

Project: VPSP wind farm  
Description: VPSP wind farm

Licensed user:  
SIA Estonian, Latvian & Lithuanian environment  
Vilandes 3-6  
LV-1010 Riga  
0037167242411  
Anna / anna@environment.lv  
Calculated:  
02/05/2022 17:18/3.5.576

## SHADOW - Calendar per WTG

WTG: 1.1. - Siemens Gamesa SG 6.6-170 6600 170.0 !OI hub: 165.0 m (TOT: 250.0 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
1.35	3.07	4.72	8.16	9.63	10.93	9.79	7.85	5.92	3.23	1.29	0.72

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
293	300	348	355	333	399	506	566	582	663	919	1,110	790	574	487	406	8,631

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

	January	February	March	April	May	June
1	09:06 11:02-11:20/18 14:42-15:07/25 16:02 09:57-10:22/25 14:32-14:41/9	08:30 16:10-16:25/15 17:00	07:26 16:34-17:22/48 18:02	07:03 18:30-18:56/26 20:08 19:09-19:36/27	05:47 21:11	04:50 22:08
2	09:06 11:04-11:20/16 14:43-15:08/25 16:03 09:58-10:23/25 14:34-14:42/8	08:28 16:10-16:27/17 17:02	07:23 16:33-17:25/52 18:04	07:01 18:31-18:53/22 20:10 19:08-19:36/28	05:45 21:13	04:49 22:10
3	09:06 11:04-11:20/16 15:21-15:22/1 14:35-14:40/5 16:05 09:58-10:23/25 14:43-15:08/25	08:26 16:09-16:29/20 17:04	07:21 16:33-17:28/55 18:07	06:58 18:33-18:50/17 20:12 19:07-19:35/28	05:42 21:15	04:48 22:11
4	09:05 11:05-11:19/14 15:21-15:23/2 16:06 09:58-10:23/25 14:44-15:08/24	08:24 16:09-16:32/23 17:06	07:18 16:32-17:29/57 18:09	06:55 18:37-18:47/10 20:14 19:08-19:35/27	05:40 21:17	04:47 22:12
5	09:05 11:07-11:19/12 15:22-15:25/3 16:07 09:59-10:24/25 14:45-15:09/24	08:22 16:10-16:35/25 17:09	07:15 16:32-17:30/58 18:11	06:53 19:07-19:35/28 20:16	05:38 21:19	04:46 22:14
6	09:04 11:09-11:18/9 15:21-15:27/6 16:09 10:00-10:24/24 14:46-15:09/23	08:20 16:11-16:37/26 17:11	07:13 16:33-17:32/59 18:13	06:50 19:07-19:34/27 20:18	05:36 21:21	04:45 22:15
7	09:04 11:11-11:16/5 15:21-15:28/7 16:10 10:00-10:24/24 14:47-15:10/23	08:18 16:10-16:39/29 17:13	07:10 16:32-17:32/60 18:15	06:47 19:08-19:34/26 20:21	05:33 21:23	04:44 22:16
8	09:03 10:00-10:25/25 14:48-15:10/22 16:12 15:21-15:30/9	08:16 16:11-16:42/31 17:15	07:08 16:32-17:33/61 18:17 17:41-17:48/7	06:45 19:08-19:32/24 20:23	05:31 21:25	04:43 22:17
9	09:02 10:01-10:25/24 14:49-15:10/21 16:14 15:21-15:32/11	08:14 16:13-16:44/31 17:18	07:05 16:33-17:34/61 18:20 17:40-17:51/11	06:42 19:09-19:32/23 20:25	05:29 21:27	04:43 22:18
10	09:02 10:01-10:26/25 14:50-15:10/20 16:15 15:22-15:34/12	08:11 16:14-16:44/30 17:20	07:02 16:33-17:34/61 18:22 17:38-17:53/15	06:40 19:09-19:30/21 20:27	05:27 21:29	04:42 22:19
11	09:01 10:02-10:26/24 14:51-15:10/19 16:17 15:22-15:36/14	08:09 16:16-16:44/28 17:22	07:00 16:34-17:33/59 18:24 17:36-17:55/19	06:37 19:10-19:27/17 20:29	05:25 21:31	04:41 22:20
12	09:00 10:02-10:25/23 14:51-15:09/18 16:19 15:21-15:38/17	08:07 16:22-16:44/22 17:24	06:57 16:35-17:34/59 18:26 17:36-17:58/22	06:34 19:13-19:25/12 20:31	05:23 21:33	04:41 22:21
13	08:59 10:03-10:26/23 14:52-15:09/17 16:20 15:22-15:40/18	08:05 16:23-16:44/21 17:27	06:54 16:36-17:34/58 18:28 17:35-17:58/23	06:32 20:33	05:21 21:35	04:40 22:22
14	08:58 10:04-10:26/22 14:54-15:09/15 16:22 15:22-15:42/20	08:02 16:24-16:43/19 17:29	06:52 16:37-17:33/56 18:30 17:34-17:58/24	06:29 20:35	05:19 21:37	04:40 22:22
15	08:57 10:04-10:26/22 14:55-15:08/13 16:24 15:22-15:43/21	08:00 16:24-16:42/18 17:31	06:49 16:38-17:32/54 18:32 17:33-17:58/25	06:26 20:37	05:17 21:39	04:40 22:23
16	08:55 10:05-10:26/21 14:57-15:08/11 16:26 15:23-15:44/21	07:58 16:26-16:41/15 17:33	06:46 16:41-17:33/52 18:34 17:34-18:00/26	06:24 20:39	05:15 21:41	04:39 22:24
17	08:54 10:06-10:25/19 14:59-15:06/7 16:28 15:23-15:44/21	07:55 16:27-16:39/12 17:36	06:44 16:45-18:01/76 18:37	06:21 20:41	05:13 21:43	04:39 22:24
18	08:53 10:08-10:25/17 16:30 15:24-15:45/21	07:53 16:32-16:36/4 17:38	06:41 16:53-17:30/37 18:39 17:31-18:02/31	06:19 20:44	05:11 21:45	04:39 22:25
19	08:52 10:08-10:24/16 16:32 15:24-15:45/21	07:51 17:40	06:38 16:55-18:03/68 18:41	06:16 20:46	05:09 21:47	04:39 22:25
20	08:50 10:10-10:23/13 16:34 15:24-15:44/20	07:48 16:49-17:01/12 17:42	06:36 16:55-18:03/68 18:43	06:14 20:48	05:08 21:48	04:39 22:25
21	08:49 10:13-10:22/9 16:36 15:26-15:45/19	07:46 16:45-17:04/19 17:45	06:33 16:56-17:27/31 18:45 17:28-18:03/35	06:11 20:50	05:06 21:50	04:39 22:26
22	08:47 10:16-10:18/2 16:38 15:26-15:45/19	07:43 16:42-17:06/24 17:47	06:30 16:56-17:25/29 18:47 17:27-18:03/36	06:09 20:52	05:04 21:52	04:39 22:26
23	08:46 15:27-15:44/17 16:40	07:41 16:41-17:08/27 17:49	06:28 16:59-17:24/25 18:49 17:27-18:03/36	06:06 20:54	05:02 21:54	04:40 22:26
24	08:44 15:28-15:43/15 16:42	07:38 16:39-17:09/30 17:51	06:25 17:00-17:21/21 18:51 17:27-18:03/36	06:04 20:56	05:01 21:56	04:40 22:26
25	08:43 15:29-15:42/13 16:44	07:36 16:38-17:11/33 17:53	06:22 17:03-17:17/14 18:53 17:26-18:02/36	06:01 20:58	04:59 21:57	04:40 22:26
26	08:41 15:31-15:41/10 16:46	07:33 16:36-17:11/35 17:56	06:20 17:27-18:02/35 18:55 18:22-18:27/5	05:59 21:00	04:58 21:59	04:41 22:26
27	08:39 15:34-15:38/4 16:49	07:31 16:35-17:12/37 17:58	06:17 17:27-18:01/34 18:58 18:17-18:29/12	05:56 21:02	04:56 22:01	04:41 22:26
28	08:37 16:12-16:14/2 16:51	07:28 16:35-17:13/38 18:00	06:14 17:26-18:00/34 19:00 18:14-18:31/17	05:54 21:04	04:55 22:02	04:42 22:26
29	08:36 16:11-16:17/6 16:53		07:11 18:28-19:00/32 20:02 19:13-19:34/21	05:52 21:07	04:54 22:04	04:43 22:25
30	08:34 16:11-16:19/8 16:55		07:09 18:28-18:58/30 20:04 19:11-19:35/24	05:49 21:09	04:52 22:05	04:43 22:25
31	08:32 16:10-16:22/12 16:57		07:06 18:28-18:57/29 20:06 19:10-19:35/25		04:51 22:07	
Potential sun hours	235	266	366	426	508	529
Sum of minutes with flicker	1272	641	1959	363	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

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LV-1010 Riga  
0037167242411  
Anna / anna@environment.lv  
Calculated:  
02/05/2022 17:18/3.5.576

## SHADOW - Calendar per WTG

WTG: 1.1. - Siemens Gamesa SG 6.6-170 6600 170.0 !OI hub: 165.0 m (TOT: 250.0 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
1.35	3.07	4.72	8.16	9.63	10.93	9.79	7.85	5.92	3.23	1.29	0.72

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
293	300	348	355	333	399	506	566	582	663	919	1,110	790	574	487	406	8,631

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

	July	August	September	October	November	December
1	04:44 22:25	05:30 21:43	06:32 19:10-19:27/17 20:29	07:32 17:15-18:13/58 19:08 18:14-18:37/23	07:38 15:43-16:14/31 16:50	08:40 09:44-10:08/24 14:33-14:52/19 15:59 15:04-15:19/15
2	04:45 22:24	05:32 21:41	06:34 19:07-19:28/21 20:26	07:34 17:13-18:13/60 19:06 18:15-18:35/20	07:40 15:42-16:14/32 16:48	08:41 09:45-10:09/24 14:32-14:52/20 15:58 15:04-15:16/12
3	04:46 22:24	05:34 21:39	06:36 19:06-19:29/23 20:24	07:36 17:12-18:12/60 19:03 18:15-18:32/17	07:42 15:41-16:11/30 16:46	08:43 09:44-10:08/24 14:32-14:53/21 15:57 15:04-15:15/11
4	04:47 22:23	05:36 21:37	06:38 19:05-19:29/24 20:21	07:38 17:10-18:11/61 19:00 18:16-18:29/13	07:44 15:40-16:09/29 16:44	08:45 09:44-10:09/25 14:32-14:54/22 15:56 15:05-15:14/9
5	04:48 22:22	05:38 21:35	06:40 19:04-19:30/26 20:18	07:40 17:09-18:10/61 18:58 18:17-18:27/10	07:47 15:40-16:07/27 16:42	08:46 10:57-11:01/4 15:06-15:14/8 15:56 09:45-10:10/25 14:32-14:55/23
6	04:49 22:22	05:40 21:33	06:42 19:03-19:30/27 20:16	07:42 17:09-18:09/60 18:55 18:20-18:24/4	07:49 15:40-16:04/24 16:40	08:48 10:55-11:04/9 15:07-15:13/6 15:55 09:46-10:10/24 14:32-14:56/24
7	04:50 22:21	05:42 21:31	06:44 19:02-19:30/28 20:13	07:45 17:08-18:08/60 18:52	07:51 15:40-16:02/22 16:37	08:49 10:53-11:05/12 15:08-15:12/4 15:54 09:45-10:10/25 14:31-14:55/24
8	04:51 22:20	05:44 21:28	06:46 18:32-18:40/8 20:10	07:47 17:07-18:06/59 18:50	07:53 15:40-16:00/20 16:35	08:51 10:53-11:07/14 15:09-15:11/2 15:54 09:46-10:11/25 14:31-14:56/24
9	04:52 22:19	05:46 21:26	06:48 18:28-18:44/16 20:08	07:49 17:08-18:05/57 18:47	07:55 15:41-15:58/17 16:33	08:52 10:52-11:08/16 15:09-15:10/1 14:23-14:28/5 15:53 09:47-10:12/25 14:31-14:56/25
10	04:53 22:18	05:48 21:24	06:50 18:25-18:46/21 20:05	07:51 17:07-18:03/56 18:45	07:57 15:41-15:55/14 16:31	08:54 10:53-11:09/16 14:32-14:57/25 15:53 09:47-10:12/25 14:32-14:57/25
11	04:55 22:17	05:50 21:21	06:52 18:23-18:48/25 20:02	07:53 17:07-18:01/54 18:42	08:00 15:41-15:53/12 16:29	08:55 10:52-11:10/18 14:32-14:58/26 15:53 09:47-10:12/25 14:22-14:31/9
12	04:56 22:16	05:52 21:19	06:54 18:21-18:49/28 20:00	07:55 17:07-17:58/51 18:39	08:02 15:43-15:51/8 16:27	08:56 10:53-11:11/18 14:22-14:59/37 15:52 09:49-10:13/24
13	04:57 22:15	05:54 21:17	06:56 18:19-18:49/30 19:57	07:57 17:07-17:53/46 18:37	08:04 15:43-15:49/6 16:26	08:57 10:53-11:12/19 14:22-14:59/37 15:52 09:49-10:13/24
14	04:59 22:13	05:56 21:14	06:58 18:18-18:50/32 19:54	07:59 17:08-17:45/37 18:34	08:06 15:45-15:47/2 16:24	08:58 10:53-11:13/20 14:22-14:59/37 15:52 09:49-10:13/24
15	05:00 22:12	05:58 21:12	07:00 18:17-18:50/33 19:52	08:01 17:08-17:44/36 18:32	08:08 15:07-15:11/4 16:22	08:59 10:53-11:13/20 14:22-15:00/38 15:52 09:50-10:13/23
16	05:02 22:11	06:00 21:10	07:02 18:16-18:51/35 19:49	08:03 17:09-17:43/34 18:29	08:10 15:04-15:14/10 16:20	09:00 10:53-11:14/21 14:22-15:00/38 15:52 09:50-10:14/24
17	05:03 22:09	06:02 21:07	07:04 18:14-18:50/36 19:46	08:05 17:09-17:41/32 18:26	08:12 15:03-15:16/13 16:18	09:01 10:54-11:15/21 14:22-15:01/39 15:52 09:51-10:14/23
18	05:05 22:08	06:04 21:05	07:06 17:52-18:04/12 19:43	08:08 17:10-17:40/30 18:24	08:15 15:02-15:17/15 16:17	09:02 10:54-11:15/21 14:23-15:01/38 15:52 09:51-10:15/24
19	05:07 22:07	06:06 21:02	07:08 17:48-18:07/19 19:41	08:10 17:12-17:39/27 18:21	08:17 15:01-15:18/17 16:15	09:03 10:55-11:16/21 14:23-15:01/38 15:52 09:52-10:16/24
20	05:08 22:05	06:08 21:00	07:10 17:45-18:09/24 19:38	08:12 17:14-17:36/22 18:19	08:19 09:51-09:53/2 16:13	09:04 10:54-11:16/22 14:23-15:02/39 15:53 09:52-10:15/23
21	05:10 22:03	06:10 20:57	07:12 17:42-18:10/28 19:35	08:14 17:16-17:33/17 18:16	08:21 09:48-09:57/9 16:12	09:04 10:55-11:17/22 14:24-15:03/39 15:53 09:53-10:16/23 14:19-14:21/2
22	05:12 22:02	06:12 20:55	07:14 17:41-18:11/30 19:33	08:16 17:21-17:30/9 18:14	08:23 09:47-10:00/13 16:10	09:05 10:55-11:17/22 14:24-15:03/39 15:53 09:53-10:16/23 14:19-14:21/2
23	05:13 22:00	06:14 20:52	07:16 17:39-18:12/33 19:30	08:18 17:16-17:30/9 18:12	08:25 09:46-10:01/15 16:09	09:05 10:56-11:18/22 14:25-15:04/39 15:54 09:54-10:17/23
24	05:15 21:58	06:16 20:50	07:18 17:38-18:46/68 19:27	08:20 16:59-17:06/7 18:09	08:27 09:45-10:02/17 16:07	09:06 10:57-11:18/21 14:25-15:04/39 15:55 09:54-10:17/23
25	05:17 21:57	06:18 20:47	07:20 17:36-18:45/69 19:25	07:23 15:57-16:10/13 17:07	08:29 09:44-10:03/19 14:37-14:44/7 16:06	09:06 10:57-11:18/21 14:26-15:04/38 15:55 09:54-10:18/24
26	05:19 21:55	06:20 20:45	07:22 17:29-18:13/44 19:22	07:25 15:55-16:11/16 17:04	08:31 09:44-10:04/20 14:35-14:46/11 16:05	09:06 10:57-11:18/21 14:26-15:04/38 15:56 09:55-10:18/23
27	05:21 21:53	06:22 20:42	07:24 17:23-18:13/50 19:19	07:27 15:53-16:12/19 17:02	08:32 09:43-10:05/22 14:34-14:47/13 16:04	09:06 10:58-11:19/21 14:27-15:05/38 15:57 09:55-10:19/24
28	05:22 21:51	06:24 20:39	07:26 17:21-18:41/80 19:16	07:29 15:53-16:13/20 17:00	08:34 09:44-10:06/22 14:33-14:48/15 16:02	09:07 10:59-11:19/20 14:28-15:05/37 15:58 09:55-10:19/24
29	05:24 21:49	06:26 20:37	07:28 17:18-18:14/56 19:14	07:31 15:52-16:13/21 16:57	08:36 09:44-10:07/23 14:33-14:50/17 16:01	09:07 10:59-11:19/20 14:29-15:06/37 15:59 09:56-10:20/24
30	05:26 21:47	06:28 20:34	07:30 17:16-18:38/82 19:11	07:33 15:48-16:13/25 16:55	08:38 09:44-10:08/24 14:33-14:51/18 16:00	09:07 11:00-11:20/20 14:30-15:07/37 16:00 09:57-10:21/24
31	05:28 21:45	06:30 19:13-19:25/12 20:32		07:36 15:45-16:14/29 16:53		09:07 11:02-11:20/18 14:31-15:07/36 16:01 09:57-10:21/24
Potential sun hours	530	470	385	323	247	215
Sum of minutes with flicker	0	12	1533	1224	819	2348

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: VPSP wind farm  
Description: VPSP wind farm

Licensed user:  
SIA Estonian, Latvian & Lithuanian environment  
Vilandes 3-6  
LV-1010 Riga  
0037167242411  
Anna / anna@environment.lv  
Calculated:  
02/05/2022 17:18/3.5.576

## SHADOW - Calendar per WTG

WTG: 1.2. - Siemens Gamesa SG 6.6-170 6600 170.0 !OI hub: 165.0 m (TOT: 250.0 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
1.35	3.07	4.72	8.16	9.63	10.93	9.79	7.85	5.92	3.23	1.29	0.72

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

	January	February	March	April	May	June
1	09:06 14:07-15:17/70 16:02	08:30 14:25-15:16/51 17:00 15:26-16:03/37	07:26 16:44-17:18/34 18:02	07:03 05:47 20:08 21:11		04:50 22:08
2	09:06 14:07-15:17/70 16:03	08:28 14:27-15:16/49 17:02 15:25-16:04/39	07:23 16:43-17:18/35 18:04 17:33-17:35/2	07:01 05:45 20:10 21:13		04:49 22:10
3	09:06 14:08-15:18/70 16:05	08:26 14:30-15:15/45 17:04 15:24-16:03/39	07:21 16:44-17:19/35 18:07 17:32-17:38/6	06:58 05:42 20:38-20:42/4 20:12 21:15		04:48 22:11
4	09:05 14:08-15:18/70 16:06	08:24 14:39-15:15/36 16:25-16:32/7 17:06 15:24-16:04/40	07:18 16:43-17:18/35 18:09 17:30-17:40/10	06:55 05:40 20:37-20:44/7 20:14 21:17		04:47 22:12
5	09:05 14:08-15:19/71 16:07	08:22 14:40-15:14/34 16:22-16:35/13 17:09 15:24-16:05/41	07:15 16:43-17:18/35 18:11 17:29-17:42/13	06:53 05:38 20:35-20:46/11 20:16 21:19		04:46 22:13
6	09:04 14:09-15:20/71 16:09	08:20 14:41-15:14/33 16:21-16:38/17 17:11 15:24-16:06/42	07:13 16:43-17:18/35 18:13 17:29-17:45/16	06:50 05:36 20:35-20:48/13 20:18 21:21		04:45 22:15
7	09:04 14:09-15:20/71 16:10	08:18 14:42-15:12/30 16:19-16:39/20 17:13 15:23-16:05/42	07:10 16:43-17:17/34 18:15 17:28-17:46/18	06:47 05:33 20:34-20:49/15 20:21 21:23		04:44 22:16
8	09:03 14:09-15:20/71 16:12	08:16 14:44-15:11/27 16:18-16:41/23 17:15 15:24-16:06/42	07:08 16:43-17:16/33 18:17 17:27-17:47/20	06:45 05:31 20:34-20:51/17 20:23 21:25		04:43 22:17
9	09:02 14:09-15:21/72 16:14	08:14 14:47-15:09/22 16:18-16:42/24 17:18 15:24-16:07/43	07:05 16:44-17:16/32 18:20 17:28-17:47/19	06:42 05:29 20:33-20:53/20 20:25 21:27		04:43 22:18
10	09:02 14:10-15:21/71 16:15	08:11 14:49-15:06/17 16:17-16:42/25 17:20 15:24-16:06/42	07:02 16:45-17:14/29 18:22 17:28-17:46/18	06:40 05:27 20:33-20:53/20 20:27 21:29		04:42 22:19
11	09:01 14:09-15:22/73 16:17	08:09 14:54-15:02/8 16:17-16:43/26 17:22 15:24-16:06/42	07:00 16:45-17:13/28 18:24 17:28-17:45/17	06:37 05:25 20:33-20:53/20 20:29 21:31		04:41 22:20
12	09:00 14:10-15:21/71 16:19	08:07 15:24-16:06/42 17:24 16:16-16:43/27	06:57 16:47-17:12/25 18:26 17:29-17:43/14	06:34 05:23 20:34-20:54/20 20:31 21:33		04:41 22:21
13	08:59 14:10-15:21/71 16:20	08:05 15:24-16:06/42 17:27 16:16-16:44/28	06:54 16:49-17:09/20 18:28 17:31-17:42/11	06:32 05:21 20:34-20:53/19 20:33 21:35		04:40 22:22
14	08:58 14:11-15:22/71 16:22	08:02 15:25-16:06/41 17:29 16:16-16:44/28	06:52 16:51-17:06/15 18:30	06:29 05:19 20:34-20:53/19 20:35 21:37		04:40 22:22
15	08:57 14:11-15:21/70 16:24	08:00 15:25-16:05/40 17:31 16:16-16:44/28	06:49 16:56-17:00/4 18:32	06:26 05:17 20:34-20:52/18 20:37 21:39		04:40 22:23
16	08:55 14:12-15:22/70 16:26	07:58 15:27-16:05/38 17:33 16:17-16:44/27	06:46 18:34	06:24 05:15 20:35-20:52/17 20:39 21:41		04:39 22:24
17	08:54 14:12-15:21/69 16:28	07:55 15:27-16:03/36 17:36 16:17-16:43/26	06:44 18:37	06:21 05:13 20:36-20:51/15 20:41 21:43		04:39 22:24
18	08:53 14:13-15:21/68 16:30	07:53 15:28-16:03/35 17:38 16:18-16:43/25	06:41 18:39	06:19 05:11 20:36-20:50/14 20:44 21:45		04:39 22:25
19	08:52 14:13-15:20/67 16:32	07:51 15:29-16:01/32 17:40 16:18-16:41/23	06:38 18:41	06:16 05:09 20:38-20:49/11 20:46 21:47		04:39 22:25
20	08:50 14:13-15:18/65 16:34	07:48 15:31-16:01/30 17:42 16:19-16:40/21	06:36 18:43	06:14 05:08 20:40-20:47/7 20:48 21:48		04:39 22:25
21	08:49 14:14-15:17/63 16:36	07:46 15:32-15:59/27 16:21-16:39/18 17:45 16:57-17:08/11	06:33 18:45	06:11 05:06 20:50 21:50		04:39 22:26
22	08:47 14:14-15:15/61 16:38	07:43 15:34-15:56/22 16:22-16:36/14 17:47 16:53-17:11/18	06:30 18:47	06:09 05:04 20:52 21:52		04:39 22:26
23	08:46 14:15-15:16/61 16:40 15:36-15:48/12	07:41 15:37-15:53/16 16:26-16:34/8 17:49 16:51-17:13/22	06:28 18:49	06:06 05:02 20:54 21:54		04:40 22:26
24	08:44 14:15-15:16/61 16:42 15:34-15:51/17	07:38 15:43-15:47/4 17:51 16:49-17:14/25	06:25 18:51	06:04 05:01 20:56 21:56		04:40 22:26
25	08:43 14:16-15:16/60 16:44 15:32-15:53/21	07:36 16:48-17:16/28 17:53	06:22 18:53	06:01 04:59 20:58 21:57		04:40 22:26
26	08:41 14:17-15:16/59 16:46 15:30-15:55/25	07:33 16:47-17:17/30 17:56	06:20 18:55	05:59 04:58 21:00 21:59		04:41 22:26
27	08:39 14:18-15:16/58 16:49 15:29-15:56/27	07:31 16:46-17:17/31 17:58	06:17 18:58	05:56 04:56 21:02 22:01		04:41 22:26
28	08:37 14:19-15:16/57 16:51 15:28-15:58/30	07:28 16:45-17:18/33 18:00	06:14 19:00	05:54 04:55 21:04 22:02		04:42 22:26
29	08:36 14:20-15:16/56 16:53 15:27-15:59/32		07:11 20:02	05:52 04:54 21:07 22:04		04:43 22:25
30	08:34 14:21-15:17/56 16:55 15:27-16:00/33		07:09 20:04	05:49 04:52 21:09 22:05		04:43 22:25
31	08:32 14:23-15:16/53 16:57 15:26-16:02/36		07:06 20:06	04:51 22:07		
Potential sun hours	235	266	366	426	508	529
Sum of minutes with flicker	2280	1832	593	0	267	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: VPSP wind farm  
Description: VPSP wind farm

Licensed user:  
SIA Estonian, Latvian & Lithuanian environment  
Vilandes 3-6  
LV-1010 Riga  
0037167242411  
Anna / anna@environment.lv  
Calculated:  
02/05/2022 17:18/3.5.576

## SHADOW - Calendar per WTG

WTG: 1.2. - Siemens Gamesa SG 6.6-170 6600 170.0 !OI hub: 165.0 m (TOT: 250.0 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
1.35	3.07	4.72	8.16	9.63	10.93	9.79	7.85	5.92	3.23	1.29	0.72

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
293	300	348	355	333	399	506	566	582	663	919	1,110	790	574	487	406	8,631

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

	July	August	September	October	November	December
1	04:44 22:25	05:30 20:44-21:04/20 21:43	06:32 20:29	07:32 17:27-17:50/23 19:08 18:10-18:22/12	07:38 14:18-14:36/18 15:46-16:12/26 16:50 14:53-15:36/43	08:40 13:51-15:03/72 15:59
2	04:45 22:24	05:32 20:43-21:03/20 21:41	06:34 20:26	07:34 17:25-17:51/26 19:06 18:08-18:23/15	07:40 14:16-14:39/23 15:48-16:12/24 16:48 14:54-15:36/42	08:41 13:52-15:03/71 15:58
3	04:46 22:24	05:34 20:43-21:04/21 21:39	06:36 20:24	07:36 17:23-17:52/29 19:03 18:06-18:24/18	07:42 14:13-14:40/27 15:48-16:10/22 16:46 14:53-15:36/43	08:43 13:53-15:04/71 15:57
4	04:47 22:23	05:36 20:44-21:03/19 21:37	06:38 20:21	07:38 17:22-17:52/30 19:00 18:05-18:24/19	07:44 14:12-14:42/30 15:49-16:09/20 16:44 14:53-15:35/42	08:45 13:53-15:05/72 15:56
5	04:48 22:22	05:38 20:44-21:01/17 21:35	06:40 20:18	07:40 17:21-17:53/32 18:58 18:04-18:24/20	07:47 14:11-14:43/32 15:51-16:07/16 16:42 14:54-15:35/41	08:46 13:54-15:05/71 15:56
6	04:49 22:22	05:40 20:45-20:59/14 21:33	06:42 20:16	07:42 17:20-17:53/33 18:55 18:04-18:24/20	07:49 14:09-14:44/35 15:52-16:04/12 16:40 14:54-15:35/41	08:48 13:55-15:06/71 15:55
7	04:50 22:21	05:42 20:44-20:56/12 21:30	06:44 20:13	07:44 17:19-17:53/34 18:52 18:04-18:21/17	07:51 14:09-14:45/36 15:56-16:02/6 16:37 14:55-15:35/40	08:49 13:55-15:06/71 15:54
8	04:51 22:20	05:44 20:45-20:54/9 21:28	06:46 20:10	07:47 17:18-17:53/35 18:50 18:04-18:18/14	07:53 14:00-14:46/46 16:35 14:55-15:34/39	08:51 13:56-15:06/70 15:54
9	04:52 22:19	05:46 20:46-20:52/6 21:26	06:48 20:08	07:49 17:18-17:53/35 18:47 18:04-18:15/11	07:55 13:58-14:47/49 16:33 14:56-15:34/38	08:52 13:56-15:06/70 15:53
10	04:53 22:18	05:48 20:48-20:51/3 21:24	06:50 20:05	07:51 17:18-17:53/35 18:44 18:05-18:13/8	07:57 13:55-14:47/52 16:31 14:57-15:33/36	08:53 13:57-15:07/70 15:53
11	04:55 22:17	05:50 21:21	06:52 20:02	07:53 17:18-17:52/34 18:42 18:07-18:11/4	08:00 13:54-14:47/53 16:29 14:57-15:32/35	08:55 13:57-15:07/70 15:53
12	04:56 22:16	05:52 21:19	06:54 20:00	07:55 17:17-17:52/35 18:39	08:02 13:53-14:48/55 16:27 14:59-15:32/33	08:56 13:58-15:07/69 15:52
13	04:57 22:15	05:54 21:17	06:56 19:57	07:57 17:17-17:51/34 18:37	08:04 13:52-14:48/56 16:26 14:59-15:31/32	08:57 13:59-15:08/69 15:52
14	04:59 22:13	05:56 21:14	06:58 19:54	07:59 17:18-17:50/32 18:34	08:06 13:51-14:49/58 16:24 15:01-15:31/30	08:58 13:59-15:08/69 15:52
15	05:00 22:12	05:58 21:12	07:00 19:52	08:01 17:19-17:50/31 18:32	08:08 13:50-14:49/59 16:22 15:02-15:29/27	08:59 14:00-15:08/68 15:52
16	05:02 22:11	06:00 21:10	07:02 19:49	08:03 17:19-17:48/29 18:29	08:10 13:50-14:49/59 16:20 15:03-15:28/25	09:00 14:00-15:08/68 15:52
17	05:03 22:09	06:02 21:07	07:04 19:46	08:05 17:20-17:47/27 18:26	08:12 13:50-14:50/60 16:18 15:06-15:27/21	09:01 14:01-15:08/67 15:52
18	05:05 22:08	06:04 21:05	07:06 19:43	08:07 16:11-16:21/10 18:24 17:21-17:45/24	08:14 13:49-14:50/61 16:17 15:08-15:25/17	09:02 14:02-15:08/66 15:52
19	05:07 22:06	06:06 21:02	07:08 19:41	08:10 16:07-16:26/19 16:56-17:06/10 18:21 17:23-17:44/21	08:17 13:49-14:50/61 16:15 15:10-15:22/12	09:03 14:02-15:08/66 15:52
20	05:08 22:05	06:08 21:00	07:10 19:38	08:12 16:04-16:28/24 16:52-17:08/16 18:19 17:25-17:41/16	08:19 13:49-14:50/61 16:13	09:03 14:02-15:08/66 15:53
21	05:10 22:03	06:10 20:57	07:12 19:35	08:14 16:02-16:29/27 16:50-17:10/20 18:16 17:29-17:36/7	08:21 13:49-14:52/63 16:12	09:04 14:03-15:09/66 15:53
22	05:12 22:02	06:12 20:55	07:14 19:33	08:16 16:01-16:31/30 18:14 16:49-17:11/22	08:23 13:49-14:54/65 16:10	09:05 14:03-15:09/66 15:53
23	05:13 20:52-20:56/4 22:00	06:14 20:52	07:16 19:30	08:18 15:59-16:32/33 18:12 16:48-17:12/24	08:25 13:50-14:57/67 16:09	09:05 14:03-15:10/67 15:54
24	05:15 20:49-20:58/9 21:58	06:16 20:50	07:18 19:27	08:20 15:57-16:33/36 18:09 16:47-17:12/25	08:27 13:50-14:58/68 16:07	09:06 14:05-15:11/66 15:55
25	05:17 20:48-21:00/12 21:57	06:18 20:47	07:20 19:24	08:22 14:57-15:34/37 17:07 15:47-16:13/26	08:29 13:50-14:59/69 16:06	09:06 14:05-15:11/66 15:55
26	05:19 20:46-21:01/15 21:55	06:20 20:45	07:22 19:22	08:24 14:56-15:34/38 17:04 15:46-16:13/27	08:31 13:50-15:00/70 16:05	09:06 14:05-15:12/67 15:56
27	05:21 20:46-21:02/16 21:53	06:22 20:42	07:24 19:19	08:26 14:55-15:34/39 17:02 15:45-16:13/28	08:32 13:50-15:00/70 16:04	09:06 14:05-15:13/68 15:57
28	05:22 20:45-21:03/18 21:51	06:24 20:39	07:26 19:16	08:28 14:55-15:35/40 17:00 15:46-16:14/28	08:34 13:50-15:01/71 16:02	09:07 14:06-15:14/68 15:58
29	05:24 20:44-21:03/19 21:49	06:26 20:37	07:28 17:33-17:46/13 19:14	08:31 14:54-15:35/41 16:57 15:46-16:13/27	08:36 13:50-15:02/72 16:01	09:07 14:06-15:15/69 15:59
30	05:26 20:44-21:03/19 21:47	06:28 20:34	07:30 17:30-17:48/18 19:11 18:13-18:20/7	08:33 14:53-15:35/42 16:55 15:45-16:12/27	08:38 13:51-15:02/71 16:00	09:07 14:07-15:16/69 16:00
31	05:28 20:44-21:04/20 21:45	06:30 20:32	07:32 19:11	08:36 14:22-14:33/11 15:46-16:13/27 16:53 14:54-15:36/42	08:40 13:51-15:02/71 16:00	09:08 14:06-15:16/70 16:01
Potential sun hours	530	470	385	323	247	216
Sum of minutes with flicker	132	141	38	1536	2380	2129

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:

VPSP wind farm

Description:

VPSP wind farm

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Anna / anna@environment.lv

Calculated:

02/05/2022 17:18/3.5.576

## SHADOW - Calendar per WTG

WTG: 1.3. - Siemens Gamesa SG 6.6-170 6600 170.0 !OI hub: 165.0 m (TOT: 250.0 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
1.35	3.07	4.72	8.16	9.63	10.93	9.79	7.85	5.92	3.23	1.29	0.72

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
293	300	348	355	333	399	506	566	582	663	919	1,110	790	574	487	406	8,631

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

	January		February		March	April		May	June
1	09:06	13:51-14:25/34	08:30	07:26		07:03	19:11-19:40/29	05:47	04:50
	16:02	12:20-12:49/29	17:00	18:02		20:08		21:11	22:08
2	09:06	13:52-14:26/34	08:28	07:23		07:01	19:11-19:42/31	05:45	04:49
	16:04	12:21-12:49/28	17:02	18:04		20:10		21:13	22:10
3	09:06	13:53-14:26/33	08:26	07:21		06:58	19:12-19:43/31	05:42	04:48
	16:05	12:22-12:49/27	17:04	18:07		20:12		21:15	22:11
4	09:05	13:53-14:26/33	08:24	07:18		06:55	19:14-19:43/29	05:40	04:47
	16:06	12:22-12:49/27	17:06	18:09		20:14		21:17	22:12
5	09:05	13:54-14:27/33	08:22	07:16		06:53	19:24-19:42/18	05:38	04:46
	16:08	12:24-12:49/25	17:09	18:11		20:16		21:19	22:14
6	09:04	13:54-14:27/33	08:20	07:13		06:50	19:24-19:41/17	05:36	04:45
	16:09	12:25-12:49/24	17:11	18:13		20:19		21:21	22:15
7	09:04	13:55-14:28/33	08:18	07:10		06:47	19:25-19:40/15	05:33	04:44
	16:10	12:26-12:49/23	17:13	18:15		20:21		21:23	22:16
8	09:03	13:56-14:28/32	08:16	07:08		06:45	19:26-19:38/12	05:31	04:43
	16:12	12:27-12:48/21	17:15	18:17		20:23	07:10-07:14/4	21:25	22:17
9	09:02	13:56-14:28/32	08:14	07:05		06:42	19:29-19:35/6	05:29	04:43
	16:14	12:28-12:48/20	17:18	18:20		20:25	07:08-07:17/9	21:27	22:18
10	09:02	13:57-14:28/31	08:11	07:02		06:40	07:05-07:18/13	05:27	04:42
	16:15	12:30-12:47/17	17:20	18:22		20:27		21:29	22:19
11	09:01	13:58-14:28/30	08:09	07:00		06:37	07:03-07:19/16	05:25	04:41
	16:17	12:32-12:46/14	17:22	18:24		20:29		21:31	22:20
12	09:00	13:58-14:28/30	08:07	06:57		06:34	07:00-07:19/19	05:23	04:41
	16:19	12:34-12:44/10	17:24	18:26		20:31		21:33	22:21
13	08:59	13:59-14:28/29	08:05	06:54		06:32	06:58-07:20/22	05:21	04:40
	16:21		17:27	18:28		20:33		21:35	22:22
14	08:58	14:00-14:28/28	08:02	06:52		06:29	06:56-07:19/23	05:19	04:40
	16:22		17:29	18:30		20:35		21:37	22:22
15	08:57	14:01-14:27/26	08:00	06:49		06:27	06:56-07:20/24	05:17	04:40
	16:24		17:31	18:32		20:37		21:39	22:23
16	08:56	14:02-14:27/25	07:58	06:46		06:24	06:55-07:19/24	05:15	04:39
	16:26		17:33	18:35		20:39		21:41	22:24
17	08:54	14:03-14:26/23	07:55	06:44		06:21	06:55-07:20/25	05:13	04:39
	16:28		17:36	18:37		20:42		21:43	22:24
18	08:53	14:05-14:26/21	07:53	06:41		06:19	06:54-07:19/25	05:11	04:39
	16:30		17:38	18:39		20:44		21:45	22:25
19	08:52	14:06-14:25/19	07:51	06:38	18:07-18:13/6	06:16	06:55-07:19/24	05:09	04:39
	16:32		17:40	18:41		20:46		21:47	22:25
20	08:50	14:08-14:23/15	07:48	06:36	18:05-18:15/10	06:14	06:54-07:18/24	05:08	04:39
	16:34		17:42	18:43		20:48		21:49	22:26
21	08:49	14:11-14:22/11	07:46	06:33	18:03-18:17/14	06:11	06:55-07:17/22	05:06	04:39
	16:36		17:45	18:45		20:50		21:50	22:26
22	08:47		07:43	06:30	18:02-18:18/16	06:09	06:55-07:16/21	05:04	04:39
	16:38		17:47	18:47		20:52		21:52	22:26
23	08:46		07:41	06:28	18:01-18:21/20	06:06	06:56-07:15/19	05:03	04:40
	16:40		17:49	18:49		20:54		21:54	22:26
24	08:44		07:38	06:25	18:01-18:23/22	06:04	06:57-07:14/17	05:01	04:40
	16:42		17:51	18:51		20:56		21:56	22:26
25	08:43		07:36	06:22	18:00-18:25/25	06:01	06:58-07:11/13	04:59	04:40
	16:44		17:53	18:53		20:58		21:57	22:26
26	08:41		07:33	06:20	18:00-18:27/27	05:59	07:01-07:08/7	04:58	04:41
	16:47		17:56	18:56		21:00		21:59	22:26
27	08:39		07:31	06:17	18:00-18:29/29	05:56		04:56	04:41
	16:49		17:58	18:58		21:02		22:01	22:26
28	08:38		07:28	06:14	18:00-18:31/31	05:54		04:55	04:42
	16:51		18:00	19:00		21:05		22:02	22:26
29	08:36			07:12	19:02-19:34/32	05:52		04:54	04:43
	16:53			20:02		21:07		22:04	22:26
30	08:34			07:09	19:03-19:35/32	05:49		04:52	04:43
	16:55			20:04		21:09		22:05	22:25
31	08:32			07:06	19:05-19:37/32			04:51	
	16:57			20:06				22:07	
Potential sun hours	235		266	366		426		508	529
Sum of minutes with flicker	850	0	296	539	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:

VPSP wind farm

Description:

VPSP wind farm

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Anna / anna@environment.lv

Calculated:

02/05/2022 17:18/3.5.576

## SHADOW - Calendar per WTG

WTG: 1.3. - Siemens Gamesa SG 6.6-170 6600 170.0 !OI hub: 165.0 m (TOT: 250.0 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
1.35	3.07	4.72	8.16	9.63	10.93	9.79	7.85	5.92	3.23	1.29	0.72

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
293	300	348	355	333	399	506	566	582	663	919	1,110	790	574	487	406	8,631

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

	July	August	September	October	November	December
1	04:44 22:25	05:30 21:43	06:32 07:02-07:18/16 20:29	07:32 19:08	07:38 16:50	08:40 13:40-14:10/30 15:59 12:14-12:28/14
2	04:45 22:24	05:32 21:41	06:34 07:04-07:17/13 20:26	07:34 19:06	07:40 16:48	08:42 13:40-14:11/31 15:58 12:13-12:30/17
3	04:46 22:24	05:34 21:39	06:36 19:26-19:32/6 20:24 07:06-07:15/9	07:36 19:03	07:42 16:46	08:43 13:39-14:11/32 15:57 12:11-12:31/20
4	04:47 22:23	05:36 21:37	06:38 19:23-19:35/12 20:21 07:08-07:12/4	07:38 19:00	07:44 16:44	08:45 13:40-14:12/32 15:57 12:11-12:32/21
5	04:48 22:22	05:38 21:35	06:40 19:21-19:36/15 20:19	07:40 18:58	07:47 16:42	08:46 13:40-14:13/33 15:56 12:11-12:34/23
6	04:49 22:22	05:40 21:33	06:42 19:20-19:37/17 20:16	07:43 18:55	07:49 16:40	08:48 13:41-14:13/32 15:55 12:11-12:35/24
7	04:50 22:21	05:42 21:31	06:44 19:19-19:37/18 20:13	07:45 18:52	07:51 16:37	08:49 13:40-14:13/33 15:54 12:10-12:35/25
8	04:51 22:20	05:44 21:28	06:46 19:09-19:37/28 20:11	07:47 18:50	07:53 16:35	08:51 13:41-14:14/33 15:54 12:10-12:37/27
9	04:52 22:19	05:46 21:26	06:48 19:06-19:37/31 20:08	07:49 18:47	07:55 16:33	08:52 13:41-14:14/33 15:53 12:11-12:38/27
10	04:53 22:18	05:48 21:24	06:50 19:04-19:35/31 20:05	07:51 18:45	07:58 16:31	08:54 13:42-14:15/33 15:53 12:10-12:38/28
11	04:55 22:17	05:50 21:22	06:52 19:03-19:32/29 20:02	07:53 18:42	08:00 16:29	08:55 13:42-14:15/33 15:53 12:10-12:39/29
12	04:56 22:16	05:52 21:19	06:54 18:57-19:30/33 20:00	07:55 18:39	08:02 16:27	08:56 13:43-14:17/34 15:52 12:11-12:40/29
13	04:57 22:15	05:54 21:17	06:56 18:54-19:27/33 19:57	07:57 18:37	08:04 16:26	08:57 13:43-14:17/34 15:52 12:11-12:41/30
14	04:59 22:14	05:56 21:14	06:58 18:52-19:24/32 19:54	07:59 18:34	08:06 16:24	08:58 13:43-14:17/34 15:52 12:11-12:41/30
15	05:00 22:12	05:58 21:12	07:00 18:51-19:22/31 19:52	08:01 18:32	08:08 16:22	08:59 13:43-14:18/35 15:52 12:11-12:42/31
16	05:02 22:11	06:00 21:10	07:02 18:50-19:19/29 19:49	08:03 18:29	08:10 16:20	09:00 13:44-14:18/34 15:52 12:11-12:42/31
17	05:03 22:10	06:02 07:07-07:16/9 21:07	07:04 18:49-19:16/27 19:46	08:05 18:27	08:13 16:18	09:01 13:44-14:19/35 15:52 12:12-12:43/31
18	05:05 22:08	06:04 07:04-07:18/14 21:05	07:06 18:47-19:13/26 19:44	08:08 18:24	08:15 16:17	09:02 13:45-14:19/34 15:52 12:12-12:44/32
19	05:07 22:07	06:06 07:03-07:20/17 21:02	07:08 18:47-19:10/23 19:41	08:10 18:22	08:17 16:15	09:03 13:46-14:20/34 15:52 12:13-12:45/32
20	05:08 22:05	06:08 07:01-07:21/20 21:00	07:10 18:47-19:07/20 19:38	08:12 18:19	08:19 16:13	09:04 13:45-14:20/35 15:53 12:13-12:44/31
21	05:10 22:03	06:10 07:00-07:22/22 20:57	07:12 18:47-19:05/18 19:35	08:14 18:17	08:21 13:46-13:57/11 16:12	09:04 13:46-14:21/35 15:53 12:14-12:45/31
22	05:12 22:02	06:12 06:59-07:22/23 20:55	07:14 18:47-19:02/15 19:33	08:16 18:14	08:23 13:44-13:59/15 16:10	09:05 13:46-14:21/35 15:54 12:14-12:45/31
23	05:13 22:00	06:14 06:59-07:22/23 20:52	07:16 18:48-18:59/11 19:30	08:18 18:12	08:25 13:43-14:02/19 16:09	09:05 13:47-14:22/35 15:54 12:15-12:46/31
24	05:15 21:58	06:16 06:58-07:23/25 20:50	07:18 18:49-18:56/7 19:27	08:20 18:09	08:27 13:42-14:03/21 16:08	09:06 13:48-14:22/34 15:55 12:15-12:46/31
25	05:17 21:57	06:18 06:57-07:22/25 20:47	07:20 18:52-18:54/2 19:25	07:23 17:07	08:29 13:41-14:04/23 16:06	09:06 13:48-14:22/34 15:55 12:15-12:47/32
26	05:19 21:55	06:20 06:57-07:21/24 20:45	07:22 19:22	07:25 17:04	08:31 13:40-14:05/25 16:05	09:06 13:48-14:23/35 15:56 12:16-12:47/31
27	05:21 21:53	06:22 06:57-07:21/24 20:42	07:24 19:19	07:27 17:02	08:33 13:40-14:06/26 16:04	09:07 13:49-14:23/34 15:57 12:16-12:47/31
28	05:22 21:51	06:24 06:57-07:20/23 20:40	07:26 19:16	07:29 17:00	08:34 13:40-14:08/28 16:02	09:07 13:49-14:23/34 15:58 12:17-12:48/31
29	05:24 21:49	06:26 06:57-07:20/23 20:37	07:28 19:14	07:31 16:57	08:36 13:40-14:09/29 16:01	09:07 13:50-14:24/34 15:59 12:18-12:48/30
30	05:26 21:47	06:28 06:58-07:20/22 20:34	07:30 19:11	07:34 16:55	08:38 13:40-14:10/30 16:00	09:07 13:50-14:25/35 16:00 12:19-12:49/30
31	05:28 21:45	06:30 07:00-07:19/19 20:32		07:36 16:53		09:07 13:51-14:25/34 16:01 12:20-12:49/29
Potential sun hours	530	470	385	323	247	215
Sum of minutes with flicker	0	313	536	0	237	1913

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:

VPSP wind farm

Description:

VPSP wind farm

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Anna / anna@environment.lv

Calculated:

02/05/2022 17:18/3.5.576

## SHADOW - Calendar per WTG

WTG: 1.4. - Siemens Gamesa SG 6.6-170 6600 170.0 !OI hub: 165.0 m (TOT: 250.0 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
1.35	3.07	4.72	8.16	9.63	10.93	9.79	7.85	5.92	3.23	1.29	0.72

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
293	300	348	355	333	399	506	566	582	663	919	1,110	790	574	487	406	8,631

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

	January	February	March	April	May	June
1	09:06 16:02	08:30 17:00	07:26 18:02	07:04 20:08	05:47 21:11	04:50 22:08
2	09:06 16:04	08:28 17:02	07:23 18:04	07:50-07:57/7 20:10	07:01 21:13	05:45 22:10
3	09:06 16:05	08:26 17:04	07:21 18:07	07:47-08:00/13 20:12	05:42 21:15	06:18-06:31/13 22:11
4	09:05 16:06	08:24 17:06	07:18 18:09	07:44-08:01/17 20:14	05:40 21:17	06:15-06:33/18 22:12
5	09:05 16:08	08:22 17:09	07:16 18:11	07:43-08:03/20 20:16	05:38 21:19	06:12-06:34/22 22:14
6	09:04 16:09	08:20 17:11	07:13 18:13	07:39-08:04/25 20:19	05:36 21:21	06:11-06:36/25 22:15
7	09:04 16:11	08:18 17:13	07:10 18:15	07:36-08:04/28 20:21	05:33 21:23	06:09-06:37/28 22:16
8	09:03 16:12	08:16 17:15	07:08 18:17	07:34-08:05/31 20:23	05:31 21:25	06:08-06:38/30 22:17
9	09:02 16:14	08:14 17:18	07:05 18:20	07:31-08:04/33 20:25	05:29 21:27	06:07-06:38/31 22:18
10	09:02 16:15	08:11 17:20	07:02 18:22	07:29-08:04/35 20:27	05:27 21:29	06:07-06:40/33 22:19
11	09:01 16:17	08:09 17:22	07:00 18:24	07:29-08:03/34 20:29	05:25 21:31	06:07-06:40/33 22:20
12	09:00 16:19	08:07 17:24	06:57 18:26	07:28-08:03/35 20:31	05:23 21:33	06:06-06:41/35 22:21
13	08:59 16:21	08:05 17:27	06:54 18:28	07:28-08:02/34 20:33	05:21 21:35	06:05-06:41/36 22:22
14	08:58 16:22	08:02 17:29	06:52 18:30	07:28-08:01/33 20:35	05:19 21:37	06:05-06:41/36 22:22
15	08:57 16:24	08:00 17:31	06:49 18:32	07:29-08:00/31 20:37	05:17 21:39	06:04-06:41/37 22:23
16	08:56 16:26	07:58 17:33	06:46 18:35	07:29-07:58/29 20:39	05:15 21:41	06:05-06:42/37 22:24
17	08:54 16:28	07:55 17:36	06:44 18:37	07:30-07:55/25 20:42	05:13 21:43	06:04-06:42/38 22:24
18	08:53 16:30	07:53 17:38	06:41 18:39	07:32-07:45/13 20:44	05:11 21:45	06:05-06:42/37 22:25
19	08:52 16:32	07:51 17:40	06:38 18:41	07:34-07:41/7 20:46	05:09 21:47	06:05-06:42/37 22:25
20	08:50 16:34	07:48 17:42	06:36 18:43	06:14 20:48	05:08 21:49	06:04-06:41/37 22:25
21	08:49 16:36	07:46 17:45	06:33 18:45	06:11 20:50	05:06 21:50	06:05-06:42/37 22:26
22	08:47 16:38	07:43 17:47	06:30 18:47	06:09 20:52	05:04 21:52	06:04-06:41/37 22:26
23	08:46 16:40	07:41 17:49	06:28 18:49	06:06 20:54	05:03 21:54	06:05-06:42/37 22:26
24	08:44 16:42	07:38 17:51	06:25 18:51	06:04 20:56	05:01 21:56	06:06-06:42/36 22:26
25	08:43 16:44	07:36 17:54	06:22 18:53	06:01 20:58	04:59 21:57	06:05-06:41/36 22:26
26	08:41 16:47	07:33 17:56	06:20 18:56	05:59 21:00	04:58 21:59	06:06-06:41/35 22:26
27	08:39 16:49	07:31 17:58	06:17 18:58	05:56 21:02	04:56 22:01	06:06-06:41/35 22:26
28	08:38 16:51	07:28 18:00	06:14 19:00	05:54 21:05	04:55 22:02	06:07-06:41/34 22:26
29	08:36 16:53		07:12 20:02	05:52 21:07	04:54 22:04	06:07-06:41/34 22:26
30	08:34 16:55		07:09 20:04	05:49 21:09	04:52 22:05	06:07-06:40/33 22:25
31	08:32 16:57		07:06 20:06		04:51 22:07	06:07-06:40/33 22:25
Potential sun hours	235	266	366	426	508	529
Sum of minutes with flicker	0	0	450	0	950	709

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: VPSP wind farm  
Description: VPSP wind farm

Licensed user:  
SIA Estonian, Latvian & Lithuanian environment  
Vilandes 3-6  
LV-1010 Riga  
0037167242411  
Anna / anna@environment.lv  
Calculated:  
02/05/2022 17:18/3.5.576

## SHADOW - Calendar per WTG

WTG: 1.4. - Siemens Gamesa SG 6.6-170 6600 170.0 !OI hub: 165.0 m (TOT: 250.0 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
1.35	3.07	4.72	8.16	9.63	10.93	9.79	7.85	5.92	3.23	1.29	0.72

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
293	300	348	355	333	399	506	566	582	663	919	1,110	790	574	487	406	8,631

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

	July	August	September	October	November	December
1	04:44 06:18-06:42/24 22:25	05:30 06:17-06:51/34 21:43	06:32 20:29	07:32 08:07-08:42/35 19:08	07:38 16:51	08:40 15:59
2	04:45 06:19-06:43/24 22:24	05:32 06:17-06:50/33 21:41	06:34 20:26	07:34 08:07-08:42/35 19:06	07:40 16:48	08:41 15:58
3	04:46 06:18-06:43/25 22:24	05:34 06:17-06:49/32 21:39	06:36 20:24	07:36 08:07-08:42/35 19:03	07:42 16:46	08:43 15:57
4	04:47 06:17-06:43/26 22:23	05:36 06:18-06:48/30 21:37	06:38 20:21	07:38 08:07-08:42/35 19:00	07:44 16:44	08:45 15:57
5	04:48 06:17-06:44/27 22:22	05:38 06:19-06:48/29 21:35	06:40 20:19	07:40 08:09-08:41/32 18:58	07:47 16:42	08:46 15:56
6	04:49 06:17-06:45/28 22:22	05:40 06:20-06:47/27 21:33	06:42 20:16	07:43 08:11-08:40/29 18:55	07:49 16:40	08:48 15:55
7	04:50 06:17-06:45/28 22:21	05:42 06:21-06:46/25 21:31	06:44 20:13	07:45 08:14-08:40/26 18:52	07:51 16:38	08:49 15:54
8	04:51 06:17-06:46/29 22:20	05:44 06:23-06:44/21 21:28	06:46 20:11	07:47 08:16-08:39/23 18:50	07:53 16:35	08:51 15:54
9	04:52 06:16-06:46/30 22:19	05:46 06:24-06:41/17 21:26	06:48 20:08	07:49 08:18-08:37/19 18:47	07:55 16:33	08:52 15:53
10	04:54 06:17-06:48/31 22:18	05:48 06:27-06:38/11 21:24	06:50 20:05	07:51 08:20-08:35/15 18:45	07:58 16:31	08:54 15:53
11	04:55 06:17-06:48/31 22:17	05:50 21:22	06:52 20:02	07:53 08:22-08:32/10 18:42	08:00 16:29	08:55 15:53
12	04:56 06:16-06:48/32 22:16	05:52 21:19	06:54 20:00	07:55 18:39	08:02 16:28	08:56 15:52
13	04:58 06:16-06:48/32 22:15	05:54 21:17	06:56 19:57	07:57 18:37	08:04 16:26	08:57 15:52
14	04:59 06:16-06:50/34 22:14	05:56 21:14	06:58 19:54	07:59 18:34	08:06 16:24	08:58 15:52
15	05:00 06:16-06:50/34 22:12	05:58 21:12	07:00 19:52	08:01 18:32	08:08 16:22	08:59 15:52
16	05:02 06:15-06:50/35 22:11	06:00 21:10	07:02 19:49	08:03 18:29	08:10 16:20	09:00 15:52
17	05:04 06:16-06:51/35 22:10	06:02 21:07	07:04 19:46	08:05 18:27	08:12 16:18	09:01 15:52
18	05:05 06:15-06:51/36 22:08	06:04 21:05	07:06 19:44	08:08 18:24	08:15 16:17	09:02 15:52
19	05:07 06:15-06:52/37 22:07	06:06 21:02	07:08 19:41	08:10 18:22	08:17 16:15	09:03 15:52
20	05:08 06:15-06:51/36 22:05	06:08 21:00	07:10 19:38	08:12 18:19	08:19 16:14	09:04 15:53
21	05:10 06:15-06:52/37 22:03	06:10 20:57	07:12 19:35	08:14 18:17	08:21 16:12	09:04 15:53
22	05:12 06:15-06:52/37 22:02	06:12 20:55	07:14 19:33	08:16 18:14	08:23 16:10	09:05 15:54
23	05:13 06:15-06:52/37 22:00	06:14 20:52	07:16 19:30	08:18 18:12	08:25 16:09	09:05 15:54
24	05:15 06:14-06:52/38 21:58	06:16 20:50	07:18 19:27	08:20 18:09	08:27 16:08	09:06 15:55
25	05:17 06:15-06:52/37 21:57	06:18 20:47	07:20 08:15-08:27/12 19:25	07:23 17:07	08:29 16:06	09:06 15:55
26	05:19 06:15-06:52/37 21:55	06:20 20:45	07:22 08:13-08:37/24 19:22	07:25 17:04	08:31 16:05	09:06 15:56
27	05:21 06:15-06:52/37 21:53	06:22 20:42	07:24 08:11-08:39/28 19:19	07:27 17:02	08:33 16:04	09:06 15:57
28	05:22 06:15-06:52/37 21:51	06:24 20:40	07:26 08:10-08:41/31 19:16	07:29 17:00	08:34 16:02	09:07 15:58
29	05:24 06:16-06:52/36 21:49	06:26 20:37	07:28 08:09-08:41/32 19:14	07:31 16:57	08:36 16:01	09:07 15:59
30	05:26 06:15-06:51/36 21:47	06:28 20:34	07:30 08:08-08:42/34 19:11	07:33 16:55	08:38 16:00	09:07 16:00
31	05:28 06:16-06:51/35 21:45	06:30 20:32		07:36 16:53		09:07 16:01
Potential sun hours	530	470	385	323	247	216
Sum of minutes with flicker	1018	259	161	294	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:

VPSP wind farm

Description:

VPSP wind farm

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Anna / anna@environment.lv

Calculated:

02/05/2022 17:18/3.5.576

## SHADOW - Calendar per WTG

WTG: 1.5. - Siemens Gamesa SG 6.6-170 6600 170.0 !OI hub: 165.0 m (TOT: 250.0 m) (14)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.35	3.07	4.72	8.16	9.63	10.93	9.79	7.85	5.92	3.23	1.29	0.72

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
293	300	348	355	333	399	506	566	582	663	919	1,110	790	574	487	406	8,631

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

	January		February		March		April		May		June	
1	09:06	15:08-15:19/11	08:30	15:51-16:07/16	07:26		07:03	18:40-19:14/34	05:47		04:50	
	16:02		17:00		18:02		20:08		21:11		22:08	
2	09:06	15:08-15:20/12	08:28	15:52-16:06/14	07:23		07:01	18:40-19:14/34	05:45		04:49	
	16:03		17:02		18:04		20:10		21:13		22:09	
3	09:06	15:09-15:22/13	08:26	15:53-16:04/11	07:21	17:32-17:38/6	06:58	18:40-19:13/33	05:42		04:48	
	16:05		17:04		18:07		20:12		21:15		22:11	
4	09:05	15:09-15:23/14	08:24	15:57-16:01/4	07:18	17:30-17:40/10	06:55	18:41-19:13/32	05:40		04:47	
	16:06		17:06		18:09		20:14		21:17		22:12	
5	09:05	15:09-15:25/16	08:22		07:15	17:28-17:42/14	06:53	18:41-19:12/31	05:38		04:46	
	16:07		17:09		18:11		20:16		21:19		22:13	
6	09:04	15:10-15:27/17	08:20		07:13	17:28-17:45/17	06:50	18:42-19:10/28	05:36		04:45	
	16:09		17:11		18:13		20:18		21:21		22:15	
7	09:04	15:10-15:29/19	08:18		07:10	17:27-17:46/19	06:47	18:43-19:09/26	05:33		04:44	
	16:10		17:13		18:15		20:20		21:23		22:16	
8	09:03	15:10-15:30/20	08:16		07:08	17:26-17:47/21	06:45	18:44-19:07/23	05:31		04:43	
	16:12		17:15		18:17		20:23		21:25		22:17	
9	09:02	15:10-15:32/22	08:13		07:05	17:26-17:48/22	06:42	18:46-19:04/18	05:29		04:43	
	16:14		17:18		18:19		20:25		21:27		22:18	
10	09:01	15:11-15:32/21	08:11		07:02	17:26-17:47/21	06:39	18:49-19:01/12	05:27		04:42	
	16:15		17:20		18:22		20:27		21:29		22:19	
11	09:01	15:10-15:32/22	08:09		07:00	17:26-17:46/20	06:37		05:25		04:41	
	16:17		17:22		18:24		20:29		21:31		22:20	
12	09:00	15:11-15:33/22	08:07		06:57	17:26-17:45/19	06:34		05:23		04:41	
	16:19		17:24		18:26		20:31		21:33		22:21	
13	08:59	15:12-15:33/21	08:05		06:54	17:27-17:44/17	06:32		05:21		04:40	
	16:20		17:27		18:28		20:33		21:35		22:21	
14	08:58	15:11-15:33/22	08:02		06:52	17:28-17:42/14	06:29		05:19		04:40	
	16:22		17:29		18:30		20:35		21:37		22:22	
15	08:56	15:12-15:34/22	08:00		06:49	17:30-17:39/9	06:26		05:17		04:40	
	16:24		17:31		18:32		20:37		21:39		22:23	
16	08:55	15:13-15:34/21	07:58		06:46		06:24		05:15		04:39	
	16:26		17:33		18:34		20:39		21:41		22:23	
17	08:54	15:13-15:34/21	07:55		06:44		06:21		05:13		04:39	
	16:28		17:36		18:37		20:41		21:43		22:24	
18	08:53	15:48-15:50/2	07:53		06:41		06:19		05:11		04:39	
	16:30	15:14-15:33/19	17:38		18:39		20:43		21:45		22:25	
19	08:51	15:48-15:53/5	07:51		06:38		06:16		05:09		04:39	
	16:32	15:15-15:34/19	17:40		18:41		20:46		21:46		22:25	
20	08:50	15:47-15:55/8	07:48		06:36	17:55-18:08/13	06:14		05:08		04:39	
	16:34	15:16-15:33/17	17:42		18:43		20:48		21:48		22:25	
21	08:49	15:46-15:57/11	07:46		06:33	17:51-18:11/20	06:11		05:06		04:39	
	16:36	15:16-15:33/17	17:45		18:45		20:50		21:50		22:26	
22	08:47	15:47-16:00/13	07:43		06:30	17:49-18:12/23	06:09		05:04		04:39	
	16:38	15:18-15:33/15	17:47		18:47		20:52		21:52		22:26	
23	08:46	15:47-16:03/16	07:41		06:28	17:47-18:14/27	06:06		05:02		04:40	
	16:40	15:20-15:32/12	17:49		18:49		20:54		21:54		22:26	
24	08:44	15:47-16:05/18	07:38		06:25	17:46-18:15/29	06:04		05:01		04:40	
	16:42	15:22-15:30/8	17:51		18:51		20:56		21:55		22:26	
25	08:42	15:47-16:07/20	07:36		06:22	17:44-18:15/31	06:01		04:59		04:40	
	16:44		17:53		18:53		20:58		21:57		22:26	
26	08:41	15:47-16:08/21	07:33		06:19	17:44-18:16/32	05:59		04:58		04:41	
	16:46		17:56		18:55		21:00		21:59		22:26	
27	08:39	15:47-16:08/21	07:31		06:17	17:42-18:16/34	05:56		04:56		04:41	
	16:49		17:58		18:57		21:02		22:00		22:26	
28	08:37	15:47-16:08/21	07:28		06:14	17:41-18:16/35	05:54		04:55		04:42	
	16:51		18:00		19:00		21:04		22:02		22:26	
29	08:36	15:48-16:08/20			07:11	18:41-19:15/34	05:52		04:54		04:43	
	16:53				20:02		21:06		22:04		22:25	
30	08:34	15:49-16:08/19			07:09	18:41-19:16/35	05:49		04:52		04:43	
	16:55				20:04		21:09		22:05		22:25	
31	08:32	15:50-16:07/17			07:06	18:40-19:15/35			04:51			
	16:57				20:06				22:07			
Potential sun hours	235		266		366		426		508		529	
Sum of minutes with flicker	635		45		557		271		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:

VPSP wind farm

Description:

VPSP wind farm

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Anna / anna@environment.lv

Calculated:

02/05/2022 17:18/3.5.576

## SHADOW - Calendar per WTG

WTG: 1.5. - Siemens Gamesa SG 6.6-170 6600 170.0 !OI hub: 165.0 m (TOT: 250.0 m) (14)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.35	3.07	4.72	8.16	9.63	10.93	9.79	7.85	5.92	3.23	1.29	0.72

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
293	300	348	355	333	399	506	566	582	663	919	1,110	790	574	487	406	8,631

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

	July	August	September	October	November	December
1	04:44 22:25	05:30 21:43	06:32 20:29	07:32 18:06-18:25/19 19:08	07:38 16:50	08:40 14:52-15:14/22 15:59
2	04:45 22:24	05:32 21:41	06:34 18:47-18:59/12 20:26	07:34 18:05-18:25/20 19:06	07:40 16:48	08:41 14:53-15:14/21 15:58
3	04:46 22:24	05:34 21:39	06:36 18:44-19:02/18 20:24	07:36 18:04-18:25/21 19:03	07:42 16:46	08:43 14:53-15:15/22 15:57
4	04:47 22:23	05:36 21:37	06:38 18:42-19:04/22 20:21	07:38 18:03-18:25/22 19:00	07:44 16:44	08:45 14:54-15:15/21 15:57
5	04:48 22:22	05:38 21:35	06:40 18:40-19:05/25 20:18	07:40 18:03-18:25/22 18:58	07:46 16:42	08:46 14:55-15:14/19 15:56
6	04:49 22:21	05:40 21:33	06:42 18:38-19:06/28 20:16	07:42 18:03-18:24/21 18:55	07:49 16:40	08:48 14:55-15:12/17 15:55
7	04:50 22:21	05:42 21:30	06:44 18:37-19:07/30 20:13	07:44 18:03-18:21/18 18:52	07:51 15:27-15:32/5 16:37	08:49 14:56-15:12/16 15:54
8	04:51 22:20	05:44 21:28	06:46 18:36-19:07/31 20:10	07:46 18:03-18:18/15 18:50	07:53 15:24-15:35/11 16:35	08:51 14:57-15:11/14 15:54
9	04:52 22:19	05:46 21:26	06:48 18:35-19:07/32 20:08	07:49 18:04-18:15/11 18:47	07:55 15:22-15:36/14 16:33	08:52 14:57-15:10/13 15:53
10	04:53 22:18	05:48 21:24	06:50 18:34-19:08/34 20:05	07:51 18:06-18:13/7 18:44	07:57 15:22-15:38/16 16:31	08:53 14:58-15:10/12 15:53
11	04:55 22:17	05:50 21:21	06:52 18:33-19:08/35 20:02	07:53 18:07-18:11/4 18:42	08:00 15:20-15:38/18 16:29	08:55 14:58-15:09/11 15:53
12	04:56 22:16	05:52 21:19	06:54 18:33-19:07/34 20:00	07:55 18:39	08:02 15:21-15:40/19 16:27	08:56 14:59-15:09/10 15:52
13	04:57 22:15	05:54 21:17	06:56 18:32-19:07/35 19:57	07:57 18:37	08:04 15:20-15:40/20 16:26	08:57 15:00-15:09/9 15:52
14	04:59 22:13	05:56 21:14	06:58 18:32-19:07/35 19:54	07:59 18:34	08:06 15:19-15:40/21 16:24	08:58 15:01-15:09/8 15:52
15	05:00 22:12	05:58 21:12	07:00 18:32-19:06/34 19:52	08:01 18:32	08:08 15:20-15:41/21 16:22	08:59 15:01-15:08/7 15:52
16	05:02 22:11	06:00 21:10	07:02 18:31-19:05/34 19:49	08:03 18:29	08:10 15:20-15:41/21 16:20	09:00 13:16-13:21/5 15:52
17	05:03 22:09	06:02 21:07	07:04 18:31-19:04/33 19:46	08:05 18:26	08:12 15:21-15:41/20 16:18	09:01 13:15-13:22/7 15:52
18	05:05 22:08	06:04 21:05	07:06 18:31-19:03/32 19:43	08:07 18:24	08:14 15:21-15:39/18 16:17	09:02 13:15-13:23/8 15:52
19	05:07 22:06	06:06 21:02	07:08 18:32-19:01/29 19:41	08:10 18:21	08:16 15:21-15:37/16 16:15	09:03 13:15-13:23/8 15:52
20	05:08 22:05	06:08 21:00	07:10 18:33-19:00/27 19:38	08:12 18:19	08:19 15:22-15:35/13 16:13	09:03 13:15-13:24/9 15:53
21	05:10 22:03	06:10 20:57	07:12 18:34-18:58/24 19:35	08:14 18:16	08:21 15:23-15:33/10 16:12	09:04 13:16-13:25/9 15:53
22	05:12 22:02	06:12 20:55	07:14 18:35-18:56/21 19:33	08:16 18:14	08:23 15:23-15:31/8 16:10	09:05 13:16-13:25/9 15:54
23	05:13 22:00	06:14 20:52	07:16 18:37-18:53/16 19:30	08:18 18:12	08:25 15:24-15:29/5 16:09	09:05 13:16-13:25/9 15:54
24	05:15 21:58	06:16 20:50	07:18 18:42-18:48/6 19:27	08:20 18:09	08:27 15:26-15:28/2 16:07	09:05 13:18-13:26/8 15:55
25	05:17 21:56	06:18 20:47	07:20 19:24	08:22 17:07	08:29 14:51-15:12/21 16:06	09:06 13:18-13:26/8 15:55
26	05:19 21:55	06:20 20:45	07:22 19:22	08:25 17:04	08:30 14:51-15:12/21 16:05	09:06 13:19-13:26/7 15:56
27	05:21 21:53	06:22 20:42	07:24 19:19	08:27 17:02	08:32 14:51-15:13/22 16:04	09:06 13:20-13:26/6 15:57
28	05:22 21:51	06:24 20:39	07:26 18:13-18:19/6 19:16	08:29 17:00	08:34 14:51-15:13/22 16:02	09:06 13:22-13:25/3 15:58
29	05:24 21:49	06:26 20:37	07:28 18:09-18:22/13 19:14	08:31 16:57	08:36 14:52-15:13/21 16:01	09:06 15:08-15:15/7 15:59
30	05:26 21:47	06:28 20:34	07:30 18:07-18:23/16 19:11	08:33 16:55	08:38 14:52-15:14/22 16:00	09:06 15:08-15:16/8 16:00
31	05:28 21:45	06:30 20:32		08:36 16:53		09:06 15:08-15:17/9 16:01
Potential sun hours	530	470	385	323	247	216
Sum of minutes with flicker	0	0	662	180	493	410

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: VPSP wind farm  
Description: VPSP wind farm

Licensed user:  
SIA Estonian, Latvian & Lithuanian environment  
Vilandes 3-6  
LV-1010 Riga  
0037167242411  
Anna / anna@environment.lv  
Calculated:  
02/05/2022 17:18/3.5.576

## SHADOW - Calendar per WTG

WTG: 1.6. - Siemens Gamesa SG 6.6-170 6600 170.0 !OI hub: 165.0 m (TOT: 250.0 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
1.35	3.07	4.72	8.16	9.63	10.93	9.79	7.85	5.92	3.23	1.29	0.72

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
293	300	348	355	333	399	506	566	582	663	919	1,110	790	574	487	406	8,631

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

	January	February	March	April	May	June
1	09:06 16:02	08:30 15:30-16:25/55 17:00	07:26 18:02	07:03 20:08	05:47 21:11	04:50 22:08
2	09:06 16:04	08:28 15:29-16:25/56 17:02	07:23 18:04	07:01 20:10	05:45 21:13	04:49 22:09
3	09:06 16:05	08:26 15:29-16:26/57 17:04	07:21 18:07	06:58 20:12	05:42 21:15	04:48 22:11
4	09:05 16:06	08:24 15:29-16:26/57 17:06	07:18 18:09	06:55 20:14	05:40 21:17	04:47 21:21-21:27/6 22:12
5	09:05 16:08	08:22 15:29-16:27/58 17:09	07:15 18:11	06:53 20:16	05:38 21:19	04:46 21:19-21:29/10 22:13
6	09:04 16:09	08:20 15:30-16:26/56 17:11	07:13 18:13	06:50 20:18	05:36 21:21	04:45 21:17-21:30/13 22:15
7	09:04 16:10	08:18 15:29-16:26/57 17:13	07:10 18:15	06:47 20:20	05:33 21:23	04:44 21:17-21:32/15 22:16
8	09:03 16:12	08:16 15:29-16:26/57 17:15	07:08 18:17	06:45 20:23	05:31 21:25	04:43 21:16-21:33/17 22:17
9	09:02 16:14	08:13 15:30-16:24/54 17:18	07:05 18:19	06:42 20:25	05:29 21:27	04:43 21:16-21:34/18 22:18
10	09:01 16:15	08:11 16:08-16:24/16 17:20	07:02 18:22	06:39 20:27	05:27 21:29	04:42 21:15-21:34/19 22:19
11	09:00 16:17	08:09 16:10-16:22/12 17:22	07:00 18:24	06:37 20:29	05:25 21:31	04:41 21:15-21:35/20 22:20
12	09:00 16:19	08:07 16:12-16:19/7 17:24	06:57 18:26	06:34 20:31	05:23 21:33	04:41 21:14-21:35/21 22:21
13	08:59 16:20	08:05 15:32-16:05/33 17:27	06:54 18:28	06:32 20:33	05:21 21:35	04:40 21:15-21:36/21 22:21
14	08:58 16:22	08:02 15:32-16:04/32 17:29	06:52 18:30	06:29 20:35	05:19 21:37	04:40 21:15-21:37/22 22:22
15	08:56 16:24	08:00 15:33-16:03/30 17:31	06:49 18:32	06:26 20:37	05:17 21:39	04:40 21:15-21:38/23 22:23
16	08:55 16:26	07:58 15:34-16:02/28 17:33	06:46 18:34	06:24 20:39	05:15 21:41	04:39 21:14-21:37/23 22:23
17	08:54 16:28	07:55 15:36-16:01/25 17:36	06:44 18:36	06:21 20:41	05:13 21:43	04:39 21:14-21:38/24 22:24
18	08:53 16:30	07:53 15:38-15:58/20 17:38	06:41 18:39	06:19 20:43	05:11 21:45	04:39 21:14-21:38/24 22:24
19	08:51 16:32	07:50 15:41-15:56/15 17:40	06:38 18:41	06:16 20:46	05:09 21:46	04:39 21:14-21:38/24 22:25
20	08:50 16:34	07:48 15:45-15:51/6 17:42	06:36 18:43	06:14 20:48	05:08 21:48	04:39 21:15-21:39/24 22:25
21	08:49 16:36	07:46 17:45	06:33 18:45	06:11 20:50	05:06 21:50	04:39 21:15-21:40/25 22:25
22	08:47 15:40-15:50/10 16:38	07:43 17:47	06:30 18:47	06:09 20:52	05:04 21:52	04:39 21:15-21:39/24 22:26
23	08:46 15:38-15:53/15 16:40	07:41 17:49	06:28 18:49	06:06 20:54	05:02 21:54	04:40 21:15-21:39/24 22:26
24	08:44 15:36-15:55/19 16:42	07:38 17:51	06:25 18:51	06:04 20:56	05:01 21:55	04:40 21:16-21:40/24 22:26
25	08:42 15:34-15:57/23 16:44	07:36 17:53	06:22 18:53	06:01 20:58	04:59 21:57	04:40 21:16-21:40/24 22:26
26	08:41 16:09-16:10/1 16:46 15:33-15:58/25	07:33 17:56	06:19 18:55	05:59 21:00	04:58 21:59	04:41 21:17-21:40/23 22:26
27	08:39 16:07-16:12/5 16:49 15:32-16:00/28	07:31 17:58	06:17 18:57	05:56 21:02	04:56 22:00	04:41 21:17-21:40/23 22:26
28	08:37 16:06-16:15/9 16:51 15:32-16:01/29	07:28 18:00	06:14 19:00	05:54 21:04	04:55 22:02	04:42 21:18-21:40/22 22:25
29	08:35 16:05-16:17/12 16:53 15:31-16:02/31		07:11 20:02	05:52 21:06	04:54 22:04	04:43 21:18-21:40/22 22:25
30	08:34 16:05-16:20/15 16:55 15:31-16:03/32		07:09 20:04	05:49 21:08	04:52 22:05	04:43 21:18-21:40/22 22:25
31	08:32 15:30-16:22/52 16:57		07:06 20:06		04:51 22:07	
Potential sun hours	235	266	366	426	508	529
Sum of minutes with flicker	306	836	0	0	0	557

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: VPSP wind farm  
Description: VPSP wind farm

Licensed user:  
SIA Estonian, Latvian & Lithuanian environment  
Vilandes 3-6  
LV-1010 Riga  
0037167242411  
Anna / anna@environment.lv  
Calculated:  
02/05/2022 17:18/3.5.576

## SHADOW - Calendar per WTG

WTG: 1.6. - Siemens Gamesa SG 6.6-170 6600 170.0 !OI hub: 165.0 m (TOT: 250.0 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
1.35	3.07	4.72	8.16	9.63	10.93	9.79	7.85	5.92	3.23	1.29	0.72

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
293	300	348	355	333	399	506	566	582	663	919	1,110	790	574	487	406	8,631

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

	July	August	September	October	November	December
1	04:44 21:19-21:40/21 22:24	05:30 21:43 21:43	06:32 20:29 20:29	07:32 19:08 19:08	07:38 15:37-15:53/16 16:50 14:59-15:36/37	08:40 15:59 15:59
2	04:45 21:19-21:39/20 22:24	05:32 21:41 21:41	06:34 20:26 20:26	07:34 19:06 19:06	07:40 14:59-15:54/55 16:48	08:41 15:58 15:58
3	04:46 21:20-21:39/19 22:23	05:34 21:39 21:39	06:36 20:24 20:24	07:36 19:03 19:03	07:42 14:59-15:55/56 16:46	08:43 15:57 15:57
4	04:47 21:21-21:38/17 22:23	05:36 21:37 21:37	06:38 20:21 20:21	07:38 19:00 19:00	07:44 14:59-15:56/57 16:44	08:45 15:57 15:57
5	04:48 21:22-21:38/16 22:22	05:38 21:35 21:35	06:40 20:18 20:18	07:40 18:58 18:58	07:46 14:59-15:57/58 16:42	08:46 15:56 15:56
6	04:49 21:23-21:37/14 22:21	05:40 21:33 21:33	06:42 20:16 20:16	07:42 18:55 18:55	07:49 14:59-15:56/57 16:40	08:48 15:55 15:55
7	04:50 21:25-21:36/11 22:21	05:42 21:30 21:30	06:44 20:13 20:13	07:44 18:52 18:52	07:51 15:00-15:56/56 16:37	08:49 15:54 15:54
8	04:51 21:27-21:34/7 22:20	05:44 21:28 21:28	06:46 20:10 20:10	07:46 18:50 18:50	07:53 15:00-15:57/57 16:35	08:51 15:54 15:54
9	04:52 21:19 22:19	05:46 21:26 21:26	06:48 20:08 20:08	07:49 18:47 18:47	07:55 15:00-15:56/56 16:33	08:52 15:53 15:53
10	04:53 21:18 22:18	05:48 21:24 21:24	06:50 20:05 20:05	07:51 18:44 18:44	07:57 15:01-15:56/55 16:31	08:53 15:53 15:53
11	04:55 21:17 22:17	05:50 21:21 21:21	06:52 20:02 20:02	07:53 18:42 18:42	07:59 15:01-15:53/52 16:29	08:55 15:53 15:53
12	04:56 21:16 22:16	05:52 21:19 21:19	06:54 20:00 20:00	07:55 18:39 18:39	08:02 15:37-15:51/14 16:27	08:56 15:52 15:52
13	04:57 21:14 22:14	05:54 21:17 21:17	06:56 19:57 19:57	07:57 18:37 18:37	08:04 15:37-15:49/12 16:26	08:57 15:52 15:52
14	04:59 21:13 22:13	05:56 21:14 21:14	06:58 19:54 19:54	07:59 18:34 18:34	08:06 15:38-15:46/8 16:24	08:58 15:52 15:52
15	05:00 21:12 22:12	05:58 21:12 21:12	07:00 19:51 19:51	08:01 18:32 18:32	08:08 15:40-15:45/5 16:22	08:59 15:52 15:52
16	05:02 21:11 22:11	06:00 21:09 21:09	07:02 19:49 19:49	08:03 18:29 18:29	08:10 15:42-15:43/1 16:20	09:00 15:52 15:52
17	05:03 21:09 22:09	06:02 21:07 21:07	07:04 19:46 19:46	08:05 18:26 18:26	08:12 15:08-15:31/23 16:18	09:01 15:52 15:52
18	05:05 21:08 22:08	06:04 21:05 21:05	07:06 19:43 19:43	08:07 18:24 18:24	08:14 15:10-15:29/19 16:17	09:02 15:52 15:52
19	05:07 21:06 22:06	06:06 21:02 21:02	07:08 19:41 19:41	08:10 18:21 18:21	08:16 15:12-15:27/15 16:15	09:03 15:52 15:52
20	05:08 21:05 22:05	06:08 21:00 21:00	07:10 19:38 19:38	08:12 18:19 18:19	08:18 15:15-15:25/10 16:13	09:03 15:53 15:53
21	05:10 21:03 22:03	06:10 20:57 20:57	07:12 19:35 19:35	08:14 18:16 18:16	08:21 16:12 16:12	09:04 15:53 15:53
22	05:12 21:02 22:02	06:12 20:55 20:55	07:14 19:33 19:33	08:16 18:14 18:14	16:14-16:23/9 08:23	09:04 15:54 15:54
23	05:13 21:00 22:00	06:14 20:52 20:52	07:16 19:30 19:30	08:18 18:12 18:12	16:10-16:27/17 08:25	09:05 15:54 15:54
24	05:15 21:58 21:58	06:16 20:50 20:50	07:18 19:27 19:27	08:20 18:09 18:09	16:07-16:29/22 08:27	09:05 15:55 15:55
25	05:17 21:56 21:56	06:18 20:47 20:47	07:20 19:24 19:24	07:22 17:07 17:07	15:05-15:31/26 08:28	09:06 15:55 15:55
26	05:19 21:55 21:55	06:20 20:45 20:45	07:22 19:22 19:22	07:25 17:04 17:04	15:04-15:32/28 08:30	09:06 15:56 15:56
27	05:21 21:53 21:53	06:22 20:42 20:42	07:24 19:19 19:19	07:27 17:02 17:02	15:03-15:33/30 08:32	09:06 15:57 15:57
28	05:22 21:51 21:51	06:24 20:39 20:39	07:26 19:16 19:16	07:29 17:00 17:00	15:01-15:34/33 08:34	09:06 15:58 15:58
29	05:24 21:49 21:49	06:26 20:37 20:37	07:28 19:14 19:14	07:31 16:57 16:57	15:01-15:35/34 08:36	09:06 15:59 15:59
30	05:26 21:47 21:47	06:28 20:34 20:34	07:30 19:11 19:11	07:33 16:55 16:55	15:41-15:49/8 08:38	09:06 16:00 16:00
31	05:28 21:45 21:45	06:30 20:32 20:32	07:32 16:53 16:53	07:35 15:39-15:52/13 16:53	15:00-15:36/36 08:36	09:06 16:01 16:01
Potential sun hours	530	470	385	323	247	216
Sum of minutes with flicker	125	0	0	291	864	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: VPSP wind farm  
Description: VPSP wind farm

Licensed user:  
SIA Estonian, Latvian & Lithuanian environment  
Vilandes 3-6  
LV-1010 Riga  
0037167242411  
Anna / anna@environment.lv  
Calculated:  
02/05/2022 17:18/3.5.576

## SHADOW - Calendar per WTG

WTG: 2.1. - Siemens Gamesa SG 6.6-170 6600 170.0 !OI hub: 165.0 m (TOT: 250.0 m) (7)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.35	3.07	4.72	8.16	9.63	10.93	9.79	7.85	5.92	3.23	1.29	0.72

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
293	300	348	355	333	399	506	566	582	663	919	1,110	790	574	487	406	8,631

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

	January	February	March	April	May	June	
1	09:06 16:03	08:30 17:00	07:26 17:22-17:33/11 18:02	07:04 20:08	05:47 20:18-20:38/20 21:11	04:50 20:49-21:19/30 05:28-05:51/23 22:08 20:04-20:43/39	
2	09:06 16:04	08:28 17:02	07:23 17:20-17:35/15 18:05	07:01 20:10	05:45 20:17-20:39/22 21:13	04:49 20:49-21:19/30 05:27-05:51/24 22:09 20:04-20:43/39	
3	09:06 16:05	08:26 17:04	07:21 17:20-17:38/18 18:07	06:58 20:12	05:42 20:13-20:39/26 21:15	04:48 20:49-21:19/30 05:27-05:52/25 22:11 20:05-20:42/37	
4	09:05 16:06	08:24 17:07	07:18 17:19-17:40/21 18:09	06:56 20:14	05:40 20:10-20:37/27 21:17	04:47 20:49-21:19/30 05:27-05:52/25 22:12 20:05-20:42/37	
5	09:05 16:08	08:22 17:09	07:15 17:19-17:39/20 18:11	06:53 20:16	05:38 20:08-20:37/29 21:19	04:46 20:49-21:19/30 05:26-05:52/26 22:13 20:05-20:42/37	
6	09:04 16:09	08:20 17:11	07:13 17:19-17:40/21 18:13	06:50 20:18	05:36 20:07-20:36/29 21:21	04:45 20:49-21:19/30 05:27-05:53/26 22:15 20:05-20:41/36	
7	09:04 16:11	08:18 17:13	07:10 17:19-17:39/20 18:15	06:48 20:21	05:34 20:06-20:37/31 21:23	04:44 20:50-21:20/30 05:21-05:53/32 22:16 20:06-20:42/36	
8	09:03 16:12	08:16 17:16	07:08 17:19-17:37/18 18:17	06:45 20:23	05:31 20:05-20:38/33 21:25	04:44 20:49-21:19/30 05:19-05:53/34 22:17 20:06-20:41/35	
9	09:02 16:14	08:14 17:18	07:05 17:21-17:37/16 18:20	06:42 20:25	05:29 20:04-20:38/34 21:27	04:43 20:50-21:20/30 05:19-05:54/35 22:18 20:07-20:42/35	
10	09:01 16:16	08:11 17:20	07:02 17:22-17:35/13 18:22	06:40 20:27	05:27 20:04-20:40/36 21:29	04:42 20:50-21:20/30 05:18-05:53/35 22:19 20:07-20:41/34	
11	09:01 16:17	08:09 16:44-16:50/6 17:22	07:00 17:24-17:31/7 18:24	06:37 20:29	05:25 20:03-20:40/37 21:31	04:42 20:50-21:20/30 05:18-05:54/36 22:20 20:08-20:42/34	
12	09:00 16:19	08:07 16:42-16:52/10 17:25	06:57 18:26	06:34 20:31	05:23 20:02-20:41/39 21:33	04:41 20:51-21:21/30 05:18-05:55/37 22:21 20:09-20:42/33	
13	08:59 16:21	08:05 16:41-16:55/14 17:27	06:54 18:28	06:32 20:33	05:21 20:02-20:41/39 21:35	04:41 20:50-21:20/30 05:17-05:54/37 22:21 20:09-20:41/32	
14	08:58 16:23	08:02 16:40-16:57/17 17:29	06:52 18:30	06:29 20:35	05:19 20:01-20:41/40 21:37	04:40 20:51-21:21/30 21:23-21:27/4 22:22 20:09-20:42/33 05:17-05:55/38	
15	08:56 16:24	08:00 16:40-17:00/20 17:31	06:49 18:32	06:27 20:37	05:17 20:01-20:41/40 21:39	04:40 20:51-21:21/30 21:22-21:29/7 22:23 20:10-20:42/32 05:17-05:55/38	
16	08:55 16:26	07:58 16:40-17:01/21 17:34	06:46 18:35	06:24 20:39	05:15 20:01-20:42/41 21:41	04:40 20:52-21:30/38 05:17-05:56/39 22:23 20:10-20:42/32	
17	08:54 16:28	07:55 16:39-17:01/22 17:36	06:44 18:37	06:21 20:41	05:13 20:59-21:05/6 21:43	04:40 20:52-21:31/39 05:17-05:56/39 22:24 20:11-20:42/31	
18	08:53 16:30	07:53 16:40-17:01/21 17:38	06:41 18:39	06:19 20:44	05:11 20:57-21:09/12 21:45	04:39 20:52-21:32/40 05:17-05:56/39 22:24 20:11-20:42/31	
19	08:51 16:32	07:51 16:39-17:00/21 17:40	06:38 18:41	06:16 20:46	05:10 20:55-21:10/15 21:46	04:39 20:52-21:32/40 05:17-05:56/39 22:25 20:11-20:42/31	
20	08:50 16:34	07:48 16:39-16:59/20 17:42	06:36 18:43	06:14 20:48	05:08 20:53-21:11/18 21:48	04:39 20:53-21:33/40 05:17-05:56/39 22:25 20:11-20:43/32	
21	08:49 16:36	07:46 16:40-16:59/19 17:45	06:33 18:45	06:11 20:50	05:06 20:52-21:13/21 21:50	04:40 20:53-21:33/40 05:17-05:56/39 22:26 20:11-20:43/32	
22	08:47 16:38	07:43 16:41-16:58/17 17:47	06:30 18:47	06:09 20:52	05:04 20:51-21:13/22 21:52	04:40 20:53-21:33/40 05:17-05:56/39 22:26 20:11-20:43/32	
23	08:46 16:40	07:41 16:43-16:57/14 17:49	06:28 18:49	06:06 20:54	05:03 20:51-21:14/23 21:54	04:40 20:54-21:33/39 05:18-05:57/39 22:26 20:12-20:43/31	
24	08:44 16:42	07:38 16:45-16:54/9 17:51	06:25 18:51	06:04 20:56	05:01 20:51-21:15/24 05:34-05:43/9 21:55	04:40 20:53-21:33/40 05:18-05:57/39 22:26 20:12-20:43/31	
25	08:42 16:45	07:36 16:44-16:53/15 17:54	06:22 18:53	06:01 20:24-20:27/3 20:58	05:00 20:49-21:15/26 05:33-05:45/12 21:57	04:41 20:53-21:32/39 05:18-05:57/39 22:26 20:12-20:43/31	
26	08:41 16:47	07:33 16:43-16:52/16 17:56	06:20 18:56	05:59 20:22-20:29/7 21:00	04:58 20:49-21:16/27 05:31-05:46/15 21:59	04:41 20:54-21:33/39 05:19-05:58/39 22:26 20:12-20:44/32	
27	08:39 16:49	07:31 17:25-17:28/3 17:58	06:17 18:58	05:57 20:21-20:31/10 21:02	04:57 20:49-21:17/28 05:30-05:47/17 22:00	04:42 20:54-21:23/29 21:24-21:32/8 22:26 20:12-20:44/32 05:19-05:57/38	
28	08:37 16:51	07:28 17:24-17:31/7 18:00	06:14 19:00	05:54 20:19-20:32/13 21:04	04:55 20:49-21:17/28 05:29-05:48/19 22:02	04:42 20:54-21:24/30 21:25-21:31/6 22:26 20:13-20:45/32 05:20-05:58/38	
29	08:36 16:53		07:12 20:02	05:52 20:19-20:34/15 21:07	04:54 20:49-21:18/29 05:29-05:49/20 22:04	04:43 20:54-21:24/30 05:21-05:58/37 22:25 20:12-20:45/33	
30	08:34 16:55		07:09 20:04	05:49 20:18-20:36/18 21:09	04:53 20:49-21:18/29 05:28-05:50/22 22:05	04:44 20:54-21:24/30 05:21-05:58/37 22:25 20:12-20:45/33	
31	08:32 16:58		07:06 20:06		04:51 20:48-21:17/29 05:28-05:50/22 22:07		
Potential sun hours	235	266	366	426	508	529	
Sum of minutes with flicker	0	241	180	66	1615	3083	

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:

VPSP wind farm

Description:

VPSP wind farm

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Anna / anna@environment.lv

Calculated:

02/05/2022 17:18/3.5.576

## SHADOW - Calendar per WTG

WTG: 2.1. - Siemens Gamesa SG 6.6-170 6600 170.0 !OI hub: 165.0 m (TOT: 250.0 m) (7)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.35	3.07	4.72	8.16	9.63	10.93	9.79	7.85	5.92	3.23	1.29	0.72

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
293	300	348	355	333	399	506	566	582	663	919	1,110	790	574	487	406	8,631

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

	July	August	September	October	November	December
1	04:44 20:55-21:25/30 05:22-05:58/36 22:24 20:12-20:46/34	05:30 20:13-20:51/38 21:43	06:32 20:29 21:08	07:32 19:08	07:38 16:51	08:40 15:59
2	04:45 20:55-21:25/30 05:23-05:59/36 22:24 20:13-20:47/34	05:32 20:14-20:51/37 21:41	06:34 20:26 21:06	07:34 18:01-18:12/11	07:40 16:48	08:41 15:58
3	04:46 20:55-21:25/30 05:24-05:59/35 22:23 20:13-20:47/34	05:34 20:13-20:49/36 21:39	06:36 20:24 21:03	07:36 17:57-18:14/17	07:42 16:46	08:43 15:58
4	04:47 20:55-21:25/30 05:25-05:59/34 22:23 20:12-20:47/35	05:36 20:14-20:48/34 21:37	06:38 20:21 21:00	07:38 17:59-18:13/14	07:44 16:44	08:45 15:57
5	04:48 20:55-21:25/30 05:25-05:58/33 22:22 20:12-20:47/35	05:38 20:15-20:48/33 21:35	06:40 20:18 21:58	07:40 17:56-18:15/19	07:46 16:42	08:46 15:56
6	04:49 20:55-21:25/30 05:32-05:58/26 22:21 20:12-20:48/36 05:28-05:31/3	05:40 20:16-20:47/31 21:33	06:42 20:16 21:55	07:42 17:55-18:15/20	07:49 16:40	08:48 15:55
7	04:50 20:55-21:25/30 05:33-05:58/25 22:21 20:12-20:48/36	05:42 20:18-20:47/29 21:30	06:44 20:13 21:52	07:45 17:54-18:14/20	07:51 16:38	08:49 15:55
8	04:51 20:55-21:25/30 05:34-05:59/25 22:20 20:11-20:48/37	05:44 20:18-20:46/28 21:28	06:46 20:10 21:50	07:47 17:55-18:15/20	07:53 16:36	08:51 15:54
9	04:52 20:56-21:25/29 05:34-05:59/25 22:19 20:11-20:49/38	05:46 20:20-20:47/27 21:26	06:48 20:08 21:47	07:49 17:54-18:14/20	07:55 16:34	08:52 15:54
10	04:54 20:57-21:26/29 05:35-05:59/24 22:18 20:12-20:50/38	05:48 20:23-20:47/24 21:24	06:50 20:05 21:45	07:51 17:54-18:11/17	07:57 16:32	08:53 15:53
11	04:55 20:57-21:26/29 05:35-05:58/23 22:17 20:12-20:50/38	05:50 20:26-20:47/21 21:21	06:52 20:02 21:42	07:53 17:55-18:08/13	08:00 16:28	08:55 15:53
12	04:56 20:57-21:26/29 05:35-05:58/23 22:16 20:11-20:50/39	05:52 20:27-20:46/19 21:19	06:54 20:00 21:39	07:55 17:55-18:05/10	08:02 16:26	08:56 15:52
13	04:58 20:57-21:26/29 05:37-05:58/21 22:15 20:11-20:50/39	05:54 20:27-20:44/17 21:17	06:56 19:57 21:37	07:57 17:56-18:02/6	08:04 16:24	08:57 15:52
14	04:59 20:58-21:26/28 05:37-05:58/21 22:13 20:11-20:52/41	05:56 20:27-20:42/15 21:14	06:58 19:54 21:34	07:59 17:15-17:26/11	08:06 16:17	08:58 15:52
15	05:01 20:58-21:26/28 05:37-05:57/20 22:12 20:11-20:51/40	05:58 20:27-20:39/12 21:12	07:00 19:52 21:32	08:01 17:14-17:28/14	08:08 16:15	08:59 15:52
16	05:02 20:58-21:25/27 05:39-05:57/18 22:11 20:11-20:51/40	06:00 20:28-20:37/9 21:10	07:02 19:49 21:29	08:03 17:20-17:22/2	08:10 16:19	09:00 15:52
17	05:04 20:59-21:26/27 05:40-05:56/16 22:09 20:11-20:52/41	06:02 20:29-20:35/6 21:07	07:04 19:46 21:27	08:05 17:15-17:26/11	08:12 16:17	09:01 15:52
18	05:05 20:59-21:25/26 05:41-05:54/13 22:08 20:11-20:52/41	06:04 20:31-20:33/2 21:05	07:06 19:44 21:24	08:08 17:14-17:28/14	08:14 16:15	09:02 15:53
19	05:07 21:00-21:25/25 05:43-05:53/10 22:06 20:11-20:53/42	06:06 21:02 21:22	07:08 19:41 21:22	08:10 17:12-17:29/17	08:16 16:14	09:03 15:53
20	05:09 21:00-21:24/24 05:44-05:51/7 22:05 20:11-20:52/41	06:08 21:00 21:20	07:10 19:38 21:19	08:12 17:10-17:30/20	08:19 16:12	09:03 15:53
21	05:10 21:01-21:24/23 22:03 20:11-20:53/42	06:10 20:57 21:17	07:12 19:35 21:17	08:14 17:10-17:31/21	08:21 16:11	09:04 15:54
22	05:12 21:02-21:23/21 22:02 20:10-20:53/43	06:12 20:55 21:14	07:14 19:33 21:14	08:16 17:10-17:31/21	08:23 16:10	09:05 15:54
23	05:14 21:03-21:22/19 22:00 20:11-20:53/42	06:14 20:52 21:13	07:16 19:30 21:12	08:18 17:09-17:30/21	08:25 16:08	09:05 15:55
24	05:15 21:04-21:21/17 21:58 20:10-20:53/43	06:16 20:50 21:12	07:18 19:27 21:09	08:20 16:09-16:30/21	08:27 16:06	09:05 15:56
25	05:17 21:06-21:19/13 21:56 20:11-20:53/42	06:18 20:47 21:10	07:20 19:25 21:07	08:22 16:09-16:30/21	08:29 16:05	09:06 15:56
26	05:19 21:08-21:18/10 21:55 20:11-20:53/42	06:20 20:45 21:08	07:22 19:22 21:04	08:24 16:09-16:28/19	08:30 16:04	09:06 15:57
27	05:21 20:11-20:52/41 21:53	06:22 20:42 21:06	07:24 19:19 21:02	08:26 16:11-16:27/16	08:32 16:03	09:06 15:58
28	05:23 20:11-20:52/41 21:51	06:24 20:39 21:04	07:26 19:16 21:00	08:28 16:11-16:24/13	08:34 16:02	09:06 15:59
29	05:24 20:12-20:52/40 21:49	06:26 20:37 21:02	07:28 19:14 21:57	08:30 16:12-16:21/9	08:36 16:00	09:06 16:00
30	05:26 20:12-20:51/39 21:47	06:28 20:34 21:00	07:30 19:11 21:55	08:32 16:14-16:19/5	08:38 16:53	09:06 16:01
31	05:28 20:12-20:51/39 21:45	06:30 20:32 21:00	07:36 16:53 21:00		09:06 16:01	
Potential sun hours		530	470	385	324	247
Sum of minutes with flicker		2360	418	0	418	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: VPSP wind farm  
Description: VPSP wind farm

Licensed user:  
SIA Estonian, Latvian & Lithuanian environment  
Vilandes 3-6  
LV-1010 Riga  
0037167242411  
Anna / anna@environment.lv  
Calculated:  
02/05/2022 17:18/3.5.576

## SHADOW - Calendar per WTG

WTG: 2.2. - Siemens Gamesa SG 6.6-170 6600 170.0 !OI hub: 165.0 m (TOT: 250.0 m) (6)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.35	3.07	4.72	8.16	9.63	10.93	9.79	7.85	5.92	3.23	1.29	0.72

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
293	300	348	355	333	399	506	566	582	663	919	1,110	790	574	487	406	8,631

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

	January	February	March	April	May	June
1	09:06 16:03	08:30 17:00	07:26 18:02	07:04 20:08	07:56-08:16/20 21:11	04:50 22:08
2	09:06 16:04	08:28 17:02	07:23 18:05	07:01 20:10	07:56-08:14/18 21:13	04:49 22:09
3	09:06 16:05	08:26 17:04	07:21 18:07	06:58 20:12	07:59-08:12/13 21:15	04:48 22:11
4	09:05 16:06	08:24 17:07	07:18 18:09	06:56 20:14	08:02-08:08/6 21:17	04:47 22:12
5	09:05 16:08	08:22 17:09	07:16 18:11	06:53 20:16	05:38 21:19	20:05-20:37/32 22:13
6	09:04 16:09	08:20 17:11	07:13 18:13	06:50 20:18	05:36 21:21	20:06-20:36/30 22:15
7	09:04 16:11	08:18 17:13	07:10 18:15	06:48 20:21	05:34 21:23	20:07-20:36/29 22:16
8	09:03 16:12	08:16 17:16	07:08 18:18	06:45 20:23	19:46-19:53/7 21:25	20:08-20:36/28 22:17
9	09:02 16:14	08:14 17:18	07:05 18:20	06:42 20:25	19:45-19:56/11 21:27	20:09-20:36/27 22:18
10	09:01 16:16	08:11 17:20	07:02 18:22	06:40 20:27	19:43-19:57/14 21:29	20:10-20:36/26 22:19
11	09:01 16:17	08:09 17:22	07:00 18:24	06:37 20:29	19:42-20:00/18 21:31	20:11-20:35/24 22:20
12	09:00 16:19	08:07 17:25	06:57 18:26	06:34 20:31	19:40-20:01/21 21:33	20:11-20:35/24 22:21
13	08:59 16:21	08:05 17:27	06:55 18:28	06:32 20:33	19:39-20:02/23 21:35	20:12-20:34/22 22:21
14	08:58 16:23	08:02 17:29	06:52 18:30	06:29 20:35	19:39-20:02/23 21:37	20:12-20:33/21 22:22
15	08:57 16:24	08:00 17:31	06:49 18:32	06:27 20:37	19:38-20:02/24 21:39	20:14-20:32/18 22:23
16	08:55 16:26	07:58 17:34	06:47 18:35	06:24 20:39	19:39-20:02/23 21:41	20:15-20:31/16 22:23
17	08:54 16:28	07:55 17:36	06:44 18:37	06:22 20:41	19:38-20:01/23 21:43	20:16-20:29/13 22:24
18	08:53 16:30	07:53 17:38	06:41 18:39	06:19 20:44	19:39-20:00/21 21:45	20:19-20:27/8 22:25
19	08:52 16:32	07:51 17:40	06:38 18:41	06:16 20:46	19:40-20:00/20 21:47	04:40 22:25
20	08:50 16:34	07:48 17:43	06:36 18:43	06:14 20:48	19:40-19:58/18 21:48	04:40 22:25
21	08:49 16:36	07:46 17:45	06:33 18:45	06:11 20:50	19:41-19:57/16 21:50	04:40 22:26
22	08:47 16:38	07:43 17:47	06:30 18:47	06:09 20:52	19:42-19:55/13 21:52	04:40 22:26
23	08:46 16:40	07:41 17:49	06:28 18:49	06:06 20:54	19:46-19:51/5 21:54	04:40 22:26
24	08:44 16:42	07:38 17:51	06:25 18:51	06:04 20:56	20:08-20:23/14 21:55	04:40 22:26
25	08:43 16:45	07:36 17:54	06:22 18:53	06:01 20:58	20:06-20:27/21 21:57	04:41 22:26
26	08:41 16:47	07:33 17:56	06:20 18:56	05:59 21:00	20:06-20:29/23 21:59	04:41 22:26
27	08:39 16:49	07:31 17:58	06:17 18:58	05:57 21:02	20:05-20:31/26 22:00	04:42 22:26
28	08:37 16:51	07:28 18:00	06:14 19:00	05:54 21:04	20:05-20:33/28 22:02	04:42 22:26
29	08:36 16:53		07:12 20:02	05:52 21:07	20:04-20:34/30 22:04	04:43 22:25
30	08:34 16:55		07:09 20:04	05:49 21:09	20:04-20:36/32 22:05	04:44 22:25
31	08:32 16:58		07:06 20:06			04:51 22:07
Potential sun hours	235	266	366	426	508	529
Sum of minutes with flicker	0	0	445	544	445	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: VPSP wind farm  
Description: VPSP wind farm

Licensed user:  
SIA Estonian, Latvian & Lithuanian environment  
Vilandes 3-6  
LV-1010 Riga  
0037167242411  
Anna / anna@environment.lv  
Calculated:  
02/05/2022 17:18/3.5.576

## SHADOW - Calendar per WTG

WTG: 2.2. - Siemens Gamesa SG 6.6-170 6600 170.0 !OI hub: 165.0 m (TOT: 250.0 m) (6)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.35	3.07	4.72	8.16	9.63	10.93	9.79	7.85	5.92	3.23	1.29	0.72

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
293	300	348	355	333	399	506	566	582	663	919	1,110	790	574	487	406	8,631

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

	July	August	September	October	November	December
1	04:44 22:25	05:30 20:21-20:45/24 21:43	06:32 19:41-19:59/18 20:29	07:32 19:08	07:38 16:51	08:40 16:00
2	04:45 22:24	05:32 20:21-20:46/25 21:41	06:34 19:41-19:56/15 20:26	07:34 19:06	07:40 16:48	08:41 15:59
3	04:46 22:24	05:34 20:19-20:46/27 21:39	06:36 19:42-19:53/11 20:24	07:36 19:03	07:42 16:46	08:43 15:58
4	04:47 22:23	05:36 20:19-20:46/27 21:37	06:38 19:43-19:50/7 20:21	07:38 19:00	07:44 16:44	08:45 15:57
5	04:48 22:22	05:38 20:18-20:46/28 21:35	06:40 20:19	07:40 18:58	07:47 16:42	08:46 15:56
6	04:49 22:21	05:40 20:17-20:47/30 21:33	06:42 20:16	07:43 18:55	07:49 16:40	08:48 15:55
7	04:50 22:21	05:42 20:16-20:47/31 21:30	06:44 20:13	07:45 18:53	07:51 16:38	08:49 15:55
8	04:51 22:20	05:44 20:15-20:47/32 21:28	06:46 07:57-08:01/4 20:11	07:47 18:50	07:53 16:36	08:51 15:54
9	04:53 22:19	05:46 20:14-20:46/32 21:26	06:48 07:52-08:05/13 20:08	07:49 18:47	07:55 16:34	08:52 15:54
10	04:54 22:18	05:48 20:13-20:46/33 21:24	06:50 07:50-08:07/17 20:05	07:51 18:45	07:57 16:32	08:53 15:53
11	04:55 22:17	05:50 20:13-20:45/32 21:21	06:52 07:48-08:09/21 20:02	07:53 18:42	08:00 16:30	08:55 15:53
12	04:56 22:16	05:52 20:13-20:45/32 21:19	06:54 07:47-08:09/22 20:00	07:55 18:39	08:02 16:28	08:56 15:53
13	04:58 22:15	05:54 20:13-20:44/31 21:17	06:56 07:46-08:10/24 19:57	07:57 18:37	08:04 16:26	08:57 15:52
14	04:59 22:13	05:56 20:13-20:42/29 21:14	06:58 07:45-08:13/28 19:54	07:59 18:34	08:06 16:24	08:58 15:52
15	05:01 22:12	05:58 20:12-20:39/27 21:12	07:00 07:44-08:14/30 19:52	08:01 18:32	08:08 16:22	08:59 15:52
16	05:02 22:11	06:00 20:12-20:37/25 21:10	07:02 07:43-08:15/32 19:49	08:03 18:29	08:10 16:20	09:00 15:52
17	05:04 22:09	06:02 20:13-20:35/22 21:07	07:04 07:43-08:15/32 19:46	08:05 18:27	08:12 16:19	09:01 15:52
18	05:05 22:08	06:04 20:13-20:33/20 21:05	07:06 07:43-08:16/33 19:44	08:08 18:24	08:14 16:17	09:02 15:52
19	05:07 22:06	06:06 20:14-20:30/16 21:02	07:08 07:43-08:16/33 19:41	08:10 18:22	08:17 16:15	09:03 15:53
20	05:09 22:05	06:08 19:51-19:58/7 21:00	07:10 07:43-08:16/33 19:38	08:12 18:19	08:19 16:14	09:03 15:53
21	05:10 22:03	06:10 19:48-20:01/13 20:57	07:12 07:43-08:15/32 19:35	08:14 18:17	08:21 16:12	09:04 15:53
22	05:12 22:02	06:12 19:46-20:02/16 20:55	07:14 07:44-08:15/31 19:33	08:16 18:14	08:23 16:11	09:05 15:54
23	05:14 22:00	06:14 19:44-20:03/19 20:52	07:16 07:45-08:14/29 19:30	08:18 18:12	08:25 16:09	09:05 15:54
24	05:15 21:58	06:16 19:42-20:03/21 20:50	07:18 07:47-08:13/26 19:27	08:20 18:09	08:27 16:08	09:05 15:55
25	05:17 20:32-20:35/3 21:57	06:18 19:41-20:03/22 20:47	07:20 07:50-08:12/22 19:25	07:23 17:07	08:29 16:06	09:06 15:56
26	05:19 20:28-20:39/11 21:55	06:20 19:41-20:04/23 20:45	07:22 07:51-08:10/19 19:22	07:25 17:05	08:30 16:05	09:06 15:56
27	05:21 20:26-20:40/14 21:53	06:22 19:40-20:04/24 20:42	07:24 07:53-08:08/15 19:19	07:27 17:02	08:32 16:04	09:06 15:57
28	05:23 20:25-20:42/17 21:51	06:24 19:40-20:04/24 20:40	07:26 07:55-08:05/10 19:17	07:29 17:00	08:34 16:03	09:06 15:58
29	05:25 20:24-20:43/19 21:49	06:26 19:40-20:03/23 20:37	07:28 19:14	07:31 16:58	08:36 16:02	09:06 15:59
30	05:26 20:22-20:43/21 21:47	06:28 19:40-20:03/23 20:34	07:30 19:11	07:33 16:55	08:38 16:01	09:06 16:00
31	05:28 20:22-20:44/22 21:45	06:30 19:40-20:01/21 20:32		07:36 16:53		09:06 16:01
Potential sun hours	530	470	385	324	247	216
Sum of minutes with flicker	107	787	557	0	0	0

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

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

Project: VPSP wind farm  
Description: VPSP wind farm

Licensed user:  
SIA Estonian, Latvian & Lithuanian environment  
Vilandes 3-6  
LV-1010 Riga  
0037167242411  
Anna / anna@environment.lv  
Calculated:  
02/05/2022 17:18/3.5.576

## SHADOW - Calendar per WTG

WTG: 2.3. - Siemens Gamesa SG 6.6-170 6600 170.0 !OI hub: 165.0 m (TOT: 250.0 m) (4)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.35	3.07	4.72	8.16	9.63	10.93	9.79	7.85	5.92	3.23	1.29	0.72

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
293	300	348	355	333	399	506	566	582	663	919	1,110	790	574	487	406	8,631

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

	January	February	March	April	May	June	July	August	September	October	November	December				
1	09:06 16:03	08:30 17:00	07:26 18:02	07:04 20:08	05:47 21:11	04:50 22:08	05:50-06:06/16	04:44 22:25	05:30 21:43	06:04-06:27/23	06:32 20:29	07:32 19:08	07:38 16:51	08:40 15:59		
2	09:06 16:04	08:28 17:02	07:23 18:05	07:01 20:10	05:45 21:13	04:49 22:10	05:51-06:05/14	04:45 22:24	05:32 21:41	06:06-06:27/21	06:34 20:26	07:34 19:06	07:40 16:48	08:41 15:58		
3	09:06 16:05	08:26 17:04	07:21 18:07	06:58 20:12	05:42 21:15	04:48 22:11	05:51-06:04/13	04:46 22:24	05:34 21:39	06:08-06:26/18	06:36 20:24	07:36 19:03	07:42 16:46	08:43 15:58		
4	09:05 16:06	08:24 17:07	07:18 18:09	06:56 20:14	05:40 21:17	04:47 22:12	05:52-06:04/12	04:47 22:23	05:36 21:37	06:09-06:25/16	06:38 20:21	07:38 19:00	07:44 16:44	08:45 15:57		
5	09:05 16:08	08:22 17:09	07:16 18:11	06:53 20:16	05:38 21:19	04:46 22:13	06:07-06:10/3	04:48 22:22	05:38 21:35	06:11-06:24/13	06:40 20:19	07:40 18:58	07:47 16:42	08:46 15:56		
6	09:04 16:09	08:20 17:11	07:13 18:13	06:50 20:19	05:36 21:21	04:45 22:15	06:05-06:12/7	04:49 22:22	06:01-06:07/6	06:13-06:23/10	06:42 20:16	07:43 18:55	07:49 16:40	08:48 15:55		
7	09:04 16:11	08:18 17:13	07:10 18:15	06:48 20:21	05:34 21:23	04:44 22:16	06:03-06:14/11	04:44 22:21	05:56-06:01/5	06:15-06:21/6	06:44 20:13	07:45 18:53	07:51 16:38	08:49 15:55		
8	09:03 16:12	08:16 17:16	07:08 18:18	06:45 20:23	05:31 21:25	04:44 22:17	06:01-06:15/14	04:44 22:20	06:00-06:11/11	06:11-06:21/6	06:46 20:11	07:47 18:50	07:53 16:36	08:51 15:54		
9	09:02 16:14	08:14 17:18	07:05 18:20	06:42 20:25	05:29 21:27	04:43 22:18	05:59-06:16/17	04:43 22:19	05:59-06:12/13	06:12-06:22/6	06:48 20:08	07:49 18:47	07:55 16:34	08:52 15:54		
10	09:01 16:16	08:11 17:20	07:02 18:22	06:40 20:27	05:27 21:29	04:42 22:19	05:57-06:16/19	04:42 22:20	05:58-06:12/14	06:12-06:22/6	06:50 20:05	07:51 18:45	07:57 16:32	08:53 15:53		
11	09:01 16:17	08:09 17:22	07:00 18:24	06:37 20:29	05:25 21:31	04:42 22:20	05:55-06:16/21	04:42 22:21	05:58-06:13/15	06:13-06:23/10	06:52 20:02	07:53 18:42	08:00 16:30	08:55 15:53		
12	09:00 16:19	08:07 17:25	06:57 18:26	06:34 20:31	05:23 21:33	04:41 22:21	05:53-06:17/24	04:41 22:22	05:57-06:13/16	06:13-06:23/10	06:54 20:00	07:55 18:39	08:02 16:28	08:56 15:53		
13	08:59 16:21	08:05 17:27	06:56 18:28	06:32 20:33	05:21 21:35	04:41 22:22	05:51-06:17/26	04:41 22:23	05:57-06:15/18	06:15-06:25/12	06:56 19:57	07:57 18:37	08:04 16:26	08:57 15:52		
14	08:58 16:23	08:02 17:29	06:52 18:30	06:29 20:35	05:19 21:37	04:40 22:22	05:49-06:16/27	04:40 22:23	05:57-06:15/18	06:15-06:25/12	06:58 19:54	07:59 18:34	08:06 16:24	08:58 15:52		
15	08:57 16:24	08:00 17:31	06:49 18:32	06:27 20:37	05:17 21:39	04:40 22:23	05:48-06:17/29	04:40 22:24	05:56-06:15/19	06:15-06:25/12	07:00 19:52	08:01 18:32	08:08 16:22	08:59 15:52		
16	08:55 16:26	07:58 17:34	06:47 18:35	06:24 20:39	05:15 21:41	04:40 22:24	05:46-06:17/31	04:40 22:25	05:56-06:16/20	06:16-06:26/11	07:02 19:49	08:03 18:29	08:10 16:20	09:00 15:52		
17	08:54 16:28	07:55 17:36	06:44 18:37	06:21 20:41	05:13 21:43	04:40 22:24	05:45-06:16/31	04:40 22:25	05:56-06:19/23	06:16-06:26/11	07:04 19:46	08:05 18:27	08:12 16:19	09:01 15:52		
18	08:53 16:30	07:53 17:38	06:41 18:39	06:19 20:44	05:11 21:45	04:39 22:24	05:46-06:17/31	04:39 22:25	05:55-06:21/26	06:16-06:26/11	07:06 19:44	08:08 18:24	08:15 16:17	09:02 15:52		
19	08:52 16:32	07:51 17:40	06:38 18:41	06:16 20:46	05:10 21:47	04:39 22:25	05:45-06:16/31	04:39 22:26	05:56-06:22/26	06:16-06:26/11	07:08 19:41	08:10 18:22	08:17 16:15	09:03 15:53		
20	08:50 16:34	07:48 17:43	06:36 18:43	06:14 20:48	05:08 21:48	04:39 22:25	05:45-06:16/31	04:39 22:26	05:55-06:23/28	06:16-06:26/11	07:10 19:38	08:12 18:19	08:19 16:14	09:03 15:53		
21	08:49 16:36	07:46 17:45	06:33 18:45	06:11 20:50	05:06 21:50	04:40 22:26	05:45-06:15/30	04:40 22:27	05:55-06:24/29	06:16-06:26/11	07:12 19:35	08:14 18:17	08:21 16:12	09:04 15:53		
22	08:47 16:38	07:43 17:47	06:30 18:47	06:09 20:52	05:04 21:52	04:40 22:26	05:46-06:15/29	04:40 22:27	05:55-06:25/30	06:16-06:26/11	07:14 19:33	08:16 18:14	08:23 16:11	09:05 15:54		
23	08:46 16:40	07:41 17:49	06:28 18:49	06:06 20:54	05:03 21:54	04:40 22:26	05:45-06:14/29	04:40 22:27	05:55-06:26/31	06:16-06:26/11	07:16 19:30	08:18 18:12	08:25 16:09	09:05 15:54		
24	08:44 16:42	07:38 17:51	06:25 18:51	06:04 20:56	05:01 21:55	04:40 22:26	05:46-06:13/27	04:40 22:27	05:56-06:27/31	06:16-06:26/11	07:18 19:27	08:20 18:09	08:27 16:08	09:06 15:55		
25	08:43 16:45	07:36 17:54	06:22 18:53	06:01 20:58	05:00 21:57	04:41 22:26	05:46-06:13/27	04:41 22:27	05:55-06:26/31	06:18-06:28/10	07:20 19:25	07:23 17:07	08:29 16:06	09:06 15:56		
26	08:41 16:47	07:33 17:56	06:20 18:56	05:59 21:00	04:58 21:59	04:41 22:26	05:46-06:11/25	04:41 22:27	05:56-06:27/31	06:20-06:30/12	07:22 19:25	07:25 17:05	08:31 16:05	09:06 15:56		
27	08:39 16:49	07:31 17:58	06:17 18:58	05:57 21:02	04:57 22:01	04:42 22:26	05:47-06:09/22	04:42 22:27	05:57-06:28/31	06:22-06:32/14	07:24 19:19	07:27 17:02	08:32 16:04	09:06 15:57		
28	08:37 16:51	07:28 18:00	06:14 19:00	05:54 21:04	04:55 22:02	04:42 22:26	05:47-06:07/20	04:42 22:27	05:57-06:27/30	06:24-06:34/16	07:26 19:17	07:29 17:00	08:34 16:03	09:06 15:58		
29	08:36 16:53	07:12 18:02	07:12 19:02	05:52 21:07	04:54 22:04	04:43 22:25	05:48-06:07/19	04:43 22:26	05:59-06:27/28	06:26-06:36/18	07:28 19:14	07:31 16:57	08:36 16:02	09:07 15:59		
30	08:34 16:55	07:09 18:04	07:09 19:04	05:49 21:09	04:53 22:05	04:44 22:25	05:49-06:07/18	04:44 22:26	06:01-06:28/27	06:28-06:38/20	07:30 19:11	07:33 16:55	08:38 16:00	09:07 15:59		
31	08:32 16:58	07:06 18:06	07:06 19:06	05:49 22:07	04:51 22:07	04:45 22:27	05:49-06:06/17	04:45 22:28	06:02-06:27/25	06:30-06:40/22	07:32 19:13	07:36 16:53	08:40 16:01	09:08 15:59		
Potential sun hours	235	266	366	426	508	529	530	470	385	324	247	216	0	0	0	0
Sum of minutes with flicker	0	0	0	0	616	105	588	107	0	0	0	0	0	0	0	0

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

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

Project: VPSP wind farm  
Description: VPSP wind farm

Licensed user:  
SIA Estonian, Latvian & Lithuanian environment  
Vilandes 3-6  
LV-1010 Riga  
0037167242411  
Anna / anna@environment.lv  
Calculated:  
02/05/2022 17:18/3.5.576

## SHADOW - Calendar per WTG

WTG: 2.4. - Siemens Gamesa SG 6.6-170 6600 170.0 !OI hub: 165.0 m (TOT: 250.0 m) (3)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.35	3.07	4.72	8.16	9.63	10.93	9.79	7.85	5.92	3.23	1.29	0.72

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
293	300	348	355	333	399	506	566	582	663	919	1,110	790	574	487	406	8,631

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

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

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

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

Project:

VPSP wind farm

Description:

VPSP wind farm

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Anna / anna@environment.lv

Calculated:

02/05/2022 17:18/3.5.576

## SHADOW - Calendar per WTG

WTG: 4.2. - Siemens Gamesa SG 6.6-170 6600 170.0 !OI hub: 165.0 m (TOT: 250.0 m) (1)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.35	3.07	4.72	8.16	9.63	10.93	9.79	7.85	5.92	3.23	1.29	0.72

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
293	300	348	355	333	399	506	566	582	663	919	1,110	790	574	487	406	8,631

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

	January		February		March		April		May		June	
1	09:06	10:27-11:06/39	08:30	10:42-11:12/30	07:26	17:04-17:29/25	07:04	07:48-08:21/33	05:47		04:50	
	16:03		17:00	15:52-16:17/25	18:02		20:08		21:11		22:08	
2	09:06	10:28-11:07/39	08:28	10:44-11:11/27	07:23	17:03-17:31/28	07:01	07:47-08:20/33	05:45		04:49	
	16:04		17:02	15:51-16:18/27	18:05		20:10		21:13		22:10	
3	09:06	10:28-11:08/40	08:26	10:46-11:09/23	07:21	17:02-17:31/29	06:58	07:48-08:20/32	05:43		04:48	
	16:05		17:04	15:50-16:20/30	18:07		20:12		21:15		22:11	
4	09:05	10:28-11:08/40	08:24	10:47-11:06/19	07:18	17:01-17:31/30	06:56	07:47-08:19/32	05:40		04:47	
	16:06		17:07	15:49-16:20/31	18:09		20:14		21:17		22:12	
5	09:05	10:29-11:09/40	08:22	10:51-11:03/12	07:16	17:01-17:32/31	06:53	07:47-08:18/31	05:38		04:46	
	16:08		17:09	15:49-16:21/32	18:11		20:17		21:19		22:14	
6	09:04	10:29-11:10/41	08:20	15:48-16:22/34	07:13	17:00-17:32/32	06:50	07:48-08:18/30	05:36		04:45	
	16:09		17:11		18:13		20:19		21:21		22:15	
7	09:04	10:29-11:10/41	08:18	15:48-16:23/35	07:10	16:59-17:32/33	06:48	07:49-08:16/27	05:34		04:44	
	16:11		17:13		18:15		20:21		21:23		22:16	
8	09:03	10:29-11:11/42	08:16	15:47-16:23/36	07:08	17:00-17:32/32	06:45	07:49-08:14/25	05:31		04:44	
	16:12		17:16		18:18		20:23		21:25		22:17	
9	09:02	10:30-11:11/41	08:14	15:47-16:24/37	07:05	16:59-17:31/32	06:42	07:51-08:13/22	05:29		04:43	
	16:14		17:18		18:20		20:25		21:27		22:18	
10	09:02	10:30-11:12/42	08:12	15:46-16:24/38	07:03	16:59-17:31/32	06:40	07:52-08:10/18	05:27		04:42	
	16:16		17:20		18:22		20:27		21:29		22:19	
11	09:01	10:30-11:13/43	08:09	15:47-16:24/37	07:00	16:59-17:30/31	06:37	07:55-08:07/12	05:25		04:42	
	16:17		17:22		18:24		20:29		21:31		22:20	
12	09:00	10:30-11:13/43	08:07	15:47-16:25/38	06:57	17:00-17:29/29	06:34		05:23		04:41	
	16:19		17:25		18:26		20:31		21:33		22:21	
13	08:59	10:30-11:13/43	08:05	15:47-16:24/37	06:55	17:01-17:28/27	06:32		05:21		04:41	
	16:21		17:27		18:28		20:33		21:35		22:22	
14	08:58	10:31-11:14/43	08:03	15:47-16:24/37	06:52	17:01-17:26/25	06:29		05:19		04:40	
	16:23		17:29		18:30		20:35		21:37		22:22	
15	08:57	10:31-11:14/43	08:00	15:47-16:24/37	06:49	17:03-17:25/22	06:27		05:17		04:40	
	16:24		17:31		18:33		20:37		21:39		22:23	
16	08:56	10:31-11:15/44	07:58	15:48-16:24/36	06:47	17:05-17:23/18	06:24		05:15		04:40	
	16:26		17:34		18:35		20:40		21:41		22:24	
17	08:54	10:31-11:15/44	07:56	15:48-16:23/35	06:44	17:07-17:19/12	06:22		05:13		04:40	
	16:28		17:36		18:37		20:42		21:43		22:24	
18	08:53	10:32-11:16/44	07:53	15:49-16:23/34	06:41		06:19		05:11		04:39	
	16:30		17:38		18:39		20:44		21:45		22:25	
19	08:52	10:32-11:16/44	07:51	15:49-16:21/32	06:39		06:16		05:10		04:39	
	16:32		17:40		18:41		20:46		21:47		22:25	
20	08:50	10:32-11:15/43	07:48	15:51-16:21/30	06:36		06:14		05:08		04:39	
	16:34		17:43		18:43		20:48		21:49		22:26	
21	08:49	10:33-11:16/43	07:46	15:52-16:19/27	06:33		06:11		05:06		04:40	
	16:36		17:45		18:45		20:50		21:50		22:26	
22	08:47	10:34-11:16/42	07:43	15:54-16:18/24	06:31	07:01-07:14/13	06:09		05:04		04:40	
	16:38		17:47		18:47		20:52		21:52		22:26	
23	08:46	10:34-11:16/42	07:41	15:55-16:16/21	06:28	06:58-07:17/19	06:06		05:03		04:40	
	16:40		17:49		18:49		20:54		21:54		22:26	
24	08:44	10:35-11:16/41	07:39	15:58-16:12/14	06:25	06:55-07:18/23	06:04		05:01		04:40	
	16:42		17:51		18:51		20:56		21:56		22:26	
25	08:43	10:35-11:16/41	07:36		06:22	06:54-07:20/26	06:01		05:00		04:41	
	16:45		17:54		18:54		20:58		21:57		22:26	
26	08:41	10:36-11:15/39	07:34	17:11-17:24/13	06:20	06:52-07:20/28	05:59		04:58		04:41	
	16:47		17:56		18:56		21:00		21:59		22:26	
27	08:39	10:36-11:15/39	07:31	17:08-17:27/19	06:17	06:51-07:21/30	05:57		04:57		04:42	
	16:49		17:58		18:58		21:03		22:01		22:26	
28	08:38	10:37-11:15/38	07:28	17:06-17:28/22	06:14	06:50-07:22/32	05:54		04:55		04:42	
	16:51		18:00		19:00		21:05		22:02		22:26	
29	08:36	10:38-11:14/36			07:12	07:49-08:22/33	05:52		04:54		04:43	
	16:53	15:57-16:10/13			20:02		21:07		22:04		22:26	
30	08:34	10:39-11:14/35			07:09	07:48-08:21/33	05:49		04:53		04:44	
	16:55	15:55-16:13/18			20:04		21:09		22:05		22:25	
31	08:32	10:41-11:13/32			07:06	07:48-08:22/34			04:51			
	16:58	15:53-16:15/22			20:06				22:07			
Potential sun hours	235		266		366		426		508		529	
Sum of minutes with flicker	1320		929		739		295		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:

VPSP wind farm

Description:

VPSP wind farm

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Anna / anna@environment.lv

Calculated:

02/05/2022 17:18/3.5.576

## SHADOW - Calendar per WTG

WTG: 4.2. - Siemens Gamesa SG 6.6-170 6600 170.0 !OI hub: 165.0 m (TOT: 250.0 m) (1)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.35	3.07	4.72	8.16	9.63	10.93	9.79	7.85	5.92	3.23	1.29	0.72

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
293	300	348	355	333	399	506	566	582	663	919	1,110	790	574	487	406	8,631

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

	July	August	September	October	November	December
1	04:44 22:25	05:30 21:43	06:32 20:29	07:54-08:06/12 19:09	07:32 17:40-18:08/28 16:51	07:38 15:16-15:53/37 15:59
2	04:45 22:24	05:32 21:41	06:34 20:27	07:51-08:09/18 19:06	07:34 17:38-18:08/30 16:48	07:40 15:17-15:53/36 15:58
3	04:46 22:24	05:34 21:39	06:36 20:24	07:49-08:11/22 19:03	07:36 17:37-18:08/31 16:46	07:42 15:17-15:53/36 15:58
4	04:47 22:23	05:36 21:37	06:38 20:21	07:47-08:12/25 19:01	07:39 17:37-18:08/31 16:44	07:45 15:18-15:53/35 15:57
5	04:48 22:22	05:38 21:35	06:40 20:19	07:46-08:13/27 18:58	07:41 17:36-18:08/32 16:42	07:47 15:18-15:52/34 15:56
6	04:49 22:22	05:40 21:33	06:42 20:16	07:44-08:13/29 18:55	07:43 17:36-18:08/32 16:40	07:49 10:20-10:33/13 15:55
7	04:50 22:21	05:42 21:31	06:44 20:13	07:43-08:13/30 18:53	07:45 17:35-18:07/32 16:38	07:51 10:18-10:37/19 15:55
8	04:51 22:20	05:44 21:28	06:46 20:11	07:42-08:14/32 18:50	07:47 17:36-18:08/32 16:36	07:53 10:15-10:39/24 15:54
9	04:52 22:19	05:46 21:26	06:48 20:08	07:41-08:14/33 18:47	07:49 17:36-18:07/31 16:34	07:55 10:14-10:42/28 15:54
10	04:54 22:18	05:48 21:24	06:50 20:05	07:40-08:14/34 18:45	07:51 17:36-18:06/30 16:32	07:58 10:13-10:43/30 15:53
11	04:55 22:17	05:50 21:22	06:52 20:03	07:40-08:13/33 18:42	07:53 17:36-18:05/29 16:30	08:00 10:12-10:45/33 15:53
12	04:56 22:16	05:52 21:19	06:54 20:00	07:40-08:13/33 18:40	07:55 17:37-18:03/26 16:28	08:02 10:11-10:45/34 15:53
13	04:58 22:15	05:54 21:17	06:56 19:57	07:40-08:13/33 18:37	07:57 17:38-18:02/24 16:26	08:04 10:10-10:46/36 15:52
14	04:59 22:14	05:56 21:15	06:58 19:54	07:40-08:12/32 18:34	07:59 17:40-18:01/21 16:24	08:06 10:10-10:48/38 15:52
15	05:01 22:12	05:58 21:12	07:00 19:52	07:40-08:11/31 18:32	08:01 17:41-17:58/17 16:22	08:08 10:09-10:48/39 15:52
16	05:02 22:11	06:00 21:10	07:02 19:49	07:40-08:10/30 18:29	08:03 17:44-17:54/10 16:20	08:10 10:10-10:49/39 15:52
17	05:04 22:10	06:02 21:07	07:04 19:46	07:41-08:09/28 18:27	08:06 16:32-16:41/9 16:19	08:13 10:09-10:50/41 15:52
18	05:05 22:08	06:04 21:05	07:06 19:44	07:41-08:08/27 18:24	08:08 16:29-16:46/17 16:17	08:15 10:08-10:50/42 15:52
19	05:07 22:07	06:06 21:02	07:08 19:41	07:42-08:06/24 18:22	08:10 16:26-16:48/22 16:15	08:17 10:09-10:51/42 15:53
20	05:09 22:05	06:08 21:00	07:10 19:38	07:44-08:04/20 18:19	08:12 16:23-16:49/26 16:14	08:19 10:09-10:51/42 15:53
21	05:10 22:04	06:10 20:57	07:12 19:36	07:46-08:01/15 18:17	08:14 16:21-16:50/29 16:12	08:21 10:09-10:51/42 15:53
22	05:12 22:02	06:12 20:55	07:14 19:33	07:51-07:56/5 18:14	08:16 16:21-16:51/30 16:11	08:23 10:09-10:52/43 15:54
23	05:14 22:00	06:14 20:52	07:16 19:30	08:18 16:19-16:52/33 18:12	08:25 10:09-10:53/44 16:09	09:05 10:25-11:01/36 15:54
24	05:15 21:58	06:16 20:50	07:18 19:27	08:21 16:18-16:52/34 18:09	08:27 10:09-10:53/44 16:08	09:06 10:25-11:02/37 15:55
25	05:17 21:57	06:18 20:47	07:20 19:25	07:23 15:18-15:53/35 17:07	08:29 10:09-10:53/44 16:06	09:06 10:25-11:02/37 15:56
26	05:19 21:55	06:20 20:45	07:22 19:22	17:52-18:01/9 17:05	07:25 15:17-15:53/36 16:05	08:31 10:10-10:53/43 15:56
27	05:21 21:53	06:22 20:42	07:24 19:19	17:47-18:04/17 17:02	07:27 15:16-15:53/37 16:04	08:33 10:10-10:53/43 15:57
28	05:23 21:51	06:24 20:40	07:26 19:17	17:45-18:06/21 17:00	07:29 15:17-15:54/37 16:03	08:34 10:11-10:54/43 15:58
29	05:25 21:49	06:26 20:37	07:28 19:14	17:43-18:07/24 16:58	07:31 15:16-15:54/38 16:02	08:36 10:11-10:54/43 15:59
30	05:26 21:47	06:28 20:34	07:30 19:11	17:41-18:07/26 16:55	07:34 15:17-15:54/37 16:00	08:38 10:12-10:55/43 16:00
31	05:28 21:45	06:30 20:32		07:36 15:16-15:54/38 16:53		09:07 10:28-11:06/38 16:01
Potential sun hours	530	470	385	323	247	216
Sum of minutes with flicker	0	0	670	894	1306	1195

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: VPSP wind farm  
Description: VPSP wind farm

Licensed user:  
SIA Estonian, Latvian & Lithuanian environment  
Vilandes 3-6  
LV-1010 Riga  
0037167242411  
Anna / anna@environment.lv  
Calculated:  
02/05/2022 17:18/3.5.576

## SHADOW - Calendar per WTG

WTG: 4.3. - Siemens Gamesa SG 6.6-170 6600 170.0 !OI hub: 165.0 m (TOT: 250.0 m) (2)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.35	3.07	4.72	8.16	9.63	10.93	9.79	7.85	5.92	3.23	1.29	0.72

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
293	300	348	355	333	399	506	566	582	663	919	1,110	790	574	487	406	8,631

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

	January	February	March	April	May	June	July	August	September	October	November	December
1	09:06 14:19-14:46/27 16:03	08:30 15:33-15:57/24 17:00	07:26 07:04 18:02	07:04 20:08 18:02	05:47 21:11 22:08	04:50 22:25 21:43	04:44 20:29 19:09	05:30 21:43 20:29	06:32 19:09 17:59	07:32 15:59 15:59	07:38 08:10-08:23/13 16:51	08:40 14:09-14:29/20 15:59
2	09:06 14:21-14:46/25 16:04	08:28 15:34-15:56/22 17:02	07:23 18:05 18:05	07:01 20:10 21:13	05:45 22:10 22:24	04:49 21:41 20:27	04:45 20:27 19:06	05:32 20:27 19:06	06:34 19:06 17:59	07:34 15:59 15:59	07:40 08:13-08:21/8 16:48	08:42 14:08-14:29/21 15:59
3	09:06 14:21-14:46/25 16:05	08:26 15:36-15:56/20 17:04	07:21 18:07 18:07	06:58 20:12 21:15	05:43 22:11 22:24	04:48 21:39 20:24	04:46 20:24 19:03	05:34 20:24 19:03	06:36 19:03 17:59	07:36 15:58 15:58	07:42 16:46 16:46	08:43 14:08-14:30/22 15:58
4	09:05 14:21-14:46/25 16:06	08:24 15:36-15:54/18 17:07	07:18 18:09 18:09	06:56 20:14 21:17	05:40 22:12 22:23	04:47 21:37 20:21	04:46 20:21 19:01	05:36 20:21 19:01	06:38 19:01 17:59	07:38 15:57 15:57	07:44 16:44 16:44	08:45 14:08-14:31/23 15:57
5	09:05 14:22-14:47/25 16:08	08:22 15:38-15:53/15 17:09	07:16 18:09 18:11	06:53 20:17 21:19	05:38 22:14 22:22	04:46 21:35 20:19	04:48 20:19 18:58	05:38 20:19 18:58	06:40 18:58 17:48	07:41 15:56 15:56	07:47 15:10-15:21/11 16:42	08:46 14:09-14:32/23 15:56
6	09:04 14:23-14:47/24 16:09	08:20 15:41-15:51/10 17:11	07:13 18:13 18:13	06:50 20:19 21:21	05:36 22:15 22:22	04:45 21:33 20:16	04:49 20:16 18:55	05:40 20:16 18:55	06:42 18:55 17:45	07:43 15:55 15:55	07:49 15:08-15:23/15 16:40	08:48 14:09-14:33/24 15:55
7	09:04 14:23-14:47/24 16:11	08:18 17:13 17:13	07:10 18:15 18:15	06:48 20:21 21:23	05:34 22:16 22:21	04:44 21:31 20:13	04:50 20:13 18:53	05:42 20:13 18:53	06:44 18:53 17:43	07:45 15:55 15:55	07:51 15:07-15:25/18 16:38	08:49 14:08-14:33/25 15:55
8	09:03 14:24-14:47/23 16:12	08:16 17:16 17:16	07:08 18:18 18:18	06:45 20:23 21:25	05:31 22:17 22:20	04:44 21:28 20:11	04:51 20:11 18:50	05:44 20:11 18:50	06:46 18:50 17:40	07:47 15:54 15:54	07:53 15:05-15:26/21 16:36	08:51 14:09-14:34/25 15:54
9	09:02 14:25-14:47/22 16:14	08:14 08:43-08:52/9 17:18	07:05 18:20 18:20	06:42 20:25 21:27	05:29 22:18 22:19	04:43 21:26 20:08	04:52 20:08 18:47	05:46 20:08 18:47	06:48 18:47 17:37	07:49 15:54 15:54	07:55 15:05-15:27/22 16:34	08:52 14:09-14:34/25 15:54
10	09:02 14:26-14:47/21 16:16	08:12 08:41-08:55/14 17:20	07:03 18:22 18:22	06:40 20:27 21:29	05:27 22:19 22:19	04:42 21:24 20:05	04:54 20:05 18:45	05:48 20:05 18:45	06:50 18:45 17:35	07:51 15:53 15:53	07:58 15:04-15:28/24 16:32	08:54 14:10-14:35/25 15:53
11	09:01 14:27-14:47/20 16:17	08:09 08:38-08:56/18 17:22	07:00 18:24 18:24	06:37 20:29 21:31	05:25 22:20 22:17	04:42 21:22 20:03	04:55 20:03 18:42	05:50 20:03 18:42	06:52 18:42 17:32	07:53 15:53 15:53	08:00 15:03-15:28/25 16:30	08:55 14:10-14:36/26 15:53
12	09:00 14:27-14:46/19 16:19	08:07 08:37-08:58/21 17:25	06:57 18:26 18:26	06:35 20:31 21:33	05:23 22:21 22:16	04:41 21:19 20:00	04:56 20:00 18:40	05:52 20:00 18:40	06:54 18:40 17:30	07:55 15:53 15:53	08:02 15:03-15:29/26 16:28	08:56 14:11-14:37/26 15:53
13	08:59 14:29-14:46/17 16:21	08:05 08:36-08:59/23 17:27	06:55 18:28 18:28	06:32 20:33 21:35	05:21 22:22 22:15	04:41 21:17 20:00	04:58 20:00 18:37	05:54 20:00 18:37	06:56 18:37 17:27	07:57 15:52 15:52	08:04 15:03-15:29/26 16:26	08:57 14:11-14:37/26 15:52
14	08:58 14:31-14:46/15 16:23	08:03 08:35-09:00/25 17:29	06:52 18:30 18:30	06:29 20:35 21:37	05:19 22:22 22:14	04:40 21:15 20:00	04:59 20:00 18:34	05:56 20:00 18:34	06:58 18:34 17:24	07:59 15:52 15:52	08:06 15:04-15:30/26 16:24	08:58 14:11-14:37/26 15:52
15	08:57 14:32-14:44/12 16:24	08:00 08:34-09:00/26 17:31	06:49 18:33 18:33	06:27 20:37 21:39	05:17 22:23 22:12	04:40 21:12 20:00	05:01 20:00 18:32	05:58 20:00 18:32	07:00 18:32 17:22	08:01 15:52 15:52	09:13-09:24/11 16:22	08:59 11:08-11:09/1 15:52
16	08:56 14:35-14:43/8 16:26	07:58 08:34-09:01/27 17:34	06:47 18:35 18:35	06:24 20:40 21:41	05:15 22:24 22:11	04:40 21:10 20:00	05:02 20:00 18:29	06:00 20:00 18:29	07:02 18:29 17:19	08:03 15:53 15:53	09:10-09:26/16 16:20	08:59 11:06-11:11/5 15:52
17	08:54 15:32-15:47/15 16:28	07:56 08:34-09:00/26 17:36	06:44 18:37 18:37	06:22 20:42 21:43	05:13 22:24 22:10	04:40 21:07 20:00	05:04 20:00 18:27	06:02 20:00 18:27	07:04 18:27 17:17	08:06 15:54 15:54	09:08-09:27/19 16:19	08:57 11:06-11:13/7 15:52
18	08:53 15:31-15:51/20 16:30	07:53 08:34-09:01/27 17:38	06:41 18:39 18:39	06:19 20:44 21:45	05:11 22:25 22:08	04:39 21:05 20:00	05:05 20:00 18:24	06:04 20:00 18:24	07:06 18:24 17:14	08:06 15:54 15:54	09:07-09:29/22 16:17	08:56 11:06-11:14/8 15:52
19	08:52 15:31-15:53/22 16:32	07:51 08:33-09:00/27 17:40	06:39 18:41 18:41	06:16 20:46 21:47	05:10 22:25 22:07	04:39 21:02 20:00	05:07 20:00 18:22	06:06 20:00 18:22	07:08 18:22 17:12	08:08 15:54 15:54	09:10 09:06-09:30/24 16:15	08:55 11:07-11:15/8 15:53
20	08:50 15:30-15:53/23 16:34	07:48 08:34-09:01/27 17:43	06:36 18:43 18:43	06:14 20:48 21:49	05:08 22:25 22:05	04:39 21:00 20:00	05:09 20:00 18:19	06:08 20:00 18:19	07:10 18:19 17:09	08:12 15:54 15:54	09:05 09:05-09:30/25 16:14	08:54 11:06-11:15/9 15:53
21	08:49 15:31-15:55/24 16:36	07:46 08:34-09:00/26 17:45	06:33 18:45 18:45	06:11 20:50 21:50	05:06 22:26 22:03	04:40 21:07 20:00	05:10 20:00 18:17	06:10 20:00 18:17	07:12 18:17 17:07	08:14 15:54 15:54	09:05 09:05-09:31/26 16:12	08:53 11:07-11:16/9 15:52
22	08:47 15:30-15:55/25 16:38	07:43 08:35-09:00/25 17:47	06:31 18:47 18:47	06:09 20:52 21:52	05:04 22:26 22:02	04:40 21:05 20:00	05:12 20:00 18:14	06:12 20:00 18:14	07:14 18:14 17:04	08:16 15:54 15:54	09:04 09:04-09:31/27 16:11	08:52 11:07-11:16/9 15:54
23	08:46 15:30-15:56/26 16:40	07:41 08:35-08:58/23 17:49	06:28 18:49 18:49	06:06 20:54 21:54	05:03 22:26 22:00	04:40 21:02 20:00	05:14 20:00 18:12	06:14 20:00 18:12	07:16 18:12 17:02	08:18 15:54 15:54	09:04 09:04-09:31/27 16:09	08:51 11:08-11:17/9 15:54
24	08:44 15:30-15:56/26 16:42	07:39 08:36-08:57/21 17:51	06:25 18:51 18:51	06:04 20:56 21:56	05:01 22:26 22:00	04:40 21:00 20:00	05:15 20:00 18:09	06:16 20:00 18:09	07:18 18:09 17:00	08:21 15:54 15:54	09:04 09:04-09:31/27 16:08	08:50 11:08-11:17/9 15:55
25	08:43 15:30-15:56/26 16:45	07:36 08:38-08:56/18 17:54	06:22 18:54 18:54	06:02 20:58 21:57	05:00 22:26 22:01	04:41 21:00 20:00	05:17 20:00 18:07	06:18 20:00 18:07	07:20 18:07 17:00	08:23 15:54 15:54	09:04 08:04-08:31/27 16:06	08:50 11:09-11:17/8 15:56
26	08:41 15:30-15:57/27 16:47	07:34 08:39-08:53/14 17:56	06:20 18:56 18:56	05:59 21:00 21:59	04:58 22:26 22:01	04:41 21:00 20:00	05:19 20:00 18:05	06:20 20:00 18:05	07:22 18:05 17:00	08:25 15:54 15:54	09:04 08:04-08:30/26 16:05	08:50 11:10-11:17/7 15:56
27	08:39 15:30-15:57/27 16:49	07:31 08:43-08:50/7 17:58	06:17 18:58 18:58	05:57 21:03 22:01	04:57 22:26 22:01	04:42 21:00 20:00	05:21 20:00 18:02	06:22 20:00 18:02	07:24 18:02 17:00	08:27 15:54 15:54	09:04 08:05-08:30/25 16:04	08:50 11:11-11:17/6 15:57
28	08:38 15:31-15:57/26 16:51	07:28 18:00 18:00	06:14 19:00 19:00	05:54 22:02 22:26	04:55 22:26 22:01	04:42 21:00 20:00	05:23 20:00 18:00	06:24 20:00 18:00	07:26 18:00 17:00	08:29 15:54 15:54	09:04 08:05-08:29/24 16:03	08:50 11:13-11:16/3 15:58
29	08:36 15:31-15:57/26 16:53		07:12 20:02 21:07	05:52 22:07 22:04	04:54 22:25 22:01	04:43 21:49 20:37	05:25 20:37 19:14	06:26 20:37 19:14	07:28 19:14 18:02	08:31 15:54 15:54	09:04 08:05-08:28/23 16:02	08:50 11:14-14:42/27 15:59
30	08:34 15:32-15:57/25 16:55		07:09 20:04 21:09	05:49 22:05 22:25	04:53 22:25 22:01	04:44 21:47 20:34	05:26 20:34 19:11	06:28 20:34 19:11	07:30 19:11 18:00	08:33 15:54 15:54	09:04 08:07-08:27/20 16:00	08:50 11:14-14:45/27 16:00
31	08:32 15:32-15:57/25 16:58		07:06 20:06 21:07	05:46 22:06 22:07	04:51 22:07 22:07	04:44 21:45 20:32	05:28 20:32 19:15	06:30 20:32 19:15	07:36 19:15 18:00	08:36 15:54 15:54	09:04 08:08-08:25/17 16:00	08:50 11:14-14:46/27 16:01
Potential sun hours	235	266	366	426	508	529	530	470	385	323	247	216
Sum of minutes with flicker	741	513	0	0	0	0	0	0	0	386	613	890

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: VPSP wind farm  
Description: VPSP wind farm

Licensed user:  
SIA Estonian, Latvian & Lithuanian environment  
Vilandes 3-6  
LV-1010 Riga  
0037167242411  
Anna / anna@environment.lv  
Calculated:  
02/05/2022 17:18/3.5.576

## SHADOW - Calendar per WTG

WTG: 4.4.A - Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165.0 m (TOT: 250.0 m) (8)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.35	3.07	4.72	8.16	9.63	10.93	9.79	7.85	5.92	3.23	1.29	0.72

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
293	300	348	355	333	399	506	566	582	663	919	1,110	790	574	487	406	8,631

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

	January	February	March	April	May	June
1	09:06 16:02	08:30 09:19-09:51/32 17:00	07:26 18:02	07:04 20:08	05:47 20:04-20:29/25 21:11	04:50 20:44-21:28/44 22:08
2	09:06 16:04	08:28 09:20-09:51/31 17:02	07:23 18:04	07:01 20:10	05:45 20:04-20:29/25 21:13	04:49 20:44-21:05/21 22:10 21:07-21:28/21
3	09:06 16:05	08:26 09:22-09:51/29 17:04	07:21 18:07	06:58 20:12	05:42 20:04-20:28/24 21:15 20:39-20:42/3	04:48 20:45-21:06/21 22:11 21:08-21:29/21
4	09:05 16:06	08:24 09:22-09:50/28 17:06	07:18 18:09	06:55 20:14	05:40 20:04-20:27/23 21:17 20:37-20:44/7	04:47 20:46-21:06/20 22:12 21:08-21:29/21
5	09:05 16:08	08:22 09:25-09:50/25 17:09	07:15 18:11	06:53 20:16	05:38 20:05-20:27/22 21:19 20:35-20:46/11	04:46 20:46-21:05/19 22:13 21:08-21:29/21
6	09:04 16:09	08:20 09:28-09:49/21 17:11	07:13 18:13	06:50 20:18	05:36 20:05-20:26/21 21:21 20:34-20:47/13	04:45 20:47-21:05/18 22:15 21:07-21:28/21
7	09:04 16:11	08:18 09:28-09:47/19 17:13	07:10 18:15	06:48 20:21	05:33 20:06-20:25/19 21:23 20:34-20:49/15	04:44 20:48-21:05/17 22:16 21:08-21:29/21
8	09:03 16:12	08:16 09:30-09:46/16 17:15	07:08 18:17	06:45 20:23	05:31 20:07-20:24/17 21:25 20:33-20:51/18	04:43 20:48-21:04/16 22:17 21:08-21:29/21
9	09:02 16:14	08:14 09:33-09:44/11 17:18	07:05 18:20	06:42 20:25	05:29 20:09-20:22/13 21:27 20:32-20:53/21	04:43 20:49-21:04/15 22:18 21:09-21:29/20
10	09:01 16:15	08:11 17:20	07:02 18:22	06:40 20:27	05:27 20:11-20:20/9 21:29 20:32-20:55/23	04:42 20:49-21:04/15 22:19 21:09-21:29/20
11	09:01 16:17	08:09 17:22	07:00 18:24	06:37 20:29	05:25 20:33-20:57/24 21:31	04:41 20:51-21:04/13 22:20 21:10-21:30/20
12	09:00 16:19	08:07 17:24	06:57 18:26	06:34 20:31	05:23 20:33-20:59/26 21:33	04:41 20:51-21:03/12 22:21 21:09-21:29/20
13	08:59 16:21	08:05 17:27	06:54 18:28	06:32 20:33	05:21 20:32-21:01/29 21:35	04:41 20:52-21:03/11 22:22 21:10-21:29/19
14	08:58 16:22	08:02 17:29	06:52 18:30	06:29 20:35	05:19 20:32-21:02/30 21:37	04:40 20:53-21:03/10 22:22 21:10-21:30/20
15	08:57 16:24	08:00 17:31	06:49 18:32	06:27 20:37	05:17 20:32-21:04/32 21:39	04:40 20:53-21:03/10 22:23 21:11-21:30/19
16	08:55 09:31-09:36/5 16:26	07:58 17:33	06:46 18:35	06:24 20:39	05:15 20:34-21:05/31 21:41	04:40 20:54-21:03/9 22:24 21:11-21:30/19
17	08:54 09:29-09:39/10 16:28	07:55 17:36	06:44 18:37	06:21 20:41	05:13 20:34-21:05/31 21:43	04:39 20:55-21:02/7 22:24 21:12-21:30/18
18	08:53 09:28-09:41/13 16:30	07:53 17:38	06:41 18:39	06:19 20:44	05:11 20:34-21:05/31 21:45	04:39 20:56-21:02/6 22:25 21:12-21:31/19
19	08:52 09:26-09:43/17 16:32	07:51 17:40	06:38 18:41	06:16 20:46	05:09 20:35-21:06/31 21:47	04:39 20:56-21:02/6 22:25 21:12-21:31/19
20	08:50 09:24-09:44/20 16:34	07:48 17:42	06:36 18:43	06:14 20:48	05:08 20:36-21:06/30 21:48	04:39 20:56-21:02/6 22:25 21:12-21:31/19
21	08:49 09:23-09:46/23 16:36	07:46 17:45	06:33 18:45	06:11 20:16-20:19/3 20:50	05:06 20:38-21:07/29 21:50 21:11-21:14/3	04:39 20:56-21:02/6 22:26 21:12-21:31/19
22	08:47 09:21-09:46/25 16:38	07:43 17:47	06:30 18:47	06:09 20:12-20:21/9 20:52	05:04 20:39-21:06/27 21:52 21:09-21:15/6	04:40 20:56-21:02/6 22:26 21:12-21:31/19
23	08:46 09:19-09:47/28 16:40	07:41 17:49	06:28 18:49	06:06 20:10-20:23/13 20:54	05:03 20:41-21:07/26 21:54 21:09-21:17/8	04:40 20:56-21:02/6 22:26 21:12-21:31/19
24	08:44 09:17-09:48/31 16:42	07:38 17:51	06:25 18:51	06:04 20:09-20:25/16 20:56	05:01 20:42-21:07/25 21:55 21:09-21:19/10	04:40 20:57-21:03/6 22:26 21:13-21:32/19
25	08:43 09:17-09:49/32 16:44	07:36 17:54	06:22 18:53	06:01 20:07-20:27/20 20:58	04:59 20:41-21:20/39 21:57	04:41 20:56-21:03/7 22:26 21:13-21:32/19
26	08:41 09:17-09:49/32 16:47	07:33 17:56	06:20 18:56	05:59 20:06-20:28/22 21:00	04:58 20:42-21:21/39 21:59	04:41 20:57-21:05/8 22:26 21:13-21:32/19
27	08:39 09:17-09:50/33 16:49	07:31 17:58	06:17 18:58	05:57 20:06-20:29/23 21:02	04:57 20:42-21:23/41 22:00	04:41 20:56-21:05/9 22:26 21:13-21:32/19
28	08:37 09:17-09:50/33 16:51	07:28 18:00	06:14 19:00	05:54 20:04-20:29/25 21:04	04:55 20:43-21:25/42 22:02	04:42 20:56-21:06/10 22:26 21:14-21:33/19
29	08:36 09:17-09:51/34 16:53		07:12 20:02	05:52 20:04-20:29/25 21:07	04:54 20:42-21:25/43 22:04	04:43 20:55-21:06/11 22:25 21:13-21:33/20
30	08:34 09:18-09:51/33 16:55		07:09 20:04	05:49 20:04-20:29/25 21:09	04:53 20:43-21:27/44 22:05	04:43 20:55-21:07/12 22:25 21:13-21:33/20
31	08:32 09:18-09:51/33 16:58		07:06 20:06		04:51 20:43-21:28/45 22:07	
Potential sun hours	235	266	366	426	508	529
Sum of minutes with flicker	402	212	0	181	1031	948

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:

VPSP wind farm

Description:

VPSP wind farm

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Anna / anna@environment.lv

Calculated:

02/05/2022 17:18/3.5.576

## SHADOW - Calendar per WTG

WTG: 4.4.A - Siemens Gamesa SG 6.6-170 6600 170.0 !OI! hub: 165.0 m (TOT: 250.0 m) (8)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.35	3.07	4.72	8.16	9.63	10.93	9.79	7.85	5.92	3.23	1.29	0.72

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
293	300	348	355	333	399	506	566	582	663	919	1,110	790	574	487	406	8,631

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

	July	August	September	October	November	December
1	04:44 20:55-21:08/13 22:25 21:14-21:34/20	05:30 20:43-21:09/26 21:43	06:32 20:29 19:08	07:32 16:51	07:38 09:06-09:09/3	08:40 15:59
2	04:45 20:55-21:09/14 22:24 21:14-21:34/20	05:32 20:25-20:28/3 21:41 20:43-21:07/24	06:34 20:26 19:06	07:34 16:48	07:40 09:02-09:14/12	08:41 15:58
3	04:46 20:54-21:09/15 22:24 21:13-21:34/21	05:34 20:20-20:31/11 21:39 20:42-21:04/22	06:36 20:24 19:03	07:36 16:46	07:42 08:59-09:16/17	08:43 15:57
4	04:47 20:54-21:09/15 22:23 21:14-21:34/20	05:36 20:18-20:33/15 21:37 20:43-21:03/20	06:38 20:21 19:00	07:38 16:44	07:44 08:59-09:18/19	08:45 15:57
5	04:48 20:53-21:10/17 22:22 21:14-21:35/21	05:38 20:17-20:34/17 21:35 20:43-21:01/18	06:40 20:18 18:58	07:40 16:42	07:47 08:57-09:19/22	08:46 15:56
6	04:49 20:53-21:11/18 22:22 21:14-21:35/21	05:40 20:16-20:35/19 21:33 20:44-20:59/15	06:42 20:16 18:55	07:42 16:40	07:49 08:54-09:19/25	08:48 15:55
7	04:50 20:53-21:11/18 22:21 21:14-21:35/21	05:42 20:15-20:36/21 21:30 20:45-20:57/12	06:44 20:13 18:52	07:45 16:38	07:51 08:53-09:21/28	08:49 15:55
8	04:51 20:52-21:12/20 22:20 21:14-21:35/21	05:44 20:14-20:36/22 21:28 20:45-20:54/9	06:46 20:10 18:50	07:47 16:36	07:53 08:51-09:21/30	08:51 15:54
9	04:52 20:52-21:12/20 22:19 21:14-21:35/21	05:46 20:13-20:37/24 21:26 20:47-20:52/5	06:48 20:08 18:47	07:49 16:33	07:55 08:51-09:22/31	08:52 15:54
10	04:54 20:53-21:14/21 22:18 21:15-21:36/21	05:48 20:13-20:37/24 21:24 20:49-20:50/1	06:50 20:05 18:45	07:51 16:31	07:57 08:50-09:22/32	08:53 15:53
11	04:55 20:52-21:14/22 22:17 21:15-21:36/21	05:50 20:13-20:37/24 21:21	06:52 20:02 18:42	07:53 16:30	08:00 08:49-09:22/33	08:55 15:53
12	04:56 20:52-21:14/22 22:16 21:15-21:36/21	05:52 20:13-20:37/24 21:19	06:54 20:00 18:39	07:55 16:28	08:02 08:50-09:23/33	08:56 15:52
13	04:58 20:51-21:14/23 22:15 21:15-21:36/21	05:54 20:13-20:37/24 21:17	06:56 19:57 18:37	07:57 16:26	08:04 08:49-09:22/33	08:57 15:52
14	04:59 20:52-21:35/43 22:13	05:56 20:12-20:36/24 21:14	06:58 19:54 18:34	07:59 16:24	08:06 08:50-09:23/33	08:58 15:52
15	05:01 20:51-21:34/43 22:12	05:58 20:12-20:36/24 21:12	07:00 19:52 18:32	08:01 16:22	08:08 08:50-09:23/33	08:59 15:52
16	05:02 20:51-21:32/41 22:11	06:00 20:12-20:35/23 21:10	07:02 19:49 18:29	08:03 16:20	08:10 08:50-09:22/32	09:00 15:52
17	05:04 20:51-21:16/25 22:09 21:17-21:32/15	06:02 20:13-20:35/22 21:07	07:04 19:46 18:27	08:05 16:19	08:12 08:51-09:23/32	09:01 15:52
18	05:05 20:51-21:16/25 22:08 21:17-21:30/13	06:04 20:13-20:33/20 21:05	07:06 19:44 18:24	08:08 16:17	08:14 08:51-09:22/31	09:02 15:52
19	05:07 20:52-21:17/25 22:06 21:18-21:29/11	06:06 20:14-20:31/17 21:02	07:08 19:41 18:22	08:10 16:15	08:17 08:54-09:21/27	09:03 15:53
20	05:08 20:51-21:17/26 22:05 21:18-21:28/10	06:08 20:16-20:28/12 21:00	07:10 19:38 18:19	08:12 16:14	08:19 08:56-09:22/26	09:03 15:53
21	05:10 20:50-21:17/27 22:03 21:19-21:27/8	06:10 20:18-20:26/8 20:57	07:12 19:35 18:17	08:14 16:12	08:21 08:58-09:21/23	09:04 15:53
22	05:12 20:48-21:17/29 22:02 21:20-21:25/5	06:12 20:55 19:33	07:14 18:14	08:16 16:11	08:23 09:00-09:20/20	09:05 15:54
23	05:14 20:47-21:17/30 22:00 21:22-21:24/2	06:14 20:52 19:30	07:16 18:12	08:18 16:09	08:25 09:03-09:20/17	09:05 15:54
24	05:15 20:46-21:16/30 21:58	06:16 20:50 19:27	07:18 18:09	08:20 16:08	08:27 09:05-09:18/13	09:06 15:55
25	05:17 20:45-21:16/31 21:57	06:18 20:47 19:25	07:20 17:07	08:22 16:06	08:29 09:07-09:17/10	09:06 15:55
26	05:19 20:45-21:16/31 21:55	06:20 20:45 19:22	07:22 17:04	08:24 16:05	09:09-09:14/5	09:06 15:56
27	05:21 20:44-21:15/31 21:53	06:22 20:42 19:19	07:24 17:02	08:26 16:04		09:06 15:57
28	05:23 20:44-21:15/31 21:51	06:24 20:39 19:16	07:26 17:00	08:28 16:03		09:06 15:58
29	05:24 20:44-21:14/30 21:49	06:26 20:37 19:14	07:28 16:57	08:30 16:01		09:07 15:59
30	05:26 20:43-21:12/29 21:47	06:28 20:34 19:11	07:30 16:55	08:32 16:00		09:07 16:00
31	05:28 20:43-21:10/27 21:45	06:30 20:32 19:09	07:32 16:53 19:07	08:34 16:01 19:05		09:06 16:01
Potential sun hours	530	470	385	323	247	216
Sum of minutes with flicker	1126	530	0	0	620	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: VPSP wind farm  
Description: VPSP wind farm

Licensed user:  
SIA Estonian, Latvian & Lithuanian environment  
Vilandes 3-6  
LV-1010 Riga  
0037167242411  
Anna / anna@environment.lv  
Calculated:  
02/05/2022 17:18/3.5.576

## SHADOW - Calendar per WTG

WTG: 4.4-B - Siemens Gamesa SG 6.6-170 6600 170.0 IO! hub: 165.0 m (TOT: 250.0 m) (9)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.35	3.07	4.72	8.16	9.63	10.93	9.79	7.85	5.92	3.23	1.29	0.72

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
293	300	348	355	333	399	506	566	582	663	919	1,110	790	574	487	406	8,631

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

	January	February	March	April	May	June	July	August	September	October	November	December
1	09:06 16:02	08:30 09:11-09:52/41 17:00	07:26 09:27-09:44/17 18:02	07:04 20:08	05:47 21:11	04:50 22:08	04:44 22:25	05:30 21:43	06:32 20:29	07:32 19:08	07:38 08:39-09:29/50 16:51	08:40 15:59
2	09:06 16:04	08:28 09:10-09:54/44 17:02	07:23 09:34-09:38/4 18:05	07:01 20:10	05:45 21:13	04:49 22:10	04:45 22:24	05:32 21:41	06:34 20:26	07:34 19:06	07:40 08:39-09:30/51 16:48	08:41 15:58
3	09:06 16:05	08:26 09:10-09:55/45 17:04	07:21 18:07	06:58 20:12	05:42 21:15	04:48 22:11	04:46 22:24	05:34 21:39	06:36 20:24	07:36 19:03	07:42 08:39-09:29/50 16:46	08:43 15:57
4	09:05 16:06	08:24 09:09-09:56/47 17:06	07:18 18:09	06:56 20:14	05:40 21:17	04:47 22:12	04:47 22:23	05:36 21:37	06:38 20:21	07:38 19:00	07:44 08:39-09:29/50 16:44	08:45 15:57
5	09:05 16:08	08:22 09:09-09:57/48 17:09	07:16 18:11	06:53 20:16	05:38 21:19	04:46 22:14	04:48 22:22	05:38 21:35	06:40 20:19	07:40 18:58	07:47 08:39-09:28/49 16:42	08:46 15:56
6	09:04 16:09	08:20 09:09-09:58/49 17:11	07:13 18:13	06:50 20:18	05:36 21:21	04:45 22:15	04:49 22:22	05:40 21:33	06:42 20:16	07:43 18:55	07:49 08:39-09:26/47 16:40	08:48 15:55
7	09:04 16:11	08:18 09:10-09:58/48 17:13	07:10 18:15	06:48 20:21	05:33 21:23	04:44 22:16	04:50 22:21	05:42 21:31	06:44 20:13	07:45 18:52	07:51 08:40-09:26/46 16:38	08:49 15:55
8	09:03 16:12	08:16 09:09-09:59/50 17:15	07:08 18:17	06:45 20:23	05:31 21:25	04:43 22:17	04:51 22:20	05:44 21:28	06:46 20:11	07:47 18:50	07:53 08:40-09:25/45 16:36	08:51 15:54
9	09:02 16:14	08:14 09:10-10:00/50 17:18	07:05 18:20	06:42 20:25	05:29 21:27	04:43 22:18	04:52 22:19	05:46 21:26	06:48 20:08	07:49 18:47	07:55 08:41-09:24/43 16:33	08:52 15:54
10	09:02 16:15	08:11 09:09-10:00/51 17:20	07:02 18:22	06:40 20:27	05:27 21:29	04:42 22:19	04:54 22:18	05:48 21:24	06:50 20:05	07:51 18:45	07:57 08:41-09:23/42 16:31	08:54 15:53
11	09:01 16:17	08:09 09:10-10:01/51 17:22	07:00 18:24	06:37 20:29	05:25 21:31	04:41 22:20	04:55 22:17	05:50 21:21	06:52 20:02	07:53 18:42	08:00 08:42-09:21/39 16:30	08:55 15:53
12	09:00 16:19	08:07 09:11-10:01/50 17:24	06:57 18:26	06:34 20:31	05:23 21:33	04:41 22:21	04:56 22:16	05:52 21:19	06:54 20:00	07:55 10:03-10:15/12 18:39	08:02 08:43-09:20/37 16:28	08:56 15:52
13	08:59 16:21	08:05 09:11-10:01/50 17:27	06:54 18:28	06:32 20:33	05:21 21:35	04:41 22:22	04:58 22:15	05:54 21:17	06:56 19:57	07:57 09:58-10:19/21 18:37	08:04 08:44-09:17/33 16:26	08:57 15:52
14	08:58 16:22	08:02 09:13-10:02/49 17:29	06:52 18:30	06:29 20:35	05:19 21:37	04:40 22:22	04:59 22:13	05:56 21:14	06:58 19:54	07:59 09:56-10:22/26 18:34	08:06 08:46-09:15/29 16:24	08:58 15:52
15	08:57 16:24	08:00 09:13-10:01/48 17:31	06:49 18:32	06:27 20:37	05:17 21:39	04:40 22:23	05:01 22:12	05:58 21:12	07:00 19:52	08:01 09:54-10:24/30 18:32	08:08 08:48-09:04/16 16:22	08:59 15:52
16	08:55 16:26	07:58 09:15-10:01/46 17:34	06:46 18:35	06:24 20:39	05:15 21:41	04:40 22:24	05:02 22:11	06:00 21:10	07:02 19:49	08:03 09:52-10:25/33 18:29	08:10 08:49-09:02/13 16:20	09:00 15:52
17	08:54 16:28	07:55 09:14-10:01/47 17:36	06:44 18:37	06:21 20:42	05:13 21:43	04:39 22:24	05:04 22:09	06:02 21:07	07:04 19:46	08:05 09:50-10:26/36 18:27	08:12 08:54-09:00/6 16:19	09:01 15:52
18	08:53 16:30	07:53 09:15-10:01/46 17:38	06:41 18:39	06:19 20:44	05:11 21:45	04:39 22:25	05:05 22:08	06:04 21:05	07:06 19:44	08:08 09:50-10:28/38 18:24	08:15 16:17	09:02 15:52
19	08:52 16:32	07:51 09:15-10:00/45 17:40	06:38 18:41	06:16 20:46	05:09 21:47	04:39 22:25	05:07 22:07	06:06 21:02	07:08 19:41	08:10 09:48-10:28/40 18:22	08:17 16:15	09:03 15:53
20	08:50 16:34	07:48 09:16-10:00/44 17:42	06:36 18:43	06:14 20:48	05:08 21:48	04:39 22:25	05:08 22:05	06:08 21:00	07:10 19:38	08:12 09:47-10:29/42 18:19	08:19 16:14	09:03 15:53
21	08:49 16:36	07:46 09:16-09:59/43 17:45	06:33 18:45	06:11 20:50	05:06 21:50	04:39 22:26	05:10 22:03	06:10 20:57	07:12 19:35	08:14 09:46-10:29/43 18:17	08:21 16:12	09:04 15:53
22	08:47 16:38	07:43 09:17-09:58/41 17:47	06:30 18:47	06:09 20:52	05:04 21:52	04:40 22:26	05:12 22:02	06:12 20:55	07:14 19:33	08:16 09:46-10:30/44 18:14	08:23 16:11	09:05 15:54
23	08:46 16:40	07:41 09:17-09:57/40 17:49	06:28 18:49	06:06 20:54	05:03 21:54	04:40 22:26	05:14 22:00	06:14 20:52	07:16 19:30	08:18 09:45-10:30/45 18:12	08:25 16:09	09:05 15:54
24	08:44 16:42	07:38 09:18-09:55/37 17:51	06:25 18:51	06:04 20:56	05:01 21:56	04:40 22:26	05:15 22:00	06:16 20:50	07:18 19:27	08:20 09:44-10:30/46 18:09	08:27 16:08	09:06 15:55
25	08:43 16:44	09:20-09:26/6 17:54	06:22 18:53	06:01 20:58	04:59 21:57	04:41 22:26	05:17 22:07	06:18 20:47	07:20 19:25	07:23 08:45-09:31/46 17:07	08:29 16:06	09:06 15:55
26	08:41 16:47	09:16-09:29/13 17:56	06:20 18:56	05:59 21:00	04:58 21:59	04:41 22:26	05:19 22:05	06:20 20:45	07:22 19:22	07:25 08:44-09:31/47 17:04	08:31 16:05	09:06 15:56
27	08:39 16:49	09:15-09:31/16 17:58	06:17 18:58	05:57 21:02	04:57 22:01	04:41 22:26	05:21 21:53	06:22 20:42	07:24 19:19	07:27 08:42-09:30/48 17:02	08:32 16:04	09:06 15:57
28	08:37 16:51	09:13-09:42/29 18:00	06:14 19:00	05:54 21:05	04:55 22:02	04:42 22:26	05:23 21:51	06:24 20:40	07:26 19:17	07:29 08:42-09:31/49 17:00	08:34 16:03	09:07 15:58
29	08:36 16:53	09:12-09:46/34 20:02	06:12 20:02	05:52 21:07	04:54 22:04	04:43 22:25	05:24 21:49	06:26 20:37	07:28 19:14	07:31 08:41-09:30/49 16:57	08:36 16:01	09:07 15:59
30	08:34 16:55	09:12-09:48/36 20:04	06:09 20:04	05:49 22:09	04:52 22:05	04:43 22:25	05:26 21:47	06:28 20:34	07:30 19:11	07:33 08:41-09:31/50 16:55	08:38 16:00	09:07 15:59
31	08:32 16:58	09:11-09:50/39 20:06	06:06 20:06	05:47 22:07	04:51 22:07	04:43 22:25	05:28 21:45	06:30 20:32	07:36 19:00	07:36 08:40-09:30/50 16:53	08:39 16:01	09:06 15:59
Potential sun hours	235	266	366	426	508	529	530	470	385	323	247	216
Sum of minutes with flicker	173	1228	21	0	0	0	0	0	0	795	646	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: VPSP wind farm  
Description: VPSP wind farm

Licensed user:  
SIA Estonian, Latvian & Lithuanian environment  
Vilandes 3-6  
LV-1010 Riga  
0037167242411  
Anna / anna@environment.lv  
Calculated:  
02/05/2022 17:18/3.5.576

## SHADOW - Calendar per WTG

WTG: 4.4.C - Siemens Gamesa SG 6.6-170 6600 170.0 IO! hub: 165.0 m (TOT: 250.0 m) (10)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.35	3.07	4.72	8.16	9.63	10.93	9.79	7.85	5.92	3.23	1.29	0.72

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
293	300	348	355	333	399	506	566	582	663	919	1,110	790	574	487	406	8,631

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

	January		February		March		April		May		June		July		August		September		October		November		December		
1	09:06 16:02	08:30 17:00			07:26 18:02	07:52-08:13/21	07:03 20:08	05:47 21:11	04:50 22:08	04:44 22:25	05:30 21:43	06:32 20:29			07:32 19:08	08:07-08:47/40	07:38 16:51	08:40 15:59							
2	09:06 16:04	08:28 17:02			07:23 18:04	07:51-08:14/23	07:01 20:10	05:45 21:13	04:49 22:10	04:45 22:24	05:32 21:41	06:34 20:26			07:34 19:06	08:08-08:48/40	07:40 16:48	08:41 15:58							
3	09:06 16:05	08:26 17:04			07:21 18:07	07:50-08:14/24	06:58 20:12	05:42 21:15	04:48 22:11	04:46 22:24	05:34 21:39	06:36 20:24			07:36 19:03	08:10-08:49/39	07:42 16:46	08:43 15:57							
4	09:05 16:06	08:24 17:06			07:18 18:09	07:49-08:14/25	06:55 20:14	05:40 21:17	04:47 22:12	04:47 22:23	05:36 21:37	06:38 20:21			07:38 19:00	08:12-08:50/38	07:44 16:44	08:45 15:57							
5	09:05 16:08	08:22 17:09			07:15 18:11	07:49-08:15/26	06:53 20:16	05:38 21:19	04:46 22:13	04:48 22:22	05:38 21:35	06:40 20:18			07:40 18:58	08:26-08:50/24	07:47 16:42	08:46 15:56							
6	09:04 16:09	08:20 17:11			07:13 18:13	07:49-08:15/26	06:50 20:18	05:36 21:21	04:45 22:15	04:49 22:22	05:40 21:33	06:42 20:16			07:42 18:55	08:25-08:50/25	07:49 16:40	08:48 15:55							
7	09:04 16:11	08:18 17:13			07:10 18:15	07:48-08:14/26	06:48 20:21	05:33 21:23	04:44 22:16	04:50 22:21	05:42 21:30	06:44 20:13			07:45 18:52	08:24-08:50/26	07:51 16:38	08:49 15:55							
8	09:03 16:12	08:16 17:15			07:08 18:17	07:49-08:14/25	06:45 20:23	05:31 21:25	04:43 22:17	04:51 22:20	05:44 21:28	06:46 20:10			07:47 18:50	08:25-08:50/25	07:53 16:35	08:51 15:54							
9	09:02 16:14	08:14 17:18			07:05 18:20	07:49-08:13/24	06:42 20:25	05:29 21:27	04:43 22:18	04:52 22:19	05:46 21:26	06:48 20:08			07:49 18:47	08:24-08:50/26	07:55 16:33	08:52 15:53							
10	09:02 16:15	08:11 17:20			07:02 18:22	07:33-08:11/38	06:40 20:27	05:27 21:29	04:42 22:19	04:54 22:18	05:48 21:24	06:50 20:05			07:51 18:45	08:24-08:49/25	07:57 16:31	08:53 15:53							
11	09:01 16:17	08:09 17:22			07:00 18:24	07:30-08:10/40	06:37 20:29	05:25 21:31	04:41 22:20	04:55 22:17	05:50 21:21	06:52 20:02			07:53 18:42	08:24-08:48/24	08:00 16:29	08:55 15:53							
12	09:00 16:19	08:07 17:24			06:57 18:26	07:29-08:09/40	06:34 20:31	05:23 21:33	04:41 22:21	04:56 22:16	05:52 21:19	06:54 20:00			07:55 18:39	08:24-08:47/23	08:02 16:28	08:56 15:52							
13	08:59 16:21	08:05 17:27			06:54 18:28	07:27-08:06/39	06:32 20:33	05:21 21:35	04:40 22:22	04:58 22:15	05:54 21:17	06:56 19:57	08:25-08:28/3		07:57 18:37	08:26-08:45/19	08:04 16:26	08:57 15:52							
14	08:58 16:22	08:02 17:29			06:52 18:30	07:25-07:55/30	06:29 20:35	05:19 21:37	04:40 22:22	04:59 22:13	05:56 21:14	06:58 19:54	08:19-08:33/14		07:59 18:34	08:29-08:45/16	08:06 16:24	08:58 15:52							
15	08:57 16:24	08:00 17:31			06:49 18:32	07:25-07:57/32	06:27 20:37	05:17 21:39	04:40 22:23	05:00 22:12	05:58 21:12	07:00 19:52	08:16-08:36/20		08:01 18:32	08:31-08:42/11	08:08 16:22	08:59 15:52							
16	08:55 16:26	07:58 17:33			06:46 18:35	07:24-07:57/33	06:24 20:39	05:15 21:41	04:40 22:24	05:02 22:11	06:00 21:10	07:02 19:49	08:14-08:37/23		08:03 18:29	08:33-08:39/6	08:10 16:20	09:00 15:52							
17	08:54 16:28	07:55 17:36			06:44 18:37	07:23-07:56/33	06:21 20:41	05:13 21:43	04:39 22:24	05:04 22:09	06:02 21:07	07:04 19:46	08:12-08:39/27		08:05 18:27	08:12-08:40/29	08:12 16:18	09:01 15:52							
18	08:53 16:30	07:53 17:38			06:41 18:39	07:22-07:56/34	06:19 20:44	05:11 21:45	04:39 22:25	05:05 22:08	06:04 21:05	07:06 19:44	08:11-08:40/29		08:08 18:24	08:11-08:40/30	08:15 16:17	09:02 15:52							
19	08:52 16:32	07:51 17:40			06:38 18:41	07:22-07:57/35	06:16 20:46	05:09 21:47	04:39 22:25	05:07 22:06	06:06 21:02	07:08 19:41	08:10-08:40/30		08:10 18:22	08:10-08:40/30	08:17 16:15	09:03 15:52							
20	08:50 16:34	07:48 17:42			06:36 18:43	07:22-07:56/34	06:14 20:48	05:08 21:48	04:39 22:25	05:08 22:05	06:08 21:00	07:10 19:38	08:08-08:41/33		08:12 18:19	08:08-08:41/33	08:19 16:14	09:03 15:53							
21	08:49 16:36	07:46 17:45			06:33 18:45	07:21-07:55/34	06:11 20:50	05:06 21:50	04:39 22:26	05:10 22:03	06:10 20:57	07:12 19:35	08:08-08:41/33		08:14 18:17	08:08-08:41/33	08:21 16:12	09:04 15:53							
22	08:47 16:38	07:43 17:47			06:30 18:47	07:22-07:55/33	06:09 20:52	05:04 21:52	04:40 22:26	05:12 22:02	06:12 20:55	07:14 19:33	08:07-08:41/34		08:16 18:14	08:07-08:41/34	08:23 16:10	09:05 15:54							
23	08:46 16:40	07:41 17:49			06:28 18:49	07:22-07:54/32	06:06 20:54	05:03 21:54	04:40 22:26	05:13 22:00	06:14 20:52	07:16 19:30	08:06-08:41/35		08:18 18:12	08:06-08:41/35	08:25 16:09	09:05 15:54							
24	08:44 16:42	07:38 17:51			06:25 18:51	07:22-07:53/31	06:04 20:56	05:01 21:56	04:40 22:26	05:15 21:58	06:16 20:50	07:18 19:27	08:06-08:40/34		08:20 18:09	08:06-08:40/34	08:27 16:08	09:06 15:55							
25	08:43 16:44	07:36 17:53			06:22 18:53	07:23-07:52/29	06:01 20:58	04:59 21:57	04:40 22:26	05:17 21:57	06:18 20:47	07:20 19:25	08:06-08:40/34		08:23 17:07	08:06-08:40/34	08:29 16:06	09:06 15:55							
26	08:41 16:47	07:33 17:56	08:00-08:08/8		06:20 18:56	07:23-07:50/27	05:59 21:00	04:58 21:59	04:41 22:26	05:19 21:55	06:20 20:45	07:22 19:22	08:05-08:39/34		08:25 17:04	08:05-08:39/34	09:01 16:05	09:06 15:56							
27	08:39 16:49	07:31 17:58	07:58-08:11/13		06:17 18:58	07:24-07:48/24	05:56 21:02	04:56 22:01	04:41 22:26	05:21 21:53	06:22 20:42	07:24 19:19	08:05-08:39/34		08:27 17:02	08:05-08:39/34	09:06 16:04	09:06 15:57							
28	08:37 16:51	07:28 18:00	07:55-08:12/17		06:14 19:00	07:25-07:46/21	05:54 21:04	04:55 22:02	04:42 22:26	05:22 21:51	06:24 20:40	07:26 19:16	08:05-08:38/33		08:29 17:00	08:05-08:38/33	09:03 16:03	09:07 15:58							
29	08:36 16:53				07:12 20:02	08:28-08:44/16	05:52 21:07	04:54 22:04	04:43 22:25	05:24 21:49	06:26 20:37	07:28 19:14	08:06-08:37/31		08:31 16:57	08:06-08:37/31	09:07 16:01	09:07 15:59							
30	08:34 16:55				07:09 20:04	08:32-08:38/6	05:49 21:09	04:52 22:05	04:43 22:25	05:26 21:47	06:28 20:34	07:30 19:11	08:06-08:44/38		08:33 16:55	08:06-08:44/38	09:07 16:00	09:07 15:59							
31	08:32 16:57				07:06 20:06			04:51 22:07		05:28 21:45	06:30 20:32				07:36 16:53			09:06 16:01							
Potential sun hours	235	266			366		426	508	529	530	470	385	323		412		247	216							
Sum of minutes with flicker	0	38			873		0	0	0	0	0	519	412		0		0	0							

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

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

Project: VPSP wind farm  
Description: VPSP wind farm

Licensed user:  
SIA Estonian, Latvian & Lithuanian environment  
Vilandes 3-6  
LV-1010 Riga  
0037167242411  
Anna / anna@environment.lv  
Calculated:  
02/05/2022 17:18/3.5.576

## SHADOW - Calendar per WTG

WTG: 4.6. - Siemens Gamesa SG 6.6-170 6600 170.0 !OI hub: 165.0 m (TOT: 250.0 m) (5)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
1.35 3.07 4.72 8.16 9.63 10.93 9.79 7.85 5.92 3.23 1.29 0.72

Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum  
293 300 348 355 333 399 506 566 582 663 919 1,110 790 574 487 406 8,631  
Idle start wind speed: Cut in wind speed from power curve

		January	February	March	April	May	June	July	August	September	October	November	December	
1	09:06 16:03	08:30 17:00	07:26 18:02	07:04 20:08		05:47 21:11	06:20-06:56/36 22:08	21:03-21:24/21 06:19-06:37/18	04:44 21:11-21:27/16	05:30 21:43	06:20-07:05/45 20:29	07:32 19:09	07:38 16:51	08:40 15:59
2	09:06 16:04	08:28 17:02	07:23 18:05	07:01 20:10		05:45 21:13	06:18-06:56/38 22:10	21:04-21:24/20 06:20-06:36/16	04:45 21:12-21:28/16	05:32 21:41	06:21-07:06/45 20:26	07:34 19:06	07:40 16:48	08:41 15:59
3	09:06 16:05	08:26 17:04	07:21 18:07	06:58 20:12		05:43 21:15	06:17-06:57/40 22:11	21:04-21:23/19 06:21-06:35/14	04:46 21:12-21:28/16	05:34 21:39	06:21-07:06/45 20:24	07:36 19:03	07:42 16:46	08:43 15:58
4	09:05 16:06	08:24 17:07	07:18 18:09	06:56 20:14		05:40 21:17	06:15-06:57/42 22:12	21:04-21:23/19 06:22-06:34/12	04:47 21:11-21:28/17	05:36 21:37	06:21-07:06/45 20:21	07:38 19:01	07:44 16:44	08:45 15:57
5	09:05 16:08	08:22 17:09	07:16 18:11	06:53 20:16		05:38 21:19	06:14-06:57/43 22:13	21:04-21:23/19 06:24-06:32/8	04:48 21:11-21:28/17	05:38 21:35	06:21-07:06/45 20:19	07:40 18:58	07:47 16:42	08:46 15:56
6	09:04 16:09	08:20 17:11	07:13 18:13	06:50 20:19		05:36 21:21	06:13-06:57/44 22:15	21:05-21:24/19 06:27-06:31/4	04:49 21:11-21:29/18	05:40 21:33	06:22-07:06/44 20:16	07:43 18:55	07:49 16:40	08:48 15:55
7	09:04 16:11	08:18 17:13	07:10 18:15	06:48 20:21		05:34 21:23	06:12-06:57/45 22:16	21:05-21:23/18 06:32-06:39/7	04:50 21:11-21:29/18	05:42 21:30	06:23-07:06/43 20:13	07:45 18:53	07:51 16:38	08:49 15:55
8	09:03 16:12	08:16 17:16	07:08 18:18	06:45 20:23		05:31 21:25	06:12-06:57/45 22:17	21:05-21:23/18 06:30-06:41/11	04:51 21:10-21:30/20	05:44 21:28	06:24-07:06/42 20:11	07:47 18:50	07:53 16:36	08:51 15:54
9	09:02 16:14	08:14 17:18	07:05 18:20	06:42 20:25		05:29 21:27	06:11-06:56/45 22:18	21:06-21:23/17 06:29-06:42/13	04:53 21:11-21:31/20	05:46 21:26	06:25-07:06/41 20:08	07:49 18:47	07:55 16:34	08:52 15:54
10	09:01 16:16	08:11 17:20	07:02 18:22	06:40 20:27		05:27 21:29	06:11-06:56/45 22:19	21:06-21:22/16 06:28-06:43/15	04:54 21:11-21:31/20	05:48 21:24	06:25-07:05/40 20:05	07:51 18:45	07:57 16:32	08:53 15:53
11	09:01 16:17	08:09 17:22	07:00 18:24	06:37 20:29		05:25 21:31	06:10-06:55/45 22:20	21:07-21:23/16 06:27-06:44/17	04:55 21:11-21:31/20	05:50 21:21	06:27-07:05/38 20:02	07:53 18:42	08:00 16:30	08:55 15:53
12	09:00 16:19	08:07 17:25	06:57 18:26	06:34 20:31		05:23 21:33	06:10-06:55/45 22:21	21:08-21:23/15 06:26-06:45/19	04:56 21:11-21:31/20	05:52 21:19	06:30-07:04/34 20:04	07:55 18:39	08:02 16:28	08:56 15:53
13	08:59 16:21	08:05 17:27	06:55 18:28	06:32 20:33		05:21 21:35	06:10-06:54/44 22:22	21:08-21:22/14 06:26-06:47/21	04:58 21:10-21:31/21	05:54 21:17	06:35-07:04/29 20:04	07:57 18:37	08:04 16:26	08:57 15:52
14	08:58 16:23	08:02 17:29	06:52 18:30	06:29 20:35		05:19 21:37	06:09-06:53/44 22:22	21:08-21:23/15 06:25-06:47/22	04:59 21:11-21:32/21	05:56 21:14	06:35-07:03/28 20:04	07:59 18:34	08:06 16:24	08:58 15:52
15	08:57 16:24	08:00 17:31	06:49 18:32	06:27 20:37		05:17 21:39	06:10-06:53/43 22:23	21:09-21:23/14 06:24-06:48/24	05:01 21:11-21:32/21	05:58 21:12	06:36-07:02/26 19:52	08:01 18:32	08:08 16:22	08:59 15:52
16	08:55 16:26	07:58 17:34	06:47 18:35	06:24 20:39		05:15 21:41	06:10-06:52/42 22:24	21:09-21:23/14 06:24-06:49/25	05:02 21:11-21:32/21	06:00 21:10	06:37-07:01/24 19:49	08:03 18:29	08:10 16:20	09:00 15:52
17	08:54 16:28	07:55 17:36	06:44 18:37	06:22 20:42		05:13 21:43	06:10-06:50/40 22:24	21:10-21:23/13 06:23-06:50/27	05:04 21:12-21:32/20	06:02 21:07	06:38-06:58/20 19:46	08:05 18:27	08:12 16:19	09:01 15:52
18	08:53 16:30	07:53 17:38	06:41 18:39	06:19 20:44		05:11 21:45	21:06-21:09/3 06:10-06:50/40	21:10-21:23/13 06:22-06:50/28	05:05 21:11-21:30/19	06:04 21:05	06:39-06:56/17 19:44	08:08 18:24	08:15 16:17	09:02 15:52
19	08:52 16:32	07:51 17:40	06:39 18:41	06:16 20:46		05:10 21:47	21:05-21:11/6 06:10-06:48/38	21:11-21:23/12 06:22-06:51/29	05:07 21:12-21:29/17	06:06 21:02	06:42-06:54/12 19:41	08:10 18:22	08:17 16:15	09:03 15:53
20	08:50 16:34	07:48 17:43	06:36 18:43	06:14 20:48		05:08 21:48	21:03-21:12/9 06:11-06:47/36	21:11-21:23/12 06:22-06:51/29	05:09 21:12-21:27/15	06:08 21:00	19:41 18:19	08:12 18:19	08:19 16:14	09:03 15:53
21	08:49 16:36	07:46 17:45	06:33 18:45	06:11 20:50		05:06 21:50	21:03-21:14/11 06:11-06:44/33	21:11-21:23/12 06:22-06:52/30	05:10 21:13-21:27/14	06:10 20:57	19:41 18:17	08:14 18:16	08:21 16:12	09:04 15:53
22	08:47 16:38	07:43 17:47	06:30 18:47	06:09 20:52		05:04 21:52	21:02-21:15/13 06:12-06:43/31	21:11-21:23/12 06:22-06:52/31	05:12 21:13-21:25/12	06:12 20:55	19:41 18:14	08:16 18:14	08:23 16:11	09:05 15:54
23	08:46 16:40	07:41 17:49	06:28 18:49	06:06 20:54		05:03 21:54	21:02-21:17/15 06:12-06:42/30	21:12-21:24/12 06:22-06:56/35	05:14 21:14-21:24/10	06:14 20:52	19:41 18:12	08:18 18:12	08:25 16:09	09:05 15:54
24	08:44 16:42	07:38 17:51	06:25 18:51	06:04 20:56		05:01 21:56	21:03-21:19/16 06:13-06:42/29	21:11-21:24/13 06:21-06:58/37	05:15 21:14-21:21/7	06:16 20:50	19:41 18:09	08:20 18:08	08:27 16:08	09:06 15:55
25	08:43 16:45	07:36 17:54	06:22 18:53	06:01 20:58		05:00 21:57	21:02-21:20/18 06:13-06:42/29	21:11-21:24/13 06:21-06:59/39	05:17 21:15-21:20/5	06:18 20:47	19:41 17:07	08:23 18:06	08:29 16:06	09:06 15:56
26	08:41 16:47	07:33 17:56	06:20 18:56	05:59 21:00		04:58 21:59	21:02-21:21/19 06:13-06:40/27	21:12-21:25/13 06:21-07:01/40	05:19 21:17-21:19/2	06:20 20:45	19:41 17:05	08:25 18:01	08:31 16:05	09:06 15:56
27	08:39 16:49	07:31 17:58	06:17 18:58	05:57 21:02		04:57 22:01	21:02-21:23/21 06:14-06:40/26	21:11-21:25/14 06:22-06:52/30	05:21 21:17-21:27/14	06:22 20:42	19:41 17:02	08:27 18:02	08:32 16:04	09:06 15:57
28	08:37 16:51	07:28 18:00	06:14 19:00	05:54 21:05		04:55 22:02	21:02-21:23/21 06:15-06:40/25	21:12-21:26/14 06:22-06:52/30	05:23 21:17-21:27/14	06:24 20:40	19:41 17:00	08:29 18:03	08:34 16:03	09:06 15:58
29	08:36 16:53		07:12 20:02	05:52 21:07		04:54 22:04	21:03-21:23/20 06:16-06:39/23	21:12-21:26/14 06:22-06:52/30	05:25 21:17-21:27/14	06:26 20:37	19:41 17:00	08:31 18:02	08:36 16:02	09:07 15:59
30	08:34 16:55		07:09 20:04	05:49 21:09		04:53 22:05	21:03-21:24/21 06:17-06:39/22	21:11-21:26/15 06:22-06:52/30	05:26 21:17-21:27/14	06:28 20:34	19:41 17:00	08:33 18:01	08:38 16:01	09:07 15:59
31	08:32 16:58		07:06 20:06			04:51 22:07	21:03-21:24/21 06:18-06:38/20		05:28 21:17-21:27/14	06:30 20:32		07:36 16:53		09:06 16:01
Potential sun hours	235	266	366	426	508	529	530	470	385	324	247	216	0	0
Sum of minutes with flicker	0	0	0	165	1349	528	1136	663	0	0	0	0	0	0

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

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



Project: VPSP wind farm  
Description: VPSP wind farm

Licensed user:  
SIA Estonian, Latvian & Lithuanian environment  
Vilandes 3-6  
LV-1010 Riga  
0037167242411  
Anna / anna@environment.lv  
Calculated:  
02/05/2022 17:18/3.5.576

## SHADOW - Calendar per WTG

WTG: 4.7.A - Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165.0 m (TOT: 250.0 m) (11)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.35	3.07	4.72	8.16	9.63	10.93	9.79	7.85	5.92	3.23	1.29	0.72

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
293	300	348	355	333	399	506	566	582	663	919	1,110	790	574	487	406	8,631

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

	January	February	March	April	May	June	July	August	September	October	November	December				
1	09:06 16:02	08:30 17:00	07:26 18:02	07:03 20:08	05:47 21:11	04:50 22:08	20:26-21:08/42 22:25 21:28-21:41/13	04:44 21:43	20:30-21:17/47 20:29	05:30 06:34	06:32 07:34	07:32 19:08	07:38 16:50	08:40 15:59		
2	09:06 16:04	08:28 17:02	07:23 18:04	07:01 20:10	05:45 21:13	04:49 22:09	20:25-21:08/43 22:24 21:29-21:40/11	04:45 21:41	20:31-21:17/46 20:26	05:32 06:36	06:34 07:36	07:34 19:06	07:40 16:48	08:41 15:58		
3	09:06 16:05	08:26 17:04	07:21 18:07	06:58 20:12	05:42 21:15	04:48 22:11	20:26-21:10/44 22:24 21:30-21:38/8	04:46 21:39	20:30-21:16/46 20:24	05:34 06:38	06:36 07:38	07:36 19:03	07:42 16:46	08:43 15:57		
4	09:05 16:06	08:24 17:06	07:18 18:09	06:55 20:14	05:40 21:17	04:47 22:12	20:26-21:10/44 22:23 21:33-21:36/3	04:47 21:37	20:31-21:16/45 20:21	05:36 06:40	06:38 07:40	07:38 19:00	07:44 16:44	08:45 15:57		
5	09:05 16:08	08:22 17:09	07:15 18:11	06:53 20:16	05:38 21:19	04:46 22:13	20:26-21:10/44 22:22	04:48 21:35	20:31-21:17/46 20:18	05:38 06:42	06:40 07:42	07:40 18:58	07:46 16:42	08:46 15:56		
6	09:04 16:09	08:20 17:11	07:13 18:13	06:50 20:18	05:36 21:21	04:45 22:15	20:25-21:10/45 22:21	04:49 21:33	20:32-21:17/45 20:16	05:40 06:44	06:42 07:44	07:42 18:55	07:49 16:40	08:48 15:55		
7	09:04 16:11	08:18 17:13	07:10 18:15	06:47 20:21	05:33 21:23	04:44 22:16	20:26-21:11/45 22:21	04:50 21:30	20:32-21:17/45 20:13	05:42 06:46	06:44 07:47	07:44 18:52	07:51 16:38	08:49 15:55		
8	09:03 16:12	08:16 17:15	07:08 18:17	06:45 20:23	05:31 21:25	04:43 22:17	20:26-21:11/45 22:20	04:51 21:28	20:32-21:16/44 20:10	05:44 06:48	06:46 07:49	07:47 18:50	07:53 16:35	08:51 15:54		
9	09:02 16:14	08:14 17:18	07:05 18:20	06:42 20:25	05:29 21:27	04:43 22:18	20:26-21:12/46 21:27-21:33/6	04:52 22:19	20:33-21:16/43 21:26	05:46 06:50	06:48 07:51	07:49 18:47	07:55 16:33	08:52 15:53		
10	09:01 16:15	08:11 17:20	07:02 18:22	06:40 20:27	05:27 21:29	04:42 22:19	20:26-21:12/46 21:25-21:34/9	04:54 22:18	20:34-21:17/43 21:24	05:48 06:52	06:50 07:53	07:51 18:45	07:57 16:31	08:53 15:53		
11	09:01 16:17	08:09 17:22	07:00 18:24	06:37 20:29	05:25 21:31	04:41 22:20	20:26-21:12/46 21:24-21:36/12	04:55 22:17	20:34-21:17/43 21:21	05:50 06:52	06:52 07:55	07:53 18:42	08:00 16:29	08:55 15:53		
12	09:00 16:19	08:07 17:24	06:57 18:26	06:34 20:31	05:23 21:33	04:41 22:21	20:26-21:12/46 21:23-21:36/13	04:56 22:16	20:34-21:16/42 21:19	05:52 06:56	06:54 07:57	07:55 18:39	08:02 16:28	08:56 15:52		
13	08:59 16:21	08:05 17:27	06:54 18:28	06:32 20:33	05:21 21:35	04:40 22:21	20:26-21:13/47 21:23-21:38/15	04:58 22:15	20:35-21:16/41 21:17	05:54 06:56	06:56 07:57	07:57 18:37	08:04 16:26	08:57 15:52		
14	08:58 16:22	08:02 17:29	06:52 18:30	06:29 20:35	05:19 21:37	04:40 22:22	20:26-21:13/47 21:23-21:39/16	04:59 22:13	20:36-21:16/40 21:14	05:56 06:58	06:58 07:59	07:59 18:34	08:06 16:24	08:58 15:52		
15	08:57 16:24	08:00 17:31	06:49 18:32	06:27 20:37	05:17 21:39	04:40 22:23	20:27-21:14/47 21:23-21:39/16	05:00 22:12	20:36-21:15/39 21:12	05:58 06:59	07:00 08:01	08:01 18:32	08:08 16:22	08:59 15:52		
16	08:55 16:26	07:58 17:33	06:46 18:34	06:24 20:39	05:15 21:41	04:40 22:24	20:27-21:14/47 21:23-21:40/17	05:02 22:11	20:36-21:15/39 21:10	06:00 07:02	07:02 08:03	08:03 18:29	08:10 16:20	09:00 15:52		
17	08:54 16:28	07:55 17:36	06:44 18:37	06:21 20:41	05:13 21:43	04:39 22:24	20:27-21:14/47 21:23-21:41/18	05:04 22:09	20:38-21:15/37 21:07	06:02 07:04	07:04 08:05	08:05 18:27	08:12 16:18	09:01 15:52		
18	08:53 16:30	07:53 17:38	06:41 18:39	06:19 20:44	05:11 21:45	04:39 22:25	20:27-21:15/48 21:23-21:41/18	05:05 22:08	20:38-21:14/36 21:05	06:04 07:06	07:06 08:07	08:07 18:24	08:14 16:17	09:02 15:52		
19	08:52 16:32	07:51 17:40	06:38 18:41	06:16 20:46	05:09 21:47	04:39 22:25	20:28-21:15/47 21:23-21:41/18	05:07 22:06	20:39-21:14/35 21:02	06:06 07:08	07:08 08:09	08:10 18:21	08:17 16:15	09:03 15:52		
20	08:50 16:34	07:48 17:42	06:36 18:43	06:14 20:48	05:08 21:48	04:39 22:25	20:28-21:15/47 21:23-21:41/18	05:08 22:05	20:40-21:13/33 21:00	06:08 07:10	07:10 08:12	08:12 18:19	08:19 16:14	09:03 15:53		
21	08:49 16:36	07:46 17:45	06:33 18:45	06:11 20:50	05:06 21:50	04:39 22:26	20:28-21:15/47 21:23-21:42/19	05:10 22:03	20:41-21:12/31 20:57	06:10 07:12	07:12 08:13	08:14 18:17	08:21 16:12	09:04 15:53		
22	08:47 16:38	07:43 17:47	06:30 18:47	06:09 20:52	05:04 21:52	04:40 22:26	20:28-21:15/47 21:23-21:42/19	05:12 22:02	20:42-21:11/29 20:55	06:12 07:14	07:14 08:16	08:16 18:14	08:23 16:10	09:05 15:54		
23	08:46 16:40	07:41 17:49	06:28 18:49	06:06 20:54	05:03 21:54	04:40 22:26	20:28-21:15/47 21:23-21:41/18	05:13 22:00	20:43-21:10/27 20:52	06:14 07:16	07:16 08:18	08:18 18:12	08:25 16:09	09:05 15:54		
24	08:44 16:42	07:38 17:51	06:25 18:51	06:04 20:56	05:01 21:55	04:40 22:26	20:29-21:16/47 21:24-21:42/18	05:15 21:58	20:44-21:08/24 20:50	06:16 07:18	07:18 08:20	08:20 18:09	08:27 16:08	09:05 15:55		
25	08:42 16:44	07:36 17:53	06:22 18:53	06:01 20:58	04:59 21:57	04:41 22:26	20:28-21:15/47 21:24-21:42/18	05:17 21:57	20:46-21:06/20 20:47	06:18 07:20	07:20 08:22	08:22 17:07	08:29 16:06	09:06 15:55		
26	08:41 16:47	07:33 17:56	06:20 18:55	05:59 21:00	04:58 21:59	04:41 22:26	20:29-21:16/47 21:25-21:42/17	05:19 21:55	20:49-21:04/15 20:45	06:20 07:22	07:22 08:24	08:24 17:04	08:30 16:05	09:06 15:56		
27	08:39 16:49	07:31 17:58	06:17 18:58	05:56 21:02	04:57 22:00	04:41 22:26	20:29-21:16/47 21:25-21:42/17	05:21 21:53	20:52-21:00/8 20:42	06:22 07:24	07:24 08:26	08:26 17:02	08:32 16:04	09:06 15:57		
28	08:37 16:51	07:28 18:00	06:14 19:00	05:54 21:04	04:55 22:02	04:42 22:26	20:30-21:16/46 21:26-21:42/16	05:22 21:51	06:24 07:26	06:24 07:26	07:26 08:28	08:28 17:00	08:34 16:03	09:06 15:58		
29	08:36 16:53		07:11 20:02	05:52 21:06	04:54 22:04	04:43 22:25	20:29-21:16/47 21:26-21:41/15	05:24 21:49	06:26 07:28	06:26 07:28	07:28 08:30	08:30 17:01	08:36 16:01	09:06 15:59		
30	08:34 16:55		07:09 20:04	05:49 21:09	04:52 22:05	04:43 22:25	20:30-21:16/46 21:27-21:41/14	05:26 21:47	06:28 07:30	06:28 07:30	07:30 08:32	08:32 17:01	08:38 16:00	09:06 16:00		
31	08:32 16:57		07:06 20:06		04:51 22:07	22:25		21:45		06:30	07:36	08:38	16:01	09:06		
Potential sun hours	235	266	366	426	508	529	1728	530	1024	470	385	323	247	216	0	0
Sum of minutes with flicker	0	0	0	0	473	529	1728	530	1024	0	0	0	0	216	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: VPSP wind farm  
Description: VPSP wind farm

Licensed user:  
SIA Estonian, Latvian & Lithuanian environment  
Vilandes 3-6  
LV-1010 Riga  
0037167242411  
Anna / anna@environment.lv  
Calculated:  
02/05/2022 17:18/3.5.576

## SHADOW - Calendar per WTG

WTG: 4.7.B - Siemens Gamesa SG 6.6-170 6600 170.0 !OI hub: 165.0 m (TOT: 250.0 m) (12)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.35	3.07	4.72	8.16	9.63	10.93	9.79	7.85	5.92	3.23	1.29	0.72

Operational time

N	NNE	NE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
293	300	348	355	333	399	506	566	582	663	919	1,110	790	574	487	8,631

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

	January	February	March	April	May	June	July	August	September	October	November	December
1	09:06 16:02	08:30 17:00	07:26 18:02	07:52-08:07/15	07:03 20:08	05:47 21:11	04:50 22:08	04:44 22:25	05:30 21:43	06:32 20:29	07:32 19:08	07:38 16:50
2	09:06 16:04	08:28 17:02	07:23 18:04	07:50-08:08/18	07:01 20:10	05:45 21:13	04:49 22:10	04:45 22:24	05:32 21:41	06:34 20:26	07:34 19:06	07:40 16:48
3	09:06 16:05	08:26 17:04	07:21 18:07	07:47-08:08/21	06:58 20:12	05:42 21:15	04:48 22:11	04:46 22:24	05:34 21:39	06:36 20:24	07:36 19:03	07:42 16:46
4	09:05 16:06	08:24 17:06	07:18 18:09	07:47-08:07/20	06:55 20:14	05:40 21:17	04:47 22:12	04:47 22:23	05:36 21:37	06:38 20:21	07:38 19:00	07:44 16:44
5	09:05 16:08	08:22 17:09	07:15 18:11	07:47-08:08/21	06:53 20:16	05:38 21:19	04:46 22:13	04:48 22:22	05:38 21:35	06:40 20:18	07:40 18:58	07:47 16:42
6	09:04 16:09	08:20 17:11	07:13 18:13	07:47-08:07/20	06:50 20:18	05:36 21:21	04:45 22:15	04:49 22:22	05:40 21:33	06:42 20:16	07:42 18:55	07:49 16:40
7	09:04 16:11	08:18 17:13	07:10 18:15	07:47-08:06/19	06:47 20:21	05:33 21:23	04:44 22:16	04:50 22:21	05:42 21:30	06:44 20:13	07:44 18:52	07:51 16:37
8	09:03 16:12	08:16 17:15	07:08 18:17	07:48-08:05/17	06:45 20:23	05:31 21:25	04:43 22:17	04:51 22:20	05:44 21:28	06:46 20:10	07:47 18:50	07:53 16:35
9	09:02 16:14	08:14 17:18	07:05 18:20	07:49-08:03/14	06:42 20:25	05:29 21:27	04:43 22:18	04:52 22:19	05:46 21:26	06:48 20:08	07:49 18:47	07:55 16:33
10	09:01 16:15	08:11 17:20	07:02 18:22	07:51-08:00/9	06:40 20:27	05:27 21:29	04:42 22:19	04:54 22:18	05:48 21:24	06:50 20:05	07:51 18:45	08:21-08:42/21
11	09:01 16:17	08:09 17:22	07:00 18:24		06:37 20:29	05:25 21:31	04:41 22:20	04:55 22:17	05:50 21:21	06:52 20:02	07:53 18:42	08:22-08:41/19
12	09:00 16:19	08:07 17:24	06:57 18:26		06:34 20:31	05:23 21:33	04:41 22:21	04:56 22:16	05:52 21:19	06:54 20:00	07:55 18:39	08:24-08:40/16
13	08:59 16:21	08:05 17:27	06:54 18:28		06:32 20:33	05:21 21:35	04:40 22:22	04:58 22:15	05:54 21:17	06:56 19:57	07:57 18:37	08:26-08:39/13
14	08:58 16:22	08:02 17:29	06:52 18:30		06:29 20:35	05:19 21:37	04:40 22:22	04:59 22:13	05:56 21:14	06:58 19:54	07:59 18:34	08:29-08:39/10
15	08:57 16:24	08:00 17:31	06:49 18:32		06:27 20:37	05:17 21:39	04:40 22:23	05:00 22:12	05:58 21:12	07:00 19:52	08:01 18:32	08:31-08:36/5
16	08:55 16:26	07:58 17:33	06:46 18:34		06:24 20:39	05:15 21:41	04:40 22:24	05:02 22:11	06:00 21:10	07:02 19:49	08:03 18:29	
17	08:54 16:28	07:55 17:36	06:44 18:37		06:21 20:41	05:13 21:43	04:39 22:24	05:04 22:09	06:02 21:07	07:04 19:46	08:05 18:27	
18	08:53 16:30	07:53 17:38	06:41 18:39		06:19 20:44	05:11 21:45	04:39 22:25	05:05 22:08	06:04 21:05	07:06 19:43	08:07 18:24	
19	08:52 16:32	07:51 17:40	06:38 18:41		06:16 20:46	05:09 21:47	04:39 22:25	05:07 22:06	06:06 21:02	07:08 19:41	08:10 18:21	
20	08:50 16:34	07:48 17:42	06:36 18:43		06:14 20:48	05:08 21:48	04:39 22:25	05:08 22:05	06:08 21:00	07:10 19:38	08:12 18:19	
21	08:49 16:36	07:46 17:45	06:33 18:45		06:11 20:50	05:06 21:50	04:39 22:26	05:10 22:03	06:10 20:57	07:12 19:35	08:14 18:17	
22	08:47 16:38	07:43 17:47	06:30 18:47		06:09 20:52	05:04 21:52	04:40 22:26	05:12 22:02	06:12 20:55	07:14 19:33	08:16 18:14	
23	08:46 16:40	07:41 17:49	06:28 18:49		06:06 20:54	05:03 21:54	04:40 22:26	05:13 22:00	06:14 20:52	07:16 19:30	08:18 18:12	
24	08:44 16:42	07:38 17:51	06:25 18:51		06:04 20:56	05:01 21:55	04:40 22:26	05:15 21:58	06:16 20:50	07:18 19:27	08:20 18:09	
25	08:43 16:44	07:36 17:53	06:22 18:53		06:01 20:58	04:59 21:57	04:40 22:26	05:17 21:57	06:18 20:47	07:20 19:25	07:23 17:07	
26	08:41 16:47	07:33 17:56	06:20 18:55	08:00-08:02/2	05:59 21:00	04:58 21:59	04:41 22:26	05:19 21:55	06:20 20:45	07:22 19:22	07:25 17:04	
27	08:39 16:49	07:31 17:58	06:17 18:58	07:58-08:05/7	05:56 21:02	04:56 22:00	04:41 22:26	05:21 21:53	06:22 20:42	07:24 19:19	07:27 17:02	
28	08:37 16:51	07:28 18:00	06:14 19:00	07:55-08:06/11	05:54 21:04	04:55 22:02	04:42 22:26	05:22 21:51	06:24 20:39	07:26 19:16	07:29 17:00	
29	08:36 16:53		07:11 20:02		05:52 21:07	04:54 22:04	04:43 22:25	05:24 21:49	06:26 20:37	07:28 19:14	07:31 16:57	
30	08:34 16:55		07:09 20:04		05:49 21:09	04:52 22:05	04:43 22:25	05:26 21:47	06:28 20:34	07:30 19:11	07:33 16:55	
31	08:32 16:57		07:06 20:06			04:51 22:07		05:28 21:45	06:30 20:32		07:36 16:53	
Potential sun hours	235	266	366	426	508	529	530	470	385	323	197	247
Sum of minutes with flicker	0	20	174	0	0	0	0	0	0	0	0	0

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

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

Project:

VPSP wind farm

Description:

VPSP wind farm

Licensed user:

SIA Estonian, Latvian &amp; Lithuanian environment

Vilandes 3-6

LV-1010 Riga

0037167242411

Anna / anna@environment.lv

Calculated:

02/05/2022 17:18/3.5.576

## SHADOW - Calendar per WTG

WTG: 4.7.C - Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165.0 m (TOT: 250.0 m) (13)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.35	3.07	4.72	8.16	9.63	10.93	9.79	7.85	5.92	3.23	1.29	0.72

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
293	300	348	355	333	399	506	566	582	663	919	1,110	790	574	487	406	8,631

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

	January	February	March	April	May	June
1	09:06 16:02	08:30 17:00	07:26 17:14-17:33/19 18:02	07:03 20:08	05:47 21:11	04:50 22:08
2	09:06 16:04	08:28 17:02	07:23 17:13-17:35/22 18:04	07:01 20:10	05:45 21:13	04:49 22:09
3	09:06 16:05	08:26 17:04	07:21 17:13-17:36/23 18:07	06:58 20:12	05:42 21:15	04:48 22:11
4	09:05 16:06	08:24 17:06	07:18 17:12-17:36/24 18:09	06:55 20:14	05:40 21:17	04:47 22:12
5	09:05 16:08	08:22 17:09	07:15 17:12-17:35/23 18:11	06:53 20:16	05:38 21:19	04:46 22:13
6	09:04 16:09	08:20 17:11	07:13 17:12-17:36/24 18:13	06:50 20:18	05:36 21:21	04:45 22:15
7	09:04 16:11	08:18 17:13	07:10 17:12-17:35/23 18:15	06:47 20:20	05:33 20:46-20:49/3 21:23	04:44 22:16
8	09:03 16:12	08:16 17:15	07:08 17:12-17:34/22 18:17	06:45 20:23	05:31 20:44-20:51/7 21:25	04:43 22:17
9	09:02 16:14	08:13 17:18	07:05 17:14-17:33/19 18:20	06:42 20:25	05:29 20:43-20:53/10 21:27	04:43 22:18
10	09:01 16:15	08:11 17:20	07:02 17:14-17:31/17 18:22	06:40 20:27	05:27 20:42-20:55/13 21:29	04:42 22:19
11	09:01 16:17	08:09 17:22	07:00 17:16-17:29/13 18:24	06:37 20:29	05:25 20:42-20:56/14 21:31	04:41 22:20
12	09:00 16:19	08:07 17:24	06:57 17:18-17:25/7 18:26	06:34 20:31	05:23 20:42-20:59/17 21:33	04:41 22:21
13	08:59 16:21	08:05 17:27	06:54 18:28	06:32 20:33	05:21 20:42-21:01/19 21:35	04:40 22:21
14	08:58 16:22	08:02 17:29	06:52 18:30	06:29 20:35	05:19 20:41-21:02/21 21:37	04:40 22:22
15	08:56 16:24	08:00 17:31	06:49 18:32	06:26 20:37	05:17 20:41-21:02/21 21:39	04:40 22:23
16	08:55 16:26	07:58 17:33	06:46 18:34	06:24 20:39	05:15 20:42-21:02/20 21:41	04:40 22:23
17	08:54 16:28	07:55 17:36	06:44 18:37	06:21 20:41	05:13 20:41-21:02/21 21:43	04:39 22:24
18	08:53 16:30	07:53 17:38	06:41 18:39	06:19 20:43	05:11 20:41-21:01/20 21:45	04:39 22:25
19	08:51 16:32	07:51 17:40	06:38 18:41	06:16 20:46	05:09 20:42-21:02/20 21:46	04:39 22:25
20	08:50 16:34	07:48 17:42	06:36 18:43	06:14 20:48	05:08 20:42-21:01/19 21:48	04:39 22:25
21	08:49 16:36	07:46 17:45	06:33 18:45	06:11 20:50	05:06 20:43-21:01/18 21:50	04:39 22:26
22	08:47 16:38	07:43 17:47	06:30 18:47	06:09 20:52	05:04 20:44-21:00/16 21:52	04:40 22:26
23	08:46 16:40	07:41 17:49	06:28 18:49	06:06 20:54	05:03 20:45-20:59/14 21:54	04:40 22:26
24	08:44 16:42	07:38 17:51	06:25 18:51	06:04 20:56	05:01 20:45-20:58/13 21:55	04:40 22:26
25	08:42 16:44	07:36 17:53	06:22 18:53	06:01 20:58	04:59 20:47-20:57/10 21:57	04:40 22:26
26	08:41 16:47	07:33 17:20-17:26/6 17:56	06:20 18:55	05:59 21:00	04:58 20:49-20:56/7 21:59	04:41 22:26
27	08:39 16:49	07:31 17:17-17:28/11 17:58	06:17 18:58	05:56 21:02	04:56 22:00	04:41 22:26
28	08:37 16:51	07:28 17:16-17:31/15 18:00	06:14 19:00	05:54 21:04	04:55 22:02	04:42 22:26
29	08:36 16:53		07:11 20:02	05:52 21:06	04:54 22:04	04:43 22:25
30	08:34 16:55		07:09 20:04	05:49 21:09	04:52 22:05	04:43 22:25
31	08:32 16:57		07:06 20:06		04:51 22:07	
Potential sun hours	235	266	366	426	508	529
Sum of minutes with flicker	0	32	236	0	303	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: VPSP wind farm  
Description: VPSP wind farm

Licensed user:  
SIA Estonian, Latvian & Lithuanian environment  
Vilandes 3-6  
LV-1010 Riga  
0037167242411  
Anna / anna@environment.lv  
Calculated:  
02/05/2022 17:18/3.5.576

## SHADOW - Calendar per WTG

WTG: 4.7.C - Siemens Gamesa SG 6.6-170 6600 170.0 !O! hub: 165.0 m (TOT: 250.0 m) (13)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.35	3.07	4.72	8.16	9.63	10.93	9.79	7.85	5.92	3.23	1.29	0.72

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
293	300	348	355	333	399	506	566	582	663	919	1,110	790	574	487	406	8,631

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

	July	August	September	October	November	December
1	04:44 22:25	05:30 20:52-21:09/17 21:43	06:32 20:29	07:32 19:08	07:38 16:50	08:40 15:59
2	04:45 22:24	05:32 20:52-21:06/14 21:41	06:34 20:26	07:34 17:56-18:07/11 19:06	07:40 16:48	08:41 15:58
3	04:46 22:24	05:34 20:53-21:04/11 21:39	06:36 20:24	07:36 17:53-18:09/16 19:03	07:42 16:46	08:43 15:57
4	04:47 22:23	05:36 20:54-21:03/9 21:37	06:38 20:21	07:38 17:51-18:10/19 19:00	07:44 16:44	08:45 15:57
5	04:48 22:22	05:38 20:55-21:01/6 21:35	06:40 20:18	07:40 17:50-18:10/20 18:58	07:46 16:42	08:46 15:56
6	04:49 22:21	05:40 20:57-20:59/2 21:33	06:42 20:16	07:42 17:49-18:11/22 18:55	07:49 16:40	08:48 15:55
7	04:50 22:21	05:42 21:30	06:44 20:13	07:44 17:48-18:11/23 18:52	07:51 16:37	08:49 15:54
8	04:51 22:20	05:44 21:28	06:46 20:10	07:47 17:47-18:10/23 18:50	07:53 16:35	08:51 15:54
9	04:52 22:19	05:46 21:26	06:48 20:08	07:49 17:46-18:10/24 18:47	07:55 16:33	08:52 15:53
10	04:53 22:18	05:48 21:24	06:50 20:05	07:51 17:47-18:10/23 18:44	07:57 16:31	08:53 15:53
11	04:55 22:17	05:50 21:21	06:52 20:02	07:53 17:47-18:10/23 18:42	08:00 16:29	08:55 15:53
12	04:56 22:16	05:52 21:19	06:54 20:00	07:55 17:47-18:08/21 18:39	08:02 16:27	08:56 15:52
13	04:58 22:15	05:54 21:17	06:56 19:57	07:57 17:48-18:05/17 18:37	08:04 16:26	08:57 15:52
14	04:59 22:13	05:56 21:14	06:58 19:54	07:59 17:48-18:02/14 18:34	08:06 16:24	08:58 15:52
15	05:00 22:12	05:58 21:12	07:00 19:52	08:01 17:51-18:00/9 18:32	08:08 16:22	08:59 15:52
16	05:02 22:11	06:00 21:10	07:02 19:49	08:03 17:53-17:57/4 18:29	08:10 16:20	09:00 15:52
17	05:03 21:00-21:05/5 22:09	06:02 21:07	07:04 19:46	08:05 18:26	08:12 16:18	09:01 15:52
18	05:05 20:57-21:06/9 22:08	06:04 21:05	07:06 19:43	08:07 18:24	08:14 16:17	09:02 15:52
19	05:07 20:55-21:07/12 22:06	06:06 21:02	07:08 19:41	08:10 18:21	08:16 16:15	09:03 15:52
20	05:08 20:55-21:09/14 22:05	06:08 21:00	07:10 19:38	08:12 18:19	08:19 16:13	09:03 15:53
21	05:10 20:54-21:09/15 22:03	06:10 20:57	07:12 19:35	08:14 18:16	08:21 16:12	09:04 15:53
22	05:12 20:54-21:10/16 22:02	06:12 20:55	07:14 19:33	08:16 18:14	08:23 16:10	09:05 15:54
23	05:13 20:53-21:11/18 22:00	06:14 20:52	07:16 19:30	08:18 18:12	08:25 16:09	09:05 15:54
24	05:15 20:52-21:11/19 21:58	06:16 20:50	07:18 19:27	08:20 18:09	08:27 16:08	09:05 15:55
25	05:17 20:52-21:12/20 21:56	06:18 20:47	07:20 19:24	07:22 17:07	08:29 16:06	09:06 15:55
26	05:19 20:52-21:12/20 21:55	06:20 20:45	07:22 19:22	07:25 17:04	08:30 16:05	09:06 15:56
27	05:21 20:52-21:12/20 21:53	06:22 20:42	07:24 19:19	07:27 17:02	08:32 16:04	09:06 15:57
28	05:22 20:52-21:13/21 21:51	06:24 20:39	07:26 19:16	07:29 17:00	08:34 16:02	09:06 15:58
29	05:24 20:52-21:13/21 21:49	06:26 20:37	07:28 19:14	07:31 16:57	08:36 16:01	09:06 15:59
30	05:26 20:52-21:12/20 21:47	06:28 20:34	07:30 19:11	07:33 16:55	08:38 16:00	09:06 16:00
31	05:28 20:52-21:10/18 21:45	06:30 20:32	 	07:36 16:53	 	09:06 16:01
Potential sun hours	530	470	385	323	247	216
Sum of minutes with flicker	248	59	0	269	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