53/30	05:59	17:19-17:58/39	05:35	19:58-20:21/23	04:32		04:18	21:22-21:38/16
	16:31		17:43		18:46		20:55		21:56		22:21	
29	08:27	15:54-15:55/1			06:56	18:17-18:58/41	05:33	19:58-20:23/25	04:31		04:18	21:22-21:37/15
	16:33				19:48		20:57		21:58		22:21	
30	08:25	15:53-15:58/5			06:53	18:16-18:59/43	05:30	19:58-20:23/25	04:29		04:19	21:22-21:37/15
	16:35				19:51		20:59		21:59		22:20	
31	08:23	15:52-16:01/9			06:50	18:15-18:59/44			04:28			
	16:38				19:53				22:01			
Potential sun hours	227		262		365		429		515		539	
Sum of minutes with flicker	205		1083		412		875		165		393	

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	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

Project:

Flickering\_Valka\_Nordex163

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Baiba / baiba.ozolina@environment.lv

Calculated:

16/01/2026 15:04/4.1.254

## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Nordex163 WTG: 2 - NORDEX N163/6.X 7000 163.0 !O! hub: 164.0 m (TOT: 245.5 m) (36)  
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	6.09	9.67	10.05	8.16	7.72	5.94	2.93	0.63	0.41

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

	July	August	September	October	November	December
1	04:20 21:23-21:37/14 22:20	05:09 21:35 21:29	06:15 18:12-18:53/41 20:17	07:18 18:53 18:53	07:27 15:16-15:56/40 16:32	08:33 12:37-12:41/4 15:37
2	04:21 21:24-21:37/13 22:19	05:11 21:33 21:33	06:17 18:11-18:53/42 20:14	07:20 18:50 18:50	07:30 15:17-15:54/37 16:30	08:35 12:35-12:44/9 15:36
3	04:22 21:25-21:37/12 22:19	05:13 21:31 21:31	06:19 18:11-18:55/44 20:12	07:23 18:48 18:48	07:32 15:16-15:51/35 16:27	08:36 12:33-12:46/13 15:35
4	04:23 21:25-21:36/11 22:18	05:15 20:17-20:24/7 21:29	06:21 18:10-18:55/45 20:09	07:25 18:45 18:45	07:34 15:17-15:49/32 16:25	08:38 12:33-12:48/15 15:34
5	04:24 21:26-21:35/9 22:17	05:17 20:14-20:27/13 21:26	06:23 18:10-18:55/45 20:06	07:27 18:42 18:42	07:37 15:17-15:46/29 16:23	08:40 12:32-12:49/17 15:33
6	04:25 21:27-21:35/8 22:16	05:19 20:12-20:28/16 21:24	06:25 18:09-18:54/45 20:03	07:29 18:39 18:39	07:39 15:18-15:44/26 16:20	08:41 12:32-12:51/19 15:33
7	04:26 21:28-21:34/6 22:16	05:21 20:10-20:29/19 21:22	06:27 18:08-18:54/46 20:01	07:31 18:37 18:37	07:41 15:19-15:42/23 16:18	08:43 12:32-12:52/20 15:32
8	04:27 21:29-21:33/4 22:15	05:24 20:09-20:30/21 21:19	06:30 18:08-18:54/46 19:58	07:33 18:34 18:34	07:44 15:19-15:39/20 16:16	08:44 12:32-12:53/21 15:31
9	04:29 22:14 22:14	05:26 20:08-20:31/23 21:17	06:32 18:08-18:53/45 19:55	07:36 18:31 18:31	07:46 15:21-15:37/16 16:14	08:46 12:31-12:53/22 15:31
10	04:30 22:13 22:13	05:28 20:08-20:31/23 21:15	06:34 18:07-18:53/46 19:52	07:38 17:11-17:21/10 18:28	07:48 15:21-15:34/13 16:12	08:47 12:32-12:55/23 15:30
11	04:31 22:11 22:11	05:30 20:07-20:31/24 21:12	06:36 18:07-18:52/45 19:49	07:40 17:07-17:23/16 18:26	07:50 15:23-15:32/9 16:10	08:49 12:31-12:55/24 15:30
12	04:33 22:10 22:10	05:32 20:06-20:30/24 21:10	06:38 18:07-18:51/44 19:47	07:42 17:05-17:24/19 18:23	07:53 15:25-15:30/5 16:08	08:50 12:32-12:56/24 15:29
13	04:34 22:09 22:09	05:34 20:05-20:30/25 21:07	06:40 18:07-18:50/43 19:44	07:44 17:02-17:26/24 18:20	07:55 15:26-15:27/1 16:06	08:51 12:32-12:57/25 15:29
14	04:36 22:08 22:08	05:36 20:05-20:30/25 21:05	06:42 18:08-18:49/41 19:41	07:47 16:54-17:26/32 18:18	07:57 16:04 16:04	08:52 12:32-12:57/25 15:29
15	04:37 22:06 22:06	05:38 20:05-20:28/23 21:02	06:44 18:08-18:48/40 19:38	07:49 16:51-17:26/35 18:15	07:59 16:02 16:02	08:53 12:32-12:57/25 15:29
16	04:39 22:05 22:05	05:41 20:05-20:26/21 21:00	06:46 18:08-18:46/38 19:35	07:51 16:49-17:27/38 18:12	08:02 16:00 16:00	08:54 12:33-12:59/26 15:29
17	04:41 22:03 22:03	05:43 20:05-20:23/18 20:57	06:49 18:09-18:45/36 19:33	07:53 16:47-17:27/40 18:10	08:04 15:58 15:58	08:55 12:33-12:59/26 15:29
18	04:42 22:02 22:02	05:45 20:06-20:21/15 20:55	06:51 18:10-18:43/33 19:30	07:56 16:46-17:27/41 18:07	08:06 15:56 15:56	08:56 12:33-12:59/26 15:29
19	04:44 22:00 22:00	05:47 20:07-20:19/12 20:52	06:53 18:11-18:41/30 19:27	07:58 16:44-17:27/43 18:04	08:08 15:54 15:54	08:57 12:34-13:00/26 15:29
20	04:46 21:58 21:58	05:49 20:08-20:16/8 20:49	06:55 18:13-18:38/25 19:24	08:00 16:40-17:26/46 18:02	08:11 15:53 15:53	08:58 12:35-13:01/26 15:30
21	04:48 21:57 21:57	05:51 20:09-20:14/5 20:47	06:57 18:15-18:35/20 19:21	08:02 16:36-17:26/50 17:59	08:13 15:51 15:51	08:58 12:35-13:01/26 15:30
22	04:49 21:55 21:55	05:53 20:44 20:44	06:59 18:20-18:32/12 19:19	08:05 16:31-17:22/51 17:57	08:15 15:49 15:49	08:59 12:35-13:02/27 15:30
23	04:51 21:53 21:53	05:56 20:42 20:42	07:01 19:16 19:16	08:07 16:28-17:20/52 17:54	08:17 15:48 15:48	08:59 12:36-13:02/26 15:31
24	04:53 21:51 21:51	05:58 18:29-18:43/14 20:39	07:03 19:13 19:13	08:09 16:24-17:17/53 17:52	08:19 15:46 15:46	09:00 12:37-13:03/26 15:31
25	04:55 21:49 21:49	06:00 18:25-18:46/21 20:36	07:05 19:10 19:10	07:11 15:22-16:15/53 16:49	08:21 15:45 15:45	09:00 12:37-13:03/26 15:32
26	04:57 21:47 21:47	06:02 18:22-18:48/26 20:34	07:08 19:07 19:07	07:14 15:20-16:12/52 16:46	08:23 15:43 15:43	09:00 12:38-13:03/25 15:33
27	04:59 21:46 21:46	06:04 18:20-18:49/29 20:31	07:10 19:04 19:04	07:16 15:19-16:10/51 16:44	08:25 15:42 15:42	09:01 12:38-13:04/26 15:34
28	05:01 21:44 21:44	06:06 18:18-18:51/33 20:28	07:12 19:02 19:02	07:18 15:18-16:06/48 16:42	08:27 15:41 15:41	09:01 12:39-13:04/25 15:35
29	05:03 21:41 21:41	06:08 18:16-18:51/35 20:25	07:14 18:59 18:59	07:20 15:18-16:04/46 16:39	08:29 15:39 15:39	09:01 12:40-13:05/25 15:36
30	05:05 21:39 21:39	06:10 18:15-18:52/37 20:23	07:16 18:56 18:56	07:23 15:17-16:01/44 16:37	08:31 15:38 15:38	09:01 12:40-13:04/24 15:37
31	05:07 21:37 21:37	06:13 18:13-18:53/40 20:20	07:18 16:34 16:34	07:25 15:17-15:59/42 16:34	08:33 15:38 15:38	09:01 12:41-13:05/24 15:38
Potential sun hours	538	474	386	321	241	207
Sum of minutes with flicker	77	557	852	886	286	696

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	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

Project:

Flickering\_Valka\_Nordex163

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Baiba / baiba.ozolina@environment.lv

Calculated:

16/01/2026 15:04/4.1.254

## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Nordex163 WTG: 3 - NORDEX N163/6.X 7000 163.0 !O! hub: 164.0 m (TOT: 245.5 m) (33)

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	6.09	9.67	10.05	8.16	7.72	5.94	2.93	0.63	0.41

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

	January		February	March	April	May	June
1	09:00	10:12-10:34/22	08:21	07:13	06:48	05:28	04:27
	15:39		16:40	17:46	19:55	21:01	22:03
2	09:00	10:13-10:35/22	08:19	07:11	06:45	05:25	04:26
	15:41		16:42	17:48	19:57	21:03	22:04
3	09:00	10:13-10:35/22	08:17	07:08	06:42	05:23	04:24
	15:42		16:45	17:50	19:59	21:06	22:05
4	08:59	10:13-10:35/22	08:15	07:05	06:39	05:20	04:23
	15:43		16:47	17:53	20:02	21:08	22:07
5	08:59	10:14-10:36/22	08:12	07:03	06:37	05:18	04:22
	15:45		16:49	17:55	20:04	21:10	22:08
6	08:58	10:14-10:36/22	08:10	07:00	06:34	05:16	04:21
	15:46		16:52	17:57	20:06	21:12	22:10
7	08:57	10:15-10:36/21	08:08	06:57	06:31	05:13	04:20
	15:48		16:54	17:59	20:08	21:14	22:11
8	08:57	10:16-10:36/20	08:06	06:54	06:28	05:11	04:19
	15:50		16:56	18:02	20:10	21:17	22:12
9	08:56	10:17-10:36/19	08:04	06:52	06:26	05:09	04:19
	15:51		16:59	18:04	20:13	21:19	22:13
10	08:55	10:18-10:36/18	08:01	06:49	17:30-17:36/6	05:06	04:18
	15:53		17:01	18:06	20:15	21:21	22:14
11	08:54	10:19-10:37/18	07:59	06:46	17:29-17:40/11	05:04	04:17
	15:55		17:04	18:09	20:17	21:23	22:15
12	08:53	10:20-10:36/16	07:57	06:43	17:27-17:42/15	05:02	04:17
	15:57		17:06	18:11	20:19	21:25	22:16
13	08:52	10:21-10:36/15	07:54	06:41	17:26-17:44/18	05:00	04:16
	15:59		17:08	18:13	20:21	21:27	22:17
14	08:51	10:22-10:34/12	07:52	06:38	17:25-17:46/21	04:58	04:16
	16:01		17:11	18:15	20:24	21:29	22:18
15	08:49	10:25-10:34/9	07:49	06:35	17:24-17:46/22	04:56	04:15
	16:02		17:13	18:17	20:26	21:31	22:18
16	08:48		07:47	06:32	17:23-17:46/23	04:54	04:15
	16:04		17:15	18:20	20:28	21:33	22:19
17	08:47		07:44	06:30	17:24-17:47/23	04:52	04:15
	16:06		17:18	18:22	20:30	21:35	22:20
18	08:45		07:42	06:27	17:23-17:46/23	04:50	04:15
	16:09		17:20	18:24	20:32	21:37	22:20
19	08:44		07:39	06:24	17:24-17:45/21	04:48	04:15
	16:11		17:23	18:26	20:35	21:39	22:21
20	08:43		07:37	06:21	17:24-17:44/20	04:46	04:15
	16:13		17:25	18:29	20:37	21:41	22:21
21	08:41		07:34	06:18	17:24-17:42/18	04:44	04:15
	16:15		17:27	18:31	20:39	21:43	22:21
22	08:39		07:32	06:16	17:27-17:41/14	04:42	04:15
	16:17		17:30	18:33	20:41	21:45	22:21
23	08:38		07:29	06:13	17:29-17:38/9	04:40	04:15
	16:19		17:32	18:35	20:44	21:47	22:22
24	08:36		07:27	06:10		04:39	04:16
	16:22		17:34	18:37	20:46	21:49	22:22
25	08:34		07:24	06:07		04:37	04:16
	16:24		17:37	18:40	20:48	21:51	22:22
26	08:33		07:21	06:04		04:35	04:17
	16:26		17:39	18:42	20:50	21:53	22:22
27	08:31		07:19	06:02		04:34	04:17
	16:28		17:41	18:44	20:52	21:54	22:21
28	08:29		07:16	05:59		04:32	04:18
	16:31		17:43	18:46	20:55	21:56	22:21
29	08:27			06:56		04:31	04:18
	16:33			19:48	20:57	21:58	22:21
30	08:25			06:53		04:29	04:19
	16:35			19:51	20:59	21:59	22:20
31	08:23			06:50		04:28	
	16:38			19:53		22:01	
Potential sun hours	227		262	365	429	515	539
Sum of minutes with flicker	280		0	244	0	0	0

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	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Nordex163 WTG: 3 - NORDEX N163/6.X 7000 163.0 !O! hub: 164.0 m (TOT: 245.5 m) (33)  
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	6.09	9.67	10.05	8.16	7.72	5.94	2.93	0.63	0.41

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

	July	August	September	October	November	December
1	04:20 22:20	05:09 21:35	06:15 20:17	07:18 18:06-18:22/16	07:27 16:32	08:33 15:37
2	04:21 22:19	05:11 21:33	06:17 20:15	07:21 18:06-18:19/13	07:30 16:30	08:35 15:36
3	04:22 22:19	05:13 21:31	06:19 20:12	07:23 18:08-18:16/8	07:32 16:27	08:36 15:35
4	04:23 22:18	05:15 21:29	06:21 20:09	07:25 18:10-18:13/3	07:34 16:25	08:38 15:34
5	04:24 22:17	05:17 21:26	06:23 20:06	07:27 18:42	07:37 16:23	08:40 15:33
6	04:25 22:17	05:19 21:24	06:25 20:03	07:29 18:39	07:39 16:20	08:41 15:33
7	04:26 22:16	05:22 21:22	06:28 20:01	07:31 18:37	07:41 16:18	08:43 15:32
8	04:27 22:15	05:24 21:19	06:30 19:58	07:33 18:34	07:44 16:16	08:45 15:31
9	04:29 22:14	05:26 21:17	06:32 19:55	07:36 18:31	07:46 16:14	08:46 15:31
10	04:30 22:13	05:28 21:15	06:34 19:52	07:38 18:29	07:48 16:12	08:47 15:30
11	04:31 22:11	05:30 21:12	06:36 19:50	07:40 18:26	07:50 16:10	08:49 15:30
12	04:33 22:10	05:32 21:10	06:38 19:47	07:42 18:23	07:53 16:08	08:50 15:29
13	04:34 22:09	05:34 21:07	06:40 19:44	07:44 18:20	07:55 16:06	08:51 15:29
14	04:36 22:08	05:36 21:05	06:42 19:41	07:47 18:18	07:57 16:04	08:52 15:29
15	04:37 22:06	05:39 21:02	06:44 19:38	07:49 18:15	08:00 16:02	08:53 15:29
16	04:39 22:05	05:41 21:00	06:47 19:35	07:51 18:12	08:02 16:00	08:54 15:29
17	04:41 22:03	05:43 20:57	06:49 19:33	07:53 18:10	08:04 15:58	08:55 15:29
18	04:42 22:02	05:45 20:55	06:51 19:30	07:56 18:07	08:06 15:56	08:56 15:29
19	04:44 22:00	05:47 20:52	06:53 19:27	07:58 18:04	08:08 15:54	08:57 15:29
20	04:46 21:58	05:49 20:49	06:55 19:24	08:00 18:02	08:11 15:53	08:58 15:30
21	04:48 21:57	05:51 20:47	06:57 19:21	08:02 17:59	08:13 15:51	08:58 15:30
22	04:50 21:55	05:53 20:44	06:59 19:19	08:05 17:57	08:15 15:49	08:59 15:30
23	04:51 21:53	05:56 20:42	07:01 19:16	08:07 17:54	08:17 15:48	08:59 15:31
24	04:53 21:51	05:58 20:39	07:03 19:13	08:09 17:52	08:19 15:46	09:00 15:32
25	04:55 21:49	06:00 20:36	07:06 19:10	08:11 16:49	08:21 15:45	09:00 15:32
26	04:57 21:48	06:02 20:34	07:08 19:07	08:14 16:47	08:23 15:43	09:00 15:33
27	04:59 21:46	06:04 20:31	07:10 19:05	08:16 16:44	08:25 15:42	09:01 15:34
28	05:01 21:44	06:06 20:28	07:12 19:02	08:18 16:42	08:27 15:41	09:01 15:35
29	05:03 21:42	06:08 20:25	07:14 18:59	08:21 16:39	08:29 15:40	09:01 15:36
30	05:05 21:39	06:11 20:23	07:16 18:56	08:23 16:37	08:31 15:38	09:01 15:37
31	05:07 21:37	06:13 20:20		07:25 16:34		09:01 15:38
Potential sun hours	538	474	386	321	241	207
Sum of minutes with flicker	0	0	208	40	50	698

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

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

Project:

Flickering\_Valka\_Nordex163

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Baiba / baiba.ozolina@environment.lv

Calculated:

16/01/2026 15:04/4.1.254

## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Nordex163 WTG: 4 - NORDEX N163/6.X 7000 163.0 !O! hub: 164.0 m (TOT: 245.5 m) (41)  
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 6.09 9.67 10.05 8.16 7.72 5.94 2.93 0.63 0.41

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

	January	February	March	April	May	June
1	09:00 14:31-14:53/22 15:39	08:21 14:36-15:17/41 16:40	07:13 16:47-17:08/21 17:46	06:48 18:37-19:06/29 19:55	05:28 19:49-20:17/28 21:01	04:27 19:55-20:12/17 22:02
2	09:00 14:31-14:54/23 15:41	08:19 14:37-15:18/41 16:42	07:11 16:47-17:07/20 17:48	06:45 18:39-19:05/26 19:57	05:25 19:47-20:17/30 21:03	04:26 19:56-20:11/15 22:04
3	09:00 14:32-14:56/24 15:42	08:17 14:37-15:18/41 16:45	07:08 16:47-17:06/19 17:50	06:42 18:40-19:04/24 19:59	05:23 19:47-20:18/31 21:06	04:24 19:58-20:09/11 22:05
4	08:59 14:32-14:58/26 15:43	08:15 14:37-15:17/40 16:47	07:05 16:48-17:05/17 17:53	06:39 18:42-19:02/20 20:02	05:20 19:46-20:19/33 21:08	04:23 20:00-20:07/7 22:07
5	08:59 14:32-14:59/27 15:45	08:12 14:38-15:18/40 16:49	07:03 16:49-17:03/14 17:55	06:36 18:45-18:59/14 20:04	05:18 19:45-20:20/35 21:10	04:22 22:08
6	08:58 14:33-15:01/28 15:46	08:10 14:38-15:17/39 16:52	07:00 16:52-17:01/9 17:57	06:34 18:50-18:56/6 20:06	05:16 19:44-20:19/35 21:12	04:21 22:09
7	08:57 14:33-15:03/30 15:48	08:08 14:39-15:17/38 16:54	06:57 17:59	06:31 20:08	05:13 19:44-20:20/36 21:14	04:20 22:11
8	08:57 14:33-15:05/32 15:50	08:06 14:39-15:16/37 16:56	06:54 18:02	06:28 20:10	05:11 19:43-20:20/37 21:16	04:19 22:12
9	08:56 14:34-15:07/33 15:51	08:03 14:40-15:16/36 16:59	06:52 18:04	06:25 20:13	05:09 19:43-20:20/37 21:19	04:19 22:13
10	08:55 14:34-15:09/35 15:53	08:01 14:41-15:15/34 17:01	06:49 18:06	06:23 20:15	05:06 19:43-20:20/37 21:21	04:18 22:14
11	08:54 14:34-15:11/37 15:55	07:59 14:42-15:15/33 17:04	06:46 18:08	06:20 20:17	05:04 19:43-20:20/37 21:23	04:17 22:15
12	08:53 14:35-15:13/38 15:57	07:56 14:43-15:13/30 17:06	06:43 18:11	06:17 20:19	05:02 19:43-20:20/37 21:25	04:17 22:16
13	08:52 14:35-15:15/40 15:59	07:54 14:45-15:12/27 17:08	06:41 18:13	06:15 20:21	05:00 19:43-20:20/37 21:27	04:16 22:17
14	08:51 14:36-15:18/42 16:00	07:52 14:46-15:10/24 17:11	06:38 17:40-17:46/6 18:15	06:12 20:24	04:58 19:43-20:20/37 21:29	04:16 22:18
15	08:49 14:36-15:19/43 16:02	07:49 14:48-15:08/20 17:13	06:35 17:38-17:48/10 18:17	06:09 20:26	04:56 19:43-20:21/38 21:31	04:15 22:18
16	08:48 14:37-15:20/43 16:04	07:47 14:53-15:05/12 17:15	06:32 17:36-17:50/14 18:20	06:06 20:28	04:54 19:44-20:20/36 21:33	04:15 22:19
17	08:47 14:38-15:21/43 16:06	07:44 17:18	06:30 17:36-17:53/17 18:22	06:04 20:30	04:52 19:44-20:20/36 21:35	04:15 22:20
18	08:45 14:38-15:21/43 16:09	07:42 17:20	06:27 17:35-17:55/20 18:24	06:01 20:32	04:50 19:44-20:19/35 21:37	04:15 22:20
19	08:44 14:39-15:21/42 16:11	07:39 17:22	06:24 17:34-17:57/23 18:26	05:58 20:35	04:48 19:45-20:20/35 21:39	04:15 22:20
20	08:42 14:39-15:22/43 16:13	07:37 17:25	06:21 17:34-17:59/25 18:29	05:56 20:01-20:05/4 20:37	04:46 19:45-20:19/34 21:41	04:15 22:21
21	08:41 14:39-15:22/43 16:15	07:34 16:54-16:55/1 17:27	06:18 17:34-18:01/27 18:31	05:53 19:58-20:07/9 20:39	04:44 19:45-20:18/33 21:43	04:15 22:21
22	08:39 14:38-15:22/44 16:17	07:32 16:52-16:58/6 17:30	06:16 17:34-18:03/29 18:33	05:50 19:57-20:09/12 20:41	04:42 19:46-20:18/32 21:45	04:15 22:21
23	08:38 14:38-15:22/44 16:19	07:29 16:50-17:01/11 17:32	06:13 17:35-18:06/31 18:35	05:48 19:55-20:11/16 20:43	04:40 19:46-20:17/31 21:47	04:15 22:21
24	08:36 14:37-15:22/45 16:21	07:27 16:48-17:03/15 17:34	06:10 17:36-18:08/32 18:37	05:45 19:55-20:13/18 20:46	04:39 19:47-20:17/30 21:49	04:16 22:22
25	08:34 14:37-15:22/45 16:24	07:24 16:48-17:06/18 17:36	06:07 17:37-18:09/32 18:40	05:43 19:54-20:16/22 20:48	04:37 19:48-20:17/29 21:51	04:16 22:22
26	08:32 14:37-15:21/44 16:26	07:21 16:47-17:08/21 17:39	06:04 17:37-18:09/32 18:42	05:40 19:53-20:16/23 20:50	04:35 19:49-20:16/27 21:53	04:16 22:21
27	08:31 14:36-15:20/44 16:28	07:19 16:47-17:08/21 17:41	06:02 17:36-18:08/32 18:44	05:38 19:53-20:16/23 20:52	04:34 19:50-20:16/26 21:54	04:17 22:21
28	08:29 14:36-15:19/43 16:31	07:16 16:46-17:08/22 17:43	05:59 17:37-18:09/32 18:46	05:35 19:52-20:15/23 20:55	04:32 19:51-20:15/24 21:56	04:18 22:21
29	08:27 14:36-15:17/41 16:33		06:56 18:36-19:09/33 19:48	05:33 19:52-20:15/23 20:57	04:31 19:51-20:14/23 21:58	04:18 22:21
30	08:25 14:37-15:17/40 16:35		06:53 18:36-19:08/32 19:51	05:30 19:50-20:15/25 20:59	04:29 19:52-20:13/21 21:59	04:19 22:20
31	08:23 14:37-15:18/41 16:38		06:50 18:37-19:07/30 19:53		04:28 19:54-20:13/19 22:01	
Potential sun hours	227	262	365	429	515	539
Sum of minutes with flicker	1168	648	557	317	996	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	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker



## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Nordex163 WTG: 4 - NORDEX N163/6.X 7000 163.0 !O! hub: 164.0 m (TOT: 245.5 m) (41)  
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 6.09 9.67 10.05 8.16 7.72 5.94 2.93 0.63 0.41

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

	July	August	September	October	November	December
1	04:20 22:20	05:09 19:53-20:31/38 21:35	06:15 20:17	07:18 18:53	07:27 14:10-14:45/35 16:32	08:33 14:16-14:53/37 15:37
2	04:21 22:19	05:11 19:53-20:31/38 21:33	06:17 20:14	07:20 18:50	07:30 14:10-14:46/36 16:30	08:35 14:17-14:52/35 15:36
3	04:22 22:19	05:13 19:53-20:31/38 21:31	06:19 20:12	07:23 18:48	07:32 14:08-14:46/38 16:27	08:36 14:17-14:50/33 15:35
4	04:23 22:18	05:15 19:53-20:30/37 21:28	06:21 20:09	07:25 18:45	07:34 14:08-14:47/39 16:25	08:38 14:17-14:49/32 15:34
5	04:24 22:17	05:17 19:54-20:30/36 21:26	06:23 20:06	07:27 18:42	07:37 14:07-14:47/40 16:23	08:40 14:18-14:48/30 15:33
6	04:25 22:16	05:19 19:54-20:30/36 21:24	06:25 18:46-18:51/5 20:03	07:29 18:39	07:39 14:08-14:47/39 16:20	08:41 14:19-14:47/28 15:33
7	04:26 22:16	05:21 19:54-20:29/35 21:22	06:27 18:42-18:55/13 20:01	07:31 17:30-17:34/4 18:37	07:41 14:08-14:48/40 16:18	08:43 14:19-14:47/28 15:32
8	04:27 20:09-20:13/4 22:15	05:24 19:55-20:29/34 21:19	06:30 18:38-18:57/19 19:58	07:33 17:25-17:37/12 18:34	07:44 14:07-14:48/41 16:16	08:44 14:20-14:46/26 15:31
9	04:29 20:06-20:16/10 22:14	05:26 19:55-20:28/33 21:17	06:32 18:35-18:58/23 19:55	07:36 17:24-17:40/16 18:31	07:46 14:08-14:48/40 16:14	08:46 14:20-14:44/24 15:31
10	04:30 20:05-20:17/12 22:12	05:28 19:56-20:27/31 21:14	06:34 18:32-18:59/27 19:52	07:38 17:22-17:40/18 18:28	07:48 14:07-14:48/41 16:12	08:47 14:21-14:44/23 15:30
11	04:31 20:03-20:19/16 22:11	05:30 19:57-20:26/29 21:12	06:36 18:30-18:59/29 19:49	07:40 17:21-17:41/20 18:26	07:50 14:08-14:48/40 16:10	08:49 14:21-14:43/22 15:30
12	04:33 20:03-20:21/18 22:10	05:32 19:58-20:25/27 21:10	06:38 18:29-18:59/30 19:47	07:42 17:20-17:41/21 18:23	07:53 14:07-14:48/41 16:08	08:50 14:22-14:43/21 15:29
13	04:34 20:01-20:21/20 22:09	05:34 19:58-20:23/25 21:07	06:40 18:28-18:59/31 19:44	07:44 17:20-17:41/21 18:18	07:55 14:08-14:49/41 16:06	08:51 14:23-14:42/19 15:29
14	04:36 20:00-20:22/22 22:07	05:36 20:00-20:23/23 21:05	06:42 18:27-18:59/32 19:41	07:47 17:19-17:41/22 18:18	07:57 14:09-14:51/42 16:04	08:52 14:23-14:42/19 15:29
15	04:37 20:00-20:24/24 22:06	05:38 20:00-20:23/23 21:02	06:44 18:26-18:59/33 19:38	07:49 17:19-17:40/21 18:15	07:59 14:09-14:52/43 16:02	08:53 14:24-14:41/17 15:29
16	04:39 19:59-20:24/25 22:05	05:41 20:00-20:22/22 21:00	06:46 18:26-18:58/32 19:35	07:51 17:20-17:39/19 18:12	08:02 14:10-14:54/44 16:00	08:54 14:24-14:41/17 15:29
17	04:41 19:59-20:25/26 22:03	05:43 20:00-20:22/22 20:57	06:49 18:25-18:57/32 19:33	07:53 17:20-17:36/16 18:10	08:04 14:10-14:55/45 15:58	08:55 14:25-14:41/16 15:29
18	04:42 19:58-20:26/28 22:02	05:45 20:00-20:21/21 20:55	06:51 18:25-18:56/31 19:30	07:55 17:21-17:34/13 18:07	08:06 14:11-14:56/45 15:56	08:56 14:25-14:41/16 15:29
19	04:44 19:57-20:27/30 22:00	05:47 20:00-20:19/19 20:52	06:53 18:23-18:55/32 19:27	07:58 17:21-17:31/10 18:04	08:08 14:12-14:56/44 15:54	08:57 14:26-14:42/16 15:29
20	04:46 19:57-20:28/31 21:58	05:49 20:01-20:16/15 20:49	06:55 18:21-18:53/32 19:24	08:00 17:23-17:28/5 18:02	08:10 14:13-14:57/44 15:53	08:58 14:27-14:42/15 15:30
21	04:48 19:56-20:28/32 21:57	05:51 20:02-20:14/12 20:47	06:57 18:20-18:50/30 19:21	08:02 17:59	08:13 14:14-14:57/43 15:51	08:58 14:27-14:42/15 15:30
22	04:49 19:56-20:29/33 21:55	05:53 20:03-20:11/8 20:44	06:59 18:19-18:47/28 19:18	08:04 17:57	08:15 14:15-14:58/43 15:49	08:59 14:28-14:43/15 15:30
23	04:51 19:55-20:29/34 21:53	05:56 20:05-20:09/4 20:41	07:01 18:19-18:45/26 19:16	08:07 17:54	08:17 14:16-14:58/42 15:48	08:59 14:28-14:43/15 15:31
24	04:53 19:55-20:29/34 21:51	05:58 20:39	07:03 18:18-18:42/24 19:13	08:09 17:52	08:19 14:15-14:58/43 15:46	09:00 14:28-14:44/16 15:31
25	04:55 19:55-20:30/35 21:49	06:00 20:36	07:05 18:18-18:39/21 19:10	07:11 16:49	08:21 14:16-14:59/43 15:45	09:00 14:29-14:45/16 15:32
26	04:57 19:55-20:31/36 21:47	06:02 20:33	07:08 18:18-18:36/18 19:07	07:14 14:21-14:35/14 16:46	08:23 14:15-14:59/44 15:43	09:00 14:30-14:46/16 15:33
27	04:59 19:54-20:30/36 21:45	06:04 20:31	07:10 18:18-18:33/15 19:04	07:16 14:18-14:39/21 16:44	08:25 14:15-14:58/43 15:42	09:01 14:30-14:47/17 15:34
28	05:01 19:54-20:31/37 21:43	06:06 20:28	07:12 18:19-18:30/11 19:02	07:18 14:15-14:40/25 16:42	08:27 14:16-14:58/42 15:41	09:01 14:30-14:48/18 15:35
29	05:03 19:54-20:31/37 21:41	06:08 20:25	07:14 18:20-18:27/7 18:59	07:20 14:14-14:42/28 16:39	08:29 14:16-14:56/40 15:39	09:01 14:30-14:48/18 15:36
30	05:05 19:54-20:31/37 21:39	06:10 20:23	07:16 18:22-18:25/3 18:56	07:23 14:12-14:43/31 16:37	08:31 14:16-14:55/39 15:38	09:01 14:30-14:50/20 15:37
31	05:07 19:54-20:31/37 21:37	06:13 20:20		07:25 14:11-14:44/33 16:34		09:00 14:31-14:51/20 15:38
Potential sun hours	538	474	386	321	241	207
Sum of minutes with flicker	654	606	584	370	1240	660

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	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker



Project:

Flickering\_Valka\_Nordex163

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Baiba / baiba.ozolina@environment.lv

Calculated:

16/01/2026 15:04/4.1.254

## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Nordex163 WTG: 5 - NORDEX N163/6.X 7000 163.0 !O! hub: 164.0 m (TOT: 245.5 m) (31)  
 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 6.09 9.67 10.05 8.16 7.72 5.94 2.93 0.63 0.41

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

	January	February	March	April	May	June
1	09:00 11:13-11:49/36 15:39 12:43-13:23/40	08:21 09:19-09:40/21 16:40	07:13 17:46	06:48 07:29-07:55/26 19:55	05:28 06:20-06:45/25 21:01	04:27 05:17-05:39/22 22:03
2	09:00 11:14-11:50/36 15:41 12:44-13:24/40	08:19 09:19-09:38/19 16:42	07:11 17:48	06:45 07:30-07:53/23 19:57	05:25 06:21-06:44/23 21:04	04:26 05:17-05:39/22 22:04
3	09:00 11:15-11:49/34 15:42 12:44-13:24/40	08:17 09:21-09:38/17 16:45	07:08 17:50	06:42 07:30-07:49/19 19:59	05:23 06:21-06:41/20 21:06	04:24 05:18-05:40/22 22:06
4	08:59 11:15-11:49/34 15:43 12:44-13:24/40	08:15 09:22-09:36/14 16:47	07:05 17:53	06:39 07:33-07:45/12 20:02	05:20 06:22-06:40/18 21:08	04:23 05:19-05:40/21 22:07
5	08:59 11:16-11:49/33 15:45 12:44-13:24/40	08:13 09:24-09:34/10 16:49	07:03 17:55	06:37 07:36-07:41/5 20:04	05:18 06:23-06:39/16 21:10	04:22 05:19-05:39/20 22:08
6	08:58 11:18-11:48/30 15:46 12:45-13:25/40	08:10 16:52	07:00 17:57	06:34 20:06	05:16 06:26-06:37/11 21:12	04:21 05:19-05:39/20 22:10
7	08:57 11:19-11:32/13 12:45-13:25/40 15:48 11:33-11:48/15	08:08 16:54	06:57 18:00	06:31 20:08	05:13 06:29-06:33/4 21:14	04:20 05:19-05:39/20 22:11
8	08:57 11:21-11:31/10 12:46-13:25/39 15:50 11:35-11:47/12	08:06 16:57	06:55 18:02	06:28 20:10	05:11 21:17	04:20 05:20-05:39/19 22:12
9	08:56 11:23-11:30/7 12:47-13:26/39 15:51 11:38-11:46/8	08:04 16:59	06:52 18:04	06:26 20:13	05:09 21:19	04:19 05:20-05:39/19 22:13
10	08:55 12:47-13:26/39 15:53	08:01 17:01	06:49 18:06	06:23 20:15	05:07 21:21	04:18 05:21-05:39/18 22:14
11	08:54 12:48-13:27/39 15:55	07:59 17:04	06:46 18:09	06:20 20:17	05:04 21:23	04:17 05:21-05:38/17 22:15
12	08:53 12:48-13:26/38 15:57	07:57 17:06	06:44 18:11	06:17 20:19	05:02 21:25	04:17 05:22-05:39/17 22:16
13	08:52 12:49-13:27/38 15:59	07:54 17:08	06:41 18:13	06:15 20:22	05:00 21:27	04:16 05:22-05:38/16 22:17
14	08:51 12:50-13:27/37 16:01	07:52 17:11	06:38 18:15	06:12 20:24	04:58 21:29	04:16 05:23-05:38/15 22:18
15	08:50 12:51-13:27/36 16:03	07:49 17:13	06:35 18:18	06:09 06:36-06:44/8 20:26	04:56 05:28-05:32/4 21:31	04:16 05:23-05:38/15 22:19
16	08:48 12:51-13:27/36 16:04 09:26-09:29/3	07:47 17:16	06:32 18:20	06:07 06:33-06:46/13 20:28	04:54 05:26-05:33/7 21:33	04:15 05:24-05:39/15 22:19
17	08:47 12:52-13:27/35 16:07 09:24-09:31/7	07:44 17:18	06:30 18:22	06:04 06:31-06:48/17 20:30	04:52 05:24-05:34/10 21:36	04:15 05:24-05:39/15 22:20
18	08:46 12:53-13:27/34 16:09 09:23-09:33/10	07:42 17:20	06:27 18:24	06:01 06:28-06:49/21 20:33	04:50 05:23-05:36/13 21:38	04:15 05:25-05:39/14 22:20
19	08:44 12:54-13:27/33 16:11 09:21-09:34/13	07:39 17:23	06:24 18:26	05:58 06:26-06:50/24 20:35	04:48 05:21-05:36/15 21:40	04:15 05:25-05:39/14 22:21
20	08:43 12:55-13:26/31 16:13 09:19-09:35/16	07:37 17:25	06:21 06:47-06:55/8 18:29	05:56 06:23-06:50/27 20:37	04:46 05:19-05:37/18 21:41	04:15 05:25-05:39/14 22:21
21	08:41 12:56-13:25/29 16:15 09:17-09:36/19	07:34 17:27	06:19 06:45-06:57/12 18:31	05:53 06:22-06:51/29 20:39	04:44 05:18-05:38/20 21:43	04:15 05:25-05:39/14 22:21
22	08:39 12:57-13:25/28 16:17 09:16-09:37/21	07:32 17:30	06:16 06:42-06:59/17 18:33	05:51 06:21-06:51/30 20:41	04:42 05:16-05:38/22 21:45	04:15 05:25-05:39/14 22:22
23	08:38 12:59-13:24/25 16:19 09:16-09:37/21	07:29 17:32	06:13 06:39-06:59/20 18:35	05:48 06:21-06:51/30 20:44	04:40 05:17-05:39/22 21:47	04:15 05:26-05:40/14 22:22
24	08:36 13:00-13:23/23 16:22 09:16-09:38/22	07:27 17:34	06:10 06:36-06:59/23 18:37	05:45 06:19-06:50/31 20:46	04:39 05:16-05:38/22 21:49	04:16 05:26-05:40/14 22:22
25	08:34 13:02-13:21/19 16:24 09:16-09:39/23	07:24 17:37	06:07 06:33-06:59/26 18:40	05:43 06:19-06:50/31 20:48	04:37 05:16-05:39/23 21:51	04:16 05:25-05:40/15 22:22
26	08:33 13:05-13:19/14 16:26 09:16-09:39/23	07:21 17:39	06:05 06:31-07:00/29 18:42	05:40 06:19-06:49/30 20:50	04:35 05:16-05:39/23 21:53	04:17 05:26-05:41/15 22:22
27	08:31 13:11-13:15/4 16:28 09:16-09:40/24	07:19 17:41	06:02 06:30-07:00/30 18:44	05:38 06:19-06:49/30 20:53	04:34 05:16-05:39/23 21:54	04:17 05:25-05:40/15 22:21
28	08:29 09:17-09:40/23 16:31	07:16 17:44	05:59 06:29-06:59/30 18:46	05:35 06:19-06:49/30 20:55	04:32 05:16-05:39/23 21:56	04:18 05:26-05:41/15 22:21
29	08:27 09:16-09:39/23 16:33		05:56 07:29-07:58/29 19:48	05:33 06:19-06:47/28 20:57	04:31 05:17-05:40/23 21:58	04:18 05:26-05:42/16 22:21
30	08:25 09:17-09:40/23 16:35		05:53 07:28-07:57/29 19:51	05:30 06:19-06:46/27 20:59	04:29 05:17-05:40/23 21:59	04:19 05:25-05:42/17 22:20
31	08:23 09:18-09:40/22 16:38		05:51 07:29-07:57/28 19:53		04:28 05:16-05:39/23 22:01	
Potential sun hours	227	262	365	429	515	539
Sum of minutes with flicker	1457	81	281	491	431	504

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	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

Project:

Flickering\_Valka\_Nordex163

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Baiba / baiba.ozolina@environment.lv

Calculated:

16/01/2026 15:04/4.1.254

## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Nordex163 WTG: 5 - NORDEX N163/6.X 7000 163.0 !O! hub: 164.0 m (TOT: 245.5 m) (31

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	6.09	9.67	10.05	8.16	7.72	5.94	2.93	0.63	0.41

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

	July		August		September		October	November		December	
1	04:20	05:26-05:43/17	05:09	06:15	07:18	07:28	08:33	12:29-13:08/39			
	22:20		21:35	20:17	18:53	16:32	15:37				
2	04:21	05:26-05:43/17	05:11	06:17	07:21	07:30	08:35	12:31-13:09/38			
	22:19		21:33	20:15	18:51	16:30	15:36				
3	04:22	05:26-05:44/18	05:13	06:19	07:23	07:32	08:36	11:08-11:14/6	12:31-13:10/39		
	22:19		21:31	20:12	18:48	16:27	15:35	11:22-11:29/7			
4	04:23	05:26-05:44/18	05:15	06:21	07:25	07:34	08:38	11:06-11:16/10	12:31-13:10/39		
	22:18		21:29	20:09	18:45	16:25	15:34	11:21-11:32/11			
5	04:24	05:26-05:45/19	05:17	06:23	07:27	07:37	08:58-09:01/3	08:40	11:05-11:18/13	12:30-13:10/40	
	22:17		21:26	20:06	18:42	16:23	15:33	11:20-11:34/14			
6	04:25	05:26-05:45/19	05:19	06:37-06:44/7	06:25	07:29	07:39	08:53-09:04/11	08:42	11:04-11:34/30	
	22:17		21:24	20:04	18:40	16:20	15:33	12:31-13:11/40			
7	04:26	05:25-05:46/21	05:22	06:34-06:47/13	06:28	07:31-07:36/5	07:31	07:41	08:52-09:07/15	08:43	11:04-11:36/32
	22:16		21:22	20:01	18:37	16:18	15:32	12:31-13:11/40			
8	04:27	05:25-05:46/21	05:24	06:32-06:49/17	06:30	07:27-07:39/12	07:34	07:44	08:51-09:09/18	08:45	11:04-11:37/33
	22:15		21:19	19:58	18:34	16:16	15:31	12:32-13:12/40			
9	04:29	05:25-05:46/21	05:26	06:31-06:50/19	06:32	07:25-07:43/18	07:36	07:46	08:50-09:09/19	08:46	11:03-11:37/34
	22:14		21:17	19:55	18:31	16:14	15:31	12:32-13:12/40			
10	04:30	05:25-05:46/21	05:28	06:30-06:51/21	06:34	07:23-07:46/23	07:38	07:48	08:50-09:10/20	08:47	11:03-11:39/36
	22:13		21:15	19:52	18:29	16:12	15:30	12:33-13:13/40			
11	04:31	05:25-05:47/22	05:30	06:29-06:53/24	06:36	07:22-07:47/25	07:40	07:51	08:49-09:10/21	08:49	11:04-11:40/36
	22:12		21:12	19:50	18:26	16:10	15:30	12:33-13:13/40			
12	04:33	05:25-05:47/22	05:32	06:28-06:54/26	06:38	07:21-07:48/27	07:42	07:53	08:49-09:11/22	08:50	11:04-11:40/37
	22:10		21:10	19:47	18:23	16:08	15:30	12:34-13:14/40			
13	04:34	05:25-05:47/22	05:34	06:27-06:55/28	06:40	07:20-07:48/28	07:45	07:55	08:48-09:11/23	08:51	11:03-11:41/38
	22:09		21:07	19:44	18:20	16:06	15:29	12:34-13:14/40			
14	04:36	05:25-05:48/23	05:36	06:27-06:56/29	06:42	07:19-07:48/29	07:47	07:57	08:49-09:12/23	08:52	11:04-11:41/37
	22:08		21:05	19:41	18:18	16:04	15:29	12:34-13:14/40			
15	04:37	05:25-05:48/23	05:39	06:27-06:56/29	06:44	07:19-07:48/29	07:49	08:00	12:42-12:47/5	08:54	11:04-11:43/39
	22:06		21:02	19:38	18:15	16:02	15:29	12:35-13:15/40			
16	04:39	05:26-05:49/23	05:41	06:26-06:57/31	06:47	07:18-07:48/30	07:51	08:02	12:38-12:52/14	08:55	11:05-11:43/38
	22:05		21:00	19:36	18:12	16:00	15:29	12:36-13:16/40			
17	04:41	05:25-05:48/23	05:43	06:26-06:57/31	06:49	07:18-07:48/30	07:53	08:04	12:35-12:54/19	08:55	11:05-11:44/39
	22:03		20:57	19:33	18:10	15:58	15:29	12:36-13:16/40			
18	04:42	05:26-05:49/23	05:45	06:26-06:57/31	06:51	07:20-07:47/27	07:56	08:06	12:34-12:57/23	08:56	11:05-11:45/40
	22:02		20:55	19:30	18:07	15:56	15:29	12:36-13:16/40			
19	04:44	05:26-05:48/22	05:47	06:26-06:57/31	06:53	07:23-07:47/24	07:58	08:08	12:33-12:58/25	08:57	11:05-11:44/39
	22:00		20:52	19:27	18:04	15:54	15:29	12:37-13:16/39			
20	04:46	05:26-05:49/23	05:49	06:26-06:57/31	06:55	07:25-07:46/21	08:00	08:11	12:32-13:00/28	08:58	11:06-11:45/39
	21:59		20:50	19:24	18:02	15:53	15:30	12:37-13:17/40			
21	04:48	05:26-05:48/22	05:51	06:27-06:56/29	06:57	07:27-07:45/18	08:02	08:13	12:31-13:00/29	08:58	11:07-11:46/39
	21:57		20:47	19:21	17:59	15:51	15:30	12:38-13:18/40			
22	04:50	05:27-05:48/21	05:54	06:27-06:56/29	06:59	07:29-07:43/14	08:05	08:15	12:31-13:02/31	08:59	11:07-11:46/39
	21:55		20:44	19:19	17:57	15:49	15:30	12:38-13:18/40			
23	04:51	05:29-05:48/19	05:56	06:28-06:55/27	07:01	07:31-07:40/9	08:07	08:17	12:30-13:03/33	09:00	11:07-11:46/39
	21:53		20:42	19:16	17:54	15:48	15:31	12:38-13:18/40			
24	04:53	05:30-05:47/17	05:58	06:30-06:54/24	07:03	07:33-07:35/2	08:09	08:19	12:30-13:04/34	09:00	11:08-11:47/39
	21:51		20:39	19:13	17:52	15:46	15:32	12:40-13:19/39			
25	04:55	05:32-05:46/14	06:00	06:32-06:53/21	07:06	07:11	08:21	12:30-13:05/35	09:00	11:08-11:48/40	
	21:50		20:36	19:10	16:49	15:45	15:32	12:40-13:20/40			
26	04:57	05:34-05:46/12	06:02	06:34-06:51/17	07:08	07:14	08:23	12:29-13:05/36	09:01	11:09-11:48/39	
	21:48		20:34	19:07	16:47	15:43	15:33	12:40-13:20/40			
27	04:59	05:36-05:45/9	06:04	06:36-06:49/13	07:10	07:16	08:25	12:30-13:06/36	09:01	11:09-11:48/39	
	21:46		20:31	19:05	16:44	15:42	15:34	12:41-13:21/40			
28	05:01	05:37-05:43/6	06:06	06:38-06:46/8	07:12	07:18	08:27	12:30-13:07/37	09:01	11:10-11:49/39	
	21:44		20:28	19:02	16:42	15:41	15:35	12:41-13:21/40			
29	05:03	05:39-05:41/2	06:08	07:14	07:21	08:29	12:29-13:07/38	09:01	11:11-11:49/38		
	21:42		20:26	18:59	16:39	15:40	15:36	12:42-13:22/40			
30	05:05		06:11	07:16	07:23	08:31	12:29-13:08/39	09:01	11:11-11:49/38		
	21:40		20:23	18:56	16:37	15:38	15:37	12:42-13:22/40			
31	05:07		06:13		07:25		09:01	11:12-11:49/37			
	21:37		20:20		16:34		15:38	12:42-13:22/40			
Potential sun hours	538		474		386		321	241		207	
Sum of minutes with flicker	540		536		371		0	839		2267	

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	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

Project:

Flickering\_Valka\_Nordex163

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Baiba / baiba.ozolina@environment.lv

Calculated:

16/01/2026 15:04/4.1.254

## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Nordex163 WTG: 6 - NORDEX N163/6.X 7000 163.0 !O! hub: 164.0 m (TOT: 245.5 m) (29)  
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	6.09	9.67	10.05	8.16	7.72	5.94	2.93	0.63	0.41

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

	January	February	March	April	May	June
1	09:00 13:46-14:09/23 15:40	08:21 08:54-09:09/15 16:40	07:14 08:09-08:44/35 17:46	06:48 08:00-08:37/37 19:55	05:28 06:08-06:30/22 21:01	04:27 05:47-06:29/42 22:03
2	09:00 13:48-14:10/22 15:41	08:19 08:51-09:09/18 16:42	07:11 08:09-08:42/33 17:48	06:45 08:01-08:36/35 19:57	05:25 06:07-06:32/25 21:04	04:26 05:47-06:28/41 22:04
3	09:00 13:48-14:10/22 15:42	08:17 08:50-09:10/20 16:45	07:08 08:10-08:39/29 17:50	06:42 08:01-08:34/33 19:59	05:23 06:04-06:32/28 21:06	04:25 05:48-06:28/40 22:06
4	08:59 13:49-14:10/21 15:44	08:15 08:49-09:10/21 16:47	07:05 08:11-08:33/22 17:53	06:39 08:02-08:34/32 20:02	05:20 06:04-06:33/29 21:08	04:23 05:49-06:27/38 22:07
5	08:59 13:49-14:10/21 15:45	08:13 08:49-09:11/22 16:49	07:03 08:13-08:31/18 17:55	06:37 08:03-08:31/28 20:04	05:18 05:58-06:34/36 21:10	04:22 05:49-06:26/37 22:08
6	08:58 13:50-14:10/20 15:47	08:10 08:50-09:12/22 16:52	07:00 08:15-08:28/13 17:57	06:34 08:04-08:29/25 20:06	05:16 05:54-06:35/41 21:12	04:21 05:49-06:24/35 22:10
7	08:57 13:51-14:10/19 15:48	08:08 08:49-09:11/22 16:54	06:57 08:16-08:26/20 18:00	06:31 08:06-08:26/20 20:08	05:13 05:52-06:35/43 21:14	04:20 06:17-06:22/5 22:11
8	08:57 13:52-14:10/18 15:50	08:06 08:50-09:12/22 16:57	06:55 08:17-08:02 18:02	06:28 08:09-08:23/14 20:11	05:11 05:50-06:36/46 21:17	04:20 05:51-06:15/24 22:12
9	08:56 13:53-14:10/17 15:51	08:04 08:50-09:11/21 16:59	06:52 08:18-08:04 18:04	06:26 08:10-08:13 20:13	05:09 05:49-06:36/47 21:19	04:19 05:51-06:14/23 22:13
10	08:55 13:54-14:10/16 15:53	08:01 08:51-09:11/20 17:01	06:49 08:18-08:06 18:06	06:23 08:11-08:15 20:15	05:07 05:47-06:35/48 21:21	04:18 05:52-06:14/22 22:14
11	08:54 13:56-14:10/14 15:55	07:59 08:52-09:10/18 17:04	06:46 08:19-08:09 18:09	06:20 08:12-08:17 20:17	05:04 05:47-06:37/50 21:23	04:17 05:52-06:14/22 22:15
12	08:53 13:57-14:08/11 15:57	07:57 08:53-09:09/16 17:06	06:44 08:20-08:11 18:11	06:17 08:13-08:19 20:19	05:02 05:46-06:37/51 21:25	04:17 05:53-06:14/21 22:16
13	08:52 13:59-14:07/8 15:59	07:54 08:54-09:07/13 17:08	06:41 07:21-07:34/13 18:13	06:15 08:14-08:22 20:22	05:00 05:46-06:37/51 21:27	04:16 05:54-06:14/20 22:17
14	08:51 16:01 16:01	07:52 08:57-09:04/7 17:11	06:38 07:17-07:37/20 18:15	06:12 08:15-08:24 20:24	04:58 05:45-06:36/51 21:29	04:16 05:54-06:13/19 22:18
15	08:50 16:03 16:03	07:49 08:25-08:46/21 17:13	06:35 07:15-07:40/25 18:18	06:09 08:16-08:26 20:26	04:56 05:45-06:36/51 21:31	04:16 05:54-06:13/19 22:19
16	08:48 16:05 16:05	07:47 08:21-08:47/26 17:16	06:33 07:13-07:41/28 18:20	06:07 08:17-08:28 20:28	04:54 05:44-06:36/52 21:33	04:15 05:55-06:13/18 22:19
17	08:47 16:07 16:07	07:44 08:16-08:47/31 17:18	06:30 07:11-07:42/31 18:22	06:04 08:18-08:30 20:30	04:52 05:44-06:35/51 21:36	04:15 05:56-06:13/17 22:20
18	08:46 16:09 16:09	07:42 08:15-08:49/34 17:20	06:27 07:09-07:42/33 18:24	06:01 08:19-08:33 20:33	04:50 05:44-06:36/52 21:38	04:15 05:56-06:13/17 22:20
19	08:44 16:11 16:11	07:39 08:13-08:49/36 17:23	06:24 07:07-07:43/36 18:26	05:59 08:20-08:35 20:35	04:48 05:44-06:35/51 21:40	04:15 05:56-06:14/18 22:21
20	08:43 16:13 16:13	07:37 08:11-08:49/38 17:25	06:21 07:05-07:43/38 18:29	05:56 08:21-08:37 20:37	04:46 05:43-06:35/52 21:41	04:15 05:56-06:14/18 22:21
21	08:41 16:15 16:15	07:34 08:11-08:50/39 17:27	06:19 07:05-07:44/39 18:31	05:53 08:22-08:39 20:39	04:44 05:44-06:35/51 21:43	04:15 05:56-06:14/18 22:21
22	08:39 16:17 16:17	07:32 08:10-08:49/39 17:30	06:16 07:04-07:44/40 18:33	05:51 08:23-08:41 20:41	04:42 05:44-06:34/50 21:45	04:15 05:56-06:14/18 22:22
23	08:38 16:19 16:19	07:29 08:09-08:49/40 17:32	06:13 07:02-07:44/42 18:35	05:48 08:24-08:44 20:44	04:41 05:44-06:34/50 21:47	04:15 05:57-06:15/18 22:22
24	08:36 16:22 16:22	07:27 08:09-08:49/40 17:34	06:10 07:02-07:43/41 18:37	05:45 08:25-08:46 20:46	04:39 05:44-06:33/49 21:49	04:16 05:57-06:14/17 22:22
25	08:34 16:24 16:24	07:24 08:09-08:49/40 17:37	06:07 07:01-07:43/42 18:40	05:43 08:26-08:48 20:48	04:37 05:45-06:33/48 21:51	04:16 05:57-06:14/17 22:22
26	08:33 16:26 16:26	07:21 08:08-08:48/40 17:39	06:05 07:01-07:43/42 18:42	05:40 08:27-08:50 20:50	04:36 05:45-06:32/47 21:53	04:17 05:57-06:15/18 22:22
27	08:31 16:28 16:28	07:19 08:08-08:47/39 17:41	06:02 07:00-07:42/42 18:44	05:38 08:28-08:53 20:53	04:34 05:45-06:32/47 21:54	04:17 05:57-06:15/18 22:21
28	08:29 16:31 16:31	07:16 08:09-08:46/37 17:44	05:59 07:00-07:41/41 18:46	05:35 08:29-08:55 20:55	04:32 05:45-06:32/47 21:56	04:18 05:57-06:16/19 22:21
29	08:27 09:00-09:03/3 16:33		06:56 08:00-08:40/40 19:48	05:33 06:12-06:25/13 20:57	04:31 05:46-06:31/45 21:58	04:18 05:57-06:17/20 22:21
30	08:25 16:35 16:35	08:58-09:05/7	06:53 07:59-08:39/40 19:51	05:30 06:10-06:28/18 20:59	04:30 05:47-06:31/44 21:59	04:19 05:56-06:17/21 22:20
31	08:23 16:38 16:38	08:56-09:07/11	06:51 08:00-08:39/39 19:53		04:28 05:46-06:29/43 22:01	
Potential sun hours	227	262	365	429	515	539
Sum of minutes with flicker	253	792	822	255	1398	704

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	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

Project:

Flickering\_Valka\_Nordex163

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Baiba / baiba.ozolina@environment.lv

Calculated:

16/01/2026 15:04/4.1.254

## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Nordex163 WTG: 6 - NORDEX N163/6.X 7000 163.0 !O! hub: 164.0 m (TOT: 245.5 m) (29)  
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	6.09	9.67	10.05	8.16	7.72	5.94	2.93	0.63	0.41

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

	July		August		September		October		November		December	
1	04:20	05:57-06:18/21	05:09	05:57-06:47/50	06:15		07:18	08:04-08:10/6	07:28	08:21-08:40/19	08:33	13:37-13:51/14
	22:20		21:35		20:17		18:53		16:32		15:37	
2	04:21	05:57-06:18/21	05:11	05:58-06:47/49	06:17		07:21		07:30	08:20-08:40/20	08:35	13:37-13:53/16
	22:19		21:33		20:15		18:51		16:30		15:36	
3	04:22	05:57-06:19/22	05:13	05:58-06:46/48	06:19		07:23		07:32	08:20-08:41/21	08:36	13:37-13:54/17
	22:19		21:31		20:12		18:48		16:27		15:35	
4	04:23	05:56-06:20/24	05:15	05:59-06:45/46	06:21	08:06-08:20/14	07:25		07:34	08:19-08:41/22	08:38	13:37-13:55/18
	22:18		21:29		20:09		18:45		16:25		15:34	
5	04:24	06:25-06:26/1	05:17	06:00-06:45/45	06:23	08:03-08:23/20	07:27		07:37	08:19-08:41/22	08:40	13:36-13:55/19
	22:17	05:56-06:20/24	21:26		20:06		18:42		16:23		15:34	
6	04:25	06:22-06:30/8	05:20	06:02-06:44/42	06:26	08:00-08:25/25	07:29		07:39	08:19-08:41/22	08:42	13:36-13:56/20
	22:17	05:56-06:21/25	21:24		20:04		18:40		16:21		15:33	
7	04:26	05:56-06:31/35	05:22	06:05-06:44/39	06:28	07:58-08:27/29	07:31	08:52-09:01/9	07:41	08:20-08:41/21	08:43	13:36-13:57/21
	22:16		21:22		20:01		18:37		16:18		15:32	
8	04:27	05:55-06:33/38	05:24	06:12-06:43/31	06:30	07:57-08:28/31	07:34	08:49-09:05/16	07:44	08:21-08:41/20	08:45	13:37-13:58/21
	22:15		21:19		19:58		18:34		16:16		15:31	
9	04:29	05:55-06:34/39	05:26	06:13-06:42/29	06:32	07:55-08:28/33	07:36	08:47-09:06/19	07:46	08:22-08:40/18	08:46	13:36-13:58/22
	22:14		21:17		19:55		18:31		16:14		15:31	
10	04:30	05:55-06:35/40	05:28	06:14-06:41/27	06:34	07:54-08:29/35	07:38	08:45-09:11/26	07:48	08:25-08:39/14	08:47	13:37-13:59/22
	22:13		21:15		19:52		18:29		16:12		15:30	
11	04:31	05:55-06:37/42	05:30	06:15-06:40/25	06:36	07:53-08:29/36	07:40	08:44-09:14/30	07:51	08:27-08:38/11	08:49	13:37-13:59/22
	22:11		21:12		19:50		18:26		16:10		15:30	
12	04:33	05:55-06:38/43	05:32	06:17-06:38/21	06:38	07:52-08:30/38	07:42	08:43-09:17/34	07:53	08:30-08:37/7	08:50	13:38-14:00/22
	22:10		21:10		19:47		18:23		16:08		15:30	
13	04:34	05:54-06:38/44	05:34	06:19-06:36/17	06:40	07:51-08:30/39	07:45	08:42-09:18/36	07:55	08:32-08:35/3	08:51	13:38-14:00/22
	22:09		21:07		19:44		18:20		16:06		15:29	
14	04:36	05:55-06:40/45	05:36	06:22-06:33/11	06:42	07:50-08:31/41	07:47	08:41-09:19/38	07:57		08:52	13:38-14:01/23
	22:08		21:05		19:41		18:18		16:04		15:29	
15	04:38	05:54-06:40/46	05:39		06:44	07:49-08:31/42	07:49	08:41-09:20/39	08:00		08:54	13:39-14:02/23
	22:06		21:02		19:38		18:15		16:02		15:29	
16	04:39	05:55-06:41/46	05:41		06:47	07:49-08:31/42	07:51	08:40-09:20/40	08:02		08:55	13:39-14:02/23
	22:05		21:00		19:36		18:12		16:00		15:29	
17	04:41	05:54-06:42/48	05:43		06:49	07:49-08:31/42	07:53	08:41-09:21/40	08:04		08:55	13:40-14:03/23
	22:03		20:57		19:33		18:10		15:58		15:29	
18	04:42	05:54-06:43/49	05:45		06:51	07:48-08:30/42	07:56	08:40-09:21/41	08:06		08:56	13:39-14:03/24
	22:02		20:55		19:30		18:07		15:56		15:29	
19	04:44	05:54-06:43/49	05:47		06:53	07:49-08:31/42	07:58	08:40-09:20/40	08:08		08:57	13:40-14:03/23
	22:00		20:52		19:27		18:05		15:54		15:29	
20	04:46	05:54-06:44/50	05:49		06:55	07:49-08:30/41	08:00	08:41-09:21/40	08:11		08:58	13:41-14:04/23
	21:59		20:50		19:24		18:02		15:53		15:30	
21	04:48	05:53-06:44/51	05:51		06:57	07:49-08:30/41	08:02	08:41-09:20/39	08:13		08:58	13:41-14:05/24
	21:57		20:47		19:21		17:59		15:51		15:30	
22	04:50	05:54-06:45/51	05:54		06:59	07:49-08:29/40	08:05	08:43-09:20/37	08:15		08:59	13:41-14:05/24
	21:55		20:44		19:19		17:57		15:49		15:30	
23	04:51	05:54-06:45/51	05:56		07:01	07:50-08:28/38	08:07	08:44-09:19/35	08:17		09:00	13:42-14:05/23
	21:53		20:42		19:16		17:54		15:48		15:31	
24	04:53	05:54-06:45/51	05:58		07:04	07:50-08:27/37	08:09	08:45-09:18/33	08:19		09:00	13:43-14:06/23
	21:51		20:39		19:13		17:52		15:46		15:32	
25	04:55	05:54-06:46/52	06:00		07:06	07:51-08:26/35	07:11	07:48-08:17/29	08:21		09:00	13:43-14:06/23
	21:50		20:36		19:10		16:49		15:45		15:32	
26	04:57	05:54-06:46/52	06:02		07:08	07:52-08:24/32	07:14	07:53-08:16/23	08:23		09:01	13:43-14:07/24
	21:48		20:34		19:07		16:47		15:44		15:33	
27	04:59	05:55-06:47/52	06:04		07:10	07:53-08:22/29	07:16	07:55-08:15/20	08:25		09:01	13:44-14:07/23
	21:46		20:31		19:05		16:44		15:42		15:34	
28	05:01	05:54-06:46/52	06:06		07:12	07:55-08:21/26	07:18	08:25-08:34/9	08:27		09:01	13:45-14:08/23
	21:44		20:28		19:02		16:42	07:56-08:13/17	15:41		15:35	
29	05:03	05:55-06:46/51	06:09		07:14	07:57-08:19/22	07:21	08:23-08:37/14	08:29	13:40-13:47/7	09:01	13:45-14:08/23
	21:42		20:26		18:59		16:39	07:59-08:10/11	15:40		15:36	
30	05:05	05:56-06:47/51	06:11		07:16	07:59-08:16/17	07:23	08:21-08:38/17	08:31	13:38-13:49/11	09:01	13:45-14:08/23
	21:40		20:23		18:56		16:37		15:38		15:37	
31	05:07	05:56-06:47/51	06:13				07:25	08:21-08:39/18			09:01	13:46-14:09/23
	21:37		20:20				16:34				15:38	
Potential sun hours	538		474		386		321		241		207	
Sum of minutes with flicker	1325		480		909		756		238		674	

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	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

Project:

Flickering\_Valka\_Nordex163

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Baiba / baiba.ozolina@environment.lv

Calculated:

16/01/2026 15:04/4.1.254

## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Nordex163 WTG: 7 - NORDEX N163/6.X 7000 163.0 !O! hub: 164.0 m (TOT: 245.5 m) (40)  
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	6.09	9.67	10.05	8.16	7.72	5.94	2.93	0.63	0.41

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

	January	February	March	April	May	June
1	09:00 09:43-10:05/22 15:40	08:21 09:25-10:02/37 16:40	07:14 09:37-11:04/87 17:46	06:48 10:41-11:33/52 07:53-08:35/42 19:55 08:36-08:57/21	05:28 21:01	04:27 22:03
2	09:00 09:43-10:06/23 15:41	08:19 09:25-10:03/38 16:42	07:11 09:36-11:05/89 17:48	06:45 10:43-11:29/46 07:52-08:35/43 19:57 08:38-08:53/15	05:25 21:04	04:26 22:04
3	09:00 09:42-10:07/25 15:42	08:17 09:25-10:03/38 16:45	07:08 09:36-11:05/89 17:51	06:42 10:45-11:25/40 19:59 07:52-08:34/42	05:23 21:06	04:25 22:06
4	08:59 09:41-10:07/26 15:44	08:15 09:25-10:03/38 16:47	07:05 09:35-11:05/90 17:53	06:39 10:50-11:20/30 20:02 07:53-08:34/41	05:21 21:08	04:23 22:07
5	08:59 09:40-10:08/28 15:45	08:13 09:26-10:03/37 16:49	07:03 09:35-11:05/90 17:55	06:37 10:55-11:13/18 20:04 07:53-08:33/40	05:18 21:10	04:22 22:08
6	08:58 09:39-10:08/29 15:47	08:10 09:26-10:04/38 16:52	07:00 09:34-11:05/91 17:57 07:51-07:59/8	06:34 07:53-08:31/38 20:06	05:16 21:12	04:21 22:10
7	08:57 09:39-10:09/30 15:48	08:08 09:26-10:03/37 16:54	06:57 09:34-11:05/91 18:00 07:45-08:04/19	06:31 07:53-08:30/37 20:08	05:13 21:14	04:21 22:11
8	08:57 09:39-10:10/31 15:50	08:06 10:16-10:28/12 16:57 09:27-10:03/36	06:55 09:33-11:05/92 18:02 07:42-08:06/24	06:28 07:54-08:29/35 20:11	05:11 21:17	04:20 22:12
9	08:56 09:39-10:11/32 15:52	08:04 10:09-10:34/25 16:59 09:27-10:02/35	06:52 09:32-11:04/92 18:04 07:39-08:08/29	06:26 07:55-08:28/33 20:13	05:09 21:19	04:19 22:13
10	08:55 09:39-10:12/33 15:53	08:01 10:06-10:39/33 17:01 09:29-10:02/33	06:49 09:33-11:05/92 18:06 07:38-08:10/32	06:23 07:55-08:26/31 20:15	05:07 21:21	04:18 22:14
11	08:54 09:39-10:13/34 15:55	07:59 10:02-10:41/39 17:04 09:29-10:01/32	06:46 09:32-11:05/93 18:09 07:36-08:11/35	06:20 07:57-08:24/27 20:17	05:04 21:23	04:18 22:15
12	08:53 09:38-10:13/35 15:57	07:57 09:30-10:44/74 17:06	06:44 09:32-11:04/92 18:11 07:35-08:12/37	06:17 07:59-08:21/22 20:19	05:02 21:25	04:17 22:16
13	08:52 09:39-10:13/34 15:59	07:54 09:32-10:47/75 17:08	06:41 09:32-11:03/91 18:13 07:33-08:12/39	06:15 08:01-08:18/17 20:22	05:00 21:27	04:16 22:17
14	08:51 09:38-10:13/35 16:01	07:52 09:33-10:48/75 17:11	06:38 09:31-11:03/92 18:15 07:32-08:13/41	06:12 08:05-08:14/9 20:24	04:58 21:29	04:16 22:18
15	08:50 09:39-10:14/35 16:03	07:49 09:36-10:51/75 17:13	06:35 09:32-11:03/91 18:18 07:32-08:14/42	06:09 20:26	04:56 21:31	04:16 22:18
16	08:48 09:39-10:14/35 16:05	07:47 09:39-10:52/73 17:16	06:33 09:32-11:02/90 18:20 07:31-08:14/43	06:07 20:28	04:54 21:33	04:15 22:19
17	08:47 09:38-10:14/36 16:07	07:44 09:50-10:53/63 17:18	06:30 09:31-11:01/90 18:22 07:30-08:14/44	06:04 20:30	04:52 21:36	04:15 22:20
18	08:46 09:38-10:15/37 16:09	07:42 09:49-10:55/66 17:20	06:27 09:31-11:00/89 07:16-07:21/5 18:24 07:29-08:14/45	06:01 20:33	04:50 21:38	04:15 22:20
19	08:44 09:34-10:15/41 16:11	07:39 09:47-10:56/69 17:23	06:24 09:31-10:59/88 07:10-07:26/16 18:26 07:29-08:13/44	05:59 20:35	04:48 21:40	04:15 22:21
20	08:43 09:32-10:15/43 16:13	07:37 09:46-10:57/71 17:25	06:21 09:31-10:57/86 18:29 07:06-08:13/67	05:56 20:37	04:46 21:41	04:15 22:21
21	08:41 09:30-10:15/45 16:15	07:34 09:45-10:59/74 17:27	06:19 09:32-10:57/85 18:31 07:04-08:13/69	05:53 20:39	04:44 21:43	04:15 22:21
22	08:39 09:29-10:15/46 16:17	07:32 09:44-11:00/76 17:30	06:16 09:32-10:55/83 18:33 07:02-08:12/70	05:51 20:41	04:42 21:45	04:15 22:21
23	08:38 09:28-10:15/47 16:19	07:29 09:42-11:00/78 17:32	06:13 09:33-10:54/81 18:35 07:00-08:12/72	05:48 20:44	04:41 21:47	04:15 22:22
24	08:36 09:28-10:14/46 16:22	07:27 09:42-11:02/80 17:34	06:10 09:33-10:52/79 18:38 06:59-08:11/72	05:45 20:46	04:39 21:49	04:16 22:22
25	08:34 09:27-10:14/47 16:24	07:24 09:41-11:02/81 17:37	06:07 09:33-10:50/77 18:40 06:57-08:09/72	05:43 20:48	04:37 21:51	04:16 22:22
26	08:33 09:27-10:13/46 16:26	07:21 09:40-11:03/83 17:39	06:05 09:34-10:48/74 18:42 06:57-08:09/72	05:40 20:50	04:36 21:53	04:17 22:22
27	08:31 09:26-10:12/46 16:28	07:19 09:38-11:03/85 17:41	06:02 09:35-10:47/72 18:44 06:56-08:08/72	05:38 20:53	04:34 21:54	04:17 22:21
28	08:29 09:26-10:09/43 16:31	07:16 09:38-11:04/86 17:44	05:59 09:36-10:44/68 18:46 06:55-08:06/71	05:35 20:55	04:32 21:56	04:18 22:21
29	08:27 09:25-10:02/37 16:33		06:56 10:37-11:42/65 19:49 07:54-09:04/70	05:33 20:57	04:31 21:58	04:18 22:21
30	08:25 09:25-10:02/37 16:35		06:53 10:38-11:39/61 19:51 07:53-09:02/69	05:30 20:59	04:30 21:59	04:19 22:20
31	08:23 09:25-10:02/37 16:38		06:51 10:40-11:37/57 19:53 07:53-09:00/67		04:28 22:01	
Potential sun hours	227	262	365	429	515	539
Sum of minutes with flicker	1121	1792	3953	679	0	0

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	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

Project:

Flickering\_Valka\_Nordex163

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Baiba / baiba.ozolina@environment.lv

Calculated:

16/01/2026 15:04/4.1.254

## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Nordex163  
Assumptions for shadow calculations

WTG: 7 - NORDEX N163/6.X 7000 163.0 !O! hub: 164.0 m (TOT: 245.5 m) (40)  
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 6.09 9.67 10.05 8.16 7.72 5.94 2.93 0.63 0.41

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

	July	August	September	October	November	December
1	04:20 22:20	05:09 21:35	06:15 20:17	07:18 18:53	09:35-10:07/32 08:13-08:51/38	08:33 15:37
2	04:21 22:19	05:11 21:33	06:17 20:15	07:21 18:51	09:40-10:03/23 08:14-08:50/36	08:35 15:36
3	04:22 22:19	05:13 21:31	06:19 20:12	07:23 18:48	09:48-09:56/8 08:15-08:48/33	08:36 15:35
4	04:23 22:18	05:15 21:29	06:21 20:09	07:25 18:45	08:56-09:33/37 08:17-08:47/30	08:38 15:34
5	04:24 22:17	05:17 21:26	06:23 20:06	07:27 18:42	08:56-09:33/37 08:18-08:44/26	08:40 15:34
6	04:25 22:17	05:20 21:24	06:26 20:04	07:29 18:40	08:55-09:33/38 08:20-08:41/21	08:41 15:33
7	04:26 22:16	05:22 21:22	06:28 20:01	07:31 18:37	08:56-09:34/38 08:23-08:37/14	08:43 15:32
8	04:27 22:15	05:24 21:19	06:30 19:58	07:34 18:34	08:55-09:33/38 10:10-11:41/91	08:45 15:31
9	04:29 22:14	05:26 21:17	06:32 19:55	07:36 18:31	08:56-09:33/37 10:10-11:40/90	08:46 15:31
10	04:30 22:13	05:28 21:15	06:34 19:52	07:38 18:29	08:56-09:34/38 10:10-11:39/89	08:47 15:30
11	04:32 22:11	05:30 21:12	06:36 19:50	07:40 18:26	08:56-09:33/37 10:10-11:38/88	08:49 15:30
12	04:33 22:10	05:32 21:10	06:38 19:47	07:42 18:23	08:57-09:33/36 10:11-11:38/87	08:50 15:30
13	04:34 22:09	05:34 21:07	06:40 19:44	07:45 18:20	08:57-09:34/37 10:11-11:37/86	08:51 15:29
14	04:36 22:08	05:37 21:05	06:42 19:41	07:47 18:18	08:58-09:41/43 10:11-11:36/85	08:52 15:29
15	04:38 22:06	05:39 21:02	06:45 19:38	07:49 18:15	08:58-09:43/45 10:12-11:36/84	08:53 15:29
16	04:39 22:05	05:41 21:00	06:47 19:36	07:51 18:12	09:00-09:46/46 10:12-11:34/82	08:54 15:29
17	04:41 22:03	05:43 20:57	06:49 19:33	07:53 18:10	09:00-09:48/48 10:12-11:33/81	08:55 15:29
18	04:43 22:02	05:45 20:55	06:51 19:30	07:56 18:07	09:02-09:48/46 10:13-11:33/80	08:56 15:29
19	04:44 22:00	05:47 20:52	06:53 19:27	07:58 18:05	09:03-09:50/47 10:14-11:31/77	08:57 15:29
20	04:46 21:58	05:49 20:50	06:55 19:24	08:00 18:02	09:04-09:50/46 10:15-11:31/76	08:58 15:30
21	04:48 21:57	05:51 20:47	06:57 19:21	08:02 17:59	09:05-09:51/46 10:16-11:29/73	08:58 15:30
22	04:50 21:55	05:54 20:44	06:59 19:19	08:05 17:57	09:08-09:51/43 10:16-11:27/71	08:59 15:31
23	04:52 21:53	05:56 20:42	07:01 19:16	08:07 17:54	09:10-09:51/41 10:18-11:26/68	09:00 15:31
24	04:53 21:51	05:58 20:39	07:04 19:13	08:09 17:52	09:15-09:52/37 10:19-11:24/65	09:00 15:32
25	04:55 21:50	06:00 20:36	07:06 19:10	08:11 16:49	09:17-09:53/36 09:13-09:18/5	09:00 15:32
26	04:57 21:48	06:02 20:34	07:08 19:07	08:14 16:47	09:17-09:53/36 09:07-10:21/74	09:01 15:33
27	04:59 21:46	06:04 20:31	07:10 19:05	08:16 16:44	09:05-10:20/75 09:05-10:20/75	09:01 15:34
28	05:01 21:44	06:06 20:28	07:12 19:02	08:18 16:42	09:02-10:17/75 09:02-10:17/75	09:01 15:35
29	05:03 21:42	06:09 20:26	07:14 18:59	08:21 16:39	09:01-10:16/75 08:59-10:13/74	09:01 15:36
30	05:05 21:40	06:11 20:23	07:16 18:56	08:23 16:37	09:19-09:54/35 09:19-09:54/35	09:01 15:37
31	05:07 21:37	06:13 20:20	07:18 18:58	08:25 16:34	09:32-10:10/38 08:58-09:31/33	09:01 15:38
Potential sun hours	538	474	386	321	241	207
Sum of minutes with flicker	0	50	3307	2728	1243	624

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	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker



Project:

Flickering\_Valka\_Nordex163

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Baiba / baiba.ozolina@environment.lv

Calculated:

16/01/2026 15:04/4.1.254

## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Nordex163 WTG: 8 - NORDEX N163/6.X 7000 163.0 !O! hub: 164.0 m (TOT: 245.5 m) (38)

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	6.09	9.67	10.05	8.16	7.72	5.94	2.93	0.63	0.41

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

	January	February	March	April	May	June
1	09:00 15:40	08:21 16:40	07:13 07:44-08:05/21 17:46	06:48 07:16-07:31/15 19:55	05:28 07:13-07:42/29 21:01	04:27 22:03
2	09:00 15:41	08:19 16:42	07:11 07:42-08:06/24 17:48	06:45 07:14-07:33/19 19:57	05:25 07:14-07:39/25 21:04	04:26 22:04
3	09:00 15:42	08:17 16:45	07:08 07:41-08:06/25 17:50	06:42 07:12-07:40/28 19:59	05:23 07:16-07:37/21 21:06	04:25 22:06
4	08:59 15:44	08:15 16:47	07:05 07:39-08:06/27 17:53	06:39 07:11-07:45/34 20:02	05:20 07:19-07:34/15 21:08	04:23 22:07
5	08:59 15:45	08:13 16:49	07:03 07:40-08:07/27 17:55	06:37 07:10-07:47/37 20:04	05:18 07:23-07:29/6 21:10	04:22 22:08
6	08:58 15:47	08:10 16:52	07:00 07:39-08:07/28 17:57	06:34 07:09-07:49/40 20:06	05:16 21:12	04:21 22:10
7	08:57 15:48	08:08 08:39-08:40/1 16:54	06:57 07:38-08:06/28 18:00	06:31 06:59-07:50/51 20:08	05:13 21:14	04:20 22:11
8	08:57 15:50	08:06 08:37-08:44/7 16:57	06:55 07:38-08:06/28 18:02	06:28 06:57-07:51/54 20:10	05:11 21:17	04:20 22:12
9	08:56 15:51	08:04 08:34-08:45/11 16:59	06:52 07:38-08:05/27 18:04	06:26 06:54-07:52/58 20:13	05:09 21:19	04:19 22:13
10	08:55 15:53	08:01 08:32-08:47/15 17:01	06:49 07:39-08:05/26 18:06	06:23 06:53-07:52/59 20:15	05:07 21:21	04:18 22:14
11	08:54 15:55	07:59 08:29-08:48/19 17:04	06:46 07:39-08:04/25 18:09	06:20 06:52-07:53/61 20:17	05:04 21:23	04:17 22:15
12	08:53 15:57	07:57 08:29-08:49/20 17:06	06:44 07:39-08:02/23 18:11	06:17 06:51-07:53/62 20:19	05:02 21:25	04:17 22:16
13	08:52 15:59	07:54 08:28-08:49/21 17:08	06:41 07:40-08:01/21 18:13	06:15 06:50-07:53/63 20:22	05:00 21:27	04:16 22:17
14	08:51 16:01	07:52 08:27-08:49/22 17:11	06:38 07:41-07:58/17 18:15	06:12 06:50-07:54/64 20:24	04:58 21:29	04:16 22:18
15	08:50 16:03	07:49 08:28-08:49/21 17:13	06:35 07:44-07:57/13 18:18	06:09 06:49-07:54/65 20:26	04:56 21:31	04:16 22:18
16	08:48 16:05	07:47 08:27-08:49/22 17:16	06:32 07:49-07:51/2 18:20	06:07 06:49-07:53/64 20:28	04:54 21:33	04:15 22:19
17	08:47 16:07	07:44 08:27-08:48/21 17:18	06:30 18:22	06:04 06:49-07:54/65 20:30	04:52 21:35	04:15 22:20
18	08:46 16:09	07:42 08:28-08:48/20 17:20	06:27 18:24	06:01 06:49-07:53/64 20:33	04:50 21:37	04:15 22:20
19	08:44 16:11	07:39 08:29-08:47/18 17:23	06:24 18:26	05:59 06:50-07:53/63 20:35	04:48 21:39	04:15 22:21
20	08:43 16:13	07:37 08:29-08:45/16 17:25	06:21 18:29	05:56 06:50-07:52/62 20:37	04:46 21:41	04:15 22:21
21	08:41 16:15	07:34 08:32-08:44/12 17:27	06:19 18:31	05:53 06:52-07:52/60 20:39	04:44 21:43	04:15 22:21
22	08:39 16:17	07:32 08:34-08:41/7 17:30	06:16 18:33	05:51 06:53-07:51/58 20:41	04:42 21:45	04:15 22:21
23	08:38 16:19	07:29 17:32	06:13 18:35	05:48 07:07-07:51/44 20:44	04:41 21:47	04:15 22:22
24	08:36 16:22	07:27 17:34	06:10 18:37	05:45 07:07-07:50/43 20:46	04:39 21:49	04:16 22:22
25	08:34 16:24	07:24 17:37	06:07 18:40	05:43 07:08-07:49/41 20:48	04:37 21:51	04:16 22:22
26	08:33 16:26	07:21 07:51-07:58/7 17:39	06:05 18:42	05:40 07:08-07:48/40 20:50	04:36 21:53	04:17 22:22
27	08:31 16:28	07:19 07:47-08:01/14 17:41	06:02 18:44	05:38 07:09-07:47/38 20:52	04:34 21:54	04:17 22:21
28	08:29 16:31	07:16 07:46-08:04/18 17:44	05:59 18:46	05:35 07:10-07:46/36 20:55	04:32 21:56	04:18 22:21
29	08:27 16:33		06:56 19:48	05:33 07:10-07:44/34 20:57	04:31 21:58	04:18 22:21
30	08:25 16:35		06:53 19:51	05:30 07:11-07:43/32 20:59	04:30 21:59	04:19 22:20
31	08:23 16:38		06:51 07:20-07:28/8 19:53		04:28 22:01	
Potential sun hours	227	262	365	429	515	539
Sum of minutes with flicker	0	292	370	1465	96	0

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	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker



Project:

Flickering\_Valka\_Nordex163

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Baiba / baiba.ozolina@environment.lv

Calculated:

16/01/2026 15:04/4.1.254

## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Nordex163 WTG: 8 - NORDEX N163/6.X 7000 163.0 !O! hub: 164.0 m (TOT: 245.5 m) (38)

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	6.09	9.67	10.05	8.16	7.72	5.94	2.93	0.63	0.41

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

	July	August	September	October	November	December
1	04:20 22:20	05:09 21:35	06:15 20:17	06:51-07:52/61 18:53	07:18 16:32	08:02-08:16/14 15:37
2	04:21 22:19	05:11 21:33	06:17 20:15	06:52-07:51/59 18:51	07:21 16:30	08:17-08:41/24 15:36
3	04:22 22:19	05:13 21:31	06:19 20:12	06:52-07:50/58 18:48	07:23 16:27	08:16-08:41/25 15:35
4	04:23 22:18	05:15 21:29	06:21 20:09	06:54-07:48/54 18:45	07:25 16:25	08:16-08:43/27 15:34
5	04:24 22:17	05:17 21:26	06:23 20:06	06:56-07:47/51 18:42	07:27 16:23	08:15-08:43/28 15:34
6	04:25 22:17	05:20 21:24	06:25 20:04	07:05-07:45/40 18:40	07:29 16:21	08:14-08:42/28 15:33
7	04:26 22:16	05:22 21:22	06:28 20:01	07:05-07:42/37 18:37	07:31 16:18	08:14-08:42/28 15:32
8	04:27 22:15	05:24 21:19	06:30 19:58	07:05-07:39/34 18:34	07:34 16:16	08:15-08:42/27 15:31
9	04:29 22:14	05:26 21:17	06:32 19:55	07:06-07:35/29 18:31	07:36 16:14	08:15-08:42/27 15:31
10	04:30 22:13	05:28 21:15	06:34 19:52	07:07-07:26/19 18:29	07:38 16:12	08:15-08:41/26 15:30
11	04:31 22:11	05:30 21:12	06:36 19:50	07:08-07:24/16 18:26	07:40 16:10	08:15-08:40/25 15:30
12	04:33 22:10	05:32 21:10	06:38 19:47	07:11-07:20/9 18:23	07:42 16:08	08:17-08:39/22 15:30
13	04:34 22:09	05:34 21:07	06:40 19:44	07:12-07:19/2 18:20	07:45 16:06	08:18-08:37/19 15:29
14	04:36 22:08	05:36 21:05	06:42 19:41	07:14-07:18/4 18:18	07:47 16:04	08:19-08:35/16 15:29
15	04:38 22:06	05:39 21:02	06:44 19:38	07:17-07:21/4 18:15	07:49 16:02	08:21-08:33/12 15:29
16	04:39 22:05	05:41 21:00	06:47 19:36	07:20-07:24/4 18:12	07:51 16:00	08:24-08:30/12 15:29
17	04:41 22:03	05:43 20:57	06:49 19:33	07:23-07:27/4 18:10	07:53 15:58	08:27-08:33/6 15:29
18	04:42 22:02	05:45 20:55	06:51 19:30	07:26-07:30/4 18:07	07:56 15:56	08:30-08:36/6 15:29
19	04:44 22:00	05:47 20:52	06:53 19:27	07:29-07:33/4 18:05	07:58 15:54	08:33-08:39/6 15:29
20	04:46 21:58	05:49 20:49	06:55 19:24	07:32-07:36/4 18:02	08:00 15:53	09:04-09:13/9 15:30
21	04:48 21:57	05:51 20:47	06:57 19:21	07:35-07:39/4 17:59	08:02 15:51	09:07-09:16/9 15:30
22	04:50 21:55	05:54 20:44	06:59 19:19	07:38-07:42/4 17:57	08:05 15:49	09:10-09:19/9 15:30
23	04:51 21:53	05:56 20:42	07:01 19:16	07:41-07:45/4 17:54	08:07 15:48	08:59-09:08/9 15:31
24	04:53 21:51	05:58 20:39	07:03 19:13	07:44-07:48/4 17:52	08:09 15:46	08:57-09:06/9 15:32
25	04:55 21:50	06:00 20:36	07:06 19:10	07:47-07:51/4 17:49	07:11 15:45	07:57-08:19/22 15:32
26	04:57 21:48	06:02 20:34	07:08 19:07	07:50-07:54/4 17:47	07:14 15:44	07:57-08:18/21 15:33
27	04:59 21:46	06:04 20:31	07:10 19:05	07:53-07:57/4 17:44	07:16 15:42	07:57-08:19/22 15:34
28	05:01 21:44	06:06 20:28	07:12 19:02	07:56-08:00/4 17:42	07:18 15:41	07:57-08:18/21 15:35
29	05:03 21:42	06:08 20:26	07:14 18:59	08:23-08:39/16 16:39	07:21 15:40	07:57-08:18/21 15:36
30	05:05 21:40	06:11 20:23	07:16 18:56	08:20-08:40/20 16:37	07:23 15:38	07:57-08:17/20 15:37
31	05:07 21:37	06:13 20:20		07:25 16:34	07:25 15:38	07:59-08:17/18 15:38
Potential sun hours	538	474	386	321	241	207
Sum of minutes with flicker	0	1122	513	581	30	0

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

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

Project:

Flickering\_Valka\_Nordex163

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Baiba / baiba.ozolina@environment.lv

Calculated:

16/01/2026 15:04/4.1.254

## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Nordex163 WTG: 9 - NORDEX N163/6.X 7000 163.0 !O! hub: 164.0 m (TOT: 245.5 m) (30)  
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	6.09	9.67	10.05	8.16	7.72	5.94	2.93	0.63	0.41

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

	January		February		March	April		May		June	
1	09:00	11:57-12:15/18	08:21	07:13		06:48	07:19-07:44/25	05:28		04:27	05:53-06:09/16
	15:39		16:40	17:46		19:55		21:01		22:03	
2	09:00	11:58-12:16/18	08:19	07:11		06:45	07:18-07:44/26	05:25	05:56-06:05/9	04:26	05:54-06:08/14
	15:41		16:42	17:48		19:57		21:04		22:04	
3	09:00	11:59-12:15/16	08:17	07:08		06:42	07:18-07:42/24	05:23	05:53-06:08/15	04:24	05:56-06:07/11
	15:42		16:45	17:50		19:59		21:06		22:06	
4	08:59	12:00-12:14/14	08:15	07:05		06:39	07:19-07:42/23	05:20	05:52-06:10/18	04:23	05:58-06:06/8
	15:43		16:47	17:53		20:02		21:08		22:07	
5	08:59	12:02-12:14/12	08:13	07:03		06:37	07:19-07:40/21	05:18	05:50-06:12/22	04:22	06:01-06:04/3
	15:45		16:49	17:55		20:04		21:10		22:08	
6	08:58	12:03-12:13/10	08:10	07:00		06:34	07:19-07:38/19	05:16	05:49-06:13/24	04:21	
	15:46		16:52	17:57		20:06		21:12		22:10	
7	08:57	12:06-12:11/5	08:08	06:57		06:31	07:20-07:36/16	05:13	05:48-06:14/26	04:20	
	15:48		16:54	18:00		20:08		21:14		22:11	
8	08:57		08:06	06:55		06:28	07:22-07:35/13	05:11	05:48-06:14/26	04:20	
	15:50		16:57	18:02		20:10		21:17		22:12	
9	08:56		08:04	06:52		06:26	07:25-07:31/6	05:09	05:46-06:14/28	04:19	
	15:51		16:59	18:04		20:13		21:19		22:13	
10	08:55		08:01	06:49		06:23		05:07	05:45-06:14/29	04:18	
	15:53		17:01	18:06		20:15		21:21		22:14	
11	08:54		07:59	06:46		06:20		05:04	05:45-06:15/30	04:17	
	15:55		17:04	18:09		20:17		21:23		22:15	
12	08:53		07:57	06:44		06:17		05:02	05:46-06:16/30	04:17	
	15:57		17:06	18:11		20:19		21:25		22:16	
13	08:52		07:54	06:41		06:15		05:00	05:45-06:16/31	04:16	
	15:59		17:08	18:13		20:21		21:27		22:17	
14	08:51		07:52	06:38		06:12		04:58	05:45-06:16/31	04:16	
	16:01		17:11	18:15		20:24		21:29		22:18	
15	08:50		07:49	06:35		06:09		04:56	05:45-06:16/31	04:16	
	16:03		17:13	18:18		20:26		21:31		22:18	
16	08:48		07:47	06:32		06:06		04:54	05:45-06:16/31	04:15	
	16:05		17:16	18:20		20:28		21:33		22:19	
17	08:47		07:44	06:30		06:04		04:52	05:44-06:15/31	04:15	
	16:07		17:18	18:22		20:30		21:35		22:20	
18	08:46		07:42	06:27		06:01		04:50	05:45-06:16/31	04:15	
	16:09		17:20	18:24		20:33		21:38		22:20	
19	08:44		07:39	06:24		05:58		04:48	05:45-06:16/31	04:15	
	16:11		17:23	18:26		20:35		21:39		22:21	
20	08:43		07:37	06:21		05:56		04:46	05:45-06:15/30	04:15	
	16:13		17:25	18:29		20:37		21:41		22:21	
21	08:41		07:34	06:18		05:53		04:44	05:46-06:15/29	04:15	
	16:15		17:27	18:31		20:39		21:43		22:21	
22	08:39		07:32	06:16		05:51		04:42	05:46-06:15/29	04:15	
	16:17		17:30	18:33		20:41		21:45		22:21	
23	08:38		07:29	06:13		05:48		04:40	05:47-06:15/28	04:15	
	16:19		17:32	18:35		20:44		21:47		22:22	
24	08:36		07:27	06:10	06:36-06:37/1	05:45		04:39	05:47-06:14/27	04:16	
	16:22		17:34	18:37		20:46		21:49		22:22	
25	08:34		07:24	06:07	06:33-06:41/8	05:43		04:37	05:48-06:14/26	04:16	
	16:24		17:37	18:40		20:48		21:51		22:22	
26	08:33		07:21	06:05	06:31-06:43/12	05:40		04:35	05:48-06:13/25	04:17	
	16:26		17:39	18:42		20:50		21:53		22:22	
27	08:31		07:19	06:02	06:28-06:44/16	05:38		04:34	05:49-06:13/24	04:17	
	16:28		17:41	18:44		20:52		21:54		22:21	
28	08:29		07:16	05:59	06:25-06:45/20	05:35		04:32	05:50-06:12/22	04:18	
	16:31		17:44	18:46		20:55		21:56		22:21	
29	08:27			06:56	07:22-07:45/23	05:33		04:31	05:51-06:12/21	04:18	
	16:33			19:48		20:57		21:58		22:21	
30	08:25			06:53	07:20-07:45/25	05:30		04:30	05:52-06:11/19	04:19	
	16:35			19:51		20:59		21:59		22:20	
31	08:23			06:51	07:20-07:45/25			04:28	05:52-06:10/18		
	16:38			19:53				22:01			
Potential sun hours	227		262	365		429		515		539	
Sum of minutes with flicker	93		0	130		173		772		52	

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	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Nordex163 WTG: 9 - NORDEX N163/6.X 7000 163.0 !O! hub: 164.0 m (TOT: 245.5 m) (30)  
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 6.09 9.67 10.05 8.16 7.72 5.94 2.93 0.63 0.41

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

	July	August	September	October	November	December
1	04:20 22:20	05:09 05:56-06:26/30 21:35	06:15 20:17	07:18 18:53	07:28 16:32	08:33 15:37
2	04:21 22:19	05:11 05:56-06:26/30 21:33	06:17 20:15	07:21 18:51	07:30 16:30	08:35 15:36
3	04:22 22:19	05:13 05:56-06:25/29 21:31	06:19 07:23-07:29/6 20:12	07:23 18:48	07:32 16:27	08:36 15:35
4	04:23 22:18	05:15 05:56-06:24/28 21:29	06:21 07:19-07:32/13 20:09	07:25 18:45	07:34 16:25	08:38 15:34
5	04:24 22:17	05:17 05:57-06:23/26 21:26	06:23 07:17-07:33/16 20:06	07:27 18:42	07:37 16:23	08:40 11:52-11:56/4 15:33
6	04:25 22:17	05:19 05:58-06:23/25 21:24	06:25 07:15-07:34/19 20:04	07:29 18:40	07:39 16:20	08:41 11:50-11:59/9 15:33
7	04:26 22:16	05:22 05:59-06:22/23 21:22	06:28 07:14-07:35/21 20:01	07:31 18:37	07:41 16:18	08:43 11:49-12:01/12 15:32
8	04:27 06:05-06:12/7 22:15	05:24 06:00-06:21/21 21:19	06:30 07:13-07:36/23 19:58	07:34 18:34	07:44 16:16	08:45 11:48-12:02/14 15:31
9	04:29 06:04-06:14/10 22:14	05:26 06:01-06:19/18 21:17	06:32 07:12-07:37/25 19:55	07:36 18:31	07:46 16:14	08:46 11:47-12:03/16 15:31
10	04:30 06:02-06:15/13 22:13	05:28 06:04-06:17/13 21:15	06:34 07:11-07:37/26 19:52	07:38 18:29	07:48 16:12	08:47 11:48-12:05/17 15:30
11	04:31 06:02-06:17/15 22:11	05:30 06:07-06:13/6 21:12	06:36 07:11-07:37/26 19:50	07:40 18:26	07:51 16:10	08:49 11:47-12:05/18 15:30
12	04:33 06:01-06:18/17 22:10	05:32 21:10	06:38 07:11-07:36/25 19:47	07:42 18:23	07:53 16:08	08:50 11:48-12:07/19 15:30
13	04:34 06:00-06:18/18 22:09	05:34 21:07	06:40 07:11-07:36/25 19:44	07:45 18:20	07:55 16:06	08:51 11:47-12:07/20 15:29
14	04:36 06:00-06:20/20 22:08	05:36 21:05	06:42 07:12-07:35/23 19:41	07:47 18:18	07:57 16:04	08:52 11:47-12:08/21 15:29
15	04:37 05:59-06:21/22 22:06	05:39 21:02	06:44 07:14-07:34/20 19:38	07:49 18:15	08:00 16:02	08:53 11:48-12:09/21 15:29
16	04:39 05:59-06:22/23 22:05	05:41 21:00	06:47 07:16-07:33/17 19:36	07:51 18:12	08:02 16:00	08:54 11:48-12:10/22 15:29
17	04:41 05:58-06:22/24 22:03	05:43 20:57	06:49 07:18-07:31/13 19:33	07:53 18:10	08:04 15:58	08:55 11:49-12:10/21 15:29
18	04:42 05:58-06:23/25 22:02	05:45 20:55	06:51 07:20-07:29/9 19:30	07:56 18:07	08:06 15:56	08:56 11:48-12:10/22 15:29
19	04:44 05:57-06:23/26 22:00	05:47 20:52	06:53 07:23-07:27/4 19:27	07:58 18:04	08:08 15:54	08:57 11:49-12:11/22 15:29
20	04:46 05:57-06:24/27 21:58	05:49 20:49	06:55 19:24	08:00 18:02	08:11 15:53	08:58 11:50-12:12/22 15:30
21	04:48 05:56-06:24/28 21:57	05:51 20:47	06:57 19:21	08:02 17:59	08:13 15:51	08:58 11:50-12:13/23 15:30
22	04:50 05:56-06:25/29 21:55	05:54 20:44	06:59 19:19	08:05 17:57	08:15 15:49	08:59 11:50-12:13/23 15:30
23	04:51 05:56-06:26/30 21:53	05:56 20:42	07:01 19:16	08:07 17:54	08:17 15:48	08:59 11:50-12:13/23 15:31
24	04:53 05:55-06:25/30 21:51	05:58 20:39	07:03 19:13	08:09 17:52	08:19 15:46	09:00 11:52-12:14/22 15:32
25	04:55 05:55-06:26/31 21:50	06:00 20:36	07:06 19:10	08:11 16:49	08:21 15:45	09:00 11:52-12:14/22 15:32
26	04:57 05:56-06:26/30 21:48	06:02 20:34	07:08 19:07	07:14 16:47	08:23 15:43	09:01 11:53-12:14/21 15:33
27	04:59 05:56-06:27/31 21:46	06:04 20:31	07:10 19:05	07:16 16:44	08:25 15:42	09:01 11:53-12:15/22 15:34
28	05:01 05:55-06:26/31 21:44	06:06 20:28	07:12 19:02	07:18 16:42	08:27 15:41	09:01 11:54-12:15/21 15:35
29	05:03 05:55-06:26/31 21:42	06:08 20:26	07:14 18:59	07:21 16:39	08:29 15:40	09:01 11:55-12:15/20 15:36
30	05:05 05:55-06:26/31 21:40	06:11 20:23	07:16 18:56	07:23 16:37	08:31 15:38	09:01 11:55-12:15/20 15:37
31	05:07 05:56-06:26/30 21:37	06:13 20:20		07:25 16:34		09:01 11:56-12:15/19 15:38
Potential sun hours	538	474	386	321	241	207
Sum of minutes with flicker	579	249	311	0	0	516

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	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

Flickering\_Valka\_Nordex163

SIA Estonian, Latvian & Lithuanian environment  
Vilandes 3-6  
LV-1010 Riga  
0037167242411  
Baiba / baiba.ozolina@environment.lv  
Calculated:  
16/01/2026 15:04/4.1.254

Calculation: Flickering\_Valka\_Nordex163 WTG: 10 - NORDEX N163/6.X 7000 163.0 !O! hub: 164.0 m (TOT: 245.5 m) (32)  
Assumptions for shadow calculations Sunshine probability S (Average daily sunshine hours) []  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

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	6.09	9.67	10.05	8.16	7.72	5.94	2.93	0.63	0.41

	January	February	March	April	May	June	July	August	September	October	November	December	
1	09:00 15:39	08:21 16:40	07:13 17:46	06:48 19:55	05:28 21:01	04:27 22:03	04:20 22:20	05:09 21:35	06:15 20:17	07:18 18:53	07:48-07:59/11	07:27 16:32	08:33 15:37
2	09:00 15:41	08:19 16:42	07:11 17:48	06:45 19:57	05:25 21:03	04:26 22:04	04:21 22:19	05:11 21:33	06:17 20:15	07:21 18:51	07:50-07:55/5	07:30 16:30	08:35 15:36
3	09:00 15:42	08:17 16:45	07:08 17:50	06:42 19:59	05:23 21:06	04:24 22:05	04:22 22:19	05:13 21:31	06:19 20:12	07:23 18:48		07:32 16:27	08:36 15:35
4	08:59 15:44	08:15 16:47	07:05 17:53	06:39 20:02	05:20 21:08	04:23 22:07	04:23 22:18	05:15 21:29	06:21 20:09	07:25 18:45		07:34 16:25	08:38 15:34
5	08:59 15:45	08:12 16:49	07:03 17:55	06:37 20:04	05:18 21:10	04:22 22:08	04:24 22:17	05:17 21:26	06:23 20:06	07:27 18:42		07:37 16:23	08:40 15:33
6	08:58 15:47	08:10 16:52	07:00 17:57	06:34 20:06	05:16 21:12	04:21 22:10	04:25 22:16	05:19 21:24	06:25 20:03	07:29 18:39		07:39 16:20	08:41 15:33
7	08:57 15:48	08:08 16:54	06:57 18:00	06:31 20:08	05:13 21:14	04:20 22:11	04:26 22:16	05:22 21:22	06:28 20:01	07:31 18:37		07:41 16:18	08:43 15:32
8	08:57 15:50	08:06 16:57	06:55 18:02	06:28 20:10	05:11 21:17	04:20 22:12	04:27 22:15	05:24 21:19	06:30 19:58	07:34 18:34		07:44 16:16	08:44 15:31
9	08:56 15:51	08:04 16:59	06:52 18:04	06:26 20:13	05:09 21:19	04:19 22:13	04:29 22:14	05:26 21:17	06:32 19:55	07:36 18:31		07:46 16:14	08:46 15:31
10	08:55 15:53	08:01 17:01	06:49 18:06	06:23 20:15	05:07 21:21	04:18 22:14	04:30 22:13	05:28 21:15	06:34 19:52	07:38 18:29		07:48 16:12	08:47 15:30
11	08:54 15:55	07:59 17:04	06:46 18:09	06:20 20:17	05:04 21:23	04:17 22:15	04:31 22:11	05:30 21:12	06:36 19:50	07:40 18:26		07:50 16:10	08:49 15:30
12	08:53 15:57	07:57 17:06	06:44 18:11	06:17 20:19	05:02 21:25	04:17 22:16	04:33 22:10	05:32 21:10	06:38 19:47	07:42 18:23		07:53 16:08	08:50 15:30
13	08:52 15:59	07:54 17:08	06:41 18:13	06:15 20:21	05:00 21:27	04:16 22:17	04:34 22:09	05:34 21:07	06:40 19:44	07:44 18:20		07:55 16:06	08:51 15:29
14	08:51 16:01	07:52 17:11	06:38 18:15	06:12 20:24	04:58 21:29	04:16 22:18	04:36 22:08	05:36 21:05	06:42 19:41	07:47 18:18		07:57 16:04	08:52 15:29
15	08:49 16:03	07:49 17:13	06:35 18:18	06:09 20:26	04:56 21:31	04:16 22:18	04:37 22:06	05:39 21:02	06:44 19:38	07:49 18:15		07:49 16:02	08:53 15:29
16	08:48 16:05	07:47 17:16	06:32 18:20	06:06 20:28	04:54 21:33	04:15 22:19	04:39 22:05	05:41 21:00	06:47 19:35	07:51 18:12		08:02 16:00	08:54 15:29
17	08:47 16:07	07:44 17:18	06:30 18:22	06:04 20:30	04:52 21:35	04:15 22:20	04:41 22:03	05:43 20:57	06:49 19:33	07:55-07:59/4		07:53 18:10	08:55 15:29
18	08:45 16:09	07:42 17:20	06:27 18:24	06:01 20:33	04:50 21:37	04:15 22:20	04:42 22:02	05:45 20:55	06:51 19:30	07:50-08:03/13		07:56 18:07	08:56 15:29
19	08:44 16:11	07:39 17:23	06:2										

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

## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Nordex163 WTG: 11 - NORDEX N163/6.X 7000 163.0 !O! hub: 164.0 m (TOT: 245.5 m) (39)

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	6.09	9.67	10.05	8.16	7.72	5.94	2.93	0.63	0.41

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

	January	February	March	April	May	June
1	09:00 13:21-13:27/6 15:39	08:21 16:40	07:13 16:17-16:55/38 17:46	06:48 19:55	05:28 21:01	04:27 22:02
2	09:00 15:41	08:19 16:03-16:06/3 16:42	07:11 16:16-16:55/39 17:48	06:45 19:57	05:25 21:03	04:26 22:04
3	08:59 15:42	08:17 16:00-16:08/8 16:45	07:08 16:16-16:55/39 17:50	06:42 19:59	05:23 21:06	04:24 22:05
4	08:59 15:43	08:15 15:59-16:11/12 16:47	07:05 16:15-16:55/40 17:53	06:39 20:02	05:20 21:08	04:23 22:07
5	08:58 15:45	08:12 15:59-16:14/15 16:49	07:03 16:15-16:55/40 17:55	06:36 20:04	05:18 21:10	04:22 22:08
6	08:58 15:46	08:10 15:57-16:16/19 16:52	07:00 16:15-16:55/40 17:57	06:34 20:06	05:16 21:12	04:21 22:09
7	08:57 15:48	08:08 15:57-16:20/23 16:54	06:57 16:15-16:55/40 17:59	06:31 20:08	05:13 21:14	04:20 22:11
8	08:56 15:50	08:06 15:56-16:22/26 16:56	06:54 16:15-16:54/39 18:02	06:28 20:10	05:11 21:16	04:20 22:12
9	08:56 15:51	08:03 15:57-16:25/28 16:59	06:52 16:15-16:53/38 18:04	06:25 20:13	05:09 21:19	04:19 22:13
10	08:55 15:53	08:01 15:56-16:27/31 17:01	06:49 16:15-16:52/37 18:06	06:23 20:15	05:06 21:21	04:18 22:14
11	08:54 15:55	07:59 15:56-16:28/32 17:04	06:46 16:16-16:52/36 18:08	06:20 20:17	05:04 21:23	04:17 22:15
12	08:53 15:57	07:56 15:56-16:28/32 17:06	06:43 16:17-16:51/34 18:11	06:17 20:19	05:02 21:25	04:17 22:16
13	08:52 15:59	07:54 15:57-16:29/32 17:08	06:41 16:18-16:49/31 18:13	06:15 20:21	05:00 21:27	04:16 22:17
14	08:51 16:01	07:52 15:57-16:28/31 17:11	06:38 16:19-16:47/28 18:15	06:12 20:24	04:58 21:29	04:16 22:18
15	08:49 16:02	07:49 15:57-16:28/31 17:13	06:35 16:20-16:45/25 18:17	06:09 20:26	04:56 21:31	04:16 22:18
16	08:48 16:04	07:47 15:58-16:28/30 17:15	06:32 16:22-16:43/21 18:20	06:06 20:28	04:54 21:33	04:15 22:19
17	08:47 16:06	07:44 15:59-16:27/28 17:18	06:30 16:26-16:40/14 18:22	06:04 20:30	04:52 21:35	04:15 22:19
18	08:45 16:09	07:42 16:00-16:26/26 17:20	06:27 17:27-17:52/25 18:24	06:01 20:32	04:50 21:37	04:15 22:20
19	08:44 16:11	07:39 16:03-16:25/22 17:22	06:24 17:26-17:51/25 18:26	05:58 20:35	04:48 21:39	04:15 22:20
20	08:42 16:13	07:37 16:35-16:39/4 17:25	06:21 17:25-17:51/26 18:28	05:56 20:37	04:46 21:41	04:15 22:21
21	08:41 16:15	07:34 16:29-16:44/15 17:27	06:18 17:25-17:50/25 18:31	05:53 20:39	04:44 21:43	04:15 22:21
22	08:39 16:17	07:32 16:26-16:48/22 17:30	06:16 17:25-17:49/24 18:33	05:50 20:41	04:42 21:45	04:15 22:21
23	08:38 16:19	07:29 16:24-16:49/25 17:32	06:13 17:26-17:49/23 18:35	05:48 20:43	04:40 21:47	04:15 22:21
24	08:36 16:22	07:26 16:22-16:51/29 17:34	06:10 17:27-17:47/20 18:37	05:45 20:46	04:39 21:49	04:16 22:21
25	08:34 16:24	07:24 16:21-16:53/32 17:36	06:07 17:28-17:46/18 18:40	05:43 20:48	04:37 21:51	04:16 22:21
26	08:32 16:26	07:21 16:20-16:53/33 17:39	06:04 17:29-17:43/14 18:42	05:40 20:50	04:35 21:52	04:17 22:21
27	08:31 16:28	07:19 16:18-16:54/36 17:41	06:02 17:32-17:39/7 18:44	05:38 20:52	04:34 21:54	04:17 22:21
28	08:29 16:31	07:16 16:17-16:54/37 17:43	05:59 18:46	05:35 20:55	04:32 21:56	04:18 22:21
29	08:27 16:33		06:56 19:48	05:33 20:57	04:31 21:58	04:18 22:21
30	08:25 16:35		06:53 19:51	05:30 20:59	04:29 21:59	04:19 22:20
31	08:23 16:38		06:50 19:53		04:28 22:01	
Potential sun hours	227	262	365	429	515	539
Sum of minutes with flicker	6	697	886	0	0	0

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	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Nordex163 WTG: 11 - NORDEX N163/6.X 7000 163.0 !O! hub: 164.0 m (TOT: 245.5 m) (39)  
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 6.09 9.67 10.05 8.16 7.72 5.94 2.93 0.63 0.41

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

	July	August	September	October	November	December
1	04:20 22:20	05:09 21:35	06:15 20:17	07:18 18:53	16:56-17:29/33 18:13-18:22/9	07:27 16:32
2	04:21 22:19	05:11 21:33	06:17 20:14	07:20 18:50	16:55-17:30/35 18:17-18:19/2	07:30 16:30
3	04:22 22:19	05:13 21:31	06:19 20:12	07:23 18:48	16:54-17:30/36 18:18	07:32 16:27
4	04:23 22:18	05:15 21:28	06:21 20:09	07:25 18:45	16:52-17:30/38 18:16	07:34 16:25
5	04:24 22:17	05:17 21:26	06:23 20:06	07:27 18:42	16:52-17:31/39 18:16	07:37 16:23
6	04:25 22:16	05:19 21:24	06:25 20:03	07:29 18:39	16:51-17:31/40 18:16	07:39 16:20
7	04:26 22:15	05:21 21:22	06:27 20:01	07:31 18:37	16:51-17:31/40 18:16	07:41 16:18
8	04:27 22:14	05:24 21:19	06:30 19:58	07:33 18:34	16:50-17:30/40 18:16	07:43 16:16
9	04:29 22:13	05:26 21:17	06:32 19:55	07:36 18:31	16:50-17:30/40 18:16	07:46 16:14
10	04:30 22:12	05:28 21:14	06:34 19:52	07:38 18:28	16:50-17:30/40 18:16	07:48 16:12
11	04:31 22:11	05:30 21:12	06:36 19:49	07:40 18:26	16:50-17:29/39 18:16	07:50 16:10
12	04:33 22:10	05:32 21:10	06:38 19:47	07:42 18:23	16:49-17:28/39 18:16	07:53 16:08
13	04:34 22:09	05:34 21:07	06:40 19:44	07:44 18:20	16:50-17:28/38 18:16	07:55 16:06
14	04:36 22:07	05:36 21:05	06:42 19:41	07:47 18:18	16:50-17:27/37 18:16	07:57 16:04
15	04:37 22:06	05:38 21:02	06:44 19:38	07:49 18:15	16:51-17:25/34 18:16	07:59 16:02
16	04:39 22:05	05:41 21:00	06:46 19:35	07:51 18:12	16:52-17:25/33 18:16	08:02 16:00
17	04:41 22:03	05:43 20:57	06:49 19:33	07:53 18:10	16:53-17:23/30 18:16	08:04 15:58
18	04:42 22:02	05:45 20:54	06:51 19:30	07:55 18:07	16:54-17:22/28 18:16	08:06 15:56
19	04:44 22:00	05:47 20:52	06:53 19:27	07:58 18:04	16:56-17:20/24 18:16	08:08 15:54
20	04:46 21:58	05:49 20:49	06:55 19:24	08:00 18:02	16:57-17:17/20 16:42-16:50/8	08:10 15:53
21	04:48 21:57	05:51 20:47	06:57 19:21	08:02 17:59	17:01-17:14/13 16:39-16:53/14	08:13 15:51
22	04:50 21:55	05:53 20:44	06:59 19:18	08:04 17:57	16:35-16:54/19 18:16	08:15 15:49
23	04:51 21:53	05:56 20:41	07:01 19:16	08:07 17:54	16:32-16:56/24 18:16	08:17 15:48
24	04:53 21:51	05:58 20:39	07:03 19:13	08:09 17:52	16:30-16:56/26 18:16	08:19 15:46
25	04:55 21:49	06:00 20:36	07:05 19:10	07:11 16:49	15:29-15:57/28 18:16	08:21 15:45
26	04:57 21:47	06:02 20:33	07:08 19:07	07:14 16:46	15:28-15:57/29 18:16	08:23 15:43
27	04:59 21:45	06:04 20:31	07:10 19:04	07:16 16:44	15:27-15:58/31 18:16	08:25 15:42
28	05:01 21:43	06:06 20:28	07:12 19:02	07:18 16:42	15:26-15:58/32 18:16	08:27 15:41
29	05:03 21:41	06:08 20:25	07:14 18:59	07:20 16:39	15:26-15:58/32 18:16	08:29 15:40
30	05:05 21:39	06:10 20:23	07:16 18:56	07:23 16:37	15:26-15:57/31 18:16	08:31 15:38
31	05:07 21:37	06:13 20:20		07:25 16:34	15:26-15:57/31 18:16	09:00 15:38
Potential sun hours	538	474	386	321	241	207
Sum of minutes with flicker	0	0	411	1032	163	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	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

Project:

Flickering\_Valka\_Nordex163

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Baiba / baiba.ozolina@environment.lv

Calculated:

16/01/2026 15:04/4.1.254

## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Nordex163 WTG: 12 - NORDEX N163/6.X 7000 163.0 !O! hub: 164.0 m (TOT: 245.5 m) (42)

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	6.09	9.67	10.05	8.16	7.72	5.94	2.93	0.63	0.41

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

	January		February		March		April		May		June	
1	09:00	14:35-14:53/18	08:21		07:13	16:59-17:16/17	06:48	18:33-18:58/25	05:28		04:27	
	15:39		16:40		17:46		19:55		21:01		22:02	
2	09:00	14:34-14:54/20	08:19		07:11	16:58-17:18/20	06:45	18:34-18:56/22	05:25		04:26	
	15:41		16:42		17:48		19:57		21:03		22:04	
3	09:00	14:35-14:56/21	08:17		07:08	16:57-17:20/23	06:42	18:35-18:54/19	05:23		04:24	
	15:42		16:45		17:50		19:59		21:06		22:05	
4	08:59	14:35-14:57/22	08:15		07:05	16:57-17:23/26	06:39	18:37-18:51/14	05:20		04:23	
	15:43		16:47		17:53		20:02		21:08		22:07	
5	08:59	14:35-14:58/23	08:12		07:03	16:57-17:23/26	06:37	18:42-18:46/4	05:18		04:22	
	15:45		16:49		17:55		20:04		21:10		22:08	
6	08:58	14:35-14:59/24	08:10		07:00	16:58-17:23/25	06:34		05:16		04:21	
	15:46		16:52		17:57		20:06		21:12		22:09	
7	08:57	14:35-14:59/24	08:08		06:57	16:59-17:22/23	06:31		05:13		04:20	
	15:48		16:54		17:59		20:08		21:14		22:11	
8	08:56	14:36-15:00/24	08:06		06:54	17:00-17:21/21	06:28		05:11		04:20	
	15:50		16:56		18:02		20:10		21:16		22:12	
9	08:56	14:36-15:01/25	08:03		06:52	17:02-17:19/17	06:25		05:09		04:19	
	15:51		16:59		18:04		20:13		21:19		22:13	
10	08:55	14:36-15:02/26	08:01		06:49	17:05-17:17/12	06:23		05:06		04:18	
	15:53		17:01		18:06		20:15		21:21		22:14	
11	08:54	14:36-15:02/26	07:59		06:46	17:09-17:14/5	06:20		05:04		04:17	
	15:55		17:04		18:08		20:17		21:23		22:15	
12	08:53	14:37-15:02/25	07:56		06:43		06:17		05:02		04:17	
	15:57		17:06		18:11		20:19		21:25		22:16	
13	08:52	14:36-15:02/26	07:54		06:41		06:15		05:00		04:16	
	15:59		17:08		18:13		20:21		21:27		22:17	
14	08:51	14:37-15:03/26	07:52		06:38		06:12		04:58		04:16	
	16:01		17:11		18:15		20:24		21:29		22:18	
15	08:49	14:37-15:03/26	07:49		06:35		06:09		04:56		04:16	
	16:02		17:13		18:17		20:26		21:31		22:18	
16	08:48	14:38-15:04/26	07:47		06:32		06:06		04:54		04:15	
	16:04		17:15		18:20		20:28		21:33		22:19	
17	08:47	14:38-15:04/26	07:44		06:30		06:04		04:52		04:15	
	16:07		17:18		18:22		20:30		21:35		22:20	
18	08:45	14:38-15:04/26	07:42		06:27	17:44-17:55/11	06:01		04:50		04:15	
	16:09		17:20		18:24		20:32		21:37		22:20	
19	08:44	14:39-15:04/25	07:39		06:24	17:41-17:57/16	05:58		04:48		04:15	
	16:11		17:23		18:26		20:35		21:39		22:20	
20	08:42	14:40-15:05/25	07:37		06:21	17:38-17:59/21	05:56		04:46		04:15	
	16:13		17:25		18:29		20:37		21:41		22:21	
21	08:41	14:41-15:05/24	07:34		06:18	17:37-18:00/23	05:53		04:44		04:15	
	16:15		17:27		18:31		20:39		21:43		22:21	
22	08:39	14:41-15:05/24	07:32		06:16	17:35-18:00/25	05:51		04:42		04:15	
	16:17		17:30		18:33		20:41		21:45		22:21	
23	08:38	14:42-15:04/22	07:29		06:13	17:35-18:02/27	05:48		04:40		04:15	
	16:19		17:32		18:35		20:43		21:47		22:21	
24	08:36	14:43-15:04/21	07:27		06:10	17:34-18:02/28	05:45		04:39		04:16	
	16:22		17:34		18:37		20:46		21:49		22:21	
25	08:34	14:44-15:04/20	07:24	17:04-17:06/2	06:07	17:33-18:02/29	05:43		04:37		04:16	
	16:24		17:37		18:40		20:48		21:51		22:21	
26	08:32	14:46-15:03/17	07:21	17:01-17:08/7	06:04	17:32-18:01/29	05:40		04:35		04:17	
	16:26		17:39		18:42		20:50		21:52		22:21	
27	08:31	14:47-15:01/14	07:19	17:00-17:11/11	06:02	17:31-18:01/30	05:38		04:34		04:17	
	16:28		17:41		18:44		20:52		21:54		22:21	
28	08:29	14:49-14:59/10	07:16	16:59-17:13/14	05:59	17:32-18:01/29	05:35		04:32		04:18	
	16:31		17:43		18:46		20:55		21:56		22:21	
29	08:27				06:56	18:32-19:00/28	05:33		04:31		04:18	
	16:33				19:48		20:57		21:58		22:21	
30	08:25				06:53	18:32-18:59/27	05:30		04:29		04:19	
	16:35				19:51		20:59		21:59		22:20	
31	08:23				06:50	18:32-18:58/26			04:28			
	16:38				19:53				22:01			
Potential sun hours	227		262		365		429		515		539	
Sum of minutes with flicker	636		34		564		84		0		0	

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	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker



## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Nordex163 WTG: 12 - NORDEX N163/6.X 7000 163.0 !O! hub: 164.0 m (TOT: 245.5 m) (42)

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	6.09	9.67	10.05	8.16	7.72	5.94	2.93	0.63	0.41

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

	July	August	September	October	November	December
1	04:20 22:20	05:09 21:35	06:15 20:17	07:18 18:53	07:27 16:32	08:33 15:37
2	04:21 22:19	05:11 21:33	06:17 20:14	07:20 18:51	07:30 16:30	08:35 15:36
3	04:22 22:19	05:13 21:31	06:19 20:12	07:23 18:48	07:32 16:27	08:36 15:35
4	04:23 22:18	05:15 21:28	06:21 20:09	07:25 18:45	07:34 16:25	08:38 15:34
5	04:24 22:17	05:17 21:26	06:23 20:06	07:27 18:42	07:37 16:23	08:40 15:33
6	04:25 22:16	05:19 21:24	06:25 20:03	07:29 18:39	07:39 16:20	08:41 15:33
7	04:26 22:16	05:22 21:22	06:27 20:01	07:31 18:37	07:41 16:18	08:43 15:32
8	04:27 22:15	05:24 21:19	06:30 19:58	07:33 18:34	07:44 16:16	08:44 15:31
9	04:29 22:14	05:26 21:17	06:32 19:55	07:36 18:31	07:46 16:14	08:46 15:31
10	04:30 22:12	05:28 21:14	06:34 19:52	07:38 18:28	07:48 16:12	08:47 15:30
11	04:31 22:11	05:30 21:12	06:36 19:49	07:40 18:26	07:50 16:10	08:49 15:30
12	04:33 22:10	05:32 21:10	06:38 19:47	07:42 18:23	07:53 16:08	08:50 15:29
13	04:34 22:09	05:34 21:07	06:40 19:44	07:44 18:20	07:55 16:06	08:51 15:29
14	04:36 22:07	05:36 21:05	06:42 19:41	07:47 18:18	07:57 16:04	08:52 15:29
15	04:37 22:06	05:38 21:02	06:44 19:38	07:49 18:15	07:59 16:02	08:53 15:29
16	04:39 22:05	05:41 21:00	06:46 19:35	07:51 18:12	08:02 16:00	08:54 15:29
17	04:41 22:03	05:43 20:57	06:49 19:33	07:53 18:10	08:04 15:58	08:55 15:29
18	04:42 22:02	05:45 20:55	06:51 19:30	07:55 18:07	08:06 15:56	08:56 15:29
19	04:44 22:00	05:47 20:52	06:53 19:27	07:58 18:04	08:08 15:54	08:57 15:29
20	04:46 21:58	05:49 20:49	06:55 19:24	08:00 18:02	08:10 15:53	08:58 15:30
21	04:48 21:57	05:51 20:47	06:57 19:21	08:02 17:59	08:13 15:51	08:58 15:30
22	04:50 21:55	05:53 20:44	06:59 19:19	08:04 17:57	08:15 15:49	08:59 15:30
23	04:51 21:53	05:56 20:41	07:01 19:16	08:07 17:54	08:17 15:48	08:59 15:31
24	04:53 21:51	05:58 20:39	07:03 19:13	08:09 17:52	08:19 15:46	09:00 15:32
25	04:55 21:49	06:00 20:36	07:05 19:10	08:11 16:49	08:21 15:45	09:00 15:32
26	04:57 21:47	06:02 20:33	07:08 19:07	08:14 16:47	08:23 15:43	09:00 15:33
27	04:59 21:45	06:04 20:31	07:10 19:04	08:16 16:44	08:25 15:42	09:01 15:34
28	05:01 21:43	06:06 20:28	07:12 19:02	08:18 16:42	08:27 15:41	09:01 15:35
29	05:03 21:41	06:08 20:25	07:14 18:59	08:20 16:39	08:29 15:40	09:01 15:36
30	05:05 21:39	06:11 20:23	07:16 18:56	08:23 16:37	08:31 15:38	09:01 15:37
31	05:07 21:37	06:13 20:20		08:25 16:34		09:00 15:38
Potential sun hours	538	474	386	321	241	207
Sum of minutes with flicker	0	0	432	252	386	519

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

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

Project:

Flickering\_Valka\_Nordex163

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Baiba / baiba.ozolina@environment.lv

Calculated:

16/01/2026 15:04/4.1.254

## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Nordex163 WTG: 13 - NORDEX N163/6.X 7000 163.0 !O! hub: 164.0 m (TOT: 245.5 m) (34)  
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 6.09 9.67 10.05 8.16 7.72 5.94 2.93 0.63 0.41

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	09:00 15:39	08:21 16:40	07:13 17:46	06:48 19:55	05:28 21:01	04:27 22:02	04:20 22:20	05:09 21:35	06:15 20:17	07:18 18:53	07:27 16:32	08:33 15:37
2	09:00 15:41	08:19 16:42	07:11 17:48	06:45 19:57	05:25 21:03	04:26 22:04	04:21 22:19	05:11 21:33	06:17 20:14	07:20 18:51	07:30 16:30	08:35 15:36
3	09:00 15:42	08:17 16:45	07:08 17:50	06:42 19:59	05:23 21:06	04:24 22:05	04:22 22:19	05:13 21:31	06:19 20:12	07:23 18:48	07:32 16:27	08:36 15:35
4	08:59 15:44	08:15 16:47	07:05 17:53	06:39 20:02	05:20 21:08	04:23 22:07	04:23 22:18	05:15 21:29	06:21 20:09	07:25 18:45	07:34 16:25	08:38 15:34
5	08:59 15:45	08:12 16:49	07:03 17:55	06:37 20:04	05:18 21:10	04:22 22:08	04:24 22:17	05:17 21:26	06:23 20:06	07:27 18:42	07:37 16:23	08:40 15:33
6	08:58 15:46	08:10 16:52	07:00 17:57	06:34 20:06	05:16 21:12	04:21 22:09	04:25 22:16	05:19 21:24	06:25 20:03	07:29 18:39	07:39 16:20	08:41 15:33
7	08:57 15:48	08:08 16:54	06:57 17:59	06:31 20:08	05:13 21:14	04:20 22:11	04:26 22:16	05:22 21:22	06:28 20:01	07:31 18:37	07:41 16:18	08:43 15:32
8	08:57 15:50	08:06 16:56	06:54 18:02	06:28 20:10	05:11 21:16	04:20 22:12	04:27 22:15	05:24 21:19	06:30 19:58	07:33 18:34	07:44 16:16	08:44 15:31
9	08:56 15:51	08:03 16:59	06:52 18:04	06:26 20:13	05:09 21:19	04:19 22:13	04:29 22:14	05:26 21:17	06:32 19:55	07:36 18:31	07:46 16:14	08:46 15:31
10	08:55 15:53	08:01 17:01	06:49 18:06	06:23 20:15	05:07 21:21	04:18 22:14	04:30 22:12	05:28 21:15	06:34 19:52	07:38 18:29	07:48 16:12	08:47 15:30
11	08:54 15:55	07:59 17:04	06:46 18:09	06:20 20:17	05:04 21:23	04:17 22:15	04:31 22:11	05:30 21:12	06:36 19:49	07:40 18:26	07:50 16:10	08:49 15:30
12	08:53 15:57	07:56 17:06	06:43 18:11	06:17 20:19	05:02 21:25	04:17 22:16	04:33 22:10	05:32 21:10	06:38 19:47	07:42 18:23	07:53 16:08	08:50 15:30
13	08:52 15:59	07:54 17:08	06:41 18:13	06:15 20:21	05:00 21:27	04:16 22:17	04:34 22:09	05:34 21:07	06:40 19:44	18:42-18:45/3	07:44 18:20	07:55 16:06
14	08:51 16:01	07:52 17:11	06:38 18:15	06:12 20:24	04:58 21:29	04:16 22:18	04:36 22:07	05:36 21:05	06:42 19:41	18:37-18:48/11	07:47 18:18	07:57 16:04
15	08:49 16:03	07:49 17:13	06:35 18:17	06:09 20:26	04:56 21:31	04:16 22:18	04:37 22:06	05:39 21:02	06:44 19:38	18:35-18:50/15	07:49 18:15	07:59 16:02
16	08:48 16:05	07:47 17:15	06:32 18:20	06:06 20:28	04:54 21:33	04:15 22:19	04:39 22:05	05:41 21:00	06:46 19:35	18:33-18:51/18	07:51 18:12	08:02 16:00
17	08:47 16:07	07:44 17:18	06:30 18:22	06:04 20:30	04:52 21:35	04:15 22:20	04:41 22:03	05:43 20:57	06:49 19:33	18:32-18:51/19	07:53 18:10	08:04 15:58
18	08:45 16:09	07:42 17:20	06:27 18:24	06:01 20:32	04:50 21:37	04:15 22:20	04:42 22:02	05:45 20:55	06:51 19:30	18:31-18:51/20	07:56 18:07	08:06 15:56
19	08:44 16:11	07:39 17:23	06:24 18:26	05:58 20:35	04:48 21:39	04:15 22:20	04:44 22:00	05:47 20:52	06:53 19:27	18:30-18:51/21	07:58 18:04	08:08 15:54
20	08:42 16:13	07:37 17:25	06:21 18:29	05:56 20:37	04:46 21:41	04:15 22:21	04:46 21:58	05:49 20:49	06:55 19:24	18:29-18:50/21	08:00 18:02	08:11 15:53
21	08:41 16:15	07:34 17:27	06:18 18:31	05:53 20:39	04:44 21:43	04:15 22:21	04:48 21:57	05:51 20:47	06:57 19:21	18:29-18:50/21	08:02 17:59	08:13 15:51
22	08:39 16:17	07:32 17:30	06:16 18:33	05:51 20:41	04:42 21:45	04:15 22:21	04:50 21:55	05:53 20:44	06:59 19:19	18:30-18:48/18	08:05 17:57	08:15 15:49
23	08:38 16:19	07:29 17:32	06:13 18:35	05:48 20:44	04:40 21:47	04:15 22:21	04:51 21:53	05:56 20:42	07:01 19:16	18:30-18:45/15	08:07 17:54	08:17 15:48
24	08:36 16:22	07:27 17:34	06:10 18:37	05:45 20:46	04:39 21:49	04:16 22:22	04:53 21:51	05:58 20:39	07:03 19:13	18:31-18:42/11	08:09 17:52	08:19 15:46
25	08:34 16:24	07:24 17:37	06:07 18:40	05:43 20:48	04:37 21:51	04:16 22:22	04:55 21:49	06:00 20:36	07:06 19:10	18:32-18:39/7	07:11 16:49	08:21 15:45
26	08:32 16:26	07:21 17:39	06:04 18:42	05:40 20:50	04:35 21:53	04:17 22:21	04:57 21:47	06:02 20:34	07:08 19:07	18:34-18:36/2	07:14 16:47	08:23 15:43
27	08:31 16:28	07:19 17:41	06:02 18:44	05:38 20:52	04:34 21:54	04:17 22:21	04:59 21:45	06:04 20:31	07:10 19:05		07:16 16:44	08:25 15:42
28	08:29 16:31	07:16 17:43	05:59 18:46	05:35 20:55	04:32 21:56	04:18 22:21	05:01 21:43	06:06 20:28	07:12 19:02	17:45-18:01/16	07:18 16:42	08:27 15:41
29	08:27 16:33		06:56 19:48	05:33 20:57	04:31 21:58	04:18 22:21	05:03 21:41	06:08 20:25	07:14 18:59	18:46-18:58/12	07:20 16:39	08:29 15:40
30	08:25 16:35		06:53 19:51	05:30 20:59	04:30 21:59	04:19 22:20	05:05 21:39	06:11 20:23	07:16 18:56	18:49-18:54/5	07:23 16:37	08:31 15:38
31	08:23 16:38		06:50 19:53		04:28 22:01		05:07 21:37	06:13 20:20			07:25 16:34	09:00 15:38
Potential sun hours	227	262	365	429	515	539	538	474	386	321	241	207
Sum of minutes with flicker	0	0	199	0	0	0	0	0	202	0	0	0

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	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

Project:

Flickering\_Valka\_Nordex163

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Baiba / baiba.ozolina@environment.lv

Calculated:

16/01/2026 15:04/4.1.254

## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Nordex163 WTG: 14 - NORDEX N163/6.X 7000 163.0 !O! hub: 164.0 m (TOT: 245.5 m) (35)

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	6.09	9.67	10.05	8.16	7.72	5.94	2.93	0.63	0.41

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

	January	February	March	April	May	June
1	09:00 15:39	08:21 16:40	07:13 17:46	06:48 19:55	05:28 21:01	04:27 22:02
2	09:00 15:41	08:19 16:42	07:11 17:48	06:45 19:57	05:25 21:03	04:26 22:04
3	09:00 15:42	08:17 16:45	07:08 17:50	06:42 19:59	05:23 21:06	04:24 22:05
4	08:59 15:43	08:15 16:47	07:05 17:53	06:39 20:02	05:20 21:08	04:23 22:07
5	08:59 15:45	08:12 16:49	07:03 17:55	06:37 20:04	05:18 21:10	04:22 22:08
6	08:58 15:46	08:10 16:52	07:00 17:57	06:34 20:06	05:16 21:12	04:21 22:09
7	08:57 15:48	08:08 16:54	06:57 17:59	06:31 20:08	05:13 21:14	04:20 22:11
8	08:57 15:50	08:06 16:56	06:54 18:02	06:28 20:10	05:11 21:16	04:20 22:12
9	08:56 15:51	08:03 16:59	06:52 18:04	06:25 20:13	19:37-19:43/6 21:19	05:09 22:13
10	08:55 15:53	08:01 17:01	06:49 18:06	06:23 20:15	19:34-19:44/10 21:21	05:06 22:14
11	08:54 15:55	07:59 17:04	06:46 18:09	06:20 20:17	19:32-19:46/14 21:23	05:04 22:15
12	08:53 15:57	07:56 17:06	06:43 18:11	06:17 20:19	19:31-19:49/18 21:25	05:02 22:16
13	08:52 15:59	07:54 17:08	06:41 18:13	06:15 20:21	19:30-19:51/21 21:27	05:00 22:17
14	08:51 16:01	07:52 17:11	06:38 18:15	06:12 20:24	19:29-19:51/22 21:29	04:58 22:18
15	08:49 16:02	07:49 17:13	06:35 18:17	06:09 20:26	19:29-19:52/23 21:31	04:56 22:18
16	08:48 16:04	07:47 17:15	06:32 18:20	06:06 20:28	19:28-19:51/23 21:33	04:54 22:19
17	08:47 16:06	07:44 17:18	06:30 18:22	06:04 20:30	19:29-19:52/23 21:35	04:52 22:20
18	08:45 16:09	07:42 17:20	06:27 18:24	06:01 20:32	19:28-19:51/23 21:37	04:50 22:20
19	08:44 16:11	07:39 17:23	06:24 18:26	05:58 20:35	19:28-19:49/21 21:39	04:48 22:21
20	08:42 16:13	07:37 17:25	06:21 18:29	05:56 20:37	19:29-19:49/20 21:41	04:46 22:21
21	08:41 16:15	07:34 17:27	06:18 18:31	05:53 20:39	19:29-19:47/18 21:43	04:44 22:21
22	08:39 16:17	07:32 17:30	06:16 18:33	05:51 20:41	19:31-19:46/15 21:45	04:42 22:21
23	08:38 16:19	07:29 17:32	06:13 18:35	05:48 20:44	19:32-19:44/12 21:47	04:40 22:21
24	08:36 16:22	07:27 17:34	06:10 18:37	05:45 20:46	19:36-19:40/4 21:49	04:39 22:22
25	08:34 16:24	07:24 17:37	06:07 18:40	05:43 20:48	04:37 21:51	04:16 22:22
26	08:32 16:26	07:21 17:39	06:04 18:42	05:40 20:50	04:35 21:53	04:17 22:21
27	08:31 16:28	07:19 17:41	06:02 18:44	05:38 20:52	04:34 21:54	04:17 22:21
28	08:29 16:31	07:16 17:43	05:59 18:46	05:35 20:55	04:32 21:56	04:18 22:21
29	08:27 16:33		06:56 19:48	05:33 20:57	04:31 21:58	04:18 22:21
30	08:25 16:35		06:53 19:51	05:30 20:59	04:29 21:59	04:19 22:20
31	08:23 16:38		06:50 19:53		04:28 22:01	
Potential sun hours	227	262	365	429	515	539
Sum of minutes with flicker	0	371	0	273	0	0

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	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

Project:

Flickering\_Valka\_Nordex163

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Baiba / baiba.ozolina@environment.lv

Calculated:

16/01/2026 15:04/4.1.254

## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Nordex163 WTG: 14 - NORDEX N163/6.X 7000 163.0 !O! hub: 164.0 m (TOT: 245.5 m) (35)

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	6.09	9.67	10.05	8.16	7.72	5.94	2.93	0.63	0.41

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

	July	August	September	October	November	December
1	04:20 22:20	05:09 21:35	06:15 20:17	19:31-19:45/14 18:53	07:27 16:32	15:36-15:56/20 15:37
2	04:21 22:19	05:11 21:33	06:17 20:14	19:32-19:42/10 18:51	07:30 16:30	15:38-15:54/16 15:36
3	04:22 22:19	05:13 21:31	06:19 20:12	19:34-19:40/6 18:48	07:32 16:27	15:39-15:51/12 15:35
4	04:23 22:18	05:15 21:29	06:21 20:09	07:25 18:45	07:34 16:25	15:41-15:49/8 15:34
5	04:24 22:17	05:17 21:26	06:23 20:06	07:27 18:42	07:37 16:23	15:44-15:46/2 15:33
6	04:25 22:16	05:19 21:24	06:25 20:03	07:29 18:39	07:39 16:20	08:41 15:33
7	04:26 22:16	05:22 21:22	06:28 20:01	07:31 18:37	07:41 16:18	08:43 15:32
8	04:27 22:15	05:24 21:19	06:30 19:58	07:33 18:34	07:44 16:16	08:44 15:31
9	04:29 22:14	05:26 21:17	06:32 19:55	07:36 18:31	07:46 16:14	08:46 15:31
10	04:30 22:12	05:28 21:15	06:34 19:52	07:38 18:28	07:48 16:12	08:47 15:30
11	04:31 22:11	05:30 21:12	06:36 19:49	07:40 18:26	07:50 16:10	08:49 15:30
12	04:33 22:10	05:32 21:10	06:38 19:47	07:42 18:23	07:53 16:08	08:50 15:29
13	04:34 22:09	05:34 21:07	06:40 19:44	07:44 18:20	07:55 16:06	08:51 15:29
14	04:36 22:08	05:36 21:05	06:42 19:41	07:47 18:18	07:57 16:04	08:52 15:29
15	04:37 22:06	05:39 21:02	06:44 19:38	07:49 18:15	07:59 16:02	08:53 15:29
16	04:39 22:05	05:41 21:00	06:46 19:35	07:51 18:12	08:02 16:00	08:54 15:29
17	04:41 22:03	05:43 20:57	06:49 19:33	07:53 18:10	08:04 15:58	08:55 15:29
18	04:42 22:02	05:45 20:55	06:51 19:30	07:56 18:07	16:44-16:54/10 15:56	08:56 15:29
19	04:44 22:00	05:47 20:52	19:41-19:47/6 19:27	06:53 18:04	16:41-16:56/15 15:54	08:57 15:29
20	04:46 21:58	05:49 20:49	19:38-19:50/12 19:24	06:55 18:02	16:38-16:57/19 15:53	08:58 15:30
21	04:48 21:57	05:51 20:47	19:35-19:51/16 19:21	06:57 17:59	16:37-16:59/22 15:51	08:58 15:30
22	04:50 21:55	05:53 20:44	19:34-19:52/18 19:19	06:59 17:57	16:36-16:59/23 15:49	08:59 15:30
23	04:51 21:53	05:56 20:42	19:33-19:53/20 19:16	07:01 17:54	16:36-17:00/24 15:48	08:59 15:31
24	04:53 21:51	05:58 20:39	19:32-19:53/21 19:13	07:03 17:52	16:35-17:00/25 15:46	09:00 15:32
25	04:55 21:49	06:00 20:36	19:31-19:53/22 19:10	07:06 16:49	15:35-16:01/26 15:45	09:00 15:32
26	04:57 21:47	06:02 20:34	19:30-19:53/23 19:07	07:08 16:47	15:34-16:00/26 15:43	09:00 15:33
27	04:59 21:46	06:04 20:31	19:30-19:53/23 19:04	07:10 16:44	15:35-16:01/26 15:42	09:01 15:34
28	05:01 21:44	06:06 20:28	19:30-19:53/23 19:02	07:12 16:42	15:34-16:00/26 15:41	09:01 15:35
29	05:03 21:41	06:08 20:25	19:30-19:52/22 18:59	07:14 16:39	15:35-16:00/25 15:40	09:01 15:36
30	05:05 21:39	06:11 20:23	19:30-19:50/20 18:56	07:16 16:37	15:35-15:59/24 15:38	09:01 15:37
31	05:07 21:37	06:13 20:20	19:30-19:48/18	07:25 16:34	15:36-15:59/23	09:00 15:38
Potential sun hours	538	474	386	321	241	207
Sum of minutes with flicker	0	244	30	314	58	0

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

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