

Project:

Flickering\_Valka\_Vestas172

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Baiba / baiba.ozolina@environment.lv

Calculated:

15/01/2026 16:54/4.1.254

## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Vestas172 WTG: 1 - VESTAS V172-7.2 7200 172.0 !O! hub: 166.0 m (TOT: 252.0 m) (23

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	09:54-10:25/31	08:21	09:33-10:01/28	07:13	06:48	05:28	04:27	05:04-05:26/22	
	15:39		16:40	10:02-10:46/44	17:46	19:55	21:01	22:03		
2	09:00	09:55-10:26/31	08:19	09:33-10:01/28	07:11	06:45	05:25	04:26	05:04-05:26/22	
	15:41		16:42	10:03-10:47/44	17:48	19:57	21:04	22:04		
3	09:00	09:42-09:45/3	08:17	09:35-09:59/24	07:08	06:42	05:23	04:24	05:04-05:27/23	
	15:42	09:55-10:27/32	16:45	10:04-10:47/43	17:50	19:59	21:06	22:06		
4	08:59	09:41-09:47/6	08:15	09:37-09:57/20	07:05	06:39	05:20	04:23	05:05-05:28/23	
	15:43	09:56-10:28/32	16:47	10:04-10:46/42	17:53	20:02	21:08	22:07		
5	08:59	09:40-09:48/8	08:13	09:41-09:46/5	10:05-10:46/41	07:03	06:37	05:18	04:22	05:05-05:28/23
	15:45	09:56-10:29/33	16:49	09:50-09:52/2	17:55	20:04	21:10	22:08		
6	08:58	09:39-09:50/11	08:10	10:06-10:46/40	07:00	06:34	05:16	04:21	05:05-05:27/22	
	15:46	09:57-10:30/33	16:52		17:57	20:06	21:12	22:10		
7	08:57	09:38-09:51/13	08:08	10:06-10:44/38	06:57	06:31	05:13	04:20	05:05-05:27/22	
	15:48	09:57-10:31/34	16:54		18:00	20:08	21:14	22:11		
8	08:57	09:37-09:52/15	08:06	10:08-10:44/36	06:55	06:28	05:11	04:19	05:06-05:28/22	
	15:50	09:58-10:32/34	16:56		18:02	20:10	21:17	22:12		
9	08:56	09:36-09:54/18	08:04	10:09-10:42/33	06:52	06:26	05:09	04:19	05:06-05:28/22	
	15:51	09:58-10:34/36	16:59		18:04	20:13	21:19	22:13		
10	08:55	09:35-09:55/20	08:01	10:11-10:41/30	06:49	06:23	05:06	04:18	05:06-05:28/22	
	15:53	09:59-10:35/36	17:01	16:23-16:27/4	18:06	20:15	21:21	22:14		
11	08:54	09:34-09:56/22	07:59	10:12-10:39/27	06:46	06:20	05:04	04:17	05:06-05:28/22	
	15:55	10:00-10:36/36	17:04	16:21-16:30/9	18:09	20:17	21:23	22:15		
12	08:53	09:32-09:57/25	07:57	10:13-10:37/24	06:44	06:17	05:02	04:17	05:07-05:28/21	
	15:57	10:00-10:37/37	17:06	16:18-16:32/14	18:11	20:19	21:25	22:16		
13	08:52	09:31-09:58/27	07:54	10:17-10:34/17	06:41	06:15	05:00	04:16	05:06-05:28/22	
	15:59	10:02-10:38/36	17:08	16:17-16:35/18	18:13	20:21	21:27	22:17		
14	08:51	09:29-09:58/29	07:52	10:21-10:29/8	06:38	06:12	04:58	04:16	05:07-05:28/21	
	16:00	10:01-10:38/37	17:11	16:16-16:38/22	18:15	20:24	21:29	22:18		
15	08:50	09:28-10:00/32	07:49	16:16-16:39/23	06:35	06:09	04:56	04:15	05:07-05:29/22	
	16:02	10:01-10:40/39	17:13		18:17	20:26	21:31	22:19		
16	08:48	09:27-10:00/33	07:47	16:15-16:40/25	06:32	06:06	04:54	04:15	05:08-05:29/21	
	16:04	10:01-10:40/39	17:15		18:20	20:28	21:33	22:19		
17	08:47	09:27-10:41/74	07:44	16:14-16:40/26	06:30	06:04	04:52	04:15	05:08-05:29/21	
	16:06		17:18		18:22	20:30	21:35	22:20		
18	08:46	09:27-10:42/75	07:42	16:14-16:40/26	06:27	06:01	04:50	04:15	05:08-05:29/21	
	16:09		17:20		18:24	20:33	21:38	22:20		
19	08:44	09:27-10:43/76	07:39	16:14-16:40/26	06:24	05:58	04:48	04:15	05:09-05:29/20	
	16:11		17:23		18:26	20:35	21:39	22:21		
20	08:43	09:27-10:43/76	07:37	16:13-16:40/27	06:21	05:56	04:46	04:15	05:09-05:30/21	
	16:13		17:25		18:29	20:37	21:41	22:21		
21	08:41	09:27-10:44/77	07:34	16:14-16:40/26	06:18	05:53	04:44	05:18-05:20/2	04:15	05:09-05:30/21
	16:15		17:27		18:31	20:39	21:43	22:21		
22	08:39	09:27-10:44/77	07:32	16:14-16:39/25	06:16	05:51	04:42	05:16-05:21/5	04:15	05:09-05:30/21
	16:17		17:30		18:33	20:41	21:45	22:22		
23	08:38	09:27-10:45/78	07:29	16:15-16:38/23	06:13	05:48	04:40	05:15-05:23/8	04:15	05:10-05:31/21
	16:19		17:32		18:35	20:44	21:47	22:22		
24	08:36	09:27-10:45/78	07:27	16:15-16:37/22	06:10	05:45	04:39	05:13-05:23/10	04:16	05:10-05:30/20
	16:22		17:34		18:37	20:46	21:49	22:22		
25	08:34	09:28-10:46/78	07:24	16:17-16:37/20	06:07	05:43	04:37	05:12-05:24/12	04:16	05:09-05:30/21
	16:24		17:37		18:40	20:48	21:51	22:22		
26	08:33	09:28-10:46/78	07:21	16:18-16:35/17	06:04	05:40	04:35	05:10-05:24/14	04:16	05:10-05:31/21
	16:26		17:39		18:42	20:50	21:53	22:22		
27	08:31	09:29-10:47/78	07:19	16:20-16:32/12	06:02	05:38	04:34	05:09-05:25/16	04:17	05:10-05:31/21
	16:28		17:41		18:44	20:52	21:54	22:21		
28	08:29	09:29-10:47/78	07:16		05:59	05:35	04:32	05:08-05:25/17	04:18	05:10-05:31/21
	16:31		17:44		18:46	20:55	21:56	22:21		
29	08:27	09:29-10:47/78			06:56	05:33	04:31	05:07-05:26/19	04:18	05:11-05:32/21
	16:33				19:48	20:57	21:58	22:21		
30	08:25	09:30-10:47/77			06:53	05:30	04:29	05:06-05:27/21	04:19	05:10-05:32/22
	16:35				19:51	20:59	21:59	22:20		
31	08:23	09:31-10:47/76			06:50		04:28	05:04-05:26/22		
	16:38				19:53		22:01			
Potential sun hours	227		262		365	429	515	539		
Sum of minutes with flicker	1972		939		0	0	146	645		

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

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Calculated:

15/01/2026 16:54/4.1.254

## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Vestas172 WTG: 1 - VESTAS V172-7.2 7200 172.0 !OI hub: 166.0 m (TOT: 252.0 m) (23)  
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 05:10-05:32/22 22:20	05:09 21:35	06:15 20:17	07:18 18:53	07:27 09:39-10:10/31 16:32 15:54-15:56/2	08:33 09:16-09:38/22 15:37 09:42-10:17/35
2	04:21 05:11-05:33/22 22:19	05:11 21:33	06:17 20:15	07:21 18:51	07:30 09:38-10:12/34 16:30	08:35 09:18-09:38/20 15:36 09:42-10:18/36
3	04:22 05:11-05:33/22 22:19	05:13 21:31	06:19 20:12	07:23 18:48	07:32 09:37-10:14/37 16:27	08:36 09:20-09:38/18 15:35 09:42-10:18/36
4	04:23 05:11-05:33/22 22:18	05:15 21:29	06:21 20:09	07:25 18:45	07:34 09:36-10:14/38 16:25	08:38 09:22-09:37/15 15:34 09:43-10:18/35
5	04:24 05:11-05:34/23 22:17	05:17 21:26	06:23 20:06	07:27 18:42	07:37 09:36-10:15/39 16:23	08:40 09:24-09:37/13 15:33 09:43-10:16/33
6	04:25 05:11-05:34/23 22:17	05:19 21:24	06:25 20:03	07:29 18:39	07:39 09:10-09:17/7 09:35-10:15/40 16:20 09:18-09:23/5	08:41 09:25-09:36/11 15:33 09:43-10:16/33
7	04:26 05:11-05:34/23 22:16	05:22 21:22	06:28 20:01	07:31 18:37	07:41 09:07-09:28/21 16:18 09:34-10:17/43	08:43 09:27-09:36/9 15:32 09:43-10:16/33
8	04:27 05:11-05:34/23 22:15	05:24 21:19	06:30 19:58	07:34 18:34	07:44 09:05-09:29/24 16:16 09:34-10:17/43	08:45 09:29-09:35/6 15:31 09:44-10:16/32
9	04:29 05:11-05:34/23 22:14	05:26 21:17	06:32 19:55	07:36 18:31	07:46 09:04-09:32/28 16:14 09:34-10:17/43	08:46 09:30-09:34/4 15:31 09:44-10:15/31
10	04:30 05:11-05:34/23 22:13	05:28 21:15	06:34 19:52	07:38 18:29	07:48 09:03-09:33/30 16:12 09:34-10:18/44	08:47 09:32-09:33/1 15:30 09:44-10:16/32
11	04:31 05:12-05:35/23 22:11	05:30 21:12	06:36 19:50	07:40 18:26	07:51 09:02-10:18/76 16:10	08:49 09:45-10:15/30 15:30
12	04:33 05:12-05:35/23 22:10	05:32 21:10	06:38 19:47	07:42 18:23	07:53 09:02-10:19/77 16:08	08:50 09:45-10:15/30 15:29
13	04:34 05:13-05:34/21 22:09	05:34 21:07	06:40 19:44	07:44 18:20	07:55 09:01-10:18/77 16:06	08:51 09:45-10:15/30 15:29
14	04:36 05:15-05:35/20 22:08	05:36 21:05	06:42 19:41	07:47 16:55-17:02/7 18:18	07:57 09:01-10:19/78 16:04	08:52 09:47-10:14/27 15:29
15	04:37 05:16-05:34/18 22:06	05:39 21:02	06:44 19:38	07:49 16:52-17:06/14 18:15	08:00 09:01-10:19/78 16:02	08:53 09:47-10:15/28 15:29
16	04:39 05:18-05:35/17 22:05	05:41 21:00	06:47 19:35	07:51 16:49-17:07/18 18:12	08:02 09:01-10:19/78 16:00	08:54 09:47-10:15/28 15:29
17	04:41 05:19-05:34/15 22:03	05:43 20:57	06:49 19:33	07:53 16:47-17:08/21 18:10	08:04 09:02-10:19/77 15:58	08:55 09:48-10:14/26 15:29
18	04:42 05:21-05:34/13 22:02	05:45 20:55	06:51 19:30	07:56 16:47-17:10/23 18:07	08:06 09:01-10:19/78 15:56	08:56 09:49-10:14/25 15:29
19	04:44 05:22-05:33/11 22:00	05:47 20:52	06:53 19:27	07:58 16:45-17:10/25 18:04	08:08 09:02-10:19/77 15:54	08:57 09:48-10:14/26 15:29
20	04:46 05:24-05:33/9 21:58	05:49 20:49	06:55 19:24	08:00 16:44-17:10/26 18:02	08:11 09:02-10:19/77 15:53	08:58 09:49-10:14/25 15:30
21	04:48 05:25-05:32/7 21:57	05:51 20:47	06:57 19:21	08:02 16:44-17:10/26 17:59	08:13 09:03-10:19/76 15:51	08:58 09:50-10:15/25 15:30
22	04:49 05:27-05:31/4 21:55	05:53 20:44	06:59 19:19	08:05 16:44-17:10/26 17:57	08:15 09:03-10:19/76 15:49	08:59 09:50-10:15/25 15:30
23	04:51 05:29-05:30/1 21:53	05:56 20:42	07:01 19:16	08:07 16:44-17:10/26 17:54	08:17 09:03-10:19/76 15:48	09:00 09:50-10:15/25 15:31
24	04:53 21:51	05:58 20:39	07:03 19:13	08:09 16:44-17:10/26 17:52	08:19 09:04-10:19/75 15:46	09:00 09:51-10:17/26 15:31
25	04:55 21:50	06:00 20:36	07:06 19:10	07:11 15:44-16:10/26 16:49	08:21 09:05-10:19/74 15:45	09:00 09:51-10:17/26 15:32
26	04:57 21:48	06:02 20:34	07:08 19:07	07:14 15:44-16:09/25 16:47	08:23 09:05-09:38/33 15:43 09:39-10:18/39	09:01 09:52-10:18/26 15:33
27	04:59 21:46	06:04 20:31	07:10 19:05	07:16 15:45-16:09/24 16:44	08:25 09:07-09:39/32 15:42 09:41-10:19/38	09:01 09:52-10:19/27 15:34
28	05:01 21:44	06:06 20:28	07:12 19:02	07:18 09:49-10:00/11 16:42 15:46-16:06/20	08:27 09:09-09:39/30 15:41 09:41-10:19/38	09:01 09:53-10:20/27 15:35
29	05:03 21:42	06:08 20:25	07:14 18:59	07:21 09:45-10:04/19 16:39 15:47-16:04/17	08:29 09:11-09:38/27 15:40 09:42-10:18/36	09:01 09:53-10:22/29 15:36
30	05:05 21:40	06:11 20:23	07:16 18:56	07:23 09:42-10:07/25 16:37 15:48-16:01/13	08:31 09:13-09:38/25 15:38 09:41-10:18/37	09:01 09:53-10:22/29 15:37
31	05:07 21:37	06:13 20:20		07:25 09:41-10:09/28 16:34 15:51-15:59/8		09:01 09:54-10:24/30 15:38
Potential sun hours	538	474	386	321	241	207
Sum of minutes with flicker	408	0	0	454	1994	1025

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

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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 12:40-13:06/26 15:39	08:21 15:50-16:03/13 16:40	07:13 16:28-16:53/25 17:46 16:57-17:16/19	06:48 18:14-19:18/64 19:55	05:28 19:56-20:23/27 21:01	04:27 22:03
2	09:00 12:41-13:07/26 15:41	08:19 15:49-16:06/17 16:42	07:11 16:30-16:52/22 17:48 16:57-17:18/21	06:45 18:13-19:18/65 19:57	05:25 19:57-20:22/25 21:03	04:26 22:04
3	09:00 12:42-13:07/25 15:42	08:17 15:49-16:09/20 16:45	07:08 16:32-16:50/18 17:50 16:57-17:20/23	06:42 18:12-19:16/64 19:59	05:23 19:57-20:22/25 21:06	04:24 21:23-21:24/1 22:05
4	08:59 12:42-13:07/25 15:43	08:15 15:47-16:11/24 16:47	07:05 16:36-16:47/11 17:53 16:56-17:22/26	06:39 19:00-19:14/14 20:02 18:11-18:59/48	05:20 19:58-20:22/24 21:08	04:23 21:21-21:25/4 22:07
5	08:59 12:43-13:06/23 15:45	08:12 15:47-16:14/27 16:49	07:03 16:57-17:23/26 17:55	06:36 19:02-19:11/9 20:04 18:12-19:00/48	05:18 19:59-20:21/22 21:10	04:22 21:21-21:27/6 22:08
6	08:58 12:44-13:06/22 15:46	08:10 15:46-16:16/30 16:52	07:00 16:58-17:24/26 17:57	06:34 18:11-18:59/48 20:06	05:16 19:59-20:19/20 21:12	04:21 21:20-21:28/8 22:10
7	08:57 12:45-13:06/21 15:48	08:08 15:47-16:19/32 16:54	06:57 16:59-17:23/24 17:59	06:31 18:11-18:59/48 20:08	05:13 20:00-20:18/18 21:14	04:20 21:19-21:29/10 22:11
8	08:57 12:46-13:06/20 15:50	08:06 15:46-16:22/36 16:56	06:54 17:01-17:22/21 18:02	06:28 18:11-18:58/47 20:10	05:11 20:02-20:17/15 21:17	04:19 21:18-21:29/11 22:12
9	08:56 12:48-13:06/18 15:51	08:03 15:46-16:25/39 16:59	06:52 17:03-17:20/17 18:04	06:25 18:11-18:58/47 20:13	05:09 20:05-20:15/10 21:19	04:19 21:19-21:31/12 22:13
10	08:55 12:49-13:05/16 15:53	08:01 15:46-16:27/41 17:01	06:49 17:06-17:18/12 18:06	06:23 18:11-18:57/46 20:15	05:06 21:21	04:18 21:18-21:31/13 22:14
11	08:54 12:51-13:04/13 15:55	07:59 15:47-16:30/43 17:04	06:46 17:10-17:15/5 18:08	06:20 18:11-18:55/44 20:17	05:04 21:23	04:17 21:18-21:33/15 22:15
12	08:53 12:53-13:02/9 15:57	07:56 15:46-16:32/46 17:06	06:43 18:11	06:17 18:13-18:55/42 20:19	05:02 21:25	04:17 21:18-21:34/16 22:16
13	08:52 15:59	07:54 15:47-16:35/48 17:08	06:41 18:13	06:15 18:13-18:54/41 20:21	05:00 21:27	04:16 21:18-21:34/16 22:17
14	08:51 16:00	07:52 15:48-16:38/50 17:11	06:38 18:15	06:12 18:13-18:52/39 20:24	04:58 21:29	04:16 21:18-21:35/17 22:18
15	08:49 16:02	07:49 15:48-16:40/52 17:13	06:35 18:17	06:09 18:15-18:51/36 20:26	04:56 21:31	04:15 21:18-21:36/18 22:18
16	08:48 16:04	07:47 15:50-16:43/53 17:15	06:32 18:20	06:06 18:16-18:49/33 20:28	04:54 21:33	04:15 21:18-21:36/18 22:19
17	08:47 16:06	07:44 15:51-16:45/54 17:18	06:30 18:22	06:04 18:18-18:48/30 20:30	04:52 21:35	04:15 21:19-21:37/18 22:20
18	08:45 16:08	07:42 15:53-16:48/55 17:20	06:27 18:24	06:01 18:19-18:46/27 20:32	04:50 21:37	04:15 21:19-21:37/18 22:20
19	08:44 16:11	07:39 15:55-16:51/56 17:22	06:24 18:26	05:58 18:21-18:43/22 20:35	04:48 21:39	04:15 21:19-21:38/19 22:21
20	08:43 16:13	07:37 15:59-16:53/54 17:25	06:21 18:29	05:56 18:24-18:40/16 20:37	04:46 21:41	04:15 21:19-21:38/19 22:21
21	08:41 16:15	07:34 16:03-16:55/52 17:27	06:18 17:32-17:47/15 18:31	05:53 20:05-20:07/2 20:39	04:44 21:43	04:15 21:19-21:38/19 22:21
22	08:39 16:17	07:32 16:08-16:56/48 17:30	06:16 17:29-17:51/22 18:33	05:50 20:03-20:09/6 20:41	04:42 21:45	04:15 21:19-21:38/19 22:21
23	08:38 16:19	07:29 16:12-16:56/44 17:32	06:13 17:26-17:53/27 18:35	05:48 20:01-20:11/10 20:44	04:40 21:47	04:15 21:19-21:38/19 22:22
24	08:36 16:21	07:27 16:13-16:56/43 17:34	06:10 18:05-18:08/3 18:37 17:23-17:55/32	05:45 20:00-20:13/13 20:46	04:39 21:49	04:16 21:20-21:39/19 22:22
25	08:34 16:24	07:24 16:15-16:56/41 17:36 17:01-17:06/5	06:07 18:03-18:10/7 18:40 17:21-17:56/35	05:43 19:59-20:16/17 20:48	04:37 21:51	04:16 21:20-21:38/18 22:22
26	08:32 16:26	07:21 16:16-16:56/40 17:39 17:00-17:08/8	06:04 18:01-18:12/11 18:42 17:19-17:57/38	05:40 19:58-20:17/19 20:50	04:35 21:53	04:16 21:20-21:39/19 22:21
27	08:31 16:28	07:19 16:17-16:55/38 17:41 16:58-17:10/12	06:02 18:00-18:14/14 18:44 17:18-17:58/40	05:38 19:58-20:20/22 20:52	04:34 21:54	04:17 21:20-21:38/18 22:21
28	08:29 16:31	07:16 16:19-16:54/35 17:43 16:57-17:13/16	05:59 18:00-18:17/17 18:46 17:17-17:59/42	05:35 19:57-20:21/24 20:55	04:32 21:56	04:18 21:21-21:38/17 22:21
29	08:27 16:33	15:53-15:55/2	06:56 18:16-19:19/63 19:48	05:33 19:57-20:23/26 20:57	04:31 21:58	04:18 21:21-21:37/16 22:21
30	08:25 16:35	15:52-15:58/6	06:53 18:15-19:20/65 19:51	05:30 19:57-20:23/26 20:59	04:29 21:59	04:19 21:22-21:37/15 22:20
31	08:23 16:38	15:51-16:01/10	06:50 18:13-19:19/66 19:53		04:28 22:01	
Potential sun hours	227	262	365	429	515	539
Sum of minutes with flicker	262	1172	793	1043	186	418

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\_Vestas172

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Baiba / baiba.ozolina@environment.lv

Calculated:

15/01/2026 16:54/4.1.254

## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Vestas172 WTG: 2 - VESTAS V172-7.2 7200 172.0 IO! hub: 166.0 m (TOT: 252.0 m) (22)  
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 21:22-21:37/15 22:20	05:09 21:35	06:15 18:10-18:54/44 20:17	07:18 18:53	07:27 15:15-15:56/41 16:32	08:33 12:33-12:46/13 15:37
2	04:21 21:23-21:37/14 22:19	05:11 21:33	06:17 18:09-18:55/46 20:14	07:20 18:50	07:30 15:16-15:54/38 16:30	08:35 12:32-12:47/15 15:36
3	04:22 21:24-21:37/13 22:19	05:13 20:18-20:23/5 21:31	06:19 18:09-18:56/47 20:12	07:23 17:45-17:55/10 18:48	07:32 15:16-15:51/35 16:27	08:36 12:31-12:49/18 15:35
4	04:23 21:24-21:36/12 22:18	05:15 20:14-20:26/12 21:29	06:21 18:09-18:56/47 20:09	07:25 17:42-17:57/15 18:45	07:34 15:16-15:49/33 16:25	08:38 12:30-12:50/20 15:34
5	04:24 21:25-21:35/10 22:17	05:17 20:12-20:28/16 21:26	06:23 18:08-18:56/48 20:06	07:27 17:39-17:58/19 18:42	07:37 15:16-15:46/30 16:23	08:40 12:30-12:51/21 15:33
6	04:25 21:26-21:35/9 22:16	05:19 20:10-20:29/19 21:24	06:25 18:07-18:55/48 20:03	07:29 17:36-17:59/23 18:39	07:39 15:17-15:44/27 16:20	08:41 12:30-12:52/22 15:33
7	04:26 21:27-21:34/7 22:16	05:21 20:09-20:30/21 21:22	06:27 18:59-19:07/8 20:01	07:31 17:34-17:59/25 18:37	07:41 15:18-15:42/24 16:18	08:43 12:30-12:53/23 15:32
8	04:27 21:28-21:33/5 22:15	05:24 20:08-20:31/23 21:19	06:30 18:56-19:09/13 19:58	07:33 17:32-17:59/27 18:34	07:44 15:19-15:39/20 16:16	08:44 12:31-12:55/24 15:31
9	04:29 21:29-21:32/3 22:14	05:26 20:07-20:31/24 21:17	06:32 18:06-19:10/64 19:55	07:36 17:14-17:20/6 18:31	07:46 15:20-15:37/17 16:14	08:46 12:30-12:55/25 15:31
10	04:30 22:13	05:28 20:07-20:32/25 21:15	06:34 18:06-19:11/65 19:52	07:38 17:09-17:23/14 18:28	07:48 15:20-15:34/14 16:12	08:47 12:30-12:56/26 15:30
11	04:31 22:11	05:30 20:06-20:32/26 21:12	06:36 18:06-19:11/65 19:49	07:40 17:05-17:24/19 18:26	07:50 15:22-15:32/10 16:10	08:49 12:30-12:56/26 15:30
12	04:33 22:10	05:32 20:05-20:31/26 21:10	06:38 18:06-19:11/65 19:47	07:42 17:03-17:25/22 18:23	07:53 15:24-15:30/6 16:08	08:50 12:31-12:57/26 15:29
13	04:34 22:09	05:34 20:05-20:31/26 21:07	06:40 18:06-19:11/65 19:44	07:44 16:55-17:27/32 18:20	07:55 15:25-15:27/2 16:06	08:51 12:31-12:58/27 15:29
14	04:36 22:08	05:36 20:04-20:30/26 21:05	06:42 18:06-19:10/64 19:41	07:47 16:51-17:27/36 18:18	07:57 16:04	08:52 12:31-12:58/27 15:29
15	04:37 22:06	05:38 20:04-20:28/24 21:02	06:44 18:06-19:07/61 19:38	07:49 16:50-17:27/37 18:15	07:59 16:02	08:53 12:31-12:59/28 15:29
16	04:39 22:05	05:41 20:04-20:26/22 21:00	06:46 18:49-19:04/15 19:35	07:51 16:47-17:28/41 18:12	08:02 16:00	08:54 12:32-13:00/28 15:29
17	04:41 22:03	05:43 20:05-20:23/18 20:57	06:49 18:49-19:01/12 19:33	07:53 16:46-17:27/41 18:10	08:04 15:58	08:55 12:32-13:00/28 15:29
18	04:42 22:02	05:45 20:05-20:21/16 20:55	06:51 18:50-18:58/8 19:30	07:56 16:45-17:28/43 18:07	08:06 15:56	08:56 12:32-13:00/28 15:29
19	04:44 22:00	05:47 20:06-20:19/13 20:52	06:53 18:51-18:56/5 19:27	07:58 16:42-17:27/45 18:04	08:08 15:54	08:57 12:33-13:01/28 15:29
20	04:46 21:58	05:49 20:07-20:16/9 20:49	06:55 18:11-18:40/29 19:24	08:00 16:37-17:26/49 18:02	08:11 15:53	08:58 12:33-13:02/29 15:30
21	04:48 21:57	05:51 20:08-20:14/6 20:47	06:57 18:13-18:37/24 19:21	08:02 16:33-17:26/53 17:59	08:13 15:51	08:58 12:33-13:02/29 15:30
22	04:49 21:55	05:53 18:34-18:39/5 20:44	06:59 18:17-18:34/17 19:19	08:05 16:28-17:22/54 17:57	08:15 15:49	08:59 12:34-13:03/29 15:30
23	04:51 21:53	05:56 18:28-18:44/16 20:42	07:01 18:24-18:25/1 19:16	08:07 16:25-17:20/55 17:54	08:17 15:48	08:59 12:34-13:03/29 15:31
24	04:53 21:51	05:58 18:24-18:47/23 20:39	07:03 19:13	08:09 16:22-17:17/55 17:52	08:19 15:46	09:00 12:36-13:04/28 15:31
25	04:55 21:49	06:00 18:22-18:49/27 20:36	07:05 19:10	07:11 15:21-16:15/54 16:49	08:21 15:45	09:00 12:36-13:04/28 15:32
26	04:57 21:47	06:02 18:19-18:50/31 20:34	07:08 19:07	07:14 15:19-16:12/53 16:46	08:23 15:43	09:00 12:36-13:05/29 15:33
27	04:59 21:46	06:04 18:17-18:51/34 20:31	07:10 19:04	07:16 15:18-16:10/52 16:44	08:25 15:42	09:01 12:37-13:05/28 15:34
28	05:01 21:44	06:06 18:16-18:52/36 20:28	07:12 19:02	07:18 15:17-16:06/49 16:42	08:27 15:41	09:01 12:38-13:05/27 15:35
29	05:03 21:41	06:08 18:14-18:53/39 20:25	07:14 18:59	07:20 15:17-16:04/47 16:39	08:29 15:39	09:01 12:38-13:06/28 15:36
30	05:05 21:39	06:10 18:13-18:54/41 20:23	07:16 18:56	07:23 15:16-16:01/45 16:37	08:31 12:35-12:43/8 15:38	09:01 12:38-13:06/28 15:37
31	05:07 21:37	06:13 18:11-18:54/43 20:20		07:25 15:16-15:59/43 16:34		09:01 12:39-13:06/27 15:38
Potential sun hours	538	474	386	321	241	207
Sum of minutes with flicker	88	652	1104	1213	305	792

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\_Vestas172

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Baiba / baiba.ozolina@environment.lv

Calculated:

15/01/2026 16:54/4.1.254

## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Vestas172 WTG: 3 - VESTAS V172-7.2 7200 172.0 !O! hub: 166.0 m (TOT: 252.0 m) (19)  
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	10:11-10:35/24	08:21	07:13	06:48	05:28	04:27
	15:39	14:25-14:47/22	16:40	17:46	19:55	21:01	22:03
2	09:00	10:12-10:36/24	08:19	07:11	06:45	05:25	04:26
	15:41	14:26-14:49/23	16:42	17:48	19:57	21:03	22:04
3	09:00	10:12-10:36/24	08:17	07:08	06:42	05:23	04:24
	15:42	14:26-14:49/23	16:45	17:50	19:59	21:06	22:05
4	08:59	10:13-10:36/23	08:15	07:05	06:39	05:20	04:23
	15:43	14:26-14:49/23	16:47	17:53	20:02	21:08	22:07
5	08:59	10:13-10:36/23	08:12	07:03	06:37	05:18	04:22
	15:45	14:26-14:49/23	16:49	17:55	20:04	21:10	22:08
6	08:58	10:14-10:37/23	08:10	07:00	06:34	05:16	04:21
	15:46	14:27-14:50/23	16:52	17:57	20:06	21:12	22:10
7	08:57	10:14-10:37/23	08:08	06:57	06:31	05:13	04:20
	15:48	14:27-14:50/23	16:54	17:59	20:08	21:14	22:11
8	08:57	10:15-10:37/22	08:06	06:54	06:28	05:11	04:19
	15:50	14:28-14:51/23	16:56	18:02	20:10	21:17	22:12
9	08:56	10:16-10:37/21	08:04	06:52	06:26	05:09	04:19
	15:51	14:28-14:51/23	16:59	18:04	20:13	21:19	22:13
10	08:55	10:17-10:37/20	08:01	06:49	17:30-17:36/6	06:23	05:06
	15:53	14:29-14:52/23	17:01	18:06	20:15	21:21	22:14
11	08:54	10:18-10:38/20	07:59	06:46	17:28-17:40/12	06:20	05:04
	15:55	14:29-14:51/22	17:04	18:09	20:17	21:23	22:15
12	08:53	10:19-10:37/18	07:57	06:43	17:26-17:42/16	06:17	05:02
	15:57	14:30-14:52/22	17:06	18:11	20:19	21:25	22:16
13	08:52	10:20-10:37/17	07:54	06:41	17:25-17:44/19	06:15	05:00
	15:59	14:31-14:53/22	17:08	18:13	20:21	21:27	22:17
14	08:51	10:21-10:36/15	07:52	06:38	17:24-17:46/22	06:12	04:58
	16:01	14:31-14:52/21	17:11	18:15	20:24	21:29	22:18
15	08:49	10:23-10:36/13	07:49	06:35	17:23-17:47/24	06:09	04:56
	16:02	14:31-14:52/21	17:13	18:17	20:26	21:31	22:18
16	08:48	10:25-10:34/9	07:47	06:32	17:22-17:47/25	06:06	04:54
	16:04	14:33-14:52/19	17:15	18:20	20:28	21:33	22:19
17	08:47	10:28-10:31/3	07:44	06:30	17:23-17:47/24	06:04	04:52
	16:06	14:34-14:52/18	17:18	18:22	20:30	21:35	22:20
18	08:45	14:34-14:51/17	07:42	06:27	17:23-17:46/23	06:01	04:50
	16:09		17:20	18:24	20:32	21:37	22:20
19	08:44	14:36-14:51/15	07:39	06:24	17:23-17:46/23	05:58	04:48
	16:11		17:23	18:26	20:35	21:39	22:21
20	08:43	14:38-14:50/12	07:37	06:21	17:23-17:44/21	05:56	04:46
	16:13		17:25	18:29	20:37	21:41	22:21
21	08:41	14:40-14:49/9	07:34	06:18	17:23-17:43/20	05:53	04:44
	16:15		17:27	18:31	20:39	21:43	22:21
22	08:39		07:32	06:16	17:25-17:42/17	05:51	04:42
	16:17		17:30	18:33	20:41	21:45	22:21
23	08:38		07:29	06:13	17:27-17:40/13	05:48	04:40
	16:19		17:32	18:35	20:44	21:47	22:22
24	08:36		07:27	06:10	17:30-17:35/5	05:45	04:39
	16:22		17:34	18:37	20:46	21:49	22:22
25	08:34		07:24	06:07		05:43	04:37
	16:24		17:37	18:40	20:48	21:51	22:22
26	08:33		07:21	06:04		05:40	04:35
	16:26		17:39	18:42	20:50	21:53	22:22
27	08:31		07:19	06:02		05:38	04:34
	16:28		17:41	18:44	20:52	21:54	22:21
28	08:29		07:16	05:59		05:35	04:32
	16:31		17:43	18:46	20:55	21:56	22:21
29	08:27			06:56		05:33	04:31
	16:33			19:48	20:57	21:58	22:21
30	08:25			06:53		05:30	04:29
	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	749	0	270	214	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\_Vestas172

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Baiba / baiba.ozolina@environment.lv

Calculated:

15/01/2026 16:54/4.1.254

## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Vestas172 WTG: 3 - VESTAS V172-7.2 7200 172.0 !O! hub: 166.0 m (TOT: 252.0 m) (19)  
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 06:46-06:59/13 20:17	07:18 18:05-18:22/17 18:53	07:27 16:32	08:33 09:59-10:19/20 15:37 14:11-14:34/23
2	04:21 22:19	05:11 21:33	06:17 06:48-06:58/10 20:15	07:21 18:06-18:19/13 18:51	07:30 16:30	08:35 10:00-10:21/21 15:36 14:11-14:34/23
3	04:22 22:19	05:13 21:31	06:19 06:50-06:56/6 20:12	07:23 18:07-18:16/9 18:48	07:32 16:27	08:36 10:00-10:21/21 15:35 14:11-14:34/23
4	04:23 22:18	05:15 21:29	06:21 06:52-06:53/1 20:09	07:25 18:09-18:13/4 18:45	07:34 16:25	08:38 10:00-10:22/22 15:34 14:12-14:35/23
5	04:24 22:17	05:17 21:26	06:23 20:06	07:27 18:42	07:37 16:23	08:40 09:59-10:22/23 15:33 14:12-14:35/23
6	04:25 22:17	05:19 21:24	06:25 20:03	07:29 18:39	07:39 16:20	08:41 10:00-10:23/23 15:33 14:13-14:36/23
7	04:26 22:16	05:22 21:22	06:28 20:01	07:31 18:37	07:41 16:18	08:43 10:00-10:24/24 15:32 14:14-14:37/23
8	04:27 22:15	05:24 21:19	06:30 19:58	07:33 18:34	07:44 16:16	08:45 10:01-10:24/23 15:31 14:14-14:37/23
9	04:29 22:14	05:26 21:17	06:32 19:55	07:36 18:31	07:46 16:14	08:46 10:00-10:24/24 15:31 14:14-14:37/23
10	04:30 22:13	05:28 21:15	06:34 19:52	07:38 18:29	07:48 16:12	08:47 10:01-10:25/24 15:30 14:15-14:38/23
11	04:31 22:11	05:30 21:12	06:36 19:50	07:40 18:26	07:50 16:10	08:49 10:01-10:25/24 15:30 14:15-14:38/23
12	04:33 22:10	05:32 21:10	06:38 19:47	07:42 18:23	07:53 16:08	08:50 10:02-10:26/24 15:29 14:16-14:39/23
13	04:34 22:09	05:34 21:07	06:40 19:44	07:44 18:20	07:55 16:06	08:51 10:02-10:27/25 15:29 14:16-14:39/23
14	04:36 22:08	05:36 21:05	06:42 19:41	07:47 18:18	07:57 16:04	08:52 10:02-10:27/25 15:29 14:17-14:39/22
15	04:37 22:06	05:39 21:02	06:44 19:38	07:49 18:15	08:00 16:02	08:53 10:03-10:28/25 15:29 14:17-14:39/22
16	04:39 22:05	05:41 21:00	06:47 19:35	07:51 18:12	08:02 16:00	08:54 10:04-10:29/25 15:29 14:19-14:40/21
17	04:41 22:03	05:43 20:57	06:49 19:33	07:53 18:10	08:04 15:58	08:55 10:04-10:29/25 15:29 14:18-14:40/22
18	04:42 22:02	05:45 20:55	06:51 19:30	07:56 18:07	08:06 15:56	08:56 10:04-10:29/25 15:29 14:19-14:40/21
19	04:44 22:00	05:47 20:52	06:53 19:27	07:58 18:04	08:08 15:54	08:57 10:05-10:29/24 15:29 14:20-14:41/21
20	04:46 21:58	05:49 20:49	06:55 18:13-18:25/12 19:24	08:00 18:02	08:11 15:53	08:58 10:05-10:30/25 15:30 14:20-14:42/22
21	04:48 21:57	05:51 06:50-06:56/6 20:47	06:57 18:10-18:26/16 19:21	08:02 17:59	08:13 14:15-14:24/9 15:51	08:58 10:06-10:31/25 15:30 14:20-14:41/21
22	04:50 21:55	05:53 06:47-06:59/12 20:44	06:59 18:09-18:28/19 19:19	08:05 17:57	08:15 14:14-14:26/12 15:49	08:59 10:06-10:31/25 15:30 14:21-14:42/21
23	04:51 21:53	05:56 06:45-07:00/15 20:42	07:01 18:08-18:29/21 19:16	08:07 17:54	08:17 14:13-14:27/14 15:48	08:59 10:06-10:31/25 15:31 14:21-14:42/21
24	04:53 21:51	05:58 06:44-07:01/17 20:39	07:03 18:07-18:29/22 19:13	08:09 17:52	08:19 14:12-14:29/17 15:46	09:00 10:07-10:32/25 15:32 14:22-14:44/22
25	04:55 21:49	06:00 06:43-07:02/19 20:36	07:06 18:06-18:29/23 19:10	07:11 16:49	08:21 10:07-10:08/1 15:45 14:12-14:30/18	09:00 10:08-10:33/25 15:32 14:23-14:44/21
26	04:57 21:48	06:02 06:42-07:02/20 20:34	07:08 18:05-18:29/24 19:07	07:14 16:47	08:23 10:03-10:12/9 15:43 14:11-14:30/19	09:00 10:08-10:33/25 15:33 14:23-14:44/21
27	04:59 21:46	06:04 06:41-07:02/21 20:31	07:10 18:04-18:29/25 19:05	07:16 16:44	08:25 10:02-10:15/13 15:42 14:12-14:32/20	09:01 10:09-10:33/24 15:34 14:23-14:45/22
28	05:01 21:44	06:06 06:41-07:02/21 20:28	07:12 18:04-18:28/24 19:02	07:18 16:42	08:27 10:01-10:16/15 15:41 14:11-14:32/21	09:01 10:09-10:34/25 15:35 14:24-14:46/22
29	05:03 21:42	06:08 06:40-07:02/22 20:25	07:14 18:04-18:27/23 18:59	07:21 16:39	08:29 10:00-10:17/17 15:40 14:11-14:33/22	09:01 10:10-10:35/25 15:36 14:24-14:46/22
30	05:05 21:39	06:11 06:42-07:01/19 20:23	07:16 18:05-18:25/20 18:56	07:23 16:37	08:31 10:00-10:18/18 15:38 14:11-14:33/22	09:01 10:10-10:34/24 15:37 14:24-14:46/22
31	05:07 21:37	06:13 06:44-07:00/16 20:20		07:25 16:34		09:01 10:11-10:35/24 15:38 14:25-14:47/22
Potential sun hours	538	474	386	321	241	207
Sum of minutes with flicker	0	188	259	43	247	1431

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\_Vestas172

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Baiba / baiba.ozolina@environment.lv

Calculated:

15/01/2026 16:54/4.1.254

## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Vestas172 WTG: 4 - VESTAS V172-7.2 7200 172.0 !O! hub: 166.0 m (TOT: 252.0 m) (27)  
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	14:10-14:53/43	08:21	14:35-15:18/43	07:13	16:46-17:09/23	06:48	18:36-19:07/31	05:28	19:48-20:18/30	04:27	19:52-20:14/22
	15:39		16:40		17:46		19:55		21:01		22:02	
2	09:00	14:10-14:54/44	08:19	14:36-15:19/43	07:11	16:46-17:08/22	06:45	18:37-19:06/29	05:25	19:46-20:18/32	04:26	19:53-20:13/20
	15:41		16:42		17:48		19:57		21:03		22:04	
3	09:00	14:11-14:56/45	08:17	14:36-15:19/43	07:08	16:46-17:07/21	06:42	18:38-19:05/27	05:23	19:45-20:19/34	04:24	19:54-20:13/19
	15:42		16:45		17:50		19:59		21:06		22:05	
4	08:59	14:12-14:58/46	08:15	14:36-15:18/42	07:05	16:47-17:06/19	06:39	18:40-19:03/23	05:20	19:45-20:20/35	04:23	19:55-20:12/17
	15:43		16:47		17:53		20:02		21:08		22:07	
5	08:59	14:12-14:59/47	08:12	14:37-15:19/42	07:03	16:48-17:04/16	06:36	18:43-19:01/18	05:18	19:44-20:20/36	04:22	19:57-20:11/14
	15:45		16:49		17:55		20:04		21:10		22:08	
6	08:58	14:13-15:01/48	08:10	14:36-15:18/42	07:00	16:50-17:03/13	06:34	18:47-18:59/12	05:16	19:43-20:20/37	04:21	19:59-20:10/11
	15:46		16:52		17:57		20:06		21:12		22:09	
7	08:57	14:14-15:03/49	08:08	14:37-15:18/41	06:57	16:54-16:59/5	06:31		05:13	19:42-20:20/38	04:20	20:00-20:08/8
	15:48		16:54		17:59		20:08		21:14		22:11	
8	08:57	14:14-15:05/51	08:06	14:37-15:17/40	06:54		06:28		05:11	19:42-20:21/39	04:19	
	15:50		16:56		18:02		20:10		21:16		22:12	
9	08:56	14:15-15:07/52	08:03	14:39-15:17/38	06:52		06:25		05:09	19:42-20:21/39	04:19	
	15:51		16:59		18:04		20:13		21:19		22:13	
10	08:55	14:16-15:09/53	08:01	14:39-15:16/37	06:49		06:23		05:06	19:42-20:21/39	04:18	
	15:53		17:01		18:06		20:15		21:21		22:14	
11	08:54	14:17-15:11/54	07:59	14:40-15:16/36	06:46		06:20		05:04	19:41-20:21/40	04:17	
	15:55		17:04		18:08		20:17		21:23		22:15	
12	08:53	14:18-15:13/55	07:56	14:41-15:15/34	06:43		06:17		05:02	19:41-20:21/40	04:17	
	15:57		17:06		18:11		20:19		21:25		22:16	
13	08:52	14:19-15:15/56	07:54	14:43-15:14/31	06:41	17:43-17:44/1	06:15		05:00	19:41-20:21/40	04:16	
	15:59		17:08		18:13		20:21		21:27		22:17	
14	08:51	14:20-15:18/58	07:52	14:44-15:12/28	06:38	17:40-17:46/6	06:12		04:58	19:41-20:21/40	04:16	
	16:00		17:11		18:15		20:24		21:29		22:18	
15	08:49	14:22-15:20/58	07:49	14:45-15:10/25	06:35	17:37-17:48/11	06:09		04:56	19:42-20:22/40	04:15	
	16:02		17:13		18:17		20:26		21:31		22:18	
16	08:48	14:24-15:21/57	07:47	14:48-15:09/21	06:32	17:36-17:50/14	06:06		04:54	19:42-20:21/39	04:15	
	16:04		17:15		18:20		20:28		21:33		22:19	
17	08:47	14:28-15:21/53	07:44	14:52-15:05/13	06:30	17:36-17:53/17	06:04		04:52	19:42-20:21/39	04:15	
	16:06		17:18		18:22		20:30		21:35		22:20	
18	08:45	14:32-15:21/49	07:42		06:27	17:35-17:55/20	06:01		04:50	19:42-20:20/38	04:15	
	16:09		17:20		18:24		20:32		21:37		22:20	
19	08:44	14:35-15:21/46	07:39		06:24	17:34-17:57/23	05:58		04:48	19:43-20:21/38	04:15	
	16:11		17:22		18:26		20:35		21:39		22:20	
20	08:42	14:38-15:23/45	07:37		06:21	17:33-17:59/26	05:56	20:00-20:05/5	04:46	19:43-20:20/37	04:15	
	16:13		17:25		18:29		20:37		21:41		22:21	
21	08:41	14:37-15:23/46	07:34	16:53-16:55/2	06:18	17:33-18:01/28	05:53	19:57-20:07/10	04:44	19:43-20:19/36	04:15	
	16:15		17:27		18:31		20:39		21:43		22:21	
22	08:39	14:37-15:23/46	07:32	16:51-16:58/7	06:16	17:33-18:03/30	05:50	19:56-20:09/13	04:42	19:44-20:20/36	04:15	
	16:17		17:30		18:33		20:41		21:45		22:21	
23	08:38	14:37-15:23/46	07:29	16:49-17:01/12	06:13	17:34-18:06/32	05:48	19:54-20:11/17	04:40	19:44-20:19/35	04:15	
	16:19		17:32		18:35		20:43		21:47		22:21	
24	08:36	14:36-15:23/47	07:27	16:48-17:03/15	06:10	17:35-18:08/33	05:45	19:54-20:13/19	04:39	19:45-20:19/34	04:16	
	16:21		17:34		18:37		20:46		21:49		22:22	
25	08:34	14:36-15:22/46	07:24	16:48-17:06/18	06:07	17:36-18:09/33	05:43	19:54-20:16/22	04:37	19:47-20:19/32	04:16	
	16:24		17:36		18:40		20:48		21:51		22:22	
26	08:32	14:36-15:22/46	07:21	16:47-17:08/21	06:04	17:36-18:09/33	05:40	19:52-20:16/24	04:35	19:47-20:18/31	04:16	
	16:26		17:39		18:42		20:50		21:53		22:21	
27	08:31	14:35-15:21/46	07:19	16:46-17:09/23	06:02	17:35-18:09/34	05:38	19:52-20:16/24	04:34	19:48-20:17/29	04:17	
	16:28		17:41		18:44		20:52		21:54		22:21	
28	08:29	14:35-15:20/45	07:16	16:46-17:08/22	05:59	17:36-18:10/34	05:35	19:52-20:16/24	04:32	19:49-20:17/28	04:18	
	16:31		17:43		18:46		20:55		21:56		22:21	
29	08:27	14:35-15:19/44			06:56	18:35-19:09/34	05:33	19:50-20:16/26	04:31	19:49-20:16/27	04:18	
	16:33				19:48		20:57		21:58		22:21	
30	08:25	14:35-15:18/43			06:53	18:35-19:08/33	05:30	19:49-20:16/27	04:29	19:50-20:15/25	04:19	
	16:35				19:51		20:59		21:59		22:20	
31	08:23	14:36-15:18/42			06:50	18:35-19:08/33			04:28	19:51-20:15/24		
	16:38				19:53				22:01			
Potential sun hours	227		262		365		429		515		539	
Sum of minutes with flicker	1506		719		594		351		1087		111	

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\_Vestas172 WTG: 4 - VESTAS V172-7.2 7200 172.0 IO! hub: 166.0 m (TOT: 252.0 m) (27)  
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 19:52-20:31/39 21:35	06:15 20:17	07:18 18:53	07:27 14:08-14:46/38 16:32	08:33 13:59-14:53/54 15:37
2	04:21 22:19	05:11 19:52-20:31/39 21:33	06:17 20:14	07:20 18:50	07:30 14:08-14:47/39 16:30	08:35 13:59-14:52/53 15:36
3	04:22 22:19	05:13 19:52-20:31/39 21:31	06:19 20:12	07:23 18:48	07:32 14:07-14:47/40 16:27	08:36 13:58-14:50/52 15:35
4	04:23 22:18	05:15 19:52-20:31/39 21:28	06:21 20:09	07:25 18:45	07:34 14:07-14:48/41 16:25	08:38 13:59-14:49/50 15:34
5	04:24 20:08-20:13/5 22:17	05:17 19:52-20:31/39 21:26	06:23 20:06	07:27 18:42	07:37 14:06-14:48/42 16:23	08:40 13:59-14:48/49 15:33
6	04:25 20:06-20:16/10 22:16	05:19 19:53-20:31/38 21:24	06:25 18:43-18:55/12 20:03	07:29 18:39	07:39 14:06-14:48/42 16:20	08:41 13:59-14:47/48 15:33
7	04:26 20:04-20:17/13 22:16	05:21 19:53-20:30/37 21:22	06:27 18:39-18:57/18 20:01	07:31 17:27-17:37/10 18:37	07:41 14:06-14:49/43 16:18	08:43 13:59-14:47/48 15:32
8	04:27 20:03-20:18/15 22:15	05:24 19:54-20:29/35 21:19	06:30 18:35-18:58/23 19:58	07:33 17:24-17:39/15 18:34	07:44 14:06-14:49/43 16:16	08:44 14:00-14:46/46 15:31
9	04:29 20:02-20:20/18 22:14	05:26 19:54-20:29/35 21:17	06:32 18:33-18:59/26 19:55	07:36 17:23-17:40/17 18:31	07:46 14:06-14:49/43 16:14	08:46 14:00-14:44/44 15:31
10	04:30 20:01-20:20/19 22:12	05:28 19:55-20:28/33 21:14	06:34 18:31-18:59/28 19:52	07:38 17:21-17:41/20 18:28	07:48 14:06-14:49/43 16:12	08:47 14:00-14:44/44 15:30
11	04:31 20:00-20:21/21 22:11	05:30 19:56-20:27/31 21:12	06:36 18:29-19:00/31 19:49	07:40 17:20-17:41/21 18:26	07:50 14:07-14:49/42 16:10	08:49 14:00-14:43/43 15:30
12	04:33 20:00-20:23/23 22:10	05:32 19:57-20:26/29 21:10	06:38 18:28-19:00/32 19:47	07:42 17:19-17:41/22 18:23	07:53 14:06-14:49/43 16:08	08:50 14:01-14:43/42 15:29
13	04:34 19:59-20:24/25 22:09	05:34 19:57-20:23/26 21:07	06:40 18:27-19:00/33 19:44	07:44 17:19-17:42/23 18:20	07:55 14:07-14:51/44 16:06	08:51 14:01-14:42/41 15:29
14	04:36 19:58-20:24/26 22:07	05:36 19:58-20:23/25 21:05	06:42 18:26-19:00/34 19:41	07:47 17:18-17:41/23 18:18	07:57 14:08-14:53/45 16:04	08:52 14:01-14:42/41 15:29
15	04:37 19:58-20:25/27 22:06	05:38 19:59-20:23/24 21:02	06:44 18:25-18:59/34 19:38	07:49 17:18-17:41/23 18:15	07:59 14:08-14:53/45 16:02	08:53 14:02-14:41/39 15:29
16	04:39 19:57-20:26/29 22:05	05:41 19:59-20:23/24 21:00	06:46 18:25-18:59/34 19:35	07:51 17:19-17:39/20 18:12	08:02 14:09-14:55/46 16:00	08:54 14:02-14:41/39 15:29
17	04:41 19:57-20:27/30 22:03	05:43 19:59-20:22/23 20:57	06:49 18:24-18:58/34 19:33	07:53 17:19-17:36/17 18:10	08:04 14:09-14:55/46 15:58	08:55 14:03-14:41/38 15:29
18	04:42 19:56-20:27/31 22:02	05:45 19:59-20:21/22 20:55	06:51 18:24-18:57/33 19:30	07:55 17:20-17:34/14 18:07	08:06 14:10-14:57/47 15:56	08:56 14:03-14:41/38 15:29
19	04:44 19:56-20:28/32 22:00	05:47 20:00-20:19/19 20:52	06:53 18:22-18:56/34 19:27	07:58 17:21-17:31/10 18:04	08:08 14:11-14:57/46 15:54	08:57 14:04-14:42/38 15:29
20	04:46 19:55-20:29/34 21:58	05:49 20:00-20:16/16 20:49	06:55 18:20-18:53/33 19:24	08:00 17:22-17:28/6 18:02	08:10 14:12-14:58/46 15:53	08:58 14:05-14:42/37 15:30
21	04:48 19:54-20:29/35 21:57	05:51 20:01-20:14/13 20:47	06:57 18:19-18:50/31 19:21	08:02 17:25-17:26/1 17:59	08:13 14:12-14:58/46 15:51	08:58 14:04-14:42/38 15:30
22	04:49 19:54-20:30/36 21:55	05:53 20:02-20:11/9 20:44	06:59 18:18-18:47/29 19:18	08:04 17:57	08:15 14:14-14:59/45 15:49	08:59 14:05-14:43/38 15:30
23	04:51 19:53-20:30/37 21:53	05:56 20:04-20:09/5 20:41	07:01 18:18-18:45/27 19:16	08:07 17:54	08:17 14:12-14:58/46 15:48	08:59 14:06-14:43/37 15:31
24	04:53 19:53-20:30/37 21:51	05:58 20:39	07:03 18:18-18:42/24 19:13	08:09 17:52	08:19 14:09-14:58/49 15:46	09:00 14:06-14:44/38 15:31
25	04:55 19:53-20:31/38 21:49	06:00 20:36	07:05 18:17-18:39/22 19:10	07:11 14:21-14:36/15 16:49	08:21 14:06-14:59/53 15:45	09:00 14:07-14:45/38 15:32
26	04:57 19:53-20:32/39 21:47	06:02 20:33	07:08 18:17-18:36/19 19:07	07:14 14:17-14:39/22 16:46	08:23 14:03-14:59/56 15:43	09:00 14:07-14:46/39 15:33
27	04:59 19:52-20:31/39 21:45	06:04 20:31	07:10 18:17-18:33/16 19:04	07:16 14:15-14:41/26 16:44	08:25 14:01-14:59/58 15:42	09:01 14:08-14:47/39 15:34
28	05:01 19:52-20:32/40 21:43	06:06 20:28	07:12 18:18-18:30/12 19:02	07:18 14:13-14:42/29 16:42	08:27 14:01-14:58/57 15:41	09:01 14:08-14:48/40 15:35
29	05:03 19:52-20:32/40 21:41	06:08 20:25	07:14 18:19-18:27/8 18:59	07:20 14:12-14:44/32 16:39	08:29 14:00-14:56/56 15:39	09:01 14:08-14:48/40 15:36
30	05:05 19:52-20:32/40 21:39	06:10 20:23	07:16 18:21-18:25/4 18:56	07:23 14:10-14:44/34 16:37	08:31 13:59-14:55/56 15:38	09:01 14:09-14:50/41 15:37
31	05:07 19:52-20:32/40 21:37	06:13 20:20		07:25 14:10-14:46/36 16:34		09:00 14:10-14:51/41 15:38
Potential sun hours	538	474	386	321	241	207
Sum of minutes with flicker	779	639	631	436	1386	1313

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\_Vestas172

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Baiba / baiba.ozolina@environment.lv

Calculated:

15/01/2026 16:54/4.1.254

## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Vestas172 WTG: 5 - VESTAS V172-7.2 7200 172.0 IO! hub: 166.0 m (TOT: 252.0 m) (17)  
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 11:11-11:50/39	08:21 09:18-09:40/22	07:13	06:48 07:29-07:56/27	05:28 06:19-06:47/28	04:27 05:08-05:40/32
	15:39 12:41-13:24/43	16:40	17:46	19:55	21:01	22:03
2	09:00 11:13-11:51/38	08:19 09:18-09:39/21	07:11	06:45 07:29-07:54/25	05:25 06:20-06:46/26	04:26 05:09-05:40/31
	15:41 12:43-13:25/42	16:42	17:48	19:57	21:04	22:04
3	09:00 11:13-11:51/38	08:17 09:20-09:39/19	07:08	06:42 07:29-07:51/22	05:23 06:20-06:43/23	04:24 05:10-05:41/31
	15:42 12:43-13:25/42	16:45	17:50	19:59	21:06	22:06
4	08:59 11:14-11:51/37	08:15 09:20-09:37/17	07:05	06:39 07:31-07:48/17	05:20 06:21-06:42/21	04:23 05:10-05:40/30
	15:43 12:43-13:25/42	16:47	17:53	20:02	21:08	22:07
5	08:59 11:15-11:50/35	08:13 09:22-09:36/14	07:03	06:37 07:33-07:44/11	05:18 06:22-06:41/19	04:22 05:10-05:40/30
	15:45 12:43-13:25/42	16:49	17:55	20:04	21:10	22:08
6	08:58 11:16-11:50/34	08:10 09:25-09:34/9	07:00	06:34	05:16 06:24-06:39/15	04:21 05:10-05:40/30
	15:46 12:44-13:26/42	16:52	17:57	20:06	21:12	22:10
7	08:57 11:17-11:50/33	08:08	06:57	06:31	05:13 06:26-06:37/11	04:20 05:10-05:40/30
	15:48 12:44-13:26/42	16:54	18:00	20:08	21:14	22:11
8	08:57 11:18-11:50/32	08:06	06:55	06:28	05:11	04:20 05:11-05:40/29
	15:50 12:45-13:26/41	16:57	18:02	20:10	21:17	22:12
9	08:56 11:20-11:33/13 12:45-13:27/42	08:04	06:52	06:26	05:09	04:19 05:11-05:40/29
	15:51 11:34-11:49/15	16:59	18:04	20:13	21:19	22:13
10	08:55 11:22-11:32/10 12:46-13:28/42	08:01	06:49	06:23	05:07	04:18 05:12-05:40/28
	15:53 11:37-11:48/11	17:01	18:06	20:15	21:21	22:14
11	08:54 11:26-11:30/4 12:47-13:28/41	07:59	06:46	06:20	05:04	04:17 05:11-05:40/29
	15:55 11:40-11:47/7	17:04	18:09	20:17	21:23	22:15
12	08:53 12:47-13:28/41	07:57 08:27-08:32/5	06:44	06:17	05:02	04:17 05:12-05:40/28
	15:57	17:06	18:11	20:19	21:25	22:16
13	08:52 12:48-13:28/40	07:54 08:24-08:33/9	06:41	06:15	05:00	04:16 05:13-05:39/26
	15:59	17:08	18:13	20:22	21:27	22:17
14	08:51 12:48-13:28/40	07:52 08:21-08:34/13	06:38	06:12	04:58	04:16 05:12-05:39/27
	16:01	17:11	18:15	20:24	21:29	22:18
15	08:50 12:49-13:29/40	07:49 08:19-08:35/16	06:35	06:09 06:36-06:46/10	04:56 05:28-05:33/5	04:16 05:13-05:40/27
	16:03	17:13	18:18	20:26	21:31	22:19
16	08:48 12:50-13:28/38	07:47 08:16-08:35/19	06:32	06:07 06:33-06:47/14	04:54 05:26-05:34/8	04:15 05:13-05:40/27
	16:04 09:26-09:30/4	17:16	18:20	20:28	21:33	22:19
17	08:47 12:50-13:28/38	07:44 08:14-08:35/21	06:30	06:04 06:31-06:49/18	04:52 05:24-05:35/11	04:15 05:14-05:40/26
	16:07 09:24-09:32/8	17:18	18:22	20:30	21:36	22:20
18	08:46 12:52-13:29/37	07:42 08:14-08:36/22	06:27	06:01 06:28-06:50/22	04:50 05:23-05:37/14	04:15 05:14-05:40/26
	16:09 09:23-09:34/11	17:20	18:24	20:33	21:38	22:20
19	08:44 12:52-13:28/36	07:39 08:14-08:35/21	06:24 06:50-06:51/1	05:58 06:26-06:51/25	04:48 05:21-05:37/16	04:15 05:14-05:40/26
	16:11 09:21-09:35/14	17:23	18:26	20:35	21:40	22:21
20	08:43 12:53-13:28/35	07:37 08:14-08:34/20	06:21 06:47-06:56/9	05:56 06:23-06:51/28	04:46 05:19-05:37/18	04:15 05:14-05:40/26
	16:13 09:19-09:36/17	17:25	18:29	20:37	21:41	22:21
21	08:41 12:54-13:27/33	07:34 08:15-08:34/19	06:19 06:45-06:58/13	05:53 06:22-06:52/30	04:44 05:18-05:38/20	04:15 05:14-05:40/26
	16:15 09:17-09:37/20	17:27	18:31	20:39	21:43	22:21
22	08:39 12:55-13:27/32	07:32 08:15-08:33/18	06:16 06:42-06:59/17	05:51 06:20-06:51/31	04:42 05:16-05:38/22	04:15 05:14-05:40/26
	16:17 09:15-09:37/22	17:30	18:33	20:41	21:45	22:22
23	08:38 12:56-13:26/30	07:29 08:16-08:32/16	06:13 06:39-07:00/21	05:48 06:20-06:52/32	04:40 05:15-05:39/24	04:15 05:15-05:41/26
	16:19 09:15-09:38/23	17:32	18:35	20:44	21:47	22:22
24	08:36 12:58-13:25/27	07:27 08:19-08:30/11	06:10 06:36-07:00/24	05:45 06:19-06:51/32	04:39 05:13-05:39/26	04:16 05:15-05:41/26
	16:22 09:15-09:39/24	17:34	18:37	20:46	21:49	22:22
25	08:34 13:00-13:24/24	07:24 08:22-08:26/4	06:07 06:33-07:00/27	05:43 06:19-06:51/32	04:37 05:12-05:40/28	04:16 05:15-05:41/26
	16:24 09:15-09:39/24	17:37	18:40	20:48	21:51	22:22
26	08:33 13:02-13:23/21	07:21	06:05 06:31-07:01/30	05:40 06:18-06:50/32	04:35 05:11-05:39/28	04:17 05:15-05:42/27
	16:26 09:15-09:40/25	17:39	18:42	20:50	21:53	22:22
27	08:31 13:04-13:21/17	07:19	06:02 06:30-07:01/31	05:38 06:18-06:50/32	04:34 05:09-05:40/31	04:17 05:15-05:42/27
	16:28 09:16-09:40/24	17:41	18:44	20:53	21:54	22:21
28	08:29 13:09-13:18/9	07:16	05:59 06:29-07:00/31	05:35 06:18-06:50/32	04:32 05:09-05:40/31	04:18 05:16-05:43/27
	16:31 09:16-09:41/25	17:44	18:46	20:55	21:56	22:21
29	08:27 09:16-09:40/24		06:56 07:28-07:59/31	05:33 06:18-06:48/30	04:31 05:09-05:40/31	04:18 05:16-05:43/27
	16:33		19:48	20:57	21:58	22:21
30	08:25 09:16-09:40/24		06:53 07:28-07:58/30	05:30 06:18-06:48/30	04:29 05:09-05:41/32	04:19 05:15-05:43/28
	16:35		19:51	20:59	21:59	22:20
31	08:23 09:17-09:40/23		06:51 07:29-07:58/29		04:28 05:08-05:40/32	
	16:38		19:53		22:01	
Potential sun hours	227	262	365	429	515	539
Sum of minutes with flicker	1657	316	294	532	520	834

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\_Vestas172

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

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0037167242411

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Calculated:

15/01/2026 16:54/4.1.254

## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Vestas172 WTG: 5 - VESTAS V172-7.2 7200 172.0 !OI hub: 166.0 m (TOT: 252.0 m) (17)  
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 05:16-05:44/28	05:09	06:15	07:18	07:28	08:33 11:08-11:12/4 12:28-13:09/41
	22:20	21:35	20:17	18:53	16:32	15:37 11:22-11:28/6
2	04:21 05:16-05:44/28	05:11	06:17	07:21	07:30	08:35 11:06-11:15/9 12:29-13:11/42
	22:19	21:33	20:15	18:51	16:30	15:36 11:20-11:31/11
3	04:22 05:16-05:45/29	05:13	06:19	07:23	07:32	08:36 11:04-11:17/13 12:30-13:11/41
	22:19	21:31	20:12	18:48	16:27	15:35 11:19-11:33/14
4	04:23 05:16-05:45/29	05:15	06:21	07:25	07:34	08:38 11:03-11:35/32
	22:18	21:29	20:09	18:45	16:25	15:34 12:30-13:12/42
5	04:24 05:16-05:46/30	05:17 06:37-06:44/7	06:23	07:27	07:37 08:55-09:04/9	08:40 11:03-11:36/33
	22:17	21:26	20:06	18:42	16:23	15:33 12:29-13:11/42
6	04:25 05:16-05:46/30	05:19 06:34-06:47/13	06:25	07:29	07:39 08:52-09:06/14	08:42 11:02-11:36/34
	22:17	21:24	20:04	18:40	16:20	15:33 12:30-13:12/42
7	04:26 05:16-05:47/31	05:22 06:32-06:49/17	06:28 07:29-07:39/10	07:31	07:41 08:51-09:08/17	08:43 11:02-11:38/36
	22:16	21:22	20:01	18:37	16:18	15:32 12:30-13:12/42
8	04:27 05:16-05:47/31	05:24 06:31-06:50/19	06:30 07:26-07:41/15	07:34	07:44 08:50-09:10/20	08:45 11:02-11:39/37
	22:15	21:19	19:58	18:34	16:16	15:31 12:31-13:13/42
9	04:29 05:16-05:47/31	05:26 06:30-06:52/22	06:32 07:24-07:45/21	07:36	07:46 08:49-09:10/21	08:46 11:01-11:39/38
	22:14	21:17	19:55	18:31	16:14	15:31 12:31-13:13/42
10	04:30 05:16-05:47/31	05:28 06:29-06:53/24	06:34 07:22-07:47/25	07:38	07:48 08:49-09:11/22	08:47 11:02-11:40/38
	22:13	21:15	19:52	18:29	16:12	15:30 12:32-13:14/42
11	04:31 05:17-05:48/31	05:30 06:28-06:54/26	06:36 07:21-07:48/27	07:40	07:51 08:48-09:11/23	08:49 11:02-11:42/40
	22:12	21:12	19:50	18:26	16:10	15:30 12:32-13:14/42
12	04:33 05:17-05:48/31	05:32 06:27-06:56/29	06:38 07:20-07:49/29	07:42	07:53 08:48-09:12/24	08:50 11:02-11:42/40
	22:10	21:10	19:47	18:23	16:08	15:30 12:33-13:15/42
13	04:34 05:17-05:48/31	05:34 06:27-06:56/29	06:40 07:19-07:49/30	07:45	07:55 08:48-09:12/24	08:51 11:02-11:42/40
	22:09	21:07	19:44	18:20	16:06	15:29 12:33-13:15/42
14	04:36 05:17-05:49/32	05:36 06:26-06:57/31	06:42 07:19-07:49/30	07:47	07:57 12:40-12:50/10	08:52 11:03-11:43/40
	22:08	21:05	19:41	18:18	16:04 08:48-09:13/25	15:29 12:33-13:15/42
15	04:37 05:17-05:49/32	05:39 06:26-06:57/31	06:44 07:18-07:49/31	07:49	08:00 12:36-12:53/17	08:54 11:03-11:44/41
	22:06	21:02	19:38	18:15	16:02 08:49-09:13/24	15:29 12:34-13:16/42
16	04:39 05:18-05:49/31	05:41 06:26-06:58/32	06:47 07:18-07:49/31	07:51	08:02 12:35-12:56/21	08:55 11:03-11:45/42
	22:05	21:00	19:36	18:12	16:00 08:48-09:13/25	15:29 12:35-13:17/42
17	04:41 05:19-05:49/30	05:43 06:25-06:58/33	06:49 07:18-07:49/31	07:53 08:52-09:00/8	08:04 12:33-12:57/24	08:55 11:04-11:45/41
	22:03	20:57	19:33	18:10	15:58 08:49-09:13/24	15:29 12:35-13:17/42
18	04:42 05:21-05:50/29	05:45 06:25-06:58/33	06:51 07:20-07:48/28	07:56 08:49-09:02/13	08:06 12:32-12:59/27	08:56 11:04-11:46/42
	22:02	20:55	19:30	18:07	15:56 08:49-09:13/24	15:29 12:35-13:17/42
19	04:44 05:22-05:49/27	05:47 06:26-06:58/32	06:53 07:23-07:48/25	07:58 08:47-09:03/16	08:08 12:30-13:00/30	08:57 11:04-11:46/42
	22:00	20:52	19:27	18:04	15:54 08:50-09:13/23	15:29 12:36-13:17/41
20	04:46 05:24-05:49/25	05:49 06:26-06:57/31	06:55 07:25-07:47/22	08:00 08:46-09:05/19	08:11 12:30-13:02/32	08:58 11:05-11:47/42
	21:59	20:50	19:24	18:02	15:53 08:50-09:12/22	15:30 12:36-13:18/42
21	04:48 05:25-05:48/23	05:51 06:26-06:57/31	06:57 07:27-07:45/18	08:02 08:45-09:05/20	08:13 12:29-13:02/33	08:58 11:05-11:48/43
	21:57	20:47	19:21	17:59	15:51 08:53-09:13/20	15:30 12:37-13:19/42
22	04:50 05:27-05:49/22	05:54 06:27-06:56/29	06:59 07:29-07:44/15	08:05 08:45-09:06/21	08:15 12:29-13:04/35	08:59 11:05-11:47/42
	21:55	20:44	19:19	17:57	15:49 08:55-09:12/17	15:30 12:37-13:19/42
23	04:51 05:29-05:49/20	05:56 06:28-06:56/28	07:01 07:31-07:41/10	08:07 08:44-09:05/21	08:17 12:28-13:04/36	09:00 11:05-11:48/43
	21:53	20:42	19:16	17:54	15:48 08:57-09:11/14	15:31 12:37-13:19/42
24	04:53 05:30-05:47/17	05:58 06:30-06:55/25	07:03 07:33-07:37/4	08:09 08:43-09:05/22	08:19 12:29-13:06/37	09:00 11:07-11:49/42
	21:51	20:39	19:13	17:52	15:46 09:00-09:11/11	15:32 12:38-13:20/42
25	04:55 05:32-05:47/15	06:00 06:32-06:53/21	07:06	07:11 07:44-08:05/21	08:21 12:28-13:06/38	09:00 11:07-11:49/42
	21:50	20:36	19:10	16:49	15:45 09:02-09:10/8	15:32 12:39-13:21/42
26	04:57 05:34-05:47/13	06:02 06:34-06:52/18	07:08	07:14 07:46-08:04/18	08:23 12:28-13:06/38	09:01 11:08-11:49/41
	21:48	20:34	19:07	16:47	15:43 09:05-09:09/4	15:33 12:39-13:21/42
27	04:59 05:36-05:46/10	06:04 06:36-06:50/14	07:10	07:16 07:49-08:04/15	08:25 12:28-13:08/40	09:01 11:08-11:50/42
	21:46	20:31	19:05	16:44	15:42 09:07-09:08/1	15:34 12:40-13:22/42
28	05:01 05:37-05:44/7	06:06 06:38-06:47/9	07:12	07:18 07:51-08:03/12	08:27 12:28-13:08/40	09:01 11:09-11:50/41
	21:44	20:28	19:02	16:42	15:41	15:35 12:40-13:22/42
29	05:03 05:39-05:42/3	06:08	07:14	07:21 07:54-08:02/8	08:29 12:28-13:08/40	09:01 11:10-11:50/40
	21:42	20:26	18:59	16:39	15:40	15:36 12:41-13:23/42
30	05:05	06:11	07:16	07:23 07:56-08:00/4	08:31 12:28-13:09/41	09:01 11:10-11:50/40
	21:40	20:23	18:56	16:37	15:38	15:37 12:40-13:23/43
31	05:07	06:13		07:25		09:01 11:11-11:51/40
	21:37	20:20		16:34		15:38 12:41-13:23/42
Potential sun hours	538	474	386	321	241	207
Sum of minutes with flicker	727	584	402	218	955	2471

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\_Vestas172

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Baiba / baiba.ozolina@environment.lv

Calculated:

15/01/2026 16:54/4.1.254

## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Vestas172 WTG: 6 - VESTAS V172-7.2 7200 172.0 !O! hub: 166.0 m (TOT: 252.0 m) (15)  
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 13:46-14:10/24 15:40	08:21 08:54-09:23/29 16:40	07:14 08:08-08:46/38 17:46	06:48 07:59-08:39/40 19:55	05:28 06:07-06:31/24 21:01	04:27 05:46-06:31/45 22:03
2	09:00 13:47-14:10/23 15:41	08:19 08:51-09:23/32 16:42	07:11 08:08-08:44/36 17:48	06:45 07:59-08:38/39 19:57	05:25 06:06-06:33/27 21:04	04:26 05:46-06:30/44 22:04
3	09:00 13:47-14:10/23 15:42	08:17 08:49-09:23/34 16:45	07:08 08:09-08:42/33 17:50	06:42 08:00-08:36/36 19:59	05:23 06:04-06:33/29 21:06	04:25 05:47-06:31/44 22:06
4	08:59 13:48-14:10/22 15:44	08:15 08:46-09:23/37 16:47	07:05 08:10-08:39/29 17:53	06:39 08:01-08:35/34 20:02	05:20 06:03-06:34/31 21:08	04:23 05:48-06:30/42 22:07
5	08:59 13:48-14:10/22 15:45	08:13 08:44-09:23/39 16:49	07:03 08:11-08:32/21 17:55	06:37 08:02-08:34/32 20:04	05:18 05:56-06:35/39 21:10	04:22 05:48-06:29/41 22:08
6	08:58 13:49-14:11/22 15:47	08:10 08:42-09:23/41 16:52	07:00 08:13-08:30/17 17:57	06:34 08:02-08:31/29 20:06	05:16 05:53-06:36/43 21:12	04:21 05:48-06:28/40 22:10
7	08:57 13:50-14:11/21 15:48	08:08 08:39-09:22/43 16:54	06:57 08:15-08:26/11 18:00	06:31 08:04-08:29/25 20:08	05:13 05:51-06:36/45 21:14	04:20 05:48-06:27/39 22:11
8	08:57 13:51-14:11/20 15:50	08:06 08:38-09:21/43 16:57	06:55 18:02 18:02	06:28 08:06-08:27/21 20:11	05:11 05:50-06:37/47 21:17	04:20 05:50-06:27/37 22:12
9	08:56 13:52-14:11/19 15:51	08:04 08:37-09:19/42 16:59	06:52 18:04 18:04	06:26 08:09-08:23/14 20:17	05:09 05:48-06:37/49 21:19	04:19 05:50-06:26/36 22:13
10	08:55 13:53-14:11/18 15:53	08:01 08:38-09:18/40 17:01	06:49 18:06 18:06	06:23 20:15 20:15	05:07 05:46-06:37/51 21:21	04:18 06:17-06:25/8 22:14
11	08:54 13:54-14:11/17 15:55	07:59 08:38-09:11/33 17:04	06:46 18:09 18:09	06:20 20:17 20:17	05:04 05:47-06:38/51 21:23	04:17 06:18-06:23/5 22:15
12	08:53 13:55-14:10/15 15:57	07:57 08:31-09:10/39 17:06	06:44 07:25-07:31/6 18:11	06:17 20:19 20:19	05:02 05:46-06:38/52 21:25	04:17 05:52-06:16/24 22:16
13	08:52 13:57-14:10/13 15:59	07:54 08:28-09:08/40 17:08	06:41 07:19-07:36/17 18:13	06:15 20:22 20:22	05:00 05:45-06:38/53 21:27	04:16 05:52-06:16/24 22:17
14	08:51 13:59-14:08/9 16:01	07:52 08:25-09:06/41 17:11	06:38 07:16-07:38/22 18:15	06:12 20:24 20:24	04:58 05:44-06:38/54 21:29	04:16 05:52-06:15/23 22:18
15	08:50 14:03-14:06/3 16:03	07:49 08:24-09:03/39 17:13	06:35 07:14-07:41/27 18:18	06:09 20:26 20:26	04:56 05:44-06:37/53 21:31	04:16 05:53-06:15/22 22:19
16	08:48 16:05 16:05	07:47 08:19-08:59/40 17:16	06:33 07:12-07:42/30 18:20	06:07 20:28 20:28	04:54 05:43-06:37/54 21:33	04:15 05:53-06:16/23 22:19
17	08:47 16:07 16:07	07:44 08:16-08:54/38 17:18	06:30 07:10-07:43/33 18:22	06:04 20:30 20:30	04:52 05:43-06:37/54 21:36	04:15 05:54-06:16/22 22:20
18	08:46 16:09 16:09	07:42 08:14-08:51/37 17:20	06:27 07:08-07:44/36 18:24	06:01 20:33 20:33	04:50 05:43-06:37/54 21:38	04:15 05:54-06:16/22 22:20
19	08:44 16:11 16:11	07:39 08:12-08:50/38 17:23	06:24 07:06-07:44/38 18:26	05:59 20:35 20:35	04:48 05:43-06:37/54 21:40	04:15 05:54-06:16/22 22:21
20	08:43 16:13 16:13	07:37 08:11-08:50/39 17:25	06:21 07:04-07:44/40 18:29	05:56 20:37 20:37	04:46 05:43-06:36/53 21:41	04:15 05:54-06:16/22 22:21
21	08:41 16:15 16:15	07:34 08:10-08:51/41 17:27	06:19 07:04-07:45/41 18:31	05:53 20:39 20:39	04:44 05:43-06:37/54 21:43	04:15 05:55-06:16/21 22:21
22	08:39 16:17 16:17	07:32 08:09-08:50/41 17:30	06:16 07:03-07:45/42 18:33	05:51 20:41 20:41	04:42 05:43-06:36/53 21:45	04:15 05:55-06:16/21 22:22
23	08:38 16:19 16:19	07:29 08:08-08:50/42 17:32	06:13 07:02-07:45/43 18:35	05:48 20:44 20:44	04:41 05:43-06:36/53 21:47	04:15 05:55-06:17/22 22:22
24	08:36 16:22 16:22	07:27 08:09-08:50/41 17:34	06:10 07:01-07:45/44 18:37	05:45 20:46 20:46	04:39 05:43-06:35/52 21:49	04:16 05:55-06:17/22 22:22
25	08:34 16:24 16:24	07:24 08:08-08:50/42 17:37	06:07 07:00-07:44/44 18:40	05:43 20:48 20:48	04:37 05:44-06:35/51 21:51	04:16 05:55-06:17/22 22:22
26	08:33 16:26 16:26	07:21 08:08-08:49/41 17:39	06:05 07:00-07:45/45 18:42	05:40 20:50 20:50	04:36 05:44-06:34/50 21:53	04:17 05:55-06:18/23 22:22
27	08:31 16:28 16:28	07:19 08:07-08:48/41 17:41	06:02 07:00-07:44/44 18:44	05:38 20:53 20:53	04:34 05:44-06:34/50 21:54	04:17 05:55-06:18/23 22:21
28	08:29 16:31 16:31	07:16 08:08-08:47/39 17:44	05:59 06:59-07:43/44 18:46	05:35 20:55 20:55	04:32 05:44-06:34/50 21:56	04:18 05:55-06:18/23 22:21
29	08:27 16:33 16:33		06:56 07:59-08:42/43 19:48	05:33 20:57 20:57	04:31 05:45-06:33/48 21:58	04:18 05:56-06:19/23 22:21
30	08:25 16:35 16:35		06:53 07:58-08:41/43 19:51	05:30 20:59 20:59	04:30 05:46-06:33/47 21:59	04:19 05:55-06:19/24 22:20
31	08:23 16:38 16:38		06:51 07:59-08:40/41 19:53		04:28 05:45-06:32/47 22:01	
Potential sun hours	227	262	365	429	515	539
Sum of minutes with flicker	399	1092	908	316	1472	859

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\_Vestas172

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Baiba / baiba.ozolina@environment.lv

Calculated:

15/01/2026 16:54/4.1.254

## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Vestas172 WTG: 6 - VESTAS V172-7.2 7200 172.0 IO! hub: 166.0 m (TOT: 252.0 m) (15)  
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	05:55-06:20/25	05:09	05:56-06:48/52	06:15		07:18	08:01-08:13/12	07:28	08:07-08:48/41	08:33	13:36-13:52/16
	22:20		21:35		20:17		18:53		16:32		15:37	
2	04:21	06:22-06:28/6	05:11	05:57-06:48/51	06:17		07:21		07:30	08:07-08:49/42	08:35	13:36-13:54/18
	22:19	05:55-06:20/25	21:33		20:15		18:51		16:30		15:36	
3	04:22	05:55-06:30/35	05:13	05:57-06:47/50	06:19	08:07-08:21/14	07:23		07:32	08:08-08:51/43	08:36	13:36-13:55/19
	22:19		21:31		20:12		18:48		16:27		15:35	
4	04:23	05:55-06:32/37	05:15	05:58-06:46/48	06:21	08:03-08:24/21	07:25		07:34	08:09-08:51/42	08:38	13:36-13:56/20
	22:18		21:29		20:09		18:45		16:25		15:34	
5	04:24	05:55-06:33/38	05:17	05:59-06:46/47	06:23	08:01-08:26/25	07:27		07:37	08:12-08:53/41	08:40	13:35-13:56/21
	22:17		21:26		20:06		18:42		16:23		15:34	
6	04:25	05:55-06:34/39	05:20	06:01-06:46/45	06:26	07:59-08:28/29	07:29	08:54-09:00/6	07:39	08:14-08:53/39	08:42	13:35-13:57/22
	22:17		21:24		20:04		18:40		16:21		15:33	
7	04:26	05:55-06:35/40	05:22	06:03-06:45/42	06:28	07:57-08:29/32	07:31	08:49-09:04/15	07:41	08:17-08:53/36	08:43	13:35-13:58/23
	22:16		21:22		20:01		18:37		16:18		15:32	
8	04:27	05:54-06:36/42	05:24	06:07-06:44/37	06:30	07:55-08:30/35	07:34	08:48-09:07/19	07:44	08:20-08:54/34	08:45	13:36-13:59/23
	22:15		21:19		19:58		18:34		16:16		15:31	
9	04:29	05:54-06:37/43	05:26	06:13-06:43/30	06:32	07:54-08:30/36	07:36	08:45-09:10/25	07:46	08:22-08:54/32	08:46	13:35-13:59/24
	22:14		21:17		19:55		18:31		16:14		15:31	
10	04:30	05:54-06:38/44	05:28	06:13-06:42/29	06:34	07:53-08:31/38	07:38	08:44-09:14/30	07:48	08:25-08:54/29	08:47	13:36-14:00/24
	22:13		21:15		19:52		18:29		16:12		15:30	
11	04:31	05:54-06:39/45	05:30	06:15-06:41/26	06:36	07:52-08:31/39	07:40	08:43-09:16/33	07:51	08:27-08:53/26	08:49	13:36-14:00/24
	22:11		21:12		19:50		18:26		16:10		15:30	
12	04:33	05:54-06:40/46	05:32	06:16-06:39/23	06:38	07:51-08:31/40	07:42	08:42-09:19/37	07:53	08:30-08:54/24	08:50	13:37-14:01/24
	22:10		21:10		19:47		18:23		16:08		15:30	
13	04:34	05:53-06:40/47	05:34	06:18-06:38/20	06:40	07:50-08:32/42	07:45	08:41-09:19/38	07:55	08:32-08:53/21	08:51	13:37-14:01/24
	22:09		21:07		19:44		18:20		16:06		15:29	
14	04:36	05:54-06:42/48	05:36	06:20-06:35/15	06:42	07:49-08:32/43	07:47	08:40-09:20/40	07:57	08:35-08:53/18	08:52	13:37-14:01/24
	22:08		21:05		19:41		18:18		16:04		15:29	
15	04:38	05:53-06:42/49	05:39	06:24-06:30/6	06:44	07:49-08:32/43	07:49	08:40-09:21/41	08:00	08:38-08:53/15	08:54	13:38-14:03/25
	22:06		21:02		19:38		18:15		16:02		15:29	
16	04:39	05:54-06:43/49	05:41		06:47	07:48-08:32/44	07:51	08:40-09:21/41	08:02	08:40-08:51/11	08:55	13:38-14:03/25
	22:05		21:00		19:36		18:12		16:00		15:29	
17	04:41	05:53-06:43/50	05:43		06:49	07:48-08:32/44	07:53	08:40-09:22/42	08:04	08:43-08:51/8	08:55	13:39-14:04/25
	22:03		20:57		19:33		18:10		15:58		15:29	
18	04:42	05:54-06:45/51	05:45		06:51	07:47-08:32/45	07:56	08:40-09:22/42	08:06	08:45-08:49/4	08:56	13:38-14:03/25
	22:02		20:55		19:30		18:07		15:56		15:29	
19	04:44	05:53-06:45/52	05:47		06:53	07:48-08:32/44	07:58	08:40-09:21/41	08:08		08:57	13:39-14:04/25
	22:00		20:52		19:27		18:05		15:54		15:29	
20	04:46	05:53-06:46/53	05:49		06:55	07:48-08:32/44	08:00	08:41-09:22/41	08:11		08:58	13:40-14:05/25
	21:59		20:50		19:24		18:02		15:53		15:30	
21	04:48	05:53-06:46/52	05:51		06:57	07:48-08:31/43	08:02	08:41-09:21/40	08:13		08:58	13:41-14:06/25
	21:57		20:47		19:21		17:59		15:51		15:30	
22	04:50	05:53-06:46/53	05:54		06:59	07:49-08:30/41	08:05	08:42-09:21/39	08:15		08:59	13:41-14:06/25
	21:55		20:44		19:19		17:57		15:49		15:30	
23	04:51	05:54-06:47/53	05:56		07:01	07:49-08:29/40	08:07	08:43-09:20/37	08:17		09:00	13:41-14:06/25
	21:53		20:42		19:16		17:54		15:48		15:31	
24	04:53	05:53-06:47/54	05:58		07:04	07:49-08:28/39	08:09	08:44-09:22/38	08:19		09:00	13:42-14:07/25
	21:51		20:39		19:13		17:52		15:46		15:32	
25	04:55	05:53-06:47/54	06:00		07:06	07:50-08:27/37	07:11	07:47-08:25/38	08:21		09:00	13:42-14:07/25
	21:50		20:36		19:10		16:49		15:45		15:32	
26	04:57	05:54-06:48/54	06:02		07:08	07:51-08:25/34	07:14	07:50-08:30/40	08:23		09:01	13:43-14:08/25
	21:48		20:34		19:07		16:47		15:44		15:33	
27	04:59	05:54-06:48/54	06:04		07:10	07:53-08:24/31	07:16	07:54-08:33/39	08:25	13:42-13:44/2	09:01	13:43-14:08/25
	21:46		20:31		19:05		16:44		15:42		15:34	
28	05:01	05:54-06:47/53	06:06		07:12	07:55-08:23/28	07:18	07:55-08:36/41	08:27	13:39-13:48/9	09:01	13:44-14:08/24
	21:44		20:28		19:02		16:42		15:41		15:35	
29	05:03	05:54-06:48/54	06:09		07:14	07:56-08:20/24	07:21	07:58-08:38/40	08:29	13:37-13:50/13	09:01	13:44-14:09/25
	21:42		20:26		18:59		16:39		15:40		15:36	
30	05:05	05:55-06:48/53	06:11		07:16	07:58-08:17/19	07:23	08:01-08:39/38	08:31	13:36-13:51/15	09:01	13:44-14:09/25
	21:40		20:23		18:56		16:37		15:38		15:37	
31	05:07	05:56-06:48/52	06:13				07:25	08:07-08:43/36			09:01	13:45-14:10/25
	21:37		20:20				16:34				15:38	
Potential sun hours	538		474		386		321		241		207	
Sum of minutes with flicker	1450		521		994		929		545		730	

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\_Vestas172

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Baiba / baiba.ozolina@environment.lv

Calculated:

15/01/2026 16:54/4.1.254

## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Vestas172 WTG: 7 - VESTAS V172-7.2 7200 172.0 !OI hub: 166.0 m (TOT: 252.0 m) (26)  
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 09:24-10:03/39 16:40	07:14 09:36-11:07/91 17:46	06:48 10:37-11:39/62 19:55 07:52-09:01/69	05:28 21:01	04:27 22:03
2	09:00 09:43-10:07/24 15:41	08:19 09:24-10:04/40 16:42	07:11 09:35-11:07/92 17:48	06:45 10:38-11:36/58 19:57 07:52-08:57/65	05:25 21:04	04:26 22:04
3	09:00 09:42-10:07/25 15:42	08:17 09:25-10:04/39 16:45	07:08 09:34-11:07/93 17:51	06:42 10:39-11:32/53 07:51-08:35/44 19:59 08:38-08:53/15	05:23 21:06	04:25 22:06
4	08:59 09:41-10:08/27 15:44	08:15 09:24-10:04/40 16:47	07:05 09:33-11:07/94 17:53	06:39 10:42-11:29/47 20:02 07:52-08:35/43	05:21 21:08	04:23 22:07
5	08:59 09:40-10:08/28 15:45	08:13 09:25-10:04/39 16:49	07:03 09:33-11:08/95 17:55	06:37 10:45-11:24/39 20:04 07:52-08:34/42	05:18 21:10	04:22 22:08
6	08:58 09:39-10:09/30 15:47	08:10 09:25-10:05/40 16:52	07:00 09:32-11:08/96 17:57 07:48-08:02/14	06:34 10:48-11:18/30 20:06 07:52-08:33/41	05:16 21:12	04:21 22:10
7	08:57 09:38-10:10/32 15:48	08:08 10:14-10:30/16 16:54 09:25-10:04/39	06:57 09:32-11:08/96 18:00 07:44-08:06/22	06:31 10:54-11:10/16 20:08 07:52-08:32/40	05:13 21:14	04:21 22:11
8	08:57 09:38-10:11/33 15:50	08:06 10:09-10:36/27 16:57 09:26-10:04/38	06:55 09:31-11:08/97 18:02 07:41-08:08/27	06:28 07:53-08:31/38 20:11	05:11 21:17	04:20 22:12
9	08:56 09:38-10:11/33 15:52	08:04 10:05-10:39/34 16:59 09:26-10:04/38	06:52 09:30-11:07/97 18:04 07:38-08:09/31	06:26 07:53-08:30/37 20:13	05:09 21:19	04:19 22:13
10	08:55 09:38-10:12/34 15:53	08:01 09:27-10:43/76 17:01	06:49 09:31-11:08/97 18:06 07:37-08:12/35	06:23 07:54-08:28/34 20:15	05:07 21:21	04:18 22:14
11	08:54 09:38-10:13/35 15:55	07:59 09:28-10:45/77 17:04	06:46 09:30-11:07/97 18:09 07:36-08:13/37	06:20 07:55-08:27/32 20:17	05:04 21:23	04:18 22:15
12	08:53 09:38-10:13/35 15:57	07:57 09:28-10:47/79 17:06	06:44 09:30-11:07/97 18:11 07:34-08:13/39	06:17 07:56-08:24/28 20:19	05:02 21:25	04:17 22:16
13	08:52 09:38-10:14/36 15:59	07:54 09:30-10:50/80 17:08	06:41 09:29-11:06/97 18:13 07:33-08:14/41	06:15 07:58-08:21/23 20:22	05:00 21:27	04:16 22:17
14	08:51 09:38-10:14/36 16:01	07:52 09:31-10:52/81 17:11	06:38 09:29-11:06/97 18:15 07:31-08:14/43	06:12 08:01-08:19/18 20:24	04:58 21:29	04:16 22:18
15	08:50 09:38-10:15/37 16:03	07:49 09:34-10:54/80 17:13	06:35 09:30-11:06/96 18:18 07:31-08:15/44	06:09 08:04-08:14/10 20:26	04:56 21:31	04:16 22:18
16	08:48 09:38-10:15/37 16:05	07:47 09:36-10:55/79 17:16	06:33 09:29-11:05/96 18:20 07:30-08:15/45	06:07 20:28	04:54 21:33	04:15 22:19
17	08:47 09:38-10:15/37 16:07	07:44 09:39-10:56/77 17:18	06:30 09:29-11:04/95 18:22 07:29-08:15/46	06:04 20:30	04:52 21:36	04:15 22:20
18	08:46 09:35-10:16/41 16:09	07:42 09:47-10:58/71 17:20	06:27 09:29-11:03/94 07:13-07:25/12 18:24 07:29-08:15/46	06:01 20:33	04:50 21:38	04:15 22:20
19	08:44 09:32-10:16/44 16:11	07:39 09:45-10:59/74 17:23	06:24 09:29-11:02/93 18:26 07:08-08:15/67	05:59 20:35	04:48 21:40	04:15 22:21
20	08:43 09:31-10:16/45 16:13	07:37 09:44-11:00/76 17:25	06:21 09:29-11:01/92 18:29 07:05-08:14/69	05:56 20:37	04:46 21:41	04:15 22:21
21	08:41 09:29-10:16/47 16:15	07:34 09:43-11:02/79 17:27	06:19 09:30-11:00/90 18:31 07:03-08:15/72	05:53 20:39	04:44 21:43	04:15 22:21
22	08:39 09:28-10:16/48 16:17	07:32 09:42-11:02/80 17:30	06:16 09:30-10:59/89 18:33 07:01-08:14/73	05:51 20:41	04:42 21:45	04:15 22:21
23	08:38 09:27-10:16/49 16:19	07:29 09:40-11:03/83 17:32	06:13 09:30-10:57/87 18:35 06:59-08:13/74	05:48 20:44	04:41 21:47	04:15 22:22
24	08:36 09:27-10:15/48 16:22	07:27 09:40-11:04/84 17:34	06:10 09:30-10:56/86 18:38 06:58-08:12/74	05:45 20:46	04:39 21:49	04:16 22:22
25	08:34 09:26-10:15/49 16:24	07:24 09:39-11:05/86 17:37	06:07 09:30-10:54/84 18:40 06:56-08:11/75	05:43 20:48	04:37 21:51	04:16 22:22
26	08:33 09:26-10:14/48 16:26	07:21 09:38-11:05/87 17:39	06:05 09:31-10:52/81 18:42 06:56-08:11/75	05:40 20:50	04:36 21:53	04:17 22:22
27	08:31 09:26-10:13/47 16:28	07:19 09:37-11:06/89 17:41	06:02 09:32-10:51/79 18:44 06:55-08:10/75	05:38 20:53	04:34 21:54	04:17 22:21
28	08:29 09:25-10:12/47 16:31	07:16 09:36-11:07/91 17:44	05:59 09:32-10:49/77 18:46 06:54-08:08/74	05:35 20:55	04:32 21:56	04:18 22:21
29	08:27 09:24-10:08/44 16:33		06:56 10:33-11:46/73 19:49 07:53-09:06/73	05:33 20:57	04:31 21:58	04:18 22:21
30	08:25 09:24-10:03/39 16:35		06:53 10:34-11:44/70 19:51 07:52-09:04/72	05:30 20:59	04:30 21:59	04:19 22:20
31	08:23 09:25-10:03/38 16:38		06:51 10:36-11:42/66 19:53 07:53-09:03/70		04:28 22:01	
Potential sun hours	227	262	365	429	515	539
Sum of minutes with flicker	1175	1958	4209	884	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\_Vestas172

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Baiba / baiba.ozolina@environment.lv

Calculated:

15/01/2026 16:54/4.1.254

## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Vestas172 WTG: 7 - VESTAS V172-7.2 7200 172.0 !O! hub: 166.0 m (TOT: 252.0 m) (26)  
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 07:54-08:26/32 20:17	07:18 10:09-11:46/97 18:53 08:13-08:53/40	07:28 08:56-10:11/75 16:32	08:33 09:20-09:55/35 15:37
2	04:21 22:19	05:11 21:33	06:17 07:53-08:27/34 20:15	07:21 10:08-11:45/97 18:51 08:13-08:51/38	07:30 09:35-10:08/33 16:30 08:56-09:33/37	08:35 09:21-09:56/35 15:36
3	04:22 22:19	05:13 21:31	06:19 07:51-08:28/37 20:12	07:23 10:08-11:45/97 18:48 08:14-08:49/35	07:32 09:39-10:05/26 16:27 08:56-09:34/38	08:36 09:22-09:56/34 15:35
4	04:23 22:18	05:15 21:29	06:21 07:50-08:28/38 20:09	07:25 10:08-11:45/97 18:45 08:16-08:48/32	07:34 09:45-09:58/13 16:25 08:55-09:34/39	08:38 09:23-09:56/33 15:34
5	04:24 22:17	05:17 21:26	06:23 10:51-11:07/16 20:06 07:49-08:29/40	07:27 10:08-11:45/97 18:42 08:17-08:46/29	07:37 08:55-09:35/40 16:23	08:40 09:23-09:55/32 15:34
6	04:25 22:17	05:20 21:24	06:26 10:44-11:14/30 20:04 07:48-08:29/41	07:29 10:08-11:44/96 18:40 08:19-08:43/24	07:39 08:54-09:34/40 16:21	08:41 09:25-09:55/30 15:33
7	04:26 22:16	05:22 21:22	06:28 10:40-11:19/39 20:01 07:47-08:29/42	07:31 10:07-11:43/96 18:37 08:21-08:40/19	07:41 08:55-09:35/40 16:18	08:43 09:27-09:56/29 15:32
8	04:27 22:15	05:24 21:19	06:30 10:37-11:23/46 19:58 07:46-08:30/44	07:34 10:08-11:44/96 18:34 08:27-08:35/8	07:44 08:54-09:34/40 16:16	08:45 09:29-09:56/27 15:31
9	04:29 22:14	05:26 21:17	06:32 10:34-11:26/52 07:45-08:29/44 19:55 08:32-08:47/15	07:36 10:08-11:43/95 18:31	07:46 08:55-09:35/40 16:14	08:46 09:30-09:55/25 15:31
10	04:30 22:13	05:28 21:15	06:34 10:31-11:29/58 19:52 07:45-08:50/65	07:38 10:08-11:42/94 18:29	07:48 08:56-09:35/39 16:12	08:47 09:32-09:56/24 15:30
11	04:32 22:11	05:30 21:12	06:36 10:29-11:31/62 19:50 07:44-08:53/69	07:40 10:08-11:41/93 18:26	07:51 08:55-09:34/39 16:10	08:49 09:34-09:57/23 15:30
12	04:33 22:10	05:32 21:10	06:38 10:27-11:33/66 19:47 07:44-08:54/70	07:42 10:09-11:41/92 18:23	07:53 08:56-09:35/39 16:08	08:50 09:35-09:56/21 15:30
13	04:34 22:09	05:34 21:07	06:40 10:25-11:35/70 19:44 07:44-08:56/72	07:45 10:09-11:40/91 18:20	07:55 08:56-09:40/44 16:06	08:51 09:36-09:56/20 15:29
14	04:36 22:08	05:37 21:05	06:42 10:24-11:37/73 19:41 07:43-08:57/74	07:47 10:09-11:39/90 18:18	07:57 08:57-09:44/47 16:04	08:52 09:38-09:56/18 15:29
15	04:38 22:06	05:39 21:02	06:45 10:22-11:38/76 19:38 07:43-08:57/74	07:49 10:10-11:38/88 18:15	08:00 08:58-09:45/47 16:02	08:53 09:40-09:57/17 15:29
16	04:39 22:05	05:41 21:00	06:47 10:21-11:39/78 19:36 07:43-08:58/75	07:51 10:10-11:37/87 18:12	08:02 08:59-09:47/48 16:00	08:54 09:40-09:57/17 15:29
17	04:41 22:03	05:43 20:57	06:49 10:19-11:40/81 19:33 07:43-08:58/75	07:53 10:10-11:36/86 18:10	08:04 08:59-09:49/50 15:58	08:55 09:41-09:58/17 15:29
18	04:43 22:02	05:45 20:55	06:51 10:18-11:41/83 19:30 07:44-08:59/75	07:56 10:11-11:35/84 18:07	08:06 09:01-09:49/48 15:56	08:56 09:42-09:58/16 15:29
19	04:44 22:00	05:47 20:52	06:53 10:17-11:42/85 19:27 07:45-09:00/75	07:58 10:12-11:34/82 18:05	08:08 09:02-09:51/49 15:55	08:57 09:42-09:57/15 15:29
20	04:46 21:58	05:49 20:50	06:55 10:17-11:44/87 19:24 07:46-09:00/74	08:00 10:13-11:33/80 18:02	08:11 09:03-09:51/48 15:53	08:58 09:43-09:58/15 15:30
21	04:48 21:57	05:51 20:47	06:57 10:16-11:44/88 19:21 07:47-09:00/73	08:02 10:14-11:32/78 17:59	08:13 09:04-09:52/48 15:51	08:58 09:44-09:59/15 15:30
22	04:50 21:55	05:54 20:44	06:59 10:15-11:45/90 19:19 07:48-08:59/71	08:05 10:14-11:30/76 17:57	08:15 09:07-09:52/45 15:50	08:59 09:44-09:59/15 15:31
23	04:52 21:53	05:56 20:42	07:01 10:14-11:45/91 19:16 07:49-08:59/70	08:07 10:16-11:29/73 17:54	08:17 09:08-09:52/44 15:48	09:00 09:44-09:59/15 15:31
24	04:53 21:51	05:58 20:39	07:04 10:13-11:45/92 19:13 07:51-08:59/68	08:09 10:13-11:27/74 17:52	08:19 09:12-09:53/41 15:46	09:00 09:45-10:00/15 15:32
25	04:55 21:50	06:00 20:36	07:06 10:12-11:46/94 07:54-08:09/15 19:10 08:11-08:58/47	07:11 09:08-10:26/78 16:49	08:21 09:16-09:53/37 15:45	09:00 09:45-10:01/16 15:32
26	04:57 21:48	06:02 20:34	07:08 10:11-11:46/95 19:07 08:11-08:57/46	07:14 09:04-10:24/80 16:47	08:23 09:16-09:53/37 15:44	09:01 09:45-10:01/16 15:33
27	04:59 21:46	06:04 20:31	07:10 10:10-11:46/96 19:05 08:11-08:56/45	07:16 09:02-10:23/81 16:44	08:25 09:17-09:54/37 15:42	09:01 09:45-10:02/17 15:34
28	05:01 21:44	06:06 08:06-08:16/10 20:28	07:12 10:11-11:47/96 19:02 08:12-08:56/44	07:18 09:00-10:21/81 16:42	08:27 09:18-09:54/36 15:41	09:01 09:45-10:03/18 15:35
29	05:03 21:42	06:09 08:01-08:20/19 20:26	07:14 10:10-11:46/96 18:59 08:12-08:55/43	07:21 08:59-10:19/80 16:39	08:29 09:18-09:54/36 15:40	09:01 09:46-10:04/18 15:36
30	05:05 21:40	06:11 07:58-08:22/24 20:23	07:16 10:09-11:46/97 18:56 08:12-08:54/42	07:23 08:58-10:16/78 16:37	08:31 09:19-09:54/35 15:38	09:01 09:45-10:04/19 15:37
31	05:07 21:37	06:13 07:56-08:24/28 20:20		07:25 08:57-10:14/77 16:34		09:01 09:44-10:05/21 15:38
Potential sun hours	538	474	386	321	241	207
Sum of minutes with flicker	0	81	3666	2916	1355	668

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\_Vestas172

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Baiba / baiba.ozolina@environment.lv

Calculated:

15/01/2026 16:54/4.1.254

## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Vestas172 WTG: 8 - VESTAS V172-7.2 7200 172.0 IO! hub: 166.0 m (TOT: 252.0 m) (24)  
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 17:46	07:43-08:06/23 17:46	06:48 19:55	07:16-07:32/16 21:01
2	09:00 15:41	08:19 16:42	07:11 17:48	07:42-08:06/24 17:48	06:45 19:57	07:13-07:37/24 21:04
3	09:00 15:42	08:17 16:45	07:08 17:50	07:40-08:07/27 17:50	06:42 19:59	07:11-07:43/32 21:06
4	08:59 15:44	08:15 16:47	07:05 17:53	07:39-08:07/28 17:53	06:39 20:02	07:11-07:47/36 21:08
5	08:59 15:45	08:13 16:49	07:03 17:55	07:39-08:08/29 17:55	06:37 20:04	07:09-07:49/40 21:10
6	08:58 15:47	08:10 16:52	07:00 17:57	07:38-08:08/30 17:57	06:34 20:06	07:02-07:50/48 21:12
7	08:57 15:48	08:08 16:54	06:57 18:00	07:38-08:07/29 18:00	06:31 20:08	06:58-07:51/53 21:14
8	08:57 15:50	08:06 16:57	06:55 18:02	07:37-08:07/30 18:02	06:28 20:10	06:56-07:53/57 21:17
9	08:56 15:51	08:04 16:59	06:52 18:04	07:37-08:06/29 18:04	06:26 20:13	06:54-07:53/59 21:19
10	08:55 15:53	08:01 17:01	06:49 18:06	07:38-08:06/28 18:06	06:23 20:15	06:52-07:54/62 21:21
11	08:54 15:55	07:59 17:04	06:46 18:09	07:38-08:05/27 18:09	06:20 20:17	06:52-07:55/63 21:23
12	08:53 15:57	07:57 17:06	06:44 18:11	07:38-08:03/25 18:11	06:17 20:19	06:50-07:55/65 21:25
13	08:52 15:59	07:54 17:08	06:41 18:13	07:39-08:02/23 18:13	06:15 20:22	06:49-07:55/66 21:27
14	08:51 16:01	07:52 17:11	06:38 18:15	07:40-08:00/20 18:15	06:12 20:24	06:50-07:56/66 21:29
15	08:50 16:03	07:49 17:13	06:35 18:18	07:42-07:59/17 18:18	06:09 20:26	06:49-07:55/66 21:31
16	08:48 16:05	07:47 17:16	06:32 18:20	07:44-07:55/11 18:20	06:07 20:28	06:48-07:55/67 21:33
17	08:47 16:07	07:44 17:18	06:30 18:22	07:44-07:55/11 18:22	06:04 20:30	06:49-07:55/66 21:35
18	08:46 16:09	07:42 17:20	06:27 18:24	07:44-07:55/11 18:24	06:01 20:33	06:49-07:54/65 21:37
19	08:44 16:11	07:39 17:23	06:24 18:26	07:44-07:55/11 18:26	05:59 20:35	06:49-07:55/66 21:39
20	08:43 16:13	07:37 17:25	06:21 18:29	07:44-07:55/11 18:29	05:56 20:37	06:49-07:54/65 21:41
21	08:41 16:15	07:34 17:27	06:19 18:31	07:44-07:55/11 18:31	05:53 20:39	06:51-07:54/63 21:43
22	08:39 16:17	07:32 17:30	06:16 18:33	07:44-07:55/11 18:33	05:51 20:41	06:51-07:53/62 21:45
23	08:38 16:19	07:29 17:32	06:13 18:35	07:44-07:55/11 18:35	05:48 20:44	06:53-07:53/60 21:47
24	08:36 16:22	07:27 17:34	06:10 18:37	07:44-07:55/11 18:37	05:45 20:46	07:06-07:51/45 21:49
25	08:34 16:24	07:24 17:37	06:07 18:40	07:44-07:55/11 18:40	05:43 20:48	07:07-07:51/44 21:51
26	08:33 16:26	07:21 17:39	06:05 18:42	07:44-07:55/11 18:42	05:40 20:50	07:06-07:50/44 21:53
27	08:31 16:28	07:19 17:41	06:02 18:44	07:44-07:55/11 18:44	05:38 20:52	07:07-07:49/42 21:54
28	08:29 16:31	07:16 17:44	05:59 18:46	07:44-07:55/11 18:46	05:35 20:55	07:08-07:48/40 21:56
29	08:27 16:33		06:56 19:48	07:44-07:55/11 19:48	05:33 20:57	07:08-07:47/39 21:58
30	08:25 16:35		06:53 19:51	07:44-07:55/11 19:51	05:30 20:59	07:10-07:46/36 21:59
31	08:23 16:38		06:51 19:53	07:19-07:30/11 19:53		04:28 22:01
Potential sun hours	227	262	365	429	515	539
Sum of minutes with flicker	0	443	411	1567	145	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\_Vestas172

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Baiba / baiba.ozolina@environment.lv

Calculated:

15/01/2026 16:54/4.1.254

## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Vestas172 WTG: 8 - VESTAS V172-7.2 7200 172.0 !O! hub: 166.0 m (TOT: 252.0 m) (24)  
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	07:28 16:32	08:33 15:37
2	04:21 22:19	05:11 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 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 21:29	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 15:34
6	04:25 22:17	05:20 21:24	06:25 20:04	07:29 18:40	07:39 16:21	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	07:34 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	07:51 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 15:30
13	04:34 22:09	05:34 21:07	06:40 19:44	07:45 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	04:38 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 19:36	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 18:05	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	05:54 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 21:50	06:00 20:36	07:06 19:10	07:11 16:49	07:48-08:19/31 15:45	09:00 15:32
26	04:57 21:48	06:02 20:34	07:08 19:07	07:14 16:47	07:48-08:19/31 15:44	09:00 15:33
27	04:59 21:46	06:04 20:31	07:10 19:05	07:16 16:44	07:49-08:19/30 15:42	09:01 15:34
28	05:01 21:44	06:06 20:28	07:12 19:02	07:18 16:42	07:51-08:19/28 15:41	09:01 15:35
29	05:03 21:42	06:08 20:26	07:14 18:59	07:21 16:39	07:54-08:19/25 15:40	09:01 15:36
30	05:05 21:40	06:11 20:23	07:16 18:56	07:23 16:37	07:56-08:18/22 15:38	09:01 15:37
31	05:07 21:37	06:13 20:20		07:25 16:34	07:59-08:18/19 15:38	09:01 15:38
Potential sun hours	538	474	386	321	241	207
Sum of minutes with flicker	0	1229	568	759	34	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

## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Vestas172 WTG: 9 - VESTAS V172-7.2 7200 172.0 !O! hub: 166.0 m (TOT: 252.0 m) (16)  
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 11:55-12:17/22 15:39	08:21 16:40 08:19 17:46	07:13 17:46 07:11 17:46	06:48 07:18-07:45/27 19:55	05:28 06:10-06:30/20 21:01	04:27 05:51-06:11/20 22:03
2	09:00 11:57-12:17/20 15:41	08:17 16:42 08:17 17:48	07:08 17:48 07:08 17:48	06:45 07:18-07:44/26 19:57	05:25 05:55-06:07/12 21:04	04:26 05:52-06:10/18 22:04
3	09:00 11:57-12:17/20 15:42	08:17 16:45 08:17 17:50	07:08 17:50 07:08 17:50	06:42 07:17-07:43/26 19:59	05:23 05:52-06:09/17 21:06	04:24 05:53-06:10/17 22:06
4	08:59 11:58-12:17/19 15:43	08:15 16:47 08:13 17:53	07:05 07:33-07:34/1 17:53	06:39 07:18-07:43/25 20:02	05:20 05:51-06:11/20 21:08	04:23 05:55-06:10/15 22:07
5	08:59 11:59-12:16/17 15:45	08:13 16:49 08:13 17:55	07:03 07:30-07:36/6 17:55	06:37 07:18-07:42/24 20:04	05:18 05:49-06:26/37 21:10	04:22 05:56-06:09/13 22:08
6	08:58 12:00-12:16/16 15:46	08:10 16:52 08:10 17:57	07:00 07:27-07:37/10 17:57	06:34 07:18-07:40/22 20:06	05:16 05:48-06:14/26 21:12	04:21 05:57-06:07/10 22:10
7	08:57 12:02-12:15/13 15:48	08:08 16:54 08:08 18:00	06:57 07:24-07:38/14 18:00	06:31 07:19-07:37/18 20:08	05:13 05:48-06:15/27 21:14	04:20 05:59-06:05/6 22:11
8	08:57 12:04-12:14/10 15:50	08:06 16:57 08:06 18:02	06:55 07:21-07:38/17 18:02	06:28 07:21-07:36/15 20:10	05:11 05:47-06:15/28 21:17	04:20 22:12
9	08:56 12:07-12:12/5 15:51	08:04 16:59 08:04 18:04	06:52 07:18-07:38/20 18:04	06:26 07:22-07:33/11 20:13	05:09 05:45-06:15/30 21:19	04:19 22:13
10	08:55 15:53 08:54 15:55	08:01 17:01 07:59 18:06	06:49 07:18-07:39/21 18:06	06:23 20:15 06:20 20:15	05:07 05:45-06:15/30 21:21	04:18 22:14
11	08:54 15:55 08:53 15:57	07:59 17:04 07:57 18:09	06:46 07:17-07:39/22 18:09	06:20 20:17 06:17 20:17	05:04 05:44-06:16/32 21:23	04:17 22:15
12	08:53 15:57 08:52 15:59	07:57 17:06 07:52 18:13	06:44 07:17-07:38/21 18:11	06:17 20:19 06:15 20:21	05:02 05:45-06:17/32 21:25	04:17 22:16
13	08:52 15:59 08:51 16:01	07:54 17:08 07:52 18:13	06:41 07:17-07:37/20 18:13	06:15 20:21 06:12 20:24	05:00 05:45-06:17/32 21:27	04:16 22:17
14	08:51 16:03 08:50 16:03	07:52 17:11 07:49 18:15	06:38 07:18-07:36/18 18:15	06:12 20:24 06:09 20:26	05:48 05:44-06:17/33 21:29	04:16 22:18
15	08:50 16:03 08:48 16:05	07:49 17:13 07:47 18:18	06:35 07:20-07:35/15 18:18	06:09 20:26 06:06 20:28	05:44 05:44-06:17/33 21:31	04:16 22:18
16	08:48 16:05 08:47 16:07	07:47 17:16 07:44 18:20	06:32 07:21-07:32/11 18:20	06:06 20:28 06:04 20:30	05:44 05:44-06:17/33 21:33	04:15 22:19
17	08:46 16:09 08:44 16:11	07:42 17:20 07:39 18:24	06:27 18:24 06:24 18:26	06:01 20:33 05:58 20:35	05:45 05:45-06:17/32 21:38	04:15 22:20
18	08:43 16:13 08:41 16:15	07:37 17:25 07:34 18:31	06:21 18:29 06:18 18:31	05:56 06:23-06:26/3 20:37	05:44 05:44-06:16/32 21:41	04:15 22:21
19	08:41 16:15 08:39 16:17	07:34 17:27 07:32 18:33	06:18 18:31 06:16 18:33	05:53 06:21-06:29/8 20:39	05:44 05:45-06:17/32 21:43	04:15 22:21
20	08:39 16:17 08:38 16:19	07:32 17:30 07:29 18:33	06:16 18:33 06:13 18:35	05:51 06:18-06:30/12 20:41	05:45 05:45-06:16/31 21:45	04:15 22:21
21	08:38 16:19 08:36 16:22	07:29 17:32 07:27 18:37	06:13 18:35 06:10 18:37	05:48 06:16-06:31/15 20:44	05:46 05:46-06:16/30 21:47	04:15 22:22
22	08:36 16:22 08:34 16:24	07:27 17:34 07:24 18:40	06:36-06:39/3 18:37	05:45 06:13-06:31/18 20:46	05:46 05:46-06:15/29 21:49	04:16 22:22
23	08:34 16:24 08:33 16:26	07:24 17:37 07:21 18:42	06:33-06:42/9 18:40	05:43 06:11-06:32/21 20:48	05:47 05:47-06:15/28 21:51	04:16 22:22
24	08:33 16:26 08:31 16:28	07:21 17:39 07:19 18:44	06:05 06:31-06:44/13 18:42	05:40 06:09-06:31/22 20:50	05:47 05:47-06:14/27 21:53	04:17 22:22
25	08:31 16:28 08:29 16:31	07:19 17:41 07:16 18:44	06:02 06:28-06:45/17 18:44	05:38 06:09-06:32/23 20:52	05:48 05:48-06:14/26 21:54	04:17 22:21
26	08:29 16:31 08:27 16:33	07:16 17:44 07:16 18:46	06:25-06:45/20 18:46	05:35 06:09-06:32/23 20:55	05:49 05:49-06:14/25 21:56	04:18 22:21
27	08:27 16:33 08:25 16:35	07:14 07:14	06:56 07:22-07:45/23 19:48	05:33 06:09-06:31/22 20:57	05:49 05:49-06:14/25 21:58	04:18 22:21
28	08:25 16:35 08:23 16:38	07:14 07:14	06:53 07:19-07:45/26 19:51	05:30 06:09-06:31/22 20:59	05:50 05:50-06:13/23 21:59	04:19 22:20
29	08:23 16:38 08:23 16:38	07:14 07:14	06:51 07:19-07:46/27 19:53	05:30 06:09-06:31/22 20:59	05:50 05:50-06:12/22 22:01	04:19 22:20
Potential sun hours	227	262	365	429	515	539
Sum of minutes with flicker	142	0	337	383	932	99

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\_Vestas172

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Baiba / baiba.ozolina@environment.lv

Calculated:

15/01/2026 16:54/4.1.254

## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Vestas172 WTG: 9 - VESTAS V172-7.2 7200 172.0 !OI hub: 166.0 m (TOT: 252.0 m) (16)  
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 05:55-06:27/32 21:35	06:15 20:17	07:18 07:57-08:17/20 18:53	07:28 16:32	08:33 15:37
2	04:21 22:19	05:11 05:56-06:27/31 21:33	06:17 20:15	07:21 07:56-08:17/21 18:51	07:30 16:30	08:35 15:36
3	04:22 22:19	05:13 05:55-06:26/31 21:31	06:19 07:20-07:31/11 20:12	07:23 07:55-08:16/21 18:48	07:32 16:27	08:36 11:52-11:56/4 15:35
4	04:23 22:18	05:15 05:56-06:25/29 21:29	06:21 07:18-07:33/15 20:09	07:25 07:56-08:17/21 18:45	07:34 16:25	08:38 11:49-11:59/10 15:34
5	04:24 06:06-06:11/5 22:17	05:17 05:56-06:24/28 21:26	06:23 07:16-07:34/18 20:06	07:27 07:57-08:16/19 18:42	07:37 16:23	08:40 11:47-12:00/13 15:33
6	04:25 06:04-06:13/9 22:17	05:19 05:57-06:24/27 21:24	06:25 07:14-07:36/22 20:04	07:29 07:59-08:15/16 18:40	07:39 16:20	08:41 11:47-12:02/15 15:33
7	04:26 06:03-06:14/11 22:16	05:22 05:58-06:23/25 21:22	06:28 07:13-07:37/24 20:01	07:31 08:01-08:13/12 18:37	07:41 16:18	08:43 11:46-12:03/17 15:32
8	04:27 06:02-06:16/14 22:15	05:24 05:59-06:36/37 21:19	06:30 07:12-07:37/25 19:58	07:34 08:04-08:12/8 18:34	07:44 16:16	08:45 11:46-12:05/19 15:31
9	04:29 06:01-06:17/16 22:14	05:26 06:01-06:20/19 21:17	06:32 07:12-07:38/26 19:55	07:36 08:06-08:10/4 18:31	07:46 16:14	08:46 11:46-12:05/19 15:31
10	04:30 06:00-06:18/18 22:13	05:28 06:02-06:18/16 21:15	06:34 07:11-07:38/27 19:52	07:38 18:29	07:48 16:12	08:47 11:46-12:06/20 15:30
11	04:31 06:00-06:19/19 22:11	05:30 06:05-06:15/10 21:12	06:36 07:11-07:38/27 19:50	07:40 18:26	07:51 16:10	08:49 11:45-12:07/22 15:30
12	04:33 05:59-06:20/21 22:10	05:32 06:18-06:39/21 21:10	06:38 07:10-07:37/27 19:47	07:42 18:23	07:53 16:08	08:50 11:46-12:08/22 15:30
13	04:34 05:58-06:20/22 22:09	05:34 06:17-06:39/22 21:07	06:40 07:10-07:37/27 19:44	07:45 18:20	07:55 16:06	08:51 11:46-12:09/23 15:29
14	04:36 05:58-06:22/24 22:08	05:36 06:17-06:39/22 21:05	06:42 07:12-07:36/24 19:41	07:47 18:18	07:57 16:04	08:52 10:52-10:53/1 15:29
15	04:37 05:58-06:22/24 22:06	05:39 06:17-06:39/22 21:02	06:44 07:14-07:35/21 19:38	07:49 18:15	08:00 16:02	08:53 10:50-10:55/5 15:29
16	04:39 05:58-06:23/25 22:05	05:41 06:17-06:39/22 21:00	06:47 07:16-07:34/18 19:36	07:51 18:12	08:02 16:00	08:54 10:50-10:57/7 15:29
17	04:41 05:57-06:24/27 22:03	05:43 06:17-06:39/22 20:57	06:49 07:18-07:32/14 19:33	07:53 18:10	08:04 15:58	08:55 10:50-10:58/8 11:47-12:12/25 15:29
18	04:42 05:57-06:25/28 22:02	05:45 06:18-06:38/20 20:55	06:51 07:20-07:30/10 19:30	07:56 18:07	08:06 15:56	08:56 10:50-10:59/9 11:47-12:12/25 15:29
19	04:44 05:56-06:25/29 22:00	05:47 06:20-06:37/17 20:52	06:53 07:23-07:28/5 19:27	07:58 18:04	08:08 15:54	08:57 10:49-10:59/10 11:47-12:12/25 15:29
20	04:46 05:56-06:26/30 21:58	05:49 06:22-06:36/14 20:49	06:55 19:24	08:00 18:02	08:11 15:53	08:58 10:50-11:00/10 11:48-12:13/25 15:30
21	04:48 05:55-06:25/30 21:57	05:51 06:24-06:35/11 20:47	06:57 19:21	08:02 17:59	08:13 15:51	08:58 10:51-11:01/10 11:49-12:14/25 15:30
22	04:50 05:55-06:26/31 21:55	05:54 06:26-06:33/7 20:44	06:59 19:19	08:05 17:57	08:15 15:49	08:59 10:51-11:01/10 11:49-12:14/25 15:30
23	04:51 05:55-06:27/32 21:53	05:56 06:28-06:31/3 20:42	07:01 19:16	08:07 17:54	08:17 15:48	08:59 10:51-11:01/10 11:49-12:14/25 15:31
24	04:53 05:54-06:26/32 21:51	05:58 20:39	07:03 19:13	08:09 17:52	08:19 15:46	09:00 10:52-11:02/10 11:50-12:15/25 15:32
25	04:55 05:55-06:27/32 21:50	06:00 20:36	07:06 19:10	07:11 16:49	08:21 15:45	09:00 10:53-11:02/9 11:51-12:15/24 15:32
26	04:57 05:55-06:27/32 21:48	06:02 20:34	07:08 19:07	07:14 16:47	08:23 15:43	09:01 10:54-11:02/8 11:51-12:16/25 15:33
27	04:59 05:55-06:28/33 21:46	06:04 20:31	07:10 08:03-08:12/9 19:05	07:16 16:44	08:25 15:42	09:01 10:54-11:02/8 11:52-12:16/24 15:34
28	05:01 05:54-06:27/33 21:44	06:06 20:28	07:12 08:01-08:15/14 19:02	07:18 16:42	08:27 15:41	09:01 10:56-11:01/5 15:35
29	05:03 05:54-06:27/33 21:42	06:08 20:26	07:14 07:59-08:16/17 18:59	07:21 16:39	08:29 15:40	09:01 10:58-11:01/3 15:36
30	05:05 05:55-06:27/32 21:40	06:11 20:23	07:16 07:58-08:17/19 18:56	07:23 16:37	08:31 15:38	09:01 11:53-12:16/23 15:37
31	05:07 05:55-06:27/32 21:37	06:13 20:20		07:25 16:34		09:01 11:55-12:17/22 15:38
Potential sun hours	538	474	386	321	241	207
Sum of minutes with flicker	674	553	400	142	0	805

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\_Vestas172

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Baiba / baiba.ozolina@environment.lv

Calculated:

15/01/2026 16:54/4.1.254

## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Vestas172 WTG: 10 - VESTAS V172-7.2 7200 172.0 !O! hub: 166.0 m (TOT: 252.0 m) (18)  
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 22:03	04:20 22:20	05:09 21:35	06:15 20:17	07:18 18:53	07:48-08:00/12 16:32	07:27 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	07:50-07:57/7 16:30	07:30 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	08:00 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	07:52-08:02/10 18:10	08:04 15:58	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	07:49-08:04/15 18:07	08:06 15:56	08:56 15:29
19	08:44 16:11	07:39 17:23	06:24 18:26	05:58 20:35	04:48 21:39	04:15 22:21	04:44 22:00	05:47 20:52	06:53 19:27	07:47-08:06/19 18:04	08:08 15:54	08:57 15:29
20	08:43 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	07:46-08:07/21 18:02	08:11 15:53	08:58 15:30
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	07:45-08:08/23 17:59	08:13 15:51	08:58 15:30
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	05:54 20:44	06:59 19:19	07:44-08:08/24 17:57	08:15 15:49	08:59 15:30
23	08:38 16:19	07:29 17:32	06:13 18:35	05:48 20:44	04:41 21:47	04:15 22:22	04:51 21:53	05:56 20:42	07:01 19:16	07:43-08:08/25 17:54	08:17 15:48	08:59 15:31
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	07:42-08:08/26 17:52	08:19 15:46	09:00 15:32
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	07:42-08:07/25 17:11	08:21 15:45	09:00 15:32
26	08:33 16:26	07:21 17:39	06:04 18:42	05:40 20:50	04:35 21:53	04:17 22:21	04:57 21:48	06:02 20:34	07:08 19:07	07:42-08:06/24 17:14	08:23 15:43	09:00 15:33
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 21:46	06:04 20:31	07:10 19:05	07:41-08:06/25 17:16	08:25 15:42	09:01 15:34
28	08:29 16:31	07:16 17:44	05:59 18:46	05:35 20:55	04:32 21:56	04:18 22:21	05:01 21:44	06:06 20:28	07:12 19:02	07:43-08:05/22 17:18	08:27 15:41	09:01 15:35
29	08:27 16:33		06:56 19:48	05:33 20:57	04:31 21:58	04:18 22:21	05:03 21:42	06:08 20:25	07:14 18:59	07:44-08:04/20 17:21	08:29 15:40	09:01 15:36
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	07:46-08:02/16 17:23	08:31 15:38	09:01 15:37
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		09:01 15:38
Potential sun hours	227	262	365	429	515	539	538	474	386	321	241	207
Sum of minutes with flicker	0	0	307	0	0	0	0	0	295	19	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\_Vestas172

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Baiba / baiba.ozolina@environment.lv

Calculated:

15/01/2026 16:54/4.1.254

## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Vestas172 WTG: 11 - VESTAS V172-7.2 7200 172.0 !O! hub: 166.0 m (TOT: 252.0 m) (25)

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 13:18-13:30/12 15:39	08:21 16:40	07:13 16:16-16:56/40 17:46	06:48 19:55	05:28 21:01	04:27 22:02
2	09:00 13:19-13:29/10 15:41	08:19 16:02-16:06/4 16:42	07:11 16:15-16:56/41 17:48	06:45 19:57	05:25 21:03	04:26 22:04
3	08:59 13:21-13:29/8 15:42	08:17 15:59-16:08/9 16:45	07:08 16:14-16:56/42 17:50	06:42 19:59	05:23 21:06	04:24 22:05
4	08:59 13:23-13:27/4 15:43	08:15 15:59-16:11/12 16:47	07:05 16:14-16:56/42 17:53	06:39 20:02	05:20 21:08	04:23 22:07
5	08:58 15:45	08:12 15:58-16:14/16 16:49	07:03 16:13-16:56/43 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 16:14-16:56/42 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 16:14-16:56/42 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 16:13-16:55/42 18:02	06:28 20:10	05:11 21:16	04:20 22:12
9	08:56 15:51	08:03 15:56-16:25/29 16:59	06:52 16:13-16:54/41 18:04	06:25 20:13	05:09 21:19	04:19 22:13
10	08:55 15:53	08:01 15:55-16:27/32 17:01	06:49 16:14-16:53/39 18:06	06:23 20:15	05:06 21:21	04:18 22:14
11	08:54 15:55	07:59 15:56-16:29/33 17:04	06:46 16:15-16:53/38 18:08	06:20 20:17	05:04 21:23	04:17 22:15
12	08:53 15:57	07:56 15:55-16:28/33 17:06	06:43 16:15-16:52/37 18:11	06:17 20:19	05:02 21:25	04:17 22:16
13	08:52 15:59	07:54 15:56-16:29/33 17:08	06:41 16:16-16:51/35 18:13	06:15 20:21	05:00 21:27	04:16 22:17
14	08:51 16:01	07:52 15:56-16:29/33 17:11	06:38 16:17-16:49/32 18:15	06:12 20:24	04:58 21:29	04:16 22:18
15	08:49 16:02	07:49 15:56-16:28/32 17:13	06:35 16:18-16:47/29 18:17	06:09 20:26	04:56 21:31	04:16 22:18
16	08:48 16:04	07:47 15:57-16:29/32 17:15	06:32 16:19-16:45/26 18:20	06:06 20:28	04:54 21:33	04:15 22:19
17	08:47 16:06	07:44 15:58-16:28/30 17:18	06:30 16:22-16:43/21 18:22	06:04 20:30	04:52 21:35	04:15 22:19
18	08:45 16:09	07:42 15:59-16:27/28 17:20	06:27 16:25-16:39/14 18:24	06:01 20:32	04:50 21:37	04:15 22:20
19	08:44 16:11	07:39 16:01-16:26/25 17:22	06:24 17:25-17:52/27 18:26	05:58 20:35	04:48 21:39	04:15 22:20
20	08:42 16:13	07:37 16:31-16:42/11 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 16:27-16:46/19 17:27	06:18 17:24-17:51/27 18:31	05:53 20:39	04:44 21:43	04:15 22:21
22	08:39 16:17	07:32 16:25-16:49/24 17:30	06:16 17:24-17:50/26 18:33	05:50 20:41	04:42 21:45	04:15 22:21
23	08:38 16:19	07:29 16:22-16:50/28 17:32	06:13 17:25-17:50/25 18:35	05:48 20:43	04:40 21:47	04:15 22:21
24	08:36 16:22	07:26 16:21-16:51/30 17:34	06:10 17:26-17:48/22 18:37	05:45 20:46	04:39 21:49	04:16 22:21
25	08:34 16:24	07:24 16:20-16:53/33 17:36	06:07 17:26-17:47/21 18:40	05:43 20:48	04:37 21:51	04:16 22:21
26	08:32 16:26	07:21 16:18-16:54/36 17:39	06:04 17:28-17:45/17 18:42	05:40 20:50	04:35 21:52	04:17 22:21
27	08:31 16:28	07:19 16:17-16:55/38 17:41	06:02 17:30-17:42/12 18:44	05:38 20:52	04:34 21:54	04:17 22:21
28	08:29 16:31	07:16 16:16-16:55/39 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						
Sum of minutes with flicker						
	227	262	365	429	515	539
	34	756	979	0	0	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



## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Vestas172 WTG: 11 - VESTAS V172-7.2 7200 172.0 !OI hub: 166.0 m (TOT: 252.0 m) (25)  
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	16:55-17:31/36 18:12-18:22/10	07:27 16:32	15:25-15:56/31 15:37
2	04:21 22:19	05:11 21:33	06:17 20:14	07:20 18:50	16:53-17:31/38 18:15-18:19/4	07:30 16:30	15:25-15:54/29 15:36
3	04:22 22:19	05:13 21:31	06:19 20:12	07:23 18:48	16:52-17:31/39 18:18	07:32 16:27	15:25-15:51/26 15:35
4	04:23 22:18	05:15 21:28	06:21 20:09	07:25 18:45	16:51-17:31/40 18:18	07:34 16:25	15:26-15:49/23 15:34
5	04:24 22:17	05:17 21:26	06:23 20:06	07:27 18:42	16:51-17:32/41 18:18	07:37 16:23	15:26-15:46/20 15:33
6	04:25 22:16	05:19 21:24	06:25 20:03	07:29 18:39	16:50-17:32/42 18:18	07:39 16:20	15:28-15:44/16 15:33
7	04:26 22:15	05:21 21:22	06:27 20:01	07:31 18:37	16:49-17:31/42 18:18	07:41 16:18	15:29-15:42/13 15:32
8	04:27 22:14	05:24 21:19	06:30 19:58	07:33 18:34	16:49-17:31/42 18:18	07:43 16:16	15:30-15:39/9 15:31
9	04:29 22:13	05:26 21:17	06:32 19:55	07:36 18:31	16:49-17:31/42 18:18	07:46 16:14	15:33-15:37/4 15:31
10	04:30 22:12	05:28 21:14	06:34 19:52	07:38 18:28	16:49-17:31/42 18:18	07:48 16:12	15:33-15:37/4 15:30
11	04:31 22:11	05:30 21:12	06:36 19:49	07:40 18:26	16:48-17:30/42 18:18	07:50 16:10	15:33-15:37/4 15:30
12	04:33 22:10	05:32 21:10	06:38 19:47	07:42 18:23	16:48-17:29/41 18:18	07:53 16:08	15:33-15:37/4 15:29
13	04:34 22:09	05:34 21:07	06:40 19:44	07:44 18:20	16:49-17:29/40 18:18	07:55 16:06	15:33-15:37/4 15:29
14	04:36 22:07	05:36 21:05	06:42 19:41	07:47 18:18	16:49-17:28/39 18:18	07:57 16:04	15:33-15:37/4 15:29
15	04:37 22:06	05:38 21:02	06:44 19:38	07:49 18:15	16:49-17:26/37 18:15	07:59 16:02	15:33-15:37/4 15:29
16	04:39 22:05	05:41 21:00	06:46 19:35	07:51 18:12	16:51-17:26/35 18:12	08:02 16:00	15:33-15:37/4 15:29
17	04:41 22:03	05:43 20:57	06:49 19:33	07:53 18:10	16:51-17:24/33 18:10	08:04 15:58	15:33-15:37/4 15:29
18	04:42 22:02	05:45 20:54	06:51 19:30	07:55 18:07	16:53-17:23/30 18:07	08:06 15:56	15:33-15:37/4 15:29
19	04:44 22:00	05:47 20:52	06:53 19:27	07:58 18:04	16:54-17:21/27 16:44-16:48/4	08:08 15:54	15:33-15:37/4 15:29
20	04:46 21:58	05:49 20:49	06:55 19:24	08:00 18:02	16:56-17:18/22 16:39-16:52/13	08:10 15:53	15:33-15:37/4 15:30
21	04:48 21:57	05:51 20:47	06:57 19:21	08:02 17:59	16:59-17:16/17 16:37-16:54/17	08:13 15:51	15:33-15:37/4 15:30
22	04:50 21:55	05:53 20:44	06:59 19:18	08:04 17:57	17:03-17:11/8 16:32-16:55/23	08:15 15:49	15:33-15:37/4 15:30
23	04:51 21:53	05:56 20:41	07:01 19:16	08:07 17:54	16:31-16:57/26 17:03-17:11/8	08:17 15:48	15:33-15:37/4 15:31
24	04:53 21:51	05:58 20:39	07:03 19:13	08:09 17:52	16:29-16:57/28 17:03-17:11/8	08:19 15:46	15:33-15:37/4 15:32
25	04:55 21:49	06:00 20:36	07:05 19:10	07:11 16:49	15:28-15:58/30 15:26-15:58/32	08:21 15:45	15:33-15:37/4 15:32
26	04:57 21:47	06:02 20:33	07:08 19:07	07:14 16:46	15:26-15:58/32 15:26-15:59/33	08:23 15:43	15:33-15:37/4 15:33
27	04:59 21:45	06:04 20:31	07:10 19:04	07:16 16:44	15:26-15:59/33 15:25-15:58/33	08:25 15:42	15:33-15:37/4 15:34
28	05:01 21:43	06:06 20:28	07:12 19:02	07:18 16:42	15:25-15:58/33 15:25-15:59/34	08:27 15:41	15:33-15:37/4 15:35
29	05:03 21:41	06:08 20:25	07:14 18:59	07:20 16:39	15:25-15:59/34 15:25-15:58/33	08:29 15:40	15:33-15:37/4 15:36
30	05:05 21:39	06:10 20:23	07:16 18:56	07:23 16:37	15:25-15:58/33 15:25-15:58/33	08:31 15:38	15:33-15:37/4 15:37
31	05:07 21:37	06:13 20:20		07:25 16:34	15:25-15:58/33 15:25-15:58/33	09:00 15:38	15:33-15:37/4 15:38
Potential sun hours	538	474	386	321	241	207	
Sum of minutes with flicker	0	0	474	1128	171	357	

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\_Vestas172

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Baiba / baiba.ozolina@environment.lv

Calculated:

15/01/2026 16:54/4.1.254

## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Vestas172 WTG: 12 - VESTAS V172-7.2 7200 172.0 !OI hub: 166.0 m (TOT: 252.0 m) (28)

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	14:34-14:53/19	08:21		07:13	16:58-17:16/18	06:48	18:32-18:58/26	05:28		04:27	
	15:39		16:40		17:46		19:55	19:03-19:24/21	21:01		22:02	
2	09:00	14:34-14:54/20	08:19		07:11	16:57-17:18/21	06:45	18:33-18:57/24	05:25		04:26	
	15:41		16:42		17:48		19:57	19:04-19:24/20	21:03		22:04	
3	09:00	14:34-14:56/22	08:17		07:08	16:57-17:20/23	06:42	18:34-18:55/21	05:23		04:24	
	15:42		16:45		17:50		19:59	19:04-19:23/19	21:06		22:05	
4	08:59	14:34-14:58/24	08:15		07:05	16:56-17:23/27	06:39	18:35-18:53/18	05:20		04:23	
	15:43		16:47		17:53		20:02	19:04-19:22/18	21:08		22:07	
5	08:59	14:34-14:58/24	08:12		07:03	16:56-17:23/27	06:37	18:38-18:50/12	05:18		04:22	
	15:45		16:49		17:55		20:04	19:05-19:20/15	21:10		22:08	
6	08:58	14:34-14:59/25	08:10		07:00	16:58-17:24/26	06:34	19:07-19:19/12	05:16		04:21	
	15:46		16:52		17:57		20:06		21:12		22:09	
7	08:57	14:35-15:00/25	08:08		06:57	16:58-17:23/25	06:31	19:10-19:15/5	05:13		04:20	
	15:48		16:54		17:59		20:08		21:14		22:11	
8	08:56	14:35-15:01/26	08:06		06:54	16:59-17:22/23	06:28		05:11		04:20	
	15:50		16:56		18:02		20:10		21:16		22:12	
9	08:56	14:35-15:01/26	08:03		06:52	17:00-17:20/20	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	17:03-17:18/15	06:23		05:06		04:18	
	15:53		17:01		18:06		20:15		21:21		22:14	
11	08:54	14:35-15:02/27	07:59		06:46	17:07-17:17/10	06:20		05:04		04:17	
	15:55		17:04		18:08		20:17		21:23		22:15	
12	08:53	14:36-15:03/27	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	14:36-15:03/27	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	14:36-15:04/28	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	14:36-15:04/28	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	14:37-15:05/28	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	14:37-15:05/28	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	14:37-15:05/28	07:42		06:27	17:43-17:55/12	06:01		04:50		04:15	
	16:09		17:20		18:24		20:32		21:37		22:20	
19	08:44	14:38-15:05/27	07:39		06:24	17:40-17:57/17	05:58		04:48		04:15	
	16:11		17:23		18:26		20:35		21:39		22:20	
20	08:42	14:39-15:06/27	07:37		06:21	17:37-17:59/22	05:56		04:46		04:15	
	16:13		17:25		18:29		20:37		21:41		22:21	
21	08:41	14:40-15:06/26	07:34		06:18	17:36-18:00/24	05:53		04:44		04:15	
	16:15		17:27		18:31		20:39		21:43		22:21	
22	08:39	14:40-15:06/26	07:32		06:16	17:34-18:01/27	05:51		04:42		04:15	
	16:17		17:30		18:33		20:41		21:45		22:21	
23	08:38	14:41-15:05/24	07:29		06:13	17:34-18:02/28	05:48		04:40		04:15	
	16:19		17:32		18:35		20:43		21:47		22:21	
24	08:36	14:42-15:05/23	07:27		06:10	17:33-18:02/29	05:45		04:39		04:16	
	16:22		17:34		18:37		20:46		21:49		22:21	
25	08:34	14:43-15:05/22	07:24	17:03-17:06/3	06:07	17:32-18:02/30	05:43		04:37		04:16	
	16:24		17:37		18:40		20:48		21:51		22:21	
26	08:32	14:44-15:04/20	07:21	17:01-17:08/7	06:04	17:31-18:02/31	05:40		04:35		04:17	
	16:26		17:39		18:42	18:10-18:12/2	20:50		21:52		22:21	
27	08:31	14:45-15:02/17	07:19	16:59-17:11/12	06:02	17:30-18:01/31	05:38		04:34		04:17	
	16:28		17:41		18:44	18:07-18:14/7	20:52		21:54		22:21	
28	08:29	14:47-15:01/14	07:16	16:58-17:13/15	05:59	17:31-18:02/31	05:35		04:32		04:18	
	16:31		17:43		18:46	18:07-18:17/10	20:55		21:56		22:21	
29	08:27	14:50-14:59/9			06:56	18:31-19:01/30	05:33		04:31		04:18	
	16:33				19:48	19:06-19:19/13	20:57		21:58		22:21	
30	08:25				06:53	18:31-19:00/29	05:30		04:29		04:19	
	16:35				19:51	19:05-19:21/16	20:59		21:59		22:20	
31	08:23				06:50	18:31-18:59/28			04:28			
	16:38				19:53	19:04-19:23/19			22:01			
Potential sun hours	227		262		365		429		515		539	
Sum of minutes with flicker	693		37		671		211		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\_Vestas172

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Baiba / baiba.ozolina@environment.lv

Calculated:

15/01/2026 16:54/4.1.254

## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Vestas172 WTG: 12 - VESTAS V172-7.2 7200 172.0 !OI hub: 166.0 m (TOT: 252.0 m) (28)

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	665	278	428	548

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\_Vestas172

Licensed user:

SIA Estonian, Latvian & Lithuanian environment  
Vilandes 3-6  
LV-1010 Riga  
0037167242411  
Baiba / baiba.ozolina@environment.lv  
Calculated:  
15/01/2026 16:54/4.1.254

## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Vestas172 WTG: 13 - VESTAS V172-7.2 7200 172.0 !O! hub: 166.0 m (TOT: 252.0 m) (20)  
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 15:34-15:55/21	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 15:34-15:56/22	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 15:35-15:56/21	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 15:11-15:19/8	08:36 15:35
4	08:59 15:44	08:15 15:35-15:55/20	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 15:09-15:22/13	08:38 15:34
5	08:59 15:45	08:12 15:37-15:55/18	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 15:07-15:23/16	08:40 15:33
6	08:58 15:46	08:10 15:37-15:53/16	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 15:06-15:24/18	08:41 15:33
7	08:57 15:48	08:08 15:40-15:52/12	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 15:06-15:26/20	08:43 15:32
8	08:57 15:50	08:06 15:42-15:49/7	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 15:05-15:26/21	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 15:05-15:27/22	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 15:04-15:26/22	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 15:05-15:27/22	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 15:04-15:26/22	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 18:39-18:47/8	07:44 18:20	07:55 15:05-15:27/22	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 22:07	05:36 21:05	06:42 18:36-18:49/13	07:47 18:18	07:57 15:06-15:25/19	08:52 15:29
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 18:34-18:51/17	07:49 18:15	07:59 15:06-15:23/17	08:53 15:29
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 18:32-18:51/19	07:51 18:12	08:02 15:07-15:21/14	08:54 15:29
17	08:47 16:07	07:44 17:18	06:30 17:52-17:53/1	06:04 20:30	04:52 21:35	04:15 22:20	04:41 22:03	05:43 20:57	06:49 18:31-18:51/20	07:53 18:10	08:04 15:07-15:18/11	08:55 15:29
18	08:45 16:09	07:42 17:20	06:27 17:49-17:55/6	06:01 20:32	04:50 21:37	04:15 22:20	04:42 22:02	05:45 20:55	06:51 18:30-18:52/22	07:56 18:07	08:06 15:09-15:17/8	08:56 15:29
19	08:44 16:11	07:39 17:23	06:24 17:47-17:57/10	05:58 20:35	04:48 21:39	04:15 22:20	04:44 22:00	05:47 20:52	06:53 18:29-18:51/22	07:58 18:04	08:08 15:10-15:14/4	08:57 15:29
20	08:42 16:13	07:37 17:25	06:21 17:45-17:59/14	05:56 20:37	04:46 21:41	04:15 22:21	04:46 21:58	05:49 20:49	06:55 18:29-18:51/22	08:00 18:02	08:11 15:53	08:58 15:30
21	08:41 16:15	07:34 17:27	06:18 17:44-18:01/17	05:53 20:39	04:44 21:43	04:15 22:21	04:48 21:57	05:51 20:47	06:57 18:28-18:50/22	08:02 17:59	08:13 15:51	08:58 15:30
22	08:39 16:17	07:32 17:30	06:16 17:43-18:03/20	05:51 20:41	04:42 21:45	04:15 22:21	04:50 21:55	05:53 20:44	06:59 18:29-18:48/19	08:05 17:57	08:15 15:49	08:59 15:30
23	08:38 15:36-15:40/4	07:29 17:32	06:13 17:43-18:05/22	05:48 20:44	04:40 21:47	04:15 22:21	04:51 21:53	05:56 20:42	07:01 18:30-18:45/15	08:07 17:54	08:17 15:48	08:59 15:31
24	08:36 15:35-15:43/8	07:27 17:34	06:10 17:43-18:05/22	05:45 20:46	04:39 21:49	04:16 22:22	04:53 21:51	05:58 20:39	07:03 18:30-18:42/12	08:09 17:52	08:19 15:46	09:00 15:32
25	08:34 15:34-15:45/11	07:24 17:37	06:07 17:42-18:04/22	05:43 20:48	04:37 21:51	04:16 22:22	04:55 21:49	06:00 20:36	07:06 18:31-18:39/8	07:11 16:49	08:21 15:45	09:00 15:32
26	08:32 15:34-15:48/14	07:21 17:39	06:04 17:42-18:03/21	05:40 20:50	04:35 21:53	04:17 22:21	04:57 21:47	06:02 20:34	07:08 18:33-18:36/3	07:14 16:47	08:23 15:43	09:00 15:33
27	08:31 15:33-15:50/17	07:19 17:41	06:02 17:42-18:02/20	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	09:01 15:34
28	08:29 15:33-15:52/19	07:16 16:31	05:59 17:44-18:01/17	05:35 20:55	04:32 21:56	04:18 22:21	05:01 21:43	06:06 20:28	07:12 19:02	07:18 16:42	08:27 15:41	09:01 15:35
29	08:27 15:33-15:55/22	17:43	06:56 18:45-18:59/14	05:33 20:57	04:31 21:58	04:18 22:21	05:03 21:41	06:08 20:25	07:14 18:59	07:20 16:39	08:29 15:40	09:01 15:36
30	08:25 15:34-15:56/22		06:53 18:47-18:56/9	05:30 20:59	04:30 21:59	04:19 22:20	05:05 21:39	06:11 20:23	07:16 18:56	07:23 16:37	08:31 15:38	09:01 15:37
31	08:23 15:34-15:56/22		06:50 19:53	05:28 22:01	04:28 22:01	04:19 22:20	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	139	137	215	0	0	0	0	0	222	0	279	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
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Project:

Flickering\_Valka\_Vestas172

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Baiba / baiba.ozolina@environment.lv

Calculated:

15/01/2026 16:54/4.1.254

## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Vestas172 WTG: 14 - VESTAS V172-7.2 7200 172.0 !O! hub: 166.0 m (TOT: 252.0 m) (21)

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	19:39-19:40/1 21:16	05:11 22:12
9	08:56 15:51	08:03 16:59	06:52 18:04	06:25 20:13	19:36-19:43/7 21:19	05:09 22:13
10	08:55 15:53	08:01 17:01	06:49 18:06	06:23 20:15	19:33-19:44/11 21:21	05:06 22:14
11	08:54 15:55	07:59 17:04	06:46 18:09	06:20 20:17	19:31-19:46/15 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	19:29-19:51/22 21:27	05:00 22:17
14	08:51 16:01	07:52 17:11	06:38 18:15	06:12 20:24	19:28-19:52/24 21:29	04:58 22:18
15	08:49 16:02	07:49 17:13	06:35 18:17	06:09 20:26	19:28-19:52/24 21:31	04:56 22:18
16	08:48 16:04	07:47 17:15	06:32 18:20	06:06 20:28	19:27-19:52/25 21:33	04:54 22:19
17	08:47 16:06	07:44 17:18	06:30 18:22	06:04 20:30	19:28-19:52/24 21:35	04:52 22:20
18	08:45 16:09	07:42 17:20	06:27 18:24	06:01 20:32	19:27-19:51/24 21:37	04:50 22:20
19	08:44 16:11	07:39 17:23	06:24 18:26	05:58 20:35	19:27-19:50/23 21:39	04:48 22:21
20	08:42 16:13	07:37 17:25	06:21 18:29	05:56 20:37	19:28-19:50/22 21:41	04:46 22:21
21	08:41 16:15	07:34 17:27	06:18 18:31	05:53 20:39	19:28-19:48/20 21:43	04:44 22:21
22	08:39 16:17	07:32 17:30	06:16 18:33	05:51 20:41	19:30-19:47/17 21:45	04:42 22:21
23	08:38 16:19	07:29 17:32	06:13 18:35	05:48 20:44	19:31-19:45/14 21:47	04:40 22:21
24	08:36 16:22	07:27 17:34	06:10 18:37	05:45 20:46	19:33-19:43/10 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	408	0	301	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\_Vestas172

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Baiba / baiba.ozolina@environment.lv

Calculated:

15/01/2026 16:54/4.1.254

## SHADOW - Calendar per WTG

Calculation: Flickering\_Valka\_Vestas172 WTG: 14 - VESTAS V172-7.2 7200 172.0 !O! hub: 166.0 m (TOT: 252.0 m) (21)  
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	19:30-19:45/15 18:53	07:18 16:32	07:27 15:35-15:56/21 15:37
2	04:21 22:19	05:11 21:33	06:17 20:14	19:31-19:42/11 18:51	07:30 16:30	07:30 15:37-15:54/17 15:36
3	04:22 22:19	05:13 21:31	06:19 20:12	19:33-19:40/7 18:48	07:32 16:27	07:32 15:38-15:51/13 15:35
4	04:23 22:18	05:15 21:29	06:21 20:09	19:37-19:38/1 18:45	07:34 16:25	07:34 15:40-15:49/9 15:34
5	04:24 22:17	05:17 21:26	06:23 20:06	07:27 18:42	07:37 16:23	15:42-15:46/4 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 16:44-16:53/9 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 16:41-16:56/15 18:07	08:06 15:56	08:56 15:29
19	04:44 22:00	05:47 19:38-19:49/11 20:52	06:53 19:27	07:58 16:39-16:58/19 18:04	08:08 15:54	08:57 15:29
20	04:46 21:58	05:49 19:36-19:51/15 20:49	06:55 19:24	08:00 16:37-16:58/21 18:02	08:11 15:53	08:58 15:30
21	04:48 21:57	05:51 19:34-19:52/18 20:47	06:57 19:21	08:02 16:36-17:00/24 17:59	08:13 15:51	08:58 15:30
22	04:50 21:55	05:53 19:33-19:53/20 20:44	06:59 19:19	08:05 16:35-17:00/25 17:57	08:15 15:49	08:59 15:30
23	04:51 21:53	05:56 19:32-19:54/22 20:42	07:01 19:16	08:07 16:35-17:01/26 17:54	08:17 15:48	08:59 15:31
24	04:53 21:51	05:58 19:31-19:54/23 20:39	07:03 19:13	08:09 16:34-17:01/27 17:52	08:19 15:46	09:00 15:32
25	04:55 21:49	06:00 19:30-19:54/24 20:36	07:06 19:10	07:11 15:34-16:01/27 16:49	08:21 15:45	09:00 15:32
26	04:57 21:47	06:02 19:30-19:54/24 20:34	07:08 19:07	07:14 15:33-16:01/28 16:47	08:23 15:43	09:00 15:33
27	04:59 21:46	06:04 19:29-19:54/25 20:31	07:10 19:04	07:16 15:34-16:01/27 16:44	08:25 15:42	09:01 15:34
28	05:01 21:44	06:06 19:29-19:53/24 20:28	07:12 19:02	07:18 15:33-16:01/28 16:42	08:27 15:41	09:01 15:35
29	05:03 21:41	06:08 19:29-19:53/24 20:25	07:14 18:59	07:20 15:34-16:01/27 16:39	08:29 15:40	09:01 15:36
30	05:05 21:39	06:11 19:29-19:50/21 20:23	07:16 18:56	07:23 15:34-16:00/26 16:37	08:31 15:38	09:01 15:37
31	05:07 21:37	06:13 19:30-19:48/18 20:20		07:25 15:35-15:59/24 16:34		09:00 15:38
Potential sun hours	538	474	386	321	241	207
Sum of minutes with flicker	0	269	34	353	64	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