



Weil • Winterkamp • Knopp
Landschaftsarchitektin • Geographen
Partnerschaft für Umweltplanung

**Prognose des Schattenschlagwurfs
von vier Windenergieanlagen
Nordex N163/6.X TCS164
in Ahaus (Lüntener Mark)
Anhang 1: Schattenschlagkalender WEA 1**

Auftraggeber:
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08.12.2023

SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 09-SO - IP 09-SO
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung

Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember			
1	08:42	12:27 (WEA 1)	08:15	07:21	07:10	06:05	05:19	05:16	05:53	06:43	07:32	07:26	08:18		
	16:31	18	12:45 (WEA 1)	17:19	18:11	20:05	20:57	21:43	21:57	21:25	20:22	19:13	17:06	16:25	
2	08:42	12:29 (WEA 1)	08:13	07:19	07:08	06:03	05:18	05:17	05:54	06:45	07:34	07:28	08:19		
	16:32	15	12:44 (WEA 1)	17:21	18:13	20:07	20:58	21:44	21:56	21:23	20:20	19:10	17:04	16:25	
3	08:41	12:31 (WEA 1)	08:11	07:17	07:05	06:01	05:18	05:18	05:56	06:46	07:36	07:30	08:21		
	16:33	13	12:44 (WEA 1)	17:23	18:15	20:09	21:00	21:45	21:56	21:21	20:18	19:08	17:02	16:24	
4	08:41	12:33 (WEA 1)	08:10	07:14	07:03	05:59	05:17	05:18	05:58	06:48	07:37	07:32	08:22		
	16:34	9	12:42 (WEA 1)	17:25	18:16	20:11	21:02	21:46	21:56	21:20	20:15	19:06	17:01	16:23	
5	08:41	08:08	07:12	07:01	05:57	05:16	05:19	05:59	06:50	07:39	07:34	08:23			
	16:35		17:26	18:18	20:12	21:03	21:47	21:55	21:18	20:13	19:03	16:59	16:23		
6	08:41	08:06	07:10	06:58	05:55	05:15	05:20	06:01	06:51	07:41	07:35	08:25			
	16:37		17:28	18:20	20:14	21:05	21:48	21:55	21:16	20:11	19:01	16:57	16:22		
7	08:40	08:05	07:08	06:56	05:54	05:15	05:21	06:02	06:53	07:42	07:37	08:26			
	16:38		17:30	18:22	20:16	21:07	21:49	21:54	21:14	20:09	18:59	16:55	16:22		
8	08:40	08:03	07:05	06:54	05:52	05:14	05:22	06:04	06:54	07:44	07:39	08:27			
	16:39		17:32	18:24	20:17	21:08	21:50	21:53	21:12	20:06	18:56	16:54	16:22		
9	08:39	08:01	07:03	06:52	05:50	05:14	05:23	06:05	06:56	07:46	07:41	08:28	8	12:21 (WEA 1)	
	16:41		17:34	18:25	20:19	21:10	21:51	21:53	21:11	20:04	18:54	16:52	16:21	13	12:19 (WEA 1)
10	08:39	07:59	07:01	06:49	05:48	05:13	05:24	06:07	06:58	07:48	07:43	08:29			12:18 (WEA 1)
	16:42		17:36	18:27	20:21	21:12	21:51	21:52	21:09	20:02	18:52	16:50	16:21	15	12:30 (WEA 1)
11	08:38	07:58	06:59	06:47	05:47	05:13	05:25	06:09	06:59	07:49	07:44	08:30			12:18 (WEA 1)
	16:43		17:38	18:29	20:23	21:13	21:52	21:51	21:07	19:59	18:50	16:49	16:21	18	12:36 (WEA 1)
12	08:38	07:56	06:56	06:45	05:45	05:13	05:26	06:10	07:01	07:51	07:46	08:32			12:18 (WEA 1)
	16:45		17:40	18:31	20:24	21:15	21:53	21:50	21:05	19:57	18:47	16:47	16:21	19	12:37 (WEA 1)
13	08:37	07:54	06:54	06:43	05:43	05:12	05:27	06:12	07:03	07:53	07:48	08:33			12:17 (WEA 1)
	16:46		17:41	18:32	20:26	21:16	21:54	21:50	21:03	19:55	18:45	16:46	16:21	21	12:38 (WEA 1)
14	08:36	07:52	06:52	06:40	05:42	05:12	05:28	06:14	07:04	07:54	07:50	08:33			12:17 (WEA 1)
	16:48		17:43	18:34	20:28	21:18	21:54	21:49	21:01	19:52	18:43	16:44	16:21	22	12:39 (WEA 1)
15	08:35	07:50	06:49	06:38	05:40	05:12	05:29	06:15	07:06	07:56	07:52	08:34			12:16 (WEA 1)
	16:50		17:45	18:36	20:29	21:19	21:55	21:48	20:59	19:50	18:41	16:43	16:21	23	12:39 (WEA 1)
16	08:34	07:48	06:47	06:36	05:39	05:12	05:30	06:17	07:07	07:58	07:53	08:35			12:17 (WEA 1)
	16:51		17:47	18:38	20:31	21:21	21:55	21:47	20:57	19:48	18:39	16:41	16:21	23	12:40 (WEA 1)
17	08:34	07:46	06:45	06:34	05:37	05:12	05:32	06:18	07:09	08:00	07:55	08:36			12:17 (WEA 1)
	16:53		17:49	18:39	20:33	21:23	21:56	21:46	20:55	19:45	18:36	16:40	16:21	24	12:41 (WEA 1)
18	08:33	07:44	06:42	06:32	05:36	05:12	05:33	06:20	07:11	08:01	07:57	08:37			12:17 (WEA 1)
	16:54		17:51	18:41	20:35	21:24	21:56	21:44	20:53	19:43	18:34	16:39	16:21	25	12:42 (WEA 1)
19	08:32	07:42	06:40	06:29	05:34	05:12	05:34	06:22	07:12	08:03	07:59	08:38			12:18 (WEA 1)
	16:56		17:53	18:43	20:36	21:26	21:57	21:43	20:51	19:41	18:32	16:37	16:22	25	12:43 (WEA 1)
20	08:31	07:40	06:38	06:27	05:33	05:12	05:36	06:23	07:14	08:05	08:00	08:38			12:18 (WEA 1)
	16:58		17:55	18:45	20:38	21:27	21:57	21:42	20:49	19:38	18:30	16:36	16:22	25	12:43 (WEA 1)
21	08:29	07:38	06:35	06:25	05:31	05:12	05:37	06:25	07:16	08:07	08:02	08:39			12:19 (WEA 1)
	16:59		17:56	18:46	20:40	21:28	21:57	21:41	20:46	19:36	18:28	16:35	16:23	25	12:44 (WEA 1)
22	08:28	07:36	06:33	06:23	05:30	05:12	05:38	06:27	07:17	08:08	08:04	08:39			12:19 (WEA 1)
	17:01		17:58	18:48	20:41	21:30	21:57	21:40	20:44	19:34	18:26	16:34	16:23	25	12:44 (WEA 1)
23	08:27	07:34	06:31	06:21	05:29	05:12	05:40	06:28	07:19	08:10	08:05	08:40			12:20 (WEA 1)
	17:03		18:00	18:50	20:43	21:31	21:57	21:38	20:42	19:31	18:24	16:33	16:23	25	12:45 (WEA 1)
24	08:26	07:32	06:29	06:19	05:28	05:13	05:41	06:30	07:21	08:12	08:07	08:40			12:20 (WEA 1)
	17:05		18:02	18:52	20:45	21:33	21:58	21:37	20:40	19:29	18:22	16:31	16:24	25	12:45 (WEA 1)
25	08:25	07:30	06:26	06:17	05:26	05:13	05:42	06:31	07:22	07:14	08:09	08:41			12:20 (WEA 1)
	17:06		18:04	18:53	20:46	21:34	21:58	21:35	20:38	19:26	18:20	16:30	16:25	25	12:45 (WEA 1)
26	08:23	07:27	06:24	06:15	05:25	05:13	05:44	06:33	07:24	07:16	08:10	08:41			12:21 (WEA 1)
	17:08		18:06	18:55	20:48	21:35	21:58	21:34	20:36	19:24	18:18	16:29	16:25	24	12:45 (WEA 1)
27	08:22	07:25	06:22	06:13	05:24	05:14	05:45	06:35	07:26	07:17	08:12	08:41			12:22 (WEA 1)
	17:10		18:07	18:57	20:50	21:37	21:58	21:33	20:33	19:22	18:16	16:29	16:26	24	12:46 (WEA 1)
28	08:21	07:23	06:19	06:11	05:23	05:14	05:47	06:36	07:27	07:19	08:13	08:41			12:23 (WEA 1)
	17:12		18:09	18:58	20:52	21:38	21:57	21:31	20:31	19:19	18:14	16:28	16:27	23	12:46 (WEA 1)
29	08:19		07:17	06:09	05:22	05:15	05:48	06:38	07:29	07:21	08:15	08:42			12:24 (WEA 1)
	17:14		20:00	20:53	21:39	21:57	21:30	20:29	19:17	18:11	17:12	16:27	16:28	22	12:46 (WEA 1)
30	08:18		07:15	06:07	05:21	05:15	05:50	06:40	07:31	07:23	08:16	08:42			12:25 (WEA 1)
	17:15		20:02	20:55	21:40	21:57	21:28	20:27	19:15	18:10	17:10	16:26	16:29	21	12:46 (WEA 1)
31	08:16		07:12	06:04	05:20		05:51	06:41		07:25		08:42			12:26 (WEA 1)
	17:17		20:04	20:57	21:42		21:26	20:25		17:08		16:30	16:30	20	12:46 (WEA 1)
Sonnenscheinstunden	258		277	367	416	486	500	503	454	381	331	266	243		
astr.max.mögl.Beschattung		55												520	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang (WEA mit erstem Schatten)	Minuten mit Schatten	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schatteneende (WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 09-SW - IP 09-SW
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember				
1	08:42	12:26 (WEA 1)	08:15	07:21	07:10	06:05	05:19	05:16	05:53	06:43	07:32	07:26	08:18			
	16:31	16	12:42 (WEA 1)	17:19	18:11	20:05	20:57	21:43	21:57	21:25	20:22	19:13	17:06	16:25		
2	08:42	12:28 (WEA 1)	08:13	07:19	07:08	06:03	05:18	05:17	05:54	06:45	07:34	07:28	08:19			
	16:32	13	12:41 (WEA 1)	17:21	18:13	20:07	20:58	21:44	21:56	21:23	20:20	19:10	17:04	16:25		
3	08:41	12:30 (WEA 1)	08:11	07:17	07:05	06:01	05:18	05:18	05:56	06:46	07:36	07:30	08:21			
	16:33	10	12:40 (WEA 1)	17:23	18:15	20:09	21:00	21:45	21:56	21:21	20:18	19:08	17:02	16:24		
4	08:41	12:33 (WEA 1)	08:10	07:14	07:03	05:59	05:17	05:18	05:58	06:48	07:37	07:32	08:22			
	16:34	4	12:37 (WEA 1)	17:25	18:16	20:11	21:02	21:46	21:56	21:20	20:15	19:06	17:01	16:23		
5	08:41	08:08	07:12	07:01	05:57	05:16	05:19	05:19	05:59	06:50	07:39	07:34	08:23			
	16:35		17:26	18:18	20:12	21:03	21:47	21:55	21:18	20:13	19:03	16:59	16:23			
6	08:41	08:06	07:10	06:58	05:55	05:15	05:20	06:01	06:51	07:41	07:35	08:25				
	16:37		17:28	18:20	20:14	21:05	21:48	21:55	21:16	20:11	19:01	16:57	16:22			
7	08:40	08:05	07:08	06:56	05:54	05:15	05:21	06:02	06:53	07:42	07:37	08:26				
	16:38		17:30	18:22	20:16	21:07	21:49	21:54	21:14	20:09	18:59	16:55	16:22			
8	08:40	08:03	07:05	06:54	05:52	05:14	05:22	06:04	06:54	07:44	07:39	08:27				
	16:39		17:32	18:24	20:17	21:08	21:50	21:53	21:12	20:06	18:56	16:54	16:22	2	12:22 (WEA 1)	12:24 (WEA 1)
9	08:39	08:01	07:03	06:52	05:50	05:14	05:23	06:05	06:56	07:46	07:41	08:28	12:19 (WEA 1)			
	16:41		17:34	18:25	20:19	21:10	21:51	21:53	21:11	20:04	18:54	16:52	16:21	9	12:28 (WEA 1)	12:30 (WEA 1)
10	08:39	07:59	07:01	06:49	05:48	05:13	05:24	06:07	06:58	07:48	07:43	08:29	12:17 (WEA 1)			
	16:42		17:36	18:27	20:21	21:12	21:51	21:52	21:09	20:02	18:52	16:50	16:21	13	12:30 (WEA 1)	12:32 (WEA 1)
11	08:38	07:58	06:59	06:47	05:47	05:13	05:25	06:09	06:59	07:49	07:44	08:30	12:17 (WEA 1)			
	16:43		17:38	18:29	20:23	21:13	21:52	21:51	21:07	19:59	18:50	16:49	16:21	16	12:33 (WEA 1)	12:35 (WEA 1)
12	08:38	07:56	06:56	06:45	05:45	05:13	05:26	06:10	07:01	07:51	07:46	08:32	12:17 (WEA 1)			
	16:45		17:40	18:31	20:24	21:15	21:53	21:50	21:05	19:57	18:47	16:47	16:21	17	12:34 (WEA 1)	12:36 (WEA 1)
13	08:37	07:54	06:54	06:43	05:43	05:12	05:27	06:12	07:03	07:53	07:48	08:33	12:16 (WEA 1)			
	16:46		17:41	18:32	20:26	21:16	21:54	21:50	21:03	19:55	18:45	16:46	16:21	19	12:35 (WEA 1)	12:37 (WEA 1)
14	08:36	07:52	06:52	06:40	05:42	05:12	05:28	06:14	07:04	07:54	07:50	08:33	12:16 (WEA 1)			
	16:48		17:43	18:34	20:28	21:18	21:54	21:49	21:01	19:52	18:43	16:44	16:21	20	12:36 (WEA 1)	12:38 (WEA 1)
15	08:35	07:50	06:49	06:38	05:40	05:12	05:29	06:15	07:06	07:56	07:52	08:34	12:15 (WEA 1)			
	16:50		17:45	18:36	20:29	21:19	21:55	21:48	20:59	19:50	18:41	16:43	16:21	21	12:36 (WEA 1)	12:38 (WEA 1)
16	08:34	07:48	06:47	06:36	05:39	05:12	05:30	06:17	07:07	07:58	07:53	08:35	12:15 (WEA 1)			
	16:51		17:47	18:38	20:31	21:21	21:55	21:47	20:57	19:48	18:39	16:41	16:21	22	12:37 (WEA 1)	12:39 (WEA 1)
17	08:34	07:46	06:45	06:34	05:37	05:12	05:32	06:18	07:09	08:00	07:55	08:36	12:16 (WEA 1)			
	16:53		17:49	18:39	20:33	21:23	21:56	21:46	20:55	19:45	18:36	16:40	16:21	22	12:38 (WEA 1)	12:40 (WEA 1)
18	08:33	07:44	06:42	06:32	05:36	05:12	05:33	06:20	07:11	08:01	07:57	08:37	12:16 (WEA 1)			
	16:54		17:51	18:41	20:35	21:24	21:56	21:44	20:53	19:43	18:34	16:39	16:21	23	12:39 (WEA 1)	12:41 (WEA 1)
19	08:32	07:42	06:40	06:29	05:34	05:12	05:34	06:22	07:12	08:03	07:59	08:38	12:17 (WEA 1)			
	16:56		17:53	18:43	20:36	21:26	21:57	21:43	20:51	19:41	18:32	16:37	16:22	23	12:40 (WEA 1)	12:42 (WEA 1)
20	08:31	07:40	06:38	06:27	05:33	05:12	05:36	06:23	07:14	08:05	08:00	08:38	12:16 (WEA 1)			
	16:58		17:55	18:45	20:38	21:27	21:57	21:42	20:49	19:38	18:30	16:36	16:22	24	12:40 (WEA 1)	12:42 (WEA 1)
21	08:29	07:38	06:35	06:25	05:31	05:12	05:37	06:25	07:16	08:07	08:02	08:39	12:17 (WEA 1)			
	16:59		17:56	18:46	20:40	21:28	21:57	21:41	20:46	19:36	18:28	16:35	16:23	24	12:41 (WEA 1)	12:43 (WEA 1)
22	08:28	07:36	06:33	06:23	05:30	05:12	05:38	06:27	07:17	08:08	08:04	08:39	12:17 (WEA 1)			
	17:01		17:58	18:48	20:41	21:30	21:57	21:40	20:44	19:34	18:26	16:34	16:23	24	12:41 (WEA 1)	12:43 (WEA 1)
23	08:27	07:34	06:31	06:21	05:29	05:12	05:40	06:28	07:19	08:10	08:05	08:40	12:18 (WEA 1)			
	17:03		18:00	18:50	20:43	21:31	21:57	21:38	20:42	19:31	18:24	16:33	16:23	24	12:42 (WEA 1)	12:44 (WEA 1)
24	08:26	07:32	06:29	06:19	05:28	05:13	05:41	06:30	07:21	08:12	08:07	08:40	12:18 (WEA 1)			
	17:05		18:02	18:52	20:45	21:33	21:58	21:37	20:40	19:29	18:22	16:31	16:24	24	12:42 (WEA 1)	12:44 (WEA 1)
25	08:25	07:30	06:26	06:17	05:26	05:13	05:42	06:31	07:22	07:14	08:09	08:41	12:19 (WEA 1)			
	17:06		18:04	18:53	20:46	21:34	21:58	21:35	20:38	19:26	18:20	16:30	16:25	23	12:42 (WEA 1)	12:44 (WEA 1)
26	08:23	07:27	06:24	06:15	05:25	05:13	05:44	06:33	07:24	07:16	08:10	08:41	12:19 (WEA 1)			
	17:08		18:06	18:55	20:48	21:35	21:58	21:34	20:36	19:24	18:18	16:29	16:25	23	12:42 (WEA 1)	12:44 (WEA 1)
27	08:22	07:25	06:22	06:13	05:24	05:14	05:45	06:35	07:26	07:17	08:12	08:41	12:21 (WEA 1)			
	17:10		18:07	18:57	20:50	21:37	21:58	21:33	20:33	19:22	18:16	16:29	16:26	22	12:43 (WEA 1)	12:45 (WEA 1)
28	08:21	07:23	06:19	06:11	05:23	05:14	05:47	06:36	07:27	07:19	08:13	08:41	12:22 (WEA 1)			
	17:12		18:09	18:58	20:52	21:38	21:57	21:31	20:31	19:19	18:14	16:28	16:27	21	12:43 (WEA 1)	12:45 (WEA 1)
29	08:19		07:17	06:09	05:22	05:15	05:48	06:38	07:29	07:21	08:15	08:42	12:23 (WEA 1)			
	17:14		20:00	20:53	21:39	21:57	21:30	20:29	19:17	18:11	17:12	16:27	16:28	20	12:43 (WEA 1)	12:45 (WEA 1)
30	08:18		07:15	06:07	05:21	05:15	05:50	06:40	07:31	07:23	08:16	08:42	12:24 (WEA 1)			
	17:15		20:02	20:55	21:40	21:57	21:28	20:27	19:15	18:10	17:10	16:26	16:29	19	12:43 (WEA 1)	12:45 (WEA 1)
31	08:16		07:12	06:04	05:20		05:51	06:41		07:25		08:42	12:25 (WEA 1)			
	17:17		20:04	20:57	21:42		21:26	20:25		17:08		16:30	18	12:43 (WEA 1)		
Sonnenscheinstunden	258		277	367	416	486	500	503	454	381	331	266	243			
astr.max.mögl.Beschattung		43														473

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 10-SO - IP 10-SO
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
Die Sonne scheint täglich von Sonnenauf- bis -untergang
Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni		
1	08:42 16:31	13:17 (WEA 1) 14:16 (WEA 1)	08:15 17:19	13:43 (WEA 1) 14:13 (WEA 1)	07:21 18:11	07:10 20:05	06:05 20:57	05:19 21:43
2	08:42 16:32	13:18 (WEA 1) 14:17 (WEA 1)	08:13 17:21	13:45 (WEA 1) 14:11 (WEA 1)	07:19 18:13	07:08 20:07	06:03 20:58	05:18 21:44
3	08:41 16:33	13:18 (WEA 1) 14:18 (WEA 1)	08:11 17:23	13:48 (WEA 1) 14:07 (WEA 1)	07:17 18:15	07:05 20:09	06:01 21:00	05:18 21:45
4	08:41 16:34	13:18 (WEA 1) 14:18 (WEA 1)	08:10 17:25	13:56 (WEA 1) 14:02 (WEA 1)	07:14 18:16	07:03 20:10	05:59 21:02	05:17 21:46
5	08:41 16:35	13:19 (WEA 1) 14:19 (WEA 1)	08:08 17:26		07:12 18:18	07:01 20:12	05:57 21:03	05:16 21:47
6	08:41 16:37	13:19 (WEA 1) 14:18 (WEA 1)	08:06 17:28		07:10 18:20	06:58 20:14	05:55 21:05	05:15 21:48
7	08:40 16:38	13:20 (WEA 1) 14:19 (WEA 1)	08:05 17:30		07:08 18:22	06:56 20:16	05:54 21:07	05:15 21:49
8	08:40 16:39	13:20 (WEA 1) 14:19 (WEA 1)	08:03 17:32		07:05 18:24	06:54 20:17	05:52 21:08	05:14 21:50
9	08:39 16:41	13:21 (WEA 1) 14:20 (WEA 1)	08:01 17:34		07:03 18:25	06:52 20:19	05:50 21:10	05:14 21:51
10	08:39 16:42	13:21 (WEA 1) 14:20 (WEA 1)	07:59 17:36		07:01 18:27	06:49 20:21	05:48 21:12	05:13 21:51
11	08:38 16:43	13:22 (WEA 1) 14:21 (WEA 1)	07:58 17:38		06:59 18:29	06:47 20:23	05:47 21:13	05:13 21:52
12	08:38 16:45	13:22 (WEA 1) 14:21 (WEA 1)	07:56 17:40		06:56 18:31	06:45 20:24	05:45 21:15	05:13 21:53
13	08:37 16:46	13:22 (WEA 1) 14:21 (WEA 1)	07:54 17:41		06:54 18:32	06:43 20:26	05:43 21:16	05:12 21:54
14	08:36 16:48	13:23 (WEA 1) 14:21 (WEA 1)	07:52 17:43		06:52 18:34	06:40 20:28	05:42 21:18	05:12 21:54
15	08:35 16:50	13:24 (WEA 1) 14:21 (WEA 1)	07:50 17:45		06:49 18:36	06:38 20:29	05:40 21:19	05:12 21:55
16	08:34 16:51	13:24 (WEA 1) 14:21 (WEA 1)	07:48 17:47		06:47 18:38	06:36 20:31	05:39 21:21	05:12 21:55
17	08:34 16:53	13:25 (WEA 1) 14:21 (WEA 1)	07:46 17:49		06:45 18:39	06:34 20:33	05:37 21:23	05:12 21:56
18	08:33 16:54	13:26 (WEA 1) 14:22 (WEA 1)	07:44 17:51		06:42 18:41	06:32 20:34	05:36 21:24	05:12 21:56
19	08:32 16:56	13:27 (WEA 1) 14:22 (WEA 1)	07:42 17:53		06:40 18:43	06:29 20:36	05:34 21:26	05:12 21:57
20	08:31 16:58	13:28 (WEA 1) 14:22 (WEA 1)	07:40 17:54		06:38 18:45	06:27 20:38	05:33 21:27	05:12 21:57
21	08:29 16:59	13:28 (WEA 1) 14:21 (WEA 1)	07:38 17:56		06:35 18:46	06:25 20:40	05:31 21:28	05:12 21:57
22	08:28 17:01	13:29 (WEA 1) 14:21 (WEA 1)	07:36 17:58		06:33 18:48	06:23 20:41	05:30 21:30	05:12 21:57
23	08:27 17:03	13:30 (WEA 1) 14:21 (WEA 1)	07:34 18:00		06:31 18:50	06:21 20:43	05:29 21:31	05:12 21:57
24	08:26 17:05	13:30 (WEA 1) 14:20 (WEA 1)	07:32 18:02		06:29 18:52	06:19 20:45	05:28 21:33	05:13 21:58
25	08:25 17:06	13:32 (WEA 1) 14:20 (WEA 1)	07:30 18:04		06:26 18:53	06:17 20:46	05:26 21:34	05:13 21:58
26	08:23 17:08	13:33 (WEA 1) 14:20 (WEA 1)	07:27 18:06		06:24 18:55	06:15 20:48	05:25 21:35	05:13 21:58
27	08:22 17:10	13:34 (WEA 1) 14:19 (WEA 1)	07:25 18:07		06:22 18:57	06:13 20:50	05:24 21:37	05:14 21:58
28	08:21 17:12	13:35 (WEA 1) 14:18 (WEA 1)	07:23 18:09		06:19 18:58	06:11 20:52	05:23 21:38	05:14 21:57
29	08:19 17:14	13:37 (WEA 1) 14:18 (WEA 1)			07:17 20:00	06:09 20:53	05:22 21:39	05:15 21:57
30	08:18 17:15	13:38 (WEA 1) 14:16 (WEA 1)			07:15 20:02	06:07 20:55	05:21 21:40	05:15 21:57
31	08:16 17:17	13:41 (WEA 1) 14:15 (WEA 1)			07:12 20:04		05:20 21:42	
Sonnenscheinstunden	258		277		367	416	486	500
astr.max.mögl.Beschattung	1665		81					

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 10-SO - IP 10-SO
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinfallrichtung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	July	August	September	Oktober	November		Dezember	
1	05:16	05:53	06:43	07:32	07:26		08:18	13:04 (WEA 1)
	21:57	21:25	20:22	19:12	17:06		16:25	59 14:03 (WEA 1)
2	05:17	05:54	06:45	07:34	07:28		08:19	13:05 (WEA 1)
	21:56	21:23	20:20	19:10	17:04		16:25	59 14:04 (WEA 1)
3	05:18	05:56	06:46	07:36	07:30		08:21	13:04 (WEA 1)
	21:56	21:21	20:18	19:08	17:02		16:24	59 14:03 (WEA 1)
4	05:18	05:58	06:48	07:37	07:32		08:22	13:05 (WEA 1)
	21:56	21:20	20:15	19:06	17:01		16:23	59 14:04 (WEA 1)
5	05:19	05:59	06:50	07:39	07:34		08:23	13:05 (WEA 1)
	21:55	21:18	20:13	19:03	16:59		16:23	59 14:04 (WEA 1)
6	05:20	06:01	06:51	07:41	07:35		08:25	13:05 (WEA 1)
	21:55	21:16	20:11	19:01	16:57		16:22	60 14:05 (WEA 1)
7	05:21	06:02	06:53	07:42	07:37		13:24 (WEA 1)	08:26 13:06 (WEA 1)
	21:54	21:14	20:09	18:59	16:55	9	13:33 (WEA 1)	16:22 60 14:06 (WEA 1)
8	05:22	06:04	06:54	07:44	07:39		13:19 (WEA 1)	08:27 13:06 (WEA 1)
	21:53	21:12	20:06	18:56	16:54	20	13:39 (WEA 1)	16:22 60 14:06 (WEA 1)
9	05:23	06:05	06:56	07:46	07:41		13:16 (WEA 1)	08:28 13:06 (WEA 1)
	21:53	21:11	20:04	18:54	16:52	26	13:42 (WEA 1)	16:21 60 14:06 (WEA 1)
10	05:24	06:07	06:58	07:48	07:43		13:13 (WEA 1)	08:29 13:07 (WEA 1)
	21:52	21:09	20:02	18:52	16:50	31	13:44 (WEA 1)	16:21 59 14:06 (WEA 1)
11	05:25	06:09	06:59	07:49	07:44		13:12 (WEA 1)	08:30 13:07 (WEA 1)
	21:51	21:07	19:59	18:50	16:49	34	13:46 (WEA 1)	16:21 59 14:06 (WEA 1)
12	05:26	06:10	07:01	07:51	07:46		13:10 (WEA 1)	08:32 13:08 (WEA 1)
	21:50	21:05	19:57	18:47	16:47	38	13:48 (WEA 1)	16:21 60 14:08 (WEA 1)
13	05:27	06:12	07:03	07:53	07:48		13:09 (WEA 1)	08:33 13:09 (WEA 1)
	21:50	21:03	19:55	18:45	16:46	41	13:50 (WEA 1)	16:21 59 14:08 (WEA 1)
14	05:28	06:14	07:04	07:54	07:50		13:08 (WEA 1)	08:33 13:09 (WEA 1)
	21:49	21:01	19:52	18:43	16:44	43	13:51 (WEA 1)	16:21 60 14:09 (WEA 1)
15	05:29	06:15	07:06	07:56	07:52		13:07 (WEA 1)	08:34 13:09 (WEA 1)
	21:48	20:59	19:50	18:41	16:43	45	13:52 (WEA 1)	16:21 59 14:08 (WEA 1)
16	05:30	06:17	07:07	07:58	07:53		13:06 (WEA 1)	08:35 13:09 (WEA 1)
	21:47	20:57	19:48	18:39	16:41	47	13:53 (WEA 1)	16:21 60 14:09 (WEA 1)
17	05:32	06:18	07:09	08:00	07:55		13:06 (WEA 1)	08:36 13:10 (WEA 1)
	21:46	20:55	19:45	18:36	16:40	48	13:54 (WEA 1)	16:21 59 14:09 (WEA 1)
18	05:33	06:20	07:11	08:01	07:57		13:04 (WEA 1)	08:37 13:11 (WEA 1)
	21:44	20:53	19:43	18:34	16:39	50	13:54 (WEA 1)	16:21 59 14:10 (WEA 1)
19	05:34	06:22	07:12	08:03	07:59		13:04 (WEA 1)	08:38 13:11 (WEA 1)
	21:43	20:51	19:41	18:32	16:37	51	13:55 (WEA 1)	16:22 59 14:10 (WEA 1)
20	05:36	06:23	07:14	08:05	08:00		13:04 (WEA 1)	08:38 13:12 (WEA 1)
	21:42	20:49	19:38	18:30	16:36	52	13:56 (WEA 1)	16:22 59 14:11 (WEA 1)
21	05:37	06:25	07:16	08:07	08:02		13:04 (WEA 1)	08:39 13:13 (WEA 1)
	21:41	20:46	19:36	18:28	16:35	53	13:57 (WEA 1)	16:23 59 14:12 (WEA 1)
22	05:38	06:27	07:17	08:08	08:04		13:04 (WEA 1)	08:39 13:13 (WEA 1)
	21:40	20:44	19:34	18:26	16:34	54	13:58 (WEA 1)	16:23 59 14:12 (WEA 1)
23	05:40	06:28	07:19	08:10	08:05		13:04 (WEA 1)	08:40 13:14 (WEA 1)
	21:38	20:42	19:31	18:24	16:33	55	13:59 (WEA 1)	16:23 59 14:13 (WEA 1)
24	05:41	06:30	07:21	08:12	08:07		13:03 (WEA 1)	08:40 13:14 (WEA 1)
	21:37	20:40	19:29	18:22	16:31	56	13:59 (WEA 1)	16:24 59 14:13 (WEA 1)
25	05:42	06:31	07:22	07:14	08:09		13:03 (WEA 1)	08:41 13:14 (WEA 1)
	21:35	20:38	19:26	17:20	16:30	56	13:59 (WEA 1)	16:25 59 14:13 (WEA 1)
26	05:44	06:33	07:24	07:16	08:10		13:03 (WEA 1)	08:41 13:14 (WEA 1)
	21:34	20:36	19:24	17:18	16:29	57	14:00 (WEA 1)	16:25 59 14:13 (WEA 1)
27	05:45	06:35	07:26	07:17	08:12		13:04 (WEA 1)	08:41 13:15 (WEA 1)
	21:33	20:33	19:22	17:16	16:29	57	14:01 (WEA 1)	16:26 60 14:15 (WEA 1)
28	05:47	06:36	07:27	07:19	08:13		13:03 (WEA 1)	08:41 13:16 (WEA 1)
	21:31	20:31	19:19	17:14	16:28	58	14:01 (WEA 1)	16:27 59 14:15 (WEA 1)
29	05:48	06:38	07:29	07:21	08:15		13:04 (WEA 1)	08:42 13:16 (WEA 1)
	21:30	20:29	19:17	17:12	16:27	58	14:02 (WEA 1)	16:28 60 14:16 (WEA 1)
30	05:50	06:40	07:31	07:23	08:16		13:04 (WEA 1)	08:42 13:17 (WEA 1)
	21:28	20:27	19:15	17:10	16:26	59	14:03 (WEA 1)	16:29 59 14:16 (WEA 1)
31	05:51	06:41		07:25			08:42	13:17 (WEA 1)
	21:26	20:25		17:08			16:30	60 14:17 (WEA 1)
Sonnenscheinstunden	503	454	381	331	266		243	
astr.max.mögl.Beschattung					1098			1839

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schatteneende	Schattenanfang (WEA mit erstem Schatten)	Schatteneende (WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 10-SW - IP 10-SW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
Die Sonne scheint täglich von Sonnenauf- bis -untergang
Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni		
1	08:42 16:31	13:14 (WEA 1) 14:14 (WEA 1)	08:15 17:19	13:41 (WEA 1) 14:09 (WEA 1)	07:21 18:11	07:10 20:05	06:05 20:57	05:19 21:43
2	08:42 16:32	13:15 (WEA 1) 14:14 (WEA 1)	08:13 17:21	13:44 (WEA 1) 14:06 (WEA 1)	07:19 18:13	07:08 20:07	06:03 20:58	05:18 21:44
3	08:41 16:33	13:16 (WEA 1) 14:15 (WEA 1)	08:11 17:23	13:48 (WEA 1) 14:02 (WEA 1)	07:17 18:15	07:05 20:09	06:01 21:00	05:18 21:45
4	08:41 16:34	13:16 (WEA 1) 14:15 (WEA 1)	08:10 17:25	13:48 (WEA 1) 14:02 (WEA 1)	07:17 18:15	07:05 20:09	06:01 21:00	05:18 21:45
5	08:41 16:35	13:16 (WEA 1) 14:16 (WEA 1)	08:08 17:26	13:48 (WEA 1) 14:02 (WEA 1)	07:17 18:15	07:05 20:09	06:01 21:00	05:18 21:45
6	08:41 16:37	13:16 (WEA 1) 14:16 (WEA 1)	08:06 17:28	13:48 (WEA 1) 14:02 (WEA 1)	07:17 18:15	07:05 20:09	06:01 21:00	05:18 21:45
7	08:40 16:38	13:17 (WEA 1) 14:16 (WEA 1)	08:05 17:30	13:48 (WEA 1) 14:02 (WEA 1)	07:17 18:15	07:05 20:09	06:01 21:00	05:18 21:45
8	08:40 16:39	13:17 (WEA 1) 14:16 (WEA 1)	08:03 17:32	13:48 (WEA 1) 14:02 (WEA 1)	07:17 18:15	07:05 20:09	06:01 21:00	05:18 21:45
9	08:39 16:41	13:19 (WEA 1) 14:17 (WEA 1)	08:01 17:34	13:48 (WEA 1) 14:02 (WEA 1)	07:17 18:15	07:05 20:09	06:01 21:00	05:18 21:45
10	08:39 16:42	13:19 (WEA 1) 14:18 (WEA 1)	07:59 17:36	13:48 (WEA 1) 14:02 (WEA 1)	07:17 18:15	07:05 20:09	06:01 21:00	05:18 21:45
11	08:38 16:43	13:19 (WEA 1) 14:18 (WEA 1)	07:58 17:38	13:48 (WEA 1) 14:02 (WEA 1)	07:17 18:15	07:05 20:09	06:01 21:00	05:18 21:45
12	08:38 16:45	13:20 (WEA 1) 14:18 (WEA 1)	07:56 17:40	13:48 (WEA 1) 14:02 (WEA 1)	07:17 18:15	07:05 20:09	06:01 21:00	05:18 21:45
13	08:37 16:46	13:20 (WEA 1) 14:18 (WEA 1)	07:54 17:41	13:48 (WEA 1) 14:02 (WEA 1)	07:17 18:15	07:05 20:09	06:01 21:00	05:18 21:45
14	08:36 16:48	13:20 (WEA 1) 14:18 (WEA 1)	07:52 17:43	13:48 (WEA 1) 14:02 (WEA 1)	07:17 18:15	07:05 20:09	06:01 21:00	05:18 21:45
15	08:35 16:50	13:21 (WEA 1) 14:18 (WEA 1)	07:50 17:45	13:48 (WEA 1) 14:02 (WEA 1)	07:17 18:15	07:05 20:09	06:01 21:00	05:18 21:45
16	08:34 16:51	13:22 (WEA 1) 14:18 (WEA 1)	07:48 17:47	13:48 (WEA 1) 14:02 (WEA 1)	07:17 18:15	07:05 20:09	06:01 21:00	05:18 21:45
17	08:34 16:53	13:22 (WEA 1) 14:18 (WEA 1)	07:46 17:49	13:48 (WEA 1) 14:02 (WEA 1)	07:17 18:15	07:05 20:09	06:01 21:00	05:18 21:45
18	08:33 16:54	13:23 (WEA 1) 14:19 (WEA 1)	07:44 17:51	13:48 (WEA 1) 14:02 (WEA 1)	07:17 18:15	07:05 20:09	06:01 21:00	05:18 21:45
19	08:32 16:56	13:24 (WEA 1) 14:19 (WEA 1)	07:42 17:53	13:48 (WEA 1) 14:02 (WEA 1)	07:17 18:15	07:05 20:09	06:01 21:00	05:18 21:45
20	08:31 16:58	13:25 (WEA 1) 14:19 (WEA 1)	07:40 17:54	13:48 (WEA 1) 14:02 (WEA 1)	07:17 18:15	07:05 20:09	06:01 21:00	05:18 21:45
21	08:29 16:59	13:26 (WEA 1) 14:19 (WEA 1)	07:38 17:56	13:48 (WEA 1) 14:02 (WEA 1)	07:17 18:15	07:05 20:09	06:01 21:00	05:18 21:45
22	08:28 17:01	13:26 (WEA 1) 14:19 (WEA 1)	07:36 17:58	13:48 (WEA 1) 14:02 (WEA 1)	07:17 18:15	07:05 20:09	06:01 21:00	05:18 21:45
23	08:27 17:03	13:28 (WEA 1) 14:18 (WEA 1)	07:34 18:00	13:48 (WEA 1) 14:02 (WEA 1)	07:17 18:15	07:05 20:09	06:01 21:00	05:18 21:45
24	08:26 17:05	13:28 (WEA 1) 14:17 (WEA 1)	07:32 18:02	13:48 (WEA 1) 14:02 (WEA 1)	07:17 18:15	07:05 20:09	06:01 21:00	05:18 21:45
25	08:25 17:06	13:30 (WEA 1) 14:17 (WEA 1)	07:30 18:04	13:48 (WEA 1) 14:02 (WEA 1)	07:17 18:15	07:05 20:09	06:01 21:00	05:18 21:45
26	08:23 17:08	13:31 (WEA 1) 14:17 (WEA 1)	07:27 18:06	13:48 (WEA 1) 14:02 (WEA 1)	07:17 18:15	07:05 20:09	06:01 21:00	05:18 21:45
27	08:22 17:10	13:32 (WEA 1) 14:16 (WEA 1)	07:25 18:07	13:48 (WEA 1) 14:02 (WEA 1)	07:17 18:15	07:05 20:09	06:01 21:00	05:18 21:45
28	08:21 17:12	13:33 (WEA 1) 14:14 (WEA 1)	07:23 18:09	13:48 (WEA 1) 14:02 (WEA 1)	07:17 18:15	07:05 20:09	06:01 21:00	05:18 21:45
29	08:19 17:14	13:35 (WEA 1) 14:14 (WEA 1)	07:21 18:09	13:48 (WEA 1) 14:02 (WEA 1)	07:17 18:15	07:05 20:09	06:01 21:00	05:18 21:45
30	08:18 17:15	13:37 (WEA 1) 14:12 (WEA 1)	07:19 18:09	13:48 (WEA 1) 14:02 (WEA 1)	07:17 18:15	07:05 20:09	06:01 21:00	05:18 21:45
31	08:16 17:17	13:39 (WEA 1) 14:11 (WEA 1)	07:17 18:09	13:48 (WEA 1) 14:02 (WEA 1)	07:17 18:15	07:05 20:09	06:01 21:00	05:18 21:45
Sonnenscheinstunden	258							
astr.max.mögl.Beschattung	1647	277	64	367	416	486	500	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 10-SW - IP 10-SW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinfallrichtung

Die Windenergieanlage/n ist/sind immer in Betrieb

	July	August	September	Oktober	November		Dezember	
1	05:16 21:57	05:53 21:25	06:43 20:22	07:32 19:12	07:26 17:06		08:18 16:25	59 13:01 (WEA 1)
2	05:17 21:56	05:54 21:23	06:45 20:20	07:34 19:10	07:28 17:04		08:19 16:25	59 13:02 (WEA 1)
3	05:18 21:56	05:56 21:21	06:46 20:18	07:36 19:08	07:30 17:02		08:21 16:24	59 13:02 (WEA 1)
4	05:18 21:56	05:58 21:20	06:48 20:15	07:37 19:06	07:32 17:01		08:22 16:23	59 13:03 (WEA 1)
5	05:19 21:55	05:59 21:18	06:50 20:13	07:39 19:03	07:34 16:59		08:23 16:23	60 13:02 (WEA 1)
6	05:20 21:55	06:01 21:16	06:51 20:11	07:41 19:01	07:35 16:57		08:25 16:22	60 13:02 (WEA 1)
7	05:21 21:54	06:02 21:14	06:53 20:09	07:42 18:59	07:37 16:55		08:26 16:22	59 13:04 (WEA 1)
8	05:22 21:53	06:04 21:12	06:54 20:06	07:44 18:56	07:39 16:54	16 13:18 (WEA 1)	08:27 16:22	59 13:04 (WEA 1)
9	05:23 21:53	06:05 21:11	06:56 20:04	07:46 18:54	07:41 16:52	23 13:34 (WEA 1)	08:28 16:21	59 13:04 (WEA 1)
10	05:24 21:52	06:07 21:09	06:58 20:02	07:48 18:52	07:43 16:50	28 13:38 (WEA 1)	08:29 16:21	59 13:04 (WEA 1)
11	05:25 21:51	06:09 21:07	06:59 19:59	07:49 18:50	07:44 16:49	32 13:12 (WEA 1)	08:30 16:21	60 13:04 (WEA 1)
12	05:26 21:50	06:10 21:05	07:01 19:57	07:51 18:47	07:46 16:47	36 13:42 (WEA 1)	08:32 16:21	59 13:06 (WEA 1)
13	05:27 21:50	06:12 21:03	07:03 19:55	07:53 18:45	07:48 16:46	39 13:08 (WEA 1)	08:33 16:21	59 13:06 (WEA 1)
14	05:28 21:49	06:14 21:01	07:04 19:52	07:54 18:43	07:50 16:44	41 13:07 (WEA 1)	08:33 16:21	59 13:07 (WEA 1)
15	05:29 21:48	06:15 20:59	07:06 19:50	07:56 18:41	07:52 16:43	44 13:47 (WEA 1)	08:34 16:21	59 13:06 (WEA 1)
16	05:30 21:47	06:17 20:57	07:07 19:48	07:58 18:39	07:53 16:41	46 13:05 (WEA 1)	08:35 16:21	59 13:07 (WEA 1)
17	05:32 21:46	06:18 20:55	07:09 19:45	08:00 18:36	07:55 16:40	47 13:50 (WEA 1)	08:36 16:21	60 13:07 (WEA 1)
18	05:33 21:44	06:20 20:53	07:11 19:43	08:01 18:34	07:57 16:39	49 13:04 (WEA 1)	08:37 16:21	59 13:08 (WEA 1)
19	05:34 21:43	06:22 20:51	07:12 19:41	08:03 18:32	07:59 16:37	50 13:51 (WEA 1)	08:38 16:22	59 13:08 (WEA 1)
20	05:36 21:42	06:23 20:49	07:14 19:38	08:05 18:30	08:00 16:36	52 13:02 (WEA 1)	08:38 16:22	59 13:09 (WEA 1)
21	05:37 21:41	06:25 20:46	07:16 19:36	08:07 18:28	08:02 16:35	53 13:52 (WEA 1)	08:39 16:23	59 13:10 (WEA 1)
22	05:38 21:40	06:27 20:44	07:17 19:34	08:08 18:26	08:04 16:34	54 13:01 (WEA 1)	08:39 16:23	59 13:10 (WEA 1)
23	05:40 21:38	06:28 20:42	07:19 19:31	08:10 18:24	08:05 16:33	55 13:55 (WEA 1)	08:40 16:23	59 13:11 (WEA 1)
24	05:41 21:37	06:30 20:40	07:21 19:29	08:12 18:22	08:07 16:31	55 13:01 (WEA 1)	08:40 16:24	59 13:11 (WEA 1)
25	05:42 21:35	06:31 20:38	07:22 19:26	08:14 17:20	08:09 16:30	55 13:56 (WEA 1)	08:41 16:25	59 13:11 (WEA 1)
26	05:44 21:34	06:33 20:36	07:24 19:24	08:16 17:18	08:10 16:29	56 13:01 (WEA 1)	08:41 16:25	60 13:11 (WEA 1)
27	05:45 21:33	06:35 20:33	07:26 19:22	08:17 17:16	08:12 16:29	56 13:57 (WEA 1)	08:41 16:26	59 13:13 (WEA 1)
28	05:47 21:31	06:36 20:31	07:27 19:19	08:19 17:14	08:13 16:28	57 13:01 (WEA 1)	08:41 16:27	59 13:13 (WEA 1)
29	05:48 21:30	06:38 20:29	07:29 19:17	08:21 17:12	08:15 16:27	57 13:58 (WEA 1)	08:42 16:28	60 13:13 (WEA 1)
30	05:50 21:28	06:40 20:27	07:31 19:15	08:23 17:10	08:16 16:26	58 13:01 (WEA 1)	08:42 16:29	59 13:14 (WEA 1)
31	05:51 21:26	06:41 20:25		07:25 17:08		58 13:59 (WEA 1)	08:42 16:30	60 13:14 (WEA 1)
Sonnenscheinstunden	503	454	381	331	266		243	1836
astr.max.mögl.Beschattung					1062			

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	Schattenanfang (WEA mit erstem Schatten)	Schattende (WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 11-SO - IP 11-SO
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni	
1	08:42 16:31	13:27 (WEA 1) 17:19	08:15 17:19	13:50 (WEA 1) 18:11	07:21 20:05	07:10 20:57	05:19 21:43
2	08:42 16:32	13:28 (WEA 1) 17:21	08:13 17:21	13:52 (WEA 1) 18:13	07:19 20:07	07:08 20:58	05:18 21:44
3	08:41 16:33	13:29 (WEA 1) 17:23	08:11 17:23	13:54 (WEA 1) 18:15	07:17 20:09	07:05 21:00	05:18 21:45
4	08:41 16:34	13:29 (WEA 1) 17:25	08:10 17:25	13:58 (WEA 1) 18:16	07:14 20:10	07:03 21:02	05:17 21:46
5	08:41 16:35	13:29 (WEA 1) 17:26	08:08 17:26	14:03 (WEA 1) 18:18	07:12 20:12	07:01 21:03	05:16 21:47
6	08:41 16:37	13:29 (WEA 1) 17:28	08:06 17:28	14:14 (WEA 1) 18:20	07:10 20:14	06:58 21:05	05:15 21:48
7	08:40 16:38	13:30 (WEA 1) 17:30	08:05 17:30	14:29 (WEA 1) 18:22	07:08 20:16	06:56 21:07	05:15 21:49
8	08:40 16:39	13:30 (WEA 1) 17:32	08:03 17:32	14:29 (WEA 1) 18:24	07:05 20:17	06:54 21:08	05:14 21:50
9	08:39 16:41	13:31 (WEA 1) 17:34	08:01 17:34	14:30 (WEA 1) 18:25	07:03 20:19	06:52 21:10	05:14 21:51
10	08:39 16:42	13:32 (WEA 1) 17:36	07:59 17:36	14:30 (WEA 1) 18:27	07:01 20:21	06:49 21:12	05:13 21:51
11	08:38 16:43	13:32 (WEA 1) 17:38	07:58 17:38	14:30 (WEA 1) 18:29	06:59 20:23	06:47 21:13	05:13 21:52
12	08:38 16:45	13:32 (WEA 1) 17:40	07:56 17:40	14:30 (WEA 1) 18:31	06:56 20:24	06:45 21:15	05:13 21:53
13	08:37 16:46	13:32 (WEA 1) 17:41	07:54 17:41	14:31 (WEA 1) 18:32	06:54 20:26	06:43 21:16	05:12 21:54
14	08:36 16:48	13:33 (WEA 1) 17:43	07:52 17:43	14:31 (WEA 1) 18:34	06:52 20:28	06:40 21:18	05:12 21:54
15	08:35 16:50	13:33 (WEA 1) 17:45	07:50 17:45	14:31 (WEA 1) 18:36	06:49 20:29	06:38 21:19	05:12 21:55
16	08:34 16:51	13:34 (WEA 1) 17:47	07:48 17:47	14:31 (WEA 1) 18:38	06:47 20:31	06:36 21:21	05:12 21:55
17	08:34 16:53	13:35 (WEA 1) 17:49	07:46 17:49	14:31 (WEA 1) 18:39	06:45 20:33	06:34 21:23	05:12 21:56
18	08:33 16:54	13:35 (WEA 1) 17:51	07:44 17:51	14:31 (WEA 1) 18:41	06:42 20:34	06:32 21:24	05:12 21:56
19	08:32 16:56	13:36 (WEA 1) 17:53	07:42 17:53	14:32 (WEA 1) 18:43	06:40 20:36	06:29 21:26	05:12 21:57
20	08:31 16:58	13:37 (WEA 1) 17:54	07:40 17:54	14:32 (WEA 1) 18:45	06:38 20:38	06:27 21:27	05:12 21:57
21	08:29 16:59	13:37 (WEA 1) 17:56	07:38 17:56	14:32 (WEA 1) 18:46	06:35 20:40	06:25 21:28	05:12 21:57
22	08:28 17:01	13:38 (WEA 1) 17:58	07:36 17:58	14:31 (WEA 1) 18:48	06:33 20:41	06:23 21:30	05:12 21:57
23	08:27 17:03	13:39 (WEA 1) 18:00	07:34 18:00	14:32 (WEA 1) 18:50	06:31 20:43	06:21 21:31	05:12 21:57
24	08:26 17:05	13:39 (WEA 1) 18:02	07:32 18:02	14:32 (WEA 1) 18:52	06:28 20:45	06:19 21:33	05:13 21:58
25	08:25 17:06	13:41 (WEA 1) 18:04	07:30 18:04	14:31 (WEA 1) 18:53	06:26 20:46	06:17 21:34	05:13 21:58
26	08:23 17:08	13:42 (WEA 1) 18:06	07:27 18:06	14:31 (WEA 1) 18:55	06:24 20:48	06:15 21:35	05:13 21:58
27	08:22 17:10	13:43 (WEA 1) 18:07	07:25 18:07	14:30 (WEA 1) 18:57	06:22 20:50	06:13 21:37	05:14 21:58
28	08:21 17:12	13:44 (WEA 1) 18:09	07:23 18:09	14:30 (WEA 1) 18:59	06:19 20:52	06:11 21:38	05:14 21:57
29	08:19 17:14	13:45 (WEA 1) 18:10	07:21 18:10	14:29 (WEA 1) 19:00	07:17 20:00	06:09 21:39	05:15 21:57
30	08:18 17:15	13:46 (WEA 1) 18:11	07:19 18:11	14:27 (WEA 1) 19:02	07:15 20:02	06:07 21:40	05:15 21:57
31	08:16 17:17	13:49 (WEA 1) 18:12	07:17 18:12	14:27 (WEA 1) 19:04	07:12 20:04	06:05 21:42	05:15 21:57
Sonnenscheinstunden	258			367	416	486	500
astr.max.mögl.Beschattung	1685	277	125				

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 11-SO - IP 11-SO
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinfallrichtung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	July	August	September	Oktober	November		Dezember
1	05:16	05:53	06:43	07:32	07:26		08:18
	21:57	21:25	20:22	19:12	17:06		16:25
2	05:17	05:54	06:45	07:34	07:28		08:19
	21:56	21:23	20:20	19:10	17:04		16:25
3	05:18	05:56	06:46	07:36	07:30		08:21
	21:56	21:21	20:18	19:08	17:02		16:24
4	05:18	05:58	06:48	07:37	07:32		08:22
	21:56	21:20	20:15	19:06	17:01		16:23
5	05:19	05:59	06:50	07:39	07:34		08:23
	21:55	21:18	20:13	19:03	16:59		16:23
6	05:20	06:01	06:51	07:41	07:35		13:32 (WEA 1)
	21:55	21:16	20:11	19:01	16:57	13	13:45 (WEA 1)
7	05:21	06:02	06:53	07:42	07:37		13:28 (WEA 1)
	21:54	21:14	20:09	18:59	16:55	21	13:49 (WEA 1)
8	05:22	06:04	06:54	07:44	07:39		13:25 (WEA 1)
	21:53	21:12	20:06	18:56	16:54	27	13:52 (WEA 1)
9	05:23	06:05	06:56	07:46	07:41		13:23 (WEA 1)
	21:53	21:11	20:04	18:54	16:52	31	13:54 (WEA 1)
10	05:24	06:07	06:58	07:48	07:43		13:21 (WEA 1)
	21:52	21:09	20:02	18:52	16:50	35	13:56 (WEA 1)
11	05:25	06:09	06:59	07:49	07:44		13:19 (WEA 1)
	21:51	21:07	19:59	18:50	16:49	39	13:58 (WEA 1)
12	05:26	06:10	07:01	07:51	07:46		13:18 (WEA 1)
	21:50	21:05	19:57	18:47	16:47	41	13:59 (WEA 1)
13	05:27	06:12	07:03	07:53	07:48		13:17 (WEA 1)
	21:50	21:03	19:55	18:45	16:46	44	14:01 (WEA 1)
14	05:28	06:14	07:04	07:54	07:50		13:16 (WEA 1)
	21:49	21:01	19:52	18:43	16:44	46	14:02 (WEA 1)
15	05:29	06:15	07:06	07:56	07:52		13:16 (WEA 1)
	21:48	20:59	19:50	18:41	16:43	47	14:03 (WEA 1)
16	05:30	06:17	07:07	07:58	07:53		13:15 (WEA 1)
	21:47	20:57	19:48	18:39	16:41	49	14:04 (WEA 1)
17	05:32	06:18	07:09	08:00	07:55		13:15 (WEA 1)
	21:46	20:55	19:45	18:36	16:40	50	14:05 (WEA 1)
18	05:33	06:20	07:11	08:01	07:57		13:13 (WEA 1)
	21:44	20:53	19:43	18:34	16:39	52	14:05 (WEA 1)
19	05:34	06:22	07:12	08:03	07:59		13:13 (WEA 1)
	21:43	20:51	19:41	18:32	16:37	53	14:06 (WEA 1)
20	05:36	06:23	07:14	08:05	08:00		13:13 (WEA 1)
	21:42	20:49	19:38	18:30	16:36	54	14:07 (WEA 1)
21	05:37	06:25	07:16	08:07	08:02		13:13 (WEA 1)
	21:41	20:46	19:36	18:28	16:35	54	14:07 (WEA 1)
22	05:38	06:27	07:17	08:08	08:04		13:13 (WEA 1)
	21:40	20:44	19:34	18:26	16:34	55	14:08 (WEA 1)
23	05:40	06:28	07:19	08:10	08:05		13:13 (WEA 1)
	21:38	20:42	19:31	18:24	16:33	56	14:09 (WEA 1)
24	05:41	06:30	07:21	08:12	08:07		13:12 (WEA 1)
	21:37	20:40	19:29	18:22	16:31	57	14:09 (WEA 1)
25	05:42	06:31	07:22	08:14	08:09		13:13 (WEA 1)
	21:35	20:38	19:26	17:20	16:30	56	14:09 (WEA 1)
26	05:44	06:33	07:24	08:16	08:10		13:13 (WEA 1)
	21:34	20:36	19:24	17:18	16:29	57	14:10 (WEA 1)
27	05:45	06:35	07:26	08:17	08:12		13:13 (WEA 1)
	21:33	20:33	19:22	17:16	16:29	58	14:11 (WEA 1)
28	05:47	06:36	07:27	08:19	08:13		13:13 (WEA 1)
	21:31	20:31	19:19	17:14	16:28	58	14:11 (WEA 1)
29	05:48	06:38	07:29	08:21	08:15		13:14 (WEA 1)
	21:30	20:29	19:17	17:12	16:27	58	14:12 (WEA 1)
30	05:50	06:40	07:31	08:23	08:16		13:14 (WEA 1)
	21:28	20:27	19:15	17:10	16:26	58	14:12 (WEA 1)
31	05:51	06:41		07:25			08:42
	21:26	20:25		17:08			16:30
Sonnenscheinstunden	503	454	381	331	266		243
astr.max.mögl.Beschattung					1169		1806

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schatteneende	Schattenanfang (WEA mit erstem Schatten)	Schatteneende (WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 11-SW - IP 11-SW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung

Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni	
1	08:42 16:31	13:24 (WEA 1) 14:23 (WEA 1)	08:15 17:19	13:50 (WEA 1) 14:20 (WEA 1)	07:21 18:11	07:10 20:05	05:19 21:43
2	08:42 16:32	13:25 (WEA 1) 14:23 (WEA 1)	08:13 17:21	13:52 (WEA 1) 14:17 (WEA 1)	07:19 18:13	07:08 20:07	05:18 21:44
3	08:41 16:33	13:25 (WEA 1) 14:24 (WEA 1)	08:11 17:23	13:56 (WEA 1) 14:14 (WEA 1)	07:17 18:15	07:05 20:09	05:18 21:45
4	08:41 16:34	13:25 (WEA 1) 14:24 (WEA 1)	08:10 17:25	14:03 (WEA 1) 14:08 (WEA 1)	07:14 18:16	07:03 20:10	05:17 21:46
5	08:41 16:35	13:26 (WEA 1) 14:25 (WEA 1)	08:08 17:26		07:12 18:18	07:01 20:12	05:16 21:47
6	08:41 16:37	13:26 (WEA 1) 14:25 (WEA 1)	08:06 17:28		07:10 18:20	06:58 20:14	05:15 21:48
7	08:40 16:38	13:27 (WEA 1) 14:26 (WEA 1)	08:05 17:30		07:08 18:22	06:56 20:16	05:15 21:49
8	08:40 16:39	13:27 (WEA 1) 14:26 (WEA 1)	08:03 17:32		07:05 18:24	06:54 20:17	05:14 21:50
9	08:39 16:41	13:28 (WEA 1) 14:27 (WEA 1)	08:01 17:34		07:03 18:25	06:52 20:19	05:14 21:51
10	08:39 16:42	13:28 (WEA 1) 14:27 (WEA 1)	07:59 17:36		07:01 18:27	06:49 20:21	05:13 21:51
11	08:38 16:43	13:29 (WEA 1) 14:27 (WEA 1)	07:58 17:38		06:59 18:29	06:47 20:23	05:13 21:52
12	08:38 16:45	13:29 (WEA 1) 14:27 (WEA 1)	07:56 17:40		06:56 18:31	06:45 20:24	05:13 21:53
13	08:37 16:46	13:30 (WEA 1) 14:27 (WEA 1)	07:54 17:41		06:54 18:32	06:43 20:26	05:12 21:54
14	08:36 16:48	13:30 (WEA 1) 14:27 (WEA 1)	07:52 17:43		06:52 18:34	06:40 20:28	05:12 21:54
15	08:35 16:50	13:31 (WEA 1) 14:27 (WEA 1)	07:50 17:45		06:49 18:36	06:38 20:29	05:12 21:55
16	08:34 16:51	13:31 (WEA 1) 14:28 (WEA 1)	07:48 17:47		06:47 18:38	06:36 20:31	05:12 21:55
17	08:34 16:53	13:32 (WEA 1) 14:28 (WEA 1)	07:46 17:49		06:45 18:39	06:34 20:33	05:12 21:56
18	08:33 16:54	13:33 (WEA 1) 14:28 (WEA 1)	07:44 17:51		06:42 18:41	06:32 20:34	05:12 21:56
19	08:32 16:56	13:34 (WEA 1) 14:28 (WEA 1)	07:42 17:53		06:40 18:43	06:29 20:36	05:12 21:57
20	08:31 16:58	13:35 (WEA 1) 14:28 (WEA 1)	07:40 17:54		06:38 18:45	06:27 20:38	05:12 21:57
21	08:29 16:59	13:35 (WEA 1) 14:27 (WEA 1)	07:38 17:56		06:35 18:46	06:25 20:40	05:12 21:57
22	08:28 17:01	13:36 (WEA 1) 14:28 (WEA 1)	07:36 17:58		06:33 18:48	06:23 20:41	05:12 21:57
23	08:27 17:03	13:37 (WEA 1) 14:28 (WEA 1)	07:34 18:00		06:31 18:50	06:21 20:43	05:12 21:57
24	08:26 17:05	13:37 (WEA 1) 14:27 (WEA 1)	07:32 18:02		06:28 18:52	06:19 20:45	05:13 21:58
25	08:25 17:06	13:39 (WEA 1) 14:27 (WEA 1)	07:30 18:04		06:26 18:53	06:17 20:46	05:13 21:58
26	08:23 17:08	13:40 (WEA 1) 14:27 (WEA 1)	07:27 18:06		06:24 18:55	06:15 20:48	05:13 21:58
27	08:22 17:10	13:41 (WEA 1) 14:25 (WEA 1)	07:25 18:07		06:22 18:57	06:13 20:50	05:14 21:58
28	08:21 17:12	13:42 (WEA 1) 14:24 (WEA 1)	07:23 18:09		06:19 18:58	06:11 20:52	05:14 21:57
29	08:19 17:14	13:44 (WEA 1) 14:24 (WEA 1)			07:17 20:00	06:09 20:53	05:15 21:57
30	08:18 17:15	13:45 (WEA 1) 14:22 (WEA 1)			07:15 20:02	06:07 20:55	05:15 21:57
31	08:16 17:17	13:48 (WEA 1) 14:22 (WEA 1)			07:12 20:04	06:05 21:42	
Sonnenscheinstunden	258						
astr.max.mögl.Beschattung	1647	277	78	367	416	486	500

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 11-SW - IP 11-SW
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinfallrichtung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	July	August	September	Oktober	November		Dezember	
1	05:16 21:57	05:53 21:25	06:43 20:22	07:32 19:12	07:26 17:06		08:18 16:25	58
2	05:17 21:56	05:54 21:23	06:45 20:20	07:34 19:10	07:28 17:04		08:19 16:25	58
3	05:18 21:56	05:56 21:21	06:46 20:18	07:36 19:08	07:30 17:02		08:21 16:24	59
4	05:18 21:56	05:58 21:20	06:48 20:15	07:37 19:06	07:32 17:01		08:22 16:23	59
5	05:19 21:55	05:59 21:18	06:50 20:13	07:39 19:03	07:34 16:59		08:23 16:23	59
6	05:20 21:55	06:01 21:16	06:51 20:11	07:41 19:01	07:35 16:57		08:25 16:22	59
7	05:21 21:54	06:02 21:14	06:53 20:09	07:42 18:59	07:37 16:55	7	13:32 (WEA 1) 13:39 (WEA 1)	08:26 16:22
8	05:22 21:53	06:04 21:12	06:54 20:06	07:44 18:56	07:39 16:54	19	13:26 (WEA 1) 13:45 (WEA 1)	08:27 16:22
9	05:23 21:53	06:05 21:11	06:56 20:04	07:46 18:54	07:41 16:52	25	13:23 (WEA 1) 13:48 (WEA 1)	08:28 16:21
10	05:24 21:52	06:07 21:09	06:58 20:02	07:48 18:52	07:43 16:50	31	13:20 (WEA 1) 13:51 (WEA 1)	08:29 16:21
11	05:25 21:51	06:09 21:07	06:59 19:59	07:49 18:50	07:44 16:49	34	13:19 (WEA 1) 13:53 (WEA 1)	08:30 16:21
12	05:26 21:50	06:10 21:05	07:01 19:57	07:51 18:47	07:46 16:47	37	13:17 (WEA 1) 13:54 (WEA 1)	08:32 16:21
13	05:27 21:50	06:12 21:03	07:03 19:55	07:53 18:45	07:48 16:46	40	13:16 (WEA 1) 13:56 (WEA 1)	08:33 16:21
14	05:28 21:49	06:14 21:01	07:04 19:52	07:54 18:43	07:50 16:44	42	13:15 (WEA 1) 13:57 (WEA 1)	08:33 16:21
15	05:29 21:48	06:15 20:59	07:06 19:50	07:56 18:41	07:52 16:43	44	13:14 (WEA 1) 13:58 (WEA 1)	08:34 16:21
16	05:30 21:47	06:17 20:57	07:07 19:48	07:58 18:39	07:53 16:41	47	13:13 (WEA 1) 14:00 (WEA 1)	08:35 16:21
17	05:32 21:46	06:18 20:55	07:09 19:45	08:00 18:36	07:55 16:40	48	13:13 (WEA 1) 14:01 (WEA 1)	08:36 16:21
18	05:33 21:44	06:20 20:53	07:11 19:43	08:01 18:34	07:57 16:39	50	13:11 (WEA 1) 14:01 (WEA 1)	08:37 16:21
19	05:34 21:43	06:22 20:51	07:12 19:41	08:03 18:32	07:59 16:37	51	13:11 (WEA 1) 14:02 (WEA 1)	08:38 16:22
20	05:36 21:42	06:23 20:49	07:14 19:38	08:05 18:30	08:00 16:36	52	13:11 (WEA 1) 14:03 (WEA 1)	08:38 16:22
21	05:37 21:41	06:25 20:46	07:16 19:36	08:07 18:28	08:02 16:35	52	13:11 (WEA 1) 14:03 (WEA 1)	08:39 16:23
22	05:38 21:40	06:27 20:44	07:17 19:34	08:08 18:26	08:04 16:34	53	13:11 (WEA 1) 14:04 (WEA 1)	08:39 16:23
23	05:40 21:38	06:28 20:42	07:19 19:31	08:10 18:24	08:05 16:33	54	13:11 (WEA 1) 14:05 (WEA 1)	08:40 16:23
24	05:41 21:37	06:30 20:40	07:21 19:29	08:12 18:22	08:07 16:31	55	13:10 (WEA 1) 14:05 (WEA 1)	08:40 16:24
25	05:42 21:35	06:31 20:38	07:22 19:26	08:14 17:20	08:09 16:30	56	13:10 (WEA 1) 14:06 (WEA 1)	08:41 16:25
26	05:44 21:34	06:33 20:36	07:24 19:24	08:16 17:18	08:10 16:29	57	13:10 (WEA 1) 14:07 (WEA 1)	08:41 16:25
27	05:45 21:33	06:35 20:33	07:26 19:22	08:17 17:16	08:12 16:29	56	13:11 (WEA 1) 14:07 (WEA 1)	08:41 16:26
28	05:47 21:31	06:36 20:31	07:27 19:19	08:19 17:14	08:13 16:28	57	13:10 (WEA 1) 14:07 (WEA 1)	08:41 16:27
29	05:48 21:30	06:38 20:29	07:29 19:17	08:21 17:12	08:15 16:27	57	13:11 (WEA 1) 14:08 (WEA 1)	08:42 16:28
30	05:50 21:28	06:40 20:27	07:31 19:15	08:23 17:10	08:16 16:26	58	13:11 (WEA 1) 14:09 (WEA 1)	08:42 16:29
31	05:51 21:26	06:41 20:25		07:25 17:08				08:42 16:30
Sonnenscheinstunden	503	454	381	331	266		243	1812
astr.max.mögl.Beschattung					1082			1812

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schatteneende	Schattenanfang (WEA mit erstem Schatten)	Schatteneende (WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 12-SO - IP 12-SO
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar		Februar		März		April		Mai		Juni	
1	08:42		14:27 (WEA 1)	08:15	14:26 (WEA 1)	07:21	07:10	06:05	05:19			
	16:31	39	15:06 (WEA 1)	17:19	15:29 (WEA 1)	18:11	20:05	20:57	21:43			
2	08:42		14:27 (WEA 1)	08:13	14:26 (WEA 1)	07:19	07:08	06:03	05:18			
	16:32	41	15:08 (WEA 1)	17:21	15:29 (WEA 1)	18:13	20:07	20:58	21:44			
3	08:41		14:27 (WEA 1)	08:11	14:26 (WEA 1)	07:17	07:05	06:01	05:18			
	16:33	42	15:09 (WEA 1)	17:23	15:29 (WEA 1)	18:15	20:09	21:00	21:45			
4	08:41		14:26 (WEA 1)	08:10	14:27 (WEA 1)	07:14	07:03	05:59	05:17			
	16:34	43	15:09 (WEA 1)	17:25	15:29 (WEA 1)	18:16	20:10	21:02	21:46			
5	08:41		14:27 (WEA 1)	08:08	14:27 (WEA 1)	07:12	07:01	05:57	05:16			
	16:35	44	15:11 (WEA 1)	17:26	15:29 (WEA 1)	18:18	20:12	21:03	21:47			
6	08:41		14:26 (WEA 1)	08:06	14:27 (WEA 1)	07:10	06:58	05:55	05:15			
	16:37	45	15:11 (WEA 1)	17:28	15:29 (WEA 1)	18:20	20:14	21:05	21:48			
7	08:40		14:27 (WEA 1)	08:05	14:27 (WEA 1)	07:08	06:56	05:54	05:15			
	16:38	45	15:12 (WEA 1)	17:30	15:28 (WEA 1)	18:22	20:16	21:07	21:49			
8	08:40		14:26 (WEA 1)	08:03	14:28 (WEA 1)	07:05	06:54	05:52	05:14			
	16:39	47	15:13 (WEA 1)	17:32	15:28 (WEA 1)	18:24	20:17	21:08	21:50			
9	08:39		14:27 (WEA 1)	08:01	14:28 (WEA 1)	07:03	06:52	05:50	05:14			
	16:41	48	15:15 (WEA 1)	17:34	15:27 (WEA 1)	18:25	20:19	21:10	21:51			
10	08:39		14:26 (WEA 1)	07:59	14:30 (WEA 1)	07:01	06:49	05:48	05:13			
	16:42	49	15:15 (WEA 1)	17:36	15:28 (WEA 1)	18:27	20:21	21:12	21:51			
11	08:38		14:26 (WEA 1)	07:58	14:31 (WEA 1)	06:59	06:47	05:47	05:13			
	16:43	50	15:16 (WEA 1)	17:38	15:27 (WEA 1)	18:29	20:22	21:13	21:52			
12	08:38		14:26 (WEA 1)	07:56	14:32 (WEA 1)	06:56	06:45	05:45	05:13			
	16:45	51	15:17 (WEA 1)	17:40	15:27 (WEA 1)	18:31	20:24	21:15	21:53			
13	08:37		14:25 (WEA 1)	07:54	14:33 (WEA 1)	06:54	06:43	05:43	05:12			
	16:46	52	15:17 (WEA 1)	17:41	15:26 (WEA 1)	18:32	20:26	21:16	21:54			
14	08:36		14:25 (WEA 1)	07:52	14:34 (WEA 1)	06:52	06:40	05:42	05:12			
	16:48	53	15:18 (WEA 1)	17:43	15:25 (WEA 1)	18:34	20:28	21:18	21:54			
15	08:35		14:25 (WEA 1)	07:50	14:35 (WEA 1)	06:49	06:38	05:40	05:12			
	16:50	54	15:19 (WEA 1)	17:45	15:24 (WEA 1)	18:36	20:29	21:19	21:55			
16	08:34		14:25 (WEA 1)	07:48	14:36 (WEA 1)	06:47	06:36	05:39	05:12			
	16:51	55	15:20 (WEA 1)	17:47	15:23 (WEA 1)	18:38	20:31	21:21	21:55			
17	08:34		14:25 (WEA 1)	07:46	14:37 (WEA 1)	06:45	06:34	05:37	05:12			
	16:53	56	15:21 (WEA 1)	17:49	15:21 (WEA 1)	18:39	20:33	21:23	21:56			
18	08:33		14:25 (WEA 1)	07:44	14:39 (WEA 1)	06:42	06:32	05:36	05:12			
	16:54	57	15:22 (WEA 1)	17:51	15:19 (WEA 1)	18:41	20:34	21:24	21:56			
19	08:32		14:25 (WEA 1)	07:42	14:41 (WEA 1)	06:40	06:29	05:34	05:12			
	16:56	58	15:23 (WEA 1)	17:53	15:17 (WEA 1)	18:43	20:36	21:26	21:56			
20	08:30		14:25 (WEA 1)	07:40	14:44 (WEA 1)	06:38	06:27	05:33	05:12			
	16:58	59	15:24 (WEA 1)	17:54	15:15 (WEA 1)	18:45	20:38	21:27	21:57			
21	08:29		14:24 (WEA 1)	07:38	14:47 (WEA 1)	06:35	06:25	05:31	05:12			
	16:59	60	15:24 (WEA 1)	17:56	15:12 (WEA 1)	18:46	20:40	21:28	21:57			
22	08:28		14:25 (WEA 1)	07:36	14:52 (WEA 1)	06:33	06:23	05:30	05:12			
	17:01	60	15:25 (WEA 1)	17:58	15:08 (WEA 1)	18:48	20:41	21:30	21:57			
23	08:27		14:25 (WEA 1)	07:34		06:31	06:21	05:29	05:12			
	17:03	61	15:26 (WEA 1)	18:00		18:50	20:43	21:31	21:57			
24	08:26		14:24 (WEA 1)	07:32		06:28	06:19	05:28	05:13			
	17:05	61	15:25 (WEA 1)	18:02		18:52	20:45	21:33	21:58			
25	08:25		14:25 (WEA 1)	07:30		06:26	06:17	05:26	05:13			
	17:06	61	15:26 (WEA 1)	18:04		18:53	20:46	21:34	21:58			
26	08:23		14:25 (WEA 1)	07:27		06:24	06:15	05:25	05:13			
	17:08	62	15:27 (WEA 1)	18:06		18:55	20:48	21:35	21:58			
27	08:22		14:25 (WEA 1)	07:25		06:22	06:13	05:24	05:14			
	17:10	62	15:27 (WEA 1)	18:07		18:57	20:50	21:37	21:58			
28	08:21		14:24 (WEA 1)	07:23		06:19	06:11	05:23	05:14			
	17:12	63	15:27 (WEA 1)	18:09		18:58	20:52	21:38	21:57			
29	08:19		14:25 (WEA 1)			07:17	06:09	05:22	05:15			
	17:14	63	15:28 (WEA 1)			20:00	20:53	21:39	21:57			
30	08:18		14:25 (WEA 1)			07:15	06:07	05:21	05:15			
	17:15	63	15:28 (WEA 1)			20:02	20:55	21:40	21:57			
31	08:16		14:26 (WEA 1)			07:12		05:20				
	17:17	63	15:29 (WEA 1)			20:04		21:42				
Sonnenscheinstunden	258			277		367	416	486	500			
astr.max.mögl.Beschattung	1667			1116								

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 12-SO - IP 12-SO
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	July	August	September	Oktober		November		Dezember	
1	05:16	05:53	06:43	07:32		07:26	13:59 (WEA 1)	08:18	14:08 (WEA 1)
	21:57	21:25	20:22	19:12		17:06	58 14:57 (WEA 1)	16:25	50 14:58 (WEA 1)
2	05:17	05:54	06:45	07:34		07:28	13:58 (WEA 1)	08:19	14:09 (WEA 1)
	21:56	21:23	20:20	19:10		17:04	59 14:57 (WEA 1)	16:25	49 14:58 (WEA 1)
3	05:18	05:56	06:46	07:36		07:30	13:57 (WEA 1)	08:21	14:10 (WEA 1)
	21:56	21:21	20:18	19:08		17:02	61 14:58 (WEA 1)	16:24	48 14:58 (WEA 1)
4	05:18	05:58	06:48	07:37		07:32	13:57 (WEA 1)	08:22	14:11 (WEA 1)
	21:56	21:20	20:15	19:06		17:01	61 14:58 (WEA 1)	16:23	47 14:58 (WEA 1)
5	05:19	05:59	06:49	07:39		07:34	13:57 (WEA 1)	08:23	14:12 (WEA 1)
	21:55	21:18	20:13	19:03		16:59	61 14:58 (WEA 1)	16:23	46 14:58 (WEA 1)
6	05:20	06:01	06:51	07:41		07:35	13:57 (WEA 1)	08:25	14:12 (WEA 1)
	21:55	21:16	20:11	19:01		16:57	62 14:59 (WEA 1)	16:22	45 14:57 (WEA 1)
7	05:21	06:02	06:53	07:42		07:37	13:56 (WEA 1)	08:26	14:14 (WEA 1)
	21:54	21:14	20:09	18:59		16:55	63 14:59 (WEA 1)	16:22	44 14:58 (WEA 1)
8	05:22	06:04	06:54	07:44		07:39	13:56 (WEA 1)	08:27	14:15 (WEA 1)
	21:53	21:12	20:06	18:56		16:54	63 14:59 (WEA 1)	16:22	42 14:57 (WEA 1)
9	05:23	06:05	06:56	07:46		07:41	13:56 (WEA 1)	08:28	14:15 (WEA 1)
	21:53	21:11	20:04	18:54		16:52	64 15:00 (WEA 1)	16:21	42 14:57 (WEA 1)
10	05:24	06:07	06:58	07:48		07:43	13:56 (WEA 1)	08:29	14:16 (WEA 1)
	21:52	21:09	20:02	18:52		16:50	64 15:00 (WEA 1)	16:21	41 14:57 (WEA 1)
11	05:25	06:09	06:59	07:49		07:44	13:57 (WEA 1)	08:30	14:17 (WEA 1)
	21:51	21:07	19:59	18:50		16:49	63 15:00 (WEA 1)	16:21	40 14:57 (WEA 1)
12	05:26	06:10	07:01	07:51		07:46	13:57 (WEA 1)	08:32	14:18 (WEA 1)
	21:50	21:05	19:57	18:47		16:47	63 15:00 (WEA 1)	16:21	40 14:58 (WEA 1)
13	05:27	06:12	07:03	07:53		07:48	13:57 (WEA 1)	08:33	14:19 (WEA 1)
	21:49	21:03	19:55	18:45		16:46	63 15:00 (WEA 1)	16:21	39 14:58 (WEA 1)
14	05:28	06:14	07:04	07:54		07:50	13:57 (WEA 1)	08:33	14:20 (WEA 1)
	21:49	21:01	19:52	18:43		16:44	63 15:00 (WEA 1)	16:21	38 14:58 (WEA 1)
15	05:29	06:15	07:06	07:56		07:52	13:58 (WEA 1)	08:34	14:20 (WEA 1)
	21:48	20:59	19:50	18:41		16:43	62 15:00 (WEA 1)	16:21	37 14:57 (WEA 1)
16	05:30	06:17	07:07	07:58		07:53	13:58 (WEA 1)	08:35	14:21 (WEA 1)
	21:47	20:57	19:48	18:39		16:41	62 15:00 (WEA 1)	16:21	36 14:57 (WEA 1)
17	05:32	06:18	07:09	08:00		07:55	13:59 (WEA 1)	08:36	14:22 (WEA 1)
	21:45	20:55	19:45	18:36		16:40	61 15:00 (WEA 1)	16:21	36 14:58 (WEA 1)
18	05:33	06:20	07:11	08:01		07:57	13:58 (WEA 1)	08:37	14:23 (WEA 1)
	21:44	20:53	19:43	18:34		16:39	61 14:59 (WEA 1)	16:21	35 14:58 (WEA 1)
19	05:34	06:22	07:12	08:03		07:58	13:59 (WEA 1)	08:38	14:23 (WEA 1)
	21:43	20:51	19:41	18:32		16:37	61 15:00 (WEA 1)	16:22	35 14:58 (WEA 1)
20	05:36	06:23	07:14	08:05	15:20 (WEA 1)	08:00	14:00 (WEA 1)	08:38	14:24 (WEA 1)
	21:42	20:49	19:38	18:30	20 15:40 (WEA 1)	16:36	60 15:00 (WEA 1)	16:22	34 14:58 (WEA 1)
21	05:37	06:25	07:16	08:07	15:16 (WEA 1)	08:02	14:00 (WEA 1)	08:39	14:25 (WEA 1)
	21:41	20:46	19:36	18:28	28 15:44 (WEA 1)	16:35	60 15:00 (WEA 1)	16:23	34 14:59 (WEA 1)
22	05:38	06:27	07:17	08:08	15:13 (WEA 1)	08:04	14:01 (WEA 1)	08:39	14:25 (WEA 1)
	21:40	20:44	19:34	18:26	33 15:46 (WEA 1)	16:34	59 15:00 (WEA 1)	16:23	34 14:59 (WEA 1)
23	05:40	06:28	07:19	08:10	15:11 (WEA 1)	08:05	14:02 (WEA 1)	08:40	14:26 (WEA 1)
	21:38	20:42	19:31	18:24	37 15:48 (WEA 1)	16:33	58 15:00 (WEA 1)	16:23	34 15:00 (WEA 1)
24	05:41	06:30	07:21	08:12	15:09 (WEA 1)	08:07	14:02 (WEA 1)	08:40	14:26 (WEA 1)
	21:37	20:40	19:29	18:22	41 15:50 (WEA 1)	16:31	57 14:59 (WEA 1)	16:24	35 15:01 (WEA 1)
25	05:42	06:31	07:22	07:14	14:07 (WEA 1)	08:08	14:03 (WEA 1)	08:41	14:26 (WEA 1)
	21:35	20:38	19:26	17:20	44 14:51 (WEA 1)	16:30	56 14:59 (WEA 1)	16:25	35 15:01 (WEA 1)
26	05:44	06:33	07:24	07:16	14:05 (WEA 1)	08:10	14:04 (WEA 1)	08:41	14:26 (WEA 1)
	21:34	20:36	19:24	17:18	48 14:53 (WEA 1)	16:29	55 14:59 (WEA 1)	16:25	35 15:01 (WEA 1)
27	05:45	06:35	07:26	07:17	14:04 (WEA 1)	08:12	14:05 (WEA 1)	08:41	14:27 (WEA 1)
	21:33	20:33	19:22	17:16	50 14:54 (WEA 1)	16:29	54 14:59 (WEA 1)	16:26	36 15:03 (WEA 1)
28	05:47	06:36	07:27	07:19	14:03 (WEA 1)	08:13	14:05 (WEA 1)	08:41	14:27 (WEA 1)
	21:31	20:31	19:19	17:14	52 14:55 (WEA 1)	16:28	53 14:58 (WEA 1)	16:27	37 15:04 (WEA 1)
29	05:48	06:38	07:29	07:21	14:02 (WEA 1)	08:15	14:06 (WEA 1)	08:42	14:27 (WEA 1)
	21:29	20:29	19:17	17:12	54 14:56 (WEA 1)	16:27	53 14:59 (WEA 1)	16:28	37 15:04 (WEA 1)
30	05:50	06:40	07:31	07:23	14:00 (WEA 1)	08:16	14:07 (WEA 1)	08:42	14:27 (WEA 1)
	21:28	20:27	19:15	17:10	55 14:55 (WEA 1)	16:26	51 14:58 (WEA 1)	16:29	38 15:05 (WEA 1)
31	05:51	06:41		07:25	13:59 (WEA 1)			08:42	14:26 (WEA 1)
	21:26	20:25		17:08	57 14:56 (WEA 1)			16:30	39 15:05 (WEA 1)
Sonnenscheinstunden	503	454	381	331		266		243	
astr.max.mögl.Beschattung					519		1791		1218

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM)	Schattenanfang (WEA mit erstem Schatten)	Schattenende (WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 12-SW - IP 12-SW
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni	
1	08:42 16:31	14:22 (WEA 1) 17:19	08:15 17:19	14:22 (WEA 1) 18:11	07:21 20:05	06:05 20:57	05:19 21:43
2	08:42 16:32	14:22 (WEA 1) 17:21	08:13 17:21	14:22 (WEA 1) 18:13	07:19 20:07	06:03 20:58	05:18 21:44
3	08:41 16:33	14:23 (WEA 1) 17:23	08:11 17:23	14:23 (WEA 1) 18:15	07:17 20:09	06:01 21:00	05:18 21:45
4	08:41 16:34	14:22 (WEA 1) 17:25	08:10 17:25	14:24 (WEA 1) 18:16	07:14 20:10	05:59 21:02	05:17 21:46
5	08:41 16:35	14:22 (WEA 1) 17:26	08:08 17:26	14:24 (WEA 1) 18:18	07:12 20:12	05:57 21:03	05:16 21:47
6	08:41 16:37	14:22 (WEA 1) 17:28	08:06 17:28	14:24 (WEA 1) 18:20	07:10 20:14	05:55 21:05	05:15 21:48
7	08:40 16:38	14:22 (WEA 1) 17:30	08:05 17:30	14:25 (WEA 1) 18:22	07:08 20:16	05:54 21:07	05:15 21:49
8	08:40 16:39	14:22 (WEA 1) 17:32	08:03 17:32	14:25 (WEA 1) 18:24	07:05 20:17	05:52 21:08	05:14 21:50
9	08:39 16:41	14:23 (WEA 1) 17:34	08:01 17:34	14:26 (WEA 1) 18:25	07:03 20:19	05:50 21:10	05:14 21:51
10	08:39 16:42	14:22 (WEA 1) 17:36	07:59 17:36	14:27 (WEA 1) 18:27	07:01 20:21	05:48 21:12	05:13 21:51
11	08:38 16:43	14:22 (WEA 1) 17:38	07:58 17:38	14:28 (WEA 1) 18:29	06:59 20:22	05:47 21:13	05:13 21:52
12	08:38 16:45	14:22 (WEA 1) 17:40	07:56 17:40	14:29 (WEA 1) 18:31	06:56 20:24	05:45 21:15	05:13 21:53
13	08:37 16:46	14:21 (WEA 1) 17:41	07:54 17:41	14:30 (WEA 1) 18:32	06:54 20:26	05:43 21:16	05:12 21:54
14	08:36 16:48	14:21 (WEA 1) 17:43	07:52 17:43	14:31 (WEA 1) 18:34	06:52 20:28	05:42 21:18	05:12 21:54
15	08:35 16:50	14:21 (WEA 1) 17:45	07:50 17:45	14:33 (WEA 1) 18:36	06:49 20:29	05:40 21:19	05:12 21:55
16	08:34 16:51	14:21 (WEA 1) 17:47	07:48 17:47	14:34 (WEA 1) 18:38	06:47 20:31	05:39 21:21	05:12 21:55
17	08:34 16:53	14:21 (WEA 1) 17:49	07:46 17:49	14:35 (WEA 1) 18:39	06:45 20:33	05:37 21:23	05:12 21:56
18	08:33 16:54	14:21 (WEA 1) 17:51	07:44 17:51	14:37 (WEA 1) 18:41	06:42 20:34	05:36 21:24	05:12 21:56
19	08:32 16:56	14:21 (WEA 1) 17:53	07:42 17:53	14:40 (WEA 1) 18:43	06:40 20:36	05:34 21:26	05:12 21:56
20	08:31 16:58	14:22 (WEA 1) 17:54	07:40 17:54	14:43 (WEA 1) 18:45	06:38 20:38	05:33 21:27	05:12 21:57
21	08:29 16:59	14:21 (WEA 1) 17:56	07:38 17:56	14:47 (WEA 1) 18:46	06:35 20:40	05:31 21:28	05:12 21:57
22	08:28 17:01	14:21 (WEA 1) 17:58	07:36 17:58	14:56 (WEA 1) 18:48	06:33 20:41	05:30 21:30	05:12 21:57
23	08:27 17:03	14:21 (WEA 1) 18:00	07:34 18:00	14:58 (WEA 1)	06:31 20:43	05:29 21:31	05:12 21:57
24	08:26 17:05	14:21 (WEA 1) 18:02	07:32 18:02		06:28 20:45	05:28 21:33	05:13 21:58
25	08:25 17:06	14:21 (WEA 1) 18:04	07:30 18:04		06:26 20:46	05:26 21:34	05:13 21:58
26	08:23 17:08	14:22 (WEA 1) 18:06	07:27 18:06		06:24 20:48	05:25 21:35	05:13 21:58
27	08:22 17:10	14:22 (WEA 1) 18:07	07:25 18:07		06:22 20:50	05:24 21:37	05:14 21:58
28	08:21 17:12	14:21 (WEA 1) 18:09	07:23 18:09		06:19 20:52	05:23 21:38	05:14 21:57
29	08:19 17:14	14:22 (WEA 1) 18:10	07:21 18:10		06:17 20:54	05:22 21:39	05:15 21:57
30	08:18 17:15	14:22 (WEA 1) 18:11	07:19 18:11		06:15 20:56	05:21 21:40	05:15 21:57
31	08:16 17:17	14:23 (WEA 1) 18:12	07:17 18:12		06:13 20:58	05:20 21:42	
Sonnenscheinstunden	258			367	416	486	500
astr.max.mögl.Beschattung	1711	277	1076				

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 12-SW - IP 12-SW
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	July	August	September	Oktober		November		Dezember		
1	05:16	05:53	06:43	07:32		07:26	13:56 (WEA 1)	08:18	14:04 (WEA 1)	
	21:57	21:25	20:22	19:12		17:06	14:53 (WEA 1)	16:25	14:56 (WEA 1)	
2	05:17	05:54	06:45	07:34		07:28	13:55 (WEA 1)	08:19	14:05 (WEA 1)	
	21:56	21:23	20:20	19:10		17:04	14:54 (WEA 1)	16:25	14:56 (WEA 1)	
3	05:18	05:56	06:46	07:36		07:30	13:55 (WEA 1)	08:21	14:06 (WEA 1)	
	21:56	21:21	20:18	19:08		17:02	14:54 (WEA 1)	16:24	14:56 (WEA 1)	
4	05:18	05:58	06:48	07:37		07:32	13:54 (WEA 1)	08:22	14:07 (WEA 1)	
	21:56	21:20	20:15	19:06		17:01	14:55 (WEA 1)	16:23	14:56 (WEA 1)	
5	05:19	05:59	06:49	07:39		07:34	13:54 (WEA 1)	08:23	14:07 (WEA 1)	
	21:55	21:18	20:13	19:03		16:59	14:55 (WEA 1)	16:23	14:56 (WEA 1)	
6	05:20	06:01	06:51	07:41		07:35	13:54 (WEA 1)	08:25	14:08 (WEA 1)	
	21:55	21:16	20:11	19:01		16:57	14:56 (WEA 1)	16:22	14:55 (WEA 1)	
7	05:21	06:02	06:53	07:42		07:37	13:53 (WEA 1)	08:26	14:09 (WEA 1)	
	21:54	21:14	20:09	18:59		16:55	14:56 (WEA 1)	16:22	14:56 (WEA 1)	
8	05:22	06:04	06:54	07:44		07:39	13:53 (WEA 1)	08:27	14:10 (WEA 1)	
	21:53	21:12	20:06	18:56		16:54	14:56 (WEA 1)	16:22	14:55 (WEA 1)	
9	05:23	06:05	06:56	07:46		07:41	13:53 (WEA 1)	08:28	14:11 (WEA 1)	
	21:53	21:11	20:04	18:54		16:52	14:56 (WEA 1)	16:21	14:55 (WEA 1)	
10	05:24	06:07	06:58	07:48		07:43	13:53 (WEA 1)	08:29	14:11 (WEA 1)	
	21:52	21:09	20:02	18:52		16:50	14:57 (WEA 1)	16:21	14:55 (WEA 1)	
11	05:25	06:09	06:59	07:49		07:44	13:53 (WEA 1)	08:30	14:12 (WEA 1)	
	21:51	21:07	19:59	18:50		16:49	14:57 (WEA 1)	16:21	14:55 (WEA 1)	
12	05:26	06:10	07:01	07:51		07:46	13:54 (WEA 1)	08:32	14:14 (WEA 1)	
	21:50	21:05	19:57	18:47		16:47	14:57 (WEA 1)	16:21	14:56 (WEA 1)	
13	05:27	06:12	07:03	07:53		07:48	13:54 (WEA 1)	08:33	14:15 (WEA 1)	
	21:49	21:03	19:55	18:45		16:46	14:57 (WEA 1)	16:21	14:56 (WEA 1)	
14	05:28	06:14	07:04	07:54		07:50	13:54 (WEA 1)	08:33	14:15 (WEA 1)	
	21:49	21:01	19:52	18:43		16:44	14:57 (WEA 1)	16:21	14:56 (WEA 1)	
15	05:29	06:15	07:06	07:56		07:52	13:54 (WEA 1)	08:34	14:15 (WEA 1)	
	21:48	20:59	19:50	18:41		16:43	14:57 (WEA 1)	16:21	14:55 (WEA 1)	
16	05:30	06:17	07:07	07:58		07:53	13:55 (WEA 1)	08:35	14:16 (WEA 1)	
	21:47	20:57	19:48	18:39		16:41	14:57 (WEA 1)	16:21	14:56 (WEA 1)	
17	05:32	06:18	07:09	08:00		07:55	13:55 (WEA 1)	08:36	14:17 (WEA 1)	
	21:45	20:55	19:45	18:36		16:40	14:58 (WEA 1)	16:21	14:56 (WEA 1)	
18	05:33	06:20	07:11	08:01		07:57	13:55 (WEA 1)	08:37	14:18 (WEA 1)	
	21:44	20:53	19:43	18:34		16:39	14:57 (WEA 1)	16:21	14:57 (WEA 1)	
19	05:34	06:22	07:12	08:03		07:58	13:55 (WEA 1)	08:38	14:18 (WEA 1)	
	21:43	20:51	19:41	18:32		16:37	14:57 (WEA 1)	16:22	14:56 (WEA 1)	
20	05:36	06:23	07:14	08:05	15:21 (WEA 1)	08:00	13:56 (WEA 1)	08:38	14:19 (WEA 1)	
	21:42	20:49	19:38	18:30	12	15:33 (WEA 1)	16:36	16:22	38	14:57 (WEA 1)
21	05:37	06:25	07:16	08:07	15:16 (WEA 1)	08:02	13:57 (WEA 1)	08:39	14:20 (WEA 1)	
	21:41	20:46	19:36	18:28	22	15:38 (WEA 1)	16:35	16:23	38	14:58 (WEA 1)
22	05:38	06:27	07:17	08:08	15:12 (WEA 1)	08:04	13:58 (WEA 1)	08:39	14:20 (WEA 1)	
	21:40	20:44	19:34	18:26	29	15:41 (WEA 1)	16:34	16:23	38	14:58 (WEA 1)
23	05:40	06:28	07:19	08:10	15:09 (WEA 1)	08:05	13:58 (WEA 1)	08:40	14:21 (WEA 1)	
	21:38	20:42	19:31	18:24	35	15:44 (WEA 1)	16:33	16:23	38	14:59 (WEA 1)
24	05:41	06:30	07:21	08:12	15:07 (WEA 1)	08:07	13:58 (WEA 1)	08:40	14:21 (WEA 1)	
	21:37	20:40	19:29	18:22	39	15:46 (WEA 1)	16:31	16:24	38	14:59 (WEA 1)
25	05:42	06:31	07:22	07:14	14:05 (WEA 1)	08:08	13:59 (WEA 1)	08:41	14:21 (WEA 1)	
	21:35	20:38	19:26	17:20	42	14:47 (WEA 1)	16:30	16:25	38	14:59 (WEA 1)
26	05:44	06:33	07:24	07:16	14:03 (WEA 1)	08:10	14:00 (WEA 1)	08:41	14:21 (WEA 1)	
	21:34	20:36	19:24	17:18	46	14:49 (WEA 1)	16:29	16:25	39	15:00 (WEA 1)
27	05:45	06:35	07:26	07:17	14:02 (WEA 1)	08:12	14:01 (WEA 1)	08:41	14:22 (WEA 1)	
	21:33	20:33	19:22	17:16	48	14:50 (WEA 1)	16:29	16:26	39	15:01 (WEA 1)
28	05:47	06:36	07:27	07:19	14:01 (WEA 1)	08:13	14:01 (WEA 1)	08:41	14:22 (WEA 1)	
	21:31	20:31	19:19	17:14	50	14:51 (WEA 1)	16:28	16:27	40	15:02 (WEA 1)
29	05:48	06:38	07:29	07:21	13:59 (WEA 1)	08:15	14:02 (WEA 1)	08:42	14:22 (WEA 1)	
	21:29	20:29	19:17	17:12	53	14:52 (WEA 1)	16:27	16:28	41	15:03 (WEA 1)
30	05:50	06:40	07:31	07:23	13:57 (WEA 1)	08:16	14:03 (WEA 1)	08:42	14:23 (WEA 1)	
	21:28	20:27	19:15	17:10	55	14:52 (WEA 1)	16:26	16:29	41	15:04 (WEA 1)
31	05:51	06:41		07:25	13:57 (WEA 1)			08:42	14:22 (WEA 1)	
	21:26	20:25		17:08	56	14:53 (WEA 1)		16:30	41	15:03 (WEA 1)
Sonnenscheinstunden	503	454	381	331		266		243		
astr.max.mögl.Beschattung				487		1806		1310		

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM)	Schattenanfang (WEA mit erstem Schatten)	Schattenende (WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 13-SO - IP 13-SO
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni		
1	08:42 16:31	14:35 (WEA 1) 15:14 (WEA 1)	08:15 17:19	14:36 (WEA 1) 15:34 (WEA 1)	07:21 18:11	07:10 20:05	06:05 20:57	05:19 21:43
2	08:42 16:32	14:35 (WEA 1) 15:15 (WEA 1)	08:13 17:21	14:36 (WEA 1) 15:33 (WEA 1)	07:19 18:13	07:08 20:07	06:03 20:58	05:18 21:44
3	08:41 16:33	14:35 (WEA 1) 15:16 (WEA 1)	08:11 17:23	14:36 (WEA 1) 15:33 (WEA 1)	07:17 18:15	07:05 20:09	06:01 21:00	05:18 21:45
4	08:41 16:34	14:35 (WEA 1) 15:16 (WEA 1)	08:10 17:25	14:38 (WEA 1) 15:34 (WEA 1)	07:14 18:16	07:03 20:10	05:59 21:02	05:17 21:46
5	08:41 16:35	14:35 (WEA 1) 15:17 (WEA 1)	08:08 17:26	14:38 (WEA 1) 15:33 (WEA 1)	07:12 18:18	07:01 20:12	05:57 21:03	05:16 21:47
6	08:41 16:37	14:35 (WEA 1) 15:18 (WEA 1)	08:06 17:28	14:38 (WEA 1) 15:33 (WEA 1)	07:10 18:20	06:58 20:14	05:55 21:05	05:15 21:48
7	08:40 16:38	14:35 (WEA 1) 15:19 (WEA 1)	08:05 17:30	14:39 (WEA 1) 15:32 (WEA 1)	07:08 18:22	06:56 20:16	05:54 21:07	05:15 21:49
8	08:40 16:39	14:35 (WEA 1) 15:20 (WEA 1)	08:03 17:32	14:40 (WEA 1) 15:32 (WEA 1)	07:05 18:24	06:54 20:17	05:52 21:08	05:14 21:50
9	08:39 16:41	14:35 (WEA 1) 15:21 (WEA 1)	08:01 17:34	14:40 (WEA 1) 15:31 (WEA 1)	07:03 18:25	06:52 20:19	05:50 21:10	05:14 21:51
10	08:39 16:42	14:35 (WEA 1) 15:22 (WEA 1)	07:59 17:36	14:42 (WEA 1) 15:31 (WEA 1)	07:01 18:27	06:49 20:21	05:48 21:12	05:13 21:51
11	08:38 16:43	14:35 (WEA 1) 15:23 (WEA 1)	07:58 17:38	14:43 (WEA 1) 15:30 (WEA 1)	06:59 18:29	06:47 20:22	05:47 21:13	05:13 21:52
12	08:38 16:45	14:34 (WEA 1) 15:23 (WEA 1)	07:56 17:40	14:44 (WEA 1) 15:29 (WEA 1)	06:56 18:31	06:45 20:24	05:45 21:15	05:13 21:53
13	08:37 16:46	14:34 (WEA 1) 15:24 (WEA 1)	07:54 17:41	14:46 (WEA 1) 15:28 (WEA 1)	06:54 18:32	06:43 20:26	05:43 21:16	05:12 21:54
14	08:36 16:48	14:34 (WEA 1) 15:25 (WEA 1)	07:52 17:43	14:47 (WEA 1) 15:27 (WEA 1)	06:52 18:34	06:40 20:28	05:42 21:18	05:12 21:54
15	08:35 16:50	14:34 (WEA 1) 15:25 (WEA 1)	07:50 17:45	14:49 (WEA 1) 15:25 (WEA 1)	06:49 18:36	06:38 20:29	05:40 21:19	05:12 21:55
16	08:34 16:51	14:34 (WEA 1) 15:26 (WEA 1)	07:48 17:47	14:51 (WEA 1) 15:24 (WEA 1)	06:47 18:38	06:36 20:31	05:39 21:21	05:12 21:55
17	08:34 16:53	14:34 (WEA 1) 15:27 (WEA 1)	07:46 17:49	14:53 (WEA 1) 15:20 (WEA 1)	06:45 18:39	06:34 20:33	05:37 21:23	05:12 21:56
18	08:33 16:54	14:34 (WEA 1) 15:28 (WEA 1)	07:44 17:51	14:56 (WEA 1) 15:17 (WEA 1)	06:42 18:41	06:32 20:34	05:36 21:24	05:12 21:56
19	08:32 16:56	14:34 (WEA 1) 15:29 (WEA 1)	07:42 17:53	15:02 (WEA 1) 15:12 (WEA 1)	06:40 18:43	06:29 20:36	05:34 21:26	05:12 21:56
20	08:30 16:58	14:35 (WEA 1) 15:30 (WEA 1)	07:40 17:54		06:38 18:45	06:27 20:38	05:33 21:27	05:12 21:57
21	08:29 16:59	14:34 (WEA 1) 15:30 (WEA 1)	07:38 17:56		06:35 18:46	06:25 20:40	05:31 21:28	05:12 21:57
22	08:28 17:01	14:34 (WEA 1) 15:30 (WEA 1)	07:36 17:58		06:33 18:48	06:23 20:41	05:30 21:30	05:12 21:57
23	08:27 17:03	14:35 (WEA 1) 15:31 (WEA 1)	07:34 18:00		06:31 18:50	06:21 20:43	05:29 21:31	05:12 21:57
24	08:26 17:05	14:34 (WEA 1) 15:31 (WEA 1)	07:32 18:02		06:28 18:52	06:19 20:45	05:28 21:33	05:13 21:58
25	08:25 17:06	14:35 (WEA 1) 15:32 (WEA 1)	07:30 18:04		06:26 18:53	06:17 20:46	05:26 21:34	05:13 21:58
26	08:23 17:08	14:35 (WEA 1) 15:33 (WEA 1)	07:27 18:06		06:24 18:55	06:15 20:48	05:25 21:35	05:13 21:58
27	08:22 17:10	14:35 (WEA 1) 15:33 (WEA 1)	07:25 18:07		06:22 18:57	06:13 20:50	05:24 21:37	05:14 21:58
28	08:21 17:12	14:35 (WEA 1) 15:33 (WEA 1)	07:23 18:09		06:19 18:58	06:11 20:52	05:23 21:38	05:14 21:57
29	08:19 17:14	14:35 (WEA 1) 15:33 (WEA 1)			07:17 20:00	06:09 20:53	05:22 21:39	05:15 21:57
30	08:18 17:15	14:35 (WEA 1) 15:33 (WEA 1)			07:15 20:02	06:07 20:55	05:21 21:40	05:15 21:57
31	08:16 17:17	14:36 (WEA 1) 15:34 (WEA 1)			07:12 20:04		05:20 21:42	
Sonnenscheinstunden	258		277		367	416	486	500
astr.max.mögl.Beschattung	1576		844					

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 13-SO - IP 13-SO
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung

Die Windenergieanlage/n ist/sind immer in Betrieb

	July	August	September	Oktober		November		Dezember			
1	05:16 21:57	05:53 21:25	06:43 20:22	07:32 19:12		07:26 17:06	49	14:11 (WEA 1) 15:00 (WEA 1)	08:18 16:25	48	14:17 (WEA 1) 15:05 (WEA 1)
2	05:17 21:56	05:54 21:23	06:45 20:20	07:34 19:10		07:28 17:04	51	14:10 (WEA 1) 15:01 (WEA 1)	08:19 16:25	47	14:18 (WEA 1) 15:05 (WEA 1)
3	05:18 21:56	05:56 21:21	06:46 20:18	07:36 19:08		07:30 17:02	52	14:09 (WEA 1) 15:01 (WEA 1)	08:21 16:24	46	14:18 (WEA 1) 15:04 (WEA 1)
4	05:18 21:56	05:58 21:20	06:48 20:15	07:37 19:06		07:32 17:01	54	14:08 (WEA 1) 15:02 (WEA 1)	08:22 16:23	45	14:20 (WEA 1) 15:05 (WEA 1)
5	05:19 21:55	05:59 21:18	06:49 20:13	07:39 19:03		07:34 16:59	55	14:08 (WEA 1) 15:03 (WEA 1)	08:23 16:23	44	14:20 (WEA 1) 15:04 (WEA 1)
6	05:20 21:55	06:01 21:16	06:51 20:11	07:41 19:01		07:35 16:57	55	14:08 (WEA 1) 15:03 (WEA 1)	08:25 16:22	43	14:21 (WEA 1) 15:04 (WEA 1)
7	05:21 21:54	06:02 21:14	06:53 20:09	07:42 18:59		07:37 16:55	57	14:07 (WEA 1) 15:04 (WEA 1)	08:26 16:22	43	14:22 (WEA 1) 15:05 (WEA 1)
8	05:22 21:53	06:04 21:12	06:54 20:06	07:44 18:56		07:39 16:54	57	14:07 (WEA 1) 15:04 (WEA 1)	08:27 16:22	41	14:23 (WEA 1) 15:04 (WEA 1)
9	05:23 21:53	06:05 21:11	06:56 20:04	07:46 18:54		07:41 16:52	57	14:07 (WEA 1) 15:04 (WEA 1)	08:28 16:21	40	14:24 (WEA 1) 15:04 (WEA 1)
10	05:24 21:52	06:07 21:09	06:58 20:02	07:48 18:52		07:43 16:50	58	14:07 (WEA 1) 15:05 (WEA 1)	08:29 16:21	40	14:24 (WEA 1) 15:04 (WEA 1)
11	05:25 21:51	06:09 21:07	06:59 19:59	07:49 18:50		07:44 16:49	58	14:07 (WEA 1) 15:05 (WEA 1)	08:30 16:21	39	14:25 (WEA 1) 15:04 (WEA 1)
12	05:26 21:50	06:10 21:05	07:01 19:57	07:51 18:47		07:46 16:47	58	14:07 (WEA 1) 15:05 (WEA 1)	08:31 16:21	38	14:27 (WEA 1) 15:05 (WEA 1)
13	05:27 21:49	06:12 21:03	07:03 19:55	07:53 18:45		07:48 16:46	58	14:07 (WEA 1) 15:05 (WEA 1)	08:33 16:21	38	14:27 (WEA 1) 15:05 (WEA 1)
14	05:28 21:49	06:14 21:01	07:04 19:52	07:54 18:43		07:50 16:44	58	14:07 (WEA 1) 15:05 (WEA 1)	08:33 16:21	37	14:28 (WEA 1) 15:05 (WEA 1)
15	05:29 21:48	06:15 20:59	07:06 19:50	07:56 18:41		07:52 16:43	58	14:08 (WEA 1) 15:06 (WEA 1)	08:34 16:21	36	14:28 (WEA 1) 15:04 (WEA 1)
16	05:30 21:47	06:17 20:57	07:07 19:48	07:58 18:39		07:53 16:41	58	14:08 (WEA 1) 15:06 (WEA 1)	08:35 16:21	35	14:29 (WEA 1) 15:04 (WEA 1)
17	05:32 21:45	06:18 20:55	07:09 19:45	08:00 18:36		07:55 16:40	57	14:09 (WEA 1) 15:06 (WEA 1)	08:36 16:21	35	14:30 (WEA 1) 15:05 (WEA 1)
18	05:33 21:44	06:20 20:53	07:11 19:43	08:01 18:34		07:57 16:39	57	14:08 (WEA 1) 15:05 (WEA 1)	08:37 16:21	34	14:31 (WEA 1) 15:05 (WEA 1)
19	05:34 21:43	06:22 20:51	07:12 19:41	08:03 18:32		07:58 16:37	56	14:09 (WEA 1) 15:05 (WEA 1)	08:38 16:22	34	14:31 (WEA 1) 15:05 (WEA 1)
20	05:36 21:42	06:23 20:49	07:14 19:38	08:05 18:30		08:00 16:36	56	14:09 (WEA 1) 15:05 (WEA 1)	08:38 16:22	34	14:32 (WEA 1) 15:06 (WEA 1)
21	05:37 21:41	06:25 20:46	07:16 19:36	08:07 18:28		08:02 16:35	56	14:10 (WEA 1) 15:06 (WEA 1)	08:39 16:23	34	14:33 (WEA 1) 15:07 (WEA 1)
22	05:38 21:40	06:27 20:44	07:17 19:34	08:08 18:26		08:04 16:34	55	14:11 (WEA 1) 15:06 (WEA 1)	08:39 16:23	34	14:33 (WEA 1) 15:07 (WEA 1)
23	05:40 21:38	06:28 20:42	07:19 19:31	08:10 18:24	15:30 (WEA 1)	08:05 16:33	55	14:11 (WEA 1) 15:06 (WEA 1)	08:40 16:23	34	14:34 (WEA 1) 15:08 (WEA 1)
24	05:41 21:37	06:30 20:40	07:21 19:29	08:12 18:22	15:26 (WEA 1)	08:07 16:31	54	14:11 (WEA 1) 15:05 (WEA 1)	08:40 16:24	34	14:34 (WEA 1) 15:08 (WEA 1)
25	05:42 21:35	06:31 20:38	07:22 19:26	08:14 17:20	14:23 (WEA 1)	08:08 16:30	53	14:12 (WEA 1) 15:05 (WEA 1)	08:41 16:25	34	14:34 (WEA 1) 15:08 (WEA 1)
26	05:44 21:34	06:33 20:36	07:24 19:24	08:16 17:18	14:51 (WEA 1)	08:10 16:29	53	14:13 (WEA 1) 15:05 (WEA 1)	08:41 16:25	35	14:34 (WEA 1) 15:09 (WEA 1)
27	05:45 21:33	06:35 20:33	07:26 19:22	08:17 17:16	14:18 (WEA 1)	08:12 16:29	52	14:14 (WEA 1) 15:06 (WEA 1)	08:41 16:26	35	14:35 (WEA 1) 15:10 (WEA 1)
28	05:47 21:31	06:36 20:31	07:27 19:19	08:19 17:14	14:55 (WEA 1)	08:13 16:28	51	14:16 (WEA 1) 15:05 (WEA 1)	08:41 16:27	36	14:35 (WEA 1) 15:11 (WEA 1)
29	05:48 21:29	06:38 20:29	07:29 19:17	08:21 17:12	14:15 (WEA 1)	08:15 16:27	50	14:15 (WEA 1) 15:05 (WEA 1)	08:42 16:28	37	14:35 (WEA 1) 15:12 (WEA 1)
30	05:50 21:28	06:40 20:27	07:31 19:15	08:23 17:10	14:58 (WEA 1)	08:16 16:26	48	14:16 (WEA 1) 15:04 (WEA 1)	08:42 16:29	37	14:35 (WEA 1) 15:12 (WEA 1)
31	05:51 21:26	06:41 20:25	07:32 19:15	08:25 17:08	14:12 (WEA 1)	08:17 14:59 (WEA 1)	47	14:16 (WEA 1) 15:04 (WEA 1)	08:42 16:30	37	14:35 (WEA 1) 15:12 (WEA 1)
Sonnenscheinstunden	503	454	381	331		266			243		
astr.max.mögl.Beschattung					311		1645				1184

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM)	Schattenanfang (WEA mit erstem Schatten)	Schattenende (WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 13-SW - IP 13-SW
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni		
1	08:42 16:31	14:31 (WEA 1) 15:12 (WEA 1)	08:15 17:19	14:34 (WEA 1) 15:31 (WEA 1)	07:21 18:11	07:10 20:05	06:05 20:57	05:19 21:43
2	08:42 16:32	14:32 (WEA 1) 15:13 (WEA 1)	08:13 17:21	14:34 (WEA 1) 15:31 (WEA 1)	07:19 18:13	07:08 20:07	06:03 20:58	05:18 21:44
3	08:41 16:33	14:32 (WEA 1) 15:14 (WEA 1)	08:11 17:23	14:34 (WEA 1) 15:31 (WEA 1)	07:17 18:15	07:05 20:09	06:01 21:00	05:18 21:45
4	08:41 16:34	14:31 (WEA 1) 15:15 (WEA 1)	08:10 17:25	14:35 (WEA 1) 15:31 (WEA 1)	07:14 18:16	07:03 20:10	05:59 21:02	05:17 21:46
5	08:41 16:35	14:32 (WEA 1) 15:16 (WEA 1)	08:08 17:26	14:36 (WEA 1) 15:31 (WEA 1)	07:12 18:18	07:01 20:12	05:57 21:03	05:16 21:47
6	08:41 16:37	14:31 (WEA 1) 15:16 (WEA 1)	08:06 17:28	14:36 (WEA 1) 15:30 (WEA 1)	07:10 18:20	06:58 20:14	05:55 21:05	05:15 21:48
7	08:40 16:38	14:32 (WEA 1) 15:18 (WEA 1)	08:05 17:30	14:37 (WEA 1) 15:30 (WEA 1)	07:08 18:22	06:56 20:16	05:54 21:07	05:15 21:49
8	08:40 16:39	14:31 (WEA 1) 15:18 (WEA 1)	08:03 17:32	14:37 (WEA 1) 15:29 (WEA 1)	07:05 18:24	06:54 20:17	05:52 21:08	05:14 21:50
9	08:39 16:41	14:32 (WEA 1) 15:20 (WEA 1)	08:01 17:34	14:38 (WEA 1) 15:28 (WEA 1)	07:03 18:25	06:52 20:19	05:50 21:10	05:14 21:51
10	08:39 16:42	14:32 (WEA 1) 15:20 (WEA 1)	07:59 17:36	14:40 (WEA 1) 15:29 (WEA 1)	07:01 18:27	06:49 20:21	05:48 21:12	05:13 21:51
11	08:38 16:43	14:31 (WEA 1) 15:21 (WEA 1)	07:58 17:38	14:41 (WEA 1) 15:28 (WEA 1)	06:59 18:29	06:47 20:22	05:47 21:13	05:13 21:52
12	08:38 16:45	14:31 (WEA 1) 15:21 (WEA 1)	07:56 17:40	14:42 (WEA 1) 15:27 (WEA 1)	06:56 18:31	06:45 20:24	05:45 21:15	05:13 21:53
13	08:37 16:46	14:31 (WEA 1) 15:22 (WEA 1)	07:54 17:41	14:44 (WEA 1) 15:25 (WEA 1)	06:54 18:32	06:43 20:26	05:43 21:16	05:12 21:54
14	08:36 16:48	14:31 (WEA 1) 15:23 (WEA 1)	07:52 17:43	14:46 (WEA 1) 15:24 (WEA 1)	06:52 18:34	06:40 20:28	05:42 21:18	05:12 21:54
15	08:35 16:50	14:31 (WEA 1) 15:24 (WEA 1)	07:50 17:45	14:48 (WEA 1) 15:22 (WEA 1)	06:49 18:36	06:38 20:29	05:40 21:19	05:12 21:55
16	08:34 16:51	14:31 (WEA 1) 15:24 (WEA 1)	07:48 17:47	14:50 (WEA 1) 15:20 (WEA 1)	06:47 18:38	06:36 20:31	05:39 21:21	05:12 21:55
17	08:34 16:53	14:31 (WEA 1) 15:25 (WEA 1)	07:46 17:49	14:52 (WEA 1) 15:17 (WEA 1)	06:45 18:39	06:34 20:33	05:37 21:23	05:12 21:56
18	08:33 16:54	14:31 (WEA 1) 15:26 (WEA 1)	07:44 17:51	14:56 (WEA 1) 15:13 (WEA 1)	06:42 18:41	06:32 20:34	05:36 21:24	05:12 21:56
19	08:32 16:56	14:31 (WEA 1) 15:27 (WEA 1)	07:42 17:53	14:56 (WEA 1) 15:13 (WEA 1)	06:40 18:41	06:29 20:36	05:34 21:26	05:12 21:56
20	08:30 16:58	14:32 (WEA 1) 15:28 (WEA 1)	07:40 17:54	14:56 (WEA 1) 15:13 (WEA 1)	06:38 18:43	06:27 20:38	05:33 21:27	05:12 21:57
21	08:29 16:59	14:31 (WEA 1) 15:27 (WEA 1)	07:38 17:56	14:56 (WEA 1) 15:13 (WEA 1)	06:35 18:46	06:25 20:40	05:31 21:28	05:12 21:57
22	08:28 17:01	14:31 (WEA 1) 15:28 (WEA 1)	07:36 17:58	14:56 (WEA 1) 15:13 (WEA 1)	06:33 18:48	06:23 20:41	05:30 21:30	05:12 21:57
23	08:27 17:03	14:32 (WEA 1) 15:29 (WEA 1)	07:34 18:00	14:56 (WEA 1) 15:13 (WEA 1)	06:31 18:50	06:21 20:43	05:29 21:31	05:12 21:57
24	08:26 17:05	14:31 (WEA 1) 15:29 (WEA 1)	07:32 18:02	14:56 (WEA 1) 15:13 (WEA 1)	06:28 18:52	06:19 20:45	05:28 21:33	05:13 21:58
25	08:25 17:06	14:32 (WEA 1) 15:30 (WEA 1)	07:30 18:04	14:56 (WEA 1) 15:13 (WEA 1)	06:26 18:53	06:17 20:46	05:26 21:34	05:13 21:58
26	08:23 17:08	14:32 (WEA 1) 15:31 (WEA 1)	07:27 18:06	14:56 (WEA 1) 15:13 (WEA 1)	06:24 18:55	06:15 20:48	05:25 21:35	05:13 21:58
27	08:22 17:10	14:32 (WEA 1) 15:31 (WEA 1)	07:25 18:07	14:56 (WEA 1) 15:13 (WEA 1)	06:22 18:57	06:13 20:50	05:24 21:37	05:14 21:58
28	08:21 17:12	14:32 (WEA 1) 15:30 (WEA 1)	07:23 18:09	14:56 (WEA 1) 15:13 (WEA 1)	06:19 18:58	06:11 20:52	05:23 21:38	05:14 21:57
29	08:19 17:14	14:33 (WEA 1) 15:31 (WEA 1)	18:09	14:56 (WEA 1) 15:13 (WEA 1)	07:17 20:00	06:09 20:53	05:22 21:39	05:15 21:57
30	08:18 17:15	14:33 (WEA 1) 15:31 (WEA 1)	18:09	14:56 (WEA 1) 15:13 (WEA 1)	07:15 20:02	06:07 20:55	05:21 21:40	05:15 21:57
31	08:16 17:17	14:34 (WEA 1) 15:32 (WEA 1)	18:09	14:56 (WEA 1) 15:13 (WEA 1)	07:12 20:04	06:05 20:57	05:20 21:42	05:15 21:57
Sonnenscheinstunden	258							
astr.max.mögl.Beschattung	1612	277	817	367	416	486	500	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 13-SW - IP 13-SW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	July	August	September	Oktober		November		Dezember		
1	05:16 21:57	05:53 21:25	06:43 20:22	07:32 19:12		07:26 17:06	48	14:09 (WEA 1) 16:25	08:18 15:03	14:14 (WEA 1) 15:03 (WEA 1)
2	05:17 21:56	05:54 21:23	06:45 20:20	07:34 19:10		07:28 17:04	50	14:08 (WEA 1) 14:58 (WEA 1)	08:19 16:25	14:15 (WEA 1) 15:03 (WEA 1)
3	05:18 21:56	05:56 21:21	06:46 20:18	07:36 19:08		07:30 17:02	52	14:07 (WEA 1) 14:59 (WEA 1)	08:21 16:24	14:15 (WEA 1) 15:03 (WEA 1)
4	05:18 21:56	05:58 21:20	06:48 20:15	07:37 19:06		07:32 17:01	54	14:06 (WEA 1) 15:00 (WEA 1)	08:22 16:23	14:16 (WEA 1) 15:03 (WEA 1)
5	05:19 21:55	05:59 21:18	06:49 20:13	07:39 19:03		07:34 16:59	54	14:06 (WEA 1) 15:00 (WEA 1)	08:23 16:23	14:17 (WEA 1) 15:03 (WEA 1)
6	05:20 21:55	06:01 21:16	06:51 20:11	07:41 19:01		07:35 16:57	56	14:05 (WEA 1) 15:01 (WEA 1)	08:25 16:22	14:17 (WEA 1) 15:02 (WEA 1)
7	05:21 21:54	06:02 21:14	06:53 20:09	07:42 18:59		07:37 16:55	56	14:05 (WEA 1) 15:01 (WEA 1)	08:26 16:22	14:19 (WEA 1) 15:03 (WEA 1)
8	05:22 21:53	06:04 21:12	06:54 20:06	07:44 18:56		07:39 16:54	57	14:05 (WEA 1) 15:02 (WEA 1)	08:27 16:22	14:19 (WEA 1) 15:03 (WEA 1)
9	05:23 21:53	06:05 21:11	06:56 20:04	07:46 18:54		07:41 16:52	57	14:05 (WEA 1) 15:02 (WEA 1)	08:28 16:21	14:20 (WEA 1) 15:02 (WEA 1)
10	05:24 21:52	06:07 21:09	06:58 20:02	07:48 18:52		07:43 16:50	58	14:04 (WEA 1) 15:02 (WEA 1)	08:29 16:21	14:21 (WEA 1) 15:02 (WEA 1)
11	05:25 21:51	06:09 21:07	06:59 19:59	07:49 18:50		07:44 16:49	59	14:04 (WEA 1) 15:03 (WEA 1)	08:30 16:21	14:21 (WEA 1) 15:02 (WEA 1)
12	05:26 21:50	06:10 21:05	07:01 19:57	07:51 18:47		07:46 16:47	59	14:04 (WEA 1) 15:03 (WEA 1)	08:32 16:21	14:23 (WEA 1) 15:03 (WEA 1)
13	05:27 21:49	06:12 21:03	07:03 19:55	07:53 18:45		07:48 16:46	58	14:05 (WEA 1) 15:03 (WEA 1)	08:33 16:21	14:24 (WEA 1) 15:03 (WEA 1)
14	05:28 21:49	06:14 21:01	07:04 19:52	07:54 18:43		07:50 16:44	58	14:05 (WEA 1) 15:03 (WEA 1)	08:33 16:21	14:25 (WEA 1) 15:03 (WEA 1)
15	05:29 21:48	06:15 20:59	07:06 19:50	07:56 18:41		07:52 16:43	58	14:05 (WEA 1) 15:03 (WEA 1)	08:34 16:21	14:24 (WEA 1) 15:03 (WEA 1)
16	05:30 21:47	06:17 20:57	07:07 19:48	07:58 18:39		07:53 16:41	59	14:05 (WEA 1) 15:04 (WEA 1)	08:35 16:21	14:25 (WEA 1) 15:03 (WEA 1)
17	05:32 21:45	06:18 20:55	07:09 19:45	08:00 18:36		07:55 16:40	58	14:06 (WEA 1) 15:04 (WEA 1)	08:36 16:21	14:26 (WEA 1) 15:04 (WEA 1)
18	05:33 21:44	06:20 20:53	07:11 19:43	08:01 18:34		07:57 16:39	58	14:05 (WEA 1) 15:03 (WEA 1)	08:37 16:21	14:27 (WEA 1) 15:04 (WEA 1)
19	05:34 21:43	06:22 20:51	07:12 19:41	08:03 18:32		07:58 16:37	57	14:06 (WEA 1) 15:03 (WEA 1)	08:38 16:22	14:27 (WEA 1) 15:04 (WEA 1)
20	05:36 21:42	06:23 20:49	07:14 19:38	08:05 18:30		08:00 16:36	57	14:06 (WEA 1) 15:03 (WEA 1)	08:38 16:22	14:28 (WEA 1) 15:05 (WEA 1)
21	05:37 21:41	06:25 20:46	07:16 19:36	08:07 18:28		08:02 16:35	56	14:07 (WEA 1) 15:03 (WEA 1)	08:39 16:23	14:29 (WEA 1) 15:05 (WEA 1)
22	05:38 21:40	06:27 20:44	07:17 19:34	08:08 18:26		08:04 16:34	56	14:08 (WEA 1) 15:04 (WEA 1)	08:39 16:23	14:29 (WEA 1) 15:05 (WEA 1)
23	05:40 21:38	06:28 20:42	07:19 19:31	08:10 18:24	15:32 (WEA 1)	08:05 16:33	56	14:08 (WEA 1) 15:04 (WEA 1)	08:40 16:23	14:30 (WEA 1) 15:06 (WEA 1)
24	05:41 21:37	06:30 20:40	07:21 19:29	08:12 18:22	7 15:39 (WEA 1) 20 15:45 (WEA 1)	08:07 16:31	55	14:08 (WEA 1) 15:03 (WEA 1)	08:40 16:24	14:30 (WEA 1) 15:07 (WEA 1)
25	05:42 21:35	06:31 20:38	07:22 19:26	08:14 17:20	14:22 (WEA 1) 26 14:48 (WEA 1)	08:08 16:30	54	14:09 (WEA 1) 15:03 (WEA 1)	08:41 16:25	14:30 (WEA 1) 15:07 (WEA 1)
26	05:44 21:34	06:33 20:36	07:24 19:24	08:16 17:18	14:19 (WEA 1) 31 14:50 (WEA 1)	08:10 16:29	53	14:10 (WEA 1) 15:03 (WEA 1)	08:41 16:25	14:30 (WEA 1) 15:07 (WEA 1)
27	05:45 21:33	06:35 20:33	07:26 19:22	08:17 17:16	14:17 (WEA 1) 35 14:52 (WEA 1)	08:12 16:29	53	14:11 (WEA 1) 15:04 (WEA 1)	08:41 16:26	14:31 (WEA 1) 15:09 (WEA 1)
28	05:47 21:31	06:36 20:31	07:27 19:19	08:19 17:14	14:15 (WEA 1) 39 14:54 (WEA 1)	08:13 16:28	52	14:11 (WEA 1) 15:03 (WEA 1)	08:41 16:27	14:31 (WEA 1) 15:09 (WEA 1)
29	05:48 21:29	06:38 20:29	07:29 19:17	08:21 17:12	14:13 (WEA 1) 42 14:55 (WEA 1)	08:15 16:27	51	14:12 (WEA 1) 15:03 (WEA 1)	08:42 16:28	14:32 (WEA 1) 15:10 (WEA 1)
30	05:50 21:28	06:40 20:27	07:31 19:15	08:23 17:10	14:11 (WEA 1) 44 14:55 (WEA 1)	08:16 16:26	51	14:12 (WEA 1) 15:03 (WEA 1)	08:42 16:29	14:32 (WEA 1) 15:11 (WEA 1)
31	05:51 21:26	06:41 20:25	07:32 19:15	08:25 17:08	14:10 (WEA 1) 46 14:56 (WEA 1)	08:17 16:25	51	15:03 (WEA 1) 16:30	08:42 16:30	14:31 (WEA 1) 15:11 (WEA 1)
Sonnenscheinstunden	503	454	381	331		266		243		
astr.max.mögl.Beschattung				290		1660		1250		

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM)	Schattenanfang (WEA mit erstem Schatten)	Schattenende (WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 14-SO - IP 14-SO
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni	
1	08:42 16:31	08:15 17:19	14:55 (WEA 1) 17:19	07:21 18:11	07:10 20:05	06:05 20:57	05:19 21:43
2	08:42 16:32	08:13 17:21	14:54 (WEA 1) 17:21	07:19 18:13	07:08 20:07	06:03 20:58	05:18 21:44
3	08:41 16:33	08:11 17:23	14:54 (WEA 1) 17:23	07:17 18:15	07:05 20:09	06:01 21:00	05:18 21:45
4	08:41 16:34	08:10 17:25	14:55 (WEA 1) 17:25	07:14 18:16	07:03 20:10	05:59 21:02	05:17 21:46
5	08:41 16:35	15:11 (WEA 1) 17:26	14:55 (WEA 1) 17:26	07:12 18:18	07:01 20:12	05:57 21:03	05:16 21:47
6	08:41 16:37	15:08 (WEA 1) 17:28	14:55 (WEA 1) 17:28	07:10 18:20	06:58 20:14	05:55 21:05	05:15 21:48
7	08:40 16:38	15:07 (WEA 1) 17:30	14:55 (WEA 1) 17:30	07:08 18:22	06:56 20:16	05:54 21:07	05:15 21:49
8	08:40 16:39	15:06 (WEA 1) 17:32	14:55 (WEA 1) 17:32	07:05 18:24	06:54 20:17	05:52 21:08	05:14 21:50
9	08:39 16:41	15:05 (WEA 1) 17:34	14:55 (WEA 1) 17:34	07:03 18:25	06:52 20:19	05:50 21:10	05:14 21:51
10	08:39 16:42	15:04 (WEA 1) 17:36	14:57 (WEA 1) 17:36	07:01 18:27	06:49 20:21	05:48 21:12	05:13 21:51
11	08:38 16:43	15:03 (WEA 1) 17:38	14:57 (WEA 1) 17:38	06:59 18:29	06:47 20:22	05:47 21:13	05:13 21:52
12	08:38 16:45	15:02 (WEA 1) 17:40	14:57 (WEA 1) 17:40	06:56 18:31	06:45 20:24	05:45 21:15	05:13 21:53
13	08:37 16:46	15:01 (WEA 1) 17:41	14:58 (WEA 1) 17:41	06:54 18:32	06:43 20:26	05:43 21:16	05:12 21:54
14	08:36 16:48	15:00 (WEA 1) 17:43	14:59 (WEA 1) 17:43	06:52 18:34	06:40 20:28	05:42 21:18	05:12 21:54
15	08:35 16:50	15:00 (WEA 1) 17:45	14:59 (WEA 1) 17:45	06:49 18:36	06:38 20:29	05:40 21:19	05:12 21:55
16	08:34 16:51	14:59 (WEA 1) 17:47	15:00 (WEA 1) 17:47	06:47 18:38	06:36 20:31	05:39 21:21	05:12 21:55
17	08:34 16:53	14:59 (WEA 1) 17:49	15:00 (WEA 1) 17:49	06:45 18:39	06:34 20:33	05:37 21:23	05:12 21:56
18	08:33 16:54	14:58 (WEA 1) 17:51	15:02 (WEA 1) 17:51	06:42 18:41	06:32 20:34	05:36 21:24	05:12 21:56
19	08:32 16:56	14:58 (WEA 1) 17:53	15:03 (WEA 1) 17:53	06:40 18:43	06:29 20:36	05:34 21:26	05:12 21:56
20	08:30 16:58	14:58 (WEA 1) 17:54	15:05 (WEA 1) 17:54	06:38 18:45	06:27 20:38	05:33 21:27	05:12 21:57
21	08:29 16:59	14:57 (WEA 1) 17:56	15:07 (WEA 1) 17:56	06:35 18:46	06:25 20:40	05:31 21:28	05:12 21:57
22	08:28 17:01	14:57 (WEA 1) 17:58	15:09 (WEA 1) 17:58	06:33 18:48	06:23 20:41	05:30 21:30	05:12 21:57
23	08:27 17:03	14:57 (WEA 1) 18:00	15:11 (WEA 1) 18:00	06:31 18:50	06:21 20:43	05:29 21:31	05:12 21:57
24	08:26 17:05	14:56 (WEA 1) 18:02	15:15 (WEA 1) 18:02	06:28 18:52	06:19 20:45	05:28 21:33	05:13 21:58
25	08:25 17:06	14:56 (WEA 1) 18:04	15:19 (WEA 1) 18:04	06:26 18:53	06:17 20:46	05:26 21:34	05:13 21:58
26	08:23 17:08	14:56 (WEA 1) 18:06	15:31 (WEA 1) 18:06	06:24 18:55	06:15 20:48	05:25 21:35	05:13 21:58
27	08:22 17:10	14:55 (WEA 1) 18:07	06:22 18:57	06:13 20:50	06:13 21:37	05:24 21:57	05:14 21:58
28	08:21 17:12	14:55 (WEA 1) 18:09	06:19 18:58	06:11 20:52	06:11 21:38	05:23 21:57	05:14 21:57
29	08:19 17:14	14:55 (WEA 1) 18:10	06:17 19:00	06:09 20:53	06:09 21:39	05:22 21:57	05:15 21:57
30	08:18 17:15	14:55 (WEA 1) 18:11	06:15 19:02	06:07 20:55	06:07 21:40	05:21 21:57	05:15 21:57
31	08:16 17:17	14:55 (WEA 1) 18:12	06:12 19:04	06:05 20:56	06:05 21:42	05:20 21:57	05:15 21:57
Sonnenscheinstunden	258	277	367	416	486	500	
astr.max.mögl.Beschattung	1067	1210					

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 14-SO - IP 14-SO
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung

Die Windenergieanlage/n ist/sind immer in Betrieb

	July	August	September	Oktober		November		Dezember			
1	05:16 21:57	05:53 21:25	06:43 20:22	07:32 19:12		07:26 17:06	57	14:25 (WEA 1) 15:22 (WEA 1)	08:18 16:25	29	14:45 (WEA 1) 15:14 (WEA 1)
2	05:17 21:56	05:54 21:23	06:45 20:20	07:34 19:10		07:28 17:04	57	14:25 (WEA 1) 15:22 (WEA 1)	08:19 16:25	26	14:47 (WEA 1) 15:13 (WEA 1)
3	05:18 21:56	05:56 21:21	06:46 20:18	07:36 19:08		07:30 17:02	58	14:25 (WEA 1) 15:23 (WEA 1)	08:21 16:24	24	14:48 (WEA 1) 15:12 (WEA 1)
4	05:18 21:56	05:58 21:20	06:48 20:15	07:37 19:06		07:32 17:01	58	14:25 (WEA 1) 15:23 (WEA 1)	08:22 16:23	22	14:50 (WEA 1) 15:12 (WEA 1)
5	05:19 21:55	05:59 21:18	06:49 20:13	07:39 19:03		07:34 16:59	58	14:25 (WEA 1) 15:23 (WEA 1)	08:23 16:23	18	14:52 (WEA 1) 15:10 (WEA 1)
6	05:20 21:55	06:01 21:16	06:51 20:11	07:41 19:01		07:35 16:57	58	14:25 (WEA 1) 15:23 (WEA 1)	08:25 16:22	14	14:54 (WEA 1) 15:08 (WEA 1)
7	05:21 21:54	06:02 21:14	06:53 20:09	07:42 18:59		07:37 16:55	58	14:25 (WEA 1) 15:23 (WEA 1)	08:26 16:22	9	14:58 (WEA 1) 15:07 (WEA 1)
8	05:22 21:53	06:04 21:12	06:54 20:06	07:44 18:56		07:39 16:54	58	14:25 (WEA 1) 15:23 (WEA 1)	08:27 16:22		
9	05:23 21:53	06:05 21:11	06:56 20:04	07:46 18:54		07:41 16:52	58	14:25 (WEA 1) 15:23 (WEA 1)	08:28 16:21		
10	05:24 21:52	06:07 21:09	06:58 20:02	07:48 18:52		07:43 16:50	57	14:26 (WEA 1) 15:23 (WEA 1)	08:29 16:21		
11	05:25 21:51	06:09 21:07	06:59 19:59	07:49 18:50		07:44 16:49	57	14:26 (WEA 1) 15:23 (WEA 1)	08:30 16:21		
12	05:26 21:50	06:10 21:05	07:01 19:57	07:51 18:47		07:46 16:47	57	14:26 (WEA 1) 15:23 (WEA 1)	08:31 16:21		
13	05:27 21:49	06:12 21:03	07:03 19:55	07:53 18:45		07:48 16:46	56	14:27 (WEA 1) 15:23 (WEA 1)	08:32 16:21		
14	05:28 21:49	06:14 21:01	07:04 19:52	07:54 18:43		07:50 16:44	54	14:28 (WEA 1) 15:22 (WEA 1)	08:33 16:21		
15	05:29 21:48	06:15 20:59	07:06 19:50	07:56 18:41		07:52 16:43	54	14:28 (WEA 1) 15:22 (WEA 1)	08:34 16:21		
16	05:30 21:47	06:17 20:57	07:07 19:48	07:58 18:39		07:53 16:41	53	14:29 (WEA 1) 15:22 (WEA 1)	08:35 16:21		
17	05:32 21:45	06:18 20:55	07:09 19:45	08:00 18:36	16	07:55 16:40	52	14:30 (WEA 1) 15:22 (WEA 1)	08:36 16:21		
18	05:33 21:44	06:20 20:53	07:11 19:43	08:01 18:34	24	07:57 16:39	51	14:30 (WEA 1) 15:21 (WEA 1)	08:37 16:21		
19	05:34 21:43	06:22 20:51	07:12 19:41	08:03 18:32	30	07:58 16:37	49	14:31 (WEA 1) 15:20 (WEA 1)	08:38 16:22		
20	05:36 21:42	06:23 20:49	07:14 19:38	08:05 18:30	35	08:00 16:36	48	14:32 (WEA 1) 15:20 (WEA 1)	08:38 16:22		
21	05:37 21:41	06:25 20:46	07:16 19:36	08:07 18:28	39	08:02 16:35	47	14:33 (WEA 1) 15:20 (WEA 1)	08:39 16:23		
22	05:38 21:40	06:27 20:44	07:17 19:34	08:08 18:26	41	08:04 16:34	46	14:34 (WEA 1) 15:20 (WEA 1)	08:39 16:23		
23	05:40 21:38	06:28 20:42	07:19 19:31	08:10 18:24	44	08:05 16:33	44	14:35 (WEA 1) 15:19 (WEA 1)	08:40 16:23		
24	05:41 21:37	06:30 20:40	07:21 19:29	08:12 18:22	46	08:07 16:31	43	14:35 (WEA 1) 15:18 (WEA 1)	08:40 16:24		
25	05:42 21:35	06:31 20:38	07:22 19:26	08:14 17:20	48	08:08 16:30	41	14:37 (WEA 1) 15:18 (WEA 1)	08:41 16:25		
26	05:44 21:34	06:33 20:36	07:24 19:24	08:16 17:18	50	08:10 16:29	39	14:38 (WEA 1) 15:17 (WEA 1)	08:41 16:25		
27	05:45 21:33	06:35 20:33	07:26 19:22	08:17 17:16	52	08:12 16:29	37	14:40 (WEA 1) 15:17 (WEA 1)	08:41 16:26		
28	05:47 21:31	06:36 20:31	07:27 19:19	08:19 17:14	53	08:13 16:28	36	14:40 (WEA 1) 15:16 (WEA 1)	08:41 16:27		
29	05:48 21:29	06:38 20:29	07:29 19:17	08:21 17:12	55	08:15 16:27	34	14:42 (WEA 1) 15:16 (WEA 1)	08:42 16:28		
30	05:50 21:28	06:40 20:27	07:31 19:15	08:23 17:10	55	08:16 16:26	31	14:43 (WEA 1) 15:14 (WEA 1)	08:42 16:29		
31	05:51 21:26	06:41 20:25	07:32 19:13	08:25 17:08	57	08:17 16:25		14:44 (WEA 1) 15:14 (WEA 1)	08:42 16:30		
Sonnenscheinstunden	503	454	381	331		266					243
astr.max.mögl.Beschattung					645		1506				142

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	Schattenanfang (WEA mit erstem Schatten)	Schattende (WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 14-SW - IP 14-SW
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni		
1	08:42 16:31	08:15 17:19	58	14:52 (WEA 1) 15:50 (WEA 1)	07:21 18:11	20:05 20:57	05:19 21:43	
2	08:42 16:32	08:13 17:21	59	14:51 (WEA 1) 15:50 (WEA 1)	07:19 18:13	07:08 20:07	06:03 20:58	05:18 21:44
3	08:41 16:33	15:07 (WEA 1) 17:23	59	14:51 (WEA 1) 15:50 (WEA 1)	07:17 18:15	07:05 20:09	06:01 21:00	05:18 21:45
4	08:41 16:34	15:04 (WEA 1) 17:25	59	14:52 (WEA 1) 15:51 (WEA 1)	07:14 18:16	07:03 20:10	05:59 21:02	05:17 21:46
5	08:41 16:35	15:04 (WEA 1) 17:26	59	14:52 (WEA 1) 15:51 (WEA 1)	07:12 18:18	07:01 20:12	05:57 21:03	05:16 21:47
6	08:41 16:37	15:02 (WEA 1) 17:28	59	14:52 (WEA 1) 15:51 (WEA 1)	07:10 18:20	06:58 20:14	05:55 21:05	05:15 21:48
7	08:40 16:38	15:02 (WEA 1) 17:30	59	14:52 (WEA 1) 15:51 (WEA 1)	07:08 18:22	06:56 20:16	05:54 21:07	05:15 21:49
8	08:40 16:39	15:00 (WEA 1) 17:32	58	14:52 (WEA 1) 15:50 (WEA 1)	07:05 18:24	06:54 20:17	05:52 21:08	05:14 21:50
9	08:39 16:41	15:00 (WEA 1) 17:34	58	14:52 (WEA 1) 15:50 (WEA 1)	07:03 18:25	06:52 20:19	05:50 21:10	05:14 21:51
10	08:39 16:42	14:59 (WEA 1) 17:36	57	14:54 (WEA 1) 15:51 (WEA 1)	07:01 18:27	06:49 20:21	05:48 21:12	05:13 21:51
11	08:38 16:43	14:58 (WEA 1) 17:38	57	14:54 (WEA 1) 15:51 (WEA 1)	06:59 18:29	06:47 20:22	05:47 21:13	05:13 21:52
12	08:38 16:45	14:58 (WEA 1) 17:40	55	14:55 (WEA 1) 15:50 (WEA 1)	06:56 18:31	06:45 20:24	05:45 21:15	05:13 21:53
13	08:37 16:46	14:57 (WEA 1) 17:41	55	14:55 (WEA 1) 15:50 (WEA 1)	06:54 18:32	06:43 20:26	05:43 21:16	05:12 21:54
14	08:36 16:48	14:56 (WEA 1) 17:43	53	14:56 (WEA 1) 15:49 (WEA 1)	06:52 18:34	06:40 20:28	05:42 21:18	05:12 21:54
15	08:35 16:50	14:56 (WEA 1) 17:45	52	14:57 (WEA 1) 15:49 (WEA 1)	06:49 18:36	06:38 20:29	05:40 21:19	05:12 21:55
16	08:34 16:51	14:55 (WEA 1) 17:47	50	14:58 (WEA 1) 15:48 (WEA 1)	06:47 18:38	06:36 20:31	05:39 21:21	05:12 21:55
17	08:34 16:53	14:55 (WEA 1) 17:49	48	14:58 (WEA 1) 15:46 (WEA 1)	06:45 18:39	06:34 20:33	05:37 21:23	05:12 21:56
18	08:33 16:54	14:55 (WEA 1) 17:51	46	14:59 (WEA 1) 15:45 (WEA 1)	06:42 18:41	06:32 20:34	05:36 21:24	05:12 21:56
19	08:32 16:56	14:54 (WEA 1) 17:53	43	15:01 (WEA 1) 15:44 (WEA 1)	06:40 18:43	06:29 20:36	05:34 21:26	05:12 21:56
20	08:30 16:58	14:54 (WEA 1) 17:54	39	15:03 (WEA 1) 15:42 (WEA 1)	06:38 18:45	06:27 20:38	05:33 21:27	05:12 21:57
21	08:29 16:59	14:53 (WEA 1) 17:56	36	15:05 (WEA 1) 15:41 (WEA 1)	06:35 18:46	06:25 20:40	05:31 21:28	05:12 21:57
22	08:28 17:01	14:53 (WEA 1) 17:58	32	15:07 (WEA 1) 15:39 (WEA 1)	06:33 18:48	06:23 20:41	05:30 21:30	05:12 21:57
23	08:27 17:03	14:53 (WEA 1) 18:00	26	15:10 (WEA 1) 15:36 (WEA 1)	06:31 18:50	06:21 20:43	05:29 21:31	05:12 21:57
24	08:26 17:05	14:52 (WEA 1) 18:02	19	15:14 (WEA 1) 15:33 (WEA 1)	06:28 18:52	06:19 20:45	05:28 21:33	05:13 21:58
25	08:25 17:06	14:52 (WEA 1) 18:04	4	15:21 (WEA 1) 15:25 (WEA 1)	06:26 18:53	06:17 20:46	05:26 21:34	05:13 21:58
26	08:23 17:08	14:53 (WEA 1) 18:06			06:24 18:55	06:15 20:48	05:25 21:35	05:13 21:58
27	08:22 17:10	14:52 (WEA 1) 18:07			06:22 18:57	06:13 20:50	05:24 21:37	05:14 21:58
28	08:21 17:12	14:51 (WEA 1) 18:09			06:19 18:58	06:11 20:52	05:23 21:38	05:14 21:57
29	08:19 17:14	14:52 (WEA 1) 18:09			07:17 20:00	06:09 20:53	05:22 21:39	05:15 21:57
30	08:18 17:15	14:51 (WEA 1) 18:09			07:15 20:02	06:07 20:55	05:21 21:40	05:15 21:57
31	08:16 17:17	14:52 (WEA 1) 18:09			07:12 20:04	06:07 20:55	05:21 21:42	05:15 21:57
Sonnenscheinstunden	258	277		367	416	486	500	
astr.max.mögl.Beschattung	1167	1200						

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 14-SW - IP 14-SW
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	July	August	September	Oktober		November		Dezember	
1	05:16	05:53	06:43	07:32		07:26	14:22 (WEA 1)	08:18	14:40 (WEA 1)
	21:57	21:25	20:22	19:12		17:06	58 15:20 (WEA 1)	16:25	33 15:13 (WEA 1)
2	05:17	05:54	06:45	07:34		07:28	14:22 (WEA 1)	08:19	14:42 (WEA 1)
	21:56	21:23	20:20	19:10		17:04	58 15:20 (WEA 1)	16:25	31 15:13 (WEA 1)
3	05:18	05:56	06:46	07:36		07:30	14:22 (WEA 1)	08:21	14:43 (WEA 1)
	21:56	21:21	20:18	19:08		17:02	58 15:20 (WEA 1)	16:24	28 15:11 (WEA 1)
4	05:18	05:58	06:48	07:37		07:32	14:22 (WEA 1)	08:22	14:45 (WEA 1)
	21:56	21:20	20:15	19:06		17:01	58 15:20 (WEA 1)	16:23	26 15:11 (WEA 1)
5	05:19	05:59	06:49	07:39		07:34	14:22 (WEA 1)	08:23	14:47 (WEA 1)
	21:55	21:18	20:13	19:03		16:59	59 15:21 (WEA 1)	16:23	23 15:10 (WEA 1)
6	05:20	06:01	06:51	07:41		07:35	14:22 (WEA 1)	08:25	14:48 (WEA 1)
	21:55	21:16	20:11	19:01		16:57	59 15:21 (WEA 1)	16:22	20 15:08 (WEA 1)
7	05:21	06:02	06:53	07:42		07:37	14:22 (WEA 1)	08:26	14:50 (WEA 1)
	21:54	21:14	20:09	18:59		16:55	59 15:21 (WEA 1)	16:22	18 15:08 (WEA 1)
8	05:22	06:04	06:54	07:44		07:39	14:22 (WEA 1)	08:27	14:52 (WEA 1)
	21:53	21:12	20:06	18:56		16:54	59 15:21 (WEA 1)	16:22	15 15:07 (WEA 1)
9	05:23	06:05	06:56	07:46		07:41	14:22 (WEA 1)	08:28	14:55 (WEA 1)
	21:53	21:11	20:04	18:54		16:52	59 15:21 (WEA 1)	16:21	10 15:05 (WEA 1)
10	05:24	06:07	06:58	07:48		07:43	14:22 (WEA 1)	08:29	14:59 (WEA 1)
	21:52	21:09	20:02	18:52		16:50	59 15:21 (WEA 1)	16:21	2 15:01 (WEA 1)
11	05:25	06:09	06:59	07:49		07:44	14:23 (WEA 1)	08:30	
	21:51	21:07	19:59	18:50		16:49	58 15:21 (WEA 1)	16:21	
12	05:26	06:10	07:01	07:51		07:46	14:23 (WEA 1)	08:31	
	21:50	21:05	19:57	18:47		16:47	58 15:21 (WEA 1)	16:21	
13	05:27	06:12	07:03	07:53		07:48	14:24 (WEA 1)	08:33	
	21:49	21:03	19:55	18:45		16:46	56 15:20 (WEA 1)	16:21	
14	05:28	06:14	07:04	07:54		07:50	14:24 (WEA 1)	08:33	
	21:49	21:01	19:52	18:43		16:44	56 15:20 (WEA 1)	16:21	
15	05:29	06:15	07:06	07:56		07:52	14:25 (WEA 1)	08:34	
	21:48	20:59	19:50	18:41		16:43	55 15:20 (WEA 1)	16:21	
16	05:30	06:17	07:07	07:58		07:53	14:26 (WEA 1)	08:35	
	21:47	20:57	19:48	18:39		16:41	54 15:20 (WEA 1)	16:21	
17	05:32	06:18	07:09	08:00	15:49 (WEA 1)	07:55	14:26 (WEA 1)	08:36	
	21:45	20:55	19:45	18:36	12 16:01 (WEA 1)	16:40	54 15:20 (WEA 1)	16:21	
18	05:33	06:20	07:11	08:01	15:44 (WEA 1)	07:57	14:26 (WEA 1)	08:37	
	21:44	20:53	19:43	18:34	22 16:06 (WEA 1)	16:39	53 15:19 (WEA 1)	16:21	
19	05:34	06:22	07:12	08:03	15:39 (WEA 1)	07:58	14:27 (WEA 1)	08:38	
	21:43	20:51	19:41	18:32	29 16:08 (WEA 1)	16:37	51 15:18 (WEA 1)	16:22	
20	05:36	06:23	07:14	08:05	15:37 (WEA 1)	08:00	14:28 (WEA 1)	08:38	
	21:42	20:49	19:38	18:30	33 16:10 (WEA 1)	16:36	50 15:18 (WEA 1)	16:22	
21	05:37	06:25	07:16	08:07	15:34 (WEA 1)	08:02	14:29 (WEA 1)	08:39	
	21:41	20:46	19:36	18:28	38 16:12 (WEA 1)	16:35	49 15:18 (WEA 1)	16:23	
22	05:38	06:27	07:17	08:08	15:32 (WEA 1)	08:04	14:30 (WEA 1)	08:39	
	21:40	20:44	19:34	18:26	41 16:13 (WEA 1)	16:34	48 15:18 (WEA 1)	16:23	
23	05:40	06:28	07:19	08:10	15:31 (WEA 1)	08:05	14:31 (WEA 1)	08:40	
	21:38	20:42	19:31	18:24	44 16:15 (WEA 1)	16:33	47 15:18 (WEA 1)	16:23	
24	05:41	06:30	07:21	08:12	15:29 (WEA 1)	08:07	14:32 (WEA 1)	08:40	
	21:37	20:40	19:29	18:22	47 16:16 (WEA 1)	16:31	44 15:16 (WEA 1)	16:24	
25	05:42	06:31	07:22	07:14	14:28 (WEA 1)	08:08	14:33 (WEA 1)	08:41	
	21:35	20:38	19:26	17:20	49 15:17 (WEA 1)	16:30	43 15:16 (WEA 1)	16:25	
26	05:44	06:33	07:24	07:16	14:27 (WEA 1)	08:10	14:34 (WEA 1)	08:41	
	21:34	20:36	19:24	17:18	50 15:17 (WEA 1)	16:29	42 15:16 (WEA 1)	16:25	
27	05:45	06:35	07:26	07:17	14:26 (WEA 1)	08:12	14:36 (WEA 1)	08:41	
	21:33	20:33	19:22	17:16	52 15:18 (WEA 1)	16:29	40 15:16 (WEA 1)	16:26	
28	05:47	06:36	07:27	07:19	14:26 (WEA 1)	08:13	14:36 (WEA 1)	08:41	
	21:31	20:31	19:19	17:14	53 15:19 (WEA 1)	16:28	38 15:14 (WEA 1)	16:27	
29	05:48	06:38	07:29	07:21	14:24 (WEA 1)	08:15	14:38 (WEA 1)	08:42	
	21:29	20:29	19:17	17:12	54 15:18 (WEA 1)	16:27	36 15:14 (WEA 1)	16:28	
30	05:50	06:40	07:31	07:23	14:23 (WEA 1)	08:16	14:39 (WEA 1)	08:42	
	21:28	20:27	19:15	17:10	56 15:19 (WEA 1)	16:26	34 15:13 (WEA 1)	16:29	
31	05:51	06:41		07:25	14:23 (WEA 1)			08:42	
	21:26	20:25		17:08	56 15:19 (WEA 1)			16:30	
Sonnenscheinstunden	503	454	381	331		266		243	
astr.max.mögl.Beschattung				636		1552		206	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM)	Schattenanfang (WEA mit erstem Schatten)	Schattenende (WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 15-SO - IP 15-SO
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni		
1	08:42 16:31	08:15 17:19	15:15 (WEA 1) 16:00 (WEA 1)	07:21 18:11	15:05 (WEA 1) 16:10 (WEA 1)	07:10 20:05	06:05 20:57	05:19 21:43
2	08:42 16:32	08:13 17:21	15:13 (WEA 1) 16:01 (WEA 1)	07:19 18:13	15:05 (WEA 1) 16:10 (WEA 1)	07:08 20:07	06:03 20:58	05:18 21:44
3	08:41 16:33	08:11 17:23	15:12 (WEA 1) 16:02 (WEA 1)	07:17 18:15	15:06 (WEA 1) 16:09 (WEA 1)	07:05 20:09	06:01 21:00	05:18 21:45
4	08:41 16:34	08:10 17:25	15:12 (WEA 1) 16:04 (WEA 1)	07:14 18:16	15:07 (WEA 1) 16:08 (WEA 1)	07:03 20:10	05:59 21:02	05:17 21:46
5	08:41 16:35	08:08 17:26	15:10 (WEA 1) 16:05 (WEA 1)	07:12 18:18	15:08 (WEA 1) 16:07 (WEA 1)	07:01 20:12	05:57 21:03	05:16 21:47
6	08:41 16:37	08:06 17:28	15:09 (WEA 1) 16:06 (WEA 1)	07:10 18:20	15:09 (WEA 1) 16:06 (WEA 1)	06:58 20:14	05:55 21:05	05:15 21:48
7	08:40 16:38	08:05 17:30	15:08 (WEA 1) 16:07 (WEA 1)	07:08 18:22	15:11 (WEA 1) 16:05 (WEA 1)	06:56 20:16	05:54 21:07	05:15 21:49
8	08:40 16:39	08:03 17:32	15:08 (WEA 1) 16:08 (WEA 1)	07:05 18:24	15:11 (WEA 1) 16:02 (WEA 1)	06:54 20:17	05:52 21:08	05:14 21:50
9	08:39 16:41	08:01 17:34	15:07 (WEA 1) 16:09 (WEA 1)	07:03 18:25	15:13 (WEA 1) 16:01 (WEA 1)	06:52 20:19	05:50 21:10	05:14 21:51
10	08:39 16:42	07:59 17:36	15:07 (WEA 1) 16:10 (WEA 1)	07:01 18:27	15:15 (WEA 1) 16:00 (WEA 1)	06:49 20:21	05:48 21:12	05:13 21:51
11	08:38 16:43	07:58 17:38	15:06 (WEA 1) 16:11 (WEA 1)	06:59 18:29	15:18 (WEA 1) 15:58 (WEA 1)	06:47 20:22	05:47 21:13	05:13 21:52
12	08:38 16:45	07:56 17:40	15:06 (WEA 1) 16:11 (WEA 1)	06:56 18:31	15:20 (WEA 1) 15:54 (WEA 1)	06:45 20:24	05:45 21:15	05:13 21:53
13	08:37 16:46	07:54 17:41	15:05 (WEA 1) 16:12 (WEA 1)	06:54 18:32	15:24 (WEA 1) 15:51 (WEA 1)	06:43 20:26	05:43 21:16	05:12 21:54
14	08:36 16:48	07:52 17:43	15:05 (WEA 1) 16:13 (WEA 1)	06:52 18:34	15:28 (WEA 1) 15:47 (WEA 1)	06:40 20:28	05:42 21:18	05:12 21:54
15	08:35 16:50	07:50 17:45	15:05 (WEA 1) 16:13 (WEA 1)	06:49 18:36		06:38 20:29	05:40 21:19	05:12 21:55
16	08:34 16:51	07:48 17:47	15:04 (WEA 1) 16:13 (WEA 1)	06:47 18:38		06:36 20:31	05:39 21:21	05:12 21:55
17	08:34 16:53	07:46 17:49	15:03 (WEA 1) 16:13 (WEA 1)	06:45 18:39		06:34 20:33	05:37 21:22	05:12 21:56
18	08:33 16:54	07:44 17:51	15:03 (WEA 1) 16:13 (WEA 1)	06:42 18:41		06:32 20:34	05:36 21:24	05:12 21:56
19	08:32 16:56	07:42 17:53	15:03 (WEA 1) 16:13 (WEA 1)	06:40 18:43		06:29 20:36	05:34 21:25	05:12 21:56
20	08:30 16:58	07:40 17:54	15:03 (WEA 1) 16:13 (WEA 1)	06:38 18:45		06:27 20:38	05:33 21:27	05:12 21:57
21	08:29 16:59	07:38 17:56	15:03 (WEA 1) 16:13 (WEA 1)	06:35 18:46		06:25 20:40	05:31 21:28	05:12 21:57
22	08:28 17:01	07:36 17:58	15:03 (WEA 1) 16:13 (WEA 1)	06:33 18:48		06:23 20:41	05:30 21:30	05:12 21:57
23	08:27 17:03	07:34 18:00	15:03 (WEA 1) 16:13 (WEA 1)	06:31 18:50		06:21 20:43	05:29 21:31	05:12 21:57
24	08:26 17:05	07:32 18:02	15:04 (WEA 1) 16:13 (WEA 1)	06:28 18:52		06:19 20:45	05:28 21:33	05:13 21:58
25	08:25 17:06	07:30 18:04	15:03 (WEA 1) 16:12 (WEA 1)	06:26 18:53		06:17 20:46	05:26 21:34	05:13 21:58
26	08:23 17:08	7 15:32 (WEA 1) 15:27 (WEA 1)	18:04 07:27	69 15:03 (WEA 1) 06:24		06:15 20:48	05:25 21:35	05:13 21:58
27	08:22 17:10	19 15:46 (WEA 1) 15:24 (WEA 1)	18:06 07:25	69 16:12 (WEA 1) 15:04 (WEA 1)	18:55 06:22	20:48 06:13	21:35 05:24	21:58 05:14
28	08:21 17:12	25 15:49 (WEA 1) 15:21 (WEA 1)	18:07 07:23	68 16:12 (WEA 1) 15:05 (WEA 1)	18:57 06:19	20:50 06:11	21:37 05:23	21:58 05:14
29	08:19 17:14	30 15:51 (WEA 1) 15:19 (WEA 1)	18:09 07:17	67 16:12 (WEA 1) 07:17	18:58 07:17	20:52 06:09	21:38 05:22	21:57 05:15
30	08:18 17:15	35 15:54 (WEA 1) 15:17 (WEA 1)		20:00 07:15	20:00 07:15	20:53 06:07	21:39 05:21	21:57 05:15
31	08:16 17:17	39 15:56 (WEA 1) 15:17 (WEA 1)		20:02 07:12	20:02 07:12	20:55 05:20	21:40 05:20	21:57 05:15
	Sonnenscheinstunden 258	196	277	367	416	486	500	
	astr.max.mögl.Beschattung	196	1785	688				

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM)	Schattenanfang (WEA mit erstem Schatten)	Schattenende (WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 15-SO - IP 15-SO
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung

Die Windenergieanlage/n ist/sind immer in Betrieb

	July	August	September	Oktober	November	Dezember
1	05:16 21:57	05:53 21:25	06:43 20:22	07:32 19:12	16:00 (WEA 1) 17:06	08:18 16:25
2	05:17 21:56	05:54 21:23	06:45 20:20	07:34 19:10	15:57 (WEA 1) 17:04	08:19 16:25
3	05:18 21:56	05:56 21:21	06:46 20:18	07:36 19:08	15:54 (WEA 1) 16:37 (WEA 1)	08:21 16:24
4	05:18 21:56	05:58 21:20	06:48 20:15	07:37 19:06	15:52 (WEA 1) 16:38 (WEA 1)	08:22 16:23
5	05:19 21:55	05:59 21:18	06:49 20:13	07:39 19:03	15:49 (WEA 1) 16:39 (WEA 1)	08:23 16:23
6	05:20 21:55	06:01 21:16	06:51 20:11	07:41 19:01	15:47 (WEA 1) 16:40 (WEA 1)	08:25 16:22
7	05:21 21:54	06:02 21:14	06:53 20:09	07:42 18:59	15:46 (WEA 1) 16:41 (WEA 1)	08:26 16:22
8	05:22 21:53	06:04 21:12	06:54 20:06	07:44 18:56	15:44 (WEA 1) 16:42 (WEA 1)	08:27 16:22
9	05:23 21:53	06:05 21:11	06:56 20:04	07:46 18:54	15:42 (WEA 1) 16:42 (WEA 1)	08:28 16:21
10	05:24 21:52	06:07 21:09	06:58 20:02	07:48 18:52	15:41 (WEA 1) 16:43 (WEA 1)	08:29 16:21
11	05:25 21:51	06:09 21:07	06:59 19:59	07:49 18:50	15:40 (WEA 1) 16:43 (WEA 1)	08:30 16:21
12	05:26 21:50	06:10 21:05	07:01 19:57	07:51 18:47	15:39 (WEA 1) 16:44 (WEA 1)	08:31 16:21
13	05:27 21:49	06:12 21:03	07:03 19:55	07:53 18:45	15:37 (WEA 1) 16:43 (WEA 1)	08:32 16:21
14	05:28 21:49	06:14 21:01	07:04 19:52	07:54 18:43	15:37 (WEA 1) 16:44 (WEA 1)	08:33 16:21
15	05:29 21:48	06:15 20:59	07:06 19:50	07:56 18:41	15:36 (WEA 1) 16:44 (WEA 1)	08:34 16:21
16	05:30 21:47	06:17 20:57	07:07 19:48	07:58 18:39	15:36 (WEA 1) 16:44 (WEA 1)	08:35 16:21
17	05:32 21:45	06:18 20:55	07:09 19:45	08:00 18:36	15:35 (WEA 1) 16:45 (WEA 1)	08:36 16:21
18	05:33 21:44	06:20 20:53	07:11 19:43	08:01 18:34	15:35 (WEA 1) 16:45 (WEA 1)	08:37 16:21
19	05:34 21:43	06:22 20:51	07:12 19:41	08:03 18:32	15:34 (WEA 1) 16:44 (WEA 1)	08:37 16:22
20	05:36 21:42	06:23 20:49	07:14 19:38	08:05 18:30	15:33 (WEA 1) 16:44 (WEA 1)	08:38 16:22
21	05:37 21:41	06:25 20:46	07:16 19:36	08:07 18:28	15:33 (WEA 1) 16:44 (WEA 1)	08:39 16:23
22	05:38 21:40	06:27 20:44	07:17 19:34	08:08 18:26	15:33 (WEA 1) 16:44 (WEA 1)	08:39 16:23
23	05:40 21:38	06:28 20:42	07:19 19:31	08:10 18:24	15:33 (WEA 1) 16:44 (WEA 1)	08:40 16:24
24	05:41 21:37	06:30 20:40	07:21 19:29	08:12 18:22	15:33 (WEA 1) 16:43 (WEA 1)	08:40 16:24
25	05:42 21:35	06:31 20:38	07:22 19:26	07:14 17:20	14:34 (WEA 1) 15:43 (WEA 1)	08:41 16:25
26	05:44 21:34	06:33 20:36	07:24 19:24	07:16 17:18	14:34 (WEA 1) 15:43 (WEA 1)	08:41 16:25
27	05:45 21:33	06:35 20:33	07:26 19:22	07:17 17:16	14:34 (WEA 1) 15:42 (WEA 1)	08:41 16:26
28	05:47 21:31	06:36 20:31	07:27 19:19	07:19 17:14	14:35 (WEA 1) 15:42 (WEA 1)	08:41 16:27
29	05:48 21:29	06:38 20:29	07:29 19:17	07:21 17:12	14:34 (WEA 1) 15:40 (WEA 1)	08:42 16:28
30	05:50 21:28	06:40 20:27	07:31 19:15	07:23 17:10	14:35 (WEA 1) 15:40 (WEA 1)	08:42 16:29
31	05:51 21:26	06:41 20:25		07:25 17:08	14:35 (WEA 1) 15:39 (WEA 1)	08:42 16:30
Sonnenscheinstunden	503	454	381	331	266	243
astr.max.mögl.Beschattung			38	1926	744	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM)	Schattenanfang (WEA mit erstem Schatten)	Schattenende (WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 15-SW - IP 15-SW
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlungsrichtung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni		
1	08:42 16:31	08:15 17:19	15:10 (WEA 1) 15:58 (WEA 1)	07:21 18:11	15:02 (WEA 1) 16:07 (WEA 1)	07:10 20:05	06:05 20:57	05:19 21:43
2	08:42 16:32	08:13 17:21	15:09 (WEA 1) 15:59 (WEA 1)	07:19 18:13	15:03 (WEA 1) 16:06 (WEA 1)	07:08 20:07	06:03 20:58	05:18 21:44
3	08:41 16:33	08:11 17:23	15:07 (WEA 1) 16:00 (WEA 1)	07:17 18:15	15:04 (WEA 1) 16:06 (WEA 1)	07:05 20:09	06:01 21:00	05:18 21:45
4	08:41 16:34	08:10 17:25	15:07 (WEA 1) 16:02 (WEA 1)	07:14 18:16	15:05 (WEA 1) 16:05 (WEA 1)	07:03 20:10	05:59 21:02	05:17 21:46
5	08:41 16:35	08:08 17:26	15:06 (WEA 1) 16:03 (WEA 1)	07:12 18:18	15:06 (WEA 1) 16:03 (WEA 1)	07:01 20:12	05:57 21:03	05:16 21:47
6	08:41 16:37	08:06 17:28	15:05 (WEA 1) 16:04 (WEA 1)	07:10 18:20	15:07 (WEA 1) 16:02 (WEA 1)	06:58 20:14	05:55 21:05	05:15 21:48
7	08:40 16:38	08:05 17:30	15:04 (WEA 1) 16:05 (WEA 1)	07:08 18:22	15:09 (WEA 1) 16:01 (WEA 1)	06:56 20:16	05:54 21:07	05:15 21:49
8	08:40 16:39	08:03 17:32	15:03 (WEA 1) 16:06 (WEA 1)	07:05 18:24	15:10 (WEA 1) 15:59 (WEA 1)	06:54 20:17	05:52 21:08	05:14 21:50
9	08:39 16:41	08:01 17:34	15:03 (WEA 1) 16:06 (WEA 1)	07:03 18:25	15:12 (WEA 1) 15:57 (WEA 1)	06:52 20:19	05:50 21:10	05:14 21:51
10	08:39 16:42	07:59 17:36	15:03 (WEA 1) 16:08 (WEA 1)	07:01 18:27	15:14 (WEA 1) 15:55 (WEA 1)	06:49 20:21	05:48 21:12	05:13 21:51
11	08:38 16:43	07:58 17:38	15:03 (WEA 1) 16:08 (WEA 1)	06:59 18:29	15:17 (WEA 1) 15:53 (WEA 1)	06:47 20:22	05:47 21:13	05:13 21:52
12	08:38 16:45	07:56 17:40	15:02 (WEA 1) 16:09 (WEA 1)	06:56 18:31	15:19 (WEA 1) 15:49 (WEA 1)	06:45 20:24	05:45 21:15	05:13 21:53
13	08:37 16:46	07:54 17:41	15:02 (WEA 1) 16:09 (WEA 1)	06:54 18:32	15:24 (WEA 1) 15:46 (WEA 1)	06:43 20:26	05:43 21:16	05:12 21:54
14	08:36 16:48	07:52 17:43	15:01 (WEA 1) 16:10 (WEA 1)	06:52 18:34	15:32 (WEA 1) 15:38 (WEA 1)	06:40 20:28	05:42 21:18	05:12 21:54
15	08:35 16:50	07:50 17:45	15:01 (WEA 1) 16:10 (WEA 1)	06:49 18:36		06:38 20:29	05:40 21:19	05:12 21:55
16	08:34 16:51	07:48 17:47	15:01 (WEA 1) 16:11 (WEA 1)	06:47 18:38		06:36 20:31	05:39 21:21	05:12 21:55
17	08:34 16:53	07:46 17:49	15:00 (WEA 1) 16:10 (WEA 1)	06:45 18:39		06:34 20:33	05:37 21:22	05:12 21:56
18	08:33 16:54	07:44 17:51	15:00 (WEA 1) 16:10 (WEA 1)	06:42 18:41		06:32 20:34	05:36 21:24	05:12 21:56
19	08:32 16:56	07:42 17:53	15:00 (WEA 1) 16:10 (WEA 1)	06:40 18:43		06:29 20:36	05:34 21:25	05:12 21:56
20	08:30 16:58	07:40 17:54	15:00 (WEA 1) 16:10 (WEA 1)	06:38 18:45		06:27 20:38	05:33 21:27	05:12 21:57
21	08:29 16:59	07:38 17:56	15:00 (WEA 1) 16:10 (WEA 1)	06:35 18:46		06:25 20:40	05:31 21:28	05:12 21:57
22	08:28 17:01	07:36 17:58	15:00 (WEA 1) 16:10 (WEA 1)	06:33 18:48		06:23 20:41	05:30 21:30	05:12 21:57
23	08:27 17:03	07:34 18:00	15:00 (WEA 1) 16:10 (WEA 1)	06:31 18:50		06:21 20:43	05:29 21:31	05:12 21:57
24	08:26 17:05	15:25 (WEA 1) 15:39 (WEA 1)	07:32 18:02	15:01 (WEA 1) 16:10 (WEA 1)	06:28 18:52	06:19 20:45	05:28 21:33	05:13 21:58
25	08:25 17:06	15:22 (WEA 1) 15:43 (WEA 1)	07:30 18:04	15:00 (WEA 1) 16:09 (WEA 1)	06:26 18:53	06:17 20:46	05:26 21:34	05:13 21:58
26	08:23 17:08	15:20 (WEA 1) 15:47 (WEA 1)	07:27 18:06	15:01 (WEA 1) 16:09 (WEA 1)	06:24 18:55	06:15 20:48	05:25 21:35	05:13 21:58
27	08:22 17:10	15:17 (WEA 1) 15:49 (WEA 1)	07:25 18:07	15:01 (WEA 1) 16:09 (WEA 1)	06:22 18:57	06:13 20:50	05:24 21:37	05:14 21:58
28	08:21 17:12	15:15 (WEA 1) 15:51 (WEA 1)	07:23 18:09	15:02 (WEA 1) 16:08 (WEA 1)	06:19 18:58	06:11 20:52	05:23 21:38	05:14 21:57
29	08:19 17:14	15:14 (WEA 1) 15:53 (WEA 1)			07:17 20:00	06:09 20:53	05:22 21:39	05:15 21:57
30	08:18 17:15	15:12 (WEA 1) 15:55 (WEA 1)			07:15 20:02	06:07 20:55	05:21 21:40	05:15 21:57
31	08:16 17:17	15:11 (WEA 1) 15:57 (WEA 1)			07:12 20:04		05:20 21:42	
Sonnenscheinstunden	258	277			416	486		500
astr.max.mögl.Beschattung	258	1811		643				

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM)	Schattenanfang (WEA mit erstem Schatten)	Schattenende (WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 15-SW - IP 15-SW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung

Die Windenergieanlage/n ist/sind immer in Betrieb

	July	August	September	Oktober	November	Dezember
1	05:16 21:57	05:53 21:25	06:43 20:22	07:32 19:12	16:00 (WEA 1) 17:06	14:32 (WEA 1) 16:25
2	05:17 21:56	05:54 21:23	06:45 20:20	07:34 19:10	15:56 (WEA 1) 17:04	14:33 (WEA 1) 16:25
3	05:18 21:56	05:56 21:21	06:46 20:18	07:36 19:08	15:53 (WEA 1) 16:32 (WEA 1)	14:33 (WEA 1) 16:24
4	05:18 21:56	05:58 21:20	06:48 20:15	07:37 19:06	15:51 (WEA 1) 16:34 (WEA 1)	14:34 (WEA 1) 16:23
5	05:19 21:55	05:59 21:18	06:49 20:13	07:39 19:03	15:48 (WEA 1) 16:35 (WEA 1)	14:35 (WEA 1) 16:23
6	05:20 21:55	06:01 21:16	06:51 20:11	07:41 19:01	15:46 (WEA 1) 16:36 (WEA 1)	14:36 (WEA 1) 16:22
7	05:21 21:54	06:02 21:14	06:53 20:09	07:42 18:59	15:44 (WEA 1) 16:37 (WEA 1)	14:37 (WEA 1) 16:22
8	05:22 21:53	06:04 21:12	06:54 20:06	07:44 18:56	15:42 (WEA 1) 16:38 (WEA 1)	14:38 (WEA 1) 16:22
9	05:23 21:53	06:05 21:11	06:56 20:04	07:46 18:54	15:40 (WEA 1) 16:38 (WEA 1)	14:40 (WEA 1) 16:21
10	05:24 21:52	06:07 21:09	06:58 20:02	07:48 18:52	15:39 (WEA 1) 16:39 (WEA 1)	14:41 (WEA 1) 16:21
11	05:25 21:51	06:09 21:07	06:59 19:59	07:49 18:50	15:38 (WEA 1) 16:40 (WEA 1)	14:42 (WEA 1) 16:21
12	05:26 21:50	06:10 21:05	07:01 19:57	07:51 18:47	15:37 (WEA 1) 16:41 (WEA 1)	14:44 (WEA 1) 16:21
13	05:27 21:49	06:12 21:03	07:03 19:55	07:53 18:45	15:35 (WEA 1) 16:40 (WEA 1)	14:46 (WEA 1) 16:21
14	05:28 21:49	06:14 21:01	07:04 19:52	07:54 18:43	15:34 (WEA 1) 16:41 (WEA 1)	14:48 (WEA 1) 16:21
15	05:29 21:48	06:15 20:59	07:06 19:50	07:56 18:41	15:33 (WEA 1) 16:41 (WEA 1)	14:50 (WEA 1) 16:21
16	05:30 21:47	06:17 20:57	07:07 19:48	07:58 18:39	15:33 (WEA 1) 16:41 (WEA 1)	14:53 (WEA 1) 16:21
17	05:32 21:45	06:18 20:55	07:09 19:45	08:00 18:36	15:32 (WEA 1) 16:41 (WEA 1)	14:56 (WEA 1) 16:21
18	05:33 21:44	06:20 20:53	07:11 19:43	08:01 18:34	15:32 (WEA 1) 16:42 (WEA 1)	14:59 (WEA 1) 16:21
19	05:34 21:43	06:22 20:51	07:12 19:41	08:03 18:32	15:30 (WEA 1) 16:41 (WEA 1)	15:00 (WEA 1) 16:22
20	05:36 21:42	06:23 20:49	07:14 19:38	08:05 18:30	15:30 (WEA 1) 16:41 (WEA 1)	15:00 (WEA 1) 16:22
21	05:37 21:41	06:25 20:46	07:16 19:36	08:07 18:28	15:30 (WEA 1) 16:41 (WEA 1)	15:00 (WEA 1) 16:23
22	05:38 21:40	06:27 20:44	07:17 19:34	08:08 18:26	15:30 (WEA 1) 16:41 (WEA 1)	15:00 (WEA 1) 16:23
23	05:40 21:38	06:28 20:42	07:19 19:31	08:10 18:24	15:30 (WEA 1) 16:41 (WEA 1)	15:00 (WEA 1) 16:24
24	05:41 21:37	06:30 20:40	07:21 19:29	08:12 18:22	15:30 (WEA 1) 16:41 (WEA 1)	15:00 (WEA 1) 16:24
25	05:42 21:35	06:31 20:38	07:22 19:26	07:14 17:20	14:30 (WEA 1) 15:40 (WEA 1)	15:00 (WEA 1) 16:25
26	05:44 21:34	06:33 20:36	07:24 19:24	07:16 17:18	14:30 (WEA 1) 15:40 (WEA 1)	15:00 (WEA 1) 16:25
27	05:45 21:33	06:35 20:33	07:26 19:22	07:17 17:16	14:31 (WEA 1) 15:40 (WEA 1)	15:00 (WEA 1) 16:26
28	05:47 21:31	06:36 20:31	07:27 19:19	07:19 17:14	14:31 (WEA 1) 15:39 (WEA 1)	15:00 (WEA 1) 16:27
29	05:48 21:29	06:38 20:29	07:29 19:17	07:21 17:12	14:30 (WEA 1) 15:38 (WEA 1)	15:00 (WEA 1) 16:28
30	05:50 21:28	06:40 20:27	07:31 19:15	07:23 17:10	14:31 (WEA 1) 15:38 (WEA 1)	15:00 (WEA 1) 16:29
31	05:51 21:26	06:41 20:25		07:25 17:08	14:31 (WEA 1) 15:37 (WEA 1)	15:00 (WEA 1) 16:30
Sonnenscheinstunden	503	454	381	331	266	243
astr.max.mögl.Beschattung			17	1904	829	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM)	Schattenanfang (WEA mit erstem Schatten)	Schattenende (WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 16-NW - IP 16-NW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinfallrichtung

Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni
1	08:42 16:31	08:15 17:19	15:52 (WEA 1) 16:05 (WEA 1)	07:21 18:11	15:32 (WEA 1) 20:05	06:05 20:57
2	08:42 16:32	08:13 17:21	15:52 (WEA 1) 16:06 (WEA 1)	07:19 18:13	15:32 (WEA 1) 20:07	06:03 20:58
3	08:41 16:33	08:11 17:23	15:51 (WEA 1) 16:06 (WEA 1)	07:16 18:15	15:31 (WEA 1) 20:09	06:01 21:00
4	08:41 16:34	08:10 17:25	15:51 (WEA 1) 16:08 (WEA 1)	07:14 18:16	15:30 (WEA 1) 20:10	05:59 21:02
5	08:41 16:35	08:08 17:26	15:50 (WEA 1) 16:09 (WEA 1)	07:12 18:18	15:29 (WEA 1) 20:12	05:57 21:03
6	08:41 16:37	08:06 17:28	15:50 (WEA 1) 16:09 (WEA 1)	07:10 18:20	15:28 (WEA 1) 20:14	05:55 21:05
7	08:40 16:38	08:05 17:30	15:49 (WEA 1) 16:10 (WEA 1)	07:08 18:22	15:28 (WEA 1) 20:16	05:54 21:07
8	08:40 16:39	08:03 17:32	15:48 (WEA 1) 16:10 (WEA 1)	07:05 18:24	15:32 (WEA 1) 20:17	05:52 21:08
9	08:39 16:41	08:01 17:34	15:48 (WEA 1) 16:11 (WEA 1)	07:03 18:25	15:50 (WEA 1) 20:19	05:50 21:10
10	08:39 16:42	07:59 17:36	15:48 (WEA 1) 16:12 (WEA 1)	07:01 18:27	15:55 (WEA 1) 20:21	05:48 21:12
11	08:38 16:43	07:58 17:38	15:47 (WEA 1) 16:13 (WEA 1)	06:59 18:29	15:55 (WEA 1) 20:22	05:47 21:13
12	08:38 16:45	07:56 17:40	15:47 (WEA 1) 16:13 (WEA 1)	06:56 18:31	15:55 (WEA 1) 20:24	05:45 21:15
13	08:37 16:46	07:54 17:41	15:46 (WEA 1) 16:13 (WEA 1)	06:54 18:32	15:55 (WEA 1) 20:26	05:43 21:16
14	08:36 16:48	07:52 17:43	15:45 (WEA 1) 16:14 (WEA 1)	06:52 18:34	15:55 (WEA 1) 20:28	05:42 21:18
15	08:35 16:50	07:50 17:45	15:45 (WEA 1) 16:14 (WEA 1)	06:49 18:36	15:55 (WEA 1) 20:29	05:40 21:19
16	08:34 16:51	07:48 17:47	15:44 (WEA 1) 16:14 (WEA 1)	06:47 18:38	15:55 (WEA 1) 20:31	05:39 21:21
17	08:34 16:53	07:46 17:49	15:42 (WEA 1) 16:13 (WEA 1)	06:45 18:39	15:55 (WEA 1) 20:33	05:37 21:22
18	08:33 16:54	07:44 17:51	15:42 (WEA 1) 16:13 (WEA 1)	06:42 18:41	15:55 (WEA 1) 20:34	05:36 21:24
19	08:32 16:56	07:42 17:53	15:41 (WEA 1) 16:13 (WEA 1)	06:40 18:43	15:55 (WEA 1) 20:36	05:34 21:25
20	08:30 16:58	07:40 17:54	15:40 (WEA 1) 16:13 (WEA 1)	06:38 18:45	15:55 (WEA 1) 20:38	05:33 21:27
21	08:29 16:59	07:38 17:56	15:40 (WEA 1) 16:13 (WEA 1)	06:35 18:46	15:55 (WEA 1) 20:40	05:31 21:28
22	08:28 17:01	07:36 17:58	15:39 (WEA 1) 16:12 (WEA 1)	06:33 18:48	15:55 (WEA 1) 20:41	05:30 21:30
23	08:27 17:03	07:34 18:00	15:38 (WEA 1) 16:12 (WEA 1)	06:31 18:50	15:55 (WEA 1) 20:43	05:29 21:31
24	08:26 17:05	07:32 18:02	15:38 (WEA 1) 16:12 (WEA 1)	06:28 18:52	15:55 (WEA 1) 20:45	05:28 21:33
25	08:25 17:06	07:30 18:04	15:36 (WEA 1) 16:10 (WEA 1)	06:26 18:53	15:55 (WEA 1) 20:46	05:26 21:34
26	08:23 17:08	15:55 (WEA 1) 18:06	15:35 (WEA 1) 16:09 (WEA 1)	06:24 18:55	15:55 (WEA 1) 20:48	05:25 21:35
27	08:22 17:10	15:54 (WEA 1) 18:07	15:35 (WEA 1) 16:09 (WEA 1)	06:22 18:57	15:55 (WEA 1) 20:50	05:24 21:37
28	08:21 17:12	15:53 (WEA 1) 18:09	15:34 (WEA 1) 16:08 (WEA 1)	06:19 18:58	15:55 (WEA 1) 20:52	05:23 21:38
29	08:19 17:14	15:54 (WEA 1) 16:01 (WEA 1)		07:17 20:00	15:55 (WEA 1) 20:53	05:22 21:39
30	08:18 17:15	15:53 (WEA 1) 16:02 (WEA 1)		07:15 20:02	15:55 (WEA 1) 20:55	05:21 21:40
31	08:16 17:17	15:53 (WEA 1) 16:04 (WEA 1)		07:12 20:04		05:20 21:42
Sonnenscheinstunden	258	277	367	416	486	500
astr.max.mögl.Beschattung	37	751	237			

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schatteneende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 16-NW - IP 16-NW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinfallrichtung

Die Windenergieanlage/n ist/sind immer in Betrieb

	July	August	September	Oktober		November	Dezember
1	05:16 21:57	05:53 21:25	06:43 20:22	07:32 19:12		07:26 17:06	15:17 (WEA 1) 16:25
2	05:17 21:56	05:54 21:23	06:45 20:20	07:34 19:10		07:28 17:04	15:17 (WEA 1) 16:25
3	05:18 21:56	05:56 21:21	06:46 20:18	07:36 19:08		07:30 17:02	15:18 (WEA 1) 16:24
4	05:18 21:56	05:58 21:20	06:48 20:15	07:37 19:06		07:32 17:01	15:19 (WEA 1) 16:23
5	05:19 21:55	05:59 21:18	06:49 20:13	07:39 19:03	12	16:12 (WEA 1) 16:24 (WEA 1) 16:06 (WEA 1)	07:34 16:59 07:35
6	05:20 21:55	06:01 21:16	06:51 20:11	07:41 19:01	23	16:29 (WEA 1) 16:03 (WEA 1)	16:57 07:37
7	05:21 21:54	06:02 21:14	06:53 20:09	07:42 18:59	29	16:32 (WEA 1) 16:04 (WEA 1)	16:55 07:39
8	05:22 21:53	06:04 21:12	06:54 20:06	07:44 18:56	30	16:34 (WEA 1) 16:04 (WEA 1)	16:54 07:41
9	05:23 21:53	06:05 21:11	06:56 20:04	07:46 18:54	31	16:35 (WEA 1) 16:05 (WEA 1)	16:52 07:43
10	05:24 21:52	06:07 21:09	06:58 20:02	07:48 18:52	32	16:37 (WEA 1) 16:05 (WEA 1)	16:50 07:44
11	05:25 21:51	06:09 21:07	06:59 19:59	07:49 18:50	33	16:38 (WEA 1) 16:06 (WEA 1)	16:49 07:46
12	05:26 21:50	06:10 21:05	07:01 19:57	07:51 18:47	34	16:40 (WEA 1) 16:06 (WEA 1)	16:47 07:48
13	05:27 21:49	06:12 21:03	07:03 19:55	07:53 18:45	34	16:40 (WEA 1) 16:06 (WEA 1)	16:46 07:50
14	05:28 21:49	06:14 21:01	07:04 19:52	07:54 18:43	34	16:40 (WEA 1) 16:07 (WEA 1)	16:44 07:52
15	05:29 21:48	06:15 20:59	07:06 19:50	07:56 18:41	34	16:41 (WEA 1) 16:08 (WEA 1)	16:43 07:53
16	05:30 21:47	06:17 20:57	07:07 19:48	07:58 18:39	34	16:42 (WEA 1) 16:08 (WEA 1)	16:41 07:55
17	05:32 21:45	06:18 20:55	07:09 19:45	08:00 18:36	35	16:43 (WEA 1) 16:09 (WEA 1)	16:40 07:57
18	05:33 21:44	06:20 20:53	07:11 19:43	08:01 18:34	34	16:43 (WEA 1) 16:09 (WEA 1)	16:39 07:58
19	05:34 21:43	06:22 20:51	07:12 19:41	08:03 18:32	33	16:42 (WEA 1) 16:09 (WEA 1)	16:37 08:00
20	05:36 21:42	06:23 20:49	07:14 19:38	08:05 18:30	34	16:43 (WEA 1) 16:10 (WEA 1)	16:36 08:02
21	05:37 21:41	06:25 20:46	07:16 19:36	08:07 18:28	33	16:43 (WEA 1) 16:11 (WEA 1)	16:35 08:04
22	05:38 21:40	06:27 20:44	07:17 19:34	08:08 18:26	32	16:43 (WEA 1) 16:12 (WEA 1)	16:34 08:05
23	05:40 21:38	06:28 20:42	07:19 19:31	08:10 18:24	31	16:43 (WEA 1) 16:12 (WEA 1)	16:33 08:07
24	05:41 21:37	06:30 20:40	07:21 19:29	08:12 18:22	31	16:43 (WEA 1) 15:13 (WEA 1)	16:31 08:08
25	05:42 21:35	06:31 20:38	07:22 19:26	07:14 17:20	30	15:43 (WEA 1) 15:14 (WEA 1)	08:08 16:30
26	05:44 21:34	06:33 20:36	07:24 19:24	07:16 17:18	29	15:43 (WEA 1) 15:14 (WEA 1)	08:10 16:29
27	05:45 21:33	06:35 20:33	07:26 19:22	07:17 17:16	29	15:43 (WEA 1) 15:15 (WEA 1)	08:12 16:29
28	05:47 21:31	06:36 20:31	07:27 19:19	07:19 17:14	28	15:43 (WEA 1) 15:15 (WEA 1)	08:13 16:28
29	05:48 21:29	06:38 20:29	07:29 19:17	07:21 17:12	27	15:42 (WEA 1) 15:15 (WEA 1)	08:15 16:27
30	05:50 21:28	06:40 20:27	07:31 19:15	07:23 17:10	27	15:42 (WEA 1) 15:16 (WEA 1)	08:16 16:26
31	05:51 21:26	06:41 20:25		07:25 17:08	25	15:41 (WEA 1)	08:16 16:30
Sonnenscheinstunden	503	454	381	331		266	243
astr.max.mögl.Beschattung				818		221	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM)	Schattenanfang (WEA mit erstem Schatten)	Schattenende (WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 16-SW - IP 16-SW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung

Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni		
1	08:42 16:31	08:15 17:19	15:22 (WEA 1) 16:06 (WEA 1)	07:21 18:11	15:17 (WEA 1) 16:11 (WEA 1)	07:10 20:05	06:05 20:57	05:19 21:43
2	08:42 16:32	08:13 17:21	15:20 (WEA 1) 16:07 (WEA 1)	07:19 18:13	15:18 (WEA 1) 16:11 (WEA 1)	07:08 20:07	06:03 20:58	05:18 21:44
3	08:41 16:33	08:11 17:23	15:19 (WEA 1) 16:08 (WEA 1)	07:16 18:15	15:20 (WEA 1) 16:10 (WEA 1)	07:05 20:09	06:01 21:00	05:18 21:45
4	08:41 16:34	08:10 17:25	15:19 (WEA 1) 16:10 (WEA 1)	07:14 18:16	15:22 (WEA 1) 16:08 (WEA 1)	07:03 20:10	05:59 21:02	05:17 21:46
5	08:41 16:35	08:08 17:26	15:18 (WEA 1) 16:11 (WEA 1)	07:12 18:18	15:22 (WEA 1) 16:06 (WEA 1)	07:01 20:12	05:57 21:03	05:16 21:47
6	08:41 16:37	08:06 17:28	15:17 (WEA 1) 16:12 (WEA 1)	07:10 18:20	15:25 (WEA 1) 16:04 (WEA 1)	06:58 20:14	05:55 21:05	05:15 21:48
7	08:40 16:38	08:05 17:30	15:16 (WEA 1) 16:13 (WEA 1)	07:08 18:22	15:27 (WEA 1) 16:03 (WEA 1)	06:56 20:16	05:54 21:07	05:15 21:49
8	08:40 16:39	08:03 17:32	15:16 (WEA 1) 16:13 (WEA 1)	07:05 18:24	15:29 (WEA 1) 15:59 (WEA 1)	06:54 20:17	05:52 21:08	05:14 21:50
9	08:39 16:41	08:01 17:34	15:15 (WEA 1) 16:14 (WEA 1)	07:03 18:25	15:33 (WEA 1) 15:56 (WEA 1)	06:52 20:19	05:50 21:10	05:14 21:51
10	08:39 16:42	07:59 17:36	15:15 (WEA 1) 16:15 (WEA 1)	07:01 18:27	15:38 (WEA 1) 15:51 (WEA 1)	06:49 20:21	05:48 21:12	05:13 21:51
11	08:38 16:43	07:58 17:38	15:15 (WEA 1) 16:16 (WEA 1)	06:59 18:29		06:47 20:22	05:47 21:13	05:13 21:52
12	08:38 16:45	07:56 17:40	15:15 (WEA 1) 16:16 (WEA 1)	06:56 18:31		06:45 20:24	05:45 21:15	05:13 21:53
13	08:37 16:46	07:54 17:41	15:14 (WEA 1) 16:17 (WEA 1)	06:54 18:32		06:43 20:26	05:43 21:16	05:12 21:54
14	08:36 16:48	07:52 17:43	15:14 (WEA 1) 16:17 (WEA 1)	06:52 18:34		06:40 20:28	05:42 21:18	05:12 21:54
15	08:35 16:50	07:50 17:45	15:14 (WEA 1) 16:17 (WEA 1)	06:49 18:36		06:38 20:29	05:40 21:19	05:12 21:55
16	08:34 16:51	07:48 17:47	15:14 (WEA 1) 16:18 (WEA 1)	06:47 18:38		06:36 20:31	05:39 21:21	05:12 21:55
17	08:34 16:53	07:46 17:49	15:13 (WEA 1) 16:17 (WEA 1)	06:45 18:39		06:34 20:33	05:37 21:22	05:12 21:56
18	08:33 16:54	07:44 17:51	15:13 (WEA 1) 16:17 (WEA 1)	06:42 18:41		06:32 20:34	05:36 21:24	05:12 21:56
19	08:32 16:56	07:42 17:53	15:13 (WEA 1) 16:17 (WEA 1)	06:40 18:43		06:29 20:36	05:34 21:25	05:12 21:56
20	08:30 16:58	07:40 17:54	15:13 (WEA 1) 16:17 (WEA 1)	06:38 18:45		06:27 20:38	05:33 21:27	05:12 21:57
21	08:29 16:59	07:38 17:56	15:13 (WEA 1) 16:17 (WEA 1)	06:35 18:46		06:25 20:40	05:31 21:28	05:12 21:57
22	08:28 17:01	07:36 17:58	15:14 (WEA 1) 16:17 (WEA 1)	06:33 18:48		06:23 20:41	05:30 21:30	05:12 21:57
23	08:27 17:03	07:34 18:00	15:14 (WEA 1) 16:16 (WEA 1)	06:31 18:50		06:21 20:43	05:29 21:31	05:12 21:57
24	08:26 17:05	07:32 18:02	15:15 (WEA 1) 16:16 (WEA 1)	06:28 18:52		06:19 20:45	05:28 21:33	05:13 21:58
25	08:25 17:06	07:30 18:04	15:14 (WEA 1) 16:15 (WEA 1)	06:26 18:53		06:17 20:46	05:26 21:34	05:13 21:58
26	08:23 17:08	07:27 18:06	15:15 (WEA 1) 16:14 (WEA 1)	06:24 18:55		06:15 20:48	05:25 21:35	05:13 21:58
27	08:22 17:10	07:25 18:07	15:16 (WEA 1) 16:14 (WEA 1)	06:22 18:57		06:13 20:50	05:24 21:37	05:14 21:58
28	08:21 17:12	07:23 18:09	15:17 (WEA 1) 16:13 (WEA 1)	06:19 18:58		06:11 20:52	05:23 21:38	05:14 21:57
29	08:19 17:14	07:21 18:09	15:17 (WEA 1) 16:13 (WEA 1)	06:17 19:00		06:09 20:53	05:22 21:39	05:15 21:57
30	08:18 17:15	07:19 18:09	15:17 (WEA 1) 16:13 (WEA 1)	06:15 19:02		06:07 20:55	05:21 21:40	05:15 21:57
31	08:16 17:17	07:17 18:09	15:18 (WEA 1) 16:05 (WEA 1)	06:12 20:04		06:05 20:57	05:20 21:42	05:15 21:57
Sonnenscheinstunden	258	277	367	416	486	500		
astr.max.mögl.Beschattung	227	1647	388					

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM)	Schattenanfang (WEA mit erstem Schatten)	Schattenende (WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 16-SW - IP 16-SW
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinfallrichtung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	July	August	September	Oktober		November	Dezember
1	05:16	05:53	06:43	07:32		07:26	14:44 (WEA 1) 08:18
	21:57	21:25	20:22	19:12		17:06	60 15:44 (WEA 1) 16:25
2	05:17	05:54	06:45	07:34		07:28	14:45 (WEA 1) 08:19
	21:56	21:23	20:20	19:10		17:04	58 15:43 (WEA 1) 16:25
3	05:18	05:56	06:46	07:36		07:30	14:45 (WEA 1) 08:21
	21:56	21:21	20:18	19:08		17:02	58 15:43 (WEA 1) 16:24
4	05:18	05:58	06:48	07:37		16:13 (WEA 1) 07:32	14:46 (WEA 1) 08:22
	21:56	21:20	20:15	19:06	19	16:32 (WEA 1) 17:01	56 15:42 (WEA 1) 16:23
5	05:19	05:59	06:49	07:39		16:08 (WEA 1) 07:34	14:47 (WEA 1) 08:23
	21:55	21:18	20:13	19:03	27	16:35 (WEA 1) 16:59	55 15:42 (WEA 1) 16:23
6	05:20	06:01	06:51	07:41		16:04 (WEA 1) 07:35	14:48 (WEA 1) 08:25
	21:55	21:16	20:11	19:01	33	16:37 (WEA 1) 16:57	53 15:41 (WEA 1) 16:22
7	05:21	06:02	06:53	07:42		16:02 (WEA 1) 07:37	14:49 (WEA 1) 08:26
	21:54	21:14	20:09	18:59	38	16:40 (WEA 1) 16:55	51 15:40 (WEA 1) 16:22
8	05:22	06:04	06:54	07:44		15:59 (WEA 1) 07:39	14:50 (WEA 1) 08:27
	21:53	21:12	20:06	18:56	42	16:41 (WEA 1) 16:54	49 15:39 (WEA 1) 16:22
9	05:23	06:05	06:56	07:46		15:57 (WEA 1) 07:41	14:51 (WEA 1) 08:28
	21:53	21:11	20:04	18:54	45	16:42 (WEA 1) 16:52	47 15:38 (WEA 1) 16:21
10	05:24	06:07	06:58	07:48		15:55 (WEA 1) 07:43	14:53 (WEA 1) 08:29
	21:52	21:09	20:02	18:52	48	16:43 (WEA 1) 16:50	44 15:37 (WEA 1) 16:21
11	05:25	06:09	06:59	07:49		15:53 (WEA 1) 07:44	14:54 (WEA 1) 08:30
	21:51	21:07	19:59	18:50	51	16:44 (WEA 1) 16:49	42 15:36 (WEA 1) 16:21
12	05:26	06:10	07:01	07:51		15:52 (WEA 1) 07:46	14:56 (WEA 1) 08:31
	21:50	21:05	19:57	18:47	53	16:45 (WEA 1) 16:47	39 15:35 (WEA 1) 16:21
13	05:27	06:12	07:03	07:53		15:50 (WEA 1) 07:48	14:57 (WEA 1) 08:32
	21:49	21:03	19:55	18:45	55	16:45 (WEA 1) 16:46	36 15:33 (WEA 1) 16:21
14	05:28	06:14	07:04	07:54		15:49 (WEA 1) 07:50	14:59 (WEA 1) 08:33
	21:49	21:01	19:52	18:43	57	16:46 (WEA 1) 16:44	33 15:32 (WEA 1) 16:21
15	05:29	06:15	07:06	07:56		15:48 (WEA 1) 07:52	15:02 (WEA 1) 08:34
	21:48	20:59	19:50	18:41	58	16:46 (WEA 1) 16:43	28 15:30 (WEA 1) 16:21
16	05:30	06:17	07:07	07:58		15:47 (WEA 1) 07:53	15:04 (WEA 1) 08:35
	21:47	20:57	19:48	18:39	60	16:47 (WEA 1) 16:41	24 15:28 (WEA 1) 16:21
17	05:32	06:18	07:09	08:00		15:46 (WEA 1) 07:55	15:08 (WEA 1) 08:36
	21:45	20:55	19:45	18:36	61	16:47 (WEA 1) 16:40	17 15:25 (WEA 1) 16:21
18	05:33	06:20	07:11	08:01		15:46 (WEA 1) 07:57	15:12 (WEA 1) 08:37
	21:44	20:53	19:43	18:34	62	16:48 (WEA 1) 16:39	7 15:19 (WEA 1) 16:21
19	05:34	06:22	07:12	08:03		15:44 (WEA 1) 07:58	08:37
	21:43	20:51	19:41	18:32	63	16:47 (WEA 1) 16:37	16:22
20	05:36	06:23	07:14	08:05		15:44 (WEA 1) 08:00	08:38
	21:42	20:49	19:38	18:30	63	16:47 (WEA 1) 16:36	16:22
21	05:37	06:25	07:16	08:07		15:44 (WEA 1) 08:02	08:39
	21:41	20:46	19:36	18:28	63	16:47 (WEA 1) 16:35	16:23
22	05:38	06:27	07:17	08:08		15:43 (WEA 1) 08:04	08:39
	21:40	20:44	19:34	18:26	64	16:47 (WEA 1) 16:34	16:23
23	05:40	06:28	07:19	08:10		15:43 (WEA 1) 08:05	08:40
	21:38	20:42	19:31	18:24	64	16:47 (WEA 1) 16:33	16:23
24	05:41	06:30	07:21	08:12		15:43 (WEA 1) 08:07	08:40
	21:37	20:40	19:29	18:22	64	16:47 (WEA 1) 16:31	16:24
25	05:42	06:31	07:22	07:14		14:43 (WEA 1) 08:08	08:41
	21:35	20:38	19:26	17:20	64	15:47 (WEA 1) 16:30	16:25
26	05:44	06:33	07:24	07:16		14:43 (WEA 1) 08:10	08:41
	21:34	20:36	19:24	17:18	64	15:47 (WEA 1) 16:29	16:25
27	05:45	06:35	07:26	07:17		14:43 (WEA 1) 08:12	08:41
	21:33	20:33	19:22	17:16	64	15:47 (WEA 1) 16:29	16:26
28	05:47	06:36	07:27	07:19		14:44 (WEA 1) 08:13	08:41
	21:31	20:31	19:19	17:14	63	15:47 (WEA 1) 16:28	16:27
29	05:48	06:38	07:29	07:21		14:43 (WEA 1) 08:15	08:42
	21:29	20:29	19:17	17:12	62	15:45 (WEA 1) 16:27	16:28
30	05:50	06:40	07:31	07:23		14:43 (WEA 1) 08:16	08:42
	21:28	20:27	19:15	17:10	62	15:45 (WEA 1) 16:26	16:29
31	05:51	06:41		07:25		14:44 (WEA 1)	08:42
	21:26	20:25		17:08	60	15:44 (WEA 1)	16:30
Sonnenscheinstunden	503	454	381	331		266	243
astr.max.mögl.Beschattung				1529		757	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM)	Schattenanfang (WEA mit erstem Schatten)	Schattenende (WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 17-SW - IP 17-SW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni
1	08:42 16:31	08:15 17:19	07:21 18:11	15:46 (WEA 1) 18:11	07:10 20:05	06:05 21:43
2	08:42 16:32	08:13 17:21	07:19 18:13	15:46 (WEA 1) 18:13	07:08 20:07	06:03 21:44
3	08:41 16:33	08:11 17:23	07:16 18:15	15:46 (WEA 1) 18:15	07:05 20:09	06:01 21:45
4	08:41 16:34	08:10 17:25	07:14 18:16	15:46 (WEA 1) 18:16	07:03 20:10	05:59 21:46
5	08:41 16:35	08:08 17:26	07:12 18:18	15:46 (WEA 1) 18:18	07:01 20:12	05:57 21:47
6	08:41 16:37	08:06 17:28	07:10 18:20	15:46 (WEA 1) 18:20	06:58 20:14	05:55 21:48
7	08:40 16:38	08:05 17:30	07:08 18:22	15:47 (WEA 1) 18:22	06:56 20:16	05:54 21:49
8	08:40 16:39	08:03 17:32	07:05 18:24	15:46 (WEA 1) 18:24	06:54 20:17	05:52 21:50
9	08:39 16:41	08:01 17:34	07:03 18:25	15:47 (WEA 1) 18:25	06:52 20:19	05:50 21:51
10	08:39 16:42	07:59 17:36	16:10 (WEA 1) 18:27	07:01 18:27	15:48 (WEA 1) 20:21	06:49 21:11
11	08:38 16:43	07:58 17:38	16:07 (WEA 1) 18:29	06:59 18:29	15:49 (WEA 1) 20:22	06:47 21:13
12	08:38 16:45	07:56 17:40	16:04 (WEA 1) 18:31	06:56 18:31	15:49 (WEA 1) 20:24	06:45 21:15
13	08:37 16:46	07:54 17:41	16:02 (WEA 1) 18:32	06:54 18:32	15:50 (WEA 1) 20:26	06:43 21:16
14	08:36 16:48	07:52 17:43	16:00 (WEA 1) 18:34	06:52 18:34	15:51 (WEA 1) 20:28	06:40 21:18
15	08:35 16:50	07:50 17:45	15:58 (WEA 1) 18:36	06:49 18:36	15:52 (WEA 1) 20:29	06:38 21:19
16	08:34 16:51	07:48 17:47	15:57 (WEA 1) 18:38	06:47 18:38	15:54 (WEA 1) 20:31	06:36 21:21
17	08:33 16:53	07:46 17:49	15:54 (WEA 1) 18:39	06:45 18:39	15:56 (WEA 1) 20:33	06:34 21:22
18	08:33 16:54	07:44 17:51	15:53 (WEA 1) 18:41	06:42 18:41	15:57 (WEA 1) 20:34	06:32 21:24
19	08:32 16:56	07:42 17:53	15:52 (WEA 1) 18:43	06:40 18:43	16:00 (WEA 1) 20:36	06:29 21:25
20	08:30 16:58	07:40 17:54	15:51 (WEA 1) 18:45	06:38 18:45	16:03 (WEA 1) 20:38	06:27 21:27
21	08:29 16:59	07:38 17:56	15:51 (WEA 1) 18:46	06:35 18:46	16:06 (WEA 1) 20:40	06:25 21:28
22	08:28 17:01	07:36 17:58	15:50 (WEA 1) 18:48	06:33 18:48	16:09 (WEA 1) 20:41	06:23 21:30
23	08:27 17:03	07:34 18:00	15:50 (WEA 1) 18:50	06:31 18:50	16:12 (WEA 1) 20:43	06:21 21:31
24	08:26 17:05	07:32 18:02	15:49 (WEA 1) 18:52	06:28 18:52	16:15 (WEA 1) 20:45	06:19 21:33
25	08:25 17:06	07:30 18:04	15:48 (WEA 1) 18:53	06:26 18:53	16:18 (WEA 1) 20:46	06:17 21:34
26	08:23 17:08	07:27 18:06	15:47 (WEA 1) 18:55	06:24 18:55	16:21 (WEA 1) 20:48	06:15 21:35
27	08:22 17:10	07:25 18:07	15:47 (WEA 1) 18:57	06:22 18:57	16:24 (WEA 1) 20:50	06:13 21:37
28	08:21 17:12	07:23 18:09	15:47 (WEA 1) 18:58	06:19 18:58	16:27 (WEA 1) 20:52	06:11 21:38
29	08:19 17:14		07:17 20:00		20:54 20:53	21:39 21:57
30	08:18 17:15		07:15 20:02		20:56 20:55	21:40 21:57
31	08:16 17:17		07:12 20:04		20:58 20:57	21:42 21:59
Sonnenscheinstunden	258	277	367	416	486	500
astr.max.mögl.Beschattung		919	1068			

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 17-SW - IP 17-SW
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	July	August	September	Oktober	November	Dezember	
1	05:16 21:57	05:53 21:25	06:43 20:22	07:32 19:12	16:28 (WEA 1) 17:22 (WEA 1)	07:26 17:06 15:40 (WEA 1)	08:18 16:25
2	05:17 21:56	05:54 21:23	06:45 20:20	07:34 19:10	16:27 (WEA 1) 17:22 (WEA 1)	07:28 17:04	08:19 16:25
3	05:18 21:56	05:56 21:21	06:46 20:18	07:36 19:08	16:26 (WEA 1) 17:23 (WEA 1)	07:30 17:02	08:21 16:24
4	05:18 21:56	05:58 21:20	06:48 20:15	07:37 19:06	16:25 (WEA 1) 17:23 (WEA 1)	07:32 17:01	08:22 16:23
5	05:19 21:55	05:59 21:18	06:49 20:13	07:39 19:03	16:24 (WEA 1) 17:23 (WEA 1)	07:34 16:59	08:23 16:23
6	05:20 21:55	06:01 21:16	06:51 20:11	07:41 19:01	16:23 (WEA 1) 17:23 (WEA 1)	07:35 16:57	08:25 16:22
7	05:21 21:54	06:02 21:14	06:53 20:09	07:42 18:59	16:22 (WEA 1) 17:24 (WEA 1)	07:37 16:55	08:26 16:22
8	05:22 21:53	06:04 21:12	06:54 20:06	07:44 18:56	16:22 (WEA 1) 17:24 (WEA 1)	07:39 16:54	08:27 16:22
9	05:23 21:53	06:05 21:11	06:56 20:04	07:46 18:54	16:21 (WEA 1) 17:23 (WEA 1)	07:41 16:52	08:28 16:21
10	05:24 21:52	06:07 21:09	06:58 20:02	07:48 18:52	16:20 (WEA 1) 17:23 (WEA 1)	07:43 16:50	08:29 16:21
11	05:25 21:51	06:09 21:07	06:59 19:59	07:49 18:50	16:20 (WEA 1) 17:23 (WEA 1)	07:44 16:49	08:30 16:21
12	05:26 21:50	06:10 21:05	07:01 19:57	07:51 18:47	16:20 (WEA 1) 17:23 (WEA 1)	07:46 16:47	08:31 16:21
13	05:27 21:49	06:12 21:03	07:03 19:55	07:53 18:45	16:19 (WEA 1) 17:22 (WEA 1)	07:48 16:46	08:32 16:21
14	05:28 21:49	06:14 21:01	07:04 19:52	07:54 18:43	16:19 (WEA 1) 17:21 (WEA 1)	07:50 16:44	08:33 16:21
15	05:29 21:48	06:15 20:59	07:06 19:50	07:56 18:41	16:19 (WEA 1) 17:21 (WEA 1)	07:52 16:43	08:34 16:21
16	05:30 21:47	06:17 20:57	07:07 19:48	07:58 18:39	16:20 (WEA 1) 17:21 (WEA 1)	07:53 16:41	08:35 16:21
17	05:32 21:45	06:18 20:55	07:09 19:45	08:00 18:36	16:20 (WEA 1) 17:20 (WEA 1)	07:55 16:40	08:36 16:21
18	05:33 21:44	06:20 20:53	07:11 19:43	08:01 18:34	16:20 (WEA 1) 17:20 (WEA 1)	07:57 16:39	08:37 16:21
19	05:34 21:43	06:22 20:51	07:12 19:41	08:03 18:32	16:20 (WEA 1) 17:18 (WEA 1)	07:58 16:37	08:37 16:22
20	05:36 21:42	06:23 20:49	07:14 19:38	08:05 18:30	16:21 (WEA 1) 17:17 (WEA 1)	08:00 16:36	08:38 16:22
21	05:37 21:41	06:25 20:46	07:16 19:36	08:07 18:28	16:21 (WEA 1) 17:17 (WEA 1)	08:02 16:35	08:39 16:23
22	05:38 21:39	06:27 20:44	07:17 19:34	16:54 (WEA 1) 17:08 (WEA 1)	08:08 18:26	08:04 16:34	08:39 16:23
23	05:40 21:38	06:28 20:42	07:19 19:31	16:48 (WEA 1) 17:11 (WEA 1)	08:10 18:24	08:05 16:33	08:40 16:23
24	05:41 21:37	06:30 20:40	07:21 19:29	16:44 (WEA 1) 17:14 (WEA 1)	08:12 18:22	08:07 16:31	08:40 16:24
25	05:42 21:35	06:31 20:38	07:22 19:26	16:40 (WEA 1) 17:16 (WEA 1)	07:14 17:20	08:08 16:30	08:41 16:25
26	05:44 21:34	06:33 20:36	07:24 19:24	16:38 (WEA 1) 17:18 (WEA 1)	07:16 17:18	08:10 16:29	08:41 16:25
27	05:45 21:33	06:35 20:33	07:26 19:22	16:36 (WEA 1) 17:19 (WEA 1)	07:17 17:16	08:12 16:29	08:41 16:26
28	05:47 21:31	06:36 20:31	07:27 19:19	16:33 (WEA 1) 17:19 (WEA 1)	07:19 17:14	08:13 16:28	08:41 16:27
29	05:48 21:29	06:38 20:29	07:29 19:17	16:32 (WEA 1) 17:21 (WEA 1)	07:21 17:12	08:15 16:27	08:42 16:28
30	05:50 21:28	06:40 20:27	07:31 19:15	16:30 (WEA 1) 17:22 (WEA 1)	07:23 17:10	08:16 16:26	08:42 16:29
31	05:51 21:26	06:41 20:25			07:25 17:08	15:36 (WEA 1) 16:00 (WEA 1)	08:42 16:30
Sonnenscheinstunden	503	454	381	331	266		243
astr.max.mögl.Beschattung			333	1671	16		

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM)	Schattenanfang (WEA mit erstem Schatten)	Schattenende (WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 18-NW - IP 18-NW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
Die Sonne scheint täglich von Sonnenauf- bis -untergang
Die Rotorfläche steht immer senkrecht zur Sonneneinfallrichtung
Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni
1	08:42 16:31	08:15 17:19				
2	08:42 16:32	08:13 17:21	16:15 (WEA 1) 18:13	17	15:54 (WEA 1) 20:05	06:05 20:57
3	08:41 16:33	08:11 17:23	16:14 (WEA 1) 18:15	16	15:53 (WEA 1) 20:07	06:03 20:58
4	08:41 16:34	08:10 17:25	16:16 (WEA 1) 18:16	14	16:09 (WEA 1) 20:09	20:58 21:00
5	08:41 16:35	08:08 17:26	16:15 (WEA 1) 18:18	10	15:52 (WEA 1) 20:10	06:01 21:02
6	08:41 16:37	08:06 17:28	16:14 (WEA 1) 18:20		07:01 20:12	05:59 21:03
7	08:40 16:38	08:05 17:30	16:13 (WEA 1) 18:22		06:58 20:14	05:55 21:05
8	08:40 16:39	08:03 17:32	16:20 (WEA 1) 18:24		06:56 20:16	05:54 21:07
9	08:39 16:41	08:01 17:34	16:11 (WEA 1) 18:25		06:54 20:17	05:52 21:08
10	08:39 16:42	07:59 17:36	16:21 (WEA 1) 18:27		06:52 20:19	05:50 21:10
11	08:38 16:43	07:58 17:38	16:11 (WEA 1) 18:29		06:49 20:21	05:48 21:11
12	08:38 16:45	07:56 17:40	16:22 (WEA 1) 18:31		06:47 20:22	05:47 21:13
13	08:37 16:46	07:54 17:41	16:23 (WEA 1) 18:32		06:45 20:24	05:45 21:15
14	08:36 16:48	07:52 17:43	16:09 (WEA 1) 18:34		06:43 20:26	05:43 21:16
15	08:35 16:50	07:50 17:45	16:08 (WEA 1) 18:36		06:40 20:28	05:42 21:18
16	08:34 16:51	07:48 17:47	16:23 (WEA 1) 18:38		06:38 20:30	05:40 21:19
17	08:34 16:53	07:46 17:49	16:06 (WEA 1) 18:39		06:36 20:31	05:39 21:21
18	08:33 16:54	07:44 17:51	16:07 (WEA 1) 18:41		06:34 20:33	05:37 21:22
19	08:32 16:56	07:42 17:53	16:22 (WEA 1) 18:43		06:32 20:34	05:36 21:24
20	08:30 16:58	07:40 17:54	16:03 (WEA 1) 18:45		06:30 20:36	05:34 21:25
21	08:29 16:59	07:38 17:56	16:02 (WEA 1) 18:46		06:29 20:37	05:33 21:26
22	08:28 17:01	07:36 17:58	16:21 (WEA 1) 18:48		06:27 20:39	05:31 21:27
23	08:27 17:03	07:34 18:00	16:00 (WEA 1) 18:50		06:25 20:41	05:30 21:30
24	08:26 17:05	07:32 18:02	16:02 (WEA 1) 18:52		06:23 20:43	05:28 21:31
25	08:25 17:06	07:30 18:04	15:59 (WEA 1) 18:53		06:19 20:45	05:28 21:33
26	08:23 17:08	07:27 18:06	16:19 (WEA 1) 18:55		06:17 20:47	05:26 21:34
27	08:22 17:10	07:25 18:07	16:17 (WEA 1) 18:57		06:15 20:48	05:25 21:35
28	08:21 17:12	07:23 18:09	15:56 (WEA 1) 18:58		06:13 20:50	05:24 21:37
29	08:19 17:14		16:15 (WEA 1) 20:00		06:11 20:51	05:23 21:38
30	08:18 17:15		16:13 (WEA 1) 20:02		20:52 20:53	21:38 21:39
31	08:16 17:17		18:58 20:04		20:54 20:55	21:40 21:41
Sonnenscheinstunden	258	277	367		416	486
astr.max.mögl.Beschattung		372	57			500

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 18-NW - IP 18-NW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinfallrichtung

Die Windenergieanlage/n ist/sind immer in Betrieb

	July	August	September	Oktober		November	Dezember
1	05:16	05:53	06:43	07:32		07:26	15:40 (WEA 1) 08:18
	21:57	21:25	20:22	19:12		17:06	11 15:51 (WEA 1) 16:25
2	05:17	05:54	06:45	07:34		07:28	15:40 (WEA 1) 08:19
	21:56	21:23	20:20	19:10		17:04	11 15:51 (WEA 1) 16:25
3	05:17	05:56	06:46	07:36		07:30	15:41 (WEA 1) 08:21
	21:56	21:21	20:18	19:08		17:02	9 15:50 (WEA 1) 16:24
4	05:18	05:58	06:48	07:37		07:32	15:42 (WEA 1) 08:22
	21:56	21:20	20:15	19:06		17:01	8 15:50 (WEA 1) 16:23
5	05:19	05:59	06:49	07:39		07:34	15:43 (WEA 1) 08:23
	21:55	21:18	20:13	19:03		16:59	6 15:49 (WEA 1) 16:23
6	05:20	06:01	06:51	07:41		07:35	15:44 (WEA 1) 08:25
	21:55	21:16	20:11	19:01		16:57	5 15:49 (WEA 1) 16:22
7	05:21	06:02	06:53	07:42		07:37	15:44 (WEA 1) 08:26
	21:54	21:14	20:09	18:59		16:55	4 15:48 (WEA 1) 16:22
8	05:22	06:04	06:54	07:44		07:39	15:45 (WEA 1) 08:27
	21:53	21:12	20:06	18:56		16:54	2 15:47 (WEA 1) 16:22
9	05:23	06:05	06:56	07:46		07:41	15:46 (WEA 1) 08:28
	21:53	21:11	20:04	18:54		16:52	1 15:47 (WEA 1) 16:21
10	05:24	06:07	06:58	07:48		07:43	08:29
	21:52	21:09	20:02	18:52	12	16:38 (WEA 1) 16:50	16:21
11	05:25	06:09	06:59	07:49		16:27 (WEA 1) 07:44	08:30
	21:51	21:07	19:59	18:50	14	16:41 (WEA 1) 16:49	16:21
12	05:26	06:10	07:01	07:51		16:27 (WEA 1) 07:46	08:31
	21:50	21:05	19:57	18:47	17	16:44 (WEA 1) 16:47	16:21
13	05:27	06:12	07:03	07:53		16:27 (WEA 1) 07:48	08:32
	21:49	21:03	19:55	18:45	18	16:45 (WEA 1) 16:46	16:21
14	05:28	06:13	07:04	07:54		16:28 (WEA 1) 07:50	08:33
	21:49	21:01	19:52	18:43	18	16:46 (WEA 1) 16:44	16:21
15	05:29	06:15	07:06	07:56		16:29 (WEA 1) 07:52	08:34
	21:48	20:59	19:50	18:41	18	16:47 (WEA 1) 16:43	16:21
16	05:30	06:17	07:07	07:58		16:29 (WEA 1) 07:53	08:35
	21:47	20:57	19:48	18:39	20	16:49 (WEA 1) 16:41	16:21
17	05:32	06:18	07:09	08:00		16:30 (WEA 1) 07:55	08:36
	21:45	20:55	19:45	18:36	20	16:50 (WEA 1) 16:40	16:21
18	05:33	06:20	07:11	08:01		16:31 (WEA 1) 07:57	08:37
	21:44	20:53	19:43	18:34	19	16:50 (WEA 1) 16:39	16:21
19	05:34	06:22	07:12	08:03		16:31 (WEA 1) 07:58	08:37
	21:43	20:51	19:41	18:32	19	16:50 (WEA 1) 16:37	16:22
20	05:36	06:23	07:14	08:05		16:31 (WEA 1) 08:00	08:38
	21:42	20:49	19:38	18:30	20	16:51 (WEA 1) 16:36	16:22
21	05:37	06:25	07:16	08:07		16:32 (WEA 1) 08:02	08:39
	21:41	20:46	19:36	18:28	19	16:51 (WEA 1) 16:35	16:22
22	05:38	06:27	07:17	08:08		16:33 (WEA 1) 08:04	08:39
	21:40	20:44	19:34	18:26	19	16:52 (WEA 1) 16:34	16:23
23	05:40	06:28	07:19	08:10		16:34 (WEA 1) 08:05	08:40
	21:38	20:42	19:31	18:24	18	16:52 (WEA 1) 16:33	16:23
24	05:41	06:30	07:21	08:12		16:35 (WEA 1) 08:07	08:40
	21:37	20:40	19:29	18:22	17	16:52 (WEA 1) 16:31	16:24
25	05:42	06:31	07:22	07:14		15:35 (WEA 1) 08:08	08:41
	21:35	20:38	19:26	17:20	17	15:52 (WEA 1) 16:30	16:25
26	05:44	06:33	07:24	07:16		15:36 (WEA 1) 08:10	08:41
	21:34	20:36	19:24	17:18	16	15:52 (WEA 1) 16:29	16:25
27	05:45	06:35	07:26	07:17		15:37 (WEA 1) 08:12	08:41
	21:33	20:33	19:22	17:16	16	15:53 (WEA 1) 16:29	16:26
28	05:47	06:36	07:27	07:19		15:38 (WEA 1) 08:13	08:41
	21:31	20:31	19:19	17:14	14	15:52 (WEA 1) 16:28	16:27
29	05:48	06:38	07:29	07:21		15:37 (WEA 1) 08:15	08:42
	21:29	20:29	19:17	17:12	14	15:51 (WEA 1) 16:27	16:28
30	05:50	06:40	07:31	07:23		15:38 (WEA 1) 08:16	08:42
	21:28	20:27	19:15	17:10	13	15:51 (WEA 1) 16:26	16:29
31	05:51	06:41		07:25		15:39 (WEA 1)	08:42
	21:26	20:25		17:08	12	15:51 (WEA 1)	16:30
Sonnenscheinstunden	503	454	381	331		266	243
astr.max.mögl.Beschattung				370		57	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM)	Schattenanfang (WEA mit erstem Schatten)	Schattenende (WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 18-SW - IP 18-SW
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinfallrichtung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni	
1	08:42 16:31	08:15 17:19	15:40 (WEA 1) 16:17 (WEA 1)	07:21 18:11	15:39 (WEA 1) 20:05	06:05 20:57	05:19 21:43
2	08:42 16:32	08:13 17:21	15:38 (WEA 1) 16:18 (WEA 1)	07:19 18:13	15:41 (WEA 1) 20:07	06:03 20:58	05:18 21:44
3	08:41 16:33	08:11 17:23	15:37 (WEA 1) 16:19 (WEA 1)	07:16 18:15	15:43 (WEA 1) 20:09	06:01 21:00	05:18 21:45
4	08:41 16:34	08:10 17:25	15:37 (WEA 1) 16:21 (WEA 1)	07:14 18:16	15:45 (WEA 1) 20:10	05:59 21:02	05:17 21:46
5	08:41 16:35	08:08 17:26	15:36 (WEA 1) 16:22 (WEA 1)	07:12 18:18	15:48 (WEA 1) 20:12	05:57 21:03	05:16 21:47
6	08:41 16:37	08:06 17:28	15:35 (WEA 1) 16:23 (WEA 1)	07:10 18:20	15:53 (WEA 1) 20:14	06:58 21:05	05:15 21:48
7	08:40 16:38	08:05 17:30	15:34 (WEA 1) 16:23 (WEA 1)	07:08 18:22	06:56 20:16	05:54 21:07	05:15 21:49
8	08:40 16:39	08:03 17:32	15:34 (WEA 1) 16:24 (WEA 1)	07:05 18:24	06:54 20:17	05:52 21:08	05:14 21:50
9	08:39 16:41	08:01 17:34	15:33 (WEA 1) 16:25 (WEA 1)	07:03 18:25	06:52 20:19	05:50 21:10	05:14 21:51
10	08:39 16:42	07:59 17:36	15:34 (WEA 1) 16:26 (WEA 1)	07:01 18:27	06:49 20:21	05:48 21:11	05:13 21:51
11	08:38 16:43	07:58 17:38	15:33 (WEA 1) 16:27 (WEA 1)	06:59 18:29	06:47 20:22	05:47 21:13	05:13 21:52
12	08:38 16:45	07:56 17:40	15:33 (WEA 1) 16:27 (WEA 1)	06:56 18:31	06:45 20:24	05:45 21:15	05:13 21:53
13	08:37 16:46	07:54 17:41	15:33 (WEA 1) 16:27 (WEA 1)	06:54 18:32	06:43 20:26	05:43 21:16	05:12 21:54
14	08:36 16:48	07:52 17:43	15:32 (WEA 1) 16:27 (WEA 1)	06:52 18:34	06:40 20:28	05:42 21:18	05:12 21:54
15	08:35 16:50	07:50 17:45	15:32 (WEA 1) 16:28 (WEA 1)	06:49 18:36	06:38 20:29	05:40 21:19	05:12 21:55
16	08:34 16:51	07:48 17:47	15:32 (WEA 1) 16:28 (WEA 1)	06:47 18:38	06:36 20:31	05:39 21:21	05:12 21:55
17	08:33 16:53	07:46 17:49	15:31 (WEA 1) 16:27 (WEA 1)	06:45 18:39	06:34 20:33	05:37 21:22	05:12 21:56
18	08:33 16:54	07:44 17:51	15:32 (WEA 1) 16:27 (WEA 1)	06:42 18:41	06:32 20:34	05:36 21:24	05:12 21:56
19	08:32 16:56	07:42 17:53	15:32 (WEA 1) 16:27 (WEA 1)	06:40 18:43	06:29 20:36	05:34 21:25	05:12 21:56
20	08:30 16:58	07:40 17:54	15:32 (WEA 1) 16:27 (WEA 1)	06:38 18:45	06:27 20:38	05:33 21:27	05:12 21:57
21	08:29 16:59	07:38 17:56	15:33 (WEA 1) 16:26 (WEA 1)	06:35 18:46	06:25 20:40	05:31 21:28	05:12 21:57
22	08:28 17:01	07:36 17:58	15:33 (WEA 1) 16:26 (WEA 1)	06:33 18:48	06:23 20:41	05:30 21:30	05:12 21:57
23	08:27 17:03	07:34 18:00	15:34 (WEA 1) 16:26 (WEA 1)	06:31 18:50	06:21 20:43	05:29 21:31	05:12 21:57
24	08:26 17:05	07:32 18:02	15:35 (WEA 1) 16:25 (WEA 1)	06:28 18:52	06:19 20:45	05:28 21:33	05:13 21:58
25	08:25 17:06	07:30 18:04	15:35 (WEA 1) 16:23 (WEA 1)	06:26 18:53	06:17 20:46	05:26 21:34	05:13 21:58
26	08:23 17:08	15:53 (WEA 1) 16:03 (WEA 1)	07:27 18:06	06:24 18:55	06:15 20:48	05:25 21:35	05:13 21:58
27	08:22 17:10	15:48 (WEA 1) 16:06 (WEA 1)	07:25 18:07	06:22 18:57	06:13 20:50	05:24 21:37	05:14 21:58
28	08:21 17:12	15:45 (WEA 1) 16:09 (WEA 1)	07:23 18:09	06:19 18:58	06:11 20:52	05:23 21:38	05:14 21:57
29	08:19 17:14	15:44 (WEA 1) 16:12 (WEA 1)	07:17 18:00	07:17 20:00	06:09 20:53	05:22 21:39	05:15 21:57
30	08:18 17:15	15:42 (WEA 1) 16:13 (WEA 1)	07:15 18:02	07:15 20:02	06:07 20:55	05:21 21:40	05:15 21:57
31	08:16 17:17	15:41 (WEA 1) 16:16 (WEA 1)	07:12 20:04	07:12 20:04	06:05 20:57	05:20 21:42	05:14 21:57
Sonnenscheinstunden	258	277	367	416	486	500	
astr.max.mögl.Beschattung	146	1401	171				

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM)	Schattenanfang (WEA mit erstem Schatten)	Schattenende (WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 18-SW - IP 18-SW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinfallrichtung

Die Windenergieanlage/n ist/sind immer in Betrieb

	July	August	September	Oktober		November	Dezember
1	05:16 21:57	05:53 21:25	06:43 20:22	07:32 19:12		07:26 17:06	15:02 (WEA 1) 16:25
2	05:17 21:56	05:54 21:23	06:45 20:20	07:34 19:10		07:28 17:04	15:03 (WEA 1) 16:25
3	05:17 21:56	05:56 21:21	06:46 20:18	07:36 19:08		07:30 17:02	15:04 (WEA 1) 16:24
4	05:18 21:56	05:58 21:20	06:48 20:15	07:37 19:06		07:32 17:01	15:04 (WEA 1) 16:23
5	05:19 21:55	05:59 21:18	06:49 20:13	07:39 19:03		07:34 16:59	15:05 (WEA 1) 16:23
6	05:20 21:55	06:01 21:16	06:51 20:11	07:41 19:01		07:35 16:57	15:06 (WEA 1) 16:22
7	05:21 21:54	06:02 21:14	06:53 20:09	07:42 18:59		07:37 16:55	15:07 (WEA 1) 16:22
8	05:22 21:53	06:04 21:12	06:54 20:06	07:44 18:56	18	16:26 (WEA 1) 16:44 (WEA 1)	15:08 (WEA 1) 16:22
9	05:23 21:53	06:05 21:11	06:56 20:04	07:46 18:54	25	16:21 (WEA 1) 16:46 (WEA 1)	15:09 (WEA 1) 16:21
10	05:24 21:52	06:07 21:09	06:58 20:02	07:48 18:52	31	16:18 (WEA 1) 16:49 (WEA 1)	15:11 (WEA 1) 16:21
11	05:25 21:51	06:09 21:07	06:59 19:59	07:49 18:50	34	16:16 (WEA 1) 16:50 (WEA 1)	15:12 (WEA 1) 16:21
12	05:26 21:50	06:10 21:05	07:01 19:57	07:51 18:47	38	16:14 (WEA 1) 16:52 (WEA 1)	15:14 (WEA 1) 16:21
13	05:27 21:49	06:12 21:03	07:03 19:55	07:53 18:45	41	16:11 (WEA 1) 16:52 (WEA 1)	15:16 (WEA 1) 16:21
14	05:28 21:49	06:13 21:01	07:04 19:52	07:54 18:43	43	16:10 (WEA 1) 16:53 (WEA 1)	15:18 (WEA 1) 16:21
15	05:29 21:48	06:15 20:59	07:06 19:50	07:56 18:41	45	16:09 (WEA 1) 16:54 (WEA 1)	15:21 (WEA 1) 16:21
16	05:30 21:47	06:17 20:57	07:07 19:48	07:58 18:39	48	16:07 (WEA 1) 16:55 (WEA 1)	15:26 (WEA 1) 16:21
17	05:32 21:45	06:18 20:55	07:09 19:45	08:00 18:36	50	16:06 (WEA 1) 16:56 (WEA 1)	15:39 (WEA 1) 16:21
18	05:33 21:44	06:20 20:53	07:11 19:43	08:01 18:34	51	16:06 (WEA 1) 16:57 (WEA 1)	15:44 (WEA 1) 16:21
19	05:34 21:43	06:22 20:51	07:12 19:41	08:03 18:32	52	16:04 (WEA 1) 16:56 (WEA 1)	15:47 (WEA 1) 16:22
20	05:36 21:42	06:23 20:49	07:14 19:38	08:05 18:30	53	16:03 (WEA 1) 16:56 (WEA 1)	15:51 (WEA 1) 16:22
21	05:37 21:41	06:25 20:46	07:16 19:36	08:07 18:28	54	16:03 (WEA 1) 16:57 (WEA 1)	15:56 (WEA 1) 16:22
22	05:38 21:40	06:27 20:44	07:17 19:34	08:08 18:26	55	16:02 (WEA 1) 16:57 (WEA 1)	16:00 16:34
23	05:40 21:38	06:28 20:42	07:19 19:31	08:10 18:24	55	16:02 (WEA 1) 16:57 (WEA 1)	16:05 16:33
24	05:41 21:37	06:30 20:40	07:21 19:29	08:12 18:22	55	16:02 (WEA 1) 16:57 (WEA 1)	16:37 16:31
25	05:42 21:35	06:31 20:38	07:22 19:26	08:14 17:20	55	15:02 (WEA 1) 15:57 (WEA 1)	16:37 16:30
26	05:44 21:34	06:33 20:36	07:24 19:24	08:16 17:18	55	15:02 (WEA 1) 15:57 (WEA 1)	16:30 16:29
27	05:45 21:33	06:35 20:33	07:26 19:22	08:17 17:16	55	15:02 (WEA 1) 15:57 (WEA 1)	16:29 16:29
28	05:47 21:31	06:36 20:31	07:27 19:19	08:19 17:14	55	15:02 (WEA 1) 15:57 (WEA 1)	16:29 16:28
29	05:48 21:29	06:38 20:29	07:29 19:17	08:21 17:12	55	15:01 (WEA 1) 15:56 (WEA 1)	16:28 16:27
30	05:50 21:28	06:40 20:27	07:31 19:15	08:23 17:10	54	15:01 (WEA 1) 15:55 (WEA 1)	16:27 16:26
31	05:51 21:26	06:41 20:25		08:25 17:08	53	15:02 (WEA 1) 15:55 (WEA 1)	16:26 16:30
Sonnenscheinstunden	503	454	381	331		266	243
astr.max.mögl.Beschattung				1130		604	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM)	Schattenanfang (WEA mit erstem Schatten)	Schattenende (WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 19-NW - IP 19-NW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung

Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember		
1	08:42	14:30 (WEA 1)	08:15	07:21	07:10	06:05	05:19	05:16	05:53	06:43	07:32	07:26	08:18	14:16 (WEA 1)
2	16:31	42 15:12 (WEA 1)	17:19	18:11	20:05	20:57	21:43	21:57	21:25	20:22	19:12	17:06	16:25	43 14:59 (WEA 1)
3	08:41	14:31 (WEA 1)	08:11	07:16	07:05	06:01	05:18	05:17	05:56	06:46	07:36	07:30	08:21	14:17 (WEA 1)
4	16:33	43 15:14 (WEA 1)	17:23	18:15	20:09	21:00	21:45	21:56	21:21	20:18	19:08	17:02	16:24	42 14:59 (WEA 1)
5	08:41	14:31 (WEA 1)	08:10	07:14	07:03	05:59	05:17	05:18	05:57	06:48	07:37	07:32	08:22	42 14:18 (WEA 1)
6	16:34	42 15:13 (WEA 1)	17:25	18:16	20:10	21:02	21:46	21:56	21:20	20:15	19:06	17:00	16:23	42 15:00 (WEA 1)
7	08:41	14:32 (WEA 1)	08:08	07:12	07:01	05:57	05:16	05:19	05:59	06:49	07:39	07:34	08:23	42 14:18 (WEA 1)
8	16:35	42 15:14 (WEA 1)	17:26	18:18	20:12	21:03	21:47	21:55	21:18	20:13	19:03	16:59	16:23	42 15:00 (WEA 1)
9	08:41	14:32 (WEA 1)	08:06	07:10	06:58	05:55	05:15	05:20	06:01	06:51	07:41	07:35	08:25	42 14:18 (WEA 1)
10	16:37	42 15:14 (WEA 1)	17:28	18:20	20:14	21:05	21:48	21:55	21:16	20:11	19:01	16:57	16:22	42 15:00 (WEA 1)
11	08:40	14:33 (WEA 1)	08:05	07:08	06:56	05:54	05:15	05:21	06:02	06:53	07:42	07:37	08:26	42 14:19 (WEA 1)
12	16:38	42 15:15 (WEA 1)	17:30	18:22	20:16	21:07	21:49	21:54	21:14	20:09	18:59	16:55	16:22	42 15:01 (WEA 1)
13	08:40	14:33 (WEA 1)	08:03	07:05	06:54	05:52	05:14	05:22	06:04	06:54	07:44	07:39	08:27	42 14:19 (WEA 1)
14	16:39	42 15:15 (WEA 1)	17:32	18:24	20:17	21:08	21:50	21:53	21:12	20:06	18:56	16:54	16:22	43 15:02 (WEA 1)
15	08:39	14:34 (WEA 1)	08:01	07:03	06:52	05:50	05:14	05:23	06:05	06:56	07:46	07:41	08:28	42 14:19 (WEA 1)
16	16:41	42 15:16 (WEA 1)	17:34	18:25	20:19	21:10	21:51	21:53	21:11	20:04	18:54	16:52	16:21	43 15:02 (WEA 1)
17	08:39	14:34 (WEA 1)	07:59	07:01	06:49	05:48	05:13	05:24	06:07	06:58	07:48	07:43	08:29	42 14:20 (WEA 1)
18	16:42	42 15:16 (WEA 1)	17:36	18:27	20:21	21:12	21:51	21:52	21:09	20:02	18:52	16:50	16:21	42 15:02 (WEA 1)
19	08:38	14:34 (WEA 1)	07:58	06:59	06:47	05:47	05:13	05:25	06:09	06:59	07:49	07:44	08:30	42 14:20 (WEA 1)
20	16:43	43 15:17 (WEA 1)	17:38	18:29	20:22	21:13	21:52	21:51	21:07	19:59	18:50	16:49	16:21	42 15:02 (WEA 1)
21	08:38	14:35 (WEA 1)	07:56	06:56	06:45	05:45	05:13	05:26	06:10	07:01	07:51	07:46	08:32	42 14:21 (WEA 1)
22	16:45	42 15:17 (WEA 1)	17:40	18:31	20:24	21:15	21:53	21:50	21:05	19:57	18:47	16:47	11 14:28 (WEA 1)	43 15:04 (WEA 1)
23	08:37	14:35 (WEA 1)	07:54	06:54	06:43	05:43	05:12	05:27	06:12	07:03	07:53	07:48	08:33	42 14:22 (WEA 1)
24	16:46	42 15:17 (WEA 1)	17:41	18:32	20:26	21:16	21:54	21:49	21:03	19:55	18:45	16:46	17 14:42 (WEA 1)	42 15:04 (WEA 1)
25	08:36	14:36 (WEA 1)	07:52	06:52	06:40	05:42	05:12	05:28	06:13	07:04	07:54	07:50	08:33	42 14:22 (WEA 1)
26	16:48	41 15:17 (WEA 1)	17:43	18:34	20:28	21:18	21:54	21:49	21:01	19:52	18:43	16:44	22 14:42 (WEA 1)	42 15:04 (WEA 1)
27	08:35	14:36 (WEA 1)	07:50	06:49	06:38	05:40	05:12	05:29	06:15	07:06	07:56	07:52	14:21 (WEA 1)	42 15:04 (WEA 1)
28	16:49	41 15:17 (WEA 1)	17:45	18:36	20:29	21:19	21:55	21:48	20:59	19:50	18:41	16:43	26 14:47 (WEA 1)	42 15:04 (WEA 1)
29	08:34	14:37 (WEA 1)	07:48	06:47	06:36	05:39	05:12	05:30	06:17	07:07	07:58	07:53	14:20 (WEA 1)	42 14:23 (WEA 1)
30	16:51	40 15:17 (WEA 1)	17:47	18:38	20:31	21:21	21:55	21:47	20:57	19:48	18:39	16:41	28 14:48 (WEA 1)	41 15:04 (WEA 1)
31	08:34	14:38 (WEA 1)	07:46	06:45	06:34	05:37	05:12	05:32	06:18	07:09	08:00	07:55	14:19 (WEA 1)	42 14:23 (WEA 1)
32	16:53	39 15:17 (WEA 1)	17:49	18:39	20:33	21:23	21:56	21:45	20:55	19:45	18:36	16:40	31 14:50 (WEA 1)	42 15:05 (WEA 1)
33	08:33	14:38 (WEA 1)	07:44	06:42	06:32	05:36	05:12	05:33	06:20	07:11	08:01	07:57	14:18 (WEA 1)	42 14:24 (WEA 1)
34	16:54	40 15:18 (WEA 1)	17:51	18:41	20:34	21:24	21:56	21:44	20:53	19:43	18:34	16:39	32 14:50 (WEA 1)	42 15:06 (WEA 1)
35	08:32	14:39 (WEA 1)	07:42	06:40	06:29	05:34	05:12	05:34	06:22	07:12	08:03	07:58	14:17 (WEA 1)	42 14:24 (WEA 1)
36	16:56	39 15:18 (WEA 1)	17:53	18:43	20:36	21:26	21:56	21:43	20:51	19:41	18:32	16:37	34 14:51 (WEA 1)	41 15:05 (WEA 1)
37	08:31	14:40 (WEA 1)	07:40	06:38	06:27	05:33	05:12	05:36	06:23	07:14	08:05	08:00	14:17 (WEA 1)	42 14:25 (WEA 1)
38	16:58	38 15:18 (WEA 1)	17:54	18:45	20:38	21:27	21:57	21:42	20:49	19:38	18:30	16:36	35 14:52 (WEA 1)	41 15:06 (WEA 1)
39	08:29	14:40 (WEA 1)	07:38	06:35	06:25	05:31	05:12	05:37	06:25	07:16	08:07	08:02	14:16 (WEA 1)	42 14:26 (WEA 1)
40	16:59	37 15:17 (WEA 1)	17:56	18:46	20:40	21:28	21:57	21:41	20:46	19:36	18:28	16:35	37 14:53 (WEA 1)	41 15:07 (WEA 1)
41	08:28	14:42 (WEA 1)	07:36	06:33	06:23	05:30	05:12	05:38	06:27	07:17	08:08	08:04	14:16 (WEA 1)	42 14:26 (WEA 1)
42	17:01	35 15:17 (WEA 1)	17:58	18:48	20:41	21:30	21:57	21:40	20:44	19:34	18:26	16:34	38 14:54 (WEA 1)	41 15:07 (WEA 1)
43	08:27	14:43 (WEA 1)	07:34	06:31	06:21	05:29	05:12	05:40	06:28	07:19	08:10	08:05	14:16 (WEA 1)	42 14:27 (WEA 1)
44	17:03	34 15:17 (WEA 1)	18:00	18:50	20:43	21:31	21:57	21:38	20:42	19:31	18:24	16:33	39 14:55 (WEA 1)	41 15:08 (WEA 1)
45	08:26	14:44 (WEA 1)	07:32	06:28	06:19	05:28	05:13	05:41	06:30	07:21	08:12	08:07	14:15 (WEA 1)	42 14:27 (WEA 1)
46	17:05	32 15:16 (WEA 1)	18:02	18:52	20:45	21:33	21:58	21:37	20:40	19:29	18:22	16:31	40 14:55 (WEA 1)	41 15:08 (WEA 1)
47	08:25	14:45 (WEA 1)	07:30	06:26	06:17	05:26	05:13	05:42	06:31	07:22	08:14	08:08	14:16 (WEA 1)	42 14:27 (WEA 1)
48	17:06	31 15:16 (WEA 1)	18:04	18:53	20:46	21:34	21:58	21:35	20:38	19:26	18:20	16:30	40 14:56 (WEA 1)	42 15:09 (WEA 1)
49	08:23	14:47 (WEA 1)	07:27	06:24	06:15	05:25	05:13	05:44	06:33	07:24	08:16	08:10	14:16 (WEA 1)	42 14:27 (WEA 1)
50	17:08	28 15:15 (WEA 1)	18:06	18:55	20:48	21:35	21:58	21:34	20:36	19:24	18:18	16:29	40 14:56 (WEA 1)	42 15:09 (WEA 1)
51	08:22	14:48 (WEA 1)	07:25	06:22	06:13	05:24	05:14	05:45	06:35	07:26	08:17	08:12	14:16 (WEA 1)	42 14:29 (WEA 1)
52	17:10	26 15:14 (WEA 1)	18:07	18:57	20:50	21:37	21:58	21:33	20:33	19:22	18:16	16:29	41 14:57 (WEA 1)	42 15:10 (WEA 1)
53	08:21	14:50 (WEA 1)	07:23	06:19	06:11	05:23	05:14	05:47	06:36	07:27	08:19	08:13	14:16 (WEA 1)	42 14:29 (WEA 1)
54	17:12	22 15:12 (WEA 1)	18:09	18:58	20:52	21:38	21:57	21:31	20:31	19:19	18:14	16:28	41 14:57 (WEA 1)	42 15:11 (WEA 1)
55	08:19	14:53 (WEA 1)		07:17	06:09	05:22	05:15	05:48	06:38	07:29	08:21	08:15	14:16 (WEA 1)	42 14:29 (WEA 1)
56	17:13	17 15:10 (WEA 1)		20:00	20:53	21:39	21:57	21:30	20:29	19:17	18:12	16:27	42 14:58 (WEA 1)	42 15:11 (WEA 1)
57	08:18	14:56 (WEA 1)		07:15	06:07	05:21	05:15	05:50	06:40	07:31	08:23	08:16	14:16 (WEA 1)	42 14:30 (WEA 1)
58	17:15	11 15:07 (WEA 1)		20:02	20:55	21:40	21:57	21:28	20:27	19:15	18:10	16:26	42 14:58 (WEA 1)	42 15:12 (WEA 1)
59	08:16			07:12		05:20		05:51	06:41		07:25		08:42	42 14:29 (WEA 1)
60	17:17			20:04		21:42		21:26	20:25		17:08		16:30	42 15:11 (WEA 1)
61	Sonnenscheinstunden	258	277	367	416	486	500	503	454	381	331	266	243	
62	astr.max.mögl.Beschattung	1099									636		1299	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 19-SW - IP 19-SW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung

Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember			
1	08:42	14:32 (WEA 1)	08:15	07:21	07:10	06:05	05:19	05:16	05:53	06:43	07:32	07:26	08:18	14:18 (WEA 1)	
2	16:31	42 15:14 (WEA 1)	17:19	18:11	20:05	20:57	21:43	21:57	21:25	20:22	19:12	17:06	16:25	43 15:01 (WEA 1)	
3	08:41	14:33 (WEA 1)	08:11	07:16	07:05	06:01	05:18	05:17	05:56	06:46	07:36	07:30	08:21	14:19 (WEA 1)	
4	16:33	43 15:16 (WEA 1)	17:23	18:15	20:09	21:00	21:45	21:56	21:21	20:18	19:08	17:02	16:24	42 15:01 (WEA 1)	
5	08:41	14:33 (WEA 1)	08:10	07:14	07:03	05:59	05:17	05:18	05:57	06:48	07:37	07:32	08:22	14:20 (WEA 1)	
6	16:34	42 15:15 (WEA 1)	17:25	18:16	20:10	21:02	21:46	21:56	21:20	20:15	19:06	17:00	16:23	42 15:02 (WEA 1)	
7	08:41	14:34 (WEA 1)	08:08	07:12	07:01	05:57	05:16	05:19	05:59	06:49	07:39	07:34	08:23	14:20 (WEA 1)	
8	16:35	42 15:16 (WEA 1)	17:26	18:18	20:12	21:03	21:47	21:55	21:18	20:13	19:03	16:59	16:23	42 15:02 (WEA 1)	
9	08:41	14:34 (WEA 1)	08:06	07:10	06:58	05:55	05:15	05:20	06:01	06:51	07:41	07:35	08:25	14:20 (WEA 1)	
10	16:37	42 15:16 (WEA 1)	17:28	18:20	20:14	21:05	21:48	21:55	21:16	20:11	19:01	16:57	16:22	42 15:02 (WEA 1)	
11	08:40	14:35 (WEA 1)	08:05	07:08	06:56	05:54	05:15	05:21	06:02	06:53	07:42	07:37	08:26	14:21 (WEA 1)	
12	16:38	42 15:17 (WEA 1)	17:30	18:22	20:16	21:07	21:49	21:54	21:14	20:09	18:59	16:55	16:22	42 15:03 (WEA 1)	
13	08:40	14:35 (WEA 1)	08:03	07:05	06:54	05:52	05:14	05:22	06:04	06:54	07:44	07:39	08:27	14:21 (WEA 1)	
14	16:39	42 15:17 (WEA 1)	17:32	18:24	20:17	21:08	21:50	21:53	21:12	20:06	18:56	16:54	16:22	42 15:03 (WEA 1)	
15	08:39	14:36 (WEA 1)	08:01	07:03	06:52	05:50	05:14	05:23	06:05	06:56	07:46	07:41	08:28	14:21 (WEA 1)	
16	16:41	42 15:18 (WEA 1)	17:34	18:25	20:19	21:10	21:51	21:53	21:11	20:04	18:54	16:52	16:21	43 15:04 (WEA 1)	
17	08:39	14:36 (WEA 1)	07:59	07:01	06:49	05:48	05:13	05:24	06:07	06:58	07:48	07:43	08:29	14:22 (WEA 1)	
18	16:42	42 15:18 (WEA 1)	17:36	18:27	20:21	21:12	21:51	21:52	21:09	20:02	18:52	16:50	16:21	42 15:04 (WEA 1)	
19	08:38	14:36 (WEA 1)	07:58	06:59	06:47	05:47	05:13	05:25	06:09	06:59	07:49	07:44	08:30	14:22 (WEA 1)	
20	16:43	43 15:19 (WEA 1)	17:38	18:29	20:22	21:13	21:52	21:51	21:07	19:59	18:50	16:49	10 14:30 (WEA 1)	16:21	42 15:04 (WEA 1)
21	08:38	14:36 (WEA 1)	07:56	06:56	06:45	05:45	05:13	05:26	06:10	07:01	07:51	07:46	17 14:27 (WEA 1)	08:32	14:23 (WEA 1)
22	16:45	43 15:19 (WEA 1)	17:40	18:31	20:24	21:15	21:53	21:50	21:05	19:57	18:47	16:47	17 14:44 (WEA 1)	16:21	42 15:05 (WEA 1)
23	08:37	14:37 (WEA 1)	07:54	06:54	06:43	05:43	05:12	05:27	06:12	07:03	07:53	07:48	14:24 (WEA 1)	08:33	14:24 (WEA 1)
24	16:46	42 15:19 (WEA 1)	17:41	18:32	20:26	21:16	21:54	21:49	21:03	19:55	18:45	16:46	22 14:46 (WEA 1)	16:21	42 15:06 (WEA 1)
25	08:36	14:37 (WEA 1)	07:52	06:52	06:40	05:42	05:12	05:28	06:13	07:04	07:54	07:50	25 14:23 (WEA 1)	08:33	14:24 (WEA 1)
26	16:48	42 15:19 (WEA 1)	17:43	18:34	20:28	21:18	21:54	21:49	21:01	19:52	18:43	16:44	25 14:48 (WEA 1)	16:21	42 15:06 (WEA 1)
27	08:35	14:38 (WEA 1)	07:50	06:49	06:38	05:40	05:12	05:29	06:15	07:06	07:56	07:52	14:22 (WEA 1)	08:34	14:24 (WEA 1)
28	16:49	41 15:19 (WEA 1)	17:45	18:36	20:29	21:19	21:55	21:48	20:59	19:50	18:41	16:43	28 14:50 (WEA 1)	16:21	42 15:06 (WEA 1)
29	08:34	14:38 (WEA 1)	07:48	06:47	06:36	05:39	05:12	05:30	06:17	07:07	07:58	07:53	14:21 (WEA 1)	08:35	14:25 (WEA 1)
30	16:51	42 15:20 (WEA 1)	17:47	18:38	20:31	21:21	21:55	21:47	20:57	19:48	18:39	16:41	30 14:51 (WEA 1)	16:21	41 15:06 (WEA 1)
31	08:34	14:39 (WEA 1)	07:46	06:45	06:34	05:37	05:12	05:32	06:18	07:09	08:00	07:55	14:20 (WEA 1)	08:36	14:25 (WEA 1)
32	16:53	41 15:20 (WEA 1)	17:49	18:39	20:33	21:23	21:56	21:45	20:55	19:45	18:36	16:40	32 14:52 (WEA 1)	16:21	42 15:07 (WEA 1)
33	08:33	14:40 (WEA 1)	07:44	06:42	06:32	05:36	05:12	05:33	06:20	07:11	08:01	07:57	14:18 (WEA 1)	08:37	14:26 (WEA 1)
34	16:54	40 15:20 (WEA 1)	17:51	18:41	20:34	21:24	21:56	21:44	20:53	19:43	18:34	16:39	34 14:52 (WEA 1)	16:21	41 15:07 (WEA 1)
35	08:32	14:41 (WEA 1)	07:42	06:40	06:29	05:34	05:12	05:34	06:22	07:12	08:03	07:58	14:18 (WEA 1)	08:38	14:26 (WEA 1)
36	16:56	39 15:20 (WEA 1)	17:53	18:43	20:36	21:26	21:56	21:43	20:51	19:41	18:32	16:37	36 14:54 (WEA 1)	16:22	41 15:07 (WEA 1)
37	08:31	14:42 (WEA 1)	07:40	06:38	06:27	05:33	05:12	05:36	06:23	07:14	08:05	08:00	14:18 (WEA 1)	08:38	14:27 (WEA 1)
38	16:58	38 15:20 (WEA 1)	17:54	18:45	20:38	21:27	21:57	21:42	20:49	19:38	18:30	16:36	36 14:54 (WEA 1)	16:22	41 15:08 (WEA 1)
39	08:29	14:42 (WEA 1)	07:38	06:35	06:25	05:31	05:12	05:37	06:25	07:16	08:07	08:02	14:18 (WEA 1)	08:39	14:28 (WEA 1)
40	16:59	37 15:19 (WEA 1)	17:56	18:46	20:40	21:28	21:57	21:41	20:46	19:36	18:28	16:35	37 14:55 (WEA 1)	16:22	41 15:09 (WEA 1)
41	08:28	14:43 (WEA 1)	07:36	06:33	06:23	05:30	05:12	05:38	06:27	07:17	08:08	08:04	14:18 (WEA 1)	08:39	14:28 (WEA 1)
42	17:01	36 15:19 (WEA 1)	17:58	18:48	20:41	21:30	21:57	21:40	20:44	19:34	18:26	16:34	38 14:56 (WEA 1)	16:23	41 15:09 (WEA 1)
43	08:27	14:44 (WEA 1)	07:34	06:31	06:21	05:29	05:12	05:40	06:28	07:19	08:10	08:05	14:18 (WEA 1)	08:40	14:29 (WEA 1)
44	17:03	36 15:20 (WEA 1)	18:00	18:50	20:43	21:31	21:57	21:38	20:42	19:31	18:24	16:33	39 14:57 (WEA 1)	16:23	41 15:10 (WEA 1)
45	08:26	14:44 (WEA 1)	07:32	06:28	06:19	05:28	05:13	05:41	06:30	07:21	08:12	08:07	14:17 (WEA 1)	08:40	14:29 (WEA 1)
46	17:05	34 15:18 (WEA 1)	18:02	18:52	20:45	21:33	21:58	21:37	20:40	19:29	18:22	16:31	40 14:57 (WEA 1)	16:24	41 15:10 (WEA 1)
47	08:25	14:46 (WEA 1)	07:30	06:26	06:17	05:26	05:13	05:42	06:31	07:22	08:14	08:08	14:17 (WEA 1)	08:41	14:29 (WEA 1)
48	17:06	32 15:18 (WEA 1)	18:04	18:53	20:46	21:34	21:58	21:35	20:38	19:26	18:20	16:30	41 14:58 (WEA 1)	16:25	41 15:10 (WEA 1)
49	08:23	14:48 (WEA 1)	07:27	06:24	06:15	05:25	05:13	05:44	06:33	07:24	08:16	08:10	14:17 (WEA 1)	08:41	14:29 (WEA 1)
50	17:08	30 15:18 (WEA 1)	18:06	18:55	20:48	21:35	21:58	21:34	20:36	19:24	18:18	16:29	42 14:59 (WEA 1)	16:25	42 15:11 (WEA 1)
51	08:22	14:49 (WEA 1)	07:25	06:22	06:13	05:24	05:14	05:45	06:35	07:26	08:17	08:12	14:18 (WEA 1)	08:41	14:30 (WEA 1)
52	17:10	28 15:17 (WEA 1)	18:07	18:57	20:50	21:37	21:58	21:33	20:33	19:22	18:16	16:29	41 14:59 (WEA 1)	16:26	42 15:12 (WEA 1)
53	08:21	14:50 (WEA 1)	07:23	06:19	06:11	05:23	05:14	05:47	06:36	07:27	08:19	08:13	14:17 (WEA 1)	08:41	14:31 (WEA 1)
54	17:12	25 15:15 (WEA 1)	18:09	18:58	20:52	21:38	21:57	21:31	20:31	19:19	18:14	16:28	42 14:59 (WEA 1)	16:27	41 15:12 (WEA 1)
55	08:19	14:53 (WEA 1)	07:21	06:17	06:09	05:22	05:15	05:48	06:38	07:29	08:21	08:15	14:18 (WEA 1)	08:42	14:31 (WEA 1)
56	17:13	21 15:14 (WEA 1)	18:00	18:50	20:43	21:30	21:57	21:29	20:29	19:17	18:12	16:27	42 15:00 (WEA 1)	16:28	42 15:13 (WEA 1)
57	08:18	14:55 (WEA 1)	07:15	06:07	05:21	05:15	05:50	06:40	07:31	08:23	09:16	14:17 (WEA 1)	08:42	14:32 (WEA 1)	
58	17:15	17 15:12 (WEA 1)	18:00	18:50	20:42	21:30	21:57	21:28	20:27	19:15	18:10	16:26	43 15:00 (WEA 1)	16:29	41 15:13 (WEA 1)
59	08:16	15:00 (WEA 1)	07:12	06:04	05:20	05:14	05:51	06:41	07:32	08:25	09:18	14:17 (WEA 1)	08:42	14:31 (WEA 1)	
60	17:17	9 15:09 (

SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 20-SO - IP 20-SO
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
Die Sonne scheint täglich von Sonnenauf- bis -untergang
Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni		
1	08:42 16:31	14:35 (WEA 1) 08:15	08:15 17:19	14:55 (WEA 1) 07:21	07:10 20:05	06:05 20:57	05:19 21:43	
2	08:42 16:32	14:35 (WEA 1) 08:13	08:13 17:21	14:57 (WEA 1) 07:19	07:08 20:07	06:03 20:58	05:18 21:44	
3	08:41 16:33	14:36 (WEA 1) 08:11	08:11 17:23	15:00 (WEA 1) 07:16	07:05 20:09	06:01 21:00	05:18 21:45	
4	08:41 16:34	14:36 (WEA 1) 08:10	08:10 17:25	15:14 (WEA 1) 07:14	07:03 20:10	05:59 21:02	05:17 21:46	
5	08:41 16:35	14:36 (WEA 1) 08:08	08:08 17:26	15:19 (WEA 1) 07:12	07:01 20:12	05:57 21:03	05:16 21:47	
6	08:41 16:37	14:36 (WEA 1) 08:06	08:06 17:28	15:21 (WEA 1) 07:10	06:58 20:14	05:55 21:05	05:15 21:48	
7	08:40 16:38	14:37 (WEA 1) 08:05	08:05 17:30	15:22 (WEA 1) 07:08	06:56 20:16	05:54 21:07	05:15 21:49	
8	08:40 16:39	14:37 (WEA 1) 08:03	08:03 17:32	15:21 (WEA 1) 07:05	06:54 20:17	05:52 21:08	05:14 21:50	
9	08:39 16:41	14:38 (WEA 1) 08:01	08:01 17:34	14:38 (WEA 1) 07:03	06:52 20:19	05:50 21:10	05:14 21:51	
10	08:39 16:42	14:38 (WEA 1) 07:59	07:59 17:36	14:38 (WEA 1) 07:01	06:49 20:21	05:48 21:12	05:13 21:51	
11	08:38 16:43	14:38 (WEA 1) 07:58	07:58 17:38	14:38 (WEA 1) 06:59	06:47 20:22	05:47 21:13	05:13 21:52	
12	08:38 16:45	14:38 (WEA 1) 07:56	07:56 17:40	14:38 (WEA 1) 06:56	06:45 20:24	05:45 21:15	05:13 21:53	
13	08:37 16:46	14:38 (WEA 1) 07:54	07:54 17:41	14:38 (WEA 1) 06:54	06:43 20:26	05:43 21:16	05:12 21:54	
14	08:36 16:48	14:39 (WEA 1) 07:52	07:52 17:43	14:39 (WEA 1) 06:52	06:40 20:28	05:42 21:18	05:12 21:54	
15	08:35 16:49	14:39 (WEA 1) 07:50	07:50 17:45	14:39 (WEA 1) 06:49	06:38 20:29	05:40 21:19	05:12 21:55	
16	08:34 16:51	14:40 (WEA 1) 07:48	07:48 17:47	14:39 (WEA 1) 06:47	06:36 20:31	05:39 21:21	05:12 21:55	
17	08:34 16:53	14:40 (WEA 1) 07:46	07:46 17:49	14:41 (WEA 1) 06:45	06:34 20:33	05:37 21:23	05:12 21:56	
18	08:33 16:54	14:41 (WEA 1) 07:44	07:44 17:51	14:41 (WEA 1) 06:42	06:32 20:34	05:36 21:24	05:12 21:56	
19	08:32 16:56	14:41 (WEA 1) 07:42	07:42 17:53	14:41 (WEA 1) 06:40	06:29 20:36	05:34 21:26	05:12 21:56	
20	08:30 16:58	14:42 (WEA 1) 07:40	07:40 17:54	14:42 (WEA 1) 06:38	06:27 20:38	05:33 21:27	05:12 21:57	
21	08:29 16:59	14:42 (WEA 1) 07:38	07:38 17:56	14:42 (WEA 1) 06:35	06:25 20:40	05:31 21:28	05:12 21:57	
22	08:28 17:01	14:43 (WEA 1) 07:36	07:36 17:58	14:43 (WEA 1) 06:33	06:23 20:41	05:30 21:30	05:12 21:57	
23	08:27 17:03	14:44 (WEA 1) 07:34	07:34 18:00	14:44 (WEA 1) 06:31	06:21 20:43	05:29 21:31	05:12 21:57	
24	08:26 17:05	14:44 (WEA 1) 07:32	07:32 18:02	14:44 (WEA 1) 06:28	06:19 20:45	05:28 21:33	05:13 21:58	
25	08:25 17:06	14:46 (WEA 1) 07:30	07:30 18:04	14:46 (WEA 1) 06:26	06:17 20:46	05:26 21:34	05:13 21:58	
26	08:23 17:08	14:47 (WEA 1) 07:27	07:27 18:06	14:47 (WEA 1) 06:24	06:15 20:48	05:25 21:35	05:13 21:58	
27	08:22 17:10	14:47 (WEA 1) 07:25	07:25 18:07	14:47 (WEA 1) 06:22	06:13 20:50	05:24 21:37	05:14 21:58	
28	08:21 17:12	14:48 (WEA 1) 07:23	07:23 18:09	14:48 (WEA 1) 06:19	06:11 20:52	05:23 21:38	05:14 21:57	
29	08:19 17:14	15:23 (WEA 1) 18:09	18:09	14:50 (WEA 1) 07:17	20:09	05:22	05:15	
30	08:18 17:15	15:23 (WEA 1)		14:51 (WEA 1)	20:00	20:53	21:39	
31	08:16 17:17	14:51 (WEA 1)		15:21 (WEA 1)	20:02	20:55	21:40	
		14:53 (WEA 1)		15:21 (WEA 1)	07:12	20:04	21:42	
		15:21 (WEA 1)			20:04	21:42		
Sonnenscheinstunden	258		277		367	416	486	500
astr.max.mögl.Beschattung	1285		58					

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM)	Schattenanfang (WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende (WEA mit letztem Schatten)

SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 20-SO - IP 20-SO
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinfallrichtung

Die Windenergieanlage/n ist/sind immer in Betrieb

	July	August	September	Oktober	November		Dezember		
1	05:16 21:57	05:53 21:25	06:43 20:22	07:32 19:12	07:26 17:06		08:18 16:25	45 14:20 (WEA 1) 15:05 (WEA 1)	
2	05:17 21:56	05:54 21:23	06:45 20:20	07:34 19:10	07:28 17:04		08:19 16:25	44 14:21 (WEA 1) 15:05 (WEA 1)	
3	05:17 21:56	05:56 21:21	06:46 20:18	07:36 19:08	07:30 17:02		08:21 16:24	44 14:21 (WEA 1) 15:05 (WEA 1)	
4	05:18 21:56	05:57 21:20	06:48 20:15	07:37 19:06	07:32 17:00		08:22 16:23	44 14:22 (WEA 1) 15:06 (WEA 1)	
5	05:19 21:55	05:59 21:18	06:49 20:13	07:39 19:03	07:34 16:59		08:23 16:23	44 14:22 (WEA 1) 15:06 (WEA 1)	
6	05:20 21:55	06:01 21:16	06:51 20:11	07:41 19:01	07:35 16:57		08:25 16:22	44 14:22 (WEA 1) 15:06 (WEA 1)	
7	05:21 21:54	06:02 21:14	06:53 20:09	07:42 18:59	07:37 16:55	3	14:36 (WEA 1) 14:39 (WEA 1)	08:26 16:22	44 14:23 (WEA 1) 15:07 (WEA 1)
8	05:22 21:53	06:04 21:12	06:54 20:06	07:44 18:56	07:39 16:54	15	14:30 (WEA 1) 14:45 (WEA 1)	08:27 16:22	43 14:24 (WEA 1) 15:07 (WEA 1)
9	05:23 21:53	06:05 21:11	06:56 20:04	07:46 18:54	07:41 16:52	21	14:27 (WEA 1) 14:48 (WEA 1)	08:28 16:21	43 14:24 (WEA 1) 15:07 (WEA 1)
10	05:24 21:52	06:07 21:09	06:58 20:02	07:48 18:52	07:43 16:50	25	14:25 (WEA 1) 14:50 (WEA 1)	08:29 16:21	43 14:24 (WEA 1) 15:07 (WEA 1)
11	05:25 21:51	06:09 21:07	06:59 19:59	07:49 18:50	07:44 16:49	28	14:24 (WEA 1) 14:52 (WEA 1)	08:30 16:21	42 14:25 (WEA 1) 15:07 (WEA 1)
12	05:26 21:50	06:10 21:05	07:01 19:57	07:51 18:47	07:46 16:47	30	14:23 (WEA 1) 14:53 (WEA 1)	08:32 16:21	42 14:26 (WEA 1) 15:08 (WEA 1)
13	05:27 21:49	06:12 21:03	07:03 19:55	07:53 18:45	07:48 16:46	33	14:22 (WEA 1) 14:55 (WEA 1)	08:33 16:21	42 14:27 (WEA 1) 15:09 (WEA 1)
14	05:28 21:49	06:13 21:01	07:04 19:52	07:54 18:43	07:50 16:44	35	14:21 (WEA 1) 14:56 (WEA 1)	08:33 16:21	42 14:27 (WEA 1) 15:09 (WEA 1)
15	05:29 21:48	06:15 20:59	07:06 19:50	07:56 18:41	07:52 16:43	37	14:20 (WEA 1) 14:57 (WEA 1)	08:34 16:21	42 14:27 (WEA 1) 15:09 (WEA 1)
16	05:30 21:47	06:17 20:57	07:07 19:48	07:58 18:39	07:53 16:41	38	14:20 (WEA 1) 14:58 (WEA 1)	08:35 16:21	41 14:28 (WEA 1) 15:09 (WEA 1)
17	05:32 21:45	06:18 20:55	07:09 19:45	08:00 18:36	07:55 16:40	40	14:19 (WEA 1) 14:59 (WEA 1)	08:36 16:21	42 14:28 (WEA 1) 15:10 (WEA 1)
18	05:33 21:44	06:20 20:53	07:11 19:43	08:01 18:34	07:57 16:39	41	14:18 (WEA 1) 14:59 (WEA 1)	08:37 16:21	41 14:29 (WEA 1) 15:10 (WEA 1)
19	05:34 21:43	06:22 20:51	07:12 19:41	08:03 18:32	07:58 16:37	41	14:18 (WEA 1) 14:59 (WEA 1)	08:38 16:22	41 14:29 (WEA 1) 15:10 (WEA 1)
20	05:36 21:42	06:23 20:49	07:14 19:38	08:05 18:30	08:00 16:36	42	14:18 (WEA 1) 15:00 (WEA 1)	08:38 16:22	41 14:30 (WEA 1) 15:11 (WEA 1)
21	05:37 21:41	06:25 20:46	07:16 19:36	08:07 18:28	08:02 16:35	43	14:18 (WEA 1) 15:01 (WEA 1)	08:39 16:22	41 14:31 (WEA 1) 15:12 (WEA 1)
22	05:38 21:40	06:27 20:44	07:17 19:34	08:08 18:26	08:04 16:34	43	14:18 (WEA 1) 15:01 (WEA 1)	08:39 16:23	41 14:31 (WEA 1) 15:12 (WEA 1)
23	05:40 21:38	06:28 20:42	07:19 19:31	08:10 18:24	08:05 16:33	43	14:19 (WEA 1) 15:02 (WEA 1)	08:40 16:23	41 14:32 (WEA 1) 15:13 (WEA 1)
24	05:41 21:37	06:30 20:40	07:21 19:29	08:12 18:22	08:07 16:31	44	14:18 (WEA 1) 15:02 (WEA 1)	08:40 16:24	41 14:32 (WEA 1) 15:13 (WEA 1)
25	05:42 21:35	06:31 20:38	07:22 19:26	08:14 17:20	08:08 16:30	44	14:18 (WEA 1) 15:02 (WEA 1)	08:41 16:25	41 14:32 (WEA 1) 15:13 (WEA 1)
26	05:44 21:34	06:33 20:36	07:24 19:24	08:16 17:18	08:10 16:29	44	14:19 (WEA 1) 15:03 (WEA 1)	08:41 16:25	42 14:32 (WEA 1) 15:14 (WEA 1)
27	05:45 21:33	06:35 20:33	07:26 19:22	08:17 17:16	08:12 16:29	45	14:19 (WEA 1) 15:04 (WEA 1)	08:41 16:26	41 14:34 (WEA 1) 15:15 (WEA 1)
28	05:47 21:31	06:36 20:31	07:27 19:19	08:19 17:14	08:13 16:28	44	14:19 (WEA 1) 15:03 (WEA 1)	08:41 16:27	41 14:34 (WEA 1) 15:15 (WEA 1)
29	05:48 21:29	06:38 20:29	07:29 19:17	08:21 17:12	08:15 16:27	44	14:20 (WEA 1) 15:04 (WEA 1)	08:42 16:28	42 14:34 (WEA 1) 15:16 (WEA 1)
30	05:50 21:28	06:40 20:27	07:31 19:15	08:23 17:10	08:16 16:26	45	14:19 (WEA 1) 15:04 (WEA 1)	08:42 16:29	41 14:35 (WEA 1) 15:16 (WEA 1)
31	05:51 21:26	06:41 20:25		08:25 17:08			08:42 16:30	42 14:34 (WEA 1) 15:16 (WEA 1)	
Sonnenscheinstunden	503	454	381	331	266	868	243	1308	
astr.max.mögl.Beschattung									

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	Schattenanfang (WEA mit erstem Schatten)	Schattende (WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 20-SW - IP 20-SW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlrichtung

Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni		
1	08:42 16:31	14:32 (WEA 1) 15:15 (WEA 1)	08:15 17:19	14:55 (WEA 1) 15:15 (WEA 1)	07:21 18:11	07:10 20:05	06:05 20:57	05:19 21:43
2	08:42 16:32	14:33 (WEA 1) 15:16 (WEA 1)	08:13 17:21	14:57 (WEA 1) 15:12 (WEA 1)	07:19 18:13	07:08 20:07	06:03 20:58	05:18 21:44
3	08:41 16:33	14:34 (WEA 1) 15:17 (WEA 1)	08:11 17:23	15:03 (WEA 1) 15:07 (WEA 1)	07:16 18:15	07:05 20:09	06:01 21:00	05:18 21:45
4	08:41 16:34	14:33 (WEA 1) 15:17 (WEA 1)	08:10 17:25		07:14 18:16	07:03 20:10	05:59 21:02	05:17 21:46
5	08:41 16:35	14:34 (WEA 1) 15:18 (WEA 1)	08:08 17:26		07:12 18:18	07:01 20:12	05:57 21:03	05:16 21:47
6	08:41 16:37	14:34 (WEA 1) 15:18 (WEA 1)	08:06 17:28		07:10 18:20	06:58 20:14	05:55 21:05	05:15 21:48
7	08:40 16:38	14:35 (WEA 1) 15:19 (WEA 1)	08:05 17:30		07:08 18:22	06:56 20:16	05:54 21:07	05:15 21:49
8	08:40 16:39	14:35 (WEA 1) 15:19 (WEA 1)	08:03 17:32		07:05 18:24	06:54 20:17	05:52 21:08	05:14 21:50
9	08:39 16:41	14:36 (WEA 1) 15:20 (WEA 1)	08:01 17:34		07:03 18:25	06:52 20:19	05:50 21:10	05:14 21:51
10	08:39 16:42	14:36 (WEA 1) 15:20 (WEA 1)	07:59 17:36		07:01 18:27	06:49 20:21	05:48 21:12	05:13 21:51
11	08:38 16:43	14:36 (WEA 1) 15:20 (WEA 1)	07:58 17:38		06:59 18:29	06:47 20:22	05:47 21:13	05:13 21:52
12	08:38 16:45	14:36 (WEA 1) 15:21 (WEA 1)	07:56 17:40		06:56 18:31	06:45 20:24	05:45 21:15	05:13 21:53
13	08:37 16:46	14:36 (WEA 1) 15:21 (WEA 1)	07:54 17:41		06:54 18:32	06:43 20:26	05:43 21:16	05:12 21:54
14	08:36 16:48	14:37 (WEA 1) 15:21 (WEA 1)	07:52 17:43		06:52 18:34	06:40 20:28	05:42 21:18	05:12 21:54
15	08:35 16:49	14:37 (WEA 1) 15:21 (WEA 1)	07:50 17:45		06:49 18:36	06:38 20:29	05:40 21:19	05:12 21:55
16	08:34 16:51	14:38 (WEA 1) 15:22 (WEA 1)	07:48 17:47		06:47 18:38	06:36 20:31	05:39 21:21	05:12 21:55
17	08:34 16:53	14:38 (WEA 1) 15:22 (WEA 1)	07:46 17:49		06:45 18:39	06:34 20:33	05:37 21:23	05:12 21:56
18	08:33 16:54	14:39 (WEA 1) 15:22 (WEA 1)	07:44 17:51		06:42 18:41	06:32 20:34	05:36 21:24	05:12 21:56
19	08:32 16:56	14:40 (WEA 1) 15:23 (WEA 1)	07:42 17:53		06:40 18:43	06:29 20:36	05:34 21:26	05:12 21:56
20	08:30 16:58	14:41 (WEA 1) 15:23 (WEA 1)	07:40 17:54		06:38 18:45	06:27 20:38	05:33 21:27	05:12 21:57
21	08:29 16:59	14:40 (WEA 1) 15:22 (WEA 1)	07:38 17:56		06:35 18:46	06:25 20:40	05:31 21:28	05:12 21:57
22	08:28 17:01	14:41 (WEA 1) 15:22 (WEA 1)	07:36 17:58		06:33 18:48	06:23 20:41	05:30 21:30	05:12 21:57
23	08:27 17:03	14:43 (WEA 1) 15:23 (WEA 1)	07:34 18:00		06:31 18:50	06:21 20:43	05:29 21:31	05:12 21:57
24	08:26 17:05	14:43 (WEA 1) 15:22 (WEA 1)	07:32 18:02		06:28 18:52	06:19 20:45	05:28 21:33	05:13 21:58
25	08:25 17:06	14:44 (WEA 1) 15:22 (WEA 1)	07:30 18:04		06:26 18:53	06:17 20:46	05:26 21:34	05:13 21:58
26	08:23 17:08	14:46 (WEA 1) 15:22 (WEA 1)	07:27 18:06		06:24 18:55	06:15 20:48	05:25 21:35	05:13 21:58
27	08:22 17:10	14:46 (WEA 1) 15:21 (WEA 1)	07:25 18:07		06:22 18:57	06:13 20:50	05:24 21:37	05:14 21:58
28	08:21 17:12	14:47 (WEA 1) 15:20 (WEA 1)	07:23 18:09		06:19 18:58	06:11 20:52	05:23 21:38	05:14 21:57
29	08:19 17:14	14:49 (WEA 1) 15:20 (WEA 1)			07:17 20:00	06:09 20:53	05:22 21:39	05:15 21:57
30	08:18 17:15	14:50 (WEA 1) 15:18 (WEA 1)			07:15 20:02	06:07 20:55	05:21 21:40	05:15 21:57
31	08:16 17:17	14:53 (WEA 1) 15:17 (WEA 1)			07:12 20:04		05:20 21:42	
Sonnenscheinstunden	258		277		367	416	486	500
astr.max.mögl.Beschattung	1262		39					

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM)	Schattenanfang (WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattende (WEA mit letztem Schatten)

SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 20-SW - IP 20-SW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinfallrichtung

Die Windenergieanlage/n ist/sind immer in Betrieb

	July	August	September	Oktober	November		Dezember	
1	05:16 21:57	05:53 21:25	06:43 20:22	07:32 19:12	07:26 17:06		08:18 16:25	14:18 (WEA 1) 44 15:02 (WEA 1)
2	05:17 21:56	05:54 21:23	06:45 20:20	07:34 19:10	07:28 17:04		08:19 16:25	14:19 (WEA 1) 44 15:03 (WEA 1)
3	05:17 21:56	05:56 21:21	06:46 20:18	07:36 19:08	07:30 17:02		08:21 16:24	14:19 (WEA 1) 44 15:03 (WEA 1)
4	05:18 21:56	05:57 21:20	06:48 20:15	07:37 19:06	07:32 17:00		08:22 16:23	14:20 (WEA 1) 44 15:04 (WEA 1)
5	05:19 21:55	05:59 21:18	06:49 20:13	07:39 19:03	07:34 16:59		08:23 16:23	14:20 (WEA 1) 44 15:04 (WEA 1)
6	05:20 21:55	06:01 21:16	06:51 20:11	07:41 19:01	07:35 16:57		08:25 16:22	14:20 (WEA 1) 44 15:04 (WEA 1)
7	05:21 21:54	06:02 21:14	06:53 20:09	07:42 18:59	07:37 16:55		08:26 16:22	14:21 (WEA 1) 44 15:05 (WEA 1)
8	05:22 21:53	06:04 21:12	06:54 20:06	07:44 18:56	07:39 16:54	7 14:32 (WEA 1)	08:27 16:22	14:21 (WEA 1) 44 15:05 (WEA 1)
9	05:23 21:53	06:05 21:11	06:56 20:04	07:46 18:54	07:41 16:52	16 14:44 (WEA 1)	08:28 16:21	14:22 (WEA 1) 43 15:05 (WEA 1)
10	05:24 21:52	06:07 21:09	06:58 20:02	07:48 18:52	07:43 16:50	21 14:46 (WEA 1)	08:29 16:21	14:22 (WEA 1) 43 15:05 (WEA 1)
11	05:25 21:51	06:09 21:07	06:59 19:59	07:49 18:50	07:44 16:49	25 14:48 (WEA 1)	08:30 16:21	14:22 (WEA 1) 43 15:05 (WEA 1)
12	05:26 21:50	06:10 21:05	07:01 19:57	07:51 18:47	07:46 16:47	28 14:50 (WEA 1)	08:32 16:21	14:24 (WEA 1) 43 15:07 (WEA 1)
13	05:27 21:49	06:12 21:03	07:03 19:55	07:53 18:45	07:48 16:46	31 14:52 (WEA 1)	08:33 16:21	14:24 (WEA 1) 43 15:07 (WEA 1)
14	05:28 21:49	06:13 21:01	07:04 19:52	07:54 18:43	07:50 16:44	33 14:53 (WEA 1)	08:33 16:21	14:25 (WEA 1) 42 15:07 (WEA 1)
15	05:29 21:48	06:15 20:59	07:06 19:50	07:56 18:41	07:52 16:43	35 14:54 (WEA 1)	08:34 16:21	14:24 (WEA 1) 43 15:07 (WEA 1)
16	05:30 21:47	06:17 20:57	07:07 19:48	07:58 18:39	07:53 16:41	37 14:55 (WEA 1)	08:35 16:21	14:25 (WEA 1) 42 15:07 (WEA 1)
17	05:32 21:45	06:18 20:55	07:09 19:45	08:00 18:36	07:55 16:40	38 14:56 (WEA 1)	08:36 16:21	14:26 (WEA 1) 42 15:08 (WEA 1)
18	05:33 21:44	06:20 20:53	07:11 19:43	08:01 18:34	07:57 16:39	39 14:56 (WEA 1)	08:37 16:21	14:27 (WEA 1) 42 15:09 (WEA 1)
19	05:34 21:43	06:22 20:51	07:12 19:41	08:03 18:32	07:58 16:37	40 14:57 (WEA 1)	08:38 16:22	14:27 (WEA 1) 41 15:08 (WEA 1)
20	05:36 21:42	06:23 20:49	07:14 19:38	08:05 18:30	08:00 16:36	41 14:57 (WEA 1)	08:38 16:22	14:27 (WEA 1) 42 15:09 (WEA 1)
21	05:37 21:41	06:25 20:46	07:16 19:36	08:07 18:28	08:02 16:35	42 14:58 (WEA 1)	08:39 16:22	14:28 (WEA 1) 42 15:10 (WEA 1)
22	05:38 21:40	06:27 20:44	07:17 19:34	08:08 18:26	08:04 16:34	42 14:59 (WEA 1)	08:39 16:23	14:28 (WEA 1) 42 15:10 (WEA 1)
23	05:40 21:38	06:28 20:42	07:19 19:31	08:10 18:24	08:05 16:33	43 14:59 (WEA 1)	08:40 16:23	14:29 (WEA 1) 42 15:11 (WEA 1)
24	05:41 21:37	06:30 20:40	07:21 19:29	08:12 18:22	08:07 16:31	43 14:59 (WEA 1)	08:40 16:24	14:29 (WEA 1) 42 15:11 (WEA 1)
25	05:42 21:35	06:31 20:38	07:22 19:26	08:14 17:20	08:08 16:30	44 14:59 (WEA 1)	08:41 16:25	14:30 (WEA 1) 41 15:11 (WEA 1)
26	05:44 21:34	06:33 20:36	07:24 19:24	08:16 17:18	08:10 16:29	44 14:59 (WEA 1)	08:41 16:25	14:30 (WEA 1) 42 15:12 (WEA 1)
27	05:45 21:33	06:35 20:33	07:26 19:22	08:17 17:16	08:12 16:29	45 14:59 (WEA 1)	08:41 16:26	14:31 (WEA 1) 42 15:13 (WEA 1)
28	05:47 21:31	06:36 20:31	07:27 19:19	08:19 17:14	08:13 16:28	45 14:59 (WEA 1)	08:41 16:27	14:31 (WEA 1) 43 15:14 (WEA 1)
29	05:48 21:29	06:38 20:29	07:29 19:17	08:21 17:12	08:15 16:27	45 14:59 (WEA 1)	08:42 16:28	14:32 (WEA 1) 42 15:14 (WEA 1)
30	05:50 21:28	06:40 20:27	07:31 19:15	08:23 17:10	08:16 16:26	45 14:59 (WEA 1)	08:42 16:29	14:32 (WEA 1) 43 15:15 (WEA 1)
31	05:51 21:26	06:41 20:25		07:25 17:08			08:42 16:30	14:32 (WEA 1) 42 15:14 (WEA 1)
Sonnenscheinstunden	503	454	381	331	266		243	
astr.max.mögl.Beschattung					828			1324

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	Schattenanfang (WEA mit erstem Schatten)	Schattende (WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 21-NW - IP 21-NW
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni	
1	08:42 16:31	15:23 (WEA 1) 17:19	08:15 17:19	15:20 (WEA 1) 18:11	07:21 20:05	06:05 20:57	05:19 21:43
2	08:42 16:32	15:23 (WEA 1) 17:21	08:13 17:21	15:20 (WEA 1) 18:13	07:19 20:07	06:03 20:58	05:18 21:44
3	08:41 16:33	15:22 (WEA 1) 17:23	08:11 17:23	15:21 (WEA 1) 18:15	07:16 20:09	06:01 21:00	05:18 21:45
4	08:41 16:34	15:21 (WEA 1) 17:25	08:10 17:25	15:22 (WEA 1) 18:16	07:14 20:10	05:59 21:02	05:17 21:46
5	08:41 16:35	15:21 (WEA 1) 17:26	08:08 17:26	15:23 (WEA 1) 18:18	07:12 20:12	05:57 21:03	05:16 21:47
6	08:41 16:37	15:20 (WEA 1) 17:28	08:06 17:28	15:24 (WEA 1) 18:20	07:10 20:14	05:55 21:05	05:15 21:48
7	08:40 16:38	15:21 (WEA 1) 17:30	08:05 17:30	15:24 (WEA 1) 18:22	07:08 20:16	05:54 21:07	05:15 21:49
8	08:40 16:39	15:20 (WEA 1) 17:32	08:03 17:32	15:26 (WEA 1) 18:24	07:05 20:17	05:52 21:08	05:14 21:50
9	08:39 16:41	15:20 (WEA 1) 17:34	08:01 17:34	15:27 (WEA 1) 18:25	07:03 20:19	05:50 21:10	05:14 21:51
10	08:39 16:42	15:20 (WEA 1) 17:36	07:59 17:36	15:30 (WEA 1) 18:27	07:01 20:21	05:48 21:11	05:13 21:51
11	08:38 16:43	15:19 (WEA 1) 17:38	07:58 17:38	15:32 (WEA 1) 18:29	06:59 20:22	05:47 21:13	05:13 21:52
12	08:38 16:45	15:19 (WEA 1) 17:40	07:56 17:40	15:35 (WEA 1) 18:31	06:56 20:24	05:45 21:15	05:13 21:53
13	08:37 16:46	15:18 (WEA 1) 17:41	07:54 17:41	15:49 (WEA 1) 18:32	06:54 20:26	05:43 21:16	05:12 21:54
14	08:36 16:48	15:18 (WEA 1) 17:43	07:52 17:43	15:54 (WEA 1) 18:34	06:52 20:28	05:42 21:18	05:12 21:54
15	08:35 16:49	15:18 (WEA 1) 17:45	07:50 17:45	15:58 (WEA 1) 18:36	06:49 20:29	05:40 21:19	05:12 21:55
16	08:34 16:51	15:18 (WEA 1) 17:47	07:48 17:47	16:02 (WEA 1) 18:38	06:47 20:31	05:39 21:21	05:12 21:55
17	08:34 16:53	15:18 (WEA 1) 17:49	07:46 17:49	16:06 (WEA 1) 18:39	06:45 20:33	05:37 21:22	05:12 21:56
18	08:33 16:54	15:18 (WEA 1) 17:51	07:44 17:51	16:10 (WEA 1) 18:41	06:42 20:34	05:36 21:24	05:12 21:56
19	08:32 16:56	15:18 (WEA 1) 17:53	07:42 17:53	16:14 (WEA 1) 18:43	06:40 20:36	05:34 21:25	05:12 21:56
20	08:30 16:58	15:18 (WEA 1) 17:54	07:40 17:54	16:18 (WEA 1) 18:45	06:38 20:38	05:33 21:27	05:12 21:57
21	08:29 16:59	15:17 (WEA 1) 17:56	07:38 17:56	16:22 (WEA 1) 18:46	06:35 20:40	05:31 21:28	05:12 21:57
22	08:28 17:01	15:17 (WEA 1) 17:58	07:36 17:58	16:26 (WEA 1) 18:48	06:33 20:41	05:30 21:30	05:12 21:57
23	08:27 17:03	15:18 (WEA 1) 18:00	07:34 18:00	16:30 (WEA 1) 18:50	06:31 20:43	05:29 21:31	05:12 21:57
24	08:26 17:05	15:17 (WEA 1) 18:02	07:32 18:02	16:34 (WEA 1) 18:52	06:28 20:45	05:28 21:33	05:13 21:58
25	08:25 17:06	15:18 (WEA 1) 18:04	07:30 18:04	16:38 (WEA 1) 18:53	06:26 20:46	05:26 21:34	05:13 21:58
26	08:23 17:08	15:18 (WEA 1) 18:06	07:27 18:06	16:42 (WEA 1) 18:55	06:24 20:48	05:25 21:35	05:13 21:58
27	08:22 17:10	15:18 (WEA 1) 18:07	07:25 18:07	16:46 (WEA 1) 18:57	06:21 20:50	05:24 21:37	05:14 21:58
28	08:21 17:12	15:18 (WEA 1) 18:09	07:23 18:09	16:50 (WEA 1) 18:59	06:19 20:52	05:23 21:38	05:14 21:57
29	08:19 17:13	15:19 (WEA 1)	07:21	16:54 (WEA 1)	07:17	06:09	05:22
30	08:18 17:15	16:00 (WEA 1)	07:19	16:58 (WEA 1)	20:00	20:53	21:39
31	08:16 17:17	16:00 (WEA 1)	07:17	17:02 (WEA 1)	07:15	06:07	05:21
		16:01 (WEA 1)	07:15	17:06 (WEA 1)	20:02	20:55	21:40
			07:13	17:10 (WEA 1)	07:12		05:20
			07:11	17:14 (WEA 1)	20:04		21:42
Sonnenscheinstunden	258			367	416	486	500
astr.max.mögl.Beschattung	1007	277	375				

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 21-NW - IP 21-NW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung

Die Windenergieanlage/n ist/sind immer in Betrieb

	July	August	September	Oktober		November		Dezember			
1	05:16 21:57	05:53 21:25	06:43 20:22	07:32 19:12		07:26 17:06	25	14:58 (WEA 1) 15:23 (WEA 1)	08:18 16:25	30	15:01 (WEA 1) 15:31 (WEA 1)
2	05:17 21:56	05:54 21:23	06:45 20:20	07:34 19:10		07:28 17:04	28	14:56 (WEA 1) 15:24 (WEA 1)	08:19 16:25	28	15:03 (WEA 1) 15:31 (WEA 1)
3	05:17 21:56	05:56 21:21	06:46 20:18	07:36 19:08		07:30 17:02	31	14:55 (WEA 1) 15:26 (WEA 1)	08:21 16:24	27	15:03 (WEA 1) 15:30 (WEA 1)
4	05:18 21:56	05:57 21:20	06:48 20:15	07:37 19:06		07:32 17:00	33	14:54 (WEA 1) 15:27 (WEA 1)	08:22 16:23	25	15:05 (WEA 1) 15:30 (WEA 1)
5	05:19 21:55	05:59 21:18	06:49 20:13	07:39 19:03		07:34 16:59	35	14:53 (WEA 1) 15:28 (WEA 1)	08:23 16:23	23	15:06 (WEA 1) 15:29 (WEA 1)
6	05:20 21:55	06:01 21:16	06:51 20:11	07:41 19:01		07:35 16:57	37	14:52 (WEA 1) 15:29 (WEA 1)	08:25 16:22	23	15:06 (WEA 1) 15:29 (WEA 1)
7	05:21 21:54	06:02 21:14	06:53 20:09	07:42 18:59		07:37 16:55	37	14:52 (WEA 1) 15:29 (WEA 1)	08:26 16:22	21	15:08 (WEA 1) 15:29 (WEA 1)
8	05:22 21:53	06:04 21:12	06:54 20:06	07:44 18:56		07:39 16:54	39	14:51 (WEA 1) 15:30 (WEA 1)	08:27 16:22	19	15:09 (WEA 1) 15:28 (WEA 1)
9	05:23 21:53	06:05 21:11	06:56 20:04	07:46 18:54		07:41 16:52	40	14:51 (WEA 1) 15:31 (WEA 1)	08:28 16:21	17	15:10 (WEA 1) 15:27 (WEA 1)
10	05:24 21:52	06:07 21:09	06:58 20:02	07:48 18:52		07:43 16:50	40	14:51 (WEA 1) 15:31 (WEA 1)	08:29 16:21	15	15:12 (WEA 1) 15:27 (WEA 1)
11	05:25 21:51	06:09 21:07	06:59 19:59	07:49 18:50		07:44 16:49	41	14:51 (WEA 1) 15:32 (WEA 1)	08:30 16:21	13	15:13 (WEA 1) 15:26 (WEA 1)
12	05:26 21:50	06:10 21:05	07:01 19:57	07:51 18:47		07:46 16:47	41	14:51 (WEA 1) 15:32 (WEA 1)	08:31 16:21	11	15:15 (WEA 1) 15:26 (WEA 1)
13	05:27 21:49	06:12 21:03	07:03 19:55	07:53 18:45		07:48 16:46	41	14:51 (WEA 1) 15:32 (WEA 1)	08:32 16:21	8	15:17 (WEA 1) 15:25 (WEA 1)
14	05:28 21:49	06:13 21:01	07:04 19:52	07:54 18:43		07:50 16:44	41	14:51 (WEA 1) 15:32 (WEA 1)	08:33 16:21	4	15:20 (WEA 1) 15:24 (WEA 1)
15	05:29 21:48	06:15 20:59	07:06 19:50	07:56 18:41		07:52 16:43	42	14:51 (WEA 1) 15:33 (WEA 1)	08:34 16:21		
16	05:30 21:47	06:17 20:57	07:07 19:48	07:58 18:39		07:53 16:41	42	14:51 (WEA 1) 15:33 (WEA 1)	08:35 16:21		
17	05:32 21:45	06:18 20:55	07:09 19:45	08:00 18:36		07:55 16:40	41	14:52 (WEA 1) 15:33 (WEA 1)	08:36 16:21		
18	05:33 21:44	06:20 20:53	07:11 19:43	08:01 18:34		07:57 16:39	41	14:51 (WEA 1) 15:32 (WEA 1)	08:37 16:21		
19	05:34 21:43	06:22 20:51	07:12 19:41	08:03 18:32		07:58 16:37	40	14:52 (WEA 1) 15:32 (WEA 1)	08:38 16:22		
20	05:36 21:42	06:23 20:49	07:14 19:38	08:05 18:30		08:00 16:36	41	14:52 (WEA 1) 15:33 (WEA 1)	08:38 16:22		
21	05:37 21:41	06:25 20:46	07:16 19:36	08:07 18:28		08:02 16:35	40	14:53 (WEA 1) 15:33 (WEA 1)	08:39 16:22		
22	05:38 21:40	06:27 20:44	07:17 19:33	08:08 18:26		08:04 16:34	39	14:54 (WEA 1) 15:33 (WEA 1)	08:39 16:23		
23	05:40 21:38	06:28 20:42	07:19 19:31	08:10 18:24		08:05 16:33	38	14:55 (WEA 1) 15:33 (WEA 1)	08:40 16:23		
24	05:41 21:37	06:30 20:40	07:21 19:29	08:12 18:22		08:07 16:31	37	14:55 (WEA 1) 15:32 (WEA 1)	08:40 16:24		
25	05:42 21:35	06:31 20:38	07:22 19:26	08:14 17:20		08:08 16:30	36	14:56 (WEA 1) 15:32 (WEA 1)	08:41 16:25		
26	05:44 21:34	06:33 20:36	07:24 19:24	08:16 17:18		08:10 16:29	35	14:57 (WEA 1) 15:32 (WEA 1)	08:41 16:25		
27	05:45 21:33	06:35 20:33	07:26 19:22	08:17 17:16		08:12 16:29	34	14:58 (WEA 1) 15:32 (WEA 1)	08:41 16:26		
28	05:47 21:31	06:36 20:31	07:27 19:19	08:19 17:14		08:13 16:28	33	14:58 (WEA 1) 15:31 (WEA 1)	08:41 16:27		
29	05:48 21:29	06:38 20:29	07:29 19:17	08:21 17:12	15:10 (WEA 1)	08:15 16:27	33	14:59 (WEA 1) 15:32 (WEA 1)	08:42 16:28	2	15:28 (WEA 1) 15:30 (WEA 1)
30	05:50 21:28	06:40 20:27	07:31 19:15	08:23 17:10	2 15:12 (WEA 1) 15:03 (WEA 1)	08:16 16:26	31	15:00 (WEA 1) 15:31 (WEA 1)	08:42 16:29	7	15:26 (WEA 1) 15:33 (WEA 1)
31	05:51 21:26	06:41 20:25		08:25 17:08	15:00 (WEA 1) 15:21 (WEA 1)				08:42 16:30	10	15:24 (WEA 1) 15:34 (WEA 1)
Sonnenscheinstunden	503	454	381	331		266			243		
astr.max.mögl.Beschattung				38		1112			283		

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM)	Schattenanfang (WEA mit erstem Schatten)	Schattenende (WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 21-SW - IP 21-SW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinfallrichtung

Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni	
1	08:42 16:31	08:15 17:19	15:21 (WEA 1) 17:19	07:21 18:11	07:10 20:05	06:05 20:57	05:19 21:43
2	08:42 16:32	15:29 (WEA 1) 17:21	08:13 40	15:22 (WEA 1) 18:13	07:19 20:07	06:03 20:58	05:18 21:44
3	08:41 16:33	15:35 (WEA 1) 17:23	08:11 40	15:22 (WEA 1) 18:15	07:16 20:09	06:01 21:00	05:18 21:45
4	08:41 16:34	15:26 (WEA 1) 17:25	08:10 39	15:23 (WEA 1) 18:16	07:14 20:10	05:59 21:02	05:17 21:46
5	08:41 16:35	15:39 (WEA 1) 17:26	08:08 38	15:24 (WEA 1) 18:18	07:12 20:12	05:57 21:03	05:16 21:47
6	08:41 16:37	15:24 (WEA 1) 17:28	08:06 37	15:24 (WEA 1) 18:20	07:10 20:14	05:55 21:05	05:15 21:48
7	08:40 16:38	15:42 (WEA 1) 17:30	08:05 35	15:25 (WEA 1) 18:22	07:08 20:16	05:54 21:07	05:15 21:49
8	08:40 16:39	15:24 (WEA 1) 17:32	08:03 33	15:26 (WEA 1) 18:24	07:05 20:17	05:52 21:08	05:14 21:50
9	08:39 16:41	15:45 (WEA 1) 17:34	08:01 31	15:27 (WEA 1) 18:25	07:03 20:19	05:50 21:10	05:14 21:51
10	08:39 16:42	15:23 (WEA 1) 17:36	07:59 28	15:30 (WEA 1) 18:27	07:01 20:21	05:48 21:11	05:13 21:51
11	08:38 16:43	15:48 (WEA 1) 17:38	07:58 24	15:32 (WEA 1) 18:29	06:59 20:22	05:47 21:13	05:13 21:52
12	08:38 16:45	15:22 (WEA 1) 17:40	07:56 20	15:34 (WEA 1) 18:31	06:56 20:24	05:45 21:15	05:13 21:53
13	08:37 16:46	15:50 (WEA 1) 17:41	07:54 14	15:37 (WEA 1) 18:32	06:54 20:26	05:43 21:16	05:12 21:54
14	08:36 16:48	15:21 (WEA 1) 17:43	07:52 14	15:51 (WEA 1) 18:34	06:52 20:28	05:42 21:18	05:12 21:54
15	08:35 16:49	15:52 (WEA 1) 17:45	07:50 14	15:20 (WEA 1) 18:36	06:49 20:29	05:40 21:19	05:12 21:55
16	08:34 16:51	15:53 (WEA 1) 17:47	07:48 14	15:20 (WEA 1) 18:38	06:47 20:31	05:39 21:21	05:12 21:55
17	08:34 16:53	15:54 (WEA 1) 17:49	07:46 14	15:20 (WEA 1) 18:39	06:45 20:33	05:37 21:22	05:12 21:56
18	08:33 16:54	15:55 (WEA 1) 17:49	07:44 14	15:20 (WEA 1) 18:39	06:42 20:33	05:36 21:22	05:12 21:56
19	08:32 16:56	15:56 (WEA 1) 17:51	07:42 14	15:20 (WEA 1) 18:41	06:40 20:34	05:34 21:24	05:12 21:56
20	08:30 16:58	15:20 (WEA 1) 17:53	07:40 14	15:20 (WEA 1) 18:43	06:38 20:36	05:33 21:25	05:12 21:56
21	08:29 16:59	15:20 (WEA 1) 17:54	07:38 14	15:20 (WEA 1) 18:45	06:38 20:38	05:33 21:27	05:12 21:57
22	08:28 17:01	15:19 (WEA 1) 17:56	07:36 14	15:19 (WEA 1) 18:46	06:35 20:40	05:31 21:28	05:12 21:57
23	08:27 17:03	15:58 (WEA 1) 17:58	07:34 14	15:58 (WEA 1) 18:48	06:33 20:41	05:30 21:30	05:12 21:57
24	08:26 17:05	15:20 (WEA 1) 18:00	07:32 14	15:20 (WEA 1) 18:50	06:31 20:43	05:29 21:31	05:12 21:57
25	08:26 17:06	15:19 (WEA 1) 18:02	07:32 14	15:19 (WEA 1) 18:52	06:28 20:45	05:28 21:33	05:13 21:58
26	08:25 17:08	16:00 (WEA 1) 18:04	07:30 14	16:00 (WEA 1) 18:54	06:19 20:47	05:26 21:35	05:13 21:58
27	08:25 17:10	15:20 (WEA 1) 18:06	07:28 14	15:20 (WEA 1) 18:56	06:17 20:48	05:26 21:36	05:13 21:58
28	08:22 17:11	15:20 (WEA 1) 18:07	07:25 14	15:20 (WEA 1) 18:57	06:21 20:50	05:24 21:37	05:14 21:58
29	08:22 17:13	16:02 (WEA 1) 18:09	07:23 14	16:02 (WEA 1) 18:59	06:19 20:52	05:23 21:38	05:14 21:57
30	08:19 17:15	15:21 (WEA 1) 18:09	07:21 14	15:21 (WEA 1) 19:01	06:17 20:54	05:22 21:40	05:15 21:57
31	08:16 17:17	16:03 (WEA 1) 18:11	07:19 14	16:03 (WEA 1) 19:03	06:15 20:56	05:21 21:42	05:15 21:57
Sonnenscheinstunden	258	277	421	367	416	486	500
astr.max.mögl.Beschattung	934	421					

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 21-SW - IP 21-SW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	July	August	September	Oktober		November		Dezember			
1	05:16 21:57	05:53 21:25	06:43 20:22	07:32 19:12		07:26 17:06	29	14:58 (WEA 1) 15:27 (WEA 1) 16:25	08:18 16:25	28	15:04 (WEA 1) 15:32 (WEA 1)
2	05:17 21:56	05:54 21:23	06:45 20:20	07:34 19:10		07:28 17:04	31	14:57 (WEA 1) 15:28 (WEA 1) 16:25	08:19 16:25	26	15:06 (WEA 1) 15:32 (WEA 1)
3	05:17 21:56	05:56 21:21	06:46 20:18	07:36 19:08		07:30 17:02	33	14:56 (WEA 1) 15:29 (WEA 1) 16:24	08:21 16:24	25	15:06 (WEA 1) 15:31 (WEA 1)
4	05:18 21:56	05:57 21:20	06:48 20:15	07:37 19:06		07:32 17:00	35	14:55 (WEA 1) 15:30 (WEA 1) 16:23	08:22 16:23	23	15:08 (WEA 1) 15:31 (WEA 1)
5	05:19 21:55	05:59 21:18	06:49 20:13	07:39 19:03		07:34 16:59	37	14:54 (WEA 1) 15:31 (WEA 1) 16:23	08:23 16:23	21	15:09 (WEA 1) 15:30 (WEA 1)
6	05:20 21:55	06:01 21:16	06:51 20:11	07:41 19:01		07:35 16:57	38	14:54 (WEA 1) 15:32 (WEA 1) 16:22	08:25 16:22	19	15:10 (WEA 1) 15:29 (WEA 1)
7	05:21 21:54	06:02 21:14	06:53 20:09	07:42 18:59		07:37 16:55	39	14:53 (WEA 1) 15:32 (WEA 1) 16:22	08:26 16:22	16	15:13 (WEA 1) 15:29 (WEA 1)
8	05:22 21:53	06:04 21:12	06:54 20:06	07:44 18:56		07:39 16:54	40	14:53 (WEA 1) 15:33 (WEA 1) 16:22	08:27 16:22	13	15:14 (WEA 1) 15:27 (WEA 1)
9	05:23 21:53	06:05 21:11	06:56 20:04	07:46 18:54		07:41 16:52	41	14:52 (WEA 1) 15:33 (WEA 1) 16:21	08:28 16:21	10	15:16 (WEA 1) 15:26 (WEA 1)
10	05:24 21:52	06:07 21:09	06:58 20:02	07:48 18:52		07:43 16:50	42	14:52 (WEA 1) 15:34 (WEA 1) 16:21	08:29 16:21	7	15:18 (WEA 1) 15:25 (WEA 1)
11	05:25 21:51	06:09 21:07	06:59 19:59	07:49 18:50		07:44 16:49	42	14:52 (WEA 1) 15:34 (WEA 1) 16:21	08:30 16:21		
12	05:26 21:50	06:10 21:05	07:01 19:57	07:51 18:47		07:46 16:47	42	14:52 (WEA 1) 15:34 (WEA 1) 16:21	08:31 16:21		
13	05:27 21:49	06:12 21:03	07:03 19:55	07:53 18:45		07:48 16:46	42	14:52 (WEA 1) 15:34 (WEA 1) 16:21	08:32 16:21		
14	05:28 21:49	06:13 21:01	07:04 19:52	07:54 18:43		07:50 16:44	42	14:53 (WEA 1) 15:35 (WEA 1) 16:21	08:33 16:21		
15	05:29 21:48	06:15 20:59	07:06 19:50	07:56 18:41		07:52 16:43	42	14:53 (WEA 1) 15:35 (WEA 1) 16:21	08:34 16:21		
16	05:30 21:47	06:17 20:57	07:07 19:48	07:58 18:39		07:53 16:41	42	14:53 (WEA 1) 15:35 (WEA 1) 16:21	08:35 16:21		
17	05:32 21:45	06:18 20:55	07:09 19:45	08:00 18:36		07:55 16:40	41	14:54 (WEA 1) 15:35 (WEA 1) 16:21	08:36 16:21		
18	05:33 21:44	06:20 20:53	07:11 19:43	08:01 18:34		07:57 16:39	41	14:53 (WEA 1) 15:34 (WEA 1) 16:21	08:37 16:21		
19	05:34 21:43	06:22 20:51	07:12 19:41	08:03 18:32		07:58 16:37	40	14:54 (WEA 1) 15:34 (WEA 1) 16:22	08:37 16:22		
20	05:36 21:42	06:23 20:49	07:14 19:38	08:05 18:30		08:00 16:36	39	14:55 (WEA 1) 15:34 (WEA 1) 16:22	08:38 16:22		
21	05:37 21:41	06:25 20:46	07:16 19:36	08:07 18:28		08:02 16:35	39	14:55 (WEA 1) 15:34 (WEA 1) 16:22	08:39 16:22		
22	05:38 21:40	06:27 20:44	07:17 19:33	08:08 18:26		08:04 16:34	38	14:56 (WEA 1) 15:34 (WEA 1) 16:23	08:39 16:23		
23	05:40 21:38	06:28 20:42	07:19 19:31	08:10 18:24		08:05 16:33	37	14:57 (WEA 1) 15:34 (WEA 1) 16:23	08:40 16:23		
24	05:41 21:37	06:30 20:40	07:21 19:29	08:12 18:22		08:07 16:31	36	14:57 (WEA 1) 15:33 (WEA 1) 16:24	08:40 16:24		
25	05:42 21:35	06:31 20:38	07:22 19:26	08:14 17:20		08:08 16:30	36	14:58 (WEA 1) 15:34 (WEA 1) 16:25	08:41 16:25		
26	05:44 21:34	06:33 20:36	07:24 19:24	08:16 17:18		08:10 16:29	35	14:59 (WEA 1) 15:34 (WEA 1) 16:25	08:41 16:25		
27	05:45 21:33	06:35 20:33	07:26 19:22	08:17 17:16		08:12 16:29	34	15:00 (WEA 1) 15:34 (WEA 1) 16:26	08:41 16:26		
28	05:47 21:31	06:36 20:31	07:27 19:19	08:19 17:14	3	08:13 15:12 (WEA 1)	32	15:01 (WEA 1) 15:15 (WEA 1) 16:28	08:41 16:28		
29	05:48 21:29	06:38 20:29	07:29 19:17	08:21 17:12	15	08:15 15:05 (WEA 1)	31	15:02 (WEA 1) 15:20 (WEA 1) 16:27	08:42 16:27		
30	05:50 21:28	06:40 20:27	07:31 19:15	08:23 17:10	21	08:16 15:02 (WEA 1)	29	15:03 (WEA 1) 15:23 (WEA 1) 16:26	08:42 16:26		
31	05:51 21:26	06:41 20:25		08:25 17:08	25	15:00 (WEA 1) 15:25 (WEA 1)			08:42 16:30		
Sonnenscheinstunden	503	454	381	331		266					243
astr.max.mögl.Beschattung					64		1125				188

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM)	Schattenanfang (WEA mit erstem Schatten)	Schattenende (WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 22-SO - IP 22-SO
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlungsrichtung

Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni	
1	08:42 16:31	08:15 17:19	15:52 (WEA 1) 17:19	07:21 18:11	07:10 20:05	06:05 20:57	05:19 21:43
2	08:42 16:32	08:13 17:21	15:52 (WEA 1) 16:26 (WEA 1)	07:19 18:13	07:08 20:07	06:03 20:58	05:18 21:44
3	08:41 16:33	08:11 17:23	15:51 (WEA 1) 16:26 (WEA 1)	07:16 18:15	07:05 20:09	06:01 21:00	05:18 21:45
4	08:41 16:34	08:10 17:25	15:52 (WEA 1) 16:27 (WEA 1)	07:14 18:16	07:03 20:10	05:59 21:02	05:17 21:46
5	08:41 16:35	08:08 17:26	15:52 (WEA 1) 16:27 (WEA 1)	07:12 18:18	07:01 20:12	05:57 21:03	05:16 21:47
6	08:41 16:37	08:06 17:28	15:53 (WEA 1) 16:27 (WEA 1)	07:10 18:20	06:58 20:14	05:55 21:05	05:15 21:48
7	08:40 16:38	08:05 17:30	15:53 (WEA 1) 16:26 (WEA 1)	07:08 18:22	06:56 20:16	05:54 21:07	05:15 21:49
8	08:40 16:39	08:03 17:32	15:53 (WEA 1) 16:26 (WEA 1)	07:05 18:24	06:54 20:17	05:52 21:08	05:14 21:50
9	08:39 16:41	08:01 17:34	15:54 (WEA 1) 16:25 (WEA 1)	07:03 18:25	06:52 20:19	05:50 21:10	05:14 21:51
10	08:39 16:42	07:59 17:36	15:56 (WEA 1) 16:26 (WEA 1)	07:01 18:27	06:49 20:21	05:48 21:11	05:13 21:51
11	08:38 16:43	07:58 17:38	15:57 (WEA 1) 16:25 (WEA 1)	06:59 18:29	06:47 20:22	05:47 21:13	05:13 21:52
12	08:38 16:45	07:56 17:40	15:58 (WEA 1) 16:24 (WEA 1)	06:56 18:31	06:45 20:24	05:45 21:15	05:13 21:53
13	08:37 16:46	07:54 17:41	15:59 (WEA 1) 16:22 (WEA 1)	06:54 18:32	06:43 20:26	05:43 21:16	05:12 21:54
14	08:36 16:48	07:52 17:43	16:01 (WEA 1) 16:20 (WEA 1)	06:52 18:34	06:40 20:28	05:42 21:18	05:12 21:54
15	08:35 16:49	07:50 17:45	16:04 (WEA 1) 16:18 (WEA 1)	06:49 18:36	06:38 20:29	05:40 21:19	05:12 21:55
16	08:34 16:51	07:48 17:47	16:09 (WEA 1) 16:13 (WEA 1)	06:47 18:38	06:36 20:31	05:39 21:21	05:12 21:55
17	08:33 16:53	07:46 17:49		06:45 18:39	06:34 20:33	05:37 21:22	05:12 21:56
18	08:33 16:54	16:02 (WEA 1) 16:09 (WEA 1)	07:44 17:51	06:42 18:41	06:32 20:34	05:36 21:24	05:12 21:56
19	08:32 16:56	15:59 (WEA 1) 16:12 (WEA 1)	07:42 17:53	06:40 18:43	06:29 20:36	05:34 21:25	05:12 21:56
20	08:30 16:58	15:58 (WEA 1) 16:15 (WEA 1)	07:40 17:54	06:38 18:45	06:27 20:38	05:33 21:27	05:12 21:57
21	08:29 16:59	15:56 (WEA 1) 16:16 (WEA 1)	07:38 17:56	06:35 18:46	06:25 20:40	05:31 21:28	05:12 21:57
22	08:28 17:01	15:55 (WEA 1) 16:18 (WEA 1)	07:36 17:58	06:33 18:48	06:23 20:41	05:30 21:30	05:12 21:57
23	08:27 17:03	15:55 (WEA 1) 16:20 (WEA 1)	07:34 18:00	06:31 18:50	06:21 20:43	05:29 21:31	05:12 21:57
24	08:26 17:05	15:54 (WEA 1) 16:20 (WEA 1)	07:32 18:02	06:28 18:52	06:19 20:45	05:28 21:33	05:13 21:58
25	08:25 17:06	15:54 (WEA 1) 16:22 (WEA 1)	07:29 18:04	06:26 18:53	06:17 20:46	05:26 21:34	05:13 21:58
26	08:23 17:08	15:53 (WEA 1) 16:22 (WEA 1)	07:27 18:05	06:24 18:55	06:15 20:48	05:25 21:35	05:13 21:58
27	08:22 17:10	15:53 (WEA 1) 16:23 (WEA 1)	07:25 18:07	06:21 18:57	06:13 20:50	05:24 21:37	05:14 21:58
28	08:21 17:12	15:52 (WEA 1) 16:24 (WEA 1)	07:23 18:09	06:19 18:58	06:11 20:52	05:23 21:38	05:14 21:57
29	08:19 17:13	15:52 (WEA 1) 16:25 (WEA 1)		07:17 20:00	06:09 20:53	05:22 21:39	05:15 21:57
30	08:18 17:15	15:52 (WEA 1) 16:25 (WEA 1)		07:15 20:02	06:07 20:55	05:21 21:40	05:15 21:57
31	08:16 17:17	15:52 (WEA 1) 16:26 (WEA 1)		07:12 20:04		05:20 21:42	
Sonnenscheinstunden	258	277	367	416	486	500	
astr.max.mögl.Beschattung	350	448					

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 22-SO - IP 22-SO
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung

Die Windenergieanlage/n ist/sind immer in Betrieb

	July	August	September	Oktober		November		Dezember	
1	05:16 21:57	05:53 21:25	06:43 20:22	07:32 19:12		07:26 17:06	30	15:24 (WEA 1) 15:54 (WEA 1)	08:18 16:25
2	05:17 21:56	05:54 21:23	06:45 20:20	07:34 19:10		07:28 17:04	31	15:24 (WEA 1) 15:55 (WEA 1)	08:19 16:25
3	05:17 21:56	05:56 21:21	06:46 20:18	07:36 19:08		07:30 17:02	33	15:23 (WEA 1) 15:56 (WEA 1)	08:21 16:24
4	05:18 21:56	05:57 21:20	06:48 20:15	07:37 19:06		07:32 17:00	33	15:23 (WEA 1) 15:56 (WEA 1)	08:22 16:23
5	05:19 21:55	05:59 21:18	06:49 20:13	07:39 19:03		07:34 16:59	34	15:22 (WEA 1) 15:56 (WEA 1)	08:23 16:23
6	05:20 21:55	06:01 21:16	06:51 20:11	07:41 19:01		07:35 16:57	35	15:22 (WEA 1) 15:57 (WEA 1)	08:25 16:22
7	05:21 21:54	06:02 21:14	06:53 20:09	07:42 18:59		07:37 16:55	35	15:22 (WEA 1) 15:57 (WEA 1)	08:26 16:22
8	05:22 21:53	06:04 21:12	06:54 20:06	07:44 18:56		07:39 16:54	35	15:22 (WEA 1) 15:57 (WEA 1)	08:27 16:22
9	05:23 21:53	06:05 21:11	06:56 20:04	07:46 18:54		07:41 16:52	35	15:22 (WEA 1) 15:57 (WEA 1)	08:28 16:21
10	05:24 21:52	06:07 21:09	06:58 20:02	07:47 18:52		07:43 16:50	34	15:23 (WEA 1) 15:57 (WEA 1)	08:29 16:21
11	05:25 21:51	06:09 21:07	06:59 19:59	07:49 18:50		07:44 16:49	34	15:23 (WEA 1) 15:57 (WEA 1)	08:30 16:21
12	05:26 21:50	06:10 21:05	07:01 19:57	07:51 18:47		07:46 16:47	33	15:24 (WEA 1) 15:57 (WEA 1)	08:31 16:21
13	05:27 21:49	06:12 21:03	07:03 19:55	07:53 18:45		07:48 16:46	33	15:24 (WEA 1) 15:57 (WEA 1)	08:32 16:21
14	05:28 21:49	06:13 21:01	07:04 19:52	07:54 18:43		07:50 16:44	32	15:25 (WEA 1) 15:57 (WEA 1)	08:33 16:21
15	05:29 21:48	06:15 20:59	07:06 19:50	07:56 18:41		07:52 16:43	30	15:26 (WEA 1) 15:56 (WEA 1)	08:34 16:21
16	05:30 21:47	06:17 20:57	07:07 19:48	07:58 18:39		07:53 16:41	29	15:27 (WEA 1) 15:56 (WEA 1)	08:35 16:21
17	05:32 21:45	06:18 20:55	07:09 19:45	08:00 18:36		07:55 16:40	28	15:27 (WEA 1) 15:55 (WEA 1)	08:36 16:21
18	05:33 21:44	06:20 20:53	07:11 19:43	08:01 18:34		07:57 16:39	26	15:28 (WEA 1) 15:54 (WEA 1)	08:37 16:21
19	05:34 21:43	06:22 20:51	07:12 19:41	08:03 18:32		07:58 16:37	25	15:29 (WEA 1) 15:54 (WEA 1)	08:37 16:22
20	05:36 21:42	06:23 20:49	07:14 19:38	08:05 18:30		08:00 16:36	23	15:30 (WEA 1) 15:53 (WEA 1)	08:38 16:22
21	05:37 21:41	06:25 20:46	07:16 19:36	08:07 18:28		08:02 16:35	20	15:32 (WEA 1) 15:52 (WEA 1)	08:39 16:22
22	05:38 21:39	06:27 20:44	07:17 19:33	08:08 18:26		08:04 16:34	17	15:34 (WEA 1) 15:51 (WEA 1)	08:39 16:23
23	05:40 21:38	06:28 20:42	07:19 19:31	08:10 18:24		08:05 16:33	14	15:36 (WEA 1) 15:50 (WEA 1)	08:40 16:23
24	05:41 21:37	06:30 20:40	07:21 19:29	08:12 18:22		08:07 16:31	7	15:39 (WEA 1) 15:46 (WEA 1)	08:40 16:24
25	05:42 21:35	06:31 20:38	07:22 19:26	08:14 18:20		08:08 16:30			08:41 16:25
26	05:44 21:34	06:33 20:36	07:24 19:24	08:16 18:18	7	08:10 15:44 (WEA 1)			08:41 16:25
27	05:45 21:33	06:35 20:33	07:26 19:22	08:17 18:16	15	08:12 15:33 (WEA 1)			08:41 16:26
28	05:47 21:31	06:36 20:31	07:27 19:19	08:19 18:14	20	08:13 15:30 (WEA 1)			08:41 16:27
29	05:48 21:29	06:38 20:29	07:29 19:17	08:21 18:12	24	08:15 15:27 (WEA 1)			08:42 16:28
30	05:50 21:28	06:40 20:27	07:31 19:15	08:23 18:10	26	08:16 15:26 (WEA 1)			08:42 16:29
31	05:51 21:26	06:41 20:25		08:25 18:08	28	15:25 (WEA 1) 15:53 (WEA 1)			08:42 16:30
Sonnenscheinstunden	503	454	381	331		266	686		243
astr.max.mögl.Beschattung				120					

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM)	Schattenanfang (WEA mit erstem Schatten)	Schattenende (WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 22-SW - IP 22-SW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlungsrichtung

Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni	
1	08:42 16:31	08:15 17:19	15:50 (WEA 1) 17:19	07:21 18:11	07:10 20:05	06:05 20:57	05:19 21:43
2	08:42 16:32	08:13 17:21	15:50 (WEA 1) 16:25 (WEA 1)	07:19 18:13	07:08 20:07	06:03 20:58	05:18 21:44
3	08:41 16:33	08:11 17:23	15:50 (WEA 1) 16:25 (WEA 1)	07:16 18:15	07:05 20:09	06:01 21:00	05:18 21:45
4	08:41 16:34	08:10 17:25	15:51 (WEA 1) 16:26 (WEA 1)	07:14 18:16	07:03 20:10	05:59 21:02	05:17 21:46
5	08:41 16:35	08:08 17:26	15:51 (WEA 1) 16:25 (WEA 1)	07:12 18:18	07:01 20:12	05:57 21:03	05:16 21:47
6	08:41 16:37	08:06 17:28	15:51 (WEA 1) 16:25 (WEA 1)	07:10 18:20	06:58 20:14	05:55 21:05	05:15 21:48
7	08:40 16:38	08:05 17:30	15:51 (WEA 1) 16:25 (WEA 1)	07:08 18:22	06:56 20:16	05:54 21:07	05:15 21:49
8	08:40 16:39	08:03 17:32	15:52 (WEA 1) 16:24 (WEA 1)	07:05 18:24	06:54 20:17	05:52 21:08	05:14 21:50
9	08:39 16:41	08:01 17:34	15:53 (WEA 1) 16:23 (WEA 1)	07:03 18:25	06:52 20:19	05:50 21:10	05:14 21:51
10	08:39 16:42	07:59 17:36	15:54 (WEA 1) 16:24 (WEA 1)	07:01 18:27	06:49 20:21	05:48 21:11	05:13 21:51
11	08:38 16:43	07:58 17:38	15:55 (WEA 1) 16:23 (WEA 1)	06:59 18:29	06:47 20:22	05:47 21:13	05:13 21:52
12	08:38 16:45	07:56 17:40	15:57 (WEA 1) 16:21 (WEA 1)	06:56 18:31	06:45 20:24	05:45 21:15	05:13 21:53
13	08:37 16:46	07:54 17:41	15:58 (WEA 1) 16:20 (WEA 1)	06:54 18:32	06:43 20:26	05:43 21:16	05:12 21:54
14	08:36 16:48	07:52 17:43	16:01 (WEA 1) 16:18 (WEA 1)	06:52 18:34	06:40 20:28	05:42 21:18	05:12 21:54
15	08:35 16:49	07:50 17:45	16:04 (WEA 1) 16:15 (WEA 1)	06:49 18:36	06:38 20:29	05:40 21:19	05:12 21:55
16	08:34 16:51	07:48 17:47		06:47 18:38	06:36 20:31	05:39 21:21	05:12 21:55
17	08:33 16:53	15:59 (WEA 1) 16:07 (WEA 1)	07:46 17:49	06:45 18:39	06:34 20:33	05:37 21:22	05:12 21:56
18	08:33 16:54	15:57 (WEA 1) 16:10 (WEA 1)	07:44 17:51	06:42 18:41	06:32 20:34	05:36 21:24	05:12 21:56
19	08:32 16:56	15:56 (WEA 1) 16:13 (WEA 1)	07:42 17:53	06:40 18:43	06:29 20:36	05:34 21:25	05:12 21:56
20	08:30 16:58	15:55 (WEA 1) 16:15 (WEA 1)	07:40 17:54	06:38 18:45	06:27 20:38	05:33 21:27	05:12 21:57
21	08:29 16:59	15:53 (WEA 1) 16:15 (WEA 1)	07:38 17:56	06:35 18:46	06:25 20:40	05:31 21:28	05:12 21:57
22	08:28 17:01	15:53 (WEA 1) 16:17 (WEA 1)	07:36 17:58	06:33 18:48	06:23 20:41	05:30 21:30	05:12 21:57
23	08:27 17:03	15:52 (WEA 1) 16:19 (WEA 1)	07:34 18:00	06:31 18:50	06:21 20:43	05:29 21:31	05:12 21:57
24	08:26 17:05	15:51 (WEA 1) 16:19 (WEA 1)	07:32 18:02	06:28 18:52	06:19 20:45	05:28 21:33	05:13 21:58
25	08:25 17:06	15:51 (WEA 1) 16:21 (WEA 1)	07:29 18:04	06:26 18:53	06:17 20:46	05:26 21:34	05:13 21:58
26	08:23 17:08	15:50 (WEA 1) 16:21 (WEA 1)	07:27 18:05	06:24 18:55	06:15 20:48	05:25 21:35	05:13 21:58
27	08:22 17:10	15:50 (WEA 1) 16:22 (WEA 1)	07:25 18:07	06:21 18:57	06:13 20:50	05:24 21:37	05:14 21:58
28	08:21 17:12	15:50 (WEA 1) 16:23 (WEA 1)	07:23 18:09	06:19 18:58	06:11 20:52	05:23 21:38	05:14 21:57
29	08:19 17:13	15:50 (WEA 1) 16:24 (WEA 1)		07:17 20:00	06:09 20:53	05:22 21:39	05:15 21:57
30	08:18 17:15	15:50 (WEA 1) 16:24 (WEA 1)		07:15 20:02	06:07 20:55	05:21 21:40	05:15 21:57
31	08:16 17:17	15:50 (WEA 1) 16:25 (WEA 1)		07:12 20:04		05:20 21:42	
Sonnenscheinstunden	258	277	367	416	486	500	
astr.max.mögl.Beschattung	388	436					

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 22-SW - IP 22-SW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	July	August	September	Oktober		November		Dezember
1	05:16	05:53	06:43	07:32		07:26	15:23 (WEA 1)	08:18
	21:57	21:25	20:22	19:12		17:06	29 15:52 (WEA 1)	16:25
2	05:17	05:54	06:45	07:34		07:28	15:22 (WEA 1)	08:19
	21:56	21:23	20:20	19:10		17:04	31 15:53 (WEA 1)	16:25
3	05:17	05:56	06:46	07:36		07:30	15:22 (WEA 1)	08:21
	21:56	21:21	20:18	19:08		17:02	32 15:54 (WEA 1)	16:24
4	05:18	05:57	06:48	07:37		07:32	15:21 (WEA 1)	08:22
	21:56	21:20	20:15	19:06		17:00	33 15:54 (WEA 1)	16:23
5	05:19	05:59	06:49	07:39		07:34	15:21 (WEA 1)	08:23
	21:55	21:18	20:13	19:03		16:59	34 15:55 (WEA 1)	16:23
6	05:20	06:01	06:51	07:41		07:35	15:21 (WEA 1)	08:25
	21:55	21:16	20:11	19:01		16:57	34 15:55 (WEA 1)	16:22
7	05:21	06:02	06:53	07:42		07:37	15:20 (WEA 1)	08:26
	21:54	21:14	20:09	18:59		16:55	35 15:55 (WEA 1)	16:22
8	05:22	06:04	06:54	07:44		07:39	15:20 (WEA 1)	08:27
	21:53	21:12	20:06	18:56		16:54	36 15:56 (WEA 1)	16:22
9	05:23	06:05	06:56	07:46		07:41	15:21 (WEA 1)	08:28
	21:53	21:11	20:04	18:54		16:52	35 15:56 (WEA 1)	16:21
10	05:24	06:07	06:58	07:47		07:43	15:21 (WEA 1)	08:29
	21:52	21:09	20:02	18:52		16:50	35 15:56 (WEA 1)	16:21
11	05:25	06:09	06:59	07:49		07:44	15:21 (WEA 1)	08:30
	21:51	21:07	19:59	18:50		16:49	35 15:56 (WEA 1)	16:21
12	05:26	06:10	07:01	07:51		07:46	15:22 (WEA 1)	08:31
	21:50	21:05	19:57	18:47		16:47	34 15:56 (WEA 1)	16:21
13	05:27	06:12	07:03	07:53		07:48	15:22 (WEA 1)	08:32
	21:49	21:03	19:55	18:45		16:46	34 15:56 (WEA 1)	16:21
14	05:28	06:13	07:04	07:54		07:50	15:23 (WEA 1)	08:33
	21:49	21:01	19:52	18:43		16:44	32 15:55 (WEA 1)	16:21
15	05:29	06:15	07:06	07:56		07:52	15:23 (WEA 1)	08:34
	21:48	20:59	19:50	18:41		16:43	32 15:55 (WEA 1)	16:21
16	05:30	06:17	07:07	07:58		07:53	15:24 (WEA 1)	08:35
	21:47	20:57	19:48	18:39		16:41	31 15:55 (WEA 1)	16:21
17	05:32	06:18	07:09	08:00		07:55	15:24 (WEA 1)	08:36
	21:45	20:55	19:45	18:36		16:40	30 15:54 (WEA 1)	16:21
18	05:33	06:20	07:11	08:01		07:57	15:25 (WEA 1)	08:37
	21:44	20:53	19:43	18:34		16:39	28 15:53 (WEA 1)	16:21
19	05:34	06:22	07:12	08:03		07:58	15:26 (WEA 1)	08:37
	21:43	20:51	19:41	18:32		16:37	27 15:53 (WEA 1)	16:22
20	05:36	06:23	07:14	08:05		08:00	15:28 (WEA 1)	08:38
	21:42	20:49	19:38	18:30		16:36	24 15:52 (WEA 1)	16:22
21	05:37	06:25	07:16	08:07		08:02	15:29 (WEA 1)	08:39
	21:41	20:46	19:36	18:28		16:35	23 15:52 (WEA 1)	16:22
22	05:38	06:27	07:17	08:08		08:04	15:31 (WEA 1)	08:39
	21:39	20:44	19:33	18:26		16:34	20 15:51 (WEA 1)	16:23
23	05:40	06:28	07:19	08:10		08:05	15:33 (WEA 1)	08:40
	21:38	20:42	19:31	18:24		16:33	17 15:50 (WEA 1)	16:23
24	05:41	06:30	07:21	08:12		08:07	15:34 (WEA 1)	08:40
	21:37	20:40	19:29	18:22		16:31	13 15:47 (WEA 1)	16:24
25	05:42	06:31	07:22	07:14		08:08	15:37 (WEA 1)	08:41
	21:35	20:38	19:26	17:20		16:30	8 15:45 (WEA 1)	16:25
26	05:44	06:33	07:24	07:16		08:10		08:41
	21:34	20:36	19:24	17:18		16:29		16:25
27	05:45	06:35	07:26	07:17	13 15:32 (WEA 1)	08:12		08:41
	21:33	20:33	19:22	17:16	13 15:45 (WEA 1)	16:29		16:26
28	05:47	06:36	07:27	07:19	18 15:30 (WEA 1)	08:13		08:41
	21:31	20:31	19:19	17:14	18 15:48 (WEA 1)	16:28		16:27
29	05:48	06:38	07:29	07:21	22 15:27 (WEA 1)	08:15		08:42
	21:29	20:29	19:17	17:12	22 15:49 (WEA 1)	16:27		16:28
30	05:50	06:40	07:31	07:23	25 15:25 (WEA 1)	08:16		08:42
	21:28	20:27	19:15	17:10	25 15:50 (WEA 1)	16:26		16:29
31	05:51	06:41		07:25	27 15:24 (WEA 1)			08:42
	21:26	20:25		17:08	27 15:51 (WEA 1)			16:30
Sonnenscheinstunden	503	454	381	331		266		243
astr.max.mögl.Beschattung				105		722		

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM)	Schattenanfang (WEA mit erstem Schatten)	Schattenende (WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 23-SO - IP 23-SO
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinflussrichtung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember			
1	08:42	08:15	15:52 (WEA 1)	07:21	07:10	06:05	05:19	05:16	05:53	06:43	07:32	07:26	15:31 (WEA 1)	08:18	
2	16:31	17:19	16:22 (WEA 1)	18:11	20:05	20:57	21:43	21:57	21:25	20:22	19:12	17:06	12	15:43 (WEA 1)	16:25
3	08:41	08:11	15:52 (WEA 1)	07:16	07:05	06:01	05:17	05:17	05:56	06:46	07:36	07:30	17	15:46 (WEA 1)	16:25
4	16:33	17:23	16:21 (WEA 1)	18:15	20:09	21:00	21:45	21:56	21:21	20:18	19:08	17:02	20	15:47 (WEA 1)	16:24
5	08:41	08:10	15:54 (WEA 1)	07:14	07:03	05:59	05:17	05:18	05:57	06:48	07:37	07:32	23	15:49 (WEA 1)	16:23
6	16:34	17:25	16:22 (WEA 1)	18:16	20:10	21:02	21:46	21:56	21:20	20:15	19:06	17:00	23	15:49 (WEA 1)	16:23
7	08:41	08:08	15:54 (WEA 1)	07:12	07:01	05:57	05:16	05:19	05:59	06:49	07:39	07:34	25	15:50 (WEA 1)	16:23
8	16:35	17:26	16:21 (WEA 1)	18:18	20:12	21:03	21:47	21:55	21:18	20:13	19:03	16:59	25	15:50 (WEA 1)	16:23
9	08:41	08:06	15:55 (WEA 1)	07:10	06:58	05:55	05:15	05:20	06:01	06:51	07:41	07:35	27	15:51 (WEA 1)	16:22
10	16:37	17:28	16:20 (WEA 1)	18:20	20:14	21:05	21:48	21:55	21:16	20:11	19:01	16:57	27	15:51 (WEA 1)	16:22
11	08:40	08:05	15:56 (WEA 1)	07:08	06:56	05:54	05:15	05:21	06:02	06:53	07:42	07:37	28	15:52 (WEA 1)	16:22
12	16:38	17:30	16:19 (WEA 1)	18:22	20:16	21:07	21:49	21:54	21:14	20:09	18:59	16:55	28	15:51 (WEA 1)	16:22
13	08:40	08:03	15:58 (WEA 1)	07:05	06:54	05:52	05:14	05:22	06:04	06:54	07:44	07:39	29	15:52 (WEA 1)	16:22
14	16:39	17:32	16:17 (WEA 1)	18:24	20:17	21:08	21:50	21:53	21:12	20:06	18:56	16:54	29	15:52 (WEA 1)	16:22
15	08:39	08:01	15:59 (WEA 1)	07:03	06:52	05:50	05:14	05:23	06:05	06:56	07:46	07:41	30	15:53 (WEA 1)	16:22
16	16:41	17:34	16:16 (WEA 1)	18:25	20:19	21:10	21:51	21:53	21:11	20:04	18:54	16:52	30	15:53 (WEA 1)	16:21
17	08:39	07:59	16:03 (WEA 1)	07:01	06:49	05:48	05:13	05:24	06:07	06:58	07:47	07:43	30	15:53 (WEA 1)	16:21
18	16:42	17:36	16:14 (WEA 1)	18:27	20:21	21:11	21:51	21:52	21:09	20:02	18:52	16:50	30	15:53 (WEA 1)	16:21
19	08:38	07:58		06:59	06:47	05:47	05:13	05:25	06:09	06:59	07:49	07:44	31	15:52 (WEA 1)	16:21
20	16:43	17:38		18:29	20:22	21:13	21:52	21:51	21:07	19:59	18:50	16:49	31	15:53 (WEA 1)	16:21
21	08:38	07:56		06:56	06:45	05:45	05:13	05:26	06:10	07:01	07:51	07:46	31	15:53 (WEA 1)	16:21
22	16:45	17:40		18:31	20:24	21:15	21:53	21:50	21:05	19:57	18:47	16:47	31	15:54 (WEA 1)	16:21
23	08:37	07:54		06:54	06:43	05:43	05:12	05:27	06:12	07:03	07:53	07:48	31	15:53 (WEA 1)	16:21
24	16:46	17:41	15:59 (WEA 1)	18:32	20:26	21:16	21:54	21:49	21:03	19:55	18:45	16:46	31	15:54 (WEA 1)	16:21
25	08:36	07:52	16:04 (WEA 1)	07:41	06:52	06:40	05:42	05:28	06:13	07:04	07:54	07:50	31	15:53 (WEA 1)	16:21
26	16:48	17:43	15:56 (WEA 1)	18:34	20:28	21:18	21:54	21:49	21:01	19:52	18:43	16:44	31	15:54 (WEA 1)	16:21
27	08:35	07:50	16:07 (WEA 1)	17:43	06:49	06:38	05:40	05:12	05:29	06:15	07:06	07:52	31	15:53 (WEA 1)	16:21
28	16:49	17:45	16:09 (WEA 1)	18:36	20:29	21:19	21:55	21:48	20:59	19:50	18:41	16:43	31	15:54 (WEA 1)	16:21
29	08:34	07:48	15:54 (WEA 1)	17:48	06:47	06:36	05:39	05:12	05:30	06:17	07:07	07:58	31	15:54 (WEA 1)	16:21
30	16:51	17:47	16:11 (WEA 1)	18:37	20:31	21:21	21:55	21:47	20:57	19:48	18:39	16:41	30	15:54 (WEA 1)	16:21
31	08:33	07:46	15:53 (WEA 1)	17:46	06:45	06:34	05:37	05:12	05:32	06:18	07:09	08:00	30	15:54 (WEA 1)	16:21
32	16:53	17:49	16:12 (WEA 1)	18:39	20:33	21:22	21:56	21:45	20:55	19:45	18:36	16:40	29	15:53 (WEA 1)	16:21
33	08:33	07:44	15:53 (WEA 1)	17:44	06:42	06:32	05:36	05:12	05:33	06:20	07:11	08:01	29	15:54 (WEA 1)	16:21
34	16:54	17:51	16:14 (WEA 1)	18:41	20:34	21:24	21:56	21:44	20:53	19:43	18:34	16:39	29	15:53 (WEA 1)	16:21
35	08:32	07:42	15:52 (WEA 1)	17:42	06:40	06:29	05:34	05:12	05:34	06:22	07:12	08:03	29	15:53 (WEA 1)	16:21
36	16:56	17:53	16:15 (WEA 1)	18:43	20:36	21:25	21:56	21:43	20:51	19:41	18:32	16:37	28	15:53 (WEA 1)	16:22
37	08:30	07:40	15:52 (WEA 1)	17:40	06:38	06:27	05:33	05:12	05:36	06:23	07:14	08:05	28	15:53 (WEA 1)	16:22
38	16:58	17:54	16:17 (WEA 1)	18:45	20:38	21:27	21:57	21:42	20:49	19:38	18:30	16:36	27	15:53 (WEA 1)	16:22
39	08:29	07:38	15:51 (WEA 1)	17:38	06:35	06:25	05:31	05:12	05:37	06:25	07:16	08:07	27	15:53 (WEA 1)	16:22
40	16:59	17:56	16:17 (WEA 1)	18:46	20:40	21:28	21:57	21:41	20:46	19:36	18:28	16:35	26	15:53 (WEA 1)	16:22
41	08:28	07:36	15:51 (WEA 1)	17:36	06:33	06:23	05:30	05:12	05:38	06:27	07:17	08:08	26	15:53 (WEA 1)	16:22
42	17:01	17:58	16:18 (WEA 1)	18:48	20:41	21:30	21:57	21:39	20:44	19:33	18:26	16:34	25	15:53 (WEA 1)	16:23
43	08:27	07:34	15:51 (WEA 1)	17:34	06:31	06:21	05:29	05:12	05:40	06:28	07:19	08:10	25	15:53 (WEA 1)	16:23
44	17:03	18:00	16:19 (WEA 1)	18:50	20:43	21:31	21:57	21:38	20:42	19:31	18:24	16:33	23	15:52 (WEA 1)	16:23
45	08:26	07:32	15:50 (WEA 1)	17:32	06:28	06:19	05:28	05:13	05:41	06:30	07:21	08:12	23	15:52 (WEA 1)	16:23
46	17:05	18:02	16:19 (WEA 1)	18:52	20:45	21:33	21:58	21:37	20:40	19:29	18:22	16:31	21	15:51 (WEA 1)	16:24
47	08:25	07:29	15:51 (WEA 1)	17:29	06:26	06:17	05:26	05:13	05:42	06:31	07:22	08:13	21	15:51 (WEA 1)	16:24
48	17:06	18:04	16:20 (WEA 1)	19:04	20:53	21:44	22:18	22:05	21:08	19:56	18:47	17:38	20	15:51 (WEA 1)	16:25
49	08:23	07:27	15:50 (WEA 1)	17:27	06:24	06:15	05:25	05:13	05:44	06:33	07:24	08:15	20	15:51 (WEA 1)	16:25
50	17:08	18:05	16:20 (WEA 1)	19:05	20:54	21:45	22:19	22:06	21:09	19:57	18:48	17:39	17	15:50 (WEA 1)	16:25
51	08:22	07:25	15:50 (WEA 1)	17:25	06:21	06:13	05:24	05:14	05:45	06:35	07:26	08:17	17	15:50 (WEA 1)	16:25
52	17:10	18:07	16:21 (WEA 1)	19:07	20:56	21:47	22:21	22:08	21:11	19:59	18:50	17:41	14	15:49 (WEA 1)	16:26
53	08:21	07:23	15:50 (WEA 1)	17:23	06:19	06:11	05:23	05:14	05:47	06:36	07:27	08:19	14	15:49 (WEA 1)	16:26
54	17:12	18:09	16:21 (WEA 1)	19:09	20:58	21:49	22:23	22:10	21:13	19:59	18:50	17:41	11	15:47 (WEA 1)	16:27
55	08:19	07:21	15:51 (WEA 1)	17:21	06:17	06:09	05:22	05:15	05:48	06:38	07:29	08:21	11	15:47 (WEA 1)	16:27
56	17:13	18:10	16:22 (WEA 1)	19:10	21:00	21:51	22:25	22:12	21:15	20:03	18:54	17:45	6	15:45 (WEA 1)	16:28
57	08:18	07:20	15:51 (WEA 1)	17:20	06:15	06:07	05:21	05:15	05:50	06:40	07:31	08:23	6	15:45 (WEA 1)	16:28
58	17:15	18:12	16:22 (WEA 1)	19:12	21:02	21:53	22:27	22:14	21:17	20:05	18:56	17:47	6	15:45 (WEA 1)	16:29
59	08:16	07:18	15:52 (WEA 1)	17:18	06:12	06:04	05:20	05:51	06:41	07:32	08:24	09:16	6	15:45 (WEA 1)	16:29
60	17:17	18:14	16:23 (WEA 1)	19:14	21:04	21:42	22:16	22:03	21:06	19:54	18:45	17:36	6	15:45 (WEA 1)	16:30
Sonnenscheinstunden	258	277		367	416	486	500	503	454	381	331	266	702	243	
astr.max.mögl.Beschattung	459	239													

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 23-SW - IP 23-SW
 Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinflussrichtung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember			
1	08:42	08:15	15:50 (WEA 1)	07:21	07:10	06:05	05:19	05:16	05:53	06:43	07:32	07:26	15:31 (WEA 1)	08:18	
	16:31	17:19	16:21 (WEA 1)	18:11	20:05	20:57	21:43	21:57	21:25	20:22	19:12	17:06	10	15:41 (WEA 1)	16:25
2	08:42	08:13	15:50 (WEA 1)	07:19	07:08	06:03	05:18	05:17	05:54	06:45	07:34	07:28	15:28 (WEA 1)	08:19	
	16:32	17:21	16:21 (WEA 1)	18:13	20:07	20:58	21:44	21:56	21:23	20:20	19:10	17:04	16	15:44 (WEA 1)	16:25
3	08:41	08:11	15:51 (WEA 1)	07:16	07:05	06:01	05:17	05:17	05:56	06:46	07:36	07:30	15:26 (WEA 1)	08:21	
	16:33	17:23	16:20 (WEA 1)	18:15	20:09	21:00	21:45	21:56	21:21	20:18	19:08	17:02	20	15:46 (WEA 1)	16:24
4	08:41	08:10	15:52 (WEA 1)	07:14	07:03	05:59	05:17	05:18	05:57	06:48	07:37	07:32	15:25 (WEA 1)	08:22	
	16:34	17:25	16:20 (WEA 1)	18:16	20:10	21:02	21:46	21:56	21:20	20:15	19:06	17:00	22	15:47 (WEA 1)	16:23
5	08:41	08:08	15:53 (WEA 1)	07:12	07:01	05:57	05:16	05:19	05:59	06:49	07:39	07:34	15:23 (WEA 1)	08:23	
	16:35	17:26	16:20 (WEA 1)	18:18	20:12	21:03	21:47	21:55	21:18	20:13	19:03	16:59	25	15:48 (WEA 1)	16:23
6	08:41	08:06	15:54 (WEA 1)	07:10	06:58	05:55	05:15	05:20	06:01	06:51	07:41	07:35	15:23 (WEA 1)	08:25	
	16:37	17:28	16:19 (WEA 1)	18:20	20:14	21:05	21:48	21:55	21:16	20:11	19:01	16:57	26	15:49 (WEA 1)	16:22
7	08:40	08:05	15:55 (WEA 1)	07:08	06:56	05:54	05:15	05:21	06:02	06:53	07:42	07:37	15:22 (WEA 1)	08:26	
	16:38	17:30	16:17 (WEA 1)	18:22	20:16	21:07	21:49	21:54	21:14	20:09	18:59	16:55	28	15:50 (WEA 1)	16:22
8	08:40	08:03	15:57 (WEA 1)	07:05	06:54	05:52	05:14	05:22	06:04	06:54	07:44	07:39	15:22 (WEA 1)	08:27	
	16:39	17:32	16:16 (WEA 1)	18:24	20:17	21:08	21:50	21:53	21:12	20:06	18:56	16:54	29	15:51 (WEA 1)	16:22
9	08:39	08:01	15:59 (WEA 1)	07:03	06:52	05:50	05:14	05:23	06:05	06:56	07:46	07:41	15:21 (WEA 1)	08:28	
	16:41	17:34	16:14 (WEA 1)	18:25	20:19	21:10	21:51	21:53	21:11	20:04	18:54	16:52	30	15:51 (WEA 1)	16:21
10	08:39	07:59	16:03 (WEA 1)	07:01	06:49	05:48	05:13	05:24	06:07	06:58	07:47	07:43	15:21 (WEA 1)	08:29	
	16:42	17:36	16:12 (WEA 1)	18:27	20:21	21:11	21:51	21:52	21:09	20:02	18:52	16:50	31	15:52 (WEA 1)	16:21
11	08:38	07:58		06:59	06:47	05:47	05:13	05:25	06:09	06:59	07:49	07:44	15:21 (WEA 1)	08:30	
	16:43	17:38		18:29	20:22	21:13	21:52	21:51	21:07	19:59	18:50	16:49	31	15:52 (WEA 1)	16:21
12	08:38	15:58 (WEA 1)	07:56	06:56	06:45	05:45	05:13	05:26	06:10	07:01	07:51	07:46	15:21 (WEA 1)	08:31	
	16:45	16:01 (WEA 1)	17:40	18:31	20:24	21:15	21:53	21:50	21:05	19:57	18:47	16:47	32	15:53 (WEA 1)	16:21
13	08:37	15:55 (WEA 1)	07:54	06:54	06:43	05:43	05:12	05:27	06:12	07:03	07:53	07:48	15:21 (WEA 1)	08:32	
	16:46	16:05 (WEA 1)	17:41	18:32	20:26	21:16	21:54	21:49	21:03	19:55	18:45	16:46	32	15:53 (WEA 1)	16:21
14	08:36	15:53 (WEA 1)	07:52	06:52	06:40	05:42	05:12	05:28	06:13	07:04	07:54	07:50	15:21 (WEA 1)	08:33	
	16:48	16:07 (WEA 1)	17:43	18:34	20:28	21:18	21:54	21:49	21:01	19:52	18:43	16:44	32	15:53 (WEA 1)	16:21
15	08:35	15:52 (WEA 1)	07:50	06:49	06:38	05:40	05:12	05:29	06:15	07:06	07:56	07:52	15:22 (WEA 1)	08:34	
	16:49	16:09 (WEA 1)	17:45	18:36	20:29	21:19	21:55	21:48	20:59	19:50	18:41	16:43	31	15:53 (WEA 1)	16:21
16	08:34	15:51 (WEA 1)	07:48	06:47	06:36	05:39	05:12	05:30	06:17	07:07	07:58	07:53	15:22 (WEA 1)	08:35	
	16:51	16:10 (WEA 1)	17:47	18:38	20:31	21:21	21:55	21:47	20:57	19:48	18:39	16:41	31	15:53 (WEA 1)	16:21
17	08:33	15:51 (WEA 1)	07:46	06:45	06:34	05:37	05:12	05:32	06:18	07:09	08:00	07:55	15:22 (WEA 1)	08:36	
	16:53	16:12 (WEA 1)	17:49	18:39	20:33	21:22	21:56	21:45	20:55	19:45	18:36	16:40	30	15:52 (WEA 1)	16:21
18	08:33	15:50 (WEA 1)	07:44	06:42	06:32	05:36	05:12	05:33	06:20	07:11	08:01	07:57	15:22 (WEA 1)	08:37	
	16:54	16:13 (WEA 1)	17:51	18:41	20:34	21:24	21:56	21:44	20:53	19:43	18:34	16:39	30	15:52 (WEA 1)	16:21
19	08:32	15:50 (WEA 1)	07:42	06:40	06:29	05:34	05:12	05:34	06:22	07:12	08:03	07:58	15:23 (WEA 1)	08:37	
	16:56	16:14 (WEA 1)	17:53	18:43	20:36	21:25	21:56	21:43	20:51	19:41	18:32	16:37	29	15:52 (WEA 1)	16:22
20	08:30	15:50 (WEA 1)	07:40	06:38	06:27	05:33	05:12	05:36	06:23	07:14	08:05	08:00	15:24 (WEA 1)	08:38	
	16:58	16:16 (WEA 1)	17:54	18:45	20:38	21:27	21:57	21:42	20:49	19:38	18:30	16:36	28	15:52 (WEA 1)	16:22
21	08:29	15:49 (WEA 1)	07:38	06:35	06:25	05:31	05:12	05:37	06:25	07:16	08:07	08:02	15:25 (WEA 1)	08:39	
	16:59	16:16 (WEA 1)	17:56	18:46	20:40	21:28	21:57	21:41	20:46	19:36	18:28	16:35	27	15:52 (WEA 1)	16:22
22	08:28	15:49 (WEA 1)	07:36	06:33	06:23	05:30	05:12	05:38	06:27	07:17	08:08	08:04	15:26 (WEA 1)	08:39	
	17:01	16:17 (WEA 1)	17:58	18:48	20:41	21:30	21:57	21:39	20:44	19:33	18:26	16:34	26	15:52 (WEA 1)	16:23
23	08:27	15:49 (WEA 1)	07:34	06:31	06:21	05:29	05:12	05:40	06:28	07:19	08:10	08:05	15:27 (WEA 1)	08:40	
	17:03	16:18 (WEA 1)	18:00	18:50	20:43	21:31	21:57	21:38	20:42	19:31	18:24	16:33	25	15:52 (WEA 1)	16:23
24	08:26	15:48 (WEA 1)	07:32	06:28	06:19	05:28	05:13	05:41	06:30	07:21	08:12	08:07	15:27 (WEA 1)	08:40	
	17:05	16:18 (WEA 1)	18:02	18:52	20:45	21:33	21:58	21:37	20:40	19:29	18:22	16:31	23	15:50 (WEA 1)	16:24
25	08:25	15:49 (WEA 1)	07:29	06:26	06:17	05:26	05:13	05:42	06:31	07:22	08:12	08:08	15:29 (WEA 1)	08:41	
	17:06	16:19 (WEA 1)	18:04	18:53	20:46	21:34	21:58	21:35	20:38	19:26	18:20	16:30	21	15:50 (WEA 1)	16:25
26	08:23	15:48 (WEA 1)	07:27	06:24	06:15	05:25	05:13	05:44	06:33	07:24	08:14	08:10	15:30 (WEA 1)	08:41	
	17:08	16:19 (WEA 1)	18:05	18:55	20:48	21:35	21:58	21:34	20:36	19:24	18:18	16:29	19	15:49 (WEA 1)	16:25
27	08:22	15:49 (WEA 1)	07:25	06:21	06:13	05:24	05:14	05:45	06:35	07:26	08:17	08:12	15:32 (WEA 1)	08:41	
	17:10	16:20 (WEA 1)	18:07	18:57	20:50	21:37	21:58	21:33	20:33	19:22	18:16	16:29	17	15:49 (WEA 1)	16:26
28	08:21	15:49 (WEA 1)	07:23	06:19	06:11	05:23	05:14	05:47	06:36	07:27	08:19	08:13	15:33 (WEA 1)	08:41	
	17:12	16:20 (WEA 1)	18:09	18:58	20:52	21:38	21:57	21:31	20:31	19:19	18:14	16:28	14	15:47 (WEA 1)	16:27
29	08:19	15:49 (WEA 1)		07:17	06:09	05:22	05:15	05:48	06:38	07:29	08:21	08:15	15:36 (WEA 1)	08:42	
	17:13	16:21 (WEA 1)		20:00	20:53	21:39	21:57	21:29	20:29	19:17	18:12	16:27	10	15:46 (WEA 1)	16:28
30	08:18	15:49 (WEA 1)		07:15	06:07	05:21	05:15	05:50	06:40	07:31	08:23	08:16	15:39 (WEA 1)	08:42	
	17:15	16:21 (WEA 1)		20:02	20:55	21:40	21:57	21:28	20:27	19:15	18:10	16:26	4	15:43 (WEA 1)	16:29
31	08:16	15:50 (WEA 1)		07:12		05:20		05:51	06:41		07:25				08:42
	17:17	16:21 (WEA 1)		20:04		21:42		21:26	20:25		17:08				16:30
Sonnenscheinstunden	258	277		367	416	486	500	503	454	381	331	266	729		243
astr.max.mögl.Beschattung	489	236													

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schatteneende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 24-S - IP 24-S
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlungsrichtung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni	
1	08:42 16:31	08:15 17:19	15:54 (WEA 1) 17:19	07:21 18:11	07:10 20:05	06:05 20:57	05:19 21:43
2	08:42 16:32	08:13 17:21	15:55 (WEA 1) 16:21 (WEA 1)	07:19 18:13	07:08 20:07	06:03 20:58	05:18 21:44
3	08:41 16:33	08:11 17:23	15:55 (WEA 1) 16:20 (WEA 1)	07:16 18:15	07:05 20:09	06:01 21:00	05:17 21:45
4	08:41 16:34	08:10 17:25	15:57 (WEA 1) 16:20 (WEA 1)	07:14 18:16	07:03 20:10	05:59 21:02	05:17 21:46
5	08:41 16:35	08:08 17:26	15:58 (WEA 1) 16:19 (WEA 1)	07:12 18:18	07:01 20:12	05:57 21:03	05:16 21:47
6	08:41 16:37	08:06 17:28	16:00 (WEA 1) 16:17 (WEA 1)	07:10 18:20	06:58 20:14	05:55 21:05	05:15 21:48
7	08:40 16:38	08:05 17:30	16:02 (WEA 1) 16:15 (WEA 1)	07:08 18:22	06:56 20:16	05:54 21:07	05:15 21:49
8	08:40 16:39	08:03 17:32	16:06 (WEA 1) 16:11 (WEA 1)	07:05 18:24	06:54 20:17	05:52 21:08	05:14 21:50
9	08:39 16:41	08:01 17:34	07:03 18:25	06:52 20:19	06:52 21:10	05:50 21:10	05:14 21:51
10	08:39 16:42	07:59 17:36	07:01 18:27	06:49 20:21	05:48 21:11	05:48 21:11	05:13 21:51
11	08:38 16:43	07:58 17:38	06:58 18:29	06:47 20:22	05:47 21:13	05:47 21:13	05:13 21:52
12	08:38 16:45	15:57 (WEA 1) 16:06 (WEA 1)	07:56 17:40	06:56 18:31	06:45 20:24	05:45 21:15	05:13 21:53
13	08:37 16:46	15:56 (WEA 1) 16:08 (WEA 1)	07:54 17:41	06:54 18:32	06:43 20:26	05:43 21:16	05:12 21:54
14	08:36 16:48	15:55 (WEA 1) 16:10 (WEA 1)	07:52 17:43	06:52 18:34	06:40 20:28	05:42 21:18	05:12 21:54
15	08:35 16:49	15:54 (WEA 1) 16:11 (WEA 1)	07:50 17:45	06:49 18:36	06:38 20:29	05:40 21:19	05:12 21:55
16	08:34 16:51	15:53 (WEA 1) 16:13 (WEA 1)	07:48 17:47	06:47 18:38	06:36 20:31	05:39 21:21	05:12 21:55
17	08:33 16:53	15:53 (WEA 1) 16:14 (WEA 1)	07:46 17:49	06:45 18:39	06:34 20:33	05:37 21:22	05:12 21:56
18	08:33 16:54	15:53 (WEA 1) 16:15 (WEA 1)	07:44 17:51	06:42 18:41	06:32 20:34	05:36 21:24	05:12 21:56
19	08:32 16:56	15:53 (WEA 1) 16:16 (WEA 1)	07:42 17:53	06:40 18:43	06:29 20:36	05:34 21:25	05:12 21:56
20	08:30 16:58	15:52 (WEA 1) 16:18 (WEA 1)	07:40 17:54	06:38 18:45	06:27 20:38	05:33 21:27	05:12 21:57
21	08:29 16:59	15:52 (WEA 1) 16:18 (WEA 1)	07:38 17:56	06:35 18:46	06:25 20:40	05:31 21:28	05:12 21:57
22	08:28 17:01	15:52 (WEA 1) 16:19 (WEA 1)	07:36 17:58	06:33 18:48	06:23 20:41	05:30 21:30	05:12 21:57
23	08:27 17:03	15:52 (WEA 1) 16:20 (WEA 1)	07:34 18:00	06:31 18:50	06:21 20:43	05:29 21:31	05:12 21:57
24	08:26 17:05	15:51 (WEA 1) 16:20 (WEA 1)	07:32 18:02	06:28 18:52	06:19 20:45	05:28 21:33	05:13 21:58
25	08:25 17:06	15:52 (WEA 1) 16:21 (WEA 1)	07:29 18:04	06:26 18:53	06:17 20:46	05:26 21:34	05:13 21:58
26	08:23 17:08	15:51 (WEA 1) 16:20 (WEA 1)	07:27 18:05	06:24 18:55	06:15 20:48	05:25 21:35	05:13 21:58
27	08:22 17:10	15:52 (WEA 1) 16:21 (WEA 1)	07:25 18:07	06:21 18:57	06:13 20:50	05:24 21:37	05:14 21:58
28	08:21 17:12	15:52 (WEA 1) 16:21 (WEA 1)	07:23 18:09	06:19 18:58	06:11 20:52	05:23 21:38	05:14 21:57
29	08:19 17:13	15:53 (WEA 1) 16:22 (WEA 1)	07:21 18:09	07:17 20:00	06:09 20:53	05:22 21:39	05:15 21:57
30	08:18 17:15	15:53 (WEA 1) 16:21 (WEA 1)	07:19 18:07	07:15 20:02	06:07 20:55	05:21 21:40	05:15 21:57
31	08:16 17:17	15:54 (WEA 1) 16:22 (WEA 1)	07:17 18:04	07:12 20:04	06:05 20:52	05:20 21:42	05:14 21:56
Sonnenscheinstunden		258	277	367	416	486	500
astr.max.mögl.Beschattung		476	157				

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 24-S - IP 24-S
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinfallrichtung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	July	August	September	Oktober	November		Dezember
1	05:16 21:57	05:53 21:25	06:43 20:22	07:32 19:12	07:26 17:06		08:18 16:25
2	05:17 21:56	05:54 21:23	06:45 20:20	07:34 19:10	07:28 17:04		08:19 16:25
3	05:17 21:56	05:56 21:21	06:46 20:18	07:36 19:08	07:30 17:02	15:34 (WEA 1)	08:21 16:24
4	05:18 21:56	05:57 21:20	06:48 20:15	07:37 19:06	07:32 17:00	8 15:42 (WEA 1)	08:22 16:23
5	05:19 21:55	05:59 21:18	06:49 20:13	07:39 19:03	07:34 16:59	14 15:29 (WEA 1)	08:23 16:23
6	05:20 21:55	06:01 21:16	06:51 20:11	07:41 19:01	07:35 16:57	18 15:47 (WEA 1)	08:25 16:22
7	05:21 21:54	06:02 21:14	06:53 20:09	07:42 18:59	07:37 16:55	20 15:28 (WEA 1)	08:26 16:22
8	05:22 21:53	06:04 21:12	06:54 20:06	07:44 18:56	07:39 16:54	23 15:26 (WEA 1)	08:27 16:22
9	05:23 21:53	06:05 21:11	06:56 20:04	07:46 18:54	07:41 16:52	25 15:51 (WEA 1)	08:28 16:21
10	05:24 21:52	06:07 21:09	06:58 20:02	07:47 18:52	07:43 16:50	26 15:25 (WEA 1)	08:29 16:21
11	05:25 21:51	06:09 21:07	06:59 19:59	07:49 18:50	07:44 16:49	27 15:25 (WEA 1)	08:30 16:21
12	05:26 21:50	06:10 21:05	07:01 19:57	07:51 18:47	07:46 16:47	28 15:53 (WEA 1)	08:31 16:21
13	05:27 21:49	06:12 21:03	07:03 19:55	07:53 18:45	07:48 16:46	28 15:25 (WEA 1)	08:32 16:21
14	05:28 21:49	06:13 21:01	07:04 19:52	07:54 18:43	07:50 16:44	29 15:54 (WEA 1)	08:33 16:21
15	05:29 21:48	06:15 20:59	07:06 19:50	07:56 18:41	07:52 16:43	29 15:25 (WEA 1)	08:34 16:21
16	05:30 21:47	06:17 20:57	07:07 19:48	07:58 18:39	07:53 16:41	29 15:54 (WEA 1)	08:35 16:21
17	05:32 21:45	06:18 20:55	07:09 19:45	08:00 18:36	07:55 16:40	29 15:25 (WEA 1)	08:36 16:21
18	05:33 21:44	06:20 20:53	07:11 19:43	08:01 18:34	07:57 16:39	28 15:53 (WEA 1)	08:37 16:21
19	05:34 21:43	06:22 20:51	07:12 19:41	08:03 18:32	07:58 16:37	29 15:54 (WEA 1)	08:37 16:22
20	05:35 21:42	06:23 20:49	07:14 19:38	08:05 18:30	08:00 16:36	28 15:27 (WEA 1)	08:38 16:22
21	05:37 21:41	06:25 20:46	07:16 19:36	08:07 18:28	08:02 16:35	27 15:54 (WEA 1)	08:39 16:22
22	05:38 21:39	06:27 20:44	07:17 19:33	08:08 18:26	08:04 16:34	26 15:28 (WEA 1)	08:39 16:23
23	05:40 21:38	06:28 20:42	07:19 19:31	08:10 18:24	08:05 16:33	26 15:54 (WEA 1)	08:40 16:23
24	05:41 21:37	06:30 20:40	07:21 19:29	08:12 18:22	08:07 16:31	24 15:30 (WEA 1)	08:40 16:24
25	05:42 21:35	06:31 20:38	07:22 19:26	08:14 18:20	08:08 16:30	22 15:52 (WEA 1)	08:41 16:25
26	05:44 21:34	06:33 20:36	07:24 19:24	08:16 17:18	08:10 16:29	21 15:32 (WEA 1)	08:41 16:25
27	05:45 21:33	06:35 20:33	07:26 19:22	08:17 17:16	08:12 16:28	20 15:52 (WEA 1)	08:41 16:26
28	05:47 21:31	06:36 20:31	07:27 19:19	08:19 17:14	08:13 16:28	18 15:35 (WEA 1)	08:41 16:27
29	05:48 21:29	06:38 20:29	07:29 19:17	08:21 17:12	08:15 16:27	15 15:50 (WEA 1)	08:42 16:28
30	05:50 21:28	06:40 20:27	07:31 19:15	08:23 17:10	08:16 16:26	12 15:49 (WEA 1)	08:42 16:29
31	05:51 21:26	06:41 20:25		08:25 17:08		9 15:38 (WEA 1)	08:42 16:30
Sonnenscheinstunden	503	454	381	331	266		243
astr.max.mögl.Beschattung					638		2

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	Schattenanfang (WEA mit erstem Schatten)	Schattende (WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 24-W - IP 24-W
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlungsrichtung

Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni	
1	08:42 16:31	08:15 17:19	15:53 (WEA 1) 17:19	07:21 18:11	07:10 20:05	06:05 20:57	05:19 21:43
2	08:42 16:32	08:13 17:21	15:53 (WEA 1) 16:18 (WEA 1)	07:19 18:13	07:08 20:07	06:03 20:58	05:18 21:44
3	08:41 16:33	08:11 17:23	15:54 (WEA 1) 16:17 (WEA 1)	07:16 18:15	07:05 20:09	06:01 21:00	05:17 21:45
4	08:41 16:34	08:10 17:25	15:56 (WEA 1) 16:17 (WEA 1)	07:14 18:16	07:03 20:10	05:59 21:02	05:17 21:46
5	08:41 16:35	08:08 17:26	15:58 (WEA 1) 16:16 (WEA 1)	07:12 18:18	07:01 20:12	05:57 21:03	05:16 21:47
6	08:41 16:37	08:06 17:28	15:59 (WEA 1) 16:14 (WEA 1)	07:10 18:20	06:58 20:14	05:55 21:05	05:15 21:48
7	08:40 16:38	08:05 17:30	16:02 (WEA 1) 16:11 (WEA 1)	07:08 18:22	06:56 20:16	05:54 21:07	05:15 21:49
8	08:40 16:39	08:03 17:32		07:05 18:24	06:54 20:17	05:52 21:08	05:14 21:50
9	08:39 16:41	08:01 17:34		07:03 18:25	06:52 20:19	05:50 21:10	05:14 21:51
10	08:39 16:42	15:56 (WEA 1) 16:03 (WEA 1)	07:59 17:36	07:01 18:27	06:49 20:21	05:48 21:11	05:13 21:51
11	08:38 16:43	15:54 (WEA 1) 16:05 (WEA 1)	07:58 17:38	06:58 18:29	06:47 20:22	05:47 21:13	05:13 21:52
12	08:38 16:45	15:53 (WEA 1) 16:07 (WEA 1)	07:56 17:40	06:56 18:31	06:45 20:24	05:45 21:15	05:13 21:53
13	08:37 16:46	15:52 (WEA 1) 16:08 (WEA 1)	07:54 17:41	06:54 18:32	06:43 20:26	05:43 21:16	05:12 21:54
14	08:36 16:48	15:51 (WEA 1) 16:09 (WEA 1)	07:52 17:43	06:52 18:34	06:40 20:28	05:42 21:18	05:12 21:54
15	08:35 16:49	15:51 (WEA 1) 16:11 (WEA 1)	07:50 17:45	06:49 18:36	06:38 20:29	05:40 21:19	05:12 21:55
16	08:34 16:51	15:51 (WEA 1) 16:12 (WEA 1)	07:48 17:47	06:47 18:38	06:36 20:31	05:39 21:21	05:12 21:55
17	08:33 16:53	15:50 (WEA 1) 16:13 (WEA 1)	07:46 17:49	06:45 18:39	06:34 20:33	05:37 21:22	05:12 21:56
18	08:33 16:54	15:50 (WEA 1) 16:14 (WEA 1)	07:44 17:51	06:42 18:41	06:32 20:34	05:36 21:24	05:12 21:56
19	08:32 16:56	15:50 (WEA 1) 16:15 (WEA 1)	07:42 17:53	06:40 18:43	06:29 20:36	05:34 21:25	05:12 21:56
20	08:30 16:58	15:50 (WEA 1) 16:16 (WEA 1)	07:40 17:54	06:38 18:45	06:27 20:38	05:33 21:27	05:12 21:57
21	08:29 16:59	15:49 (WEA 1) 16:16 (WEA 1)	07:38 17:56	06:35 18:46	06:25 20:40	05:31 21:28	05:12 21:57
22	08:28 17:01	15:50 (WEA 1) 16:17 (WEA 1)	07:36 17:58	06:33 18:48	06:23 20:41	05:30 21:30	05:12 21:57
23	08:27 17:03	15:50 (WEA 1) 16:18 (WEA 1)	07:34 18:00	06:31 18:50	06:21 20:43	05:29 21:31	05:12 21:57
24	08:26 17:05	15:49 (WEA 1) 16:18 (WEA 1)	07:32 18:02	06:28 18:52	06:19 20:45	05:28 21:33	05:13 21:58
25	08:25 17:06	15:50 (WEA 1) 16:19 (WEA 1)	07:29 18:04	06:26 18:53	06:17 20:46	05:26 21:34	05:13 21:58
26	08:23 17:08	15:50 (WEA 1) 16:19 (WEA 1)	07:27 18:05	06:24 18:55	06:15 20:48	05:25 21:35	05:13 21:58
27	08:22 17:10	15:50 (WEA 1) 16:19 (WEA 1)	07:25 18:07	06:21 18:57	06:13 20:50	05:24 21:37	05:14 21:58
28	08:21 17:12	15:50 (WEA 1) 16:19 (WEA 1)	07:23 18:09	06:19 18:58	06:11 20:52	05:23 21:38	05:14 21:57
29	08:19 17:13	15:51 (WEA 1) 16:20 (WEA 1)		07:17 20:00	06:09 20:53	05:22 21:39	05:15 21:57
30	08:18 17:15	15:51 (WEA 1) 16:19 (WEA 1)		07:15 20:02	06:07 20:55	05:21 21:40	05:15 21:57
31	08:16 17:17	15:53 (WEA 1) 16:20 (WEA 1)		07:12 20:04		05:20 21:42	
Sonnenscheinstunden	258		277	367	416	486	500
astr.max.mögl.Beschattung	516		137				

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 24-W - IP 24-W
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinfallrichtung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	July	August	September	Oktober	November		Dezember
1	05:16 21:57	05:53 21:25	06:43 20:22	07:32 19:12	07:26 17:06		08:18 16:25
2	05:17 21:56	05:54 21:23	06:45 20:20	07:34 19:10	07:28 17:04		08:19 16:25
3	05:17 21:56	05:56 21:21	06:46 20:18	07:36 19:08	07:30 17:02		08:21 16:24
4	05:18 21:56	05:57 21:20	06:48 20:15	07:37 19:06	07:32 17:00	9	15:32 (WEA 1) 15:41 (WEA 1)
5	05:19 21:55	05:59 21:18	06:49 20:13	07:39 19:03	07:34 16:59	15	15:29 (WEA 1) 15:44 (WEA 1)
6	05:20 21:55	06:01 21:16	06:51 20:11	07:41 19:01	07:35 16:57	19	15:27 (WEA 1) 15:46 (WEA 1)
7	05:21 21:54	06:02 21:14	06:53 20:09	07:42 18:59	07:37 16:55	21	15:26 (WEA 1) 15:47 (WEA 1)
8	05:22 21:53	06:04 21:12	06:54 20:06	07:44 18:56	07:39 16:54	23	15:25 (WEA 1) 15:48 (WEA 1)
9	05:23 21:53	06:05 21:11	06:56 20:04	07:46 18:54	07:41 16:52	25	15:24 (WEA 1) 15:49 (WEA 1)
10	05:24 21:52	06:07 21:09	06:58 20:02	07:47 18:52	07:43 16:50	26	15:24 (WEA 1) 15:50 (WEA 1)
11	05:25 21:51	06:09 21:07	06:59 19:59	07:49 18:50	07:44 16:49	28	15:23 (WEA 1) 15:51 (WEA 1)
12	05:26 21:50	06:10 21:05	07:01 19:57	07:51 18:47	07:46 16:47	28	15:23 (WEA 1) 15:51 (WEA 1)
13	05:27 21:49	06:12 21:03	07:03 19:55	07:53 18:45	07:48 16:46	29	15:23 (WEA 1) 15:52 (WEA 1)
14	05:28 21:49	06:13 21:01	07:04 19:52	07:54 18:43	07:50 16:44	29	15:23 (WEA 1) 15:52 (WEA 1)
15	05:29 21:48	06:15 20:59	07:06 19:50	07:56 18:41	07:52 16:43	29	15:23 (WEA 1) 15:52 (WEA 1)
16	05:30 21:47	06:17 20:57	07:07 19:48	07:58 18:39	07:53 16:41	30	15:23 (WEA 1) 15:53 (WEA 1)
17	05:32 21:45	06:18 20:55	07:09 19:45	08:00 18:36	07:55 16:40	29	15:23 (WEA 1) 15:52 (WEA 1)
18	05:33 21:44	06:20 20:53	07:11 19:43	08:01 18:34	07:57 16:39	29	15:23 (WEA 1) 15:52 (WEA 1)
19	05:34 21:43	06:22 20:51	07:12 19:41	08:03 18:32	07:58 16:37	28	15:24 (WEA 1) 15:52 (WEA 1)
20	05:35 21:42	06:23 20:49	07:14 19:38	08:05 18:30	08:00 16:36	27	15:25 (WEA 1) 15:52 (WEA 1)
21	05:37 21:41	06:25 20:46	07:16 19:36	08:07 18:28	08:02 16:35	27	15:25 (WEA 1) 15:52 (WEA 1)
22	05:38 21:39	06:27 20:44	07:17 19:33	08:08 18:26	08:04 16:34	26	15:26 (WEA 1) 15:52 (WEA 1)
23	05:40 21:38	06:28 20:42	07:19 19:31	08:10 18:24	08:05 16:33	25	15:27 (WEA 1) 15:52 (WEA 1)
24	05:41 21:37	06:30 20:40	07:21 19:29	08:12 18:22	08:07 16:31	24	15:27 (WEA 1) 15:51 (WEA 1)
25	05:42 21:35	06:31 20:38	07:22 19:26	08:14 18:20	08:08 16:30	23	15:28 (WEA 1) 15:51 (WEA 1)
26	05:44 21:34	06:33 20:36	07:24 19:24	08:16 17:18	08:10 16:29	21	15:30 (WEA 1) 15:51 (WEA 1)
27	05:45 21:33	06:35 20:33	07:26 19:22	08:17 17:16	08:12 16:28	20	15:31 (WEA 1) 15:51 (WEA 1)
28	05:47 21:31	06:36 20:31	07:27 19:19	08:19 17:14	08:13 16:28	19	15:31 (WEA 1) 15:50 (WEA 1)
29	05:48 21:29	06:38 20:29	07:29 19:17	08:21 17:12	08:15 16:27	16	15:33 (WEA 1) 15:49 (WEA 1)
30	05:50 21:28	06:40 20:27	07:31 19:15	08:23 17:10	08:16 16:26	14	15:34 (WEA 1) 15:48 (WEA 1)
31	05:51 21:26	06:41 20:25		07:25 17:08			08:42 16:30
Sonnenscheinstunden	503	454	381	331	266		243
astr.max.mögl.Beschattung					639		18

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	Schattenanfang (WEA mit erstem Schatten)	Schattende (WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 25-SW - IP 25-SW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlungsrichtung

Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni	
1	08:42 16:31	08:15 17:19	16:03 (WEA 1) 17:19	07:21 18:11	07:10 20:05	06:05 20:57	05:19 21:43
2	08:42 16:32	08:13 17:21	16:03 (WEA 1) 16:32 (WEA 1)	07:19 18:13	07:08 20:07	06:03 20:58	05:18 21:44
3	08:41 16:33	08:11 17:23	16:03 (WEA 1) 16:32 (WEA 1)	07:16 18:15	07:05 20:09	06:01 21:00	05:17 21:45
4	08:41 16:34	08:10 17:25	16:04 (WEA 1) 16:32 (WEA 1)	07:14 18:16	07:03 20:10	05:59 21:02	05:17 21:46
5	08:41 16:35	08:08 17:26	16:04 (WEA 1) 16:32 (WEA 1)	07:12 18:18	07:01 20:12	05:57 21:03	05:16 21:47
6	08:41 16:37	08:06 17:28	16:04 (WEA 1) 16:31 (WEA 1)	07:10 18:20	06:58 20:14	05:55 21:05	05:15 21:48
7	08:40 16:38	08:05 17:30	16:05 (WEA 1) 16:31 (WEA 1)	07:08 18:22	06:56 20:16	05:54 21:07	05:15 21:49
8	08:40 16:39	08:03 17:32	16:06 (WEA 1) 16:30 (WEA 1)	07:05 18:24	06:54 20:17	05:52 21:08	05:14 21:50
9	08:39 16:41	08:01 17:34	16:07 (WEA 1) 16:29 (WEA 1)	07:03 18:25	06:52 20:19	05:50 21:10	05:14 21:51
10	08:39 16:42	07:59 17:36	16:09 (WEA 1) 16:28 (WEA 1)	07:01 18:27	06:49 20:21	05:48 21:11	05:13 21:51
11	08:38 16:43	07:58 17:38	16:11 (WEA 1) 16:26 (WEA 1)	06:58 18:29	06:47 20:22	05:47 21:13	05:13 21:52
12	08:38 16:45	07:56 17:40	16:14 (WEA 1) 16:23 (WEA 1)	06:56 18:31	06:45 20:24	05:45 21:15	05:13 21:53
13	08:37 16:46	07:54 17:41	06:54 18:32	06:43 20:26	05:43 21:16	05:12 21:54	
14	08:36 16:48	07:52 17:43	06:52 18:34	06:40 20:28	05:42 21:18	05:12 21:54	
15	08:35 16:49	07:50 17:45	06:49 18:36	06:38 20:29	05:40 21:19	05:12 21:55	
16	08:34 16:51	07:48 17:47	06:47 18:38	06:36 20:31	05:39 21:21	05:12 21:55	
17	08:33 16:53	07:46 17:49	06:45 18:39	06:34 20:33	05:37 21:22	05:12 21:56	
18	08:33 16:54	07:44 17:51	06:42 18:41	06:32 20:34	05:36 21:24	05:12 21:56	
19	08:32 16:56	16:10 (WEA 1) 07:42	06:40 18:43	06:29 20:36	05:34 21:25	05:12 21:56	
20	08:30 16:58	8 16:08 (WEA 1) 07:40	06:38 18:45	06:27 20:38	05:33 21:27	05:12 21:57	
21	08:29 16:59	13 16:06 (WEA 1) 07:38	06:35 18:46	06:25 20:40	05:31 21:28	05:12 21:57	
22	08:28 17:01	16 16:22 (WEA 1) 07:36	06:33 18:48	06:23 20:41	05:30 21:30	05:12 21:57	
23	08:27 17:03	19 16:24 (WEA 1) 07:34	06:31 18:50	06:21 20:43	05:29 21:31	05:12 21:57	
24	08:26 17:05	21 16:26 (WEA 1) 07:32	06:28 18:52	06:19 20:45	05:28 21:33	05:13 21:58	
25	08:25 17:06	22 16:26 (WEA 1) 07:29	06:26 18:53	06:17 20:46	05:26 21:34	05:13 21:58	
26	08:23 17:08	24 16:28 (WEA 1) 07:27	06:24 18:55	06:15 20:48	05:25 21:35	05:13 21:58	
27	08:22 17:10	25 16:28 (WEA 1) 07:25	06:21 18:57	06:13 20:50	05:24 21:37	05:14 21:58	
28	08:21 17:11	26 16:29 (WEA 1) 07:23	06:19 18:58	06:11 20:52	05:23 21:38	05:14 21:57	
29	08:19 17:13	28 16:30 (WEA 1) 07:21	06:17 20:00	06:09 20:53	05:22 21:39	05:15 21:57	
30	08:18 17:15	28 16:31 (WEA 1) 07:19	06:15 20:02	06:07 20:55	05:21 21:40	05:15 21:57	
31	08:16 17:17	29 16:03 (WEA 1) 07:17	06:13 20:04	06:05 20:57	05:19 21:42	05:14 21:56	
Sonnenscheinstunden	258	277	367	416	486	500	
astr.max.mögl.Beschattung	288	285					

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 25-SW - IP 25-SW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung

Die Windenergieanlage/n ist/sind immer in Betrieb

	July	August	September	Oktober		November	Dezember
1	05:16 21:57	05:53 21:25	06:43 20:22	07:32 19:12		07:26 17:06	15:38 (WEA 1) 16:25
2	05:17 21:56	05:54 21:23	06:45 20:20	07:34 19:10		07:28 17:04	15:36 (WEA 1) 16:25
3	05:17 21:56	05:56 21:21	06:46 20:18	07:36 19:08		07:30 17:02	15:35 (WEA 1) 16:24
4	05:18 21:56	05:57 21:20	06:48 20:15	07:37 19:06		07:32 17:00	15:35 (WEA 1) 16:23
5	05:19 21:55	05:59 21:18	06:49 20:13	07:39 19:03		07:34 16:59	15:34 (WEA 1) 16:23
6	05:20 21:55	06:01 21:16	06:51 20:11	07:41 19:01		07:35 16:57	15:34 (WEA 1) 16:22
7	05:21 21:54	06:02 21:14	06:53 20:09	07:42 18:59		07:37 16:55	15:33 (WEA 1) 16:22
8	05:22 21:53	06:04 21:12	06:54 20:06	07:44 18:56		07:39 16:54	15:33 (WEA 1) 16:22
9	05:23 21:53	06:05 21:11	06:56 20:04	07:46 18:54		07:41 16:52	15:33 (WEA 1) 16:21
10	05:24 21:52	06:07 21:09	06:58 20:02	07:47 18:52		07:43 16:50	15:33 (WEA 1) 16:21
11	05:25 21:51	06:09 21:07	06:59 19:59	07:49 18:50		07:44 16:49	15:34 (WEA 1) 16:21
12	05:26 21:50	06:10 21:05	07:01 19:57	07:51 18:47		07:46 16:47	15:34 (WEA 1) 16:21
13	05:27 21:49	06:12 21:03	07:03 19:55	07:53 18:45		07:48 16:46	15:35 (WEA 1) 16:21
14	05:28 21:49	06:13 21:01	07:04 19:52	07:54 18:43		07:50 16:44	15:35 (WEA 1) 16:21
15	05:29 21:48	06:15 20:59	07:06 19:50	07:56 18:41		07:52 16:43	15:36 (WEA 1) 16:21
16	05:30 21:47	06:17 20:57	07:07 19:48	07:58 18:39		07:53 16:41	15:37 (WEA 1) 16:21
17	05:32 21:45	06:18 20:55	07:09 19:45	08:00 18:36		07:55 16:40	15:37 (WEA 1) 16:21
18	05:33 21:44	06:20 20:53	07:11 19:43	08:01 18:34		07:57 16:39	15:38 (WEA 1) 16:21
19	05:34 21:43	06:22 20:51	07:12 19:41	08:03 18:32		07:58 16:37	15:39 (WEA 1) 16:22
20	05:35 21:42	06:23 20:49	07:14 19:38	08:05 18:30		08:00 16:36	15:40 (WEA 1) 16:22
21	05:37 21:41	06:25 20:46	07:16 19:36	08:07 18:28		08:02 16:35	15:42 (WEA 1) 16:22
22	05:38 21:39	06:27 20:44	07:17 19:33	08:08 18:26		08:04 16:34	15:44 (WEA 1) 16:23
23	05:40 21:38	06:28 20:42	07:19 19:31	08:10 18:24		08:05 16:33	15:47 (WEA 1) 16:23
24	05:41 21:37	06:30 20:40	07:21 19:29	08:12 18:22		08:07 16:31	15:55 (WEA 1) 16:24
25	05:42 21:35	06:31 20:38	07:22 19:26	08:14 18:20		08:08 16:30	16:00 (WEA 1) 16:25
26	05:44 21:34	06:33 20:36	07:24 19:24	08:16 18:18		08:10 16:29	16:00 (WEA 1) 16:25
27	05:45 21:33	06:35 20:33	07:26 19:22	08:17 18:16		08:12 16:28	16:00 (WEA 1) 16:26
28	05:47 21:31	06:36 20:31	07:27 19:19	08:19 18:14		08:13 16:28	16:00 (WEA 1) 16:27
29	05:48 21:29	06:38 20:29	07:29 19:17	08:21 18:12		08:15 16:27	16:00 (WEA 1) 16:28
30	05:50 21:28	06:40 20:27	07:31 19:15	08:23 18:10	11	08:16 16:26	15:42 (WEA 1) 16:29
31	05:51 21:26	06:41 20:25	07:32 19:14	08:24 18:08	15	08:17 16:25	15:40 (WEA 1) 16:30
Sonnenscheinstunden	503	454	381	331		266	243
astr.max.mögl.Beschattung				26		551	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM)	Schattenanfang (WEA mit erstem Schatten)	Schattenende (WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 26-SW - IP 26-SW
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlrichtung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni	
1	08:42 16:31	08:15 17:19	16:17 (WEA 1)	07:21 18:11	07:10 20:05	06:05 20:57	05:19 21:43
2	08:42 16:32	08:13 17:21	25 16:16 (WEA 1)	07:19 18:13	07:08 20:07	06:03 20:58	05:18 21:44
3	08:41 16:33	08:11 17:23	26 16:16 (WEA 1)	07:16 18:15	07:05 20:09	06:01 21:00	05:17 21:45
4	08:41 16:34	08:10 17:25	27 16:16 (WEA 1)	07:14 18:16	07:03 20:10	05:59 21:02	05:17 21:46
5	08:41 16:35	08:08 17:26	28 16:16 (WEA 1)	07:12 18:18	07:01 20:12	05:57 21:03	05:16 21:47
6	08:41 16:37	08:06 17:28	28 16:16 (WEA 1)	07:10 18:20	06:58 20:14	05:55 21:05	05:15 21:48
7	08:40 16:38	08:05 17:30	28 16:16 (WEA 1)	07:08 18:22	06:56 20:16	05:54 21:07	05:15 21:49
8	08:40 16:39	08:03 17:32	28 16:16 (WEA 1)	07:05 18:24	06:54 20:17	05:52 21:08	05:14 21:50
9	08:39 16:41	08:01 17:34	28 16:16 (WEA 1)	07:03 18:25	06:52 20:19	05:50 21:10	05:14 21:51
10	08:39 16:42	07:59 17:36	27 16:16 (WEA 1)	07:01 18:27	06:49 20:21	05:48 21:11	05:13 21:51
11	08:38 16:43	07:58 17:38	26 16:18 (WEA 1)	06:58 18:29	06:47 20:22	05:47 21:13	05:13 21:52
12	08:38 16:45	07:56 17:40	25 16:18 (WEA 1)	06:56 18:31	06:45 20:24	05:45 21:15	05:13 21:53
13	08:37 16:46	07:54 17:41	23 16:19 (WEA 1)	06:54 18:32	06:43 20:26	05:43 21:16	05:12 21:54
14	08:36 16:48	07:52 17:43	21 16:20 (WEA 1)	06:52 18:34	06:40 20:28	05:42 21:18	05:12 21:54
15	08:35 16:49	07:50 17:45	18 16:22 (WEA 1)	06:49 18:36	06:38 20:29	05:40 21:19	05:12 21:55
16	08:34 16:51	07:48 17:47	14 16:23 (WEA 1)	06:47 18:38	06:36 20:31	05:39 21:21	05:12 21:55
17	08:33 16:53	07:46 17:49	6 16:27 (WEA 1)	06:45 18:39	06:34 20:33	05:37 21:22	05:12 21:56
18	08:33 16:54	07:44 17:51		06:42 18:41	06:32 20:34	05:36 21:24	05:12 21:56
19	08:32 16:56	07:42 17:53		06:40 18:43	06:29 20:36	05:34 21:25	05:12 21:56
20	08:30 16:58	07:40 17:54		06:38 18:45	06:27 20:38	05:33 21:27	05:12 21:57
21	08:29 16:59	07:38 17:56		06:35 18:46	06:25 20:40	05:31 21:28	05:12 21:57
22	08:28 17:01	07:36 17:58		06:33 18:48	06:23 20:41	05:30 21:30	05:12 21:57
23	08:27 17:03	07:34 18:00		06:31 18:50	06:21 20:43	05:29 21:31	05:12 21:57
24	08:26 17:04	07:32 18:02		06:28 18:52	06:19 20:45	05:28 21:33	05:13 21:58
25	08:25 17:06	07:29 18:04		06:26 18:53	06:17 20:46	05:26 21:34	05:13 21:58
26	08:23 17:08	16:24 (WEA 1) 16:31 (WEA 1)	07:27 18:05	06:24 18:55	06:15 20:48	05:25 21:35	05:13 21:58
27	08:22 17:10	7 16:22 (WEA 1) 12 16:34 (WEA 1)	07:25 18:07	06:21 18:57	06:13 20:50	05:24 21:37	05:14 21:58
28	08:20 17:12	16 16:20 (WEA 1) 16 16:36 (WEA 1)	07:23 18:09	06:19 18:58	06:11 20:51	05:23 21:38	05:14 21:57
29	08:19 17:13	19 16:19 (WEA 1) 19 16:38 (WEA 1)		07:17 20:00	06:09 20:53	05:22 21:39	05:15 21:57
30	08:18 17:15	21 16:18 (WEA 1) 21 16:39 (WEA 1)		07:15 20:02	06:07 20:55	05:21 21:40	05:15 21:57
31	08:16 17:17	23 16:18 (WEA 1) 23 16:41 (WEA 1)		07:12 20:04		05:20 21:42	
Sonnenscheinstunden	258	277	406	367	416	486	500
astr.max.mögl.Beschattung	98						

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 26-SW - IP 26-SW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinfallrichtung

Die Windenergieanlage/n ist/sind immer in Betrieb

	July	August	September	Oktober		November	Dezember
1	05:16	05:53	06:43	07:32		07:26	15:46 (WEA 1) 08:18
	21:57	21:25	20:22	19:12		17:06	27 16:13 (WEA 1) 16:25
2	05:17	05:54	06:45	07:34		07:28	15:45 (WEA 1) 08:19
	21:56	21:23	20:20	19:10		17:04	29 16:14 (WEA 1) 16:25
3	05:17	05:56	06:46	07:36		07:30	15:45 (WEA 1) 08:21
	21:56	21:21	20:18	19:08		17:02	29 16:14 (WEA 1) 16:24
4	05:18	05:57	06:48	07:37		07:32	15:45 (WEA 1) 08:22
	21:56	21:20	20:15	19:06		17:00	29 16:14 (WEA 1) 16:23
5	05:19	05:59	06:49	07:39		07:34	15:45 (WEA 1) 08:23
	21:55	21:18	20:13	19:03		16:59	29 16:14 (WEA 1) 16:23
6	05:20	06:01	06:51	07:41		07:35	15:46 (WEA 1) 08:25
	21:55	21:16	20:11	19:01		16:57	28 16:14 (WEA 1) 16:22
7	05:21	06:02	06:53	07:42		07:37	15:46 (WEA 1) 08:26
	21:54	21:14	20:09	18:59		16:55	28 16:14 (WEA 1) 16:22
8	05:22	06:04	06:54	07:44		07:39	15:46 (WEA 1) 08:27
	21:53	21:12	20:06	18:56		16:54	27 16:13 (WEA 1) 16:22
9	05:23	06:05	06:56	07:46		07:41	15:47 (WEA 1) 08:28
	21:53	21:10	20:04	18:54		16:52	26 16:13 (WEA 1) 16:21
10	05:24	06:07	06:58	07:47		07:43	15:48 (WEA 1) 08:29
	21:52	21:09	20:02	18:52		16:50	25 16:13 (WEA 1) 16:21
11	05:25	06:09	06:59	07:49		07:44	15:49 (WEA 1) 08:30
	21:51	21:07	19:59	18:50		16:49	23 16:12 (WEA 1) 16:21
12	05:26	06:10	07:01	07:51		07:46	15:50 (WEA 1) 08:31
	21:50	21:05	19:57	18:47		16:47	21 16:11 (WEA 1) 16:21
13	05:27	06:12	07:03	07:53		07:48	15:51 (WEA 1) 08:32
	21:49	21:03	19:55	18:45		16:46	19 16:10 (WEA 1) 16:21
14	05:28	06:13	07:04	07:54		07:50	15:53 (WEA 1) 08:33
	21:49	21:01	19:52	18:43		16:44	16 16:09 (WEA 1) 16:21
15	05:29	06:15	07:06	07:56		07:52	15:55 (WEA 1) 08:34
	21:48	20:59	19:50	18:41		16:43	12 16:07 (WEA 1) 16:21
16	05:30	06:17	07:07	07:58		07:53	15:59 (WEA 1) 08:35
	21:47	20:57	19:48	18:39		16:41	5 16:04 (WEA 1) 16:21
17	05:32	06:18	07:09	08:00		07:55	08:36
	21:45	20:55	19:45	18:36		16:40	16:21
18	05:33	06:20	07:11	08:01		07:57	08:37
	21:44	20:53	19:43	18:34		16:39	16:21
19	05:34	06:22	07:12	08:03		07:58	08:37
	21:43	20:51	19:41	18:32		16:37	16:22
20	05:35	06:23	07:14	08:05		08:00	08:38
	21:42	20:49	19:38	18:30		16:36	16:22
21	05:37	06:25	07:16	08:07		08:02	08:39
	21:41	20:46	19:36	18:28		16:35	16:22
22	05:38	06:27	07:17	08:08		08:04	08:39
	21:39	20:44	19:33	18:26		16:34	16:23
23	05:40	06:28	07:19	08:10		08:05	08:40
	21:38	20:42	19:31	18:24		16:33	16:23
24	05:41	06:30	07:21	08:12		08:07	08:40
	21:37	20:40	19:29	18:22		16:31	16:24
25	05:42	06:31	07:22	07:14	15:56 (WEA 1)	08:08	08:41
	21:35	20:38	19:26	17:20	9 16:05 (WEA 1)	16:30	16:25
26	05:44	06:33	07:24	07:16	15:53 (WEA 1)	08:10	08:41
	21:34	20:36	19:24	17:18	15 16:08 (WEA 1)	16:29	16:25
27	05:45	06:35	07:26	07:17	15:51 (WEA 1)	08:12	08:41
	21:33	20:33	19:22	17:16	19 16:10 (WEA 1)	16:28	16:26
28	05:47	06:36	07:27	07:19	15:50 (WEA 1)	08:13	08:41
	21:31	20:31	19:19	17:14	21 16:11 (WEA 1)	16:28	16:27
29	05:48	06:38	07:29	07:21	15:48 (WEA 1)	08:15	08:42
	21:29	20:29	19:17	17:12	23 16:11 (WEA 1)	16:27	16:28
30	05:50	06:40	07:31	07:23	15:47 (WEA 1)	08:16	08:42
	21:28	20:27	19:15	17:10	25 16:12 (WEA 1)	16:26	16:29
31	05:51	06:41		07:25	15:46 (WEA 1)		08:42
	21:26	20:25		17:08	27 16:13 (WEA 1)		16:30
Sonnenscheinstunden	503	454	381	331		266	243
astr.max.mögl.Beschattung				139		373	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM)	Schattenanfang (WEA mit erstem Schatten)	Schattenende (WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 27-SW - IP 27-SW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
Die Sonne scheint täglich von Sonnenauf- bis -untergang
Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlungsrichtung
Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni	
1	08:42 16:31	08:15 17:19	16:22 (WEA 1) 16:43 (WEA 1)	07:21 18:11	07:10 20:05	06:05 20:57	05:19 21:43
2	08:42 16:32	08:13 17:21	16:21 (WEA 1) 16:44 (WEA 1)	07:19 18:13	07:08 20:07	06:03 20:58	05:18 21:44
3	08:41 16:33	08:11 17:23	16:20 (WEA 1) 16:45 (WEA 1)	07:16 18:15	07:05 20:09	06:01 21:00	05:17 21:45
4	08:41 16:34	08:10 17:25	16:20 (WEA 1) 16:46 (WEA 1)	07:14 18:16	07:03 20:10	05:59 21:02	05:17 21:46
5	08:41 16:35	08:08 17:26	16:19 (WEA 1) 16:47 (WEA 1)	07:12 18:18	07:01 20:12	05:57 21:03	05:16 21:47
6	08:41 16:37	08:06 17:28	16:19 (WEA 1) 16:47 (WEA 1)	07:10 18:20	06:58 20:14	05:55 21:05	05:15 21:48
7	08:40 16:38	08:05 17:30	16:19 (WEA 1) 16:48 (WEA 1)	07:08 18:22	06:56 20:16	05:54 21:07	05:15 21:49
8	08:40 16:39	08:03 17:32	16:18 (WEA 1) 16:48 (WEA 1)	07:05 18:24	06:54 20:17	05:52 21:08	05:14 21:50
9	08:39 16:41	08:01 17:34	16:18 (WEA 1) 16:48 (WEA 1)	07:03 18:25	06:52 20:19	05:50 21:10	05:14 21:51
10	08:39 16:42	07:59 17:36	16:18 (WEA 1) 16:48 (WEA 1)	07:01 18:27	06:49 20:21	05:48 21:11	05:13 21:51
11	08:38 16:43	07:58 17:38	16:20 (WEA 1) 16:49 (WEA 1)	06:58 18:29	06:47 20:22	05:47 21:13	05:13 21:52
12	08:38 16:45	07:56 17:40	16:20 (WEA 1) 16:48 (WEA 1)	06:56 18:31	06:45 20:24	05:45 21:15	05:13 21:53
13	08:37 16:46	07:54 17:41	16:20 (WEA 1) 16:48 (WEA 1)	06:54 18:32	06:43 20:26	05:43 21:16	05:12 21:54
14	08:36 16:48	07:52 17:43	16:21 (WEA 1) 16:47 (WEA 1)	06:52 18:34	06:40 20:28	05:42 21:18	05:12 21:54
15	08:35 16:49	07:50 17:45	16:22 (WEA 1) 16:46 (WEA 1)	06:49 18:36	06:38 20:29	05:40 21:19	05:12 21:55
16	08:34 16:51	07:48 17:47	16:22 (WEA 1) 16:44 (WEA 1)	06:47 18:38	06:36 20:31	05:39 21:21	05:12 21:55
17	08:33 16:53	07:46 17:49	16:24 (WEA 1) 16:43 (WEA 1)	06:45 18:39	06:34 20:33	05:37 21:22	05:12 21:56
18	08:33 16:54	07:44 17:51	16:26 (WEA 1) 16:41 (WEA 1)	06:42 18:41	06:32 20:34	05:36 21:24	05:12 21:56
19	08:32 16:56	07:42 17:53	16:29 (WEA 1) 16:38 (WEA 1)	06:40 18:43	06:29 20:36	05:34 21:25	05:12 21:56
20	08:30 16:58	07:40 17:54		06:38 18:45	06:27 20:38	05:33 21:27	05:12 21:57
21	08:29 16:59	07:38 17:56		06:35 18:46	06:25 20:40	05:31 21:28	05:12 21:57
22	08:28 17:01	07:36 17:58		06:33 18:48	06:23 20:41	05:30 21:30	05:12 21:57
23	08:27 17:03	07:34 18:00		06:31 18:50	06:21 20:43	05:29 21:31	05:12 21:57
24	08:26 17:05	07:32 18:02		06:28 18:52	06:19 20:45	05:28 21:33	05:13 21:58
25	08:25 17:06	07:29 18:04		06:26 18:53	06:17 20:46	05:26 21:34	05:13 21:58
26	08:23 17:08	07:27 18:05		06:24 18:55	06:15 20:48	05:25 21:35	05:13 21:58
27	08:22 17:10	07:25 18:07		06:21 18:57	06:13 20:50	05:24 21:37	05:14 21:58
28	08:20 17:12	07:23 18:09		06:19 18:58	06:11 20:51	05:23 21:38	05:14 21:57
29	08:19 17:13	16:27 (WEA 1) 16:37 (WEA 1)		07:17 20:00	06:09 20:53	05:22 21:39	05:15 21:57
30	08:18 17:15	16:24 (WEA 1) 16:40 (WEA 1)		07:15 20:02	06:07 20:55	05:21 21:40	05:15 21:57
31	08:16 17:17	16:23 (WEA 1) 16:42 (WEA 1)		07:12 20:04		05:20 21:42	
Sonnenscheinstunden	258	277	367	416	486	500	
astr.max.mögl.Beschattung	45	470					

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 27-SW - IP 27-SW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinfallrichtung

Die Windenergieanlage/n ist/sind immer in Betrieb

	July	August	September	Oktober		November		Dezember	
1	05:16 21:57	05:53 21:25	06:43 20:22	07:32 19:12		07:26 17:06	29	15:48 (WEA 1) 16:17 (WEA 1)	08:18 16:25
2	05:17 21:56	05:54 21:23	06:45 20:20	07:34 19:10		07:28 17:04	29	15:48 (WEA 1) 16:17 (WEA 1)	08:19 16:25
3	05:17 21:56	05:56 21:21	06:46 20:18	07:36 19:08		07:30 17:02	29	15:48 (WEA 1) 16:17 (WEA 1)	08:21 16:24
4	05:18 21:56	05:57 21:20	06:48 20:15	07:37 19:06		07:32 17:00	29	15:48 (WEA 1) 16:17 (WEA 1)	08:22 16:23
5	05:19 21:55	05:59 21:18	06:49 20:13	07:39 19:03		07:34 16:59	28	15:49 (WEA 1) 16:17 (WEA 1)	08:23 16:23
6	05:20 21:55	06:01 21:16	06:51 20:11	07:41 19:01		07:35 16:57	28	15:49 (WEA 1) 16:17 (WEA 1)	08:25 16:22
7	05:21 21:54	06:02 21:14	06:53 20:09	07:42 18:59		07:37 16:55	26	15:50 (WEA 1) 16:16 (WEA 1)	08:26 16:22
8	05:22 21:53	06:04 21:12	06:54 20:06	07:44 18:56		07:39 16:54	25	15:51 (WEA 1) 16:16 (WEA 1)	08:27 16:22
9	05:23 21:53	06:05 21:10	06:56 20:04	07:46 18:54		07:41 16:52	23	15:52 (WEA 1) 16:15 (WEA 1)	08:28 16:21
10	05:24 21:52	06:07 21:09	06:58 20:02	07:47 18:52		07:43 16:50	21	15:53 (WEA 1) 16:14 (WEA 1)	08:29 16:21
11	05:25 21:51	06:09 21:07	06:59 19:59	07:49 18:50		07:44 16:49	19	15:54 (WEA 1) 16:13 (WEA 1)	08:30 16:21
12	05:26 21:50	06:10 21:05	07:01 19:57	07:51 18:47		07:46 16:47	15	15:56 (WEA 1) 16:11 (WEA 1)	08:31 16:21
13	05:27 21:49	06:12 21:03	07:03 19:55	07:53 18:45		07:48 16:46	10	15:59 (WEA 1) 16:09 (WEA 1)	08:32 16:21
14	05:28 21:49	06:13 21:01	07:04 19:52	07:54 18:43		07:50 16:44			08:33 16:21
15	05:29 21:48	06:15 20:59	07:06 19:50	07:56 18:41		07:52 16:43			08:34 16:21
16	05:30 21:47	06:17 20:57	07:07 19:48	07:58 18:39		07:53 16:41			08:35 16:21
17	05:32 21:45	06:18 20:55	07:09 19:45	08:00 18:36		07:55 16:40			08:36 16:21
18	05:33 21:44	06:20 20:53	07:11 19:43	08:01 18:34		07:57 16:39			08:37 16:21
19	05:34 21:43	06:22 20:51	07:12 19:41	08:03 18:32		07:58 16:37			08:37 16:22
20	05:36 21:42	06:23 20:49	07:14 19:38	08:05 18:30		08:00 16:36			08:38 16:22
21	05:37 21:41	06:25 20:46	07:16 19:36	08:07 18:28		08:02 16:35			08:39 16:22
22	05:38 21:39	06:27 20:44	07:17 19:33	08:08 18:26		08:04 16:34			08:39 16:23
23	05:40 21:38	06:28 20:42	07:19 19:31	08:10 18:24	12	08:05 17:10 (WEA 1)			08:40 16:23
24	05:41 21:37	06:30 20:40	07:21 19:29	08:12 18:22	17	08:07 17:12 (WEA 1)			08:40 16:24
25	05:42 21:35	06:31 20:38	07:22 19:26	08:14 17:20	20	08:08 16:14 (WEA 1)			08:41 16:25
26	05:44 21:34	06:33 20:36	07:24 19:24	08:16 17:18	23	08:10 16:15 (WEA 1)			08:41 16:25
27	05:45 21:33	06:35 20:33	07:26 19:22	08:17 17:16	25	08:12 16:16 (WEA 1)			08:41 16:26
28	05:47 21:31	06:36 20:31	07:27 19:19	08:19 17:14	27	08:13 16:17 (WEA 1)			08:41 16:27
29	05:48 21:29	06:38 20:29	07:29 19:17	08:21 17:12	27	08:15 16:16 (WEA 1)			08:42 16:28
30	05:50 21:28	06:40 20:27	07:31 19:15	08:23 17:10	29	08:16 16:17 (WEA 1)			08:42 16:29
31	05:51 21:26	06:41 20:25		08:25 17:08	29	08:16 16:17 (WEA 1)			08:42 16:30
Sonnenscheinstunden	503	454	381	331		266	311		243
astr.max.mögl.Beschattung				209					

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM)	Schattenanfang (WEA mit erstem Schatten)	Schattenende (WEA mit letztem Schatten)
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Projekt:

WP Luentener Mark

Lizenzierter Anwender:

WWK Partnerschaft für Umweltplanung

Molkenstraße 5

DE-48231 Warendorf

02581 93 660

Reiner Winterkamp / r.winterkamp@wwk-umweltplanung.de

Berechnet:

07.12.2023 09:56/4.0.424

SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 28-SO - IP 28-SO
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	Marz	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember			
1	08:42	08:15	16:31 (WEA 1)	07:21	07:10	06:05	05:19	05:16	05:53	06:43	07:32	07:26	15:51 (WEA 1)	08:18	
	16:31	17:19	16:42 (WEA 1)	18:11	20:05	20:57	21:43	21:57	21:25	20:22	19:12	17:06	30	16:21 (WEA 1)	16:25
2	08:42	08:13	16:28 (WEA 1)	07:19	07:08	06:03	05:18	05:17	05:54	06:45	07:34	07:28		15:52 (WEA 1)	08:19
	16:32	17:21	16:44 (WEA 1)	18:13	20:07	20:58	21:44	21:56	21:23	20:20	19:10	17:04	29	16:21 (WEA 1)	16:25
3	08:41	08:11	16:26 (WEA 1)	07:16	07:05	06:01	05:17	05:17	05:56	06:46	07:36	07:30		15:52 (WEA 1)	08:21
	16:33	17:23	16:46 (WEA 1)	18:15	20:09	21:00	21:45	21:56	21:21	20:18	19:08	17:02	29	16:21 (WEA 1)	16:24
4	08:41	08:10	16:26 (WEA 1)	07:14	07:03	05:59	05:17	05:18	05:57	06:48	07:37	07:32		15:53 (WEA 1)	08:22
	16:34	17:25	16:48 (WEA 1)	18:16	20:10	21:02	21:46	21:56	21:20	20:15	19:06	17:00	27	16:20 (WEA 1)	16:23
5	08:41	08:08	16:25 (WEA 1)	07:12	07:01	05:57	05:16	05:19	05:59	06:49	07:39	07:34		15:54 (WEA 1)	08:23
	16:35	17:26	16:49 (WEA 1)	18:18	20:12	21:03	21:47	21:55	21:18	20:13	19:03	16:59	25	16:19 (WEA 1)	16:23
6	08:41	08:06	16:24 (WEA 1)	07:10	06:58	05:55	05:15	05:20	06:01	06:51	07:41	07:35		15:55 (WEA 1)	08:25
	16:37	17:28	16:50 (WEA 1)	18:20	20:14	21:05	21:48	21:55	21:16	20:11	19:01	16:57	24	16:19 (WEA 1)	16:22
7	08:40	08:05	16:23 (WEA 1)	07:08	06:56	05:54	05:15	05:21	06:02	06:53	07:42	07:37		15:56 (WEA 1)	08:26
	16:38	17:30	16:51 (WEA 1)	18:22	20:16	21:07	21:49	21:54	21:14	20:09	18:59	16:55	22	16:18 (WEA 1)	16:22
8	08:40	08:03	16:22 (WEA 1)	07:05	06:54	05:52	05:14	05:22	06:04	06:54	07:44	07:39		15:57 (WEA 1)	08:27
	16:39	17:32	16:51 (WEA 1)	18:24	20:17	21:08	21:50	21:53	21:12	20:06	18:56	16:54	19	16:16 (WEA 1)	16:22
9	08:39	08:01	16:22 (WEA 1)	07:03	06:52	05:50	05:14	05:23	06:05	06:56	07:46	07:41		15:59 (WEA 1)	08:28
	16:41	17:34	16:52 (WEA 1)	18:25	20:19	21:10	21:51	21:53	21:10	20:04	18:54	16:52	16	16:15 (WEA 1)	16:21
10	08:39	07:59	16:21 (WEA 1)	07:01	06:49	05:48	05:13	05:24	06:07	06:58	07:47	07:43		16:02 (WEA 1)	08:29
	16:42	17:36	16:53 (WEA 1)	18:27	20:21	21:11	21:51	21:52	21:09	20:02	18:52	16:50	10	16:12 (WEA 1)	16:21
11	08:38	07:58	16:22 (WEA 1)	06:58	06:47	05:47	05:13	05:25	06:09	06:59	07:49	07:44		16:03	08:30
	16:43	17:38	16:53 (WEA 1)	18:29	20:22	21:13	21:52	21:51	21:07	19:59	18:50	16:49		16:21	08:31
12	08:38	07:56	16:22 (WEA 1)	06:56	06:45	05:45	05:13	05:26	06:10	07:01	07:51	07:46		16:21	08:31
	16:45	17:40	16:53 (WEA 1)	18:31	20:24	21:15	21:53	21:50	21:05	19:57	18:47	16:47		16:21	08:31
13	08:37	07:54	16:22 (WEA 1)	06:54	06:43	05:43	05:12	05:27	06:12	07:03	07:53	07:48		16:21	08:32
	16:46	17:41	16:53 (WEA 1)	18:32	20:26	21:16	21:54	21:49	21:03	19:55	18:45	16:46		16:21	08:32
14	08:36	07:52	16:22 (WEA 1)	06:52	06:40	05:42	05:12	05:28	06:13	07:04	07:54	07:50		16:21	08:33
	16:48	17:43	16:53 (WEA 1)	18:34	20:28	21:18	21:54	21:49	21:01	19:52	18:44	16:44		16:21	08:33
15	08:35	07:50	16:23 (WEA 1)	06:49	06:38	05:40	05:12	05:29	06:15	07:06	07:56	07:52		16:21	08:34
	16:49	17:45	16:53 (WEA 1)	18:36	20:29	21:19	21:55	21:48	20:59	19:50	18:41	16:43		16:21	08:34
16	08:34	07:48	16:22 (WEA 1)	06:47	06:36	05:39	05:12	05:30	06:17	07:07	07:58	07:53		16:21	08:35
	16:51	17:47	16:51 (WEA 1)	18:38	20:31	21:21	21:55	21:47	20:57	19:48	18:39	16:41		16:21	08:35
17	08:33	07:46	16:23 (WEA 1)	06:45	06:34	05:37	05:12	05:32	06:18	07:09	08:00	07:55		16:21	08:36
	16:53	17:49	16:51 (WEA 1)	18:39	20:33	21:22	21:56	21:45	20:55	19:45	18:36	16:40		16:21	08:36
18	08:33	07:44	16:24 (WEA 1)	06:42	06:32	05:36	05:12	05:33	06:20	07:11	08:01	07:57		16:21	08:37
	16:54	17:51	16:50 (WEA 1)	18:41	20:34	21:24	21:56	21:44	20:53	19:43	18:34	16:39		16:21	08:37
19	08:32	07:42	16:25 (WEA 1)	06:40	06:29	05:34	05:12	05:34	06:22	07:12	08:03	07:58		16:21	08:37
	16:56	17:53	16:49 (WEA 1)	18:43	20:36	21:25	21:56	21:43	20:51	19:41	18:32	8	17:12 (WEA 1)	16:37	16:22
20	08:30	07:40	16:26 (WEA 1)	06:38	06:27	05:33	05:12	05:36	06:23	07:14	08:05	07:52		16:22	08:38
	16:58	17:54	16:48 (WEA 1)	18:45	20:38	21:27	21:57	21:42	20:49	19:38	18:30	15	17:15 (WEA 1)	16:36	16:22
21	08:29	07:38	16:28 (WEA 1)	06:35	06:25	05:31	05:12	05:37	06:25	07:16	08:07	07:52		16:22	08:39
	16:59	17:56	16:46 (WEA 1)	18:46	20:40	21:28	21:57	21:41	20:46	19:36	18:28	19	17:17 (WEA 1)	16:35	16:22
22	08:28	07:36	16:31 (WEA 1)	06:33	06:23	05:30	05:12	05:38	06:27	07:17	08:08	07:53		16:22	08:39
	17:01	17:58	16:44 (WEA 1)	18:48	20:41	21:30	21:57	21:39	20:44	19:33	18:26	23	17:19 (WEA 1)	16:34	16:23
23	08:27	07:34	16:36 (WEA 1)	06:31	06:21	05:29	05:12	05:40	06:28	07:19	08:10	07:56		16:23	08:40
	17:03	18:00	16:39 (WEA 1)	18:50	20:43	21:31	21:57	21:38	20:42	19:31	18:24	25	17:20 (WEA 1)	16:33	16:23
24	08:26	07:32		06:28	06:19	05:28	05:13	05:41	06:30	07:21	08:12	07:57		16:23	08:40
	17:05	18:02		18:52	20:45	21:33	21:58	21:37	20:40	19:29	18:22	27	17:21 (WEA 1)	16:31	16:24
25	08:25	07:29		06:26	06:17	05:26	05:13	05:42	06:31	07:22	08:13	07:54		16:24	08:41
	17:06	18:04		18:53	20:46	21:34	21:58	21:35	20:38	19:26	18:20	28	16:21 (WEA 1)	16:30	16:25
26	08:23	07:27		06:24	06:15	05:25	05:13	05:44	06:33	07:24	08:16	07:51		16:25	08:41
	17:08	18:05		18:55	20:48	21:35	21:58	21:34	20:36	19:24	18:18	29	16:22 (WEA 1)	16:29	16:25
27	08:22	07:25		06:21	06:13	05:24	05:14	05:45	06:35	07:26	08:17	07:51		16:25	08:41
	17:10	18:07		18:57	20:50	21:37	21:58	21:33	20:33	19:22	18:16	30	16:22 (WEA 1)	16:29	16:26
28	08:20	07:23		06:19	06:11	05:23	05:14	05:47	06:36	07:27	08:19	07:51		16:26	08:41
	17:12	18:09		18:58	20:51	21:38	21:57	21:31	20:31	19:19	18:14	31	16:23 (WEA 1)	16:28	16:27
29	08:19			07:17	06:09	05:22	05:15	05:48	06:38	07:29	08:21	07:51		16:28	08:42
	17:13			20:00	20:53	21:39	21:57	21:29	20:29	19:17	18:12	31	16:22 (WEA 1)	16:27	16:28
30	08:18			07:15	06:07	05:21	05:15	05:50	06:40	07:31	08:23	07:51		16:28	08:42
	17:15			20:02	20:55	21:40	21:57	21:28	20:27	19:15	18:10	31	16:22 (WEA 1)	16:26	16:29
31	08:16			07:12		05:20		05:51	06:41		07:25			16:28	08:42
	17:17			20:04		21:42		21:26	20:25		17:08	31	16:22 (WEA 1)	16:30	16:30
Sonnenscheinstunden	258	277		367	416	486	500	503	454	381	331		266		243
astr.max.mögl.Beschattung			554								328		231		

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang (WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Zeitpunkt (SS:MM) Schatteneende (WEA mit letztem Schatten)
	Minuten mit Schatten	

SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 28-SW - IP 28-SW
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni	
1	08:42 16:31	08:15 17:19	16:28 (WEA 1)	07:21 18:11	07:10 20:05	06:05 20:57	05:19 21:43
2	08:42 16:32	08:13 17:21	16:26 (WEA 1)	07:19 18:13	07:08 20:07	06:03 20:58	05:18 21:44
3	08:41 16:33	08:11 17:23	16:24 (WEA 1)	07:16 18:15	07:05 20:09	06:01 21:00	05:18 21:45
4	08:41 16:34	08:10 17:25	16:24 (WEA 1)	07:14 18:16	07:03 20:10	05:59 21:02	05:17 21:46
5	08:41 16:35	08:08 17:26	16:23 (WEA 1)	07:12 18:18	07:01 20:12	05:57 21:03	05:16 21:47
6	08:41 16:37	08:06 17:28	16:22 (WEA 1)	07:10 18:20	06:58 20:14	05:55 21:05	05:15 21:48
7	08:40 16:38	08:05 17:30	16:21 (WEA 1)	07:08 18:22	06:56 20:16	05:54 21:07	05:15 21:49
8	08:40 16:39	08:03 17:32	16:21 (WEA 1)	07:05 18:24	06:54 20:17	05:52 21:08	05:14 21:50
9	08:39 16:41	08:01 17:34	16:20 (WEA 1)	07:03 18:25	06:52 20:19	05:50 21:10	05:14 21:51
10	08:39 16:42	07:59 17:36	16:20 (WEA 1)	07:01 18:27	06:49 20:21	05:48 21:11	05:13 21:51
11	08:38 16:43	07:58 17:38	16:21 (WEA 1)	06:58 18:29	06:47 20:22	05:47 21:13	05:13 21:52
12	08:38 16:45	07:56 17:40	16:21 (WEA 1)	06:56 18:31	06:45 20:24	05:45 21:15	05:13 21:53
13	08:37 16:46	07:54 17:41	16:21 (WEA 1)	06:54 18:32	06:43 20:26	05:43 21:16	05:12 21:54
14	08:36 16:48	07:52 17:43	16:21 (WEA 1)	06:52 18:34	06:40 20:28	05:42 21:18	05:12 21:54
15	08:35 16:49	07:50 17:45	16:21 (WEA 1)	06:49 18:36	06:38 20:29	05:40 21:19	05:12 21:55
16	08:34 16:51	07:48 17:47	16:21 (WEA 1)	06:47 18:38	06:36 20:31	05:39 21:21	05:12 21:55
17	08:33 16:53	07:46 17:49	16:22 (WEA 1)	06:45 18:39	06:34 20:33	05:37 21:22	05:12 21:56
18	08:33 16:54	07:44 17:51	16:23 (WEA 1)	06:42 18:41	06:32 20:34	05:36 21:24	05:12 21:56
19	08:32 16:56	07:42 17:53	16:24 (WEA 1)	06:40 18:43	06:29 20:36	05:34 21:25	05:12 21:56
20	08:30 16:58	07:40 17:54	16:25 (WEA 1)	06:38 18:45	06:27 20:38	05:33 21:27	05:12 21:57
21	08:29 16:59	07:38 17:56	16:27 (WEA 1)	06:35 18:46	06:25 20:40	05:31 21:28	05:12 21:57
22	08:28 17:01	07:36 17:58	16:30 (WEA 1)	06:33 18:48	06:23 20:41	05:30 21:30	05:12 21:57
23	08:27 17:03	07:34 18:00	16:42 (WEA 1)	06:31 18:50	06:21 20:43	05:29 21:31	05:12 21:57
24	08:26 17:05	07:32 18:02		06:28 18:52	06:19 20:45	05:28 21:33	05:13 21:58
25	08:25 17:06	07:29 18:04		06:26 18:53	06:17 20:46	05:26 21:34	05:13 21:58
26	08:23 17:08	07:27 18:05		06:24 18:55	06:15 20:48	05:25 21:35	05:13 21:58
27	08:22 17:10	07:25 18:07		06:21 18:57	06:13 20:50	05:24 21:37	05:14 21:58
28	08:20 17:12	07:23 18:09		06:19 18:58	06:11 20:51	05:23 21:38	05:14 21:57
29	08:19 17:13			07:17 20:00	06:09 20:53	05:22 21:39	05:15 21:57
30	08:18 17:15			07:15 20:02	06:07 20:55	05:21 21:40	05:15 21:57
31	08:16 17:17	16:31 (WEA 1) 16:39 (WEA 1)		07:12 20:04		05:20 21:42	
Sonnenscheinstunden	258	277	558	367	416	486	500
astr.max.mögl.Beschattung	8						

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 28-SW - IP 28-SW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinfallrichtung

Die Windenergieanlage/n ist/sind immer in Betrieb

	July	August	September	Oktober		November		Dezember	
1	05:16 21:57	05:53 21:25	06:43 20:22	07:32 19:12		07:26 17:06	30	15:50 (WEA 1) 16:20 (WEA 1)	08:18 16:25
2	05:17 21:56	05:54 21:23	06:45 20:20	07:34 19:10		07:28 17:04	30	15:50 (WEA 1) 16:20 (WEA 1)	08:19 16:25
3	05:17 21:56	05:56 21:21	06:46 20:18	07:36 19:08		07:30 17:02	30	15:50 (WEA 1) 16:20 (WEA 1)	08:21 16:24
4	05:18 21:56	05:57 21:20	06:48 20:15	07:37 19:06		07:32 17:00	28	15:51 (WEA 1) 16:19 (WEA 1)	08:22 16:23
5	05:19 21:55	05:59 21:18	06:49 20:13	07:39 19:03		07:34 16:59	27	15:52 (WEA 1) 16:19 (WEA 1)	08:23 16:23
6	05:20 21:55	06:01 21:16	06:51 20:11	07:41 19:01		07:35 16:57	25	15:53 (WEA 1) 16:18 (WEA 1)	08:25 16:22
7	05:21 21:54	06:02 21:14	06:53 20:09	07:42 18:59		07:37 16:55	23	15:54 (WEA 1) 16:17 (WEA 1)	08:26 16:22
8	05:22 21:53	06:04 21:12	06:54 20:06	07:44 18:56		07:39 16:54	21	15:55 (WEA 1) 16:16 (WEA 1)	08:27 16:22
9	05:23 21:53	06:05 21:10	06:56 20:04	07:46 18:54		07:41 16:52	17	15:57 (WEA 1) 16:14 (WEA 1)	08:28 16:21
10	05:24 21:52	06:07 21:09	06:58 20:02	07:47 18:52		07:43 16:50	14	15:59 (WEA 1) 16:13 (WEA 1)	08:29 16:21
11	05:25 21:51	06:09 21:07	06:59 19:59	07:49 18:50		07:44 16:49	8	16:02 (WEA 1) 16:10 (WEA 1)	08:30 16:21
12	05:26 21:50	06:10 21:05	07:01 19:57	07:51 18:47		07:46 16:47			08:31 16:21
13	05:27 21:49	06:12 21:03	07:03 19:55	07:53 18:45		07:48 16:46			08:32 16:21
14	05:28 21:49	06:13 21:01	07:04 19:52	07:54 18:43		07:50 16:44			08:33 16:21
15	05:29 21:48	06:15 20:59	07:06 19:50	07:56 18:41		07:52 16:43			08:34 16:21
16	05:30 21:47	06:17 20:57	07:07 19:48	07:58 18:39		07:53 16:41			08:35 16:21
17	05:32 21:45	06:18 20:55	07:09 19:45	08:00 18:36		07:55 16:40			08:36 16:21
18	05:33 21:44	06:20 20:53	07:11 19:43	08:01 18:34		07:57 16:39			08:37 16:21
19	05:34 21:43	06:22 20:51	07:12 19:41	08:03 18:32	3	17:05 (WEA 1) 17:08 (WEA 1)		07:58 16:37	08:37 16:22
20	05:36 21:42	06:23 20:49	07:14 19:38	08:05 18:30	13	17:00 (WEA 1) 17:13 (WEA 1)		08:00 16:36	08:38 16:22
21	05:37 21:41	06:25 20:46	07:16 19:36	08:07 18:28	18	16:57 (WEA 1) 17:15 (WEA 1)		08:02 16:35	08:39 16:22
22	05:38 21:39	06:27 20:44	07:17 19:33	08:08 18:26	22	16:55 (WEA 1) 17:17 (WEA 1)		08:04 16:34	08:39 16:23
23	05:40 21:38	06:28 20:42	07:19 19:31	08:10 18:24	24	16:54 (WEA 1) 17:18 (WEA 1)		08:05 16:33	08:40 16:23
24	05:41 21:37	06:30 20:40	07:21 19:29	08:12 18:22	26	16:53 (WEA 1) 17:19 (WEA 1)		08:07 16:31	08:40 16:24
25	05:42 21:35	06:31 20:38	07:22 19:26	08:14 17:20	28	15:52 (WEA 1) 16:20 (WEA 1)		08:08 16:30	08:41 16:25
26	05:44 21:34	06:33 20:36	07:24 19:24	08:16 17:18	30	15:51 (WEA 1) 16:21 (WEA 1)		08:10 16:29	08:41 16:25
27	05:45 21:33	06:35 20:33	07:26 19:22	08:17 17:16	30	15:51 (WEA 1) 16:21 (WEA 1)		08:12 16:29	08:41 16:26
28	05:47 21:31	06:36 20:31	07:27 19:19	08:19 17:14	31	15:50 (WEA 1) 16:21 (WEA 1)		08:13 16:28	08:41 16:27
29	05:48 21:29	06:38 20:29	07:29 19:17	08:21 17:12	32	15:49 (WEA 1) 16:21 (WEA 1)		08:15 16:27	08:42 16:28
30	05:50 21:28	06:40 20:27	07:31 19:15	08:23 17:10	32	15:49 (WEA 1) 16:21 (WEA 1)		08:16 16:26	08:42 16:29
31	05:51 21:26	06:41 20:25		08:25 17:08	32	15:49 (WEA 1) 16:21 (WEA 1)			08:42 16:30
Sonnenscheinstunden	503	454	381	331		266	253		243
astr.max.mögl.Beschattung					321				

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM)	Schattenanfang (WEA mit erstem Schatten)	Schattenende (WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 29-NW - IP 29-NW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
Die Sonne scheint täglich von Sonnenauf- bis -untergang
Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlungsrichtung
Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni	
1	08:42 16:31	08:15 17:19	07:21 18:11	16:38 (WEA 1) 18:11	07:10 20:05	06:05 20:57	05:19 21:43
2	08:42 16:32	08:13 17:21	07:19 18:13	16:41 (WEA 1) 18:13	07:08 20:07	06:03 20:58	05:18 21:44
3	08:41 16:33	08:11 17:23	07:16 18:15	16:52 (WEA 1) 18:15	07:05 20:09	06:01 21:00	05:18 21:45
4	08:41 16:34	08:10 17:25	07:14 18:16	16:52 (WEA 1) 18:16	07:03 20:10	05:59 21:02	05:17 21:46
5	08:41 16:35	08:08 17:26	07:12 18:18	16:52 (WEA 1) 18:18	07:01 20:12	05:57 21:03	05:16 21:47
6	08:41 16:37	08:06 17:28	07:10 18:20	16:52 (WEA 1) 18:20	06:58 20:14	05:55 21:05	05:15 21:48
7	08:40 16:38	08:05 17:30	07:08 18:22	16:52 (WEA 1) 18:22	06:56 20:16	05:54 21:07	05:15 21:49
8	08:40 16:39	08:03 17:32	07:05 18:24	16:42 (WEA 1) 16:53 (WEA 1) 18:24	06:54 20:17	05:52 21:08	05:14 21:50
9	08:39 16:41	08:01 17:34	07:03 18:25	16:39 (WEA 1) 16:56 (WEA 1) 18:25	07:03 20:19	05:50 21:10	05:14 21:51
10	08:39 16:42	07:59 17:36	07:01 18:27	16:37 (WEA 1) 16:58 (WEA 1) 18:27	07:01 20:21	05:48 21:11	05:13 21:51
11	08:38 16:43	07:58 17:38	06:58 18:29	16:36 (WEA 1) 17:00 (WEA 1) 18:29	06:47 20:22	05:47 21:13	05:13 21:52
12	08:38 16:45	07:56 17:40	06:56 18:31	16:35 (WEA 1) 17:01 (WEA 1) 18:31	06:45 20:24	05:45 21:15	05:13 21:53
13	08:37 16:46	07:54 17:41	06:54 18:32	16:34 (WEA 1) 17:02 (WEA 1) 18:32	06:43 20:26	05:43 21:16	05:12 21:54
14	08:36 16:48	07:52 17:43	06:52 18:34	16:33 (WEA 1) 17:03 (WEA 1) 18:34	06:40 20:28	05:42 21:18	05:12 21:54
15	08:35 16:49	07:50 17:45	06:49 18:36	16:33 (WEA 1) 17:04 (WEA 1) 18:36	06:38 20:29	05:40 21:19	05:12 21:55
16	08:34 16:51	07:48 17:47	06:47 18:38	16:31 (WEA 1) 17:03 (WEA 1) 18:38	06:36 20:31	05:39 21:21	05:12 21:55
17	08:33 16:53	07:46 17:49	06:45 18:39	16:31 (WEA 1) 17:04 (WEA 1) 18:39	06:34 20:33	05:37 21:22	05:12 21:56
18	08:33 16:54	07:44 17:51	06:42 18:41	16:31 (WEA 1) 17:04 (WEA 1) 18:41	06:32 20:34	05:36 21:24	05:12 21:56
19	08:32 16:56	07:42 17:53	06:40 18:43	16:31 (WEA 1) 17:04 (WEA 1) 18:43	06:29 20:36	05:34 21:25	05:12 21:56
20	08:30 16:58	07:40 17:54	06:38 18:45	16:31 (WEA 1) 17:04 (WEA 1) 18:45	06:27 20:38	05:33 21:27	05:12 21:57
21	08:29 16:59	07:38 17:56	06:35 18:46	16:31 (WEA 1) 17:04 (WEA 1) 18:46	06:25 20:40	05:31 21:28	05:12 21:57
22	08:28 17:01	07:36 17:58	06:33 18:48	16:31 (WEA 1) 17:04 (WEA 1) 18:48	06:23 20:41	05:30 21:30	05:12 21:57
23	08:27 17:03	07:34 18:00	06:31 18:50	16:32 (WEA 1) 17:04 (WEA 1) 18:50	06:21 20:43	05:29 21:31	05:12 21:57
24	08:26 17:05	07:32 18:02	06:28 18:52	16:32 (WEA 1) 17:02 (WEA 1) 18:52	06:19 20:45	05:28 21:33	05:13 21:58
25	08:25 17:06	07:29 18:04	06:26 18:53	16:32 (WEA 1) 17:02 (WEA 1) 18:53	06:17 20:46	05:26 21:34	05:13 21:58
26	08:23 17:08	07:27 18:05	06:24 18:55	16:34 (WEA 1) 17:01 (WEA 1) 18:55	06:15 20:48	05:25 21:35	05:13 21:58
27	08:22 17:10	07:25 18:07	06:21 18:57	16:35 (WEA 1) 17:00 (WEA 1) 18:57	06:13 20:50	05:24 21:37	05:14 21:57
28	08:20 17:12	07:23 18:09	06:19 18:58	16:37 (WEA 1) 16:58 (WEA 1) 18:58	06:11 20:51	05:23 21:38	05:14 21:57
29	08:19 17:13		07:17 20:00	16:58 (WEA 1) 20:00	06:09 20:53	05:22 21:39	05:15 21:57
30	08:18 17:15		07:15 20:02	20:00 20:02	20:53 20:55	21:39 21:40	21:57 21:57
31	08:16 17:17		07:12 20:04	20:02 20:04	20:55 21:42	21:40 21:42	21:57 21:57
Sonnenscheinstunden	258	277	367	416	486	500	
astr.max.mögl.Beschattung		583	28				

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 29-NW - IP 29-NW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinfallrichtung

Die Windenergieanlage/n ist/sind immer in Betrieb

	July	August	September	Oktober		November	Dezember
1	05:16 21:57	05:53 21:25	06:43 20:22	07:32 19:12		07:26 17:06	16:07 (WEA 1) 16:25
2	05:17 21:56	05:54 21:23	06:45 20:20	07:34 19:10		07:28 17:04	16:09 (WEA 1) 16:25
3	05:17 21:56	05:56 21:21	06:46 20:18	07:36 19:08		07:30 17:02	16:12 (WEA 1) 16:24
4	05:18 21:56	05:57 21:20	06:48 20:15	07:37 19:06		07:32 17:00	08:22 16:23
5	05:19 21:55	05:59 21:18	06:49 20:13	07:39 19:03		07:34 16:59	08:23 16:23
6	05:20 21:55	06:01 21:16	06:51 20:11	07:41 19:01		07:35 16:57	08:25 16:22
7	05:21 21:54	06:02 21:14	06:53 20:09	07:42 18:59		07:37 16:55	08:26 16:22
8	05:22 21:53	06:04 21:12	06:54 20:06	07:44 18:56		07:39 16:54	08:27 16:22
9	05:23 21:53	06:05 21:10	06:56 20:04	07:46 18:54		07:41 16:52	08:28 16:21
10	05:24 21:52	06:07 21:09	06:58 20:02	07:47 18:52		07:43 16:50	08:29 16:21
11	05:25 21:51	06:09 21:07	06:59 19:59	07:49 18:50	2	17:20 (WEA 1) 17:22 (WEA 1)	07:44 16:49
12	05:26 21:50	06:10 21:05	07:01 19:57	07:51 18:47	14	17:14 (WEA 1) 17:28 (WEA 1)	07:46 16:47
13	05:27 21:49	06:12 21:03	07:03 19:55	07:53 18:45	19	17:10 (WEA 1) 17:29 (WEA 1)	07:48 16:46
14	05:28 21:49	06:13 21:01	07:04 19:52	07:54 18:43	23	17:08 (WEA 1) 17:31 (WEA 1)	07:50 16:44
15	05:29 21:48	06:15 20:59	07:06 19:50	07:56 18:41	25	17:07 (WEA 1) 17:32 (WEA 1)	07:52 16:43
16	05:30 21:47	06:17 20:57	07:07 19:48	07:58 18:39	28	17:05 (WEA 1) 17:33 (WEA 1)	07:53 16:41
17	05:32 21:45	06:18 20:55	07:09 19:45	08:00 18:36	30	17:04 (WEA 1) 17:34 (WEA 1)	07:55 16:40
18	05:33 21:44	06:20 20:53	07:11 19:43	08:01 18:34	31	17:04 (WEA 1) 17:35 (WEA 1)	07:57 16:39
19	05:34 21:43	06:22 20:51	07:12 19:41	08:03 18:32	32	17:02 (WEA 1) 17:34 (WEA 1)	07:58 16:37
20	05:36 21:42	06:23 20:49	07:14 19:38	08:05 18:30	33	17:02 (WEA 1) 17:35 (WEA 1)	08:00 16:36
21	05:37 21:41	06:25 20:46	07:16 19:36	08:07 18:28	34	17:01 (WEA 1) 17:35 (WEA 1)	08:02 16:35
22	05:38 21:39	06:27 20:44	07:17 19:33	08:08 18:26	34	17:01 (WEA 1) 17:35 (WEA 1)	08:04 16:34
23	05:40 21:38	06:28 20:42	07:19 19:31	08:10 18:24	34	17:01 (WEA 1) 17:35 (WEA 1)	08:05 16:33
24	05:41 21:37	06:30 20:40	07:21 19:29	08:12 18:22	34	17:01 (WEA 1) 17:35 (WEA 1)	08:07 16:31
25	05:42 21:35	06:31 20:38	07:22 19:26	08:14 17:20	32	16:02 (WEA 1) 16:34 (WEA 1)	08:08 16:30
26	05:44 21:34	06:33 20:36	07:24 19:24	08:16 17:18	32	16:02 (WEA 1) 16:34 (WEA 1)	08:10 16:29
27	05:45 21:33	06:35 20:33	07:26 19:22	08:17 17:16	31	16:02 (WEA 1) 16:33 (WEA 1)	08:12 16:29
28	05:47 21:31	06:36 20:31	07:27 19:19	08:19 17:14	30	16:03 (WEA 1) 16:33 (WEA 1)	08:13 16:28
29	05:48 21:29	06:38 20:29	07:29 19:17	08:21 17:12	28	16:03 (WEA 1) 16:31 (WEA 1)	08:15 16:27
30	05:50 21:28	06:40 20:27	07:31 19:15	08:23 17:10	26	16:04 (WEA 1) 16:30 (WEA 1)	08:16 16:26
31	05:51 21:26	06:41 20:25	07:25 17:08	08:23 17:05	23	16:05 (WEA 1) 16:28 (WEA 1)	08:42 16:30
Sonnenscheinstunden	503	454	381	331		266	243
astr.max.mögl.Beschattung				575		46	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM)	Schattenanfang (WEA mit erstem Schatten)	Schattenende (WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 29-SW - IP 29-SW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlrichtung

Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni	
1	08:42 16:31	08:15 17:19	07:21 18:11	16:38 (WEA 1) 18:11	07:10 20:05	06:05 20:57	05:19 21:43
2	08:42 16:32	08:13 17:21	07:19 18:13	16:40 (WEA 1) 18:13	07:08 20:07	06:03 20:58	05:18 21:44
3	08:41 16:33	08:11 17:23	07:16 18:15	16:45 (WEA 1) 18:15	07:05 20:09	06:01 21:00	05:18 21:45
4	08:41 16:34	08:10 17:25	07:14 18:16	16:51 (WEA 1) 18:16	07:03 20:10	05:59 21:02	05:17 21:46
5	08:41 16:35	08:08 17:26	07:12 18:18	16:58 (WEA 1) 18:18	07:01 20:12	05:57 21:03	05:16 21:47
6	08:41 16:37	08:06 17:28	07:10 18:20	16:58 (WEA 1) 18:20	06:58 20:14	05:55 21:05	05:15 21:48
7	08:40 16:38	08:05 17:30	07:08 18:22	16:58 (WEA 1) 18:22	06:56 20:16	05:54 21:07	05:15 21:49
8	08:40 16:39	08:03 17:32	07:05 18:24	16:58 (WEA 1) 18:24	06:54 20:17	05:52 21:08	05:14 21:50
9	08:39 16:41	08:01 17:34	07:03 18:25	16:42 (WEA 1) 16:55 (WEA 1)	06:52 20:19	05:50 21:10	05:14 21:51
10	08:39 16:42	07:59 17:36	07:01 18:27	16:40 (WEA 1) 16:58 (WEA 1)	06:49 20:21	05:48 21:11	05:13 21:51
11	08:38 16:43	07:58 17:38	06:58 18:29	16:39 (WEA 1) 17:00 (WEA 1)	06:47 20:22	05:47 21:13	05:13 21:52
12	08:38 16:45	07:56 17:40	06:56 18:31	16:37 (WEA 1) 17:02 (WEA 1)	06:45 20:24	05:45 21:15	05:13 21:53
13	08:37 16:46	07:54 17:41	06:54 18:32	16:36 (WEA 1) 17:03 (WEA 1)	06:43 20:26	05:43 21:16	05:12 21:54
14	08:36 16:48	07:52 17:43	06:52 18:34	16:35 (WEA 1) 17:04 (WEA 1)	06:40 20:28	05:42 21:18	05:12 21:54
15	08:35 16:49	07:50 17:45	06:49 18:36	16:34 (WEA 1) 17:05 (WEA 1)	06:38 20:29	05:40 21:19	05:12 21:55
16	08:34 16:51	07:48 17:47	06:47 18:38	16:33 (WEA 1) 17:04 (WEA 1)	06:36 20:31	05:39 21:21	05:12 21:55
17	08:33 16:53	07:46 17:49	06:45 18:39	16:32 (WEA 1) 17:05 (WEA 1)	06:34 20:33	05:37 21:22	05:12 21:56
18	08:33 16:54	07:44 17:51	06:42 18:41	16:32 (WEA 1) 17:05 (WEA 1)	06:32 20:34	05:36 21:24	05:12 21:56
19	08:32 16:56	07:42 17:53	06:40 18:43	16:32 (WEA 1) 17:06 (WEA 1)	06:29 20:36	05:34 21:25	05:12 21:56
20	08:30 16:58	07:40 17:54	06:38 18:45	16:32 (WEA 1) 17:06 (WEA 1)	06:27 20:38	05:33 21:27	05:12 21:57
21	08:29 16:59	07:38 17:56	06:35 18:46	16:32 (WEA 1) 17:06 (WEA 1)	06:25 20:40	05:31 21:28	05:12 21:57
22	08:28 17:01	07:36 17:58	06:33 18:48	16:32 (WEA 1) 17:06 (WEA 1)	06:23 20:41	05:30 21:30	05:12 21:57
23	08:27 17:03	07:34 18:00	06:31 18:50	16:33 (WEA 1) 17:05 (WEA 1)	06:21 20:43	05:29 21:31	05:12 21:57
24	08:26 17:05	07:32 18:02	06:28 18:52	16:32 (WEA 1) 17:04 (WEA 1)	06:19 20:45	05:28 21:33	05:13 21:58
25	08:25 17:06	07:29 18:04	06:26 18:53	16:33 (WEA 1) 17:03 (WEA 1)	06:17 20:46	05:26 21:34	05:13 21:58
26	08:23 17:08	07:27 18:05	06:24 18:55	16:34 (WEA 1) 17:03 (WEA 1)	06:15 20:48	05:25 21:35	05:13 21:58
27	08:22 17:10	07:25 18:07	06:21 18:57	16:35 (WEA 1) 17:02 (WEA 1)	06:13 20:50	05:24 21:37	05:14 21:57
28	08:20 17:12	07:23 18:09	06:19 18:58	16:37 (WEA 1) 17:00 (WEA 1)	06:11 20:51	05:23 21:38	05:14 21:57
29	08:19 17:13		07:17 20:00		06:09 20:53	05:22 21:39	05:15 21:57
30	08:18 17:15		07:15 20:02		06:07 20:55	05:21 21:40	05:15 21:57
31	08:16 17:17		07:12 20:04			05:20 21:42	
Sonnenscheinstunden	258	277	367	416	486	500	
astr.max.mögl.Beschattung		570	41				

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 29-SW - IP 29-SW
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinfallrichtung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	July	August	September	Oktober		November	Dezember	
1	05:16 21:57	05:53 21:25	06:43 20:22	07:32 19:12		07:26 17:06	16:10 (WEA 1) 16:25	
2	05:17 21:56	05:54 21:23	06:45 20:20	07:34 19:10		07:28 17:04	16:12 (WEA 1) 16:25	
3	05:17 21:56	05:56 21:21	06:46 20:18	07:36 19:08		07:30 17:02	16:24 (WEA 1) 08:21 16:24	
4	05:18 21:56	05:57 21:20	06:48 20:15	07:37 19:06		07:32 17:00	08:22 16:23	
5	05:19 21:55	05:59 21:18	06:49 20:13	07:39 19:03		07:34 16:59	08:23 16:23	
6	05:20 21:55	06:01 21:16	06:51 20:11	07:41 19:01		07:35 16:57	08:25 16:22	
7	05:21 21:54	06:02 21:14	06:53 20:09	07:42 18:59		07:37 16:55	08:26 16:22	
8	05:22 21:53	06:04 21:12	06:54 20:06	07:44 18:56		07:39 16:54	08:27 16:22	
9	05:23 21:53	06:05 21:10	06:56 20:04	07:46 18:54		07:41 16:52	08:28 16:21	
10	05:24 21:52	06:07 21:09	06:58 20:02	07:47 18:52		07:43 16:50	08:29 16:21	
11	05:25 21:51	06:09 21:07	06:59 19:59	07:49 18:50	12	17:16 (WEA 1) 17:28 (WEA 1)	07:44 16:49	08:30 16:21
12	05:26 21:50	06:10 21:05	07:01 19:57	07:51 18:47	18	17:13 (WEA 1) 17:31 (WEA 1)	07:46 16:47	08:31 16:21
13	05:27 21:49	06:12 21:03	07:03 19:55	07:53 18:45	22	17:10 (WEA 1) 17:32 (WEA 1)	07:48 16:46	08:32 16:21
14	05:28 21:49	06:13 21:01	07:04 19:52	07:54 18:43	25	17:08 (WEA 1) 17:33 (WEA 1)	07:50 16:44	08:33 16:21
15	05:29 21:48	06:15 20:59	07:06 19:50	07:56 18:41	27	17:07 (WEA 1) 17:34 (WEA 1)	07:52 16:43	08:34 16:21
16	05:30 21:47	06:17 20:57	07:07 19:48	07:58 18:39	29	17:06 (WEA 1) 17:35 (WEA 1)	07:53 16:41	08:35 16:21
17	05:32 21:45	06:18 20:55	07:09 19:45	08:00 18:36	31	17:05 (WEA 1) 17:36 (WEA 1)	07:55 16:40	08:36 16:21
18	05:33 21:44	06:20 20:53	07:11 19:43	08:01 18:34	32	17:04 (WEA 1) 17:36 (WEA 1)	07:57 16:39	08:37 16:21
19	05:34 21:43	06:22 20:51	07:12 19:41	08:03 18:32	33	17:03 (WEA 1) 17:36 (WEA 1)	07:58 16:37	08:37 16:22
20	05:36 21:42	06:23 20:49	07:14 19:38	08:05 18:30	33	17:03 (WEA 1) 17:36 (WEA 1)	08:00 16:36	08:38 16:22
21	05:37 21:41	06:25 20:46	07:16 19:36	08:07 18:28	34	17:02 (WEA 1) 17:36 (WEA 1)	08:02 16:35	08:39 16:22
22	05:38 21:39	06:27 20:44	07:17 19:33	08:08 18:26	34	17:02 (WEA 1) 17:36 (WEA 1)	08:04 16:34	08:39 16:23
23	05:40 21:38	06:28 20:42	07:19 19:31	08:10 18:24	34	17:02 (WEA 1) 17:36 (WEA 1)	08:05 16:33	08:40 16:23
24	05:41 21:37	06:30 20:40	07:21 19:29	08:12 18:22	33	17:03 (WEA 1) 17:36 (WEA 1)	08:07 16:31	08:40 16:24
25	05:42 21:35	06:31 20:38	07:22 19:26	08:14 17:20	32	16:03 (WEA 1) 16:35 (WEA 1)	08:08 16:30	08:41 16:25
26	05:44 21:34	06:33 20:36	07:24 19:24	08:16 17:18	31	16:04 (WEA 1) 16:35 (WEA 1)	08:10 16:29	08:41 16:25
27	05:45 21:33	06:35 20:33	07:26 19:22	08:17 17:16	30	16:04 (WEA 1) 16:34 (WEA 1)	08:12 16:29	08:41 16:26
28	05:47 21:31	06:36 20:31	07:27 19:19	08:19 17:14	28	16:05 (WEA 1) 16:33 (WEA 1)	08:13 16:28	08:41 16:27
29	05:48 21:29	06:38 20:29	07:29 19:17	08:21 17:12	26	16:05 (WEA 1) 16:31 (WEA 1)	08:15 16:27	08:42 16:28
30	05:50 21:28	06:40 20:27	07:31 19:15	08:23 17:10	24	16:06 (WEA 1) 16:30 (WEA 1)	08:16 16:26	08:42 16:29
31	05:51 21:26	06:41 20:25	07:25 17:08	08:21 16:29 (WEA 1)	21	16:08 (WEA 1)		08:42 16:30
Sonnenscheinstunden	503	454	381	331		266	243	
astr.max.mögl.Beschattung				589		29		

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM)	Schattenanfang (WEA mit erstem Schatten)	Schattenende (WEA mit letztem Schatten)
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Projekt:

WP Luentener Mark

Lizenzierter Anwender:

WWK Partnerschaft für Umweltplanung

Molkenstraße 5

DE-48231 Warendorf

02581 93 660

Reiner Winterkamp / r.winterkamp@wwk-umweltplanung.de

Berechnet:

07.12.2023 09:56/4.0.424

SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 30-NW - IP 30-NW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember				
1	08:42	08:15	07:21	17:17 (WEA 1)	07:10	06:05	05:19	05:16	05:53	06:43	07:32	17:42 (WEA 1)	07:26	08:18		
	16:31	17:19	18:11	14	17:31 (WEA 1)	20:05	20:57	21:43	21:57	21:25	20:22	19:12	37	18:19 (WEA 1)	17:06	16:25
2	08:42	08:13	07:19		17:14 (WEA 1)	07:08	06:03	05:18	05:17	05:54	06:45	07:34		17:42 (WEA 1)	07:28	08:19
	16:32	17:21	18:13	20	17:34 (WEA 1)	20:07	20:58	21:44	21:56	21:23	20:20	19:10	37	18:19 (WEA 1)	17:04	16:25
3	08:41	08:11	07:16		17:12 (WEA 1)	07:05	06:01	05:18	05:17	05:56	06:46	07:36		17:42 (WEA 1)	07:30	08:21
	16:33	17:23	18:15	24	17:36 (WEA 1)	20:09	21:00	21:45	21:56	21:21	20:18	19:08	37	18:19 (WEA 1)	17:02	16:24
4	08:41	08:10	07:14		17:10 (WEA 1)	07:03	05:59	05:17	05:18	05:57	06:48	07:37		17:42 (WEA 1)	07:32	08:22
	16:34	17:25	18:16	28	17:38 (WEA 1)	20:10	21:02	21:46	21:56	21:20	20:15	19:06	37	18:19 (WEA 1)	17:00	16:23
5	08:41	08:08	07:12		17:08 (WEA 1)	07:01	05:57	05:16	05:19	05:59	06:49	07:39		17:42 (WEA 1)	07:34	08:23
	16:35	17:26	18:18	30	17:38 (WEA 1)	20:12	21:03	21:47	21:55	21:18	20:13	19:03	35	18:17 (WEA 1)	16:59	16:23
6	08:41	08:06	07:10		17:07 (WEA 1)	06:58	05:55	05:15	05:20	06:01	06:51	07:41		17:42 (WEA 1)	07:35	08:25
	16:37	17:28	18:20	32	17:39 (WEA 1)	20:14	21:05	21:48	21:55	21:16	20:11	19:01	35	18:17 (WEA 1)	16:57	16:22
7	08:40	08:05	07:08		17:06 (WEA 1)	06:56	05:54	05:15	05:21	06:02	06:53	07:42		17:43 (WEA 1)	07:37	08:26
	16:38	17:30	18:22	34	17:40 (WEA 1)	20:16	21:07	21:49	21:54	21:14	20:09	18:59	33	18:16 (WEA 1)	16:55	16:22
8	08:40	08:03	07:05		17:05 (WEA 1)	06:54	05:52	05:14	05:22	06:04	06:54	07:44		17:44 (WEA 1)	07:39	08:27
	16:39	17:32	18:24	35	17:40 (WEA 1)	20:17	21:08	21:50	21:53	21:12	20:06	18:56	31	18:15 (WEA 1)	16:54	16:22
9	08:39	08:01	07:03		17:04 (WEA 1)	06:52	05:50	05:14	05:23	06:05	06:56	07:46		17:44 (WEA 1)	07:41	08:28
	16:41	17:34	18:25	37	17:41 (WEA 1)	20:19	21:10	21:51	21:53	21:10	20:04	18:54	29	18:13 (WEA 1)	16:52	16:21
10	08:39	07:59	07:01		17:04 (WEA 1)	06:49	05:48	05:13	05:24	06:07	06:58	07:47		17:45 (WEA 1)	07:43	08:29
	16:42	17:36	18:27	37	17:41 (WEA 1)	20:21	21:11	21:51	21:52	21:09	20:02	18:52	26	18:11 (WEA 1)	16:50	16:21
11	08:38	07:58	06:58		17:04 (WEA 1)	06:47	05:47	05:13	05:25	06:09	06:59	07:49		17:47 (WEA 1)	07:44	08:30
	16:43	17:38	18:29	37	17:41 (WEA 1)	20:22	21:13	21:52	21:51	21:07	19:59	18:50	22	18:09 (WEA 1)	16:49	16:21
12	08:38	07:56	06:56		17:03 (WEA 1)	06:45	05:45	05:13	05:26	06:10	07:01	07:51		17:49 (WEA 1)	07:46	08:31
	16:45	17:40	18:31	37	17:40 (WEA 1)	20:24	21:15	21:53	21:50	21:05	19:57	18:47	18	18:07 (WEA 1)	16:47	16:21
13	08:37	07:54	06:54		17:03 (WEA 1)	06:43	05:43	05:12	05:27	06:12	07:03	07:53		17:52 (WEA 1)	07:48	08:32
	16:46	17:41	18:32	37	17:40 (WEA 1)	20:26	21:16	21:54	21:49	21:03	19:55	18:45	10	18:02 (WEA 1)	16:46	16:21
14	08:36	07:52	06:52		17:04 (WEA 1)	06:40	05:42	05:12	05:28	06:13	07:04	07:54		17:43 (WEA 1)	07:50	08:33
	16:48	17:43	18:34	36	17:40 (WEA 1)	20:28	21:18	21:54	21:49	21:01	19:52	18:43		17:44 (WEA 1)	16:44	16:21
15	08:35	07:50	06:49		17:03 (WEA 1)	06:38	05:40	05:12	05:29	06:15	07:06	07:56		17:45 (WEA 1)	07:52	08:34
	16:49	17:45	18:36	36	17:39 (WEA 1)	20:29	21:19	21:55	21:48	20:59	19:50	18:41		17:45 (WEA 1)	16:43	16:21
16	08:34	07:48	06:47		17:04 (WEA 1)	06:36	05:39	05:12	05:30	06:17	07:07	07:58		17:46 (WEA 1)	07:53	08:35
	16:51	17:47	18:38	35	17:39 (WEA 1)	20:31	21:21	21:55	21:47	20:57	19:48	18:39		17:47 (WEA 1)	16:41	16:21
17	08:33	07:46	06:45		17:04 (WEA 1)	06:34	05:37	05:12	05:32	06:18	07:09	08:00		17:48 (WEA 1)	07:55	08:36
	16:53	17:49	18:39	34	17:38 (WEA 1)	20:33	21:22	21:56	21:45	20:55	19:45	18:36		17:49 (WEA 1)	16:40	16:21
18	08:33	07:44	06:42		17:04 (WEA 1)	06:32	05:36	05:12	05:33	06:20	07:11	08:01		17:49 (WEA 1)	07:57	08:37
	16:54	17:51	18:41	32	17:36 (WEA 1)	20:34	21:24	21:56	21:44	20:53	19:43	18:34		17:50 (WEA 1)	16:39	16:21
19	08:32	07:42	06:40		17:05 (WEA 1)	06:29	05:34	05:12	05:34	06:22	07:12	08:03		17:51 (WEA 1)	07:58	08:37
	16:56	17:53	18:43	30	17:35 (WEA 1)	20:36	21:25	21:56	21:43	20:51	19:41	18:32		17:52 (WEA 1)	16:37	16:22
20	08:30	07:40	06:38		17:06 (WEA 1)	06:27	05:33	05:12	05:36	06:23	07:14	18:00 (WEA 1)		17:53 (WEA 1)	08:00	08:38
	16:58	17:54	18:45	27	17:33 (WEA 1)	20:38	21:27	21:57	21:42	20:49	19:38	18:30	11	18:11 (WEA 1)	16:36	16:22
21	08:29	07:38	06:35		17:08 (WEA 1)	06:25	05:31	05:12	05:37	06:25	07:16	08:07		17:56 (WEA 1)	08:07	08:39
	16:59	17:56	18:46	23	17:31 (WEA 1)	20:40	21:28	21:57	21:41	20:46	19:36	18:28	18	18:14 (WEA 1)	16:35	16:22
22	08:28	07:36	06:33		17:10 (WEA 1)	06:23	05:30	05:12	05:38	06:27	07:17	08:08		17:53 (WEA 1)	08:08	08:39
	17:01	17:58	18:48	19	17:29 (WEA 1)	20:41	21:30	21:57	21:39	20:44	19:33	18:26	22	18:15 (WEA 1)	16:34	16:23
23	08:27	07:34	06:31		17:12 (WEA 1)	06:21	05:29	05:12	05:40	06:28	07:19	08:10		17:51 (WEA 1)	08:10	08:40
	17:03	18:00	18:50	13	17:25 (WEA 1)	20:43	21:31	21:57	21:38	20:42	19:31	18:24	26	18:17 (WEA 1)	16:33	16:23
24	08:26	07:32	06:28		17:06 (WEA 1)	06:19	05:28	05:13	05:41	06:30	07:21	08:12		17:49 (WEA 1)	08:12	08:40
	17:05	18:02	18:52		20:45	21:33	21:57	21:37	21:30	20:40	19:29	18:18	29	18:18 (WEA 1)	16:31	16:24
25	08:25	07:29	06:26		17:06 (WEA 1)	06:17	05:26	05:13	05:42	06:31	07:22	08:13		17:47 (WEA 1)	08:08	08:41
	17:06	18:04	18:53		20:46	21:34	21:58	21:35	21:35	20:38	19:26	18:19	32	18:19 (WEA 1)	16:30	16:25
26	08:23	07:27	06:24		17:05 (WEA 1)	06:15	05:25	05:13	05:44	06:33	07:24	08:10		17:46 (WEA 1)	07:16	08:41
	17:08	18:05	18:55		20:48	21:35	21:58	21:34	21:34	20:36	19:24	18:19	33	18:19 (WEA 1)	16:29	16:25
27	08:22	07:25	06:21		17:04 (WEA 1)	06:13	05:24	05:14	05:45	06:35	07:26	08:12		17:45 (WEA 1)	07:17	08:41
	17:10	18:07	18:57		20:50	21:37	21:57	21:32	21:32	20:33	19:22	18:10	35	18:20 (WEA 1)	16:29	16:26
28	08:20	07:23	06:19		17:01 (WEA 1)	06:11	05:23	05:14	05:47	06:36	07:27	08:13		17:44 (WEA 1)	07:19	08:41
	17:12	18:09	18:58		20:51	21:38	21:57	21:31	21:31	20:31	19:19	18:10	36	18:20 (WEA 1)	16:28	16:27
29	08:19	07:17	06:13		17:00 (WEA 1)	06:09	05:22	05:15	05:48	06:38	07:29	08:15		17:43 (WEA 1)	07:21	08:42
	17:13	18:10	19:00		20:53	21:39	21:57	21:29	21:29	20:29	19:17	18:10	37	18:20 (WEA 1)	16:27	16:28
30	08:18	07:15	06:11		17:00 (WEA 1)	06:07	05:21	05:15	05:50	06:40	07:31	08:16		17:43 (WEA 1)	07:23	08:42
	17:15	18:12	19:02		20:55	21:40	21:57	21:28	21:28	20:27	19:15	18:10	37	18:20 (WEA 1)	16:26	16:29
31	08:16	07:12	06:08		17:00 (WEA 1)	06:05	05:20	05:15	05:51	06:41	07:32	08:16		17:45 (WEA 1)	07:25	08:42
	17:17	18:14	19:04		21:42	21:26	21:42	21:26	21:26	20:25	19:15	18:10		17:48 (WEA 1)	16:30	16:30
Sonnenscheinstunden	258	277	367		416	486	500	503	454	381	316	331		266	243	
astr.max.mögl.Beschattung			687									387				

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schatteneende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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Projekt:

WP Luentener Mark

Lizenzierter Anwender:

WWK Partnerschaft für Umweltplanung

Molkenstraße 5

DE-48231 Warendorf

02581 93 660

Reiner Winterkamp / r.winterkamp@wwk-umweltplanung.de

Berechnet:

07.12.2023 09:56/4.0.424

SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 32-NW - IP 32-NW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung

Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember		
1	08:42	08:15	07:21	07:10	06:05	05:19	20:08 (WEA 1)	05:16	20:10 (WEA 1)	05:53	06:43	07:32	07:26	08:18
	16:31	17:19	18:11	20:05	20:57	21:43	36 20:44 (WEA 1)	21:57	45 20:55 (WEA 1)	21:25	20:22	19:12	17:06	16:25
2	08:42	08:13	07:19	07:08	06:03	05:18	20:07 (WEA 1)	05:17	20:10 (WEA 1)	05:54	06:45	07:34	07:28	08:19
	16:32	17:21	18:13	20:07	20:58	21:44	38 20:45 (WEA 1)	21:56	45 20:55 (WEA 1)	21:23	20:20	19:10	17:04	16:25
3	08:41	08:11	07:16	07:05	06:01	05:18	20:08 (WEA 1)	05:18	20:10 (WEA 1)	05:56	06:46	07:36	07:30	08:20
	16:33	17:23	18:15	20:09	21:00	21:45	38 20:46 (WEA 1)	21:56	44 20:54 (WEA 1)	21:21	20:18	19:08	17:02	16:24
4	08:41	08:10	07:14	07:03	05:59	05:17	20:07 (WEA 1)	05:18	20:11 (WEA 1)	05:58	06:48	07:37	07:32	08:22
	16:34	17:25	18:16	20:10	21:02	21:46	39 20:46 (WEA 1)	21:56	43 20:54 (WEA 1)	21:20	20:15	19:06	17:01	16:23
5	08:41	08:08	07:12	07:01	05:57	05:16	20:06 (WEA 1)	05:19	20:12 (WEA 1)	05:59	06:49	07:39	07:34	08:23
	16:35	17:26	18:18	20:12	21:03	21:47	41 20:47 (WEA 1)	21:55	42 20:54 (WEA 1)	21:18	20:13	19:03	16:59	16:23
6	08:41	08:06	07:10	06:58	05:55	05:15	20:06 (WEA 1)	05:20	20:12 (WEA 1)	06:01	06:51	07:41	07:35	08:24
	16:37	17:28	18:20	20:14	21:05	21:48	42 20:48 (WEA 1)	21:55	42 20:54 (WEA 1)	21:16	20:11	19:01	16:57	16:23
7	08:40	08:05	07:08	06:56	05:54	05:15	20:06 (WEA 1)	05:21	20:13 (WEA 1)	06:02	06:53	07:42	07:37	08:26
	16:38	17:30	18:22	20:16	21:07	21:49	42 20:48 (WEA 1)	21:54	41 20:54 (WEA 1)	21:14	20:09	18:59	16:55	16:22
8	08:40	08:03	07:05	06:54	05:52	05:14	20:06 (WEA 1)	05:22	20:13 (WEA 1)	06:04	06:54	07:44	07:39	08:27
	16:39	17:32	18:24	20:17	21:08	21:50	43 20:49 (WEA 1)	21:53	40 20:53 (WEA 1)	21:12	20:06	18:56	16:54	16:22
9	08:39	08:01	07:03	06:52	05:50	05:14	20:06 (WEA 1)	05:23	20:14 (WEA 1)	06:05	06:56	07:46	07:41	08:28
	16:41	17:34	18:25	20:19	21:10	21:51	44 20:50 (WEA 1)	21:53	39 20:53 (WEA 1)	21:10	20:04	18:54	16:52	16:21
10	08:39	07:59	07:01	06:49	05:48	05:13	20:05 (WEA 1)	05:24	20:14 (WEA 1)	06:07	06:58	07:47	07:43	08:29
	16:42	17:36	18:27	20:21	21:11	21:51	45 20:50 (WEA 1)	21:52	38 20:52 (WEA 1)	21:09	20:02	18:52	16:50	16:21
11	08:38	07:58	06:59	06:47	05:47	05:13	20:06 (WEA 1)	05:25	20:15 (WEA 1)	06:09	06:59	07:49	07:44	08:30
	16:44	17:38	18:29	20:22	21:13	21:52	44 20:50 (WEA 1)	21:51	37 20:52 (WEA 1)	21:07	19:59	18:50	16:49	16:21
12	08:37	07:56	06:56	06:45	05:45	05:13	20:06 (WEA 1)	05:26	20:16 (WEA 1)	06:10	07:01	07:51	07:46	08:31
	16:45	17:40	18:31	20:24	21:15	21:53	45 20:51 (WEA 1)	21:50	35 20:51 (WEA 1)	21:05	19:57	18:47	16:46	16:21
13	08:37	07:54	06:54	06:43	05:43	05:12	20:06 (WEA 1)	05:27	20:17 (WEA 1)	06:12	07:03	07:53	07:48	08:32
	16:46	17:41	18:32	20:26	21:16	21:53	46 20:52 (WEA 1)	21:49	33 20:50 (WEA 1)	21:03	19:55	18:45	16:46	16:21
14	08:36	07:52	06:52	06:40	05:42	05:12	20:05 (WEA 1)	05:28	20:19 (WEA 1)	06:14	07:04	07:54	07:50	08:33
	16:48	17:43	18:34	20:28	21:18	21:54	46 20:51 (WEA 1)	21:49	32 20:51 (WEA 1)	21:01	19:52	18:43	16:44	16:21
15	08:35	07:50	06:49	06:38	05:40	05:12	20:05 (WEA 1)	05:29	20:20 (WEA 1)	06:15	07:06	07:56	07:52	08:34
	16:50	17:45	18:36	20:29	21:19	21:55	47 20:52 (WEA 1)	21:48	30 20:50 (WEA 1)	20:59	19:50	18:41	16:43	16:21
16	08:34	07:48	06:47	06:36	05:39	05:12	20:05 (WEA 1)	05:30	20:21 (WEA 1)	06:17	07:07	07:58	07:53	08:35
	16:51	17:47	18:38	20:31	21:21	21:55	47 20:52 (WEA 1)	21:47	27 20:48 (WEA 1)	20:57	19:48	18:39	16:41	16:21
17	08:33	07:46	06:45	06:34	05:37	05:12	20:06 (WEA 1)	05:32	20:23 (WEA 1)	06:18	07:09	08:00	07:55	08:36
	16:53	17:49	18:39	20:33	21:22	21:56	46 20:52 (WEA 1)	21:45	24 20:47 (WEA 1)	20:55	19:45	18:36	16:40	16:21
18	08:33	07:44	06:42	06:32	05:36	05:12	20:06 (WEA 1)	05:33	20:24 (WEA 1)	06:20	07:11	08:01	07:57	08:37
	16:54	17:51	18:41	20:34	21:24	21:56	46 20:52 (WEA 1)	21:44	21 20:45 (WEA 1)	20:53	19:43	18:34	16:39	16:21
19	08:31	07:42	06:40	06:29	05:34	05:12	20:06 (WEA 1)	05:34	20:26 (WEA 1)	06:22	07:12	08:03	07:58	08:37
	16:56	17:53	18:43	20:36	21:25	21:56	47 20:53 (WEA 1)	21:43	17 20:43 (WEA 1)	20:51	19:41	18:32	16:37	16:22
20	08:30	07:40	06:38	06:27	05:33	05:12	20:07 (WEA 1)	05:36	20:31 (WEA 1)	06:23	07:14	08:05	08:00	08:38
	16:58	17:54	18:45	20:38	21:27	21:57	47 20:54 (WEA 1)	21:42	9 20:40 (WEA 1)	20:49	19:38	18:30	16:36	16:22
21	08:29	07:38	06:35	06:25	05:31	05:12	20:07 (WEA 1)	05:37		06:25	07:16	08:07	08:02	08:39
	16:59	17:56	18:46	20:40	21:28	21:57	47 20:54 (WEA 1)	21:41		06:46	07:36	18:28	16:35	16:23
22	08:28	07:36	06:33	06:23	05:30	05:12	20:07 (WEA 1)	05:38		06:27	07:17	08:08	08:04	08:39
	17:01	17:58	18:48	20:41	21:30	21:57	47 20:54 (WEA 1)	21:39		06:44	07:33	18:26	16:34	16:23
23	08:27	07:34	06:31	06:21	05:29	05:12	20:07 (WEA 1)	05:40		06:28	07:19	08:10	08:05	08:40
	17:03	18:00	18:50	20:43	21:31	21:57	47 20:54 (WEA 1)	21:38		06:42	07:31	18:24	16:33	16:24
24	08:26	07:32	06:28	06:19	05:28	05:13	20:08 (WEA 1)	05:41		06:30	07:21	08:12	08:07	08:40
	17:05	18:02	18:52	20:45	21:33	14 20:32 (WEA 1)	21:57	47 20:55 (WEA 1)		06:40	07:29	18:22	16:31	16:24
25	08:25	07:29	06:26	06:17	05:26	05:13	20:16 (WEA 1)	05:42		06:31	07:22	07:14	08:08	08:41
	17:06	18:04	18:53	20:46	21:34	18 20:34 (WEA 1)	21:58	46 20:54 (WEA 1)		06:38	07:26	17:20	16:30	16:25
26	08:23	07:27	06:24	06:15	05:25	05:13	20:14 (WEA 1)	05:43		06:33	07:24	07:16	08:10	08:41
	17:08	18:06	18:55	20:48	21:35	22 20:36 (WEA 1)	21:58	46 20:54 (WEA 1)		06:36	07:24	17:18	16:29	16:25
27	08:22	07:25	06:22	06:13	05:24	05:14	20:12 (WEA 1)	05:45		06:35	07:26	07:17	08:12	08:41
	17:10	18:07	18:57	20:50	21:37	26 20:38 (WEA 1)	21:57	47 20:55 (WEA 1)		06:33	07:22	17:16	16:29	16:26
28	08:20	07:23	06:19	06:11	05:23	05:14	20:11 (WEA 1)	05:47		06:36	07:27	07:19	08:13	08:41
	17:12	18:09	18:58	20:51	21:38	28 20:39 (WEA 1)	21:57	46 20:54 (WEA 1)		06:31	07:19	17:14	16:28	16:27
29	08:19	07:17	06:09	05:22		05:15	20:10 (WEA 1)	05:48		06:38	07:29	07:21	08:15	08:42
	17:14		20:00	20:53	21:39	31 20:41 (WEA 1)	21:57	46 20:55 (WEA 1)		06:29	07:17	17:12	16:27	16:28
30	08:18	07:15	06:07	05:21		05:15	20:09 (WEA 1)	05:50		06:40	07:31	07:23	08:16	08:42
	17:15		20:02	20:55	21:40	33 20:42 (WEA 1)	21:57	45 20:54 (WEA 1)		06:27	07:15	17:10	16:26	16:29
31	08:16	07:12		05:20			20:09 (WEA 1)	05:51		06:41		07:25		08:42
	17:17	20:04		21:42	34 20:43 (WEA 1)			21:26		20:25		17:08		16:30
Sonnenscheinstunden	258	277	367	416	486	500	500	503	684	454	381	331	266	243
astr.max.mögl.Beschattung					206	1333								

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM)	Schattenanfang (WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Schattenende (WEA mit letztem Schatten)

Projekt:

WP Luentener Mark

Lizenzierter Anwender:

WWK Partnerschaft für Umweltplanung

Molkenstraße 5

DE-48231 Warendorf

02581 93 660

Reiner Winterkamp / r.winterkamp@wwk-umweltplanung.de

Berechnet:

07.12.2023 09:56/4.0.424

SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 32-SW - IP 32-SW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	June	July	August	September	Oktober	November	Dezember				
1	08:42	08:15	07:21	07:10	06:05	05:19	20:17 (WEA 1)	05:16	20:17 (WEA 1)	05:53	06:43	07:32	07:26	08:18		
	16:31	17:19	18:11	20:05	20:57	21:43	27	20:44 (WEA 1)	21:57	39	20:56 (WEA 1)	21:25	20:22	19:12	17:06	16:25
2	08:42	08:13	07:19	07:08	06:03	05:18		20:16 (WEA 1)	05:17		20:17 (WEA 1)	05:54	06:45	07:34	07:28	08:19
	16:32	17:21	18:13	20:07	20:58	21:44	28	20:44 (WEA 1)	21:56	39	20:56 (WEA 1)	21:23	20:20	19:10	17:04	16:25
3	08:41	08:11	07:16	07:05	06:01	05:18		20:16 (WEA 1)	05:18		20:17 (WEA 1)	05:56	06:46	07:36	07:30	08:20
	16:33	17:23	18:15	20:09	21:00	21:45	30	20:46 (WEA 1)	21:56	38	20:55 (WEA 1)	21:21	20:18	19:08	17:02	16:24
4	08:41	08:10	07:14	07:03	05:59	05:17		20:15 (WEA 1)	05:18		20:18 (WEA 1)	05:58	06:48	07:37	07:32	08:22
	16:34	17:25	18:16	20:10	21:02	21:46	32	20:47 (WEA 1)	21:56	37	20:55 (WEA 1)	21:20	20:15	19:06	17:01	16:23
5	08:41	08:08	07:12	07:01	05:57	05:16		20:14 (WEA 1)	05:19		20:19 (WEA 1)	05:59	06:49	07:39	07:34	08:23
	16:35	17:26	18:18	20:12	21:03	21:47	33	20:47 (WEA 1)	21:55	36	20:55 (WEA 1)	21:18	20:13	19:03	16:59	16:23
6	08:41	08:06	07:10	06:58	05:55	05:15		20:14 (WEA 1)	05:20		20:20 (WEA 1)	06:01	06:51	07:41	07:35	08:24
	16:37	17:28	18:20	20:14	21:05	21:48	35	20:49 (WEA 1)	21:55	35	20:55 (WEA 1)	21:16	20:11	19:01	16:57	16:23
7	08:40	08:05	07:08	06:56	05:54	05:15		20:13 (WEA 1)	05:21		20:21 (WEA 1)	06:02	06:53	07:42	07:37	08:26
	16:38	17:30	18:22	20:16	21:07	21:49	36	20:49 (WEA 1)	21:54	34	20:55 (WEA 1)	21:14	20:09	18:59	16:55	16:22
8	08:40	08:03	07:05	06:54	05:52	05:14		20:13 (WEA 1)	05:22		20:21 (WEA 1)	06:04	06:54	07:44	07:39	08:27
	16:39	17:32	18:24	20:17	21:08	21:50	37	20:50 (WEA 1)	21:53	32	20:53 (WEA 1)	21:12	20:06	18:56	16:54	16:22
9	08:39	08:01	07:03	06:52	05:50	05:14		20:13 (WEA 1)	05:23		20:22 (WEA 1)	06:05	06:56	07:46	07:41	08:28
	16:41	17:34	18:25	20:19	21:10	21:51	38	20:51 (WEA 1)	21:53	31	20:53 (WEA 1)	21:10	20:04	18:54	16:52	16:21
10	08:39	07:59	07:01	06:49	05:48	05:13		20:12 (WEA 1)	05:24		20:23 (WEA 1)	06:07	06:58	07:47	07:43	08:29
	16:42	17:36	18:27	20:21	21:11	21:51	39	20:51 (WEA 1)	21:52	29	20:52 (WEA 1)	21:09	20:02	18:52	16:50	16:21
11	08:38	07:58	06:59	06:47	05:47	05:13		20:13 (WEA 1)	05:25		20:24 (WEA 1)	06:09	06:59	07:49	07:44	08:30
	16:44	17:38	18:29	20:22	21:13	21:52	39	20:52 (WEA 1)	21:51	27	20:51 (WEA 1)	21:07	19:59	18:50	16:49	16:21
12	08:37	07:56	06:56	06:45	05:45	05:13		20:13 (WEA 1)	05:26		20:25 (WEA 1)	06:10	07:01	07:51	07:46	08:31
	16:45	17:40	18:31	20:24	21:15	21:53	39	20:52 (WEA 1)	21:50	25	20:50 (WEA 1)	21:05	19:57	18:47	16:47	16:21
13	08:37	07:54	06:54	06:43	05:43	05:12		20:13 (WEA 1)	05:27		20:27 (WEA 1)	06:12	07:03	07:53	07:48	08:32
	16:46	17:41	18:32	20:26	21:16	21:53	40	20:53 (WEA 1)	21:49	22	20:49 (WEA 1)	21:03	19:55	18:45	16:46	16:21
14	08:36	07:52	06:52	06:40	05:42	05:12		20:12 (WEA 1)	05:28		20:29 (WEA 1)	06:14	07:04	07:54	07:50	08:33
	16:48	17:43	18:34	20:28	21:18	21:54	41	20:53 (WEA 1)	21:49	20	20:49 (WEA 1)	21:01	19:52	18:43	16:44	16:21
15	08:35	07:50	06:49	06:38	05:40	05:12		20:12 (WEA 1)	05:29		20:32 (WEA 1)	06:15	07:06	07:56	07:52	08:34
	16:50	17:45	18:36	20:29	21:19	21:55	41	20:53 (WEA 1)	21:48	14	20:46 (WEA 1)	20:59	19:50	18:41	16:43	16:21
16	08:34	07:48	06:47	06:36	05:39	05:12		20:12 (WEA 1)	05:30		20:35 (WEA 1)	06:17	07:07	07:58	07:53	08:35
	16:51	17:47	18:38	20:31	21:21	21:55	42	20:54 (WEA 1)	21:47	8	20:43 (WEA 1)	20:57	19:48	18:39	16:41	16:21
17	08:33	07:46	06:45	06:34	05:37	05:12		20:12 (WEA 1)	05:32		20:38 (WEA 1)	06:18	07:09	08:00	07:55	08:36
	16:53	17:49	18:39	20:33	21:22	21:56	42	20:54 (WEA 1)	21:45		20:55	19:45	18:36	16:40	16:21	
18	08:33	07:44	06:42	06:32	05:36	05:12		20:12 (WEA 1)	05:33		20:39 (WEA 1)	06:20	07:11	08:01	07:57	08:37
	16:54	17:51	18:41	20:34	21:24	21:56	42	20:54 (WEA 1)	21:44		20:53	19:43	18:34	16:39	16:21	
19	08:31	07:42	06:40	06:29	05:34	05:12		20:12 (WEA 1)	05:34		20:40 (WEA 1)	06:22	07:12	08:03	07:58	08:37
	16:56	17:53	18:43	20:36	21:25	21:56	42	20:54 (WEA 1)	21:43		20:51	19:41	18:32	16:37	16:22	
20	08:30	07:40	06:38	06:27	05:33	05:12		20:13 (WEA 1)	05:36		20:41 (WEA 1)	06:23	07:14	08:05	08:00	08:38
	16:58	17:54	18:45	20:38	21:27	21:57	43	20:56 (WEA 1)	21:42		20:49	19:38	18:30	16:36	16:22	
21	08:29	07:38	06:35	06:25	05:31	05:12		20:13 (WEA 1)	05:37		20:49	06:25	07:16	08:07	08:02	08:39
	16:59	17:56	18:46	20:40	21:28	21:57	43	20:56 (WEA 1)	21:41		20:46	19:36	18:28	16:35	16:23	
22	08:28	07:36	06:33	06:23	05:30	05:12		20:13 (WEA 1)	05:38		20:46	06:27	07:17	08:08	08:04	08:39
	17:01	17:58	18:48	20:41	21:30	21:57	43	20:56 (WEA 1)	21:39		20:44	19:33	18:26	16:34	16:23	
23	08:27	07:34	06:31	06:21	05:29	05:12		20:13 (WEA 1)	05:40		20:46	06:28	07:19	08:10	08:05	08:40
	17:03	18:00	18:50	20:43	21:31	21:57	42	20:55 (WEA 1)	21:38		20:42	19:31	18:24	16:33	16:24	
24	08:26	07:32	06:28	06:19	05:28	05:13		20:14 (WEA 1)	05:41		20:46	06:30	07:21	08:12	08:07	08:40
	17:05	18:02	18:52	20:45	21:33	21:57	42	20:56 (WEA 1)	21:37		20:40	19:29	18:22	16:32	16:24	
25	08:25	07:29	06:26	06:17	05:26	05:13		20:14 (WEA 1)	05:42		20:46	06:31	07:22	07:14	08:08	08:41
	17:06	18:04	18:53	20:46	21:34	21:58	42	20:56 (WEA 1)	21:35		20:38	19:26	17:20	16:30	16:25	
26	08:23	07:27	06:24	06:15	05:25	05:13		20:14 (WEA 1)	05:44		20:46	06:33	07:24	07:16	08:10	08:41
	17:08	18:06	18:55	20:48	21:35	21:58	42	20:56 (WEA 1)	21:34		20:36	19:24	17:18	16:29	16:25	
27	08:22	07:25	06:22	06:13	05:24	05:14		20:15 (WEA 1)	05:45		20:46	06:35	07:26	07:17	08:12	08:41
	17:10	18:07	18:57	20:50	21:37	21:57	41	20:56 (WEA 1)	21:32		20:33	19:22	17:16	16:29	16:26	
28	08:20	07:23	06:19	06:11	05:23	05:14		20:15 (WEA 1)	05:47		20:46	06:36	07:27	07:19	08:13	08:41
	17:12	18:09	18:58	20:51	21:38	21:57	41	20:56 (WEA 1)	21:31		20:31	19:19	17:14	16:28	16:27	
29	08:19	07:17	06:09	05:22		05:15		20:16 (WEA 1)	05:48		20:46	06:38	07:29	07:21	08:15	08:42
	17:14		20:00	20:53	21:39	21:57	40	20:56 (WEA 1)	21:29		20:29	19:17	17:12	16:27	16:28	
30	08:18	07:15	06:07	05:21		05:15		20:16 (WEA 1)	05:50		20:46	06:40	07:31	07:23	08:16	08:42
	17:15		20:02	20:55	21:40	21:57	40	20:56 (WEA 1)	21:28		20:27	19:15	17:10	16:26	16:29	
31	08:16	07:12		05:20					05:51		06:41		07:25		08:42	
	17:17	20:04		21:42	23	20:42 (WEA 1)			21:26		20:25		17:08		16:30	
Sonnenscheinstunden	258	277	367	416	486	500	500	466	503	454	381	331	266	243		
astr.max.mögl.Beschattung					73		1162									

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang (WEA mit erstem Schatten)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schatteneende (WEA mit letztem Schatten)
	Sonnenuntergang (SS:MM)			

Projekt:

WP Luentener Mark

Lizenzierter Anwender:

WWK Partnerschaft für Umweltplanung

Molkenstraße 5

DE-48231 Warendorf

02581 93 660

Reiner Winterkamp / r.winterkamp@wwk-umweltplanung.de

Berechnet:

07.12.2023 09:56/4.0.424

SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 33 NW - IP 33 NW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung

Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	May	Juni	Juli	August	September	Oktober	November	Dezember				
1	08:42	08:15	07:21	07:10	06:05	05:19	05:16	05:53	06:43	19:22 (WEA 1)	07:32	07:26	08:18			
	16:31	17:19	18:11	20:05	20:57	21:43	21:57	21:25	20:22	26	19:48 (WEA 1)	19:12	17:06	16:25		
2	08:42	08:13	07:19	07:08	06:03	05:18	05:17	05:54	06:45		19:23 (WEA 1)	07:34	07:28	08:19		
	16:32	17:21	18:13	20:07	20:58	21:44	21:56	21:23	20:20	24	19:47 (WEA 1)	19:10	17:04	16:25		
3	08:41	08:11	07:16	07:05	06:01	05:18	05:17	05:56	06:46		19:23 (WEA 1)	07:36	07:30	08:20		
	16:33	17:23	18:15	20:09	21:00	21:45	21:56	21:21	20:18	23	19:46 (WEA 1)	19:08	17:02	16:24		
4	08:41	08:10	07:14	07:03	05:59	05:17	05:18	05:57	06:48		19:25 (WEA 1)	07:37	07:32	08:22		
	16:34	17:25	18:16	20:10	21:02	21:46	21:56	21:20	20:15	19	19:44 (WEA 1)	19:05	17:00	16:23		
5	08:41	08:08	07:12	07:01	05:57	05:16	05:19	05:59	06:49		19:26 (WEA 1)	07:39	07:34	08:23		
	16:35	17:26	18:18	20:12	21:03	21:47	21:55	21:18	20:13	15	19:41 (WEA 1)	19:03	16:59	16:23		
6	08:41	08:06	07:10	06:58	19:33 (WEA 1)	05:55	05:15	05:20	06:01		19:29 (WEA 1)	07:41	07:35	08:24		
	16:37	17:28	18:20	20:14	9	19:42 (WEA 1)	21:05	21:48	21:55	10	19:29 (WEA 1)	19:01	16:57	16:22		
7	08:40	08:05	07:08	06:56	19:30 (WEA 1)	05:54	05:15	05:21	06:02		19:29 (WEA 1)	07:42	07:37	08:26		
	16:38	17:30	18:22	20:16	15	19:45 (WEA 1)	21:07	21:49	21:54	20:09		18:59	16:55	16:22		
8	08:40	08:03	07:05	06:54	19:28 (WEA 1)	05:52	05:14	05:22	06:04		19:29 (WEA 1)	07:44	07:39	08:27		
	16:39	17:32	18:24	20:17	19	19:47 (WEA 1)	21:08	21:50	21:53	20:06		18:56	16:54	16:22		
9	08:39	08:01	07:03	06:52	19:25 (WEA 1)	05:50	05:14	05:23	06:05		19:29 (WEA 1)	07:46	07:41	08:28		
	16:41	17:34	18:25	20:19	22	19:47 (WEA 1)	21:10	21:51	21:53	20:04		18:54	16:52	16:21		
10	08:39	07:59	07:01	06:49	19:24 (WEA 1)	05:48	05:13	05:24	06:07		19:29 (WEA 1)	07:47	07:43	08:29		
	16:42	17:36	18:27	20:21	24	19:48 (WEA 1)	21:11	21:51	21:52	20:02		18:52	16:50	16:21		
11	08:38	07:57	06:58	06:47	19:23 (WEA 1)	05:47	05:13	05:25	06:09		19:29 (WEA 1)	07:49	07:44	08:30		
	16:43	17:38	18:29	20:22	26	19:49 (WEA 1)	21:13	21:52	21:51	19:59		18:50	16:49	16:21		
12	08:37	07:56	06:56	06:45	19:23 (WEA 1)	05:45	05:13	05:26	06:10		19:29 (WEA 1)	07:51	07:46	08:31		
	16:45	17:40	18:31	20:24	27	19:50 (WEA 1)	21:15	21:53	21:50	19:57		18:47	16:47	16:21		
13	08:37	07:54	06:54	06:43	19:22 (WEA 1)	05:43	05:12	05:27	06:12		19:29 (WEA 1)	07:53	07:48	08:32		
	16:46	17:41	18:32	20:26	28	19:50 (WEA 1)	21:16	21:53	21:49	19:55		18:45	16:46	16:21		
14	08:36	07:52	06:52	06:40	19:21 (WEA 1)	05:42	05:12	05:28	06:13		19:29 (WEA 1)	07:54	07:50	08:33		
	16:48	17:43	18:34	20:28	28	19:49 (WEA 1)	21:18	21:54	21:48	19:52		18:43	16:44	16:21		
15	08:35	07:50	06:49	06:38	19:21 (WEA 1)	05:40	05:12	05:29	06:15		19:29 (WEA 1)	07:56	07:51	08:34		
	16:49	17:45	18:36	20:29	28	19:49 (WEA 1)	21:19	21:55	21:47	19:50		18:41	16:43	16:21		
16	08:34	07:48	06:47	06:36	19:21 (WEA 1)	05:39	05:12	05:30	06:17		19:29 (WEA 1)	07:57	07:53	08:35		
	16:51	17:47	18:38	20:31	28	19:49 (WEA 1)	21:21	21:55	21:46	19:48		18:39	16:41	16:21		
17	08:33	07:46	06:45	06:34	19:21 (WEA 1)	05:37	05:12	05:32	06:18		19:29 (WEA 1)	07:59	07:55	08:36		
	16:53	17:49	18:39	20:32	28	19:49 (WEA 1)	21:22	21:56	21:45	19:45		18:36	16:40	16:21		
18	08:32	07:44	06:42	06:32	19:21 (WEA 1)	05:36	05:12	05:33	06:20		19:35 (WEA 1)	07:11	08:01	07:57	08:37	
	16:54	17:51	18:41	20:34	27	19:48 (WEA 1)	21:24	21:56	21:44	20:53	8	19:43 (WEA 1)	19:43	18:34	16:39	16:21
19	08:31	07:42	06:40	06:29	19:21 (WEA 1)	05:34	05:12	05:34	06:22		19:32 (WEA 1)	07:12	08:03	07:58	08:37	
	16:56	17:53	18:43	20:36	26	19:47 (WEA 1)	21:25	21:56	21:43	20:51	14	19:46 (WEA 1)	19:40	18:32	16:37	16:22
20	08:30	07:40	06:38	06:27	19:22 (WEA 1)	05:33	05:12	05:36	06:23		19:30 (WEA 1)	07:14	08:05	08:00	08:38	
	16:58	17:54	18:45	20:38	25	19:47 (WEA 1)	21:27	21:57	21:42	20:48	17	19:47 (WEA 1)	19:38	18:30	16:36	16:22
21	08:29	07:38	06:35	06:25	19:23 (WEA 1)	05:31	05:12	05:37	06:25		19:28 (WEA 1)	07:16	08:07	08:02	08:39	
	16:59	17:56	18:46	20:40	22	19:45 (WEA 1)	21:28	21:57	21:41	20:46	21	19:49 (WEA 1)	19:36	18:28	16:35	16:22
22	08:28	07:36	06:33	06:23	19:24 (WEA 1)	05:30	05:12	05:38	06:27		19:26 (WEA 1)	07:17	08:08	08:03	08:39	
	17:01	17:58	18:48	20:41	20	19:44 (WEA 1)	21:30	21:57	21:39	20:44	23	19:49 (WEA 1)	19:33	18:26	16:34	16:23
23	08:27	07:34	06:31	06:21	19:25 (WEA 1)	05:29	05:12	05:40	06:28		19:26 (WEA 1)	07:19	08:10	08:05	08:40	
	17:03	18:00	18:50	20:43	17	19:42 (WEA 1)	21:31	21:57	21:38	20:42	24	19:50 (WEA 1)	19:31	18:24	16:33	16:23
24	08:26	07:32	06:28	06:19	19:27 (WEA 1)	05:28	05:13	05:41	06:30		19:25 (WEA 1)	07:21	08:12	08:07	08:40	
	17:05	18:02	18:51	20:45	13	19:40 (WEA 1)	21:33	21:57	21:37	20:40	26	19:51 (WEA 1)	19:29	18:22	16:31	16:24
25	08:24	07:29	06:26	06:17	19:31 (WEA 1)	05:26	05:13	05:42	06:31		19:24 (WEA 1)	07:22	08:14	08:08	08:41	
	17:06	18:04	18:53	20:46	5	19:36 (WEA 1)	21:34	21:57	21:35	20:38	27	19:51 (WEA 1)	19:26	18:16	16:30	16:25
26	08:23	07:27	06:24	06:15		05:25	05:13	05:44	06:33		19:23 (WEA 1)	07:24	08:16	08:10	08:41	
	17:08	18:05	18:55	20:48		21:35	21:57	21:34	20:36	28	19:51 (WEA 1)	19:24	17:18	16:29	16:25	
27	08:22	07:25	06:21	06:13		05:24	05:14	05:45	06:35		19:22 (WEA 1)	07:26	08:17	08:12	08:41	
	17:10	18:07	18:57	20:50		21:37	21:57	21:32	20:33	29	19:51 (WEA 1)	19:22	17:16	16:29	16:26	
28	08:20	07:23	06:19	06:11		05:23	05:14	05:47	06:36		19:22 (WEA 1)	07:27	08:19	08:13	08:41	
	17:12	18:09	18:58	20:51		21:38	21:57	21:31	20:31	29	19:51 (WEA 1)	19:19	17:14	16:28	16:27	
29	08:19	07:17	06:09	06:02		05:22	05:15	05:48	06:38		19:22 (WEA 1)	07:29	08:21	08:15	08:41	
	17:13	18:10	19:00	20:53		21:39	21:57	21:29	20:29	28	19:50 (WEA 1)	19:17	17:12	16:27	16:28	
30	08:18	07:15	06:07	06:00		05:21	05:15	05:50	06:40		19:22 (WEA 1)	07:31	08:23	08:16	08:42	
	17:15	18:12	19:02	20:55		21:40	21:57	21:28	20:27	28	19:50 (WEA 1)	19:15	17:10	16:26	16:29	
31	08:16	07:12	06:04	06:00		05:20	05:14	05:51	06:41		19:22 (WEA 1)	07:31	08:25	08:18	08:42	
	17:17	18:14	19:04	20:57		21:41	21:58	21:26	20:24	28	19:50 (WEA 1)	19:15	17:08	16:23	16:30	
Sonnenscheinstunden	258	277	367	416	437	486	500	503	454	330	381	317	331	266	243	
astr.max.mögl.Beschattung																

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang (WEA mit erstem Schatten)	Zeitpunkt (SS:MM) Schattende (WEA mit letztem Schatten)
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Projekt:

WP Luentener Mark

Lizenzierter Anwender:

WWK Partnerschaft für Umweltplanung

Molkenstraße 5

DE-48231 Warendorf

02581 93 660

Reiner Winterkamp / r.winterkamp@wwk-umweltplanung.de

Berechnet:

07.12.2023 09:56/4.0.424

SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 34 NW - IP 34 NW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung

Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	May	Juni	Juli	August	September	Oktober	November	Dezember				
1	08:42	08:15	07:21	07:10	06:05	05:19	05:16	05:53	06:43	19:25 (WEA 1)	07:32	07:26	08:18			
	16:31	17:19	18:11	20:05	20:57	21:43	21:57	21:25	20:22	24	19:49 (WEA 1)	19:12	17:06	16:25		
2	08:42	08:13	07:19	07:08	06:03	05:18	05:17	05:54	06:45	19:26 (WEA 1)	07:34	07:28	08:19			
	16:32	17:21	18:13	20:07	20:58	21:44	21:56	21:23	20:20	22	19:48 (WEA 1)	19:10	17:04	16:25		
3	08:41	08:11	07:16	07:05	06:01	05:18	05:17	05:56	06:46	19:27 (WEA 1)	07:36	07:30	08:20			
	16:33	17:23	18:15	20:09	21:00	21:45	21:56	21:21	20:18	19	19:46 (WEA 1)	19:08	17:02	16:24		
4	08:41	08:10	07:14	07:03	05:59	05:17	05:18	05:57	06:48	19:28 (WEA 1)	07:37	07:32	08:22			
	16:34	17:25	18:16	20:10	21:02	21:46	21:56	21:20	20:15	15	19:44 (WEA 1)	19:05	17:00	16:23		
5	08:41	08:08	07:12	07:01	05:57	05:16	05:19	05:59	06:49	19:31 (WEA 1)	07:39	07:34	08:23			
	16:35	17:26	18:18	20:12	21:03	21:47	21:55	21:18	20:13	9	19:40 (WEA 1)	19:03	16:59	16:23		
6	08:41	08:06	07:10	06:58	05:55	05:15	05:20	06:01	06:51	19:34 (WEA 1)	07:41	07:35	08:24			
	16:37	17:28	18:20	20:14	21:05	21:48	21:55	21:16	20:11	19:01	16:57	16:22				
7	08:40	08:05	07:08	06:56	19:35 (WEA 1)	05:54	05:15	05:21	06:02	06:53	07:42	07:37	08:26			
	16:38	17:30	18:22	20:16	9	19:44 (WEA 1)	21:07	21:49	21:54	21:14	20:09	18:59	16:55	16:22		
8	08:40	08:03	07:05	06:54	19:32 (WEA 1)	05:52	05:14	05:22	06:04	06:54	07:44	07:39	08:27			
	16:39	17:32	18:24	20:17	15	19:47 (WEA 1)	21:08	21:50	21:53	21:12	20:06	18:56	16:54	16:22		
9	08:39	08:01	07:03	06:52	19:29 (WEA 1)	05:50	05:14	05:23	06:05	06:56	07:46	07:41	08:28			
	16:41	17:34	18:25	20:19	19	19:48 (WEA 1)	21:10	21:51	21:53	21:10	20:04	18:54	16:52	16:21		
10	08:39	07:59	07:01	06:49	19:27 (WEA 1)	05:48	05:13	05:24	06:07	06:58	07:47	07:43	08:29			
	16:42	17:36	18:27	20:21	23	19:50 (WEA 1)	21:11	21:51	21:52	21:09	20:02	18:52	16:50	16:21		
11	08:38	07:57	06:58	06:47	19:26 (WEA 1)	05:47	05:13	05:25	06:09	06:59	07:49	07:44	08:30			
	16:43	17:38	18:29	20:22	25	19:51 (WEA 1)	21:13	21:52	21:51	21:07	19:59	18:50	16:49	16:21		
12	08:37	07:56	06:56	06:45	19:25 (WEA 1)	05:45	05:13	05:26	06:10	07:01	07:51	07:46	08:31			
	16:45	17:40	18:31	20:24	26	19:51 (WEA 1)	21:15	21:53	21:50	21:05	19:57	18:47	16:47	16:21		
13	08:37	07:54	06:54	06:43	19:25 (WEA 1)	05:43	05:12	05:27	06:12	07:03	07:53	07:48	08:32			
	16:46	17:41	18:32	20:26	27	19:52 (WEA 1)	21:16	21:53	21:49	21:03	19:55	18:45	16:46	16:21		
14	08:36	07:52	06:52	06:40	19:23 (WEA 1)	05:42	05:12	05:28	06:13	07:04	07:54	07:50	08:33			
	16:48	17:43	18:34	20:28	28	19:51 (WEA 1)	21:18	21:54	21:48	21:01	19:52	18:43	16:44	16:21		
15	08:35	07:50	06:49	06:38	19:23 (WEA 1)	05:40	05:12	05:29	06:15	07:06	07:56	07:51	08:34			
	16:49	17:45	18:36	20:29	28	19:51 (WEA 1)	21:19	21:55	21:47	20:59	19:50	18:41	16:43	16:21		
16	08:34	07:48	06:47	06:36	19:23 (WEA 1)	05:39	05:12	05:30	06:17	07:07	07:58	07:53	08:35			
	16:51	17:47	18:38	20:31	28	19:51 (WEA 1)	21:21	21:55	21:46	20:57	19:48	18:39	16:41	16:21		
17	08:33	07:46	06:45	06:34	19:23 (WEA 1)	05:37	05:12	05:32	06:18	19:38 (WEA 1)	07:09	08:00	07:55	08:36		
	16:53	17:49	18:39	20:33	28	19:51 (WEA 1)	21:22	21:56	21:45	20:55	8	19:46 (WEA 1)	19:45	18:36	16:40	16:21
18	08:32	07:44	06:42	06:32	19:23 (WEA 1)	05:36	05:12	05:33	06:20	19:34 (WEA 1)	07:11	08:01	07:57	08:37		
	16:54	17:51	18:41	20:34	28	19:51 (WEA 1)	21:24	21:56	21:44	20:53	14	19:48 (WEA 1)	19:43	18:34	16:39	16:21
19	08:31	07:42	06:40	06:29	19:23 (WEA 1)	05:34	05:12	05:34	06:22	19:32 (WEA 1)	07:12	08:03	07:58	08:37		
	16:56	17:53	18:43	20:36	27	19:50 (WEA 1)	21:25	21:56	21:43	20:51	19	19:51 (WEA 1)	19:40	18:32	16:37	16:22
20	08:30	07:40	06:38	06:27	19:23 (WEA 1)	05:33	05:12	05:36	06:23	19:30 (WEA 1)	07:14	08:05	08:00	08:38		
	16:58	17:54	18:45	20:38	26	19:49 (WEA 1)	21:27	21:57	21:42	20:48	21	19:51 (WEA 1)	19:38	18:30	16:36	16:22
21	08:29	07:38	06:35	06:25	19:24 (WEA 1)	05:31	05:12	05:37	06:25	19:29 (WEA 1)	07:16	08:07	08:02	08:39		
	16:59	17:56	18:46	20:40	25	19:49 (WEA 1)	21:28	21:57	21:41	20:46	23	19:52 (WEA 1)	19:36	18:28	16:35	16:22
22	08:28	07:36	06:33	06:23	19:25 (WEA 1)	05:30	05:12	05:38	06:27	19:28 (WEA 1)	07:17	08:08	08:03	08:39		
	17:01	17:58	18:48	20:41	23	19:48 (WEA 1)	21:30	21:57	21:39	20:44	24	19:52 (WEA 1)	19:33	18:26	16:34	16:23
23	08:27	07:34	06:31	06:21	19:26 (WEA 1)	05:29	05:12	05:40	06:28	19:27 (WEA 1)	07:19	08:10	08:05	08:40		
	17:03	18:00	18:50	20:43	20	19:46 (WEA 1)	21:31	21:57	21:38	20:42	26	19:53 (WEA 1)	19:31	18:24	16:33	16:23
24	08:26	07:32	06:28	06:19	19:27 (WEA 1)	05:28	05:13	05:41	06:30	19:27 (WEA 1)	07:21	08:12	08:07	08:40		
	17:05	18:02	18:51	20:45	18	19:45 (WEA 1)	21:33	21:57	21:37	20:40	27	19:54 (WEA 1)	19:29	18:22	16:31	16:24
25	08:24	07:29	06:26	06:17	19:29 (WEA 1)	05:26	05:13	05:42	06:31	19:26 (WEA 1)	07:22	07:14	08:08	08:41		
	17:06	18:04	18:53	20:46	13	19:42 (WEA 1)	21:34	21:57	21:35	20:38	27	19:53 (WEA 1)	19:26	17:20	16:30	16:25
26	08:23	07:27	06:24	06:15	19:32 (WEA 1)	05:25	05:13	05:44	06:33	19:25 (WEA 1)	07:24	07:16	08:10	08:41		
	17:08	18:05	18:55	20:48	7	19:39 (WEA 1)	21:35	21:57	21:34	20:36	29	19:54 (WEA 1)	19:24	17:18	16:29	16:25
27	08:22	07:25	06:21	06:13	05:24	05:14	05:45	06:35	19:25 (WEA 1)	07:26	07:17	08:12	08:41			
	17:10	18:07	18:57	20:50	21:37	21:57	21:32	20:33	28	19:53 (WEA 1)	19:22	17:16	16:29	16:26		
28	08:20	07:23	06:19	06:11	05:23	05:14	05:47	06:36	19:25 (WEA 1)	07:27	07:19	08:13	08:41			
	17:12	18:09	18:58	20:51	21:38	21:57	21:31	20:31	28	19:53 (WEA 1)	19:19	17:14	16:28	16:27		
29	08:19	07:17	06:09	06:02	05:22	05:15	05:48	06:38	19:24 (WEA 1)	07:29	07:21	08:15	08:41			
	17:13	18:10	19:00	20:53	21:39	21:57	21:29	20:29	28	19:52 (WEA 1)	19:17	17:12	16:27	16:28		
30	08:18	07:15	06:07	06:00	05:21	05:15	05:50	06:40	19:25 (WEA 1)	07:31	07:23	08:16	08:42			
	17:15	18:12	19:02	20:55	21:40	21:57	21:28	20:27	27	19:52 (WEA 1)	19:15	17:10	16:26	16:29		
31	08:16	07:12	06:04	06:00	05:20	05:14	05:51	06:41	19:25 (WEA 1)	07:31	07:25	08:18	08:42			
	17:17	18:14	19:04	20:57	21:41	21:58	21:26	20:24	26	19:51 (WEA 1)	17:08	16:21	16:30			
Sonnenscheinstunden	258	277	367	416	443	486	500	503	454	355	381	89	331	266	243	
astr.max.mögl.Beschattung																

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang (WEA mit erstem Schatten)	Zeitpunkt (SS:MM) Schatteneende (WEA mit letztem Schatten)
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Projekt:

WP Luentener Mark

Lizenzierter Anwender:

WWK Partnerschaft für Umweltplanung

Molkenstraße 5

DE-48231 Warendorf

02581 93 660

Reiner Winterkamp / r.winterkamp@wwk-umweltplanung.de

Berechnet:

07.12.2023 09:56/4.0.424

SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 35-NW - IP 35-NW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung

Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	May	Juni	Juli	August	September	Oktober	November	Dezember				
1	08:42	08:15	07:21	07:10	06:05	05:19	05:16	05:53	06:43	19:27 (WEA 1)	07:32	07:26	08:18			
	16:31	17:19	18:11	20:05	20:57	21:43	21:57	21:25	20:22	23	19:50 (WEA 1)	19:12	17:06	16:25		
2	08:42	08:13	07:19	07:08	06:03	05:18	05:17	05:54	06:45		19:28 (WEA 1)	07:34	07:28	08:19		
	16:32	17:21	18:13	20:07	20:58	21:44	21:56	21:23	20:20	21	19:49 (WEA 1)	19:10	17:04	16:25		
3	08:41	08:11	07:16	07:05	06:01	05:18	05:17	05:56	06:46		19:29 (WEA 1)	07:36	07:30	08:20		
	16:33	17:23	18:15	20:09	21:00	21:45	21:56	21:21	20:18	18	19:47 (WEA 1)	19:08	17:02	16:24		
4	08:41	08:10	07:14	07:03	05:59	05:17	05:18	05:57	06:48		19:31 (WEA 1)	07:37	07:32	08:22		
	16:34	17:25	18:16	20:10	21:02	21:46	21:56	21:20	20:15	14	19:45 (WEA 1)	19:05	17:00	16:23		
5	08:41	08:08	07:12	07:01	05:57	05:16	05:19	05:59	06:49		19:34 (WEA 1)	07:39	07:34	08:23		
	16:35	17:26	18:18	20:12	21:03	21:47	21:55	21:18	20:13	6	19:40 (WEA 1)	19:03	16:59	16:23		
6	08:41	08:06	07:10	06:58	05:55	05:15	05:20	06:01	06:51			07:41	07:35	08:24		
	16:37	17:28	18:20	20:14	21:05	21:48	21:55	21:16	20:11			19:01	16:57	16:22		
7	08:40	08:05	07:08	06:56	19:38 (WEA 1)	05:54	05:15	05:21	06:02			07:42	07:37	08:26		
	16:38	17:30	18:22	20:16	6	19:44 (WEA 1)	21:07	21:49	21:54	21:14		20:09	18:59	16:55	16:22	
8	08:40	08:03	07:05	06:54	19:34 (WEA 1)	05:52	05:14	05:22	06:04			06:54	07:44	07:39	08:27	
	16:39	17:32	18:24	20:17	14	19:48 (WEA 1)	21:08	21:50	21:53	21:12		20:06	18:56	16:54	16:22	
9	08:39	08:01	07:03	06:52	19:31 (WEA 1)	05:50	05:14	05:23	06:05			06:56	07:46	07:41	08:28	
	16:41	17:34	18:25	20:19	18	19:49 (WEA 1)	21:10	21:51	21:53	21:10		20:04	18:54	16:52	16:21	
10	08:39	07:59	07:01	06:49	19:29 (WEA 1)	05:48	05:13	05:24	06:07			06:58	07:47	07:43	08:29	
	16:42	17:36	18:27	20:21	21	19:50 (WEA 1)	21:11	21:51	21:52	21:09		20:02	18:52	16:50	16:21	
11	08:38	07:57	06:58	06:47	19:28 (WEA 1)	05:47	05:13	05:25	06:09			06:59	07:49	07:44	08:30	
	16:43	17:38	18:29	20:22	23	19:51 (WEA 1)	21:13	21:52	21:51	21:07		19:59	18:50	16:49	16:21	
12	08:37	07:56	06:56	06:45	19:27 (WEA 1)	05:45	05:13	05:26	06:10			07:01	07:51	07:46	08:31	
	16:45	17:40	18:31	20:24	25	19:52 (WEA 1)	21:15	21:53	21:50	21:05		19:57	18:47	16:47	16:21	
13	08:37	07:54	06:54	06:43	19:27 (WEA 1)	05:43	05:12	05:27	06:12			07:03	07:53	07:48	08:32	
	16:46	17:41	18:32	20:26	26	19:53 (WEA 1)	21:16	21:53	21:49	21:03		19:55	18:45	16:46	16:21	
14	08:36	07:52	06:52	06:40	19:25 (WEA 1)	05:42	05:12	05:28	06:13			07:04	07:54	07:50	08:33	
	16:48	17:43	18:34	20:28	27	19:52 (WEA 1)	21:18	21:54	21:48	21:01		19:52	18:43	16:44	16:21	
15	08:35	07:50	06:49	06:38	19:25 (WEA 1)	05:40	05:12	05:29	06:15			07:06	07:56	07:51	08:34	
	16:49	17:45	18:36	20:29	27	19:52 (WEA 1)	21:19	21:55	21:47	20:59		19:50	18:41	16:43	16:21	
16	08:34	07:48	06:47	06:36	19:25 (WEA 1)	05:39	05:12	05:30	06:17			07:07	07:58	07:53	08:35	
	16:51	17:47	18:38	20:31	27	19:52 (WEA 1)	21:21	21:55	21:46	20:57		19:48	18:39	16:41	16:21	
17	08:33	07:46	06:45	06:34	19:25 (WEA 1)	05:37	05:12	05:32	06:18			19:40 (WEA 1)	07:09	08:00	07:55	08:36
	16:53	17:49	18:39	20:33	27	19:52 (WEA 1)	21:22	21:56	21:45	20:55	6	19:46 (WEA 1)	19:45	18:36	16:40	16:21
18	08:32	07:44	06:42	06:32	19:25 (WEA 1)	05:36	05:12	05:33	06:20			19:36 (WEA 1)	07:11	08:01	07:57	08:37
	16:54	17:51	18:41	20:34	27	19:52 (WEA 1)	21:24	21:56	21:44	20:53	13	19:49 (WEA 1)	19:43	18:34	16:39	16:21
19	08:31	07:42	06:40	06:29	19:25 (WEA 1)	05:34	05:12	05:34	06:22			19:34 (WEA 1)	07:12	08:03	07:58	08:37
	16:56	17:53	18:43	20:36	26	19:51 (WEA 1)	21:25	21:56	21:43	20:51	17	19:51 (WEA 1)	19:40	18:32	16:37	16:22
20	08:30	07:40	06:38	06:27	19:25 (WEA 1)	05:33	05:12	05:36	06:23			19:32 (WEA 1)	07:14	08:05	08:00	08:38
	16:58	17:54	18:45	20:38	25	19:50 (WEA 1)	21:27	21:57	21:42	20:48	20	19:52 (WEA 1)	19:38	18:30	16:36	16:22
21	08:29	07:38	06:35	06:25	19:26 (WEA 1)	05:31	05:12	05:37	06:25			19:31 (WEA 1)	07:16	08:07	08:02	08:39
	16:59	17:56	18:46	20:40	24	19:50 (WEA 1)	21:28	21:57	21:41	20:46	22	19:53 (WEA 1)	19:36	18:28	16:35	16:22
22	08:28	07:36	06:33	06:23	19:27 (WEA 1)	05:30	05:12	05:38	06:27			19:29 (WEA 1)	07:17	08:08	08:03	08:39
	17:01	17:58	18:48	20:41	21	19:48 (WEA 1)	21:30	21:57	21:39	20:44	24	19:53 (WEA 1)	19:33	18:26	16:34	16:23
23	08:27	07:34	06:31	06:21	19:28 (WEA 1)	05:29	05:12	05:40	06:28			19:29 (WEA 1)	07:19	08:10	08:05	08:40
	17:03	18:00	18:50	20:43	19	19:47 (WEA 1)	21:31	21:57	21:38	20:42	25	19:54 (WEA 1)	19:31	18:24	16:33	16:23
24	08:26	07:32	06:28	06:19	19:29 (WEA 1)	05:28	05:13	05:41	06:30			19:29 (WEA 1)	07:21	08:12	08:07	08:40
	17:05	18:02	18:51	20:45	16	19:45 (WEA 1)	21:33	21:57	21:37	20:40	26	19:55 (WEA 1)	19:29	18:22	16:31	16:24
25	08:24	07:29	06:26	06:17	19:31 (WEA 1)	05:26	05:13	05:42	06:31			19:27 (WEA 1)	07:22	07:14	08:08	08:41
	17:06	18:04	18:53	20:46	12	19:43 (WEA 1)	21:34	21:57	21:35	20:38	27	19:54 (WEA 1)	19:26	17:20	16:30	16:25
26	08:23	07:27	06:24	06:15	19:36 (WEA 1)	05:25	05:13	05:44	06:33			19:27 (WEA 1)	07:24	07:16	08:10	08:41
	17:08	18:05	18:55	20:48	2	19:38 (WEA 1)	21:35	21:57	21:34	20:36	28	19:55 (WEA 1)	19:24	17:18	16:29	16:25
27	08:22	07:25	06:21	06:13	05:24	05:14	05:45	06:35				19:26 (WEA 1)	07:26	07:17	08:12	08:41
	17:10	18:07	18:57	20:50			21:37	21:57	21:32	20:33	28	19:54 (WEA 1)	19:22	17:16	16:29	16:26
28	08:20	07:23	06:19	06:11	05:23	05:14	05:47	06:36				19:27 (WEA 1)	07:27	07:19	08:13	08:41
	17:12	18:09	18:58	20:51			21:38	21:57	21:31	20:31	27	19:54 (WEA 1)	19:19	17:14	16:28	16:27
29	08:19	07:17	06:09	06:02	05:22	05:15	05:48	06:38				19:26 (WEA 1)	07:29	07:21	08:15	08:41
	17:13		20:00	20:53			21:39	21:57	21:29	20:29	27	19:53 (WEA 1)	19:17	17:12	16:27	16:28
30	08:18	07:14	06:07	06:01	05:21	05:15	05:50	06:40				19:27 (WEA 1)	07:31	07:23	08:16	08:42
	17:15		20:02	20:55			21:40	21:57	21:28	20:27	26	19:53 (WEA 1)	19:15	17:10	16:26	16:29
31	08:16	07:12			05:20			05:51	06:41			19:27 (WEA 1)		07:25		08:42
	17:17	20:04			21:41			21:26	20:24	25	19:52 (WEA 1)		17:08		16:30	
Sonnenscheinstunden	258	277	367	416	413	486	500	503	454	341	381	82	331	266	243	
astr.max.mögl.Beschattung																

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	(WEA mit erstem Schatten)	Zeitpunkt (SS:MM) Schattende	(WEA mit letztem Schatten)
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Projekt:

WP Luentener Mark

Lizenzierter Anwender:

WWK Partnerschaft für Umweltplanung

Molkenstraße 5

DE-48231 Warendorf

02581 93 660

Reiner Winterkamp / r.winterkamp@wwk-umweltplanung.de

Berechnet:

07.12.2023 09:56/4.0.424

SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 37-NW - IP 37-NW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung

Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	May	Juni	Juli	August	September	Oktober	November	Dezember			
1	08:42	08:15	07:21	07:10	06:05	05:19	05:16	05:53	06:43	19:34 (WEA 1)	07:32	07:26	08:18		
	16:31	17:19	18:11	20:05	20:57	21:43	21:57	21:25	20:22	16	19:50 (WEA 1)	19:12	17:06	16:25	
2	08:42	08:13	07:19	07:08	06:03	05:18	05:17	05:54	06:45	19:36 (WEA 1)	07:34	07:28	08:19		
	16:32	17:21	18:13	20:07	20:58	21:44	21:56	21:23	20:20	12	19:48 (WEA 1)	19:10	17:04	16:25	
3	08:41	08:11	07:16	07:05	06:01	05:18	05:17	05:56	06:46	07:36	07:30	08:20			
	16:33	17:23	18:15	20:09	21:00	21:45	21:56	21:21	20:18	19:08	17:02	16:24			
4	08:41	08:10	07:14	07:03	05:59	05:17	05:18	05:57	06:48	07:37	07:32	08:22			
	16:34	17:25	18:16	20:10	21:02	21:46	21:56	21:20	20:15	19:06	17:00	16:23			
5	08:41	08:08	07:12	07:01	05:57	05:16	05:19	05:59	06:49	07:39	07:34	08:23			
	16:35	17:26	18:18	20:12	21:03	21:47	21:55	21:18	20:13	19:03	16:59	16:23			
6	08:41	08:06	07:10	06:58	05:55	05:15	05:20	06:01	06:51	07:41	07:35	08:24			
	16:37	17:28	18:20	20:14	21:05	21:48	21:55	21:16	20:11	19:01	16:57	16:22			
7	08:40	08:05	07:08	06:56	05:54	05:15	05:21	06:02	06:53	07:42	07:37	08:26			
	16:38	17:30	18:22	20:16	21:07	21:49	21:54	21:14	20:09	18:59	16:55	16:22			
8	08:40	08:03	07:05	06:54	05:52	05:14	05:22	06:04	06:54	07:44	07:39	08:27			
	16:39	17:32	18:24	20:17	21:08	21:50	21:53	21:12	20:06	18:56	16:54	16:22			
9	08:39	08:01	07:03	06:52	05:50	05:14	05:23	06:05	06:56	07:46	07:41	08:28			
	16:41	17:34	18:25	20:19	21:10	21:51	21:53	21:10	20:04	18:54	16:52	16:21			
10	08:39	07:59	07:01	06:49	19:37 (WEA 1)	05:48	05:13	05:24	06:07	07:47	07:43	08:29			
	16:42	17:36	18:27	20:21	12	19:49 (WEA 1)	21:11	21:51	21:09	18:52	16:50	16:21			
11	08:38	07:57	06:58	06:47	19:35 (WEA 1)	05:47	05:13	05:25	06:09	07:49	07:44	08:30			
	16:43	17:38	18:29	20:22	16	19:51 (WEA 1)	21:13	21:52	21:07	19:59	16:49	16:21			
12	08:37	07:56	06:56	06:45	19:33 (WEA 1)	05:45	05:13	05:26	06:10	07:01	07:46	08:31			
	16:45	17:40	18:31	20:24	20	19:53 (WEA 1)	21:15	21:53	21:05	19:57	16:47	16:21			
13	08:37	07:54	06:54	06:43	19:31 (WEA 1)	05:43	05:12	05:27	06:12	07:03	07:53	08:48			
	16:46	17:41	18:32	20:26	23	19:54 (WEA 1)	21:16	21:53	21:03	7	19:44 (WEA 1)	19:55	16:46	16:21	
14	08:36	07:52	06:52	06:40	19:29 (WEA 1)	05:42	05:12	05:28	06:13	19:40 (WEA 1)	07:04	07:54	07:50	08:33	
	16:48	17:43	18:34	20:28	25	19:54 (WEA 1)	21:18	21:54	21:01	14	19:54 (WEA 1)	19:52	18:43	16:44	16:21
15	08:35	07:50	06:49	06:38	19:28 (WEA 1)	05:40	05:12	05:29	06:15	19:38 (WEA 1)	07:06	07:56	07:51	08:34	
	16:49	17:45	18:36	20:29	27	19:55 (WEA 1)	21:19	21:55	21:47	18	19:56 (WEA 1)	19:50	18:41	16:43	16:21
16	08:34	07:48	06:47	06:36	19:28 (WEA 1)	05:39	05:12	05:30	06:17	19:36 (WEA 1)	07:07	07:58	07:53	08:35	
	16:51	17:47	18:38	20:31	27	19:55 (WEA 1)	21:21	21:55	21:46	20	19:56 (WEA 1)	19:48	18:39	16:41	16:21
17	08:33	07:46	06:45	06:34	19:27 (WEA 1)	05:37	05:12	05:32	06:18	19:35 (WEA 1)	07:09	08:00	07:55	08:36	
	16:53	17:49	18:39	20:33	29	19:56 (WEA 1)	21:22	21:56	21:45	23	19:58 (WEA 1)	19:45	18:36	16:40	16:21
18	08:32	07:44	06:42	06:32	19:27 (WEA 1)	05:36	05:12	05:33	06:20	19:33 (WEA 1)	07:11	08:01	07:57	08:37	
	16:54	17:51	18:41	20:34	29	19:56 (WEA 1)	21:24	21:56	21:44	25	19:58 (WEA 1)	19:43	18:34	16:39	16:21
19	08:31	07:42	06:40	06:29	19:27 (WEA 1)	05:34	05:12	05:34	06:22	19:33 (WEA 1)	07:12	08:03	07:58	08:37	
	16:56	17:53	18:43	20:36	29	19:56 (WEA 1)	21:25	21:56	21:43	26	19:59 (WEA 1)	19:41	18:32	16:37	16:22
20	08:30	07:40	06:38	06:27	19:26 (WEA 1)	05:33	05:12	05:36	06:23	19:31 (WEA 1)	07:14	08:05	08:00	08:38	
	16:58	17:54	18:45	20:38	29	19:55 (WEA 1)	21:27	21:57	21:42	28	19:59 (WEA 1)	19:38	18:30	16:36	16:22
21	08:29	07:38	06:35	06:25	19:26 (WEA 1)	05:31	05:12	05:37	06:25	19:31 (WEA 1)	07:16	08:07	08:02	08:39	
	16:59	17:56	18:46	20:40	29	19:55 (WEA 1)	21:28	21:57	21:41	28	19:59 (WEA 1)	19:36	18:28	16:35	16:22
22	08:28	07:36	06:33	06:23	19:27 (WEA 1)	05:30	05:12	05:38	06:27	19:30 (WEA 1)	07:17	08:08	08:03	08:39	
	17:01	17:58	18:48	20:41	28	19:55 (WEA 1)	21:30	21:57	21:39	29	19:59 (WEA 1)	19:33	18:26	16:34	16:23
23	08:27	07:34	06:31	06:21	19:27 (WEA 1)	05:29	05:12	05:40	06:28	19:30 (WEA 1)	07:19	08:10	08:05	08:40	
	17:03	18:00	18:50	20:43	27	19:54 (WEA 1)	21:31	21:57	21:38	29	19:59 (WEA 1)	19:31	18:24	16:33	16:23
24	08:26	07:32	06:28	06:19	19:27 (WEA 1)	05:28	05:13	05:41	06:30	19:30 (WEA 1)	07:21	08:12	08:07	08:40	
	17:05	18:02	18:52	20:45	26	19:53 (WEA 1)	21:33	21:57	21:37	29	19:59 (WEA 1)	19:29	18:22	16:31	16:24
25	08:24	07:29	06:26	06:17	19:28 (WEA 1)	05:26	05:13	05:42	06:31	19:30 (WEA 1)	07:22	07:14	08:08	08:41	
	17:06	18:04	18:53	20:46	24	19:52 (WEA 1)	21:34	21:57	21:35	28	19:58 (WEA 1)	19:26	17:20	16:30	16:25
26	08:23	07:27	06:24	06:15	19:29 (WEA 1)	05:25	05:13	05:44	06:33	19:30 (WEA 1)	07:24	07:16	08:10	08:41	
	17:08	18:05	18:55	20:48	22	19:51 (WEA 1)	21:35	21:57	21:34	28	19:58 (WEA 1)	19:24	17:18	16:29	16:25
27	08:22	07:25	06:21	06:13	19:30 (WEA 1)	05:24	05:14	05:45	06:35	19:30 (WEA 1)	07:26	07:17	08:12	08:41	
	17:10	18:07	18:57	20:50	20	19:50 (WEA 1)	21:37	21:57	21:32	27	19:57 (WEA 1)	19:22	17:16	16:29	16:26
28	08:20	07:23	06:19	06:11	19:31 (WEA 1)	05:23	05:14	05:47	06:36	19:30 (WEA 1)	07:27	07:19	08:13	08:41	
	17:12	18:09	18:58	20:51	17	19:48 (WEA 1)	21:38	21:57	21:31	27	19:57 (WEA 1)	19:19	17:14	16:28	16:27
29	08:19	07:17	06:09	05:59	19:33 (WEA 1)	05:22	05:15	05:48	06:38	19:30 (WEA 1)	07:29	07:21	08:15	08:41	
	17:13	18:10	19:00	20:53	12	19:45 (WEA 1)	21:39	21:57	21:29	25	19:55 (WEA 1)	19:17	17:12	16:27	16:28
30	08:18	07:15	06:07	05:59	19:37 (WEA 1)	05:21	05:15	05:50	06:40	19:31 (WEA 1)	07:31	07:23	08:16	08:42	
	17:15	18:12	19:02	20:55	4	19:41 (WEA 1)	21:40	21:57	21:28	23	19:54 (WEA 1)	19:15	17:10	16:26	16:29
31	08:16	07:12	06:04	05:55	19:39 (WEA 1)	05:20	05:14	05:51	06:41	19:33 (WEA 1)	07:33	07:25	08:18	08:42	
	17:17	18:14	19:04	20:57	21:41	21:26	21:26	21:26	20:24	20	19:53 (WEA 1)	17:08	17:08	16:30	16:30
Sonnenscheinstunden	258	277	367	416	475	486	500	503	454	381	28	331	266	243	
astr.max.mögl.Beschattung															

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM)	Schattenanfang (WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schatteneende (WEA mit letztem Schatten)

Projekt:

WP Luentener Mark

Lizenzierter Anwender:

WWK Partnerschaft für Umweltplanung

Molkenstraße 5

DE-48231 Warendorf

02581 93 660

Reiner Winterkamp / r.winterkamp@wwk-umweltplanung.de

Berechnet:

07.12.2023 09:56/4.0.424

SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 38-NW - IP 38-NW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung

Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	May	Juni	Juli	August	September	Oktober	November	Dezember			
1	08:42	08:15	07:21	07:10	06:05	05:19	05:16	05:53	06:43	19:37 (WEA 1)	07:32	07:26	08:18		
	16:31	17:19	18:11	20:05	20:57	21:43	21:57	21:25	20:22	13 19:50 (WEA 1)	19:12	17:06	16:25		
2	08:42	08:13	07:19	07:08	06:03	05:18	05:17	05:54	06:45	19:41 (WEA 1)	07:34	07:28	08:19		
	16:32	17:21	18:13	20:07	20:58	21:44	21:56	21:23	20:20	6 19:47 (WEA 1)	19:10	17:04	16:25		
3	08:41	08:11	07:16	07:05	06:01	05:18	05:17	05:56	06:46	07:36	07:30	08:20	08:20		
	16:33	17:23	18:15	20:09	21:00	21:45	21:56	21:21	20:18	19:08	17:02	16:24	16:24		
4	08:41	08:10	07:14	07:03	05:59	05:17	05:18	05:57	06:48	07:37	07:32	08:22	08:22		
	16:34	17:25	18:16	20:10	21:02	21:46	21:56	21:20	20:15	19:06	17:00	16:23	16:23		
5	08:41	08:08	07:12	07:01	05:57	05:16	05:19	05:59	06:49	07:39	07:34	08:23	08:23		
	16:35	17:26	18:18	20:12	21:03	21:47	21:55	21:18	20:13	19:03	16:59	16:23	16:23		
6	08:41	08:06	07:10	06:58	05:55	05:15	05:20	06:01	06:51	07:41	07:35	08:24	08:24		
	16:37	17:28	18:20	20:14	21:05	21:48	21:55	21:16	20:11	19:01	16:57	16:22	16:22		
7	08:40	08:05	07:08	06:56	05:54	05:15	05:21	06:02	06:53	07:42	07:37	08:26	08:26		
	16:38	17:30	18:22	20:16	21:07	21:49	21:54	21:14	20:09	18:59	16:55	16:22	16:22		
8	08:40	08:03	07:05	06:54	05:52	05:14	05:22	06:04	06:54	07:44	07:39	08:27	08:27		
	16:39	17:32	18:24	20:17	21:08	21:50	21:53	21:12	20:06	18:56	16:54	16:22	16:22		
9	08:39	08:01	07:03	06:52	05:50	05:14	05:23	06:05	06:56	07:46	07:41	08:28	08:28		
	16:41	17:34	18:25	20:19	21:10	21:51	21:53	21:10	20:04	18:54	16:52	16:21	16:21		
10	08:39	07:59	07:01	06:49	19:42 (WEA 1)	05:48	05:13	06:07	06:58	07:47	07:43	08:29	08:29		
	16:42	17:36	18:27	20:21	6 19:48 (WEA 1)	21:11	21:51	21:09	20:02	18:52	16:50	16:21	16:21		
11	08:38	07:57	06:58	06:47	19:38 (WEA 1)	05:47	05:13	06:09	06:59	07:49	07:44	08:30	08:30		
	16:43	17:38	18:29	20:22	14 19:52 (WEA 1)	21:13	21:52	21:07	19:59	18:50	16:49	16:21	16:21		
12	08:37	07:56	06:56	06:45	19:35 (WEA 1)	05:45	05:13	06:10	07:01	07:51	07:46	08:31	08:31		
	16:45	17:40	18:31	20:24	19 19:54 (WEA 1)	21:15	21:53	21:05	19:57	18:47	16:47	16:21	16:21		
13	08:37	07:54	06:54	06:43	19:34 (WEA 1)	05:43	05:12	06:12	07:03	07:53	07:48	08:32	08:32		
	16:46	17:41	18:32	20:26	21 19:55 (WEA 1)	21:16	21:53	21:03	8 19:45 (WEA 1)	19:55	18:45	16:46	16:21		
14	08:36	07:52	06:52	06:40	19:32 (WEA 1)	05:42	05:12	06:13	07:04	19:41 (WEA 1)	07:04	07:54	08:33		
	16:48	17:43	18:34	20:28	23 19:55 (WEA 1)	21:18	21:54	21:01	15 19:56 (WEA 1)	19:52	18:43	16:44	16:21		
15	08:35	07:50	06:49	06:38	19:31 (WEA 1)	05:40	05:12	06:15	07:06	19:40 (WEA 1)	07:06	07:56	08:34		
	16:49	17:45	18:36	20:29	25 19:56 (WEA 1)	21:19	21:55	21:07	18 19:58 (WEA 1)	19:50	18:41	16:43	16:21		
16	08:34	07:48	06:47	06:36	19:30 (WEA 1)	05:39	05:12	06:17	07:07	19:37 (WEA 1)	07:07	07:58	08:35		
	16:51	17:47	18:38	20:31	26 19:56 (WEA 1)	21:21	21:55	21:07	21 19:58 (WEA 1)	19:48	18:39	16:41	16:21		
17	08:33	07:46	06:45	06:34	19:29 (WEA 1)	05:37	05:12	06:18	07:09	19:37 (WEA 1)	07:09	08:00	07:55	08:36	
	16:53	17:49	18:39	20:33	28 19:57 (WEA 1)	21:22	21:56	21:05	23 20:00 (WEA 1)	19:45	18:36	16:40	16:21		
18	08:32	07:44	06:42	06:32	19:29 (WEA 1)	05:36	05:12	06:20	07:11	19:35 (WEA 1)	07:11	08:01	07:57	08:37	
	16:54	17:51	18:41	20:34	28 19:57 (WEA 1)	21:24	21:56	21:03	25 20:00 (WEA 1)	19:43	18:34	16:39	16:21		
19	08:31	07:42	06:40	06:29	19:28 (WEA 1)	05:34	05:12	06:22	07:12	19:34 (WEA 1)	07:12	08:03	07:58	08:37	
	16:56	17:53	18:43	20:36	29 19:57 (WEA 1)	21:25	21:56	21:03	27 20:01 (WEA 1)	19:40	18:32	16:37	16:22	16:22	
20	08:30	07:40	06:38	06:27	19:28 (WEA 1)	05:33	05:12	06:23	07:14	19:33 (WEA 1)	07:14	08:05	08:00	08:38	
	16:58	17:54	18:45	20:38	29 19:57 (WEA 1)	21:27	21:57	21:04	27 20:00 (WEA 1)	19:38	18:30	16:36	16:22	16:22	
21	08:29	07:38	06:35	06:25	19:28 (WEA 1)	05:31	05:12	06:25	07:16	19:33 (WEA 1)	07:16	08:07	08:02	08:39	
	16:59	17:56	18:46	20:40	29 19:57 (WEA 1)	21:28	21:57	21:04	28 20:01 (WEA 1)	19:36	18:28	16:35	16:22	16:22	
22	08:28	07:36	06:33	06:23	19:28 (WEA 1)	05:30	05:12	06:27	07:17	19:32 (WEA 1)	07:17	08:08	08:03	08:39	
	17:01	17:58	18:48	20:41	28 19:56 (WEA 1)	21:30	21:57	21:04	28 20:00 (WEA 1)	19:33	18:26	16:34	16:23	16:23	
23	08:27	07:34	06:31	06:21	19:29 (WEA 1)	05:29	05:12	06:28	07:19	19:32 (WEA 1)	07:19	08:10	08:05	08:40	
	17:03	18:00	18:50	20:43	27 19:56 (WEA 1)	21:31	21:57	21:04	29 20:01 (WEA 1)	19:31	18:24	16:33	16:23	16:23	
24	08:26	07:32	06:28	06:19	19:29 (WEA 1)	05:28	05:13	06:30	07:21	19:32 (WEA 1)	07:21	08:12	08:07	08:40	
	17:05	18:02	18:51	20:45	26 19:55 (WEA 1)	21:33	21:57	21:04	29 20:01 (WEA 1)	19:29	18:22	16:31	16:24	16:24	
25	08:24	07:29	06:26	06:17	19:29 (WEA 1)	05:26	05:13	06:31	07:22	19:32 (WEA 1)	07:22	07:14	08:08	08:41	
	17:06	18:04	18:53	20:46	25 19:54 (WEA 1)	21:34	21:57	21:05	28 20:00 (WEA 1)	19:26	17:20	16:30	16:25	16:25	
26	08:23	07:27	06:24	06:15	19:30 (WEA 1)	05:25	05:13	06:33	07:24	19:32 (WEA 1)	07:24	07:16	08:10	08:41	
	17:08	18:05	18:55	20:48	23 19:53 (WEA 1)	21:35	21:57	21:04	28 20:00 (WEA 1)	19:24	17:18	16:29	16:25	16:25	
27	08:22	07:25	06:21	06:13	19:31 (WEA 1)	05:24	05:14	06:35	07:26	19:32 (WEA 1)	07:26	07:17	08:12	08:41	
	17:10	18:07	18:57	20:50	20 19:51 (WEA 1)	21:37	21:57	21:04	26 19:58 (WEA 1)	19:22	17:16	16:29	16:26	16:26	
28	08:20	07:23	06:19	06:11	19:32 (WEA 1)	05:23	05:14	06:36	07:27	19:32 (WEA 1)	07:27	07:19	08:13	08:41	
	17:12	18:09	18:58	20:51	18 19:50 (WEA 1)	21:38	21:57	21:04	26 19:58 (WEA 1)	19:19	17:14	16:28	16:27	16:27	
29	08:19	07:17	06:09	06:01	19:34 (WEA 1)	05:22	05:15	06:38	07:29	19:32 (WEA 1)	07:29	07:21	08:15	08:41	
	17:13	18:10	19:00	20:53	13 19:47 (WEA 1)	21:39	21:57	21:04	24 19:56 (WEA 1)	19:17	17:12	16:27	16:28	16:28	
30	08:18	07:15	06:07	06:00	19:37 (WEA 1)	05:21	05:15	06:40	07:31	19:34 (WEA 1)	07:31	07:23	08:16	08:42	
	17:15	18:12	19:02	20:55	7 19:44 (WEA 1)	21:40	21:57	21:04	21 19:55 (WEA 1)	19:15	17:10	16:26	16:29	16:29	
31	08:16	07:12	06:04	06:00	05:20	05:14	05:14	06:41	07:35	19:35 (WEA 1)	07:35	07:25	08:16	08:42	
	17:17	18:14	19:04	20:57	21:41	21:58	21:58	21:04	18 19:53 (WEA 1)	19:15	17:08	16:23	16:26	16:26	
Sonnenscheinstunden	258	277	367	416	464	486	500	503	454	449	381	19	331	266	243
astr.max.mögl.Beschattung															

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang (WEA mit erstem Schatten)	Zeitpunkt (SS:MM) Schattende (WEA mit letztem Schatten)
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Projekt:

WP Luentener Mark

Lizenzierter Anwender:

WWK Partnerschaft für Umweltplanung

Molkenstraße 5

DE-48231 Warendorf

02581 93 660

Reiner Winterkamp / r.winterkamp@wwk-umweltplanung.de

Berechnet:

07.12.2023 09:56/4.0.424

SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 39-NW - IP 39-NW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung

Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	May	Juni	Juli	August	September	Oktober	November	Dezember			
1	08:42	08:15	07:21	07:10	06:05	05:19	05:16	05:53	06:43	19:36 (WEA 1)	07:32	07:26	08:18		
	16:31	17:19	18:11	20:05	20:57	21:43	21:57	21:25	20:22	15	19:51 (WEA 1)	19:12	17:06	16:25	
2	08:42	08:13	07:19	07:08	06:03	05:18	05:17	05:54	06:45	19:40 (WEA 1)	07:34	07:28	08:19		
	16:32	17:21	18:13	20:07	20:58	21:44	21:56	21:23	20:20	8	19:48 (WEA 1)	19:10	17:04	16:25	
3	08:41	08:11	07:16	07:05	06:01	05:18	05:17	05:56	06:46	07:36	07:30	08:20			
	16:33	17:23	18:15	20:09	21:00	21:45	21:56	21:21	20:18	19:08	17:02	16:24			
4	08:41	08:10	07:14	07:03	05:59	05:17	05:18	05:57	06:48	07:37	07:32	08:22			
	16:34	17:25	18:16	20:10	21:02	21:46	21:56	21:20	20:15	19:05	17:00	16:23			
5	08:41	08:08	07:12	07:01	05:57	05:16	05:19	05:59	06:49	07:39	07:34	08:23			
	16:35	17:26	18:18	20:12	21:03	21:47	21:55	21:18	20:13	19:03	16:59	16:23			
6	08:41	08:06	07:10	06:58	05:55	05:15	05:20	06:01	06:51	07:41	07:35	08:24			
	16:37	17:28	18:20	20:14	21:05	21:48	21:55	21:16	20:11	19:01	16:57	16:22			
7	08:40	08:05	07:08	06:56	05:54	05:15	05:21	06:02	06:53	07:42	07:37	08:26			
	16:38	17:30	18:22	20:16	21:07	21:49	21:54	21:14	20:09	18:59	16:55	16:22			
8	08:40	08:03	07:05	06:54	05:52	05:14	05:22	06:04	06:54	07:44	07:39	08:27			
	16:39	17:32	18:24	20:17	21:08	21:50	21:53	21:12	20:06	18:56	16:54	16:22			
9	08:39	08:01	07:03	06:52	05:50	05:14	05:23	06:05	06:56	07:46	07:41	08:28			
	16:41	17:34	18:25	20:19	21:10	21:51	21:53	21:10	20:04	18:54	16:52	16:21			
10	08:39	07:59	07:01	06:49	19:41 (WEA 1)	05:48	05:13	05:24	06:07	07:47	07:43	08:29			
	16:42	17:36	18:27	20:21	8	19:49 (WEA 1)	21:11	21:51	21:09	18:52	16:50	16:21			
11	08:38	07:57	06:58	06:47	19:37 (WEA 1)	05:47	05:13	05:25	06:09	07:49	07:44	08:30			
	16:43	17:38	18:29	20:22	15	19:52 (WEA 1)	21:13	21:52	21:07	19:59	16:49	16:21			
12	08:37	07:56	06:56	06:45	19:35 (WEA 1)	05:45	05:13	05:26	06:10	07:01	07:46	08:31			
	16:45	17:40	18:31	20:24	19	19:54 (WEA 1)	21:15	21:53	21:05	19:57	16:47	16:21			
13	08:37	07:54	06:54	06:43	19:34 (WEA 1)	05:43	05:12	05:27	06:12	07:03	07:53	08:48			
	16:46	17:41	18:32	20:26	21	19:55 (WEA 1)	21:16	21:53	21:03	19:55	16:46	16:21			
14	08:36	07:52	06:52	06:40	19:32 (WEA 1)	05:42	05:12	05:28	06:13	19:43 (WEA 1)	07:04	07:50	08:33		
	16:48	17:43	18:34	20:28	23	19:55 (WEA 1)	21:18	21:54	21:01	11	19:54 (WEA 1)	19:52	18:43	16:44	16:21
15	08:35	07:50	06:49	06:38	19:31 (WEA 1)	05:40	05:12	05:29	06:15	19:41 (WEA 1)	07:06	07:56	07:51	08:34	
	16:49	17:45	18:36	20:29	25	19:56 (WEA 1)	21:19	21:55	21:47	16	19:57 (WEA 1)	19:50	18:41	16:43	16:21
16	08:34	07:48	06:47	06:36	19:30 (WEA 1)	05:39	05:12	05:30	06:17	19:39 (WEA 1)	07:07	07:58	07:53	08:35	
	16:51	17:47	18:38	20:31	27	19:57 (WEA 1)	21:21	21:55	21:46	19	19:58 (WEA 1)	19:48	18:39	16:41	16:21
17	08:33	07:46	06:45	06:34	19:29 (WEA 1)	05:37	05:12	05:32	06:18	19:38 (WEA 1)	07:09	08:00	07:55	08:36	
	16:53	17:49	18:39	20:32	28	19:57 (WEA 1)	21:22	21:56	21:45	21	19:59 (WEA 1)	19:45	18:36	16:40	16:21
18	08:32	07:44	06:42	06:32	19:29 (WEA 1)	05:36	05:12	05:33	06:20	19:36 (WEA 1)	07:11	08:01	07:57	08:37	
	16:54	17:51	18:41	20:34	28	19:57 (WEA 1)	21:24	21:56	21:44	23	19:59 (WEA 1)	19:43	18:34	16:39	16:21
19	08:31	07:42	06:40	06:29	19:29 (WEA 1)	05:34	05:12	05:34	06:22	19:35 (WEA 1)	07:12	08:03	07:58	08:37	
	16:56	17:53	18:43	20:36	28	19:57 (WEA 1)	21:25	21:56	21:43	25	20:00 (WEA 1)	19:40	18:32	16:37	16:22
20	08:30	07:40	06:38	06:27	19:29 (WEA 1)	05:33	05:12	05:36	06:23	19:34 (WEA 1)	07:14	08:05	08:00	08:38	
	16:58	17:54	18:45	20:38	28	19:57 (WEA 1)	21:27	21:57	21:42	26	20:00 (WEA 1)	19:38	18:30	16:36	16:22
21	08:29	07:38	06:35	06:25	19:29 (WEA 1)	05:31	05:12	05:37	06:25	19:34 (WEA 1)	07:16	08:07	08:02	08:39	
	16:59	17:56	18:46	20:40	27	19:56 (WEA 1)	21:28	21:57	21:41	27	20:01 (WEA 1)	19:36	18:28	16:35	16:22
22	08:28	07:36	06:33	06:23	19:29 (WEA 1)	05:30	05:12	05:38	06:27	19:32 (WEA 1)	07:17	08:08	08:03	08:39	
	17:01	17:58	18:48	20:41	27	19:56 (WEA 1)	21:30	21:57	21:39	28	20:00 (WEA 1)	19:33	18:26	16:34	16:23
23	08:27	07:34	06:31	06:21	19:29 (WEA 1)	05:29	05:12	05:40	06:28	28	20:00 (WEA 1)	07:19	08:10	08:05	08:40
	17:03	18:00	18:50	20:43	26	19:55 (WEA 1)	21:31	21:57	21:38	28	20:00 (WEA 1)	19:31	18:24	16:33	16:23
24	08:26	07:32	06:28	06:19	19:30 (WEA 1)	05:28	05:13	05:41	06:30	19:33 (WEA 1)	07:21	08:12	08:07	08:40	
	17:05	18:02	18:51	20:45	24	19:54 (WEA 1)	21:33	21:57	21:37	28	20:01 (WEA 1)	19:29	18:22	16:31	16:24
25	08:24	07:29	06:26	06:17	19:30 (WEA 1)	05:26	05:13	05:42	06:31	19:32 (WEA 1)	07:22	07:14	08:08	08:41	
	17:06	18:04	18:53	20:46	23	19:53 (WEA 1)	21:34	21:57	21:35	28	20:00 (WEA 1)	19:26	17:20	16:30	16:25
26	08:23	07:27	06:24	06:15	19:31 (WEA 1)	05:25	05:13	05:44	06:33	19:32 (WEA 1)	07:24	07:16	08:10	08:41	
	17:08	18:05	18:55	20:48	21	19:52 (WEA 1)	21:35	21:57	21:34	28	20:00 (WEA 1)	19:24	17:18	16:29	16:25
27	08:22	07:25	06:21	06:13	19:32 (WEA 1)	05:24	05:14	05:45	06:35	19:32 (WEA 1)	07:26	07:17	08:12	08:41	
	17:10	18:07	18:57	20:50	19	19:51 (WEA 1)	21:37	21:57	21:32	26	19:58 (WEA 1)	19:22	17:16	16:29	16:26
28	08:20	07:23	06:19	06:11	19:34 (WEA 1)	05:23	05:14	05:47	06:36	19:33 (WEA 1)	07:27	07:19	08:13	08:41	
	17:12	18:09	18:58	20:51	15	19:49 (WEA 1)	21:38	21:57	21:31	25	19:58 (WEA 1)	19:19	17:14	16:28	16:27
29	08:19	07:17	06:09	05:59	19:36 (WEA 1)	05:22	05:15	05:48	06:38	19:33 (WEA 1)	07:29	07:21	08:15	08:41	
	17:13	18:10	19:00	20:53	10	19:46 (WEA 1)	21:39	21:57	21:29	23	19:56 (WEA 1)	19:17	17:12	16:27	16:28
30	08:18	07:14	06:07	05:59	19:37 (WEA 1)	05:21	05:15	05:50	06:40	19:34 (WEA 1)	07:31	07:23	08:16	08:42	
	17:15	18:12	19:02	20:55	11	19:47 (WEA 1)	21:40	21:57	21:28	21	19:55 (WEA 1)	19:15	17:10	16:26	16:29
31	08:16	07:12	06:05	05:57	19:38 (WEA 1)	05:20	05:14	05:51	06:41	19:35 (WEA 1)	07:32	07:25	08:18	08:42	
	17:17	18:14	19:04	20:04	12	19:48 (WEA 1)	21:41	21:26	20:24	19	19:54 (WEA 1)	17:08	17:08	16:30	16:30
Sonnenscheinstunden	258	277	367	416	442	486	500	503	454	422	381	23	331	266	243
astr.max.mögl.Beschattung															

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang (WEA mit erstem Schatten)	Zeitpunkt (SS:MM) Schattende (WEA mit letztem Schatten)
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Projekt:

WP Luentener Mark

Lizenzierter Anwender:

WWK Partnerschaft für Umweltplanung

Molkenstraße 5

DE-48231 Warendorf

02581 93 660

Reiner Winterkamp / r.winterkamp@wwk-umweltplanung.de

Berechnet:

07.12.2023 09:56/4.0.424

SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 40-NW - IP 40-NW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung

Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	May	Juni	Juli	August	September	Oktober	November	Dezember		
1	08:42	08:15	07:21	07:10	06:05	05:19	05:16	05:53	06:43	19:39 (WEA 1)	07:32	07:26	08:18	
	16:31	17:19	18:11	20:05	20:57	21:43	21:57	21:25	20:22	12 19:51 (WEA 1)	19:12	17:06	16:25	
2	08:42	08:13	07:19	07:08	06:03	05:18	05:17	05:54	06:45		07:34	07:28	08:19	
	16:32	17:21	18:13	20:07	20:58	21:44	21:56	21:23	20:20		19:10	17:04	16:25	
3	08:41	08:11	07:16	07:05	06:01	05:18	05:17	05:56	06:46		07:36	07:30	08:20	
	16:33	17:23	18:15	20:09	21:00	21:45	21:56	21:21	20:18		19:08	17:02	16:24	
4	08:41	08:10	07:14	07:03	05:59	05:17	05:18	05:57	06:48		07:37	07:32	08:22	
	16:34	17:25	18:16	20:10	21:02	21:46	21:56	21:20	20:15		19:05	17:00	16:23	
5	08:41	08:08	07:12	07:01	05:57	05:16	05:19	05:59	06:49		07:39	07:34	08:23	
	16:35	17:26	18:18	20:12	21:03	21:47	21:55	21:18	20:13		19:03	16:59	16:23	
6	08:41	08:06	07:10	06:58	05:55	05:15	05:20	06:01	06:51		07:41	07:35	08:24	
	16:37	17:28	18:20	20:14	21:05	21:48	21:55	21:16	20:11		19:01	16:57	16:22	
7	08:40	08:05	07:08	06:56	05:54	05:15	05:21	06:02	06:53		07:42	07:37	08:26	
	16:38	17:30	18:22	20:16	21:07	21:49	21:54	21:14	20:09		18:59	16:55	16:22	
8	08:40	08:03	07:05	06:54	05:52	05:14	05:22	06:04	06:54		07:44	07:39	08:27	
	16:39	17:32	18:24	20:17	21:08	21:50	21:53	21:12	20:06		18:56	16:54	16:22	
9	08:39	08:01	07:03	06:52	05:50	05:14	05:23	06:05	06:56		07:46	07:41	08:28	
	16:41	17:34	18:25	20:19	21:10	21:51	21:53	21:10	20:04		18:54	16:52	16:21	
10	08:39	07:59	07:01	06:49	05:48	05:13	05:24	06:07	06:58		07:47	07:43	08:29	
	16:42	17:36	18:27	20:21	21:11	21:51	21:52	21:09	20:02		18:52	16:50	16:21	
11	08:38	07:57	06:58	06:47	12 19:40 (WEA 1)	05:47	05:13	05:25	06:09		07:49	07:44	08:30	
	16:43	17:38	18:29	20:22	19:52 (WEA 1)	21:13	21:52	21:51	21:07		18:50	16:49	16:21	
12	08:37	07:56	06:56	06:45	19:38 (WEA 1)	05:45	05:13	05:26	06:10		07:51	07:46	08:31	
	16:45	17:40	18:31	20:24	16 19:54 (WEA 1)	21:15	21:53	21:50	21:05		18:47	16:47	16:21	
13	08:37	07:54	06:54	06:43	19:36 (WEA 1)	05:43	05:12	05:27	06:12	19:47 (WEA 1)	07:03	07:53	08:48	
	16:46	17:41	18:32	20:26	20 19:56 (WEA 1)	21:16	21:53	21:49	21:03	7 19:54 (WEA 1)	19:55	18:45	16:46	16:21
14	08:36	07:52	06:52	06:40	19:34 (WEA 1)	05:42	05:12	05:28	06:13	19:43 (WEA 1)	07:04	07:54	08:50	08:33
	16:48	17:43	18:34	20:28	22 19:56 (WEA 1)	21:18	21:54	21:48	21:01	13 19:56 (WEA 1)	19:52	18:43	16:44	16:21
15	08:35	07:50	06:49	06:38	19:33 (WEA 1)	05:40	05:12	05:29	06:15	19:42 (WEA 1)	07:06	07:56	07:51	08:34
	16:49	17:45	18:36	20:29	24 19:57 (WEA 1)	21:19	21:55	21:47	20:59	17 19:59 (WEA 1)	19:50	18:41	16:43	16:21
16	08:34	07:48	06:47	06:36	19:32 (WEA 1)	05:39	05:12	05:30	06:17	19:40 (WEA 1)	07:07	07:58	07:53	08:35
	16:51	17:47	18:38	20:31	26 19:58 (WEA 1)	21:21	21:55	21:46	20:57	19 19:59 (WEA 1)	19:48	18:39	16:41	16:21
17	08:33	07:46	06:45	06:34	19:31 (WEA 1)	05:37	05:12	05:32	06:18	19:39 (WEA 1)	07:09	08:00	07:55	08:36
	16:53	17:49	18:39	20:33	27 19:58 (WEA 1)	21:22	21:56	21:45	20:55	22 20:01 (WEA 1)	19:45	18:36	16:40	16:21
18	08:32	07:44	06:42	06:32	19:31 (WEA 1)	05:36	05:12	05:33	06:20	19:37 (WEA 1)	07:11	08:01	07:57	08:37
	16:54	17:51	18:41	20:34	27 19:58 (WEA 1)	21:24	21:56	21:44	20:53	24 20:01 (WEA 1)	19:43	18:34	16:39	16:21
19	08:31	07:42	06:40	06:29	19:30 (WEA 1)	05:34	05:12	05:34	06:22	19:37 (WEA 1)	07:12	08:03	07:58	08:37
	16:56	17:53	18:43	20:36	28 19:58 (WEA 1)	21:25	21:56	21:43	20:51	25 20:02 (WEA 1)	19:40	18:32	16:37	16:22
20	08:30	07:40	06:38	06:27	19:30 (WEA 1)	05:33	05:12	05:36	06:23	19:35 (WEA 1)	07:14	08:05	08:00	08:38
	16:58	17:54	18:45	20:38	28 19:58 (WEA 1)	21:27	21:57	21:42	20:48	26 20:01 (WEA 1)	19:38	18:30	16:36	16:22
21	08:29	07:38	06:35	06:25	19:30 (WEA 1)	05:31	05:12	05:37	06:25	19:35 (WEA 1)	07:16	08:07	08:02	08:39
	16:59	17:56	18:46	20:40	28 19:58 (WEA 1)	21:28	21:57	21:41	20:46	27 20:02 (WEA 1)	19:36	18:28	16:35	16:22
22	08:28	07:36	06:33	06:23	19:30 (WEA 1)	05:30	05:12	05:38	06:27	19:34 (WEA 1)	07:17	08:08	08:03	08:39
	17:01	17:58	18:48	20:41	27 19:57 (WEA 1)	21:30	21:57	21:39	20:44	27 20:01 (WEA 1)	19:33	18:26	16:34	16:23
23	08:27	07:34	06:31	06:21	19:31 (WEA 1)	05:29	05:12	05:40	06:28	19:34 (WEA 1)	07:19	08:10	08:05	08:40
	17:03	18:00	18:50	20:43	26 19:57 (WEA 1)	21:31	21:57	21:38	20:42	28 20:02 (WEA 1)	19:31	18:24	16:33	16:23
24	08:26	07:32	06:28	06:19	19:31 (WEA 1)	05:28	05:13	05:41	06:30	19:34 (WEA 1)	07:21	08:12	08:07	08:40
	17:05	18:02	18:51	20:45	25 19:56 (WEA 1)	21:33	21:57	21:37	20:40	28 20:02 (WEA 1)	19:29	18:22	16:31	16:24
25	08:24	07:29	06:26	06:17	19:32 (WEA 1)	05:26	05:13	05:42	06:31	19:34 (WEA 1)	07:22	07:14	08:08	08:41
	17:06	18:04	18:53	20:46	23 19:55 (WEA 1)	21:34	21:57	21:35	20:38	27 20:01 (WEA 1)	19:26	17:20	16:30	16:25
26	08:23	07:27	06:24	06:15	19:32 (WEA 1)	05:25	05:13	05:44	06:33	19:34 (WEA 1)	07:24	07:16	08:10	08:41
	17:08	18:05	18:55	20:48	22 19:54 (WEA 1)	21:35	21:57	21:34	20:36	27 20:01 (WEA 1)	19:24	17:18	16:29	16:25
27	08:22	07:25	06:21	06:13	19:33 (WEA 1)	05:24	05:14	05:45	06:35	19:34 (WEA 1)	07:26	07:17	08:12	08:41
	17:10	18:07	18:57	20:50	19 19:52 (WEA 1)	21:37	21:57	21:32	20:33	25 19:59 (WEA 1)	19:22	17:16	16:29	16:26
28	08:20	07:23	06:19	06:11	19:35 (WEA 1)	05:23	05:14	05:47	06:36	19:35 (WEA 1)	07:27	07:19	08:13	08:41
	17:12	18:09	18:58	20:51	16 19:51 (WEA 1)	21:38	21:57	21:31	20:31	24 19:59 (WEA 1)	19:19	17:14	16:28	16:27
29	08:19	07:17	06:09	06:00	19:36 (WEA 1)	05:22	05:15	05:48	06:38	19:35 (WEA 1)	07:29	07:21	08:15	08:41
	17:13	07:20	06:13	06:05	12 19:48 (WEA 1)	21:39	21:57	21:29	20:29	22 19:57 (WEA 1)	19:17	17:12	16:27	16:28
30	08:18	07:14	06:07	06:00	19:41 (WEA 1)	05:21	05:15	05:50	06:40	19:36 (WEA 1)	07:31	07:23	08:16	08:42
	17:15	07:22	06:15	06:08	3 19:44 (WEA 1)	21:40	21:57	21:28	20:27	20 19:56 (WEA 1)	19:15	17:10	16:26	16:29
31	08:16	07:12	06:05	06:00	05:20			05:51	06:41	19:38 (WEA 1)		07:25	08:18	08:42
	17:17	07:20	06:13	06:06	21:41			21:26	20:24	16 19:54 (WEA 1)		17:08	16:20	16:30
Sonnenscheinstunden	258	277	367	416	431	486	500	503	454	424	381	331	266	243
astr.max.mögl.Beschattung											12			

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang (WEA mit erstem Schatten)	Zeitpunkt (SS:MM) Schattende (WEA mit letztem Schatten)
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Projekt:

WP Luentener Mark

Lizenziertes Anwender:

WWK Partnerschaft für Umweltplanung

Molkenstraße 5

DE-48231 Warendorf

02581 93 660

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Berechnet:

07.12.2023 09:56/4.0.424

SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 41-NW - IP 41-NW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung

Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	May	June	July	August	September	October	November	December				
1	08:42	08:15	07:21	07:10	06:05	19:35 (WEA 1)	05:19	05:16	05:53	06:43	07:32	07:26	08:18			
	16:31	17:19	18:11	20:05	20:57	20:00 (WEA 1)	21:43	21:57	21:25	20:22	19:12	17:06	16:25			
2	08:42	08:13	07:19	07:08	06:03	19:35 (WEA 1)	05:18	05:17	05:54	06:45	07:34	07:28	08:19			
	16:32	17:21	18:13	20:07	20:58	21:59 (WEA 1)	21:44	21:56	21:23	20:20	19:10	17:04	16:25			
3	08:41	08:11	07:16	07:05	06:01	19:37 (WEA 1)	05:18	05:17	05:56	06:46	07:36	07:30	08:20			
	16:33	17:23	18:15	20:09	21:00	19:58 (WEA 1)	21:45	21:56	21:21	20:18	19:08	17:02	16:24			
4	08:41	08:10	07:14	07:03	05:59	19:38 (WEA 1)	05:17	05:18	05:57	06:48	07:37	07:32	08:22			
	16:34	17:25	18:16	20:10	21:02	19:57 (WEA 1)	21:46	21:56	21:20	20:15	19:06	17:00	16:23			
5	08:41	08:08	07:12	07:01	05:57	19:39 (WEA 1)	05:16	05:19	05:59	06:49	07:39	07:34	08:23			
	16:35	17:26	18:18	20:12	21:03	19:55 (WEA 1)	21:47	21:55	21:18	20:13	19:03	16:59	16:23			
6	08:41	08:06	07:10	06:58	05:55	19:42 (WEA 1)	05:15	05:20	06:01	19:55 (WEA 1)	06:51	07:41	07:35	08:24		
	16:37	17:28	18:20	20:14	21:05	19:52 (WEA 1)	21:48	21:55	21:16	4	19:59 (WEA 1)	20:11	19:01	16:57	16:22	
7	08:40	08:05	07:08	06:56	05:54		05:15	05:21	06:02	19:51 (WEA 1)	06:53	07:42	07:37	08:26		
	16:38	17:30	18:22	20:16	21:07		21:49	21:54	21:14	12	20:03 (WEA 1)	20:09	18:59	16:55	16:22	
8	08:40	08:03	07:05	06:54	05:52		05:14	05:22	06:04	19:48 (WEA 1)	06:54	07:44	07:39	08:27		
	16:39	17:32	18:24	20:17	21:08		21:50	21:53	21:12	17	20:05 (WEA 1)	20:06	18:56	16:54	16:22	
9	08:39	08:01	07:03	06:52	05:50		05:14	05:23	06:05	19:47 (WEA 1)	06:56	07:46	07:41	08:28		
	16:41	17:34	18:25	20:19	21:10		21:51	21:53	21:10	20	20:07 (WEA 1)	20:04	18:54	16:52	16:21	
10	08:39	07:59	07:01	06:49	05:48		05:13	05:24	06:07	19:45 (WEA 1)	06:58	07:47	07:43	08:29		
	16:42	17:36	18:27	20:21	21:11		21:51	21:52	21:09	22	20:07 (WEA 1)	20:02	18:52	16:50	16:21	
11	08:38	07:57	06:58	06:47	05:47		05:13	05:25	06:09	19:45 (WEA 1)	06:59	07:49	07:44	08:30		
	16:43	17:38	18:29	20:22	21:13		21:52	21:51	21:07	24	20:09 (WEA 1)	19:59	18:50	16:49	16:21	
12	08:37	07:56	06:56	06:45	05:45		05:13	05:26	06:10	19:43 (WEA 1)	07:01	07:51	07:46	08:31		
	16:45	17:40	18:31	20:24	21:15		21:53	21:50	21:05	26	20:09 (WEA 1)	19:57	18:47	16:47	16:21	
13	08:37	07:54	06:54	06:43	05:43		05:12	05:27	06:12	19:43 (WEA 1)	07:03	07:53	07:48	08:32		
	16:46	17:41	18:32	20:26	21:16		21:53	21:49	21:03	27	20:10 (WEA 1)	19:55	18:45	16:46	16:21	
14	08:36	07:52	06:52	06:40	05:42		05:12	05:28	06:13	19:41 (WEA 1)	07:04	07:54	07:50	08:33		
	16:48	17:43	18:34	20:28	21:18		21:54	21:48	21:01	28	20:09 (WEA 1)	19:52	18:43	16:44	16:21	
15	08:35	07:50	06:49	06:38	05:40	19:45 (WEA 1)	05:12	05:29	06:15	19:41 (WEA 1)	07:06	07:56	07:51	08:34		
	16:49	17:45	18:36	20:29	11	19:56 (WEA 1)	21:19	21:55	21:47	20:59	29	20:10 (WEA 1)	19:50	18:41	16:43	16:21
16	08:34	07:48	06:47	06:36	05:39	19:42 (WEA 1)	05:12	05:30	06:17	19:40 (WEA 1)	07:07	07:58	07:53	08:35		
	16:51	17:47	18:38	20:31	17	19:59 (WEA 1)	21:21	21:55	21:46	20:57	30	20:10 (WEA 1)	19:48	18:39	16:41	16:21
17	08:33	07:46	06:45	06:34	05:37	19:40 (WEA 1)	05:12	05:32	06:18	19:40 (WEA 1)	07:09	08:00	07:55	08:36		
	16:53	17:49	18:39	20:33	20	20:00 (WEA 1)	21:22	21:56	21:45	20:55	30	20:10 (WEA 1)	19:45	18:36	16:40	16:21
18	08:32	07:44	06:42	06:32	05:36	19:38 (WEA 1)	05:12	05:33	06:20	19:39 (WEA 1)	07:11	08:01	07:57	08:37		
	16:54	17:51	18:41	20:34	23	20:01 (WEA 1)	21:24	21:56	21:44	20:53	30	20:09 (WEA 1)	19:43	18:34	16:39	16:21
19	08:31	07:42	06:40	06:29	05:34	19:37 (WEA 1)	05:12	05:34	06:22	19:40 (WEA 1)	07:12	08:03	07:58	08:37		
	16:56	17:53	18:43	20:36	25	20:02 (WEA 1)	21:25	21:56	21:43	20:51	29	20:09 (WEA 1)	19:41	18:32	16:37	16:22
20	08:30	07:40	06:38	06:27	05:33	19:36 (WEA 1)	05:12	05:36	06:23	19:39 (WEA 1)	07:14	08:05	08:00	08:38		
	16:58	17:54	18:45	20:38	27	20:03 (WEA 1)	21:27	21:57	21:42	20:48	30	20:09 (WEA 1)	19:38	18:30	16:36	16:22
21	08:29	07:38	06:35	06:25	05:31	19:36 (WEA 1)	05:12	05:37	06:25	19:40 (WEA 1)	07:16	08:07	08:02	08:39		
	16:59	17:56	18:46	20:40	27	20:03 (WEA 1)	21:28	21:57	21:41	20:46	28	20:08 (WEA 1)	19:36	18:28	16:35	16:22
22	08:28	07:36	06:33	06:23	05:30	19:35 (WEA 1)	05:12	05:38	06:27	19:39 (WEA 1)	07:17	08:08	08:03	08:39		
	17:01	17:58	18:48	20:41	29	20:04 (WEA 1)	21:30	21:57	21:39	20:44	28	20:07 (WEA 1)	19:33	18:26	16:34	16:23
23	08:27	07:34	06:31	06:21	05:29	19:34 (WEA 1)	05:12	05:40	06:28	19:40 (WEA 1)	07:19	08:10	08:05	08:40		
	17:03	18:00	18:50	20:43	30	20:04 (WEA 1)	21:31	21:57	21:38	20:42	27	20:07 (WEA 1)	19:31	18:24	16:33	16:23
24	08:26	07:32	06:28	06:19	05:28	19:34 (WEA 1)	05:13	05:41	06:30	19:41 (WEA 1)	07:21	08:12	08:07	08:40		
	17:05	18:02	18:52	20:45	30	20:04 (WEA 1)	21:33	21:57	21:37	20:40	25	20:06 (WEA 1)	19:29	18:22	16:31	16:24
25	08:24	07:29	06:26	06:17	05:26	19:34 (WEA 1)	05:13	05:42	06:31	19:41 (WEA 1)	07:22	07:14	08:08	08:41		
	17:06	18:04	18:53	20:46	30	20:04 (WEA 1)	21:34	21:57	21:35	20:38	23	20:04 (WEA 1)	19:26	17:20	16:30	16:25
26	08:23	07:27	06:24	06:15	05:25	19:34 (WEA 1)	05:13	05:44	06:33	19:43 (WEA 1)	07:24	07:16	08:10	08:41		
	17:08	18:05	18:55	20:48	29	20:03 (WEA 1)	21:35	21:57	21:34	20:36	20	20:03 (WEA 1)	19:24	17:18	16:29	16:25
27	08:22	07:25	06:21	06:13	05:24	19:34 (WEA 1)	05:14	05:45	06:35	19:44 (WEA 1)	07:26	07:17	08:12	08:41		
	17:10	18:07	18:57	20:50	29	20:03 (WEA 1)	21:37	21:57	21:32	20:33	16	20:00 (WEA 1)	19:22	17:16	16:29	16:26
28	08:20	07:23	06:19	06:11	05:23	19:34 (WEA 1)	05:14	05:47	06:36	19:47 (WEA 1)	07:27	07:19	08:13	08:41		
	17:12	18:09	18:58	20:51	28	20:02 (WEA 1)	21:38	21:57	21:31	20:31	10	19:57 (WEA 1)	19:19	17:14	16:28	16:27
29	08:19	07:17	06:09	06:02	05:22	19:34 (WEA 1)	05:15	05:48	06:38		07:29	07:21	08:15	08:41		
	17:13	18:10	19:00	20:53	28	20:02 (WEA 1)	21:39	21:57	21:29	20:29	19:17	17:12	16:27	16:28		
30	08:18	07:15	06:07	06:00	05:21	19:34 (WEA 1)	05:15	05:50	06:40		07:31	07:23	08:16	08:42		
	17:15	18:12	19:02	20:55	27	20:01 (WEA 1)	21:40	21:57	21:28	20:27	19:15	17:10	16:26	16:29		
31	08:16	07:12	06:04	06:00	05:20		05:15	05:51	06:41			07:25		08:42		
	17:17	18:14	19:04	20:57	21:41		21:26	21:26	20:24			17:08		16:30		
Sonnenscheinstunden	258	277	367	416	410	486	500	503	454	535	381	331	266	243		
astr.max.mögl.Beschattung					115											

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang (WEA mit erstem Schatten)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schatteneende (WEA mit letztem Schatten)
	Sonnenuntergang (SS:MM)			

Projekt:

WP Luentener Mark

Lizenzierter Anwender:

WWK Partnerschaft für Umweltplanung

Molkenstraße 5

DE-48231 Warendorf

02581 93 660

Reiner Winterkamp / r.winterkamp@wwk-umweltplanung.de

Berechnet:

07.12.2023 09:56/4.0.424

SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 46-N - IP 46-N
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung

Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember				
1	08:42	08:15	07:21	07:10	06:05	05:19	20:43 (WEA 1)	05:16	20:44 (WEA 1)	05:53	06:43	07:32	07:26	08:18		
	16:31	17:19	18:11	20:05	20:57	21:43	19	21:02 (WEA 1)	21:57	29	21:13 (WEA 1)	21:25	20:22	19:12	17:06	16:25
2	08:42	08:13	07:19	07:08	06:03	05:18	20:42 (WEA 1)	05:17	20:45 (WEA 1)	05:54	06:45	07:34	07:28	08:19		
	16:32	17:21	18:13	20:07	20:58	21:44	20	21:02 (WEA 1)	21:56	28	21:13 (WEA 1)	21:23	20:20	19:10	17:04	16:25
3	08:41	08:11	07:16	07:05	06:01	05:18	20:43 (WEA 1)	05:18	20:45 (WEA 1)	05:56	06:46	07:36	07:30	08:20		
	16:33	17:23	18:15	20:09	21:00	21:45	21	21:04 (WEA 1)	21:56	27	21:12 (WEA 1)	21:21	20:18	19:08	17:02	16:24
4	08:41	08:10	07:14	07:03	05:59	05:17	20:42 (WEA 1)	05:18	20:46 (WEA 1)	05:58	06:48	07:37	07:32	08:22		
	16:34	17:25	18:16	20:10	21:02	21:46	22	21:04 (WEA 1)	21:56	26	21:12 (WEA 1)	21:20	20:15	19:06	17:01	16:23
5	08:41	08:08	07:12	07:01	05:57	05:16	20:41 (WEA 1)	05:19	20:46 (WEA 1)	05:59	06:49	07:39	07:34	08:23		
	16:35	17:26	18:18	20:12	21:03	21:47	24	21:05 (WEA 1)	21:55	26	21:12 (WEA 1)	21:18	20:13	19:03	16:59	16:23
6	08:41	08:06	07:10	06:58	05:55	05:15	20:41 (WEA 1)	05:20	20:47 (WEA 1)	06:01	06:51	07:41	07:35	08:24		
	16:37	17:28	18:20	20:14	21:05	21:48	25	21:06 (WEA 1)	21:55	25	21:12 (WEA 1)	21:16	20:11	19:01	16:57	16:23
7	08:40	08:05	07:08	06:56	05:54	05:15	20:40 (WEA 1)	05:21	20:48 (WEA 1)	06:02	06:53	07:42	07:37	08:26		
	16:38	17:30	18:22	20:16	21:07	21:49	26	21:06 (WEA 1)	21:54	24	21:12 (WEA 1)	21:14	20:09	18:59	16:55	16:22
8	08:40	08:03	07:05	06:54	05:52	05:14	20:41 (WEA 1)	05:22	20:48 (WEA 1)	06:04	06:54	07:44	07:39	08:27		
	16:39	17:32	18:24	20:17	21:08	21:50	26	21:07 (WEA 1)	21:53	23	21:11 (WEA 1)	21:12	20:06	18:56	16:54	16:22
9	08:39	08:01	07:03	06:52	05:50	05:14	20:41 (WEA 1)	05:23	20:49 (WEA 1)	06:05	06:56	07:46	07:41	08:28		
	16:41	17:34	18:25	20:19	21:10	21:51	27	21:08 (WEA 1)	21:53	22	21:11 (WEA 1)	21:10	20:04	18:54	16:52	16:21
10	08:39	07:59	07:01	06:49	05:48	05:13	20:40 (WEA 1)	05:24	20:49 (WEA 1)	06:07	06:58	07:47	07:43	08:29		
	16:42	17:36	18:27	20:21	21:11	21:51	28	21:08 (WEA 1)	21:52	21	21:10 (WEA 1)	21:09	20:02	18:52	16:50	16:21
11	08:38	07:57	06:58	06:47	05:47	05:13	20:40 (WEA 1)	05:25	20:50 (WEA 1)	06:09	06:59	07:49	07:44	08:30		
	16:43	17:38	18:29	20:22	21:13	21:52	28	21:08 (WEA 1)	21:51	19	21:09 (WEA 1)	21:07	19:59	18:50	16:49	16:21
12	08:37	07:56	06:56	06:45	05:45	05:13	20:41 (WEA 1)	05:26	20:52 (WEA 1)	06:10	07:01	07:51	07:46	08:31		
	16:45	17:40	18:31	20:24	21:15	21:53	28	21:09 (WEA 1)	21:50	17	21:09 (WEA 1)	21:05	19:57	18:47	16:47	16:21
13	08:37	07:54	06:54	06:43	05:43	05:12	20:41 (WEA 1)	05:27	20:53 (WEA 1)	06:12	07:03	07:53	07:48	08:32		
	16:46	17:41	18:32	20:26	21:16	21:53	29	21:10 (WEA 1)	21:49	15	21:08 (WEA 1)	21:03	19:55	18:45	16:46	16:21
14	08:36	07:52	06:52	06:40	05:42	05:12	20:40 (WEA 1)	05:28	20:55 (WEA 1)	06:13	07:04	07:54	07:50	08:33		
	16:48	17:43	18:34	20:28	21:18	21:54	29	21:09 (WEA 1)	21:48	12	21:07 (WEA 1)	21:01	19:52	18:43	16:44	16:21
15	08:35	07:50	06:49	06:38	05:40	05:12	20:40 (WEA 1)	05:29	20:58 (WEA 1)	06:15	07:06	07:56	07:51	08:34		
	16:50	17:45	18:36	20:29	21:19	21:55	30	21:10 (WEA 1)	21:47	7	21:05 (WEA 1)	20:59	19:50	18:41	16:43	16:21
16	08:34	07:48	06:47	06:36	05:39	05:12	20:40 (WEA 1)	05:30	20:57 (WEA 1)	06:17	07:07	07:58	07:53	08:35		
	16:51	17:47	18:38	20:31	21:21	21:55	30	21:10 (WEA 1)	21:46	20:57	19:48	18:39	16:41	16:21		
17	08:33	07:46	06:45	06:34	05:37	05:12	20:40 (WEA 1)	05:32	20:57 (WEA 1)	06:18	07:09	08:00	07:55	08:36		
	16:53	17:49	18:39	20:33	21:22	21:56	30	21:10 (WEA 1)	21:45	20:55	19:45	18:36	16:40	16:21		
18	08:32	07:44	06:42	06:32	05:36	05:12	20:41 (WEA 1)	05:33	20:56 (WEA 1)	06:20	07:11	08:01	07:57	08:37		
	16:54	17:51	18:41	20:34	21:24	21:56	29	21:10 (WEA 1)	21:44	20:53	19:43	18:34	16:39	16:21		
19	08:31	07:42	06:40	06:29	05:34	05:12	20:41 (WEA 1)	05:34	20:56 (WEA 1)	06:22	07:12	08:03	07:58	08:37		
	16:56	17:53	18:43	20:36	21:25	21:56	30	21:11 (WEA 1)	21:43	20:51	19:41	18:32	16:37	16:22		
20	08:30	07:40	06:38	06:27	05:33	05:12	20:41 (WEA 1)	05:36	20:57 (WEA 1)	06:23	07:14	08:05	08:00	08:38		
	16:58	17:54	18:45	20:38	21:27	21:57	30	21:11 (WEA 1)	21:42	20:48	19:38	18:30	16:36	16:22		
21	08:29	07:38	06:35	06:25	05:31	05:12	20:42 (WEA 1)	05:37	20:56 (WEA 1)	06:25	07:16	08:07	08:02	08:39		
	16:59	17:56	18:46	20:40	21:28	21:57	30	21:12 (WEA 1)	21:41	20:46	19:36	18:28	16:35	16:23		
22	08:28	07:36	06:33	06:23	05:30	05:12	20:42 (WEA 1)	05:38	20:55 (WEA 1)	06:27	07:17	08:08	08:03	08:39		
	17:01	17:58	18:48	20:41	21:30	21:57	30	21:12 (WEA 1)	21:39	20:44	19:33	18:26	16:34	16:23		
23	08:27	07:34	06:31	06:21	05:29	05:12	20:42 (WEA 1)	05:40	20:54 (WEA 1)	06:28	07:19	08:10	08:05	08:40		
	17:03	18:00	18:50	20:43	21:31	21:57	30	21:12 (WEA 1)	21:38	20:42	19:31	18:24	16:33	16:24		
24	08:26	07:32	06:28	06:19	05:28	05:13	20:43 (WEA 1)	05:41	20:53 (WEA 1)	06:30	07:21	08:12	08:07	08:40		
	17:05	18:02	18:52	20:45	21:33	21:57	30	21:13 (WEA 1)	21:37	20:40	19:29	18:22	16:31	16:24		
25	08:24	07:29	06:26	06:17	05:26	05:13	20:42 (WEA 1)	05:42	20:54 (WEA 1)	06:31	07:22	07:14	08:08	08:41		
	17:06	18:04	18:53	20:46	21:34	21:57	30	21:12 (WEA 1)	21:35	20:38	19:26	17:20	16:30	16:25		
26	08:23	07:27	06:24	06:15	05:25	05:13	20:42 (WEA 1)	05:44	20:55 (WEA 1)	06:33	07:24	07:16	08:10	08:41		
	17:08	18:06	18:55	20:48	21:35	21:57	30	21:12 (WEA 1)	21:34	20:36	19:24	17:18	16:29	16:25		
27	08:22	07:25	06:21	06:13	05:24	05:14	20:43 (WEA 1)	05:45	20:56 (WEA 1)	06:35	07:26	07:17	08:12	08:41		
	17:10	18:07	18:57	20:50	21:37	21:57	30	21:13 (WEA 1)	21:32	20:33	19:22	17:16	16:29	16:26		
28	08:20	07:23	06:19	06:11	05:23	05:14	20:43 (WEA 1)	05:47	20:57 (WEA 1)	06:36	07:27	07:19	08:13	08:41		
	17:12	18:09	18:58	20:51	21:38	21:57	29	21:12 (WEA 1)	21:31	20:31	19:19	17:14	16:28	16:27		
29	08:19	07:17	06:09	05:22	20:47 (WEA 1)	05:15	20:44 (WEA 1)	05:48	20:56 (WEA 1)	06:38	07:29	07:21	08:15	08:41		
	17:14	20:00	20:53	21:39	10	20:57 (WEA 1)	21:57	29	21:13 (WEA 1)	21:29	20:29	19:17	17:12	16:27	16:28	
30	08:18	07:15	06:07	05:21	20:45 (WEA 1)	05:15	20:44 (WEA 1)	05:50	20:57 (WEA 1)	06:40	07:31	07:23	08:16	08:42		
	17:15	20:02	20:55	21:40	13	20:58 (WEA 1)	21:57	28	21:12 (WEA 1)	21:28	20:27	19:15	17:10	16:26	16:29	
31	08:16	07:12	06:05	05:20	20:45 (WEA 1)	05:15	20:45 (WEA 1)	05:51	20:58 (WEA 1)	06:41	07:32	07:25	08:18	08:42		
	17:17	20:04	21:41	16	21:01 (WEA 1)	05:15	21:26	20:24	20:24	06:41	07:32	07:25	08:18	08:42		
Sonnenscheinstunden	258	277	367	416	486	500	503	454	381	331	266	243				
astr.max.mögl.Beschattung					39	827	321									

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang (WEA mit erstem Schatten)	Zeitpunkt (SS:MM) Schatteneende (WEA mit letztem Schatten)
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Projekt:

WP Luentener Mark

Lizenzierter Anwender:

WWK Partnerschaft für Umweltplanung

Molkenstraße 5

DE-48231 Warendorf

02581 93 660

Reiner Winterkamp / r.winterkamp@wwk-umweltplanung.de

Berechnet:

07.12.2023 09:56/4.0.424

SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 46-W - IP 46-W
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung

Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember				
1	08:42	08:15	07:21	07:10	06:05	05:19	20:46 (WEA 1)	05:16	20:46 (WEA 1)	05:53	06:43	07:32	07:26	08:18		
	16:31	17:19	18:11	20:05	20:57	21:43	15	21:01 (WEA 1)	21:57	27	21:13 (WEA 1)	21:25	20:22	19:12	17:06	16:25
2	08:42	08:13	07:19	07:08	06:03	05:18	20:45 (WEA 1)	05:17	20:47 (WEA 1)	05:54	06:45	07:34	07:28	08:19		
	16:32	17:21	18:13	20:07	20:58	21:44	17	21:02 (WEA 1)	21:56	26	21:13 (WEA 1)	21:23	20:20	19:10	17:04	16:25
3	08:41	08:11	07:16	07:05	06:01	05:18	20:45 (WEA 1)	05:18	20:47 (WEA 1)	05:56	06:46	07:36	07:30	08:20		
	16:33	17:23	18:15	20:09	21:00	21:45	19	21:04 (WEA 1)	21:56	26	21:13 (WEA 1)	21:21	20:18	19:08	17:02	16:24
4	08:41	08:10	07:14	07:03	05:59	05:17	20:44 (WEA 1)	05:18	20:48 (WEA 1)	05:58	06:48	07:37	07:32	08:22		
	16:34	17:25	18:16	20:10	21:02	21:46	20	21:04 (WEA 1)	21:56	25	21:13 (WEA 1)	21:20	20:15	19:06	17:01	16:23
5	08:41	08:08	07:12	07:01	05:57	05:16	20:43 (WEA 1)	05:19	20:48 (WEA 1)	05:59	06:49	07:39	07:34	08:23		
	16:35	17:26	18:18	20:12	21:03	21:47	22	21:05 (WEA 1)	21:55	25	21:13 (WEA 1)	21:18	20:13	19:03	16:59	16:23
6	08:41	08:06	07:10	06:58	05:55	05:15	20:43 (WEA 1)	05:20	20:49 (WEA 1)	06:01	06:51	07:41	07:35	08:24		
	16:37	17:28	18:20	20:14	21:05	21:48	23	21:06 (WEA 1)	21:55	24	21:13 (WEA 1)	21:16	20:11	19:01	16:57	16:23
7	08:40	08:05	07:08	06:56	05:54	05:15	20:42 (WEA 1)	05:21	20:50 (WEA 1)	06:02	06:53	07:42	07:37	08:26		
	16:38	17:30	18:22	20:16	21:07	21:49	24	21:06 (WEA 1)	21:54	22	21:12 (WEA 1)	21:14	20:09	18:59	16:55	16:22
8	08:40	08:03	07:05	06:54	05:52	05:14	20:43 (WEA 1)	05:22	20:50 (WEA 1)	06:04	06:54	07:44	07:39	08:27		
	16:39	17:32	18:24	20:17	21:08	21:50	24	21:07 (WEA 1)	21:53	21	21:11 (WEA 1)	21:12	20:06	18:56	16:54	16:22
9	08:39	08:01	07:03	06:52	05:50	05:14	20:43 (WEA 1)	05:23	20:51 (WEA 1)	06:05	06:56	07:46	07:41	08:28		
	16:41	17:34	18:25	20:19	21:10	21:51	25	21:08 (WEA 1)	21:53	19	21:10 (WEA 1)	21:10	20:04	18:54	16:52	16:21
10	08:39	07:59	07:01	06:49	05:48	05:13	20:42 (WEA 1)	05:24	20:52 (WEA 1)	06:07	06:58	07:47	07:43	08:29		
	16:42	17:36	18:27	20:21	21:11	21:51	26	21:08 (WEA 1)	21:52	18	21:10 (WEA 1)	21:09	20:02	18:52	16:50	16:21
11	08:38	07:57	06:58	06:47	05:47	05:13	20:42 (WEA 1)	05:25	20:53 (WEA 1)	06:09	06:59	07:49	07:44	08:30		
	16:43	17:38	18:29	20:22	21:13	21:52	27	21:09 (WEA 1)	21:51	16	21:09 (WEA 1)	21:07	19:59	18:50	16:49	16:21
12	08:37	07:56	06:56	06:45	05:45	05:13	20:42 (WEA 1)	05:26	20:55 (WEA 1)	06:10	07:01	07:51	07:46	08:31		
	16:45	17:40	18:31	20:24	21:15	21:53	27	21:09 (WEA 1)	21:50	13	21:08 (WEA 1)	21:05	19:57	18:47	16:47	16:21
13	08:37	07:54	06:54	06:43	05:43	05:12	20:43 (WEA 1)	05:27	20:57 (WEA 1)	06:12	07:03	07:53	07:48	08:32		
	16:46	17:41	18:32	20:26	21:16	21:53	27	21:10 (WEA 1)	21:49	9	21:06 (WEA 1)	21:03	19:55	18:45	16:46	16:21
14	08:36	07:52	06:52	06:40	05:42	05:12	20:42 (WEA 1)	05:28	21:02 (WEA 1)	06:14	07:04	07:54	07:50	08:33		
	16:48	17:43	18:34	20:28	21:18	21:54	28	21:10 (WEA 1)	21:48	1	21:03 (WEA 1)	21:01	19:52	18:43	16:44	16:21
15	08:35	07:50	06:49	06:38	05:40	05:12	20:42 (WEA 1)	05:29	20:55 (WEA 1)	06:15	07:06	07:56	07:51	08:34		
	16:50	17:45	18:36	20:29	21:19	21:55	28	21:10 (WEA 1)	21:47	20:59	19:50	18:41	16:43	16:21		
16	08:34	07:48	06:47	06:36	05:39	05:12	20:42 (WEA 1)	05:30	20:56 (WEA 1)	06:17	07:07	07:58	07:53	08:35		
	16:51	17:47	18:38	20:31	21:21	21:55	28	21:10 (WEA 1)	21:46	20:57	19:48	18:39	16:41	16:21		
17	08:33	07:46	06:45	06:34	05:37	05:12	20:42 (WEA 1)	05:32	20:57 (WEA 1)	06:18	07:09	08:00	07:55	08:36		
	16:53	17:49	18:39	20:33	21:22	21:56	29	21:11 (WEA 1)	21:45	20:55	19:45	18:36	16:40	16:21		
18	08:32	07:44	06:42	06:32	05:36	05:12	20:42 (WEA 1)	05:33	20:58 (WEA 1)	06:20	07:11	08:01	07:57	08:37		
	16:54	17:51	18:41	20:34	21:24	21:56	29	21:11 (WEA 1)	21:44	20:53	19:43	18:34	16:39	16:21		
19	08:31	07:42	06:40	06:29	05:34	05:12	20:42 (WEA 1)	05:34	20:59 (WEA 1)	06:22	07:12	08:03	07:58	08:37		
	16:56	17:53	18:43	20:36	21:25	21:56	29	21:11 (WEA 1)	21:43	20:51	19:41	18:32	16:37	16:22		
20	08:30	07:40	06:38	06:27	05:33	05:12	20:42 (WEA 1)	05:36	20:59 (WEA 1)	06:23	07:14	08:05	08:00	08:38		
	16:58	17:54	18:45	20:38	21:27	21:57	29	21:11 (WEA 1)	21:42	20:48	19:38	18:30	16:36	16:22		
21	08:29	07:38	06:35	06:25	05:31	05:12	20:43 (WEA 1)	05:37	20:59 (WEA 1)	06:25	07:16	08:07	08:02	08:39		
	16:59	17:56	18:46	20:40	21:28	21:57	29	21:12 (WEA 1)	21:41	20:46	19:36	18:28	16:35	16:23		
22	08:28	07:36	06:33	06:23	05:30	05:12	20:43 (WEA 1)	05:38	20:59 (WEA 1)	06:27	07:17	08:08	08:03	08:39		
	17:01	17:58	18:48	20:41	21:30	21:57	29	21:12 (WEA 1)	21:39	20:44	19:33	18:26	16:34	16:23		
23	08:27	07:34	06:31	06:21	05:29	05:12	20:43 (WEA 1)	05:40	20:59 (WEA 1)	06:28	07:19	08:10	08:05	08:40		
	17:03	18:00	18:50	20:43	21:31	21:57	29	21:12 (WEA 1)	21:38	20:42	19:31	18:24	16:33	16:24		
24	08:26	07:32	06:28	06:19	05:28	05:13	20:44 (WEA 1)	05:41	20:59 (WEA 1)	06:30	07:21	08:12	08:07	08:40		
	17:05	18:02	18:52	20:45	21:33	21:57	29	21:13 (WEA 1)	21:37	20:40	19:29	18:22	16:31	16:24		
25	08:25	07:29	06:26	06:17	05:26	05:13	20:44 (WEA 1)	05:42	20:59 (WEA 1)	06:31	07:22	07:14	08:08	08:41		
	17:06	18:04	18:53	20:46	21:34	21:57	29	21:13 (WEA 1)	21:35	20:38	19:26	17:20	16:30	16:25		
26	08:23	07:27	06:24	06:15	05:25	05:13	20:44 (WEA 1)	05:44	20:59 (WEA 1)	06:33	07:24	07:16	08:10	08:41		
	17:08	18:06	18:55	20:48	21:35	21:57	29	21:13 (WEA 1)	21:34	20:36	19:24	17:18	16:29	16:25		
27	08:22	07:25	06:21	06:13	05:24	05:14	20:45 (WEA 1)	05:45	20:59 (WEA 1)	06:35	07:26	07:17	08:12	08:41		
	17:10	18:07	18:57	20:50	21:37	21:57	28	21:13 (WEA 1)	21:32	20:33	19:22	17:16	16:29	16:26		
28	08:20	07:23	06:19	06:11	05:23	05:14	20:45 (WEA 1)	05:47	20:59 (WEA 1)	06:36	07:27	07:19	08:13	08:41		
	17:12	18:09	18:58	20:51	21:38	21:57	28	21:13 (WEA 1)	21:31	20:31	19:19	17:14	16:28	16:27		
29	08:19	07:17	06:09	05:22	05:15	05:15	20:46 (WEA 1)	05:48	20:59 (WEA 1)	06:38	07:29	07:21	08:15	08:41		
	17:14	18:11	19:00	20:53	21:39	21:57	27	21:13 (WEA 1)	21:29	20:29	19:17	17:12	16:27	16:28		
30	08:18	07:15	06:07	05:21	05:15	05:15	20:45 (WEA 1)	05:50	20:59 (WEA 1)	06:40	07:31	07:23	08:16	08:42		
	17:15	18:12	19:01	20:55	21:40	21:57	28	21:13 (WEA 1)	21:28	20:27	19:15	17:10	16:26	16:29		
31	08:16	07:12	06:04	05:20	05:14	05:14	20:46 (WEA 1)	05:51	20:59 (WEA 1)	06:41	07:32	07:25	08:18	08:42		
	17:17	18:14	19:03	20:41	21:26	21:41	12	21:00 (WEA 1)	21:26	20:24	19:12	17:08	16:23	16:30		
Sonnenscheinstunden	258	277	367	416	486	500	500	503	454	381	331	266	243			
astr.max.mögl.Beschattung					19	781	781	272								

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM)	Schattenanfang (WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenende (WEA mit letztem Schatten)

SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 47-NW - IP 47-NW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung

Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April		Mai	Juni
1	08:42 16:31	08:15 17:19	07:21 18:11	07:10 20:05		06:05 20:57	19:58 (WEA 1) 21:43
2	08:42 16:32	08:13 17:21	07:19 18:13	07:08 20:07		06:03 20:58	19:57 (WEA 1) 21:44
3	08:41 16:33	08:11 17:23	07:16 18:15	07:05 20:09		06:01 21:00	19:57 (WEA 1) 21:45
4	08:41 16:34	08:10 17:25	07:14 18:16	07:03 20:10		05:59 21:02	19:57 (WEA 1) 21:46
5	08:41 16:35	08:08 17:26	07:12 18:18	07:01 20:12		05:57 21:03	19:56 (WEA 1) 21:47
6	08:41 16:37	08:06 17:28	07:10 18:20	06:58 20:14		05:55 21:05	19:55 (WEA 1) 21:48
7	08:40 16:38	08:05 17:30	07:08 18:22	06:56 20:16		05:54 21:07	19:56 (WEA 1) 21:49
8	08:40 16:39	08:03 17:32	07:05 18:24	06:54 20:17		05:52 21:08	19:55 (WEA 1) 21:50
9	08:39 16:41	08:01 17:34	07:03 18:25	06:52 20:19		05:50 21:10	19:55 (WEA 1) 21:51
10	08:39 16:42	07:59 17:36	07:01 18:27	06:49 20:21		05:48 21:11	19:56 (WEA 1) 21:51
11	08:38 16:43	07:57 17:38	06:58 18:29	06:47 20:22		05:47 21:13	19:56 (WEA 1) 21:52
12	08:37 16:45	07:56 17:40	06:56 18:31	06:45 20:24		05:45 21:15	19:56 (WEA 1) 21:53
13	08:37 16:46	07:54 17:41	06:54 18:32	06:43 20:26		05:43 21:16	19:56 (WEA 1) 21:53
14	08:36 16:48	07:52 17:43	06:52 18:34	06:40 20:28		05:42 21:18	19:57 (WEA 1) 21:54
15	08:35 16:49	07:50 17:45	06:49 18:36	06:38 20:29		05:40 21:19	19:57 (WEA 1) 21:55
16	08:34 16:51	07:48 17:47	06:47 18:38	06:36 20:31		05:39 21:21	19:58 (WEA 1) 21:55
17	08:33 16:53	07:46 17:49	06:45 18:39	06:34 20:33		05:37 21:22	20:00 (WEA 1) 21:56
18	08:32 16:54	07:44 17:51	06:42 18:41	06:32 20:34		05:36 21:24	20:00 (WEA 1) 21:56
19	08:31 16:56	07:42 17:53	06:40 18:43	06:29 20:36		05:34 21:25	20:02 (WEA 1) 21:56
20	08:30 16:58	07:40 17:54	06:38 18:45	06:27 20:38		05:33 21:27	20:03 (WEA 1) 21:57
21	08:29 16:59	07:38 17:56	06:35 18:46	06:25 20:40		05:31 21:28	20:05 (WEA 1) 21:57
22	08:28 17:01	07:36 17:58	06:33 18:48	06:23 20:41		05:30 21:30	20:08 (WEA 1) 21:57
23	08:27 17:03	07:34 18:00	06:31 18:50	06:21 20:43		05:29 21:31	20:12 (WEA 1) 21:57
24	08:26 17:05	07:32 18:02	06:28 18:52	06:19 20:45		05:28 21:33	20:19 (WEA 1) 21:57
25	08:24 17:06	07:29 18:04	06:26 18:53	06:17 20:46		05:26 21:34	20:02 (WEA 1) 21:57
26	08:23 17:08	07:27 18:05	06:24 18:55	06:15 20:48		05:25 21:35	20:05 (WEA 1) 21:57
27	08:22 17:10	07:25 18:07	06:21 18:57	06:13 20:50	12	20:05 (WEA 1) 20:17 (WEA 1)	05:24 21:37
28	08:20 17:12	07:23 18:09	06:19 18:58	06:11 20:51	16	20:03 (WEA 1) 20:19 (WEA 1)	05:23 21:38
29	08:19 17:13		07:17 20:00	06:09 20:53	20	20:01 (WEA 1) 20:21 (WEA 1)	05:22 21:39
30	08:18 17:15		07:15 20:02	06:07 20:55	22	20:00 (WEA 1) 20:22 (WEA 1)	05:21 21:40
31	08:16 17:17		07:12 20:04			05:20 21:41	21:57
Sonnenscheinstunden	258	277	367	416		486	500
astr.max.mögl.Beschattung				70		516	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM)	Schattenanfang (WEA mit erstem Schatten)	Schattenende (WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 47-NW - IP 47-NW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinfallrichtung

Die Windenergieanlage/n ist/sind immer in Betrieb

	July	August	September	Oktober	November	Dezember	
1	05:16 21:57	05:53 21:25	20:07 (WEA 1)	06:43 20:22	07:32 19:12	07:26 17:06	08:18 16:25
2	05:17 21:56	05:54 21:23	20:06 (WEA 1)	06:45 20:20	07:34 19:10	07:28 17:04	08:19 16:25
3	05:17 21:56	05:56 21:21	20:06 (WEA 1)	06:46 20:18	07:36 19:08	07:30 17:02	08:20 16:24
4	05:18 21:56	05:57 21:20	20:05 (WEA 1)	06:48 20:15	07:37 19:06	07:32 17:00	08:22 16:23
5	05:19 21:55	05:59 21:18	20:06 (WEA 1)	06:49 20:13	07:39 19:03	07:34 16:59	08:23 16:23
6	05:20 21:55	06:01 21:16	20:05 (WEA 1)	06:51 20:11	07:41 19:01	07:35 16:57	08:24 16:22
7	05:21 21:54	06:02 21:14	20:06 (WEA 1)	06:53 20:09	07:42 18:59	07:37 16:55	08:26 16:22
8	05:22 21:53	06:04 21:12	20:05 (WEA 1)	06:54 20:06	07:44 18:56	07:39 16:54	08:27 16:22
9	05:23 21:53	06:05 21:10	20:06 (WEA 1)	06:56 20:04	07:46 18:54	07:41 16:52	08:28 16:21
10	05:24 21:52	06:07 21:09	20:06 (WEA 1)	06:58 20:02	07:47 18:52	07:43 16:50	08:29 16:21
11	05:25 21:51	06:09 21:07	20:07 (WEA 1)	06:59 19:59	07:49 18:50	07:44 16:49	08:30 16:21
12	05:26 21:50	06:10 21:05	20:07 (WEA 1)	07:01 19:57	07:51 18:47	07:46 16:47	08:31 16:21
13	05:27 21:49	06:12 21:03	20:08 (WEA 1)	07:03 19:55	07:53 18:45	07:48 16:46	08:32 16:21
14	05:28 21:48	06:13 21:01	20:09 (WEA 1)	07:04 19:52	07:54 18:43	07:50 16:44	08:33 16:21
15	05:29 21:47	06:15 20:59	20:11 (WEA 1)	07:06 19:50	07:56 18:41	07:51 16:43	08:34 16:21
16	05:30 21:46	06:17 20:57	20:13 (WEA 1)	07:07 19:48	07:58 18:39	07:53 16:41	08:35 16:21
17	05:32 21:45	06:18 20:55	20:23 (WEA 1)	07:09 19:45	08:00 18:36	07:55 16:40	08:36 16:21
18	05:33 21:44	06:20 20:53		07:11 19:43	08:01 18:34	07:57 16:39	08:37 16:21
19	05:34 21:43	06:22 20:51		07:12 19:41	08:03 18:32	07:58 16:37	08:37 16:22
20	05:36 21:42	06:23 20:48		07:14 19:38	08:05 18:30	08:00 16:36	08:38 16:22
21	05:37 21:41	06:25 20:46		07:16 19:36	08:07 18:28	08:02 16:35	08:39 16:22
22	05:38 21:39	20:16 (WEA 1) 20:24 (WEA 1)	06:27 20:44	07:17 19:33	08:08 18:26	08:03 16:34	08:39 16:23
23	05:40 21:38	12 20:14 (WEA 1) 20:26 (WEA 1)	06:28 20:42	07:19 19:31	08:10 18:24	08:05 16:33	08:40 16:23
24	05:41 21:37	15 20:13 (WEA 1) 20:28 (WEA 1)	06:30 20:40	07:21 19:29	08:12 18:22	08:07 16:31	08:40 16:24
25	05:42 21:35	18 20:11 (WEA 1) 20:29 (WEA 1)	06:31 20:38	07:22 19:26	07:14 17:20	08:08 16:30	08:41 16:25
26	05:44 21:34	20 20:10 (WEA 1) 20:30 (WEA 1)	06:33 20:36	07:24 19:24	07:16 17:18	08:10 16:29	08:41 16:25
27	05:45 21:32	21 20:10 (WEA 1) 20:31 (WEA 1)	06:35 20:33	07:26 19:22	07:17 17:16	08:12 16:29	08:41 16:26
28	05:47 21:31	23 20:09 (WEA 1) 20:32 (WEA 1)	06:36 20:31	07:27 19:19	07:19 17:14	08:13 16:28	08:41 16:27
29	05:48 21:29	25 20:07 (WEA 1) 20:32 (WEA 1)	06:38 20:29	07:29 19:17	07:21 17:12	08:15 16:27	08:41 16:28
30	05:50 21:28	26 20:07 (WEA 1) 20:33 (WEA 1)	06:40 20:27	07:31 19:15	07:23 17:10	08:16 16:26	08:42 16:29
31	05:51 21:26	26 20:07 (WEA 1) 20:33 (WEA 1)	06:41 20:24		07:25 17:08		08:42 16:30
Sonnenscheinstunden	503	454	381	331	266	243	
astr.max.mögl.Beschattung	194	396					

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 48-NW - IP 48-NW
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April		Mai	Juni
1	08:42 16:31	08:15 17:19	07:21 18:11	07:10 20:05		06:05 20:57	20:01 (WEA 1) 21:43
2	08:42 16:32	08:13 17:21	07:19 18:13	07:08 20:07		06:03 20:58	20:00 (WEA 1) 21:44
3	08:41 16:33	08:11 17:23	07:16 18:15	07:05 20:09		06:01 21:00	19:59 (WEA 1) 21:45
4	08:41 16:34	08:10 17:25	07:14 18:16	07:03 20:10		05:59 21:02	19:59 (WEA 1) 21:46
5	08:41 16:35	08:08 17:26	07:12 18:18	07:01 20:12		05:57 21:03	19:58 (WEA 1) 21:47
6	08:41 16:37	08:06 17:28	07:10 18:20	06:58 20:14		05:55 21:05	19:57 (WEA 1) 21:48
7	08:40 16:38	08:05 17:30	07:08 18:22	06:56 20:16		05:54 21:07	19:57 (WEA 1) 21:49
8	08:40 16:39	08:03 17:32	07:05 18:24	06:54 20:17		05:52 21:08	19:57 (WEA 1) 21:50
9	08:39 16:41	08:01 17:34	07:03 18:25	06:52 20:19		05:50 21:10	19:56 (WEA 1) 21:51
10	08:39 16:42	07:59 17:36	07:01 18:27	06:49 20:21		05:48 21:11	19:57 (WEA 1) 21:51
11	08:38 16:43	07:57 17:38	06:58 18:29	06:47 20:22		05:47 21:13	19:57 (WEA 1) 21:52
12	08:37 16:45	07:56 17:40	06:56 18:31	06:45 20:24		05:45 21:15	19:57 (WEA 1) 21:53
13	08:37 16:46	07:54 17:41	06:54 18:32	06:43 20:26		05:43 21:16	19:57 (WEA 1) 21:53
14	08:36 16:48	07:52 17:43	06:52 18:34	06:40 20:28		05:42 21:18	19:58 (WEA 1) 21:54
15	08:35 16:49	07:50 17:45	06:49 18:36	06:38 20:29		05:40 21:19	19:58 (WEA 1) 21:55
16	08:34 16:51	07:48 17:47	06:47 18:38	06:36 20:31		05:39 21:21	19:59 (WEA 1) 21:55
17	08:33 16:53	07:46 17:49	06:45 18:39	06:34 20:33		05:37 21:22	20:00 (WEA 1) 21:56
18	08:32 16:54	07:44 17:51	06:42 18:41	06:32 20:34		05:36 21:24	20:00 (WEA 1) 21:56
19	08:31 16:56	07:42 17:53	06:40 18:43	06:29 20:36		05:34 21:25	20:01 (WEA 1) 21:56
20	08:30 16:58	07:40 17:54	06:38 18:45	06:27 20:38		05:33 21:27	20:02 (WEA 1) 21:57
21	08:29 16:59	07:38 17:56	06:35 18:46	06:25 20:40		05:31 21:28	20:04 (WEA 1) 21:57
22	08:28 17:01	07:36 17:58	06:33 18:48	06:23 20:41		05:30 21:30	20:04 (WEA 1) 21:57
23	08:27 17:03	07:34 18:00	06:31 18:50	06:21 20:43		05:29 21:31	20:06 (WEA 1) 21:57
24	08:26 17:05	07:32 18:02	06:28 18:52	06:19 20:45		05:28 21:33	20:10 (WEA 1) 21:57
25	08:24 17:06	07:29 18:04	06:26 18:53	06:17 20:46		05:26 21:34	20:14 (WEA 1) 21:57
26	08:23 17:08	07:27 18:05	06:24 18:55	06:15 20:48		05:25 21:35	21:57
27	08:22 17:10	07:25 18:07	06:21 18:57	06:13 20:50		05:24 21:37	21:57
28	08:20 17:12	07:23 18:09	06:19 18:58	06:11 20:51	11	20:07 (WEA 1) 20:18 (WEA 1)	05:23 21:38
29	08:19 17:13		07:17 20:00	06:09 20:53	17	20:04 (WEA 1) 20:21 (WEA 1)	05:22 21:39
30	08:18 17:15		07:15 20:02	06:07 20:55	20	20:02 (WEA 1) 20:22 (WEA 1)	05:21 21:40
31	08:16 17:17		07:12 20:04			05:20 21:41	21:57
Sonnenscheinstunden	258	277	367	416		486	500
astr.max.mögl.Beschattung				48		564	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM)	Schattenanfang (WEA mit erstem Schatten)	Schattenende (WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 48-NW - IP 48-NW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinfallrichtung

Die Windenergieanlage/n ist/sind immer in Betrieb

	July	August	September	Oktober	November	Dezember	
1	05:16 21:57	05:53 21:25	20:08 (WEA 1)	06:43 20:22	07:32 19:12	07:26 17:06	08:18 16:25
2	05:17 21:56	05:54 21:23	20:07 (WEA 1)	06:45 20:20	07:34 19:10	07:28 17:04	08:19 16:25
3	05:18 21:56	05:56 21:21	20:07 (WEA 1)	06:46 20:18	07:36 19:08	07:30 17:02	08:20 16:24
4	05:18 21:56	05:57 21:20	20:07 (WEA 1)	06:48 20:15	07:37 19:06	07:32 17:00	08:22 16:23
5	05:19 21:55	05:59 21:18	20:07 (WEA 1)	06:49 20:13	07:39 19:03	07:34 16:59	08:23 16:23
6	05:20 21:55	06:01 21:16	20:07 (WEA 1)	06:51 20:11	07:41 19:01	07:35 16:57	08:24 16:22
7	05:21 21:54	06:02 21:14	20:08 (WEA 1)	06:53 20:09	07:42 18:59	07:37 16:55	08:26 16:22
8	05:22 21:53	06:04 21:12	20:07 (WEA 1)	06:54 20:06	07:44 18:56	07:39 16:54	08:27 16:22
9	05:23 21:53	06:05 21:10	20:08 (WEA 1)	06:56 20:04	07:46 18:54	07:41 16:52	08:28 16:21
10	05:24 21:52	06:07 21:09	20:08 (WEA 1)	06:58 20:02	07:47 18:52	07:43 16:50	08:29 16:21
11	05:25 21:51	06:09 21:07	20:09 (WEA 1)	06:59 19:59	07:49 18:50	07:44 16:49	08:30 16:21
12	05:26 21:50	06:10 21:05	20:10 (WEA 1)	07:01 19:57	07:51 18:47	07:46 16:47	08:31 16:21
13	05:27 21:49	06:12 21:03	20:11 (WEA 1)	07:03 19:55	07:53 18:45	07:48 16:46	08:32 16:21
14	05:28 21:48	06:13 21:01	20:12 (WEA 1)	07:04 19:52	07:54 18:43	07:50 16:44	08:33 16:21
15	05:29 21:47	06:15 20:59	20:15 (WEA 1)	07:06 19:50	07:56 18:41	07:51 16:43	08:34 16:21
16	05:30 21:46	06:17 20:57	20:25 (WEA 1)	07:07 19:48	07:58 18:39	07:53 16:41	08:35 16:21
17	05:32 21:45	06:18 20:55		07:09 19:45	08:00 18:36	07:55 16:40	08:36 16:21
18	05:33 21:44	06:20 20:53		07:11 19:43	08:01 18:34	07:57 16:39	08:37 16:21
19	05:34 21:43	06:22 20:51		07:12 19:41	08:03 18:32	07:58 16:37	08:37 16:22
20	05:36 21:42	20:18 (WEA 1) 20:26 (WEA 1)	06:23 20:48	07:14 19:38	08:05 18:30	08:00 16:36	08:38 16:22
21	05:37 21:41	20:16 (WEA 1) 20:28 (WEA 1)	06:25 20:46	07:16 19:36	08:07 18:28	08:02 16:35	08:39 16:22
22	05:38 21:39	20:14 (WEA 1) 20:29 (WEA 1)	06:27 20:44	07:17 19:33	08:08 18:26	08:03 16:34	08:39 16:23
23	05:40 21:38	20:13 (WEA 1) 20:30 (WEA 1)	06:28 20:42	07:19 19:31	08:10 18:24	08:05 16:33	08:40 16:23
24	05:41 21:37	20:12 (WEA 1) 20:32 (WEA 1)	06:30 20:40	07:21 19:29	08:12 18:22	08:07 16:31	08:40 16:24
25	05:42 21:35	20:11 (WEA 1) 20:33 (WEA 1)	06:31 20:38	07:22 19:26	07:14 17:20	08:08 16:30	08:41 16:25
26	05:44 21:34	20:10 (WEA 1) 20:33 (WEA 1)	06:33 20:36	07:24 19:24	07:16 17:18	08:10 16:29	08:41 16:25
27	05:45 21:32	20:10 (WEA 1) 20:34 (WEA 1)	06:35 20:33	07:26 19:22	07:17 17:16	08:12 16:29	08:41 16:26
28	05:47 21:31	20:09 (WEA 1) 20:35 (WEA 1)	06:36 20:31	07:27 19:19	07:19 17:14	08:13 16:28	08:41 16:27
29	05:48 21:29	20:08 (WEA 1) 20:35 (WEA 1)	06:38 20:29	07:29 19:17	07:21 17:12	08:15 16:27	08:41 16:28
30	05:50 21:28	20:08 (WEA 1) 20:36 (WEA 1)	06:40 20:27	07:31 19:15	07:23 17:10	08:16 16:26	08:42 16:29
31	05:51 21:26	20:07 (WEA 1) 20:35 (WEA 1)	06:41 20:24		07:25 17:08		08:42 16:30
Sonnenscheinstunden	503	454		381	331	266	243
astr.max.mögl.Beschattung	250		371				

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 49-NW - IP 49-NW
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April		Mai	Juni
1	08:42 16:31	08:15 17:19	07:21 18:11	07:10 20:05		06:05 20:57	20:07 (WEA 1) 21:43
2	08:42 16:32	08:13 17:21	07:19 18:13	07:08 20:07		06:03 20:58	20:05 (WEA 1) 21:44
3	08:41 16:33	08:11 17:23	07:16 18:15	07:05 20:09		06:01 21:00	20:05 (WEA 1) 21:45
4	08:41 16:34	08:10 17:25	07:14 18:16	07:03 20:10		05:59 21:02	20:03 (WEA 1) 21:46
5	08:41 16:35	08:08 17:26	07:12 18:18	07:01 20:12		05:57 21:03	20:02 (WEA 1) 21:47
6	08:41 16:37	08:06 17:28	07:10 18:20	06:58 20:14		05:55 21:05	20:01 (WEA 1) 21:48
7	08:40 16:38	08:05 17:30	07:08 18:22	06:56 20:16		05:54 21:07	20:01 (WEA 1) 21:49
8	08:40 16:39	08:03 17:32	07:05 18:24	06:54 20:17		05:52 21:08	20:01 (WEA 1) 21:50
9	08:39 16:41	08:01 17:34	07:03 18:25	06:52 20:19		05:50 21:10	20:00 (WEA 1) 21:51
10	08:39 16:42	07:59 17:36	07:01 18:27	06:49 20:21		05:48 21:11	20:00 (WEA 1) 21:51
11	08:38 16:43	07:57 17:38	06:58 18:29	06:47 20:22		05:47 21:13	20:00 (WEA 1) 21:52
12	08:37 16:45	07:56 17:40	06:56 18:31	06:45 20:24		05:45 21:15	20:00 (WEA 1) 21:53
13	08:37 16:46	07:54 17:41	06:54 18:32	06:43 20:26		05:43 21:16	20:00 (WEA 1) 21:53
14	08:36 16:48	07:52 17:43	06:52 18:34	06:40 20:28		05:42 21:18	20:00 (WEA 1) 21:54
15	08:35 16:50	07:50 17:45	06:49 18:36	06:38 20:29		05:40 21:19	20:00 (WEA 1) 21:55
16	08:34 16:51	07:48 17:47	06:47 18:38	06:36 20:31		05:39 21:21	20:01 (WEA 1) 21:55
17	08:33 16:53	07:46 17:49	06:45 18:39	06:34 20:33		05:37 21:22	20:02 (WEA 1) 21:56
18	08:32 16:54	07:44 17:51	06:42 18:41	06:32 20:34		05:36 21:24	20:01 (WEA 1) 21:56
19	08:31 16:56	07:42 17:53	06:40 18:43	06:29 20:36		05:34 21:25	20:02 (WEA 1) 21:56
20	08:30 16:58	07:40 17:54	06:38 18:45	06:27 20:38		05:33 21:27	20:03 (WEA 1) 21:57
21	08:29 16:59	07:38 17:56	06:35 18:46	06:25 20:40		05:31 21:28	20:04 (WEA 1) 21:57
22	08:28 17:01	07:36 17:58	06:33 18:48	06:23 20:41		05:30 21:30	20:04 (WEA 1) 21:57
23	08:27 17:03	07:34 18:00	06:31 18:50	06:21 20:43		05:29 21:31	20:05 (WEA 1) 21:57
24	08:26 17:05	07:32 18:02	06:28 18:52	06:19 20:45		05:28 21:33	20:06 (WEA 1) 21:57
25	08:24 17:06	07:29 18:04	06:26 18:53	06:17 20:46		05:26 21:34	20:08 (WEA 1) 21:57
26	08:23 17:08	07:27 18:05	06:24 18:55	06:15 20:48		05:25 21:35	20:09 (WEA 1) 21:57
27	08:22 17:10	07:25 18:07	06:21 18:57	06:13 20:50		05:24 21:37	20:11 (WEA 1) 21:57
28	08:20 17:12	07:23 18:09	06:19 18:58	06:11 20:51		05:23 21:38	20:15 (WEA 1) 21:57
29	08:19 17:13		07:17 20:00	06:09 20:53		05:22 21:39	
30	08:18 17:15		07:15 20:02	06:07 20:55	11	20:10 (WEA 1) 20:21 (WEA 1)	05:21 21:40
31	08:16 17:17		07:12 20:04			05:20 21:41	21:57
Sonnenscheinstunden	258	277	367	416	11	486	500
astr.max.mögl.Beschattung					11	647	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM)	Schattenanfang (WEA mit erstem Schatten)	Schattenende (WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 49-NW - IP 49-NW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinfallrichtung

Die Windenergieanlage/n ist/sind immer in Betrieb

	July	August	September	Oktober	November	Dezember	
1	05:16 21:57	05:53 21:25	29 20:11 (WEA 1)	06:43 20:22	07:32 19:12	07:26 17:06	08:18 16:25
2	05:17 21:56	05:54 21:23	30 20:10 (WEA 1)	06:45 20:20	07:34 19:10	07:28 17:04	08:19 16:25
3	05:18 21:56	05:56 21:21	29 20:11 (WEA 1)	06:46 20:18	07:36 19:08	07:30 17:02	08:20 16:24
4	05:18 21:56	05:57 21:20	29 20:10 (WEA 1)	06:48 20:15	07:37 19:06	07:32 17:00	08:22 16:23
5	05:19 21:55	05:59 21:18	28 20:11 (WEA 1)	06:49 20:13	07:39 19:03	07:34 16:59	08:23 16:23
6	05:20 21:55	06:01 21:16	27 20:11 (WEA 1)	06:51 20:11	07:41 19:01	07:35 16:57	08:24 16:22
7	05:21 21:54	06:02 21:14	26 20:12 (WEA 1)	06:53 20:09	07:42 18:59	07:37 16:55	08:26 16:22
8	05:22 21:53	06:04 21:12	25 20:12 (WEA 1)	06:54 20:06	07:44 18:56	07:39 16:54	08:27 16:22
9	05:23 21:53	06:05 21:10	23 20:13 (WEA 1)	06:56 20:04	07:46 18:54	07:41 16:52	08:28 16:21
10	05:24 21:52	06:07 21:09	21 20:14 (WEA 1)	06:58 20:02	07:47 18:52	07:43 16:50	08:29 16:21
11	05:25 21:51	06:09 21:07	19 20:15 (WEA 1)	06:59 19:59	07:49 18:50	07:44 16:49	08:30 16:21
12	05:26 21:50	06:10 21:05	15 20:16 (WEA 1)	07:01 19:57	07:51 18:47	07:46 16:47	08:31 16:21
13	05:27 21:49	06:12 21:03	10 20:19 (WEA 1)	07:03 19:55	07:53 18:45	07:48 16:46	08:32 16:21
14	05:28 21:48	06:13 21:01		07:04 19:52	07:54 18:43	07:50 16:44	08:33 16:21
15	05:29 21:47	06:15 20:59		07:06 19:50	07:56 18:41	07:51 16:43	08:34 16:21
16	05:30 21:46	20:22 (WEA 1) 06:17 20:28 (WEA 1)	06:17 20:57	07:07 19:48	07:58 18:39	07:53 16:41	08:35 16:21
17	05:32 21:45	20:19 (WEA 1) 06:18 20:30 (WEA 1)	06:18 20:55	07:09 19:45	08:00 18:36	07:55 16:40	08:36 16:21
18	05:33 21:44	20:18 (WEA 1) 06:18 20:32 (WEA 1)	06:20 20:53	07:11 19:43	08:01 18:34	07:57 16:39	08:37 16:21
19	05:34 21:43	20:16 (WEA 1) 06:22 20:33 (WEA 1)	06:22 20:51	07:12 19:41	08:03 18:32	07:58 16:37	08:37 16:22
20	05:36 21:42	20:16 (WEA 1) 06:23 20:35 (WEA 1)	06:23 20:48	07:14 19:38	08:05 18:30	08:00 16:36	08:38 16:22
21	05:37 21:41	20:15 (WEA 1) 06:25 20:36 (WEA 1)	06:25 20:46	07:16 19:36	08:07 18:28	08:02 16:35	08:39 16:22
22	05:38 21:39	20:14 (WEA 1) 06:27 20:36 (WEA 1)	06:27 20:44	07:17 19:33	08:08 18:26	08:03 16:34	08:39 16:23
23	05:40 21:38	20:13 (WEA 1) 06:28 20:37 (WEA 1)	06:28 20:42	07:19 19:31	08:10 18:24	08:05 16:33	08:40 16:23
24	05:41 21:37	20:13 (WEA 1) 06:30 20:38 (WEA 1)	06:30 20:40	07:21 19:29	08:12 18:22	08:07 16:31	08:40 16:24
25	05:42 21:35	20:12 (WEA 1) 06:31 20:38 (WEA 1)	06:31 20:38	07:22 19:26	07:14 17:20	08:08 16:30	08:41 16:25
26	05:44 21:34	20:12 (WEA 1) 06:33 20:38 (WEA 1)	06:33 20:36	07:24 19:24	07:16 17:18	08:10 16:29	08:41 16:25
27	05:45 21:32	20:12 (WEA 1) 06:35 20:39 (WEA 1)	06:35 20:33	07:26 19:22	07:17 17:16	08:12 16:29	08:41 16:26
28	05:47 21:31	20:11 (WEA 1) 06:36 20:39 (WEA 1)	06:36 20:31	07:27 19:19	07:19 17:14	08:13 16:28	08:41 16:27
29	05:48 21:29	20:10 (WEA 1) 06:38 20:39 (WEA 1)	06:38 20:29	07:29 19:17	07:21 17:12	08:15 16:27	08:41 16:28
30	05:50 21:28	20:11 (WEA 1) 06:40 20:40 (WEA 1)	06:40 20:27	07:31 19:15	07:23 17:10	08:16 16:26	08:42 16:29
31	05:51 21:26	20:10 (WEA 1) 06:41 20:39 (WEA 1)	06:41 20:24		07:25 17:08		08:42 16:30
Sonnenscheinstunden	503	454		381	331	266	243
astr.max.mögl.Beschattung	353		311				

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 50-NW - IP 50-NW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinfallrichtung

Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai		Juni
1	08:42 16:31	08:15 17:19	07:21 18:11	07:10 18:05	06:05 20:57		05:19 21:43
2	08:42 16:32	08:13 17:21	07:19 18:13	07:08 20:07	06:03 20:58		20 20:14 (WEA 1)
3	08:41 16:33	08:11 17:23	07:16 18:15	07:05 20:09	06:01 21:00		19 20:33 (WEA 1)
4	08:41 16:34	08:10 17:25	07:14 18:16	07:03 20:10	05:59 21:02	8	20:19 (WEA 1) 20:27 (WEA 1)
5	08:41 16:35	08:08 17:26	07:12 18:18	07:01 20:12	05:57 21:03	14	20:15 (WEA 1) 20:29 (WEA 1)
6	08:41 16:37	08:06 17:28	07:10 18:20	06:58 20:14	05:55 21:05	18	20:13 (WEA 1) 20:31 (WEA 1)
7	08:40 16:38	08:05 17:30	07:08 18:22	06:56 20:16	05:54 21:07	21	20:12 (WEA 1) 20:33 (WEA 1)
8	08:40 16:39	08:03 17:32	07:05 18:24	06:54 20:17	05:52 21:08	23	20:11 (WEA 1) 20:34 (WEA 1)
9	08:39 16:41	08:01 17:34	07:03 18:25	06:52 20:19	05:50 21:10	25	20:09 (WEA 1) 20:34 (WEA 1)
10	08:39 16:42	07:59 17:36	07:01 18:27	06:49 20:21	05:48 21:11	26	20:09 (WEA 1) 20:35 (WEA 1)
11	08:38 16:43	07:57 17:38	06:58 18:29	06:47 20:22	05:47 21:13	27	20:08 (WEA 1) 20:35 (WEA 1)
12	08:37 16:45	07:56 17:40	06:56 18:31	06:45 20:24	05:45 21:15	28	20:08 (WEA 1) 20:36 (WEA 1)
13	08:37 16:46	07:54 17:41	06:54 18:32	06:43 20:26	05:43 21:16	29	20:07 (WEA 1) 20:36 (WEA 1)
14	08:36 16:48	07:52 17:43	06:52 18:34	06:40 20:28	05:42 21:18	29	20:08 (WEA 1) 20:37 (WEA 1)
15	08:35 16:50	07:50 17:45	06:49 18:36	06:38 20:29	05:40 21:19	30	20:07 (WEA 1) 20:37 (WEA 1)
16	08:34 16:51	07:48 17:47	06:47 18:38	06:36 20:31	05:39 21:21	30	20:07 (WEA 1) 20:37 (WEA 1)
17	08:33 16:53	07:46 17:49	06:45 18:39	06:34 20:33	05:37 21:22	31	20:07 (WEA 1) 20:38 (WEA 1)
18	08:32 16:54	07:44 17:51	06:42 18:41	06:32 20:34	05:36 21:24	30	20:07 (WEA 1) 20:37 (WEA 1)
19	08:31 16:56	07:42 17:53	06:40 18:43	06:29 20:36	05:34 21:25	30	20:07 (WEA 1) 20:37 (WEA 1)
20	08:30 16:58	07:40 17:54	06:38 18:45	06:27 20:38	05:33 21:27	29	20:08 (WEA 1) 20:37 (WEA 1)
21	08:29 16:59	07:38 17:56	06:35 18:46	06:25 20:40	05:31 21:28	29	20:08 (WEA 1) 20:37 (WEA 1)
22	08:28 17:01	07:36 17:58	06:33 18:48	06:23 20:41	05:30 21:30	29	20:07 (WEA 1) 20:36 (WEA 1)
23	08:27 17:03	07:34 18:00	06:31 18:50	06:21 20:43	05:29 21:31	28	20:08 (WEA 1) 20:36 (WEA 1)
24	08:26 17:05	07:32 18:02	06:28 18:52	06:19 20:45	05:28 21:33	28	20:08 (WEA 1) 20:36 (WEA 1)
25	08:24 17:06	07:29 18:04	06:26 18:53	06:17 20:46	05:26 21:34	27	20:09 (WEA 1) 20:36 (WEA 1)
26	08:23 17:08	07:27 18:05	06:24 18:55	06:15 20:48	05:25 21:35	26	20:10 (WEA 1) 20:36 (WEA 1)
27	08:22 17:10	07:25 18:07	06:21 18:57	06:13 20:50	05:24 21:37	25	20:10 (WEA 1) 20:35 (WEA 1)
28	08:20 17:12	07:23 18:09	06:19 18:58	06:11 20:51	05:23 21:38	24	20:11 (WEA 1) 20:35 (WEA 1)
29	08:19 17:13		07:17 20:00	06:09 20:53	05:22 21:39	23	20:11 (WEA 1) 20:34 (WEA 1)
30	08:18 17:15		07:15 20:02	06:07 20:55	05:21 21:40	22	20:12 (WEA 1) 20:34 (WEA 1)
31	08:16 17:17		07:12 20:04		05:20 21:41	21	20:13 (WEA 1) 20:34 (WEA 1)
Sonnenscheinstunden	258	277	367	416	486		500
astr.max.mögl.Beschattung					710		111

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM)	Schattenanfang (WEA mit erstem Schatten)	Schattenende (WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 50-NW - IP 50-NW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinfallrichtung

Die Windenergieanlage/n ist/sind immer in Betrieb

	Juli		August		September		Oktober		November		Dezember	
1	05:16		05:53		20:19 (WEA 1)	06:43	07:32		07:26		08:18	
	21:57		21:25	28	20:47 (WEA 1)	20:22	19:12		17:06		16:25	
2	05:17		05:54		20:19 (WEA 1)	06:45	07:34		07:28		08:19	
	21:56		21:23	27	20:46 (WEA 1)	20:20	19:10		17:04		16:25	
3	05:18		05:56		20:20 (WEA 1)	06:46	07:36		07:30		08:20	
	21:56		21:21	26	20:46 (WEA 1)	20:18	19:08		17:02		16:24	
4	05:18		20:28 (WEA 1)	05:57	20:20 (WEA 1)	06:48	07:37		07:32		08:22	
	21:56	4	20:32 (WEA 1)	21:20	24	20:44 (WEA 1)	20:15	19:06	17:00		16:23	
5	05:19		20:27 (WEA 1)	05:59	20:22 (WEA 1)	06:49	07:39		07:34		08:23	
	21:55	7	20:34 (WEA 1)	21:18	22	20:44 (WEA 1)	20:13	19:03	16:59		16:23	
6	05:20		20:26 (WEA 1)	06:01	20:22 (WEA 1)	06:51	07:41		07:35		08:24	
	21:55	10	20:36 (WEA 1)	21:16	20	20:42 (WEA 1)	20:11	19:01	16:57		16:22	
7	05:21		20:25 (WEA 1)	06:02	20:24 (WEA 1)	06:53	07:42		07:37		08:26	
	21:54	13	20:38 (WEA 1)	21:14	17	20:41 (WEA 1)	20:09	18:59	16:55		16:22	
8	05:22		20:23 (WEA 1)	06:04	20:25 (WEA 1)	06:54	07:44		07:39		08:27	
	21:53	15	20:38 (WEA 1)	21:12	13	20:38 (WEA 1)	20:06	18:56	16:54		16:22	
9	05:23		20:23 (WEA 1)	06:05	20:30 (WEA 1)	06:56	07:46		07:41		08:28	
	21:53	16	20:39 (WEA 1)	21:10	5	20:35 (WEA 1)	20:04	18:54	16:52		16:21	
10	05:24		20:22 (WEA 1)	06:07		06:58	07:47		07:43		08:29	
	21:52	18	20:40 (WEA 1)	21:09		20:02	18:52		16:50		16:21	
11	05:25		20:22 (WEA 1)	06:09		06:59	07:49		07:44		08:30	
	21:51	19	20:41 (WEA 1)	21:07		19:59	18:50		16:49		16:21	
12	05:26		20:21 (WEA 1)	06:10		07:01	07:51		07:46		08:31	
	21:50	20	20:41 (WEA 1)	21:05		19:57	18:47		16:47		16:21	
13	05:27		20:20 (WEA 1)	06:12		07:03	07:53		07:48		08:32	
	21:49	22	20:42 (WEA 1)	21:03		19:55	18:45		16:46		16:21	
14	05:28		20:20 (WEA 1)	06:13		07:04	07:54		07:50		08:33	
	21:48	23	20:43 (WEA 1)	21:01		19:52	18:43		16:44		16:21	
15	05:29		20:20 (WEA 1)	06:15		07:06	07:56		07:51		08:34	
	21:47	24	20:44 (WEA 1)	20:59		19:50	18:41		16:43		16:21	
16	05:30		20:20 (WEA 1)	06:17		07:07	07:58		07:53		08:35	
	21:46	25	20:45 (WEA 1)	20:57		19:48	18:39		16:41		16:21	
17	05:32		20:19 (WEA 1)	06:18		07:09	08:00		07:55		08:36	
	21:45	26	20:45 (WEA 1)	20:55		19:45	18:36		16:40		16:21	
18	05:33		20:19 (WEA 1)	06:20		07:11	08:01		07:57		08:37	
	21:44	26	20:45 (WEA 1)	20:53		19:43	18:34		16:39		16:21	
19	05:34		20:18 (WEA 1)	06:22		07:12	08:03		07:58		08:37	
	21:43	28	20:46 (WEA 1)	20:51		19:41	18:32		16:37		16:22	
20	05:36		20:19 (WEA 1)	06:23		07:14	08:05		08:00		08:38	
	21:42	28	20:47 (WEA 1)	20:48		19:38	18:30		16:36		16:22	
21	05:37		20:18 (WEA 1)	06:25		07:16	08:07		08:02		08:39	
	21:41	29	20:47 (WEA 1)	20:46		19:36	18:28		16:35		16:23	
22	05:38		20:18 (WEA 1)	06:27		07:17	08:08		08:03		08:39	
	21:39	29	20:47 (WEA 1)	20:44		19:33	18:26		16:34		16:23	
23	05:40		20:17 (WEA 1)	06:28		07:19	08:10		08:05		08:40	
	21:38	30	20:47 (WEA 1)	20:42		19:31	18:24		16:33		16:23	
24	05:41		20:18 (WEA 1)	06:30		07:21	08:12		08:07		08:40	
	21:37	30	20:48 (WEA 1)	20:40		19:29	18:22		16:31		16:24	
25	05:42		20:18 (WEA 1)	06:31		07:22	07:14		08:08		08:41	
	21:35	30	20:48 (WEA 1)	20:38		19:26	17:20		16:30		16:25	
26	05:44		20:17 (WEA 1)	06:33		07:24	07:16		08:10		08:41	
	21:34	30	20:47 (WEA 1)	20:36		19:24	17:18		16:29		16:25	
27	05:45		20:18 (WEA 1)	06:35		07:26	07:17		08:12		08:41	
	21:32	30	20:48 (WEA 1)	20:33		19:22	17:16		16:29		16:26	
28	05:47		20:17 (WEA 1)	06:36		07:27	07:19		08:13		08:41	
	21:31	30	20:47 (WEA 1)	20:31		19:19	17:14		16:28		16:27	
29	05:48		20:17 (WEA 1)	06:38		07:29	07:21		08:15		08:41	
	21:29	30	20:47 (WEA 1)	20:29		19:17	17:12		16:27		16:28	
30	05:50		20:18 (WEA 1)	06:40		07:31	07:23		08:16		08:42	
	21:28	29	20:47 (WEA 1)	20:27		19:15	17:10		16:26		16:29	
31	05:51		20:18 (WEA 1)	06:41			07:25				08:42	
	21:26	29	20:47 (WEA 1)	20:24			17:08				16:30	
Sonnenscheinstunden	503		454			381	331		266		243	
astr.max.mögl.Beschattung	650		182									

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 51-NW - IP 51-NW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinfallrichtung

Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai		Juni
1	08:42 16:31	08:15 17:19	07:21 18:11	07:10 18:05	06:05 20:57		05:19 21:43
2	08:42 16:32	08:13 17:21	07:19 18:13	07:08 20:07	06:03 20:58		05:18 21:44
3	08:41 16:33	08:11 17:23	07:16 18:15	07:05 20:09	06:01 21:00	10	20:17 (WEA 1) 20:27 (WEA 1) 21:45
4	08:41 16:34	08:10 17:25	07:14 18:16	07:03 20:10	05:59 21:02	15	20:14 (WEA 1) 20:29 (WEA 1) 21:46
5	08:41 16:35	08:08 17:26	07:12 18:18	07:01 20:12	05:57 21:03	18	20:12 (WEA 1) 20:30 (WEA 1) 21:47
6	08:41 16:37	08:06 17:28	07:10 18:20	06:58 20:14	05:55 21:05	20	20:11 (WEA 1) 20:31 (WEA 1) 21:48
7	08:40 16:38	08:05 17:30	07:08 18:22	06:56 20:16	05:54 21:07	23	20:10 (WEA 1) 20:33 (WEA 1) 21:49
8	08:40 16:39	08:03 17:32	07:05 18:24	06:54 20:17	05:52 21:08	24	20:09 (WEA 1) 20:33 (WEA 1) 21:50
9	08:39 16:41	08:01 17:34	07:03 18:25	06:52 20:19	05:50 21:10	25	20:08 (WEA 1) 20:33 (WEA 1) 21:51
10	08:39 16:42	07:59 17:36	07:01 18:27	06:49 20:21	05:48 21:11	26	20:08 (WEA 1) 20:34 (WEA 1) 21:51
11	08:38 16:43	07:57 17:38	06:58 18:29	06:47 20:22	05:47 21:13	27	20:07 (WEA 1) 20:34 (WEA 1) 21:52
12	08:37 16:45	07:56 17:40	06:56 18:31	06:45 20:24	05:45 21:15	28	20:07 (WEA 1) 20:35 (WEA 1) 21:53
13	08:37 16:46	07:54 17:41	06:54 18:32	06:43 20:26	05:43 21:16	29	20:06 (WEA 1) 20:35 (WEA 1) 21:53
14	08:36 16:48	07:52 17:43	06:52 18:34	06:40 20:28	05:42 21:18	28	20:07 (WEA 1) 20:35 (WEA 1) 21:54
15	08:35 16:50	07:50 17:45	06:49 18:36	06:38 20:29	05:40 21:19	29	20:06 (WEA 1) 20:35 (WEA 1) 21:55
16	08:34 16:51	07:48 17:47	06:47 18:38	06:36 20:31	05:39 21:21	28	20:07 (WEA 1) 20:35 (WEA 1) 21:55
17	08:33 16:53	07:46 17:49	06:45 18:39	06:34 20:33	05:37 21:22	29	20:07 (WEA 1) 20:36 (WEA 1) 21:56
18	08:32 16:54	07:44 17:51	06:42 18:41	06:32 20:34	05:36 21:24	28	20:07 (WEA 1) 20:35 (WEA 1) 21:56
19	08:31 16:56	07:42 17:53	06:40 18:43	06:29 20:36	05:34 21:25	28	20:07 (WEA 1) 20:35 (WEA 1) 21:56
20	08:30 16:58	07:40 17:54	06:38 18:45	06:27 20:38	05:33 21:27	27	20:08 (WEA 1) 20:35 (WEA 1) 21:57
21	08:29 16:59	07:38 17:56	06:35 18:46	06:25 20:40	05:31 21:28	27	20:08 (WEA 1) 20:35 (WEA 1) 21:57
22	08:28 17:01	07:36 17:58	06:33 18:48	06:23 20:41	05:30 21:30	26	20:08 (WEA 1) 20:34 (WEA 1) 21:57
23	08:27 17:03	07:34 18:00	06:31 18:50	06:21 20:43	05:29 21:31	25	20:09 (WEA 1) 20:34 (WEA 1) 21:57
24	08:26 17:05	07:32 18:02	06:28 18:52	06:19 20:45	05:28 21:33	24	20:09 (WEA 1) 20:33 (WEA 1) 21:57
25	08:24 17:06	07:29 18:04	06:26 18:53	06:17 20:46	05:26 21:34	23	20:10 (WEA 1) 20:33 (WEA 1) 21:57
26	08:23 17:08	07:27 18:05	06:24 18:55	06:15 20:48	05:25 21:35	21	20:11 (WEA 1) 20:32 (WEA 1) 21:57
27	08:22 17:10	07:25 18:07	06:21 18:57	06:13 20:50	05:24 21:37	21	20:11 (WEA 1) 20:32 (WEA 1) 21:57
28	08:20 17:12	07:23 18:09	06:19 18:58	06:11 20:51	05:23 21:38	19	20:12 (WEA 1) 20:31 (WEA 1) 21:57
29	08:19 17:13		06:17 20:00	06:09 20:53	05:22 21:39	17	20:13 (WEA 1) 20:30 (WEA 1) 21:57
30	08:18 17:15		06:15 20:02	06:07 20:55	05:21 21:40	15	20:14 (WEA 1) 20:29 (WEA 1) 21:57
31	08:16 17:17		06:12 20:04		05:20 21:41	13	20:16 (WEA 1) 20:29 (WEA 1)
Sonnenscheinstunden	258	277	367	416	486		500
astr.max.mögl.Beschattung						673	18

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	Schattenanfang (WEA mit erstem Schatten)	Schattende (WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 51-NW - IP 51-NW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinfallrichtung

Die Windenergieanlage/n ist/sind immer in Betrieb

	Juli		August		September		Oktober		November		Dezember			
1	05:16		05:53		20:18 (WEA 1)	06:43	07:32		07:26		08:18			
	21:57		21:25	28	20:46 (WEA 1)	20:22	19:12		17:06		16:25			
2	05:17		05:54		20:18 (WEA 1)	06:45	07:34		07:28		08:19			
	21:56		21:23	27	20:45 (WEA 1)	20:20	19:10		17:04		16:25			
3	05:18		05:56		20:18 (WEA 1)	06:46	07:36		07:30		08:20			
	21:56		21:21	27	20:45 (WEA 1)	20:18	19:08		17:02		16:24			
4	05:18		05:57		20:19 (WEA 1)	06:48	07:37		07:32		08:22			
	21:56		21:20	25	20:44 (WEA 1)	20:15	19:06		17:00		16:23			
5	05:19		05:59		20:20 (WEA 1)	06:49	07:39		07:34		08:23			
	21:55		21:18	23	20:43 (WEA 1)	20:13	19:03		16:59		16:23			
6	05:20		06:01		20:20 (WEA 1)	06:51	07:41		07:35		08:24			
	21:55		21:16	22	20:42 (WEA 1)	20:11	19:01		16:57		16:22			
7	05:21		06:02		20:21 (WEA 1)	06:53	07:42		07:37		08:26			
	21:54		21:14	20	20:41 (WEA 1)	20:09	18:59		16:55		16:22			
8	05:22		06:04		20:22 (WEA 1)	06:54	07:44		07:39		08:27			
	21:53		21:12	17	20:39 (WEA 1)	20:06	18:56		16:54		16:22			
9	05:23		06:05		20:25 (WEA 1)	06:56	07:46		07:41		08:28			
	21:53		21:10	13	20:38 (WEA 1)	20:04	18:54		16:52		16:21			
10	05:24		20:28 (WEA 1)	06:07	20:27 (WEA 1)	06:58	07:47		07:43		08:29			
	21:52	4	20:32 (WEA 1)	21:09	7	20:34 (WEA 1)	20:02		18:52		16:21			
11	05:25		20:25 (WEA 1)	06:09			06:59		07:49		07:44		08:30	
	21:51	10	20:35 (WEA 1)	21:07			19:59		18:50		16:49		16:21	
12	05:26		20:24 (WEA 1)	06:10			07:01		07:51		07:46		08:31	
	21:50	12	20:36 (WEA 1)	21:05			19:57		18:47		16:47		16:21	
13	05:27		20:23 (WEA 1)	06:12			07:03		07:53		07:48		08:32	
	21:49	14	20:37 (WEA 1)	21:03			19:55		18:45		16:46		16:21	
14	05:28		20:22 (WEA 1)	06:13			07:04		07:54		07:50		08:33	
	21:48	16	20:38 (WEA 1)	21:01			19:52		18:43		16:44		16:21	
15	05:29		20:22 (WEA 1)	06:15			07:06		07:56		07:51		08:34	
	21:47	18	20:40 (WEA 1)	20:59			19:50		18:41		16:43		16:21	
16	05:30		20:21 (WEA 1)	06:17			07:07		07:58		07:53		08:35	
	21:46	20	20:41 (WEA 1)	20:57			19:48		18:39		16:41		16:21	
17	05:32		20:21 (WEA 1)	06:18			07:09		08:00		07:55		08:36	
	21:45	21	20:42 (WEA 1)	20:55			19:45		18:36		16:40		16:21	
18	05:33		20:20 (WEA 1)	06:20			07:11		08:01		07:57		08:37	
	21:44	22	20:42 (WEA 1)	20:53			19:43		18:34		16:39		16:21	
19	05:34		20:19 (WEA 1)	06:22			07:12		08:03		07:58		08:37	
	21:43	24	20:43 (WEA 1)	20:51			19:41		18:32		16:37		16:22	
20	05:36		20:19 (WEA 1)	06:23			07:14		08:05		08:00		08:38	
	21:42	25	20:44 (WEA 1)	20:48			19:38		18:30		16:36		16:22	
21	05:37		20:19 (WEA 1)	06:25			07:16		08:07		08:02		08:39	
	21:41	25	20:44 (WEA 1)	20:46			19:36		18:28		16:35		16:22	
22	05:38		20:18 (WEA 1)	06:27			07:17		08:08		08:03		08:39	
	21:39	26	20:44 (WEA 1)	20:44			19:33		18:26		16:34		16:23	
23	05:40		20:18 (WEA 1)	06:28			07:19		08:10		08:05		08:40	
	21:38	27	20:45 (WEA 1)	20:42			19:31		18:24		16:33		16:23	
24	05:41		20:18 (WEA 1)	06:30			07:21		08:12		08:07		08:40	
	21:37	28	20:46 (WEA 1)	20:40			19:29		18:22		16:31		16:24	
25	05:42		20:17 (WEA 1)	06:31			07:22		07:14		08:08		08:41	
	21:35	29	20:46 (WEA 1)	20:38			19:26		17:20		16:30		16:25	
26	05:44		20:17 (WEA 1)	06:33			07:24		07:16		08:10		08:41	
	21:34	28	20:45 (WEA 1)	20:36			19:24		17:18		16:29		16:25	
27	05:45		20:17 (WEA 1)	06:35			07:26		07:17		08:12		08:41	
	21:32	29	20:46 (WEA 1)	20:33			19:22		17:16		16:29		16:26	
28	05:47		20:17 (WEA 1)	06:36			07:27		07:19		08:13		08:41	
	21:31	29	20:46 (WEA 1)	20:31			19:19		17:14		16:28		16:27	
29	05:48		20:17 (WEA 1)	06:38			07:29		07:21		08:15		08:41	
	21:29	28	20:45 (WEA 1)	20:29			19:17		17:12		16:27		16:28	
30	05:50		20:17 (WEA 1)	06:40			07:31		07:23		08:16		08:42	
	21:28	29	20:46 (WEA 1)	20:27			19:15		17:10		16:26		16:29	
31	05:51		20:17 (WEA 1)	06:41					07:25				08:42	
	21:26	28	20:45 (WEA 1)	20:24					17:08				16:30	
Sonnenscheinstunden	503		454		381		331		266		243			
astr.max.mögl.Beschattung	492		209											

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 52-NW - IP 52-NW
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinfallrichtung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai		Juni
1	08:42 16:31	08:15 17:19	07:21 18:11	07:10 20:05	06:05 20:57		05:19 21:43
2	08:42 16:32	08:13 17:21	07:19 18:13	07:08 20:07	06:03 20:58		21 20:17 (WEA 1)
3	08:41 16:33	08:11 17:23	07:16 18:15	07:05 20:09	06:01 21:00		20 20:37 (WEA 1)
4	08:41 16:34	08:10 17:25	07:14 18:16	07:03 20:10	05:59 21:02		19 20:37 (WEA 1)
5	08:41 16:35	08:08 17:26	07:12 18:18	07:01 20:12	05:57 21:03		18 20:18 (WEA 1)
6	08:41 16:37	08:06 17:28	07:10 18:20	06:58 20:14	05:55 21:05	11	20:20 (WEA 1) 20:31 (WEA 1)
7	08:40 16:38	08:05 17:30	07:08 18:22	06:56 20:16	05:54 21:07	15	20:18 (WEA 1) 20:33 (WEA 1)
8	08:40 16:39	08:03 17:32	07:05 18:24	06:54 20:17	05:52 21:08	19	20:16 (WEA 1) 20:35 (WEA 1)
9	08:39 16:41	08:01 17:34	07:03 18:25	06:52 20:19	05:50 21:10	21	20:14 (WEA 1) 20:35 (WEA 1)
10	08:39 16:42	07:59 17:36	07:01 18:27	06:49 20:21	05:48 21:11	23	20:14 (WEA 1) 20:37 (WEA 1)
11	08:38 16:43	07:57 17:38	06:58 18:29	06:47 20:22	05:47 21:13	24	20:13 (WEA 1) 20:37 (WEA 1)
12	08:37 16:45	07:56 17:40	06:56 18:31	06:45 20:24	05:45 21:15	26	20:12 (WEA 1) 20:38 (WEA 1)
13	08:37 16:46	07:54 17:41	06:54 18:32	06:43 20:26	05:43 21:16	27	20:11 (WEA 1) 20:38 (WEA 1)
14	08:36 16:48	07:52 17:43	06:52 18:34	06:40 20:28	05:42 21:18	27	20:12 (WEA 1) 20:39 (WEA 1)
15	08:35 16:50	07:50 17:45	06:49 18:36	06:38 20:29	05:40 21:19	28	20:11 (WEA 1) 20:39 (WEA 1)
16	08:34 16:51	07:48 17:47	06:47 18:38	06:36 20:31	05:39 21:21	28	20:11 (WEA 1) 20:39 (WEA 1)
17	08:33 16:53	07:46 17:49	06:45 18:39	06:34 20:33	05:37 21:22	29	20:11 (WEA 1) 20:40 (WEA 1)
18	08:32 16:54	07:44 17:51	06:42 18:41	06:32 20:34	05:36 21:24	29	20:10 (WEA 1) 20:39 (WEA 1)
19	08:31 16:56	07:42 17:53	06:40 18:43	06:29 20:36	05:34 21:25	29	20:11 (WEA 1) 20:40 (WEA 1)
20	08:30 16:58	07:40 17:54	06:38 18:45	06:27 20:38	05:33 21:27	29	20:11 (WEA 1) 20:40 (WEA 1)
21	08:29 16:59	07:38 17:56	06:35 18:46	06:25 20:40	05:31 21:28	29	20:11 (WEA 1) 20:40 (WEA 1)
22	08:28 17:01	07:36 17:58	06:33 18:48	06:23 20:41	05:30 21:30	28	20:11 (WEA 1) 20:39 (WEA 1)
23	08:27 17:03	07:34 18:00	06:31 18:50	06:21 20:43	05:29 21:31	28	20:11 (WEA 1) 20:39 (WEA 1)
24	08:26 17:05	07:32 18:02	06:28 18:52	06:19 20:45	05:28 21:33	27	20:12 (WEA 1) 20:39 (WEA 1)
25	08:24 17:06	07:29 18:04	06:26 18:53	06:17 20:46	05:26 21:34	27	20:12 (WEA 1) 20:39 (WEA 1)
26	08:23 17:08	07:27 18:05	06:24 18:55	06:15 20:48	05:25 21:35	27	20:12 (WEA 1) 20:39 (WEA 1)
27	08:22 17:10	07:25 18:07	06:21 18:57	06:13 20:50	05:24 21:37	26	20:13 (WEA 1) 20:39 (WEA 1)
28	08:20 17:12	07:23 18:09	06:19 18:58	06:11 20:51	05:23 21:38	25	20:13 (WEA 1) 20:38 (WEA 1)
29	08:19 17:13		07:17 20:00	06:09 20:53	05:22 21:39	24	20:14 (WEA 1) 20:38 (WEA 1)
30	08:18 17:15		07:15 20:02	06:07 20:55	05:21 21:40	23	20:14 (WEA 1) 20:37 (WEA 1)
31	08:16 17:17		07:12 20:04		05:20 21:41	22	20:16 (WEA 1) 20:38 (WEA 1)
Sonnenscheinstunden	258	277	367	416	486		500
astr.max.mögl.Beschattung					651		155

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM)	Schattenanfang (WEA mit erstem Schatten)	Schattenende (WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 52-NW - IP 52-NW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinfallrichtung

Die Windenergieanlage/n ist/sind immer in Betrieb

	Juli		August		September		Oktober		November		Dezember	
1	05:16		20:32 (WEA 1)	05:53		20:23 (WEA 1)	06:43	07:32	07:26	08:18		
	21:57	1	20:33 (WEA 1)	21:25	25	20:48 (WEA 1)	20:22	19:12	17:06	16:25		
2	05:17		20:30 (WEA 1)	05:54		20:23 (WEA 1)	06:45	07:34	07:28	08:19		
	21:56	6	20:36 (WEA 1)	21:23	24	20:47 (WEA 1)	20:20	19:10	17:04	16:25		
3	05:18		20:28 (WEA 1)	05:56		20:25 (WEA 1)	06:46	07:36	07:30	08:20		
	21:56	9	20:37 (WEA 1)	21:21	22	20:47 (WEA 1)	20:18	19:08	17:02	16:24		
4	05:18		20:28 (WEA 1)	05:57		20:25 (WEA 1)	06:48	07:37	07:32	08:22		
	21:56	10	20:38 (WEA 1)	21:20	20	20:45 (WEA 1)	20:15	19:06	17:00	16:23		
5	05:19		20:27 (WEA 1)	05:59		20:27 (WEA 1)	06:49	07:39	07:34	08:23		
	21:55	13	20:40 (WEA 1)	21:18	17	20:44 (WEA 1)	20:13	19:03	16:59	16:23		
6	05:20		20:27 (WEA 1)	06:01		20:28 (WEA 1)	06:51	07:41	07:35	08:24		
	21:55	14	20:41 (WEA 1)	21:16	14	20:42 (WEA 1)	20:11	19:01	16:57	16:22		
7	05:21		20:27 (WEA 1)	06:02		20:31 (WEA 1)	06:53	07:42	07:37	08:26		
	21:54	15	20:42 (WEA 1)	21:14	9	20:40 (WEA 1)	20:09	18:59	16:55	16:22		
8	05:22		20:25 (WEA 1)	06:04			06:54	07:44	07:39	08:27		
	21:53	17	20:42 (WEA 1)	21:12			20:06	18:56	16:54	16:22		
9	05:23		20:25 (WEA 1)	06:05			06:56	07:46	07:41	08:28		
	21:53	18	20:43 (WEA 1)	21:10			20:04	18:54	16:52	16:21		
10	05:24		20:24 (WEA 1)	06:07			06:58	07:47	07:43	08:29		
	21:52	20	20:44 (WEA 1)	21:09			20:02	18:52	16:50	16:21		
11	05:25		20:24 (WEA 1)	06:09			06:59	07:49	07:44	08:30		
	21:51	20	20:44 (WEA 1)	21:07			19:59	18:50	16:49	16:21		
12	05:26		20:23 (WEA 1)	06:10			07:01	07:51	07:46	08:31		
	21:50	22	20:45 (WEA 1)	21:05			19:57	18:47	16:47	16:21		
13	05:27		20:23 (WEA 1)	06:12			07:03	07:53	07:48	08:32		
	21:49	23	20:46 (WEA 1)	21:03			19:55	18:45	16:46	16:21		
14	05:28		20:22 (WEA 1)	06:13			07:04	07:54	07:50	08:33		
	21:48	24	20:46 (WEA 1)	21:01			19:52	18:43	16:44	16:21		
15	05:29		20:23 (WEA 1)	06:15			07:06	07:56	07:51	08:34		
	21:47	25	20:48 (WEA 1)	20:59			19:50	18:41	16:43	16:21		
16	05:30		20:23 (WEA 1)	06:17			07:07	07:58	07:53	08:35		
	21:46	25	20:48 (WEA 1)	20:57			19:48	18:39	16:41	16:21		
17	05:32		20:22 (WEA 1)	06:18			07:09	08:00	07:55	08:36		
	21:45	26	20:48 (WEA 1)	20:55			19:45	18:36	16:40	16:21		
18	05:33		20:22 (WEA 1)	06:20			07:11	08:01	07:57	08:37		
	21:44	27	20:49 (WEA 1)	20:53			19:43	18:34	16:39	16:21		
19	05:34		20:21 (WEA 1)	06:22			07:12	08:03	07:58	08:37		
	21:43	28	20:49 (WEA 1)	20:51			19:41	18:32	16:37	16:22		
20	05:36		20:22 (WEA 1)	06:23			07:14	08:05	08:00	08:38		
	21:42	28	20:50 (WEA 1)	20:48			19:38	18:30	16:36	16:22		
21	05:37		20:21 (WEA 1)	06:25			07:16	08:07	08:02	08:39		
	21:41	29	20:50 (WEA 1)	20:46			19:36	18:28	16:35	16:23		
22	05:38		20:21 (WEA 1)	06:27			07:17	08:08	08:03	08:39		
	21:39	29	20:50 (WEA 1)	20:44			19:33	18:26	16:34	16:23		
23	05:40		20:21 (WEA 1)	06:28			07:19	08:10	08:05	08:40		
	21:38	29	20:50 (WEA 1)	20:42			19:31	18:24	16:33	16:23		
24	05:41		20:21 (WEA 1)	06:30			07:21	08:12	08:07	08:40		
	21:37	29	20:50 (WEA 1)	20:40			19:29	18:22	16:31	16:24		
25	05:42		20:21 (WEA 1)	06:31			07:22	07:14	08:08	08:41		
	21:35	29	20:50 (WEA 1)	20:38			19:26	17:20	16:30	16:25		
26	05:44		20:21 (WEA 1)	06:33			07:24	07:16	08:10	08:41		
	21:34	29	20:50 (WEA 1)	20:36			19:24	17:18	16:29	16:25		
27	05:45		20:22 (WEA 1)	06:35			07:26	07:17	08:12	08:41		
	21:32	28	20:50 (WEA 1)	20:33			19:22	17:16	16:29	16:26		
28	05:47		20:21 (WEA 1)	06:36			07:27	07:19	08:13	08:41		
	21:31	29	20:50 (WEA 1)	20:31			19:19	17:14	16:28	16:27		
29	05:48		20:21 (WEA 1)	06:38			07:29	07:21	08:15	08:41		
	21:29	28	20:49 (WEA 1)	20:29			19:17	17:12	16:27	16:28		
30	05:50		20:22 (WEA 1)	06:40			07:31	07:23	08:16	08:42		
	21:28	27	20:49 (WEA 1)	20:27			19:15	17:10	16:26	16:29		
31	05:51		20:22 (WEA 1)	06:41				07:25		08:42		
	21:26	26	20:48 (WEA 1)	20:24				17:08		16:30		
Sonnenscheinstunden	503			454			381	331	266	243		
astr.max.mögl.Beschattung		683			131							

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 53-NW - IP 53-NW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinfallrichtung

Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai		Juni
1	08:42 16:31	08:15 17:19	07:21 18:11	07:10 18:05	06:05 20:57		05:19 21:43
2	08:42 16:32	08:13 17:21	07:19 18:13	07:08 20:07	06:03 20:58		12 20:19 (WEA 1) 20:31 (WEA 1) 20:20 (WEA 1)
3	08:41 16:33	08:11 17:23	07:16 18:15	07:16 20:09	06:01 21:00		10 20:30 (WEA 1) 05:18 20:23 (WEA 1)
4	08:41 16:34	08:10 17:25	07:14 18:16	07:03 20:10	05:59 21:02	9	6 20:29 (WEA 1) 20:20 (WEA 1) 05:17 21:46
5	08:41 16:35	08:08 17:26	07:12 18:18	07:01 20:12	05:57 21:03	14	20:17 (WEA 1) 20:31 (WEA 1) 05:16 21:47
6	08:41 16:37	08:06 17:28	07:10 18:20	06:58 20:14	05:55 21:05	17	20:15 (WEA 1) 20:32 (WEA 1) 05:15 21:48
7	08:40 16:38	08:05 17:30	07:08 18:22	06:56 20:16	05:54 21:07	20	20:14 (WEA 1) 20:34 (WEA 1) 05:15 21:49
8	08:40 16:39	08:03 17:32	07:05 18:24	06:54 20:17	05:52 21:08	22	20:13 (WEA 1) 20:35 (WEA 1) 05:14 21:50
9	08:39 16:41	08:01 17:34	07:03 18:25	06:52 20:19	05:50 21:10	24	20:11 (WEA 1) 20:35 (WEA 1) 05:14 21:51
10	08:39 16:42	07:59 17:36	07:01 18:27	06:49 20:21	05:48 21:11	25	20:11 (WEA 1) 20:36 (WEA 1) 05:13 21:51
11	08:38 16:43	07:57 17:38	06:58 18:29	06:47 20:22	05:47 21:13	26	20:10 (WEA 1) 20:36 (WEA 1) 05:13 21:52
12	08:37 16:45	07:56 17:40	06:56 18:31	06:45 20:24	05:45 21:15	27	20:10 (WEA 1) 20:37 (WEA 1) 05:13 21:53
13	08:37 16:46	07:54 17:41	06:54 18:32	06:43 20:26	05:43 21:16	27	20:10 (WEA 1) 20:37 (WEA 1) 05:12 21:53
14	08:36 16:48	07:52 17:43	06:52 18:34	06:40 20:28	05:42 21:18	28	20:10 (WEA 1) 20:38 (WEA 1) 05:12 21:54
15	08:35 16:50	07:50 17:45	06:49 18:36	06:38 20:29	05:40 21:19	28	20:09 (WEA 1) 20:37 (WEA 1) 05:12 21:55
16	08:34 16:51	07:48 17:47	06:47 18:38	06:36 20:31	05:39 21:21	28	20:10 (WEA 1) 20:38 (WEA 1) 05:12 21:55
17	08:33 16:53	07:46 17:49	06:45 18:39	06:34 20:33	05:37 21:22	28	20:10 (WEA 1) 20:38 (WEA 1) 05:12 21:56
18	08:32 16:54	07:44 17:51	06:42 18:41	06:32 20:34	05:36 21:24	28	20:09 (WEA 1) 20:37 (WEA 1) 05:12 21:56
19	08:31 16:56	07:42 17:53	06:40 18:43	06:29 20:36	05:34 21:25	27	20:10 (WEA 1) 20:37 (WEA 1) 05:12 21:56
20	08:30 16:58	07:40 17:54	06:38 18:45	06:27 20:38	05:33 21:27	27	20:10 (WEA 1) 20:37 (WEA 1) 05:12 21:57
21	08:29 16:59	07:38 17:56	06:35 18:46	06:25 20:40	05:31 21:28	26	20:11 (WEA 1) 20:37 (WEA 1) 05:12 21:57
22	08:28 17:01	07:36 17:58	06:33 18:48	06:23 20:41	05:30 21:30	25	20:11 (WEA 1) 20:36 (WEA 1) 05:12 21:57
23	08:27 17:03	07:34 18:00	06:31 18:50	06:21 20:43	05:29 21:31	25	20:11 (WEA 1) 20:36 (WEA 1) 05:12 21:57
24	08:26 17:05	07:32 18:02	06:28 18:51	06:19 20:45	05:28 21:33	24	20:12 (WEA 1) 20:36 (WEA 1) 05:13 21:57
25	08:24 17:06	07:29 18:04	06:26 18:53	06:17 20:46	05:26 21:34	24	20:12 (WEA 1) 20:36 (WEA 1) 05:13 21:57
26	08:23 17:08	07:27 18:05	06:24 18:55	06:15 20:48	05:25 21:35	22	20:13 (WEA 1) 20:35 (WEA 1) 05:13 21:57
27	08:22 17:10	07:25 18:07	06:21 18:57	06:13 20:50	05:24 21:37	21	20:14 (WEA 1) 20:35 (WEA 1) 05:14 21:57
28	08:20 17:12	07:23 18:09	06:19 18:58	06:11 20:51	05:23 21:38	20	20:14 (WEA 1) 20:34 (WEA 1) 05:14 21:57
29	08:19 17:13		07:17 20:00	06:09 20:53	05:22 21:39	18	20:15 (WEA 1) 20:33 (WEA 1) 05:15 21:57
30	08:18 17:15		07:15 20:02	06:07 20:55	05:21 21:40	17	20:16 (WEA 1) 20:33 (WEA 1) 05:15 21:57
31	08:16 17:17		07:12 20:04		05:20 21:41	15	20:18 (WEA 1) 20:33 (WEA 1)
Sonnenscheinstunden	258	277	367	416	486		500
astr.max.mögl.Beschattung					642		28

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	Schattenanfang (WEA mit erstem Schatten)	Schattende (WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 53-NW - IP 53-NW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung

Die Windenergieanlage/n ist/sind immer in Betrieb

	July	August	September	Oktober	November	Dezember
1	05:16 21:57	05:53 21:25	26 20:21 (WEA 1)	06:43 20:22	07:32 19:12	07:26 17:06
2	05:17 21:56	05:54 21:23	26 20:21 (WEA 1)	06:45 20:20	07:34 19:10	07:28 17:04
3	05:18 21:56	05:56 21:21	24 20:22 (WEA 1)	06:46 20:18	07:36 19:08	07:30 17:02
4	05:18 21:56	05:57 21:19	23 20:22 (WEA 1)	06:48 20:15	07:37 19:06	07:32 17:00
5	05:19 21:55	05:59 21:18	22 20:23 (WEA 1)	06:49 20:13	07:39 19:03	07:34 16:59
6	05:20 21:55	06:01 21:16	19 20:24 (WEA 1)	06:51 20:11	07:41 19:01	07:35 16:57
7	05:21 21:54	06:02 21:14	16 20:26 (WEA 1)	06:53 20:09	07:42 18:59	07:37 16:55
8	05:22 21:53	06:04 21:12	13 20:27 (WEA 1)	06:54 20:06	07:44 18:56	07:39 16:54
9	05:23 21:53	20:30 (WEA 1) 20:34 (WEA 1)	06:05 21:10	6 20:31 (WEA 1) 20:37 (WEA 1)	06:56 20:04	07:46 18:54
10	05:24 21:52	20:28 (WEA 1) 20:37 (WEA 1)	06:07 21:09	06:58 20:02	07:47 18:52	07:43 16:50
11	05:25 21:51	20:27 (WEA 1) 20:38 (WEA 1)	06:09 21:07	06:59 19:59	07:49 18:50	07:44 16:49
12	05:26 21:50	20:26 (WEA 1) 20:40 (WEA 1)	06:10 21:05	07:01 19:57	07:51 18:47	07:46 16:47
13	05:27 21:49	20:25 (WEA 1) 20:41 (WEA 1)	06:12 21:03	07:03 19:55	07:53 18:45	07:48 16:46
14	05:28 21:48	20:24 (WEA 1) 20:41 (WEA 1)	06:13 21:01	07:04 19:52	07:54 18:43	07:50 16:44
15	05:29 21:47	20:24 (WEA 1) 20:43 (WEA 1)	06:15 20:59	07:06 19:50	07:56 18:41	07:51 16:43
16	05:30 21:46	20:24 (WEA 1) 20:44 (WEA 1)	06:17 20:57	07:07 19:48	07:58 18:39	07:53 16:41
17	05:32 21:45	20:23 (WEA 1) 20:44 (WEA 1)	06:18 20:55	07:09 19:45	08:00 18:36	07:55 16:40
18	05:33 21:44	20:22 (WEA 1) 20:45 (WEA 1)	06:20 20:51	07:11 19:40	08:01 18:32	07:57 16:37
19	05:34 21:43	20:22 (WEA 1) 20:45 (WEA 1)	06:22 20:51	07:12 19:38	08:03 18:30	07:58 16:36
20	05:36 21:42	20:22 (WEA 1) 20:47 (WEA 1)	06:23 20:48	07:14 19:38	08:05 18:30	08:00 16:36
21	05:37 21:41	20:21 (WEA 1) 20:47 (WEA 1)	06:25 20:46	07:16 19:36	08:07 18:28	08:02 16:35
22	05:38 21:39	20:21 (WEA 1) 20:47 (WEA 1)	06:27 20:44	07:17 19:33	08:08 18:26	08:03 16:34
23	05:40 21:38	20:20 (WEA 1) 20:47 (WEA 1)	06:28 20:42	07:19 19:31	08:10 18:24	08:05 16:33
24	05:41 21:37	20:21 (WEA 1) 20:48 (WEA 1)	06:30 20:40	07:21 19:29	08:12 18:22	08:07 16:31
25	05:42 21:35	20:20 (WEA 1) 20:48 (WEA 1)	06:31 20:38	07:22 19:26	07:14 18:20	08:08 16:30
26	05:44 21:34	20:20 (WEA 1) 20:48 (WEA 1)	06:33 20:36	07:24 19:24	07:16 17:18	08:10 16:29
27	05:45 21:32	20:20 (WEA 1) 20:48 (WEA 1)	06:35 20:33	07:26 19:22	07:17 17:16	08:12 16:29
28	05:47 21:31	20:20 (WEA 1) 20:48 (WEA 1)	06:36 20:31	07:27 19:19	07:19 17:14	08:13 16:28
29	05:48 21:29	20:20 (WEA 1) 20:47 (WEA 1)	06:38 20:29	07:29 19:17	07:21 17:12	08:15 16:27
30	05:50 21:28	20:20 (WEA 1) 20:48 (WEA 1)	06:40 20:27	07:31 19:15	07:23 17:10	08:16 16:26
31	05:51 21:26	20:20 (WEA 1) 20:47 (WEA 1)	06:41 20:24		07:25 17:08	08:42 16:30
Sonnenscheinstunden		503	454	381	331	266
astr.max.mögl.Beschattung		502	175			243

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM)	Schattenanfang (WEA mit erstem Schatten)	Schattenende (WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 54-NW - IP 54-NW
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinfallrichtung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai		Juni	
1	08:42 16:31	08:15 17:19	07:21 18:11	07:10 20:05	06:05 20:57		05:19 21:43	27 20:19 (WEA 1) 20:46 (WEA 1)
2	08:42 16:32	08:13 17:21	07:19 18:13	07:08 20:07	06:03 20:58		05:18 21:44	27 20:19 (WEA 1) 20:46 (WEA 1)
3	08:41 16:33	08:11 17:23	07:16 18:15	07:05 20:09	06:01 21:00		05:18 21:45	27 20:20 (WEA 1) 20:47 (WEA 1)
4	08:41 16:34	08:10 17:25	07:14 18:16	07:03 20:10	05:59 21:02		05:17 21:46	26 20:20 (WEA 1) 20:46 (WEA 1)
5	08:41 16:35	08:08 17:26	07:12 18:18	07:01 20:12	05:57 21:03		05:16 21:47	26 20:20 (WEA 1) 20:46 (WEA 1)
6	08:41 16:37	08:06 17:28	07:10 18:20	06:58 20:14	05:55 21:05		05:15 21:48	25 20:21 (WEA 1) 20:46 (WEA 1)
7	08:40 16:38	08:05 17:30	07:08 18:22	06:56 20:16	05:54 21:07		05:15 21:49	24 20:21 (WEA 1) 20:45 (WEA 1)
8	08:40 16:39	08:03 17:32	07:05 18:24	06:54 20:17	05:52 21:08		05:14 21:50	24 20:22 (WEA 1) 20:46 (WEA 1)
9	08:39 16:41	08:01 17:34	07:03 18:25	06:52 20:19	05:50 21:10		05:14 21:51	23 20:23 (WEA 1) 20:46 (WEA 1)
10	08:39 16:42	07:59 17:36	07:01 18:27	06:49 20:21	05:48 21:11	11	20:26 (WEA 1) 20:37 (WEA 1)	05:13 21:51
11	08:38 16:43	07:57 17:38	06:58 18:29	06:47 20:22	05:47 21:13	16	20:23 (WEA 1) 20:39 (WEA 1)	05:13 21:52
12	08:37 16:45	07:56 17:40	06:56 18:31	06:45 20:24	05:45 21:15	19	20:22 (WEA 1) 20:41 (WEA 1)	05:13 21:53
13	08:37 16:46	07:54 17:41	06:54 18:32	06:43 20:26	05:43 21:16	20	20:21 (WEA 1) 20:41 (WEA 1)	05:12 21:53
14	08:36 16:48	07:52 17:43	06:52 18:34	06:40 20:28	05:42 21:18	23	20:20 (WEA 1) 20:43 (WEA 1)	05:12 21:54
15	08:35 16:50	07:50 17:45	06:49 18:36	06:38 20:29	05:40 21:19	24	20:19 (WEA 1) 20:43 (WEA 1)	05:12 21:55
16	08:34 16:51	07:48 17:47	06:47 18:38	06:36 20:31	05:39 21:21	26	20:18 (WEA 1) 20:44 (WEA 1)	05:12 21:55
17	08:33 16:53	07:46 17:49	06:45 18:39	06:34 20:33	05:37 21:22	27	20:18 (WEA 1) 20:45 (WEA 1)	05:12 21:56
18	08:32 16:54	07:44 17:51	06:42 18:41	06:32 20:34	05:36 21:24	28	20:17 (WEA 1) 20:45 (WEA 1)	05:12 21:56
19	08:31 16:56	07:42 17:53	06:40 18:43	06:29 20:36	05:34 21:25	28	20:17 (WEA 1) 20:45 (WEA 1)	05:12 21:56
20	08:30 16:58	07:40 17:54	06:38 18:45	06:27 20:38	05:33 21:27	29	20:17 (WEA 1) 20:46 (WEA 1)	05:12 21:57
21	08:29 16:59	07:38 17:56	06:35 18:46	06:25 20:40	05:31 21:28	29	20:17 (WEA 1) 20:46 (WEA 1)	05:12 21:57
22	08:28 17:01	07:36 17:58	06:33 18:48	06:23 20:41	05:30 21:30	30	20:16 (WEA 1) 20:46 (WEA 1)	05:12 21:57
23	08:27 17:03	07:34 18:00	06:31 18:50	06:21 20:43	05:29 21:31	29	20:17 (WEA 1) 20:46 (WEA 1)	05:12 21:57
24	08:26 17:05	07:32 18:02	06:28 18:52	06:19 20:45	05:28 21:33	29	20:17 (WEA 1) 20:46 (WEA 1)	05:13 21:57
25	08:24 17:06	07:29 18:04	06:26 18:53	06:17 20:46	05:26 21:34	29	20:17 (WEA 1) 20:46 (WEA 1)	05:13 21:57
26	08:23 17:08	07:27 18:05	06:24 18:55	06:15 20:48	05:25 21:35	29	20:17 (WEA 1) 20:46 (WEA 1)	05:13 21:57
27	08:22 17:10	07:25 18:07	06:21 18:57	06:13 20:50	05:24 21:37	29	20:17 (WEA 1) 20:46 (WEA 1)	05:14 21:57
28	08:20 17:12	07:23 18:09	06:19 18:58	06:11 20:51	05:23 21:38	29	20:17 (WEA 1) 20:46 (WEA 1)	05:14 21:57
29	08:19 17:14		06:09 20:00	05:22 20:53	05:22 21:39	29	20:17 (WEA 1) 20:46 (WEA 1)	05:15 21:57
30	08:18 17:15		06:07 20:02	05:21 20:55	05:21 21:40	28	20:18 (WEA 1) 20:46 (WEA 1)	05:15 21:57
31	08:16 17:17		06:07 20:04	05:20 21:41	05:20 21:41	28	20:19 (WEA 1) 20:47 (WEA 1)	20:49 (WEA 1)
Sonnenscheinstunden	258	277	367	416	486		500	
astr.max.mögl.Beschattung					569		652	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 54-NW - IP 54-NW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung

Die Windenergieanlage/n ist/sind immer in Betrieb

Juli		August		September		Oktober		November		Dezember	
1	05:16	20:28 (WEA 1)	05:53	17	20:33 (WEA 1)	06:43	07:32	07:26	08:18		
	21:57	20:50 (WEA 1)	21:25		20:50 (WEA 1)	20:22	19:12	17:06	16:25		
2	05:17	20:28 (WEA 1)	05:54	14	20:34 (WEA 1)	06:45	07:34	07:28	08:19		
	21:56	20:50 (WEA 1)	21:23		20:48 (WEA 1)	20:20	19:10	17:04	16:25		
3	05:18	20:27 (WEA 1)	05:56	9	20:37 (WEA 1)	06:46	07:36	07:30	08:20		
	21:56	20:50 (WEA 1)	21:21		20:46 (WEA 1)	20:18	19:08	17:02	16:24		
4	05:18	20:27 (WEA 1)	05:57			06:48	07:37	07:32	08:22		
	21:56	20:51 (WEA 1)	21:20			20:15	19:06	17:00	16:23		
5	05:19	20:27 (WEA 1)	05:59			06:49	07:39	07:34	08:23		
	21:55	20:52 (WEA 1)	21:18			20:13	19:03	16:59	16:23		
6	05:20	20:28 (WEA 1)	06:01			06:51	07:41	07:35	08:24		
	21:55	20:52 (WEA 1)	21:16			20:11	19:01	16:57	16:22		
7	05:21	20:28 (WEA 1)	06:02			06:53	07:42	07:37	08:26		
	21:54	20:53 (WEA 1)	21:14			20:09	18:59	16:55	16:22		
8	05:22	20:27 (WEA 1)	06:04			06:54	07:44	07:39	08:27		
	21:53	20:52 (WEA 1)	21:12			20:06	18:56	16:54	16:22		
9	05:23	20:27 (WEA 1)	06:05			06:56	07:46	07:41	08:28		
	21:53	20:53 (WEA 1)	21:10			20:04	18:54	16:52	16:21		
10	05:24	20:26 (WEA 1)	06:07			06:58	07:47	07:43	08:29		
	21:52	20:53 (WEA 1)	21:09			20:02	18:52	16:50	16:21		
11	05:25	20:26 (WEA 1)	06:09			06:59	07:49	07:44	08:30		
	21:51	20:54 (WEA 1)	21:07			19:59	18:50	16:49	16:21		
12	05:26	20:26 (WEA 1)	06:10			07:01	07:51	07:46	08:31		
	21:50	20:54 (WEA 1)	21:05			19:57	18:47	16:47	16:21		
13	05:27	20:26 (WEA 1)	06:12			07:03	07:53	07:48	08:32		
	21:49	20:54 (WEA 1)	21:03			19:55	18:45	16:46	16:21		
14	05:28	20:26 (WEA 1)	06:13			07:04	07:54	07:50	08:33		
	21:48	20:55 (WEA 1)	21:01			19:52	18:43	16:44	16:21		
15	05:29	20:27 (WEA 1)	06:15			07:06	07:56	07:51	08:34		
	21:47	20:56 (WEA 1)	20:59			19:50	18:41	16:43	16:21		
16	05:30	20:27 (WEA 1)	06:17			07:07	07:58	07:53	08:35		
	21:46	20:56 (WEA 1)	20:57			19:48	18:39	16:41	16:21		
17	05:32	20:27 (WEA 1)	06:18			07:09	08:00	07:55	08:36		
	21:45	20:56 (WEA 1)	20:55			19:45	18:36	16:40	16:21		
18	05:33	20:26 (WEA 1)	06:20			07:11	08:01	07:57	08:37		
	21:44	20:56 (WEA 1)	20:53			19:43	18:34	16:39	16:21		
19	05:34	20:26 (WEA 1)	06:22			07:12	08:03	07:58	08:37		
	21:43	20:56 (WEA 1)	20:51			19:41	18:32	16:37	16:22		
20	05:36	20:27 (WEA 1)	06:23			07:14	08:05	08:00	08:38		
	21:42	20:57 (WEA 1)	20:48			19:38	18:30	16:36	16:22		
21	05:37	20:27 (WEA 1)	06:25			07:16	08:07	08:02	08:39		
	21:41	20:56 (WEA 1)	20:46			19:36	18:28	16:35	16:23		
22	05:38	20:27 (WEA 1)	06:27			07:17	08:08	08:03	08:39		
	21:39	20:56 (WEA 1)	20:44			19:33	18:26	16:34	16:23		
23	05:40	20:27 (WEA 1)	06:28			07:19	08:10	08:05	08:40		
	21:38	20:56 (WEA 1)	20:42			19:31	18:24	16:33	16:23		
24	05:41	20:28 (WEA 1)	06:30			07:21	08:12	08:07	08:40		
	21:37	20:56 (WEA 1)	20:40			19:29	18:22	16:31	16:24		
25	05:42	20:28 (WEA 1)	06:31			07:22	07:14	08:08	08:41		
	21:35	20:56 (WEA 1)	20:38			19:26	17:20	16:30	16:25		
26	05:44	20:28 (WEA 1)	06:33			07:24	07:16	08:10	08:41		
	21:34	20:55 (WEA 1)	20:36			19:24	17:18	16:29	16:25		
27	05:45	20:29 (WEA 1)	06:35			07:26	07:17	08:12	08:41		
	21:32	20:55 (WEA 1)	20:33			19:22	17:16	16:29	16:26		
28	05:47	20:29 (WEA 1)	06:36			07:27	07:19	08:13	08:41		
	21:31	20:54 (WEA 1)	20:31			19:19	17:14	16:28	16:27		
29	05:48	20:29 (WEA 1)	06:38			07:29	07:21	08:15	08:41		
	21:29	20:53 (WEA 1)	20:29			19:17	17:12	16:27	16:28		
30	05:50	20:31 (WEA 1)	06:40			07:31	07:23	08:16	08:42		
	21:28	20:53 (WEA 1)	20:27			19:15	17:10	16:26	16:29		
31	05:51	20:31 (WEA 1)	06:41				07:25		08:42		
	21:26	20:51 (WEA 1)	20:24				17:08		16:30		
Sonnenscheinstunden		503	454			381	331	266	243		
astr.max.mögl.Beschattung		820	40								

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 55-NW - IP 55-NW
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinfallrichtung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai		Juni	
1	08:42 16:31	08:15 17:19	07:21 18:11	07:10 20:05	06:05 20:57		05:19 21:43	23 20:20 (WEA 1) 20:43 (WEA 1)
2	08:41 16:32	08:13 17:21	07:19 18:13	07:08 20:07	06:03 20:58		05:18 21:44	22 20:20 (WEA 1) 20:42 (WEA 1)
3	08:41 16:33	08:11 17:23	07:16 18:15	07:05 20:09	06:01 21:00		05:18 21:45	20 20:22 (WEA 1) 20:42 (WEA 1)
4	08:41 16:34	08:10 17:25	07:14 18:16	07:03 20:10	05:59 21:02		05:17 21:46	20 20:22 (WEA 1) 20:42 (WEA 1)
5	08:41 16:35	08:08 17:26	07:12 18:18	07:01 20:12	05:57 21:03		05:16 21:47	19 20:22 (WEA 1) 20:41 (WEA 1)
6	08:41 16:37	08:06 17:28	07:10 18:20	06:58 20:14	05:55 21:05		05:15 21:48	18 20:23 (WEA 1) 20:41 (WEA 1)
7	08:40 16:38	08:05 17:30	07:08 18:22	06:56 20:16	05:54 21:07		05:15 21:49	16 20:24 (WEA 1) 20:40 (WEA 1)
8	08:40 16:39	08:03 17:32	07:05 18:24	06:54 20:17	05:52 21:08	10 20:25 (WEA 1) 20:35 (WEA 1)	05:14 21:50	15 20:25 (WEA 1) 20:40 (WEA 1)
9	08:39 16:41	08:01 17:34	07:03 18:25	06:52 20:19	05:50 21:10	15 20:22 (WEA 1) 20:37 (WEA 1)	05:14 21:51	14 20:26 (WEA 1) 20:40 (WEA 1)
10	08:39 16:42	07:59 17:36	07:01 18:27	06:49 20:21	05:48 21:11	18 20:21 (WEA 1) 20:39 (WEA 1)	05:13 21:51	13 20:26 (WEA 1) 20:39 (WEA 1)
11	08:38 16:43	07:57 17:38	06:58 18:29	06:47 20:22	05:47 21:13	21 20:19 (WEA 1) 20:40 (WEA 1)	05:13 21:52	12 20:27 (WEA 1) 20:39 (WEA 1)
12	08:37 16:45	07:56 17:40	06:56 18:31	06:45 20:24	05:45 21:15	22 20:19 (WEA 1) 20:41 (WEA 1)	05:13 21:53	11 20:28 (WEA 1) 20:39 (WEA 1)
13	08:37 16:46	07:54 17:41	06:54 18:32	06:43 20:26	05:43 21:16	23 20:18 (WEA 1) 20:41 (WEA 1)	05:12 21:53	10 20:28 (WEA 1) 20:38 (WEA 1)
14	08:36 16:48	07:52 17:43	06:52 18:34	06:40 20:28	05:42 21:18	24 20:18 (WEA 1) 20:42 (WEA 1)	05:12 21:54	8 20:29 (WEA 1) 20:37 (WEA 1)
15	08:35 16:50	07:50 17:45	06:49 18:36	06:38 20:29	05:40 21:19	25 20:17 (WEA 1) 20:42 (WEA 1)	05:12 21:55	7 20:30 (WEA 1) 20:37 (WEA 1)
16	08:34 16:51	07:48 17:47	06:47 18:38	06:36 20:31	05:39 21:21	26 20:17 (WEA 1) 20:43 (WEA 1)	05:12 21:55	5 20:31 (WEA 1) 20:36 (WEA 1)
17	08:33 16:53	07:46 17:49	06:45 18:39	06:34 20:33	05:37 21:22	27 20:17 (WEA 1) 20:44 (WEA 1)	05:12 21:56	3 20:33 (WEA 1) 20:36 (WEA 1)
18	08:32 16:54	07:44 17:51	06:42 18:41	06:32 20:34	05:36 21:24	27 20:16 (WEA 1) 20:43 (WEA 1)	05:12 21:56	
19	08:31 16:56	07:42 17:53	06:40 18:43	06:29 20:36	05:34 21:25	28 20:16 (WEA 1) 20:44 (WEA 1)	05:12 21:56	
20	08:30 16:58	07:40 17:54	06:38 18:45	06:27 20:38	05:33 21:27	28 20:16 (WEA 1) 20:44 (WEA 1)	05:12 21:57	
21	08:29 16:59	07:38 17:56	06:35 18:46	06:25 20:40	05:31 21:28	28 20:16 (WEA 1) 20:44 (WEA 1)	05:12 21:57	
22	08:28 17:01	07:36 17:58	06:33 18:48	06:23 20:41	05:30 21:30	28 20:16 (WEA 1) 20:44 (WEA 1)	05:12 21:57	
23	08:27 17:03	07:34 18:00	06:31 18:50	06:21 20:43	05:29 21:31	28 20:16 (WEA 1) 20:44 (WEA 1)	05:12 21:57	
24	08:26 17:05	07:32 18:02	06:28 18:51	06:19 20:45	05:28 21:33	28 20:16 (WEA 1) 20:44 (WEA 1)	05:13 21:57	
25	08:24 17:06	07:29 18:04	06:26 18:53	06:17 20:46	05:26 21:34	27 20:17 (WEA 1) 20:44 (WEA 1)	05:13 21:57	2 20:35 (WEA 1) 20:37 (WEA 1)
26	08:23 17:08	07:27 18:05	06:24 18:55	06:15 20:48	05:25 21:35	27 20:17 (WEA 1) 20:44 (WEA 1)	05:13 21:57	4 20:34 (WEA 1) 20:38 (WEA 1)
27	08:22 17:10	07:25 18:07	06:21 18:57	06:13 20:50	05:24 21:37	26 20:17 (WEA 1) 20:43 (WEA 1)	05:14 21:57	6 20:34 (WEA 1) 20:40 (WEA 1)
28	08:20 17:12	07:23 18:09	06:19 18:58	06:11 20:51	05:23 21:38	25 20:18 (WEA 1) 20:43 (WEA 1)	05:14 21:57	7 20:33 (WEA 1) 20:40 (WEA 1)
29	08:19 17:13		07:17 20:00	06:09 20:53	05:22 21:39	25 20:18 (WEA 1) 20:43 (WEA 1)	05:15 21:57	9 20:33 (WEA 1) 20:42 (WEA 1)
30	08:18 17:15		07:15 20:02	06:07 20:55	05:21 21:40	25 20:18 (WEA 1) 20:43 (WEA 1)	05:15 21:57	10 20:32 (WEA 1) 20:42 (WEA 1)
31	08:16 17:17		07:12 20:04		05:20 21:41	23 20:20 (WEA 1) 20:43 (WEA 1)		
Sonnenscheinstunden	258	277	367	416	486		500	
astr.max.mögl.Beschattung					584		274	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM)	Schattenanfang (WEA mit erstem Schatten)	Schattenende (WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 55-NW - IP 55-NW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung

Die Windenergieanlage/n ist/sind immer in Betrieb

	Juli		August		September		Oktober		November		Dezember	
1	05:16		20:32 (WEA 1)	05:53		20:30 (WEA 1)	06:43	07:32	07:26	08:18		
	21:57	11	20:43 (WEA 1)	21:25	21	20:51 (WEA 1)	20:22	19:12	17:06	16:25		
2	05:17		20:31 (WEA 1)	05:54		20:30 (WEA 1)	06:45	07:34	07:28	08:19		
	21:56	13	20:44 (WEA 1)	21:23	20	20:50 (WEA 1)	20:20	19:10	17:04	16:25		
3	05:18		20:30 (WEA 1)	05:56		20:32 (WEA 1)	06:46	07:36	07:30	08:20		
	21:56	14	20:44 (WEA 1)	21:21	17	20:49 (WEA 1)	20:18	19:08	17:02	16:24		
4	05:18		20:30 (WEA 1)	05:57		20:33 (WEA 1)	06:48	07:37	07:32	08:22		
	21:56	15	20:45 (WEA 1)	21:19	13	20:46 (WEA 1)	20:15	19:06	17:00	16:23		
5	05:19		20:30 (WEA 1)	05:59		20:36 (WEA 1)	06:49	07:39	07:34	08:23		
	21:55	16	20:46 (WEA 1)	21:18	8	20:44 (WEA 1)	20:13	19:03	16:59	16:23		
6	05:20		20:30 (WEA 1)	06:01			06:51	07:41	07:35	08:24		
	21:55	17	20:47 (WEA 1)	21:16			20:11	19:01	16:57	16:22		
7	05:21		20:30 (WEA 1)	06:02			06:53	07:42	07:37	08:26		
	21:54	18	20:48 (WEA 1)	21:14			20:09	18:59	16:55	16:22		
8	05:22		20:28 (WEA 1)	06:04			06:54	07:44	07:39	08:27		
	21:53	20	20:48 (WEA 1)	21:12			20:06	18:56	16:54	16:22		
9	05:23		20:28 (WEA 1)	06:05			06:56	07:46	07:41	08:28		
	21:53	21	20:49 (WEA 1)	21:10			20:04	18:54	16:52	16:21		
10	05:24		20:28 (WEA 1)	06:07			06:58	07:47	07:43	08:29		
	21:52	21	20:49 (WEA 1)	21:09			20:02	18:52	16:50	16:21		
11	05:25		20:28 (WEA 1)	06:09			06:59	07:49	07:44	08:30		
	21:51	22	20:50 (WEA 1)	21:07			19:59	18:50	16:49	16:21		
12	05:26		20:27 (WEA 1)	06:10			07:01	07:51	07:46	08:31		
	21:50	23	20:50 (WEA 1)	21:05			19:57	18:47	16:47	16:21		
13	05:27		20:27 (WEA 1)	06:12			07:03	07:53	07:48	08:32		
	21:49	24	20:51 (WEA 1)	21:03			19:55	18:45	16:46	16:21		
14	05:28		20:27 (WEA 1)	06:13			07:04	07:54	07:50	08:33		
	21:48	24	20:51 (WEA 1)	21:01			19:52	18:43	16:44	16:21		
15	05:29		20:27 (WEA 1)	06:15			07:06	07:56	07:51	08:34		
	21:47	26	20:53 (WEA 1)	20:59			19:50	18:41	16:43	16:21		
16	05:30		20:27 (WEA 1)	06:17			07:07	07:58	07:53	08:35		
	21:46	26	20:53 (WEA 1)	20:57			19:48	18:39	16:41	16:21		
17	05:32		20:27 (WEA 1)	06:18			07:09	08:00	07:55	08:36		
	21:45	26	20:53 (WEA 1)	20:55			19:45	18:36	16:40	16:21		
18	05:33		20:26 (WEA 1)	06:20			07:11	08:01	07:57	08:37		
	21:44	27	20:53 (WEA 1)	20:53			19:43	18:34	16:39	16:21		
19	05:34		20:26 (WEA 1)	06:22			07:12	08:03	07:58	08:37		
	21:43	27	20:53 (WEA 1)	20:51			19:40	18:32	16:37	16:22		
20	05:36		20:27 (WEA 1)	06:23			07:14	08:05	08:00	08:38		
	21:42	27	20:54 (WEA 1)	20:48			19:38	18:30	16:36	16:22		
21	05:37		20:26 (WEA 1)	06:25			07:16	08:07	08:02	08:39		
	21:41	28	20:54 (WEA 1)	20:46			19:36	18:28	16:35	16:23		
22	05:38		20:26 (WEA 1)	06:27			07:17	08:08	08:03	08:39		
	21:39	28	20:54 (WEA 1)	20:44			19:33	18:26	16:34	16:23		
23	05:40		20:26 (WEA 1)	06:28			07:19	08:10	08:05	08:40		
	21:38	28	20:54 (WEA 1)	20:42			19:31	18:24	16:33	16:23		
24	05:41		20:27 (WEA 1)	06:30			07:21	08:12	08:07	08:40		
	21:37	27	20:54 (WEA 1)	20:40			19:29	18:22	16:31	16:24		
25	05:42		20:26 (WEA 1)	06:31			07:22	07:14	08:08	08:41		
	21:35	28	20:54 (WEA 1)	20:38			19:26	17:20	16:30	16:25		
26	05:44		20:26 (WEA 1)	06:33			07:24	07:16	08:10	08:41		
	21:34	28	20:54 (WEA 1)	20:36			19:24	17:18	16:29	16:25		
27	05:45		20:27 (WEA 1)	06:35			07:26	07:17	08:12	08:41		
	21:32	27	20:54 (WEA 1)	20:33			19:22	17:16	16:29	16:26		
28	05:47		20:27 (WEA 1)	06:36			07:27	07:19	08:13	08:41		
	21:31	26	20:53 (WEA 1)	20:31			19:19	17:14	16:28	16:27		
29	05:48		20:27 (WEA 1)	06:38			07:29	07:21	08:15	08:41		
	21:29	25	20:52 (WEA 1)	20:29			19:17	17:12	16:27	16:28		
30	05:50		20:28 (WEA 1)	06:40			07:31	07:23	08:16	08:42		
	21:28	24	20:52 (WEA 1)	20:27			19:15	17:10	16:26	16:29		
31	05:51		20:28 (WEA 1)	06:41				07:25		08:42		
	21:26	23	20:51 (WEA 1)	20:24				17:08		16:30		
Sonnenscheinstunden	503			454			381	331	266	243		
astr.max.mögl.Beschattung		710			79							

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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Projekt:

WP Luentener Mark

Lizenzierter Anwender:

WWK Partnerschaft für Umweltplanung

Molkenstraße 5

DE-48231 Warendorf

02581 93 660

Reiner Winterkamp / r.winterkamp@wwk-umweltplanung.de

Berechnet:

07.12.2023 09:56/4.0.424

SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 56-NW - IP 56-NW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung

Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Jun	Jul	August	September	Oktober	November	Dezember
1	08:42	08:15	07:21	07:10	06:05	05:19	20:25 (WEA 1) 05:16	20:32 (WEA 1) 05:53	06:43	07:32	07:26	08:18
2	16:31	17:19	18:11	20:05	20:57	21:43	30 20:55 (WEA 1) 21:57	28 21:00 (WEA 1) 21:25	20:22	19:12	17:06	16:25
3	08:41	08:11	07:16	07:05	06:01	05:18	20:26 (WEA 1) 05:18	20:31 (WEA 1) 05:56	06:46	07:36	07:30	08:20
4	16:33	17:23	18:15	20:09	21:00	21:45	30 20:56 (WEA 1) 21:56	29 21:00 (WEA 1) 21:21	20:18	19:08	17:02	16:24
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6	16:34	17:25	18:16	20:10	21:02	21:46	30 20:55 (WEA 1) 21:56	29 21:01 (WEA 1) 21:20	20:15	19:06	17:00	16:23
7	08:41	08:08	07:12	07:01	05:57	05:16	20:25 (WEA 1) 05:19	20:32 (WEA 1) 05:59	06:49	07:39	07:34	08:23
8	16:35	17:26	18:18	20:12	21:03	21:47	30 20:55 (WEA 1) 21:55	29 21:01 (WEA 1) 21:18	20:13	19:03	16:59	16:23
9	08:41	08:06	07:10	06:58	05:55	05:15	20:26 (WEA 1) 05:20	20:32 (WEA 1) 06:01	06:51	07:41	07:35	08:24
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47	08:24	07:29	06:26	06:17	05:26	05:13	20:25 (WEA 1) 05:13	20:38 (WEA 1) 06:31	07:22	08:14	08:08	08:41
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49	08:23	07:27	06:24	06:15	05:25	05:13	20:25 (WEA 1) 05:13	20:31 (WEA 1) 06:33	07:24	08:16	08:10	08:41
50	17:08	18:05	18:55	20:48	21:35	21:57	28 20:59 (WEA 1) 21:34	19 20:58 (WEA 1) 21:06	19:24	18:18	16:29	16:25
51	08:22	07:25	06:21	06:13	05:24	05:14	20:25 (WEA 1) 05:14	20:31 (WEA 1) 06:35	07:26	08:17	08:12	08:41
52	17:10	18:07	18:57	20:50	21:37	21:57	28 20:59 (WEA 1) 21:32	16 20:57 (WEA 1) 21:03	19:22	18:16	16:29	16:26
53	08:20	07:23	06:19	06:11	05:23	05:14	20:24 (WEA 1) 05:14	20:31 (WEA 1) 06:36	07:27	08:19	08:13	08:41
54	17:12	18:09	18:58	20:51	21:38	21:57	28 20:59 (WEA 1) 21:31	13 20:55 (WEA 1) 21:03	19:19	18:14	16:28	16:27
55	08:19	07:17	06:09	05:22	05:22	05:15	20:24 (WEA 1) 05:15	20:32 (WEA 1) 06:38	07:29	08:21	08:15	08:41
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58	17:15	18:12	19:01	20:55	21:40	21:57	29 21:00 (WEA 1) 21:28	20:27	19:15	18:10	16:26	16:29
59	08:16	07:12	06:02	05:20	05:20	05:14	20:25 (WEA 1) 05:14	20:31 (WEA 1) 06:51	07:25	08:17	08:12	08:42
60	17:17	18:14	19:03	20:54	21:41	21:57	30 20:55 (WEA 1) 21:26	20:24	17:08	16:08	16:30	16:30
Sonnenscheinstunden		258	277	367	416	486	500	503	454	381	331	266
astr.max.mögl.Beschattung						417	860	757				243

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang (WEA mit erstem Schatten)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schatteneende (WEA mit letztem Schatten)
	Sonnenuntergang (SS:MM)			

Projekt:

WP Luentener Mark

Lizenzierter Anwender:

WWK Partnerschaft für Umweltplanung

Molkenstraße 5

DE-48231 Warendorf

02581 93 660

Reiner Winterkamp / r.winterkamp@wwk-umweltplanung.de

Berechnet:

07.12.2023 09:56/4.0.424

SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 57-NW - IP 57-NW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung

Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	June	July	August	September	Oktober	November	Dezember	
1	08:42	08:15	07:21	07:10	06:05	05:19	20:30 (WEA 1) 05:16	20:36 (WEA 1) 05:53	06:43	07:32	07:26	08:18	
	16:31	17:19	18:11	20:05	20:57	21:43	29 20:59 (WEA 1) 21:57	29 21:05 (WEA 1) 21:25	20:22	19:12	17:06	16:25	
2	08:42	08:13	07:19	07:08	06:03	05:18	20:30 (WEA 1) 05:17	20:36 (WEA 1) 05:54	06:45	07:34	07:28	08:19	
	16:32	17:21	18:13	20:07	20:58	21:44	29 20:59 (WEA 1) 21:56	30 21:06 (WEA 1) 21:23	20:20	19:10	17:04	16:25	
3	08:41	08:11	07:16	07:05	06:01	05:18	20:30 (WEA 1) 05:18	20:36 (WEA 1) 05:56	06:46	07:36	07:30	08:20	
	16:33	17:23	18:15	20:09	21:00	21:45	30 21:00 (WEA 1) 21:56	29 21:05 (WEA 1) 21:21	20:18	19:08	17:02	16:24	
4	08:41	08:10	07:14	07:03	05:59	05:17	20:30 (WEA 1) 05:18	20:36 (WEA 1) 05:58	06:48	07:37	07:32	08:22	
	16:34	17:25	18:16	20:10	21:02	21:46	30 21:00 (WEA 1) 21:56	30 21:06 (WEA 1) 21:20	20:15	19:06	17:00	16:23	
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	16:35	17:26	18:18	20:12	21:03	21:47	29 20:59 (WEA 1) 21:55	30 21:06 (WEA 1) 21:18	20:13	19:03	16:59	16:23	
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12	08:37	07:56	06:56	06:45	05:45	05:13	20:30 (WEA 1) 05:26	20:37 (WEA 1) 06:10	07:01	07:51	07:46	08:31	
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13	08:37	07:54	06:54	06:43	05:43	05:12	20:30 (WEA 1) 05:27	20:38 (WEA 1) 06:12	07:03	07:53	07:48	08:32	
	16:46	17:41	18:32	20:26	21:16	21:53	30 21:01 (WEA 1) 21:49	28 21:06 (WEA 1) 21:03	19:55	18:45	16:46	16:21	
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	17:10	18:07	18:57	20:50	21:37	21:57	29 21:04 (WEA 1) 21:32	20:33	19:22	17:16	16:29	16:26	
28	08:20	07:23	06:19	06:11	05:23	05:14	20:30 (WEA 1) 05:47	20:35 (WEA 1) 06:36	07:27	08:18	08:13	08:41	
	17:12	18:09	18:58	20:51	21:38	21:57	29 21:04 (WEA 1) 21:31	20:31	19:19	17:14	16:28	16:27	
29	08:19	07:17	06:09	05:22	05:15	05:15	20:30 (WEA 1) 05:48	06:38	07:29	08:15	08:15	08:41	
	17:14	18:11	19:00	20:53	21:39	21:57	30 21:05 (WEA 1) 21:29	20:29	19:17	17:12	16:27	16:28	
30	08:18	07:15	06:07	05:21	05:15	05:15	20:29 (WEA 1) 05:50	06:40	07:31	08:16	08:16	08:42	
	17:15	18:12	19:01	20:55	21:40	21:57	30 21:05 (WEA 1) 21:28	20:27	19:15	17:10	16:26	16:29	
31	08:16	07:12	06:04	05:20	05:14	05:14	20:30 (WEA 1) 05:51	06:41	07:32	08:17	08:17	08:42	
	17:17	18:14	19:03	20:57	21:41	21:57	29 20:59 (WEA 1) 21:26	20:24	19:12	17:08	16:26	16:30	
Sonnenscheinstunden	258	277	367	416	486	500	500	503	454	381	331	266	243
astr.max.mögl.Beschattung					318	882	660						

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang (WEA mit erstem Schatten)	Zeitpunkt (SS:MM) Schattendecke (WEA mit letztem Schatten)
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Projekt:

WP Luentener Mark

Lizenzierter Anwender:

WWK Partnerschaft für Umweltplanung

Molkenstraße 5

DE-48231 Warendorf

02581 93 660

Reiner Winterkamp / r.winterkamp@wwk-umweltplanung.de

Berechnet:

07.12.2023 09:56/4.0.424

SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 58-NW - IP 58-NW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinflussrichtung

Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	June	July	August	September	Oktober	November	Dezember
1	08:42	08:15	07:21	07:10	06:05	05:19	20:25 (WEA 1) 05:16	20:32 (WEA 1) 05:53	06:43	07:32	07:26	08:18
	16:31	17:19	18:11	20:05	20:57	21:43	28 20:53 (WEA 1) 21:57	25 20:57 (WEA 1) 21:25	20:22	19:12	17:06	16:25
2	08:41	08:13	07:19	07:08	06:03	05:18	20:25 (WEA 1) 05:17	20:33 (WEA 1) 05:54	06:45	07:34	07:28	08:19
	16:32	17:21	18:13	20:07	20:58	21:44	27 20:52 (WEA 1) 21:56	25 20:58 (WEA 1) 21:23	20:20	19:10	17:04	16:25
3	08:41	08:11	07:16	07:05	06:01	05:18	20:26 (WEA 1) 05:18	20:32 (WEA 1) 05:56	06:46	07:36	07:30	08:20
	16:33	17:23	18:15	20:09	21:00	21:45	27 20:53 (WEA 1) 21:56	25 20:57 (WEA 1) 21:21	20:18	19:08	17:02	16:24
4	08:41	08:10	07:14	07:03	05:59	05:17	20:25 (WEA 1) 05:18	20:32 (WEA 1) 05:57	06:48	07:37	07:32	08:22
	16:34	17:25	18:16	20:10	21:02	21:46	28 20:53 (WEA 1) 21:56	26 20:58 (WEA 1) 21:19	20:15	19:06	17:00	16:23
5	08:41	08:08	07:12	07:01	05:57	05:16	20:25 (WEA 1) 05:19	20:32 (WEA 1) 05:59	06:49	07:39	07:34	08:23
	16:35	17:26	18:18	20:12	21:03	21:47	27 20:52 (WEA 1) 21:55	27 20:59 (WEA 1) 21:18	20:13	19:03	16:59	16:23
6	08:41	08:06	07:10	06:58	05:55	05:15	20:26 (WEA 1) 05:20	20:33 (WEA 1) 06:01	06:51	07:41	07:35	08:24
	16:37	17:28	18:20	20:14	21:05	21:48	27 20:53 (WEA 1) 21:55	26 20:59 (WEA 1) 21:16	20:11	19:01	16:57	16:22
7	08:40	08:05	07:08	06:56	05:54	05:15	20:26 (WEA 1) 05:21	20:33 (WEA 1) 06:02	06:53	07:42	07:37	08:26
	16:38	17:30	18:22	20:16	21:07	21:49	26 20:52 (WEA 1) 21:54	27 21:00 (WEA 1) 21:14	20:09	18:59	16:55	16:22
8	08:40	08:03	07:05	06:54	05:52	05:14	20:27 (WEA 1) 05:22	20:32 (WEA 1) 06:04	06:54	07:44	07:39	08:27
	16:39	17:32	18:24	20:17	21:08	21:50	26 20:53 (WEA 1) 21:53	27 20:59 (WEA 1) 21:12	20:06	18:56	16:54	16:22
9	08:39	08:01	07:03	06:52	05:50	05:14	20:28 (WEA 1) 05:23	20:32 (WEA 1) 06:05	06:56	07:46	07:41	08:28
	16:41	17:34	18:25	20:19	21:10	21:51	25 20:53 (WEA 1) 21:53	27 20:59 (WEA 1) 21:10	20:04	18:54	16:52	16:21
10	08:39	07:59	07:01	06:49	05:48	05:13	20:27 (WEA 1) 05:24	20:32 (WEA 1) 06:07	06:58	07:47	07:43	08:29
	16:42	17:36	18:27	20:21	21:11	21:51	26 20:53 (WEA 1) 21:52	28 21:00 (WEA 1) 21:09	20:02	18:52	16:50	16:21
11	08:38	07:57	06:58	06:47	05:47	05:13	20:28 (WEA 1) 05:25	20:32 (WEA 1) 06:09	06:59	07:49	07:44	08:30
	16:43	17:38	18:29	20:22	21:13	21:52	25 20:53 (WEA 1) 21:51	28 21:00 (WEA 1) 21:07	19:59	18:50	16:49	16:21
12	08:37	07:56	06:56	06:45	05:45	05:13	20:29 (WEA 1) 05:26	20:32 (WEA 1) 06:10	07:01	07:51	07:46	08:31
	16:45	17:40	18:31	20:24	21:15	21:53	24 20:53 (WEA 1) 21:50	28 21:00 (WEA 1) 21:05	19:57	18:47	16:47	16:21
13	08:37	07:54	06:54	06:43	05:43	05:12	20:28 (WEA 1) 05:27	20:32 (WEA 1) 06:12	07:03	07:53	07:48	08:32
	16:46	17:41	18:32	20:26	21:16	10 20:42 (WEA 1) 21:53	24 20:52 (WEA 1) 21:49	28 21:00 (WEA 1) 21:03	19:55	18:45	16:46	16:21
14	08:36	07:52	06:52	06:40	05:42	05:12	20:30 (WEA 1) 05:12	20:29 (WEA 1) 05:28	07:04	07:54	07:50	08:33
	16:48	17:43	18:34	20:28	21:18	14 20:44 (WEA 1) 21:54	24 20:53 (WEA 1) 21:48	28 21:00 (WEA 1) 21:01	19:52	18:43	16:44	16:21
15	08:35	07:50	06:49	06:38	05:40	05:12	20:28 (WEA 1) 05:12	20:29 (WEA 1) 05:29	07:06	07:56	07:51	08:34
	16:50	17:45	18:36	20:29	21:19	17 20:45 (WEA 1) 21:55	24 20:53 (WEA 1) 21:47	29 21:02 (WEA 1) 20:59	19:50	18:41	16:43	16:21
16	08:34	07:48	06:47	06:36	05:39	05:12	20:27 (WEA 1) 05:12	20:30 (WEA 1) 05:30	07:07	07:57	07:53	08:35
	16:51	17:47	18:38	20:31	21:21	20 20:47 (WEA 1) 21:55	23 20:53 (WEA 1) 21:46	28 21:01 (WEA 1) 20:57	19:48	18:39	16:41	16:21
17	08:33	07:46	06:45	06:34	05:37	05:12	20:27 (WEA 1) 05:12	20:30 (WEA 1) 05:32	07:08	07:58	07:53	08:36
	16:53	17:49	18:39	20:33	21:22	21 20:48 (WEA 1) 21:56	23 20:53 (WEA 1) 21:45	28 21:01 (WEA 1) 20:55	19:45	18:36	16:40	16:21
18	08:32	07:44	06:42	06:32	05:36	05:12	20:25 (WEA 1) 05:12	20:30 (WEA 1) 05:33	07:09	07:59	07:54	08:37
	16:54	17:51	18:41	20:34	21:24	23 20:48 (WEA 1) 21:56	23 20:53 (WEA 1) 21:44	28 21:01 (WEA 1) 20:53	19:43	18:34	16:39	16:21
19	08:31	07:42	06:40	06:29	05:34	05:12	20:25 (WEA 1) 05:12	20:30 (WEA 1) 05:34	07:12	08:03	07:58	08:37
	16:56	17:53	18:43	20:36	21:25	24 20:49 (WEA 1) 21:56	23 20:53 (WEA 1) 21:43	28 21:01 (WEA 1) 20:51	19:41	18:32	16:37	16:22
20	08:30	07:40	06:38	06:27	05:33	05:12	20:25 (WEA 1) 05:12	20:30 (WEA 1) 05:36	07:14	08:05	08:00	08:38
	16:58	17:54	18:45	20:38	21:27	25 20:50 (WEA 1) 21:57	23 20:53 (WEA 1) 21:42	28 21:02 (WEA 1) 20:48	19:38	18:30	16:36	16:22
21	08:29	07:38	06:35	06:25	05:31	05:12	20:25 (WEA 1) 05:12	20:31 (WEA 1) 05:37	07:16	08:07	08:02	08:39
	16:59	17:56	18:46	20:40	21:28	26 20:51 (WEA 1) 21:57	23 20:54 (WEA 1) 21:41	27 21:01 (WEA 1) 20:46	19:36	18:28	16:35	16:23
22	08:28	07:36	06:33	06:23	05:30	05:12	20:24 (WEA 1) 05:12	20:31 (WEA 1) 05:38	07:17	08:08	08:03	08:39
	17:01	17:58	18:48	20:41	21:30	26 20:50 (WEA 1) 21:57	23 20:54 (WEA 1) 21:39	27 21:01 (WEA 1) 20:44	19:33	18:26	16:34	16:23
23	08:27	07:34	06:31	06:21	05:29	05:12	20:24 (WEA 1) 05:12	20:31 (WEA 1) 05:40	07:19	08:10	08:05	08:40
	17:03	18:00	18:50	20:43	21:31	27 20:51 (WEA 1) 21:57	23 20:54 (WEA 1) 21:38	26 21:00 (WEA 1) 20:42	19:31	18:24	16:33	16:23
24	08:26	07:32	06:28	06:19	05:28	05:13	20:24 (WEA 1) 05:13	20:32 (WEA 1) 05:41	07:21	08:12	08:07	08:40
	17:05	18:02	18:52	20:45	21:33	27 20:51 (WEA 1) 21:57	23 20:55 (WEA 1) 21:37	24 21:00 (WEA 1) 20:40	19:29	18:22	16:31	16:24
25	08:24	07:29	06:26	06:17	05:26	05:13	20:24 (WEA 1) 05:13	20:32 (WEA 1) 05:42	07:22	08:13	08:08	08:41
	17:06	18:04	18:53	20:46	21:34	28 20:52 (WEA 1) 21:57	23 20:55 (WEA 1) 21:35	23 20:59 (WEA 1) 20:38	19:26	18:19	16:30	16:25
26	08:23	07:27	06:24	06:15	05:25	05:13	20:24 (WEA 1) 05:13	20:32 (WEA 1) 05:44	07:24	08:15	08:10	08:41
	17:08	18:05	18:55	20:48	21:35	28 20:52 (WEA 1) 21:57	23 20:55 (WEA 1) 21:34	22 20:58 (WEA 1) 20:36	19:24	18:17	16:29	16:25
27	08:22	07:25	06:21	06:13	05:24	05:14	20:24 (WEA 1) 05:14	20:32 (WEA 1) 05:45	07:26	08:17	08:12	08:41
	17:10	18:07	18:57	20:50	21:37	28 20:52 (WEA 1) 21:57	24 20:56 (WEA 1) 21:32	20 20:58 (WEA 1) 20:33	19:22	18:16	16:29	16:26
28	08:20	07:23	06:19	06:11	05:23	05:14	20:24 (WEA 1) 05:14	20:32 (WEA 1) 05:47	07:27	08:18	08:13	08:41
	17:12	18:09	18:58	20:51	21:38	28 20:52 (WEA 1) 21:57	24 20:56 (WEA 1) 21:31	19 20:57 (WEA 1) 20:31	19:19	18:14	16:28	16:27
29	08:19	07:17	06:09	05:22	05:15	05:15	20:24 (WEA 1) 05:15	20:32 (WEA 1) 05:48	07:29	08:20	08:15	08:41
	17:14	18:11	19:00	20:53	21:39	28 20:52 (WEA 1) 21:57	24 20:56 (WEA 1) 21:29	16 20:55 (WEA 1) 20:29	19:17	18:12	16:27	16:28
30	08:18	07:15	06:07	05:21	05:15	05:15	20:24 (WEA 1) 05:15	20:32 (WEA 1) 05:50	07:31	08:22	08:16	08:42
	17:15	18:12	19:01	20:55	21:40	28 20:52 (WEA 1) 21:57	24 20:56 (WEA 1) 21:28	13 20:54 (WEA 1) 20:27	19:15	18:11	16:26	16:29
31	08:16	07:12	06:05	05:20	05:15	05:15	20:25 (WEA 1) 05:15	20:32 (WEA 1) 06:01	07:25	08:16	08:11	08:42
	17:17	18:14	19:03	20:54	21:41	28 20:53 (WEA 1) 21:57	24 20:57 (WEA 1) 21:26	7 20:44 (WEA 1) 20:24	17:08	16:03	16:30	16:30
Sonnenscheinstunden	258	277	367	416	486	500	503	454	381	331	266	243
astr.max.mögl.Beschattung					456	737	768					

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM)	Schattenanfang (WEA mit erstem Schatten)
	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Schattenende (WEA mit letztem Schatten)

Projekt:

WP Luentener Mark

Lizenzierter Anwender:

WWK Partnerschaft für Umweltplanung

Molkenstraße 5

DE-48231 Warendorf

02581 93 660

Reiner Winterkamp / r.winterkamp@wwk-umweltplanung.de

Berechnet:

07.12.2023 09:56/4.0.424

SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 59-NW - IP 59-NW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung

Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	Juni	Juli	August	September	Oktober	November	Dezember	
1	08:42	08:15	07:21	07:10	06:05	05:19	20:32 (WEA 1) 05:16	20:38 (WEA 1) 05:53	06:43	07:32	07:26	08:18	
	16:31	17:19	18:11	20:05	20:57	21:43	27 20:59 (WEA 1) 21:57	27 21:05 (WEA 1) 21:25	20:22	19:12	17:06	16:25	
2	08:41	08:13	07:19	07:08	06:03	05:18	20:31 (WEA 1) 05:17	20:38 (WEA 1) 05:54	06:45	07:34	07:28	08:19	
	16:32	17:21	18:13	20:07	20:58	21:44	28 20:59 (WEA 1) 21:56	28 21:06 (WEA 1) 21:23	20:20	19:10	17:04	16:25	
3	08:41	08:11	07:16	07:05	06:01	05:18	20:32 (WEA 1) 05:18	20:38 (WEA 1) 05:56	06:46	07:36	07:30	08:20	
	16:33	17:23	18:15	20:09	21:00	21:45	28 21:00 (WEA 1) 21:56	27 21:05 (WEA 1) 21:21	20:18	19:08	17:02	16:24	
4	08:41	08:10	07:14	07:03	05:59	05:17	20:32 (WEA 1) 05:18	20:38 (WEA 1) 05:57	06:48	07:37	07:32	08:22	
	16:34	17:25	18:16	20:10	21:02	21:46	28 21:00 (WEA 1) 21:56	28 21:06 (WEA 1) 21:19	20:15	19:06	17:00	16:23	
5	08:41	08:08	07:12	07:01	05:57	05:16	20:32 (WEA 1) 05:19	20:38 (WEA 1) 05:59	06:49	07:39	07:34	08:23	
	16:35	17:26	18:18	20:12	21:03	21:47	28 21:00 (WEA 1) 21:55	28 21:06 (WEA 1) 21:18	20:13	19:03	16:59	16:23	
6	08:41	08:06	07:10	06:58	05:55	05:15	20:32 (WEA 1) 05:20	20:39 (WEA 1) 06:01	06:51	07:41	07:35	08:24	
	16:37	17:28	18:20	20:14	21:05	21:48	28 21:00 (WEA 1) 21:55	28 21:07 (WEA 1) 21:16	20:11	19:01	16:57	16:22	
7	08:40	08:05	07:08	06:56	05:54	05:15	20:32 (WEA 1) 05:21	20:39 (WEA 1) 06:02	06:53	07:42	07:37	08:26	
	16:38	17:30	18:22	20:16	21:07	21:49	28 21:00 (WEA 1) 21:54	28 21:07 (WEA 1) 21:14	20:09	18:59	16:55	16:22	
8	08:40	08:03	07:05	06:54	05:52	05:14	20:33 (WEA 1) 05:22	20:38 (WEA 1) 06:04	06:54	07:44	07:39	08:27	
	16:39	17:32	18:24	20:17	21:08	21:50	28 21:01 (WEA 1) 21:53	28 21:06 (WEA 1) 21:12	20:06	18:56	16:54	16:22	
9	08:39	08:01	07:03	06:52	05:50	05:14	20:33 (WEA 1) 05:23	20:39 (WEA 1) 06:05	06:56	07:46	07:41	08:28	
	16:41	17:34	18:25	20:19	21:10	21:51	28 21:01 (WEA 1) 21:53	28 21:07 (WEA 1) 21:10	20:04	18:54	16:52	16:21	
10	08:39	07:59	07:01	06:49	05:48	05:13	20:33 (WEA 1) 05:24	20:39 (WEA 1) 06:07	06:58	07:47	07:43	08:29	
	16:42	17:36	18:27	20:21	21:11	21:51	28 21:01 (WEA 1) 21:52	28 21:07 (WEA 1) 21:09	20:02	18:52	16:50	16:21	
11	08:38	07:57	06:58	06:47	05:47	05:13	20:33 (WEA 1) 05:25	20:39 (WEA 1) 06:09	06:59	07:49	07:44	08:30	
	16:43	17:38	18:29	20:22	21:13	21:52	28 21:01 (WEA 1) 21:51	28 21:07 (WEA 1) 21:07	19:59	18:50	16:49	16:21	
12	08:37	07:56	06:56	06:45	05:45	05:13	20:34 (WEA 1) 05:26	20:39 (WEA 1) 06:10	07:01	07:51	07:46	08:31	
	16:45	17:40	18:31	20:24	21:15	21:53	28 21:02 (WEA 1) 21:50	28 21:07 (WEA 1) 21:05	19:57	18:47	16:47	16:21	
13	08:37	07:54	06:54	06:43	05:43	05:12	20:33 (WEA 1) 05:27	20:39 (WEA 1) 06:12	07:03	07:53	07:48	08:32	
	16:46	17:41	18:32	20:26	21:16	21:53	28 21:01 (WEA 1) 21:49	28 21:07 (WEA 1) 21:03	19:55	18:45	16:46	16:21	
14	08:36	07:52	06:52	06:40	05:42	05:12	20:34 (WEA 1) 05:28	20:40 (WEA 1) 06:13	07:04	07:54	07:50	08:33	
	16:48	17:43	18:34	20:28	21:18	21:54	27 21:01 (WEA 1) 21:48	27 21:07 (WEA 1) 21:01	19:52	18:43	16:44	16:21	
15	08:35	07:50	06:49	06:38	05:40	05:12	20:34 (WEA 1) 05:29	20:41 (WEA 1) 06:15	07:06	07:56	07:51	08:34	
	16:50	17:45	18:36	20:29	21:19	21:55	27 21:01 (WEA 1) 21:47	27 21:08 (WEA 1) 21:09	19:50	18:41	16:43	16:21	
16	08:34	07:48	06:47	06:36	05:39	05:12	20:35 (WEA 1) 05:30	20:41 (WEA 1) 06:17	07:07	07:58	07:53	08:35	
	16:51	17:47	18:38	20:31	21:21	21:55	27 21:02 (WEA 1) 21:46	26 21:07 (WEA 1) 21:07	19:48	18:39	16:41	16:21	
17	08:33	07:46	06:45	06:34	05:37	05:12	20:35 (WEA 1) 05:32	20:41 (WEA 1) 06:18	07:09	08:00	07:55	08:36	
	16:53	17:49	18:39	20:33	21:22	7 20:48 (WEA 1) 21:56	27 21:02 (WEA 1) 21:45	26 21:07 (WEA 1) 21:05	19:45	18:36	16:40	16:21	
18	08:32	07:44	06:42	06:32	05:36	05:12	20:38 (WEA 1) 05:33	20:42 (WEA 1) 06:20	07:11	08:01	07:57	08:37	
	16:54	17:51	18:41	20:34	21:24	12 20:50 (WEA 1) 21:56	27 21:02 (WEA 1) 21:44	25 21:07 (WEA 1) 21:03	19:43	18:34	16:39	16:21	
19	08:31	07:42	06:40	06:29	05:34	05:12	20:37 (WEA 1) 05:34	20:42 (WEA 1) 06:22	07:12	08:03	07:58	08:37	
	16:56	17:53	18:43	20:36	21:25	15 20:52 (WEA 1) 21:56	27 21:02 (WEA 1) 21:43	24 21:06 (WEA 1) 21:05	19:40	18:32	16:37	16:22	
20	08:30	07:40	06:38	06:27	05:33	05:12	20:36 (WEA 1) 05:36	20:43 (WEA 1) 06:23	07:14	08:05	08:00	08:38	
	16:58	17:54	18:45	20:38	21:27	17 20:53 (WEA 1) 21:57	27 21:02 (WEA 1) 21:42	23 21:06 (WEA 1) 21:04	19:38	18:30	16:36	16:22	
21	08:29	07:38	06:35	06:25	05:31	05:12	20:35 (WEA 1) 05:37	20:44 (WEA 1) 06:25	07:16	08:07	08:02	08:39	
	16:59	17:56	18:46	20:40	21:28	19 20:54 (WEA 1) 21:57	27 21:03 (WEA 1) 21:41	22 21:06 (WEA 1) 21:04	19:36	18:28	16:35	16:23	
22	08:28	07:36	06:33	06:23	05:30	05:12	20:36 (WEA 1) 05:38	20:44 (WEA 1) 06:27	07:17	08:08	08:03	08:39	
	17:01	17:58	18:48	20:41	21:30	22 20:55 (WEA 1) 21:57	27 21:03 (WEA 1) 21:39	21 21:05 (WEA 1) 21:04	19:33	18:26	16:34	16:23	
23	08:27	07:34	06:31	06:21	05:29	05:12	20:36 (WEA 1) 05:40	20:45 (WEA 1) 06:28	07:19	08:10	08:05	08:40	
	17:03	18:00	18:50	20:43	21:31	22 20:55 (WEA 1) 21:57	27 21:03 (WEA 1) 21:38	18 21:03 (WEA 1) 21:02	19:31	18:24	16:33	16:23	
24	08:26	07:32	06:28	06:19	05:28	05:13	20:37 (WEA 1) 05:41	20:47 (WEA 1) 06:30	07:21	08:12	08:07	08:40	
	17:05	18:02	18:52	20:45	21:33	23 20:56 (WEA 1) 21:57	27 21:04 (WEA 1) 21:37	16 21:03 (WEA 1) 21:02	19:29	18:22	16:31	16:24	
25	08:24	07:29	06:26	06:17	05:26	05:13	20:37 (WEA 1) 05:42	20:48 (WEA 1) 06:31	07:22	08:13	08:08	08:41	
	17:06	18:04	18:53	20:46	21:34	25 20:57 (WEA 1) 21:57	27 21:04 (WEA 1) 21:35	13 21:01 (WEA 1) 21:00	19:26	18:19	16:30	16:25	
26	08:23	07:27	06:24	06:15	05:25	05:13	20:37 (WEA 1) 05:44	20:49 (WEA 1) 06:33	07:24	08:15	08:10	08:41	
	17:08	18:05	18:55	20:48	21:35	25 20:57 (WEA 1) 21:57	27 21:04 (WEA 1) 21:34	10 20:59 (WEA 1) 21:00	19:24	18:17	16:29	16:25	
27	08:22	07:25	06:21	06:13	05:24	05:14	20:37 (WEA 1) 05:45	20:49 (WEA 1) 06:35	07:26	08:17	08:12	08:41	
	17:10	18:07	18:57	20:50	21:37	26 20:58 (WEA 1) 21:57	28 21:05 (WEA 1) 21:32	20:33	19:22	17:16	16:29	16:26	
28	08:20	07:23	06:19	06:11	05:23	05:14	20:37 (WEA 1) 05:47	20:49 (WEA 1) 06:36	07:27	08:18	08:13	08:41	
	17:12	18:09	18:58	20:51	21:38	27 20:58 (WEA 1) 21:57	27 21:04 (WEA 1) 21:31	20:31	19:19	17:14	16:28	16:27	
29	08:19	07:17	06:09	05:22	05:15	05:15	20:38 (WEA 1) 05:48	20:49 (WEA 1) 06:38	07:29	08:20	08:15	08:41	
	17:14	18:11	19:00	20:53	21:39	27 20:58 (WEA 1) 21:57	27 21:05 (WEA 1) 21:29	20:29	19:17	17:12	16:27	16:28	
30	08:18	07:15	06:07	05:21	05:15	05:15	20:37 (WEA 1) 05:50	20:49 (WEA 1) 06:40	07:31	08:23	08:16	08:42	
	17:15	18:12	19:01	20:55	21:40	27 20:58 (WEA 1) 21:57	28 21:05 (WEA 1) 21:28	20:27	19:15	17:10	16:26	16:29	
31	08:16	07:12	06:04	05:20	05:14	05:14	20:32 (WEA 1) 05:51	20:49 (WEA 1) 06:41	07:25	08:17	08:10	08:42	
	17:17	18:14	19:03	20:54	21:41	27 20:59 (WEA 1) 21:57	28 21:06 (WEA 1) 21:26	20:24	19:11	17:08	16:23	16:30	
Sonnenscheinstunden	258	277	367	416	486	500	500	503	454	381	331	266	243
astr.max.mögl.Beschattung					321	500	824	640					

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Zeitpunkt (SS:MM) Schattenanfang (WEA mit erstem Schatten)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattendecke (WEA mit letztem Schatten)
	Sonnenuntergang (SS:MM)			

Projekt:

WP Luentener Mark

Lizenzierter Anwender:

WWK Partnerschaft für Umweltplanung

Molkenstraße 5

DE-48231 Warendorf

02581 93 660

Reiner Winterkamp / r.winterkamp@wwk-umweltplanung.de

Berechnet:

07.12.2023 09:56/4.0.424

SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 60-NW - IP 60-NW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinfallrichtung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai	June	July	August	September	Oktober	November	Dezember	
1	08:42	08:15	07:21	07:10	06:05	05:19	20:28 (WEA 1) 05:16	20:35 (WEA 1) 05:53	06:43	07:32	07:26	08:18	
	16:31	17:19	18:11	20:05	20:57	21:43	20:56 (WEA 1) 21:57	21:00 (WEA 1) 21:25	20:22	19:12	17:06	16:25	
2	08:41	08:13	07:19	07:08	06:03	05:18	20:28 (WEA 1) 05:17	20:36 (WEA 1) 05:54	06:45	07:34	07:28	08:19	
	16:32	17:21	18:13	20:07	20:58	21:44	20:55 (WEA 1) 21:56	21:01 (WEA 1) 21:23	20:20	19:10	17:04	16:25	
3	08:41	08:11	07:16	07:05	06:01	05:18	20:29 (WEA 1) 05:18	20:35 (WEA 1) 05:56	06:46	07:36	07:30	08:20	
	16:33	17:23	18:15	20:09	21:00	21:45	20:56 (WEA 1) 21:56	21:01 (WEA 1) 21:21	20:18	19:08	17:02	16:24	
4	08:41	08:10	07:14	07:03	05:59	05:17	20:29 (WEA 1) 05:18	20:35 (WEA 1) 05:57	06:48	07:37	07:32	08:22	
	16:34	17:25	18:16	20:10	21:02	21:46	20:56 (WEA 1) 21:56	21:01 (WEA 1) 21:19	20:15	19:06	17:00	16:23	
5	08:41	08:08	07:12	07:01	05:57	05:16	20:29 (WEA 1) 05:19	20:36 (WEA 1) 05:59	06:49	07:39	07:34	08:23	
	16:35	17:26	18:18	20:12	21:03	21:47	20:55 (WEA 1) 21:55	21:02 (WEA 1) 21:18	20:13	19:03	16:59	16:23	
6	08:41	08:06	07:10	06:58	05:55	05:15	20:30 (WEA 1) 05:20	20:36 (WEA 1) 06:01	06:51	07:41	07:35	08:24	
	16:37	17:28	18:20	20:14	21:05	21:48	20:56 (WEA 1) 21:55	21:03 (WEA 1) 21:16	20:11	19:01	16:57	16:22	
7	08:40	08:05	07:08	06:56	05:54	05:15	20:29 (WEA 1) 05:21	20:36 (WEA 1) 06:02	06:53	07:42	07:37	08:26	
	16:38	17:30	18:22	20:16	21:07	21:49	20:56 (WEA 1) 21:54	21:03 (WEA 1) 21:14	20:09	18:59	16:55	16:22	
8	08:40	08:03	07:05	06:54	05:52	05:14	20:30 (WEA 1) 05:22	20:35 (WEA 1) 06:04	06:54	07:44	07:39	08:27	
	16:39	17:32	18:24	20:17	21:08	21:50	20:56 (WEA 1) 21:53	21:02 (WEA 1) 21:12	20:06	18:56	16:54	16:22	
9	08:39	08:01	07:03	06:52	05:50	05:14	20:31 (WEA 1) 05:23	20:35 (WEA 1) 06:05	06:56	07:46	07:41	08:28	
	16:41	17:34	18:25	20:19	21:10	21:51	20:56 (WEA 1) 21:53	21:02 (WEA 1) 21:10	20:04	18:54	16:52	16:21	
10	08:39	07:59	07:01	06:49	05:48	05:13	20:30 (WEA 1) 05:24	20:35 (WEA 1) 06:07	06:58	07:47	07:43	08:29	
	16:42	17:36	18:27	20:21	21:11	21:51	20:56 (WEA 1) 21:52	21:03 (WEA 1) 21:09	20:02	18:52	16:50	16:21	
11	08:38	07:57	06:58	06:47	05:47	05:13	20:31 (WEA 1) 05:25	20:36 (WEA 1) 06:09	06:59	07:49	07:44	08:30	
	16:43	17:38	18:29	20:22	21:13	21:52	20:56 (WEA 1) 21:51	21:03 (WEA 1) 21:07	19:59	18:50	16:49	16:21	
12	08:37	07:56	06:56	06:45	05:45	05:13	20:32 (WEA 1) 05:26	20:36 (WEA 1) 06:10	07:01	07:51	07:46	08:31	
	16:45	17:40	18:31	20:24	21:15	21:53	20:57 (WEA 1) 21:50	21:03 (WEA 1) 21:05	19:57	18:47	16:47	16:21	
13	08:37	07:54	06:54	06:43	05:43	05:12	20:31 (WEA 1) 05:27	20:36 (WEA 1) 06:12	07:03	07:53	07:48	08:32	
	16:46	17:41	18:32	20:26	21:16	21:53	20:56 (WEA 1) 21:49	21:03 (WEA 1) 21:03	19:55	18:45	16:46	16:21	
14	08:36	07:52	06:52	06:40	05:42	05:12	20:32 (WEA 1) 05:28	20:36 (WEA 1) 06:13	07:04	07:54	07:50	08:33	
	16:48	17:43	18:34	20:28	21:18	5	20:43 (WEA 1) 21:54	21:03 (WEA 1) 21:01	19:52	18:43	16:44	16:21	
15	08:35	07:50	06:49	06:38	05:40	05:12	20:34 (WEA 1) 05:12	20:32 (WEA 1) 05:29	07:06	07:56	07:51	08:34	
	16:50	17:45	18:36	20:29	21:19	12	20:46 (WEA 1) 21:55	21:04 (WEA 1) 21:04	19:50	18:41	16:43	16:21	
16	08:34	07:48	06:47	06:36	05:39	05:12	20:33 (WEA 1) 05:12	20:32 (WEA 1) 05:30	07:07	07:57	07:53	08:35	
	16:51	17:47	18:38	20:31	21:21	15	20:48 (WEA 1) 21:55	21:04 (WEA 1) 21:04	19:48	18:39	16:41	16:21	
17	08:33	07:46	06:45	06:34	05:37	05:12	20:32 (WEA 1) 05:12	20:33 (WEA 1) 05:32	07:08	07:58	07:54	08:36	
	16:53	17:49	18:39	20:33	21:22	18	20:50 (WEA 1) 21:56	21:04 (WEA 1) 21:04	19:45	18:36	16:40	16:21	
18	08:32	07:44	06:42	06:32	05:36	05:12	20:30 (WEA 1) 05:12	20:33 (WEA 1) 05:33	07:09	07:59	07:55	08:37	
	16:54	17:51	18:41	20:34	21:24	20	20:50 (WEA 1) 21:56	21:04 (WEA 1) 21:04	19:43	18:34	16:39	16:21	
19	08:31	07:42	06:40	06:29	05:34	05:12	20:30 (WEA 1) 05:12	20:33 (WEA 1) 05:34	07:12	08:03	07:58	08:37	
	16:56	17:53	18:43	20:36	21:25	21	20:51 (WEA 1) 21:56	21:03 (WEA 1) 21:03	19:40	18:32	16:37	16:22	
20	08:30	07:40	06:38	06:27	05:33	05:12	20:29 (WEA 1) 05:12	20:38 (WEA 1) 06:23	07:14	08:05	08:00	08:38	
	16:58	17:54	18:45	20:38	21:27	23	20:52 (WEA 1) 21:57	21:04 (WEA 1) 21:04	19:38	18:30	16:36	16:22	
21	08:29	07:38	06:35	06:25	05:31	05:12	20:29 (WEA 1) 05:12	20:34 (WEA 1) 05:37	07:16	08:07	08:02	08:39	
	16:59	17:56	18:46	20:40	21:28	24	20:53 (WEA 1) 21:57	21:04 (WEA 1) 21:04	19:36	18:28	16:35	16:23	
22	08:28	07:36	06:33	06:23	05:30	05:12	20:28 (WEA 1) 05:12	20:34 (WEA 1) 05:38	07:17	08:08	08:03	08:39	
	17:01	17:58	18:48	20:41	21:30	25	20:53 (WEA 1) 21:57	21:04 (WEA 1) 21:04	19:33	18:26	16:34	16:23	
23	08:27	07:34	06:31	06:21	05:29	05:12	20:28 (WEA 1) 05:12	20:34 (WEA 1) 05:40	07:19	08:10	08:05	08:40	
	17:03	18:00	18:50	20:43	21:31	25	20:53 (WEA 1) 21:57	21:04 (WEA 1) 21:04	19:31	18:24	16:33	16:23	
24	08:26	07:32	06:28	06:19	05:28	05:13	20:28 (WEA 1) 05:13	20:35 (WEA 1) 05:41	07:21	08:12	08:07	08:40	
	17:05	18:02	18:51	20:45	21:33	26	20:54 (WEA 1) 21:57	21:04 (WEA 1) 21:04	19:29	18:22	16:31	16:24	
25	08:24	07:29	06:26	06:17	05:26	05:13	20:28 (WEA 1) 05:13	20:35 (WEA 1) 05:42	07:22	08:13	08:08	08:41	
	17:06	18:04	18:53	20:46	21:34	26	20:54 (WEA 1) 21:57	21:04 (WEA 1) 21:04	19:26	18:19	16:30	16:25	
26	08:23	07:27	06:24	06:15	05:25	05:13	20:27 (WEA 1) 05:13	20:35 (WEA 1) 05:44	07:24	08:14	08:09	08:41	
	17:08	18:05	18:55	20:48	21:35	27	20:54 (WEA 1) 21:57	21:04 (WEA 1) 21:04	19:24	18:17	16:29	16:25	
27	08:22	07:25	06:21	06:13	05:24	05:14	20:27 (WEA 1) 05:14	20:35 (WEA 1) 05:45	07:26	08:17	08:12	08:41	
	17:10	18:07	18:57	20:50	21:37	28	20:55 (WEA 1) 21:57	21:04 (WEA 1) 21:04	19:22	18:15	16:29	16:26	
28	08:20	07:23	06:19	06:11	05:23	05:14	20:27 (WEA 1) 05:14	20:35 (WEA 1) 05:47	07:27	08:18	08:13	08:41	
	17:12	18:09	18:58	20:51	21:38	28	20:55 (WEA 1) 21:57	21:04 (WEA 1) 21:04	19:19	18:12	16:28	16:27	
29	08:19	07:17	06:09	05:22	05:15	05:15	20:27 (WEA 1) 05:15	20:35 (WEA 1) 05:48	07:29	08:20	08:15	08:41	
	17:14	18:11	19:00	20:53	21:39	28	20:55 (WEA 1) 21:57	21:04 (WEA 1) 21:04	19:17	18:10	16:27	16:28	
30	08:18	07:15	06:07	05:21	05:15	05:15	20:27 (WEA 1) 05:15	20:35 (WEA 1) 05:50	07:31	08:22	08:16	08:42	
	17:15	18:12	19:01	20:55	21:40	28	20:55 (WEA 1) 21:57	21:04 (WEA 1) 21:04	19:15	18:08	16:26	16:29	
31	08:16	07:12	06:04	05:20	05:15	05:15	20:28 (WEA 1) 21:57	21:04 (WEA 1) 21:04	07:31	08:22	08:16	08:42	
	17:17	18:14	19:03	20:54	21:41	28	20:56 (WEA 1) 21:57	21:04 (WEA 1) 21:04	19:15	18:08	16:26	16:30	
	Sonnenscheinstunden	258	277	367	416	486	500	503	454	381	331	266	243
	astr.max.mögl.Beschattung				407	749		702					

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang (WEA mit erstem Schatten)	Zeitpunkt (SS:MM) Schatteneende (WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 61-NW - IP 61-NW
Annahmen für Schattenwurfberechnung

Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:

Die Sonne scheint täglich von Sonnenauf- bis -untergang

Die Rotorfläche steht immer senkrecht zur Sonneneinfallrichtung

Die Windenergieanlage/n ist/sind immer in Betrieb

	Januar	Februar	März	April	Mai		Juni	
1	08:42 16:31	08:15 17:19	07:21 18:11	07:10 20:05	06:05 20:57		05:19 21:43	26 20:25 (WEA 1)
2	08:41 16:32	08:13 17:21	07:19 18:13	07:08 20:07	06:03 20:58		05:18 21:44	26 20:25 (WEA 1)
3	08:41 16:33	08:11 17:23	07:16 18:15	07:05 20:09	06:01 21:00		05:18 21:45	26 20:26 (WEA 1)
4	08:41 16:34	08:10 17:25	07:14 18:16	07:03 20:10	05:59 21:02		05:17 21:46	25 20:26 (WEA 1)
5	08:41 16:35	08:08 17:26	07:12 18:18	07:01 20:12	05:57 21:03		05:16 21:47	25 20:26 (WEA 1)
6	08:41 16:37	08:06 17:28	07:10 18:20	06:58 20:14	05:55 21:05		05:15 21:48	24 20:27 (WEA 1)
7	08:40 16:38	08:05 17:30	07:08 18:22	06:56 20:16	05:54 21:07		05:15 21:49	23 20:27 (WEA 1)
8	08:40 16:39	08:03 17:32	07:05 18:24	06:54 20:17	05:52 21:08		05:14 21:50	23 20:28 (WEA 1)
9	08:39 16:41	08:01 17:34	07:03 18:25	06:52 20:19	05:50 21:10		05:14 21:51	22 20:29 (WEA 1)
10	08:39 16:42	07:59 17:36	07:01 18:27	06:49 20:21	05:48 21:11		05:13 21:51	21 20:29 (WEA 1)
11	08:38 16:43	07:57 17:38	06:58 18:29	06:47 20:22	05:47 21:13		05:13 21:52	21 20:30 (WEA 1)
12	08:37 16:45	07:56 17:40	06:56 18:31	06:45 20:24	05:45 21:15	10	20:32 (WEA 1) 20:42 (WEA 1)	21 20:30 (WEA 1) 21 20:51 (WEA 1)
13	08:37 16:46	07:54 17:41	06:54 18:32	06:43 20:26	05:43 21:16	13	20:30 (WEA 1) 20:43 (WEA 1)	20 20:30 (WEA 1) 20 20:50 (WEA 1)
14	08:36 16:48	07:52 17:43	06:52 18:34	06:40 20:28	05:42 21:18	16	20:29 (WEA 1) 20:45 (WEA 1)	20 20:30 (WEA 1) 20 20:50 (WEA 1)
15	08:35 16:50	07:50 17:45	06:49 18:36	06:38 20:29	05:40 21:19	19	20:27 (WEA 1) 20:46 (WEA 1)	19 20:31 (WEA 1) 19 20:50 (WEA 1)
16	08:34 16:51	07:48 17:47	06:47 18:38	06:36 20:31	05:39 21:21	21	20:26 (WEA 1) 20:47 (WEA 1)	19 20:31 (WEA 1) 19 20:50 (WEA 1)
17	08:33 16:53	07:46 17:49	06:45 18:39	06:34 20:33	05:37 21:22	22	20:26 (WEA 1) 20:48 (WEA 1)	18 20:32 (WEA 1) 18 20:50 (WEA 1)
18	08:32 16:54	07:44 17:51	06:42 18:41	06:32 20:34	05:36 21:24	23	20:25 (WEA 1) 20:48 (WEA 1)	19 20:32 (WEA 1) 19 20:51 (WEA 1)
19	08:31 16:56	07:42 17:53	06:40 18:43	06:29 20:36	05:34 21:25	24	20:25 (WEA 1) 20:49 (WEA 1)	19 20:32 (WEA 1) 19 20:51 (WEA 1)
20	08:30 16:58	07:40 17:54	06:38 18:45	06:27 20:38	05:33 21:27	26	20:24 (WEA 1) 20:50 (WEA 1)	19 20:32 (WEA 1) 19 20:51 (WEA 1)
21	08:29 16:59	07:38 17:56	06:35 18:46	06:25 20:40	05:31 21:28	26	20:24 (WEA 1) 20:50 (WEA 1)	19 20:33 (WEA 1) 19 20:52 (WEA 1)
22	08:28 17:01	07:36 17:58	06:33 18:48	06:23 20:41	05:30 21:30	27	20:23 (WEA 1) 20:50 (WEA 1)	19 20:33 (WEA 1) 19 20:52 (WEA 1)
23	08:27 17:03	07:34 18:00	06:31 18:50	06:21 20:43	05:29 21:31	27	20:23 (WEA 1) 20:50 (WEA 1)	19 20:33 (WEA 1) 19 20:52 (WEA 1)
24	08:26 17:05	07:32 18:02	06:28 18:51	06:19 20:45	05:28 21:33	27	20:24 (WEA 1) 20:51 (WEA 1)	19 20:34 (WEA 1) 19 20:53 (WEA 1)
25	08:24 17:06	07:29 18:04	06:26 18:53	06:17 20:46	05:26 21:34	27	20:24 (WEA 1) 20:51 (WEA 1)	18 20:34 (WEA 1) 18 20:52 (WEA 1)
26	08:23 17:08	07:27 18:05	06:24 18:55	06:15 20:48	05:25 21:35	27	20:24 (WEA 1) 20:51 (WEA 1)	18 20:34 (WEA 1) 18 20:52 (WEA 1)
27	08:22 17:10	07:25 18:07	06:21 18:57	06:13 20:50	05:24 21:37	27	20:24 (WEA 1) 20:51 (WEA 1)	19 20:34 (WEA 1) 19 20:53 (WEA 1)
28	08:20 17:12	07:23 18:09	06:19 18:58	06:11 20:51	05:23 21:38	27	20:24 (WEA 1) 20:51 (WEA 1)	19 20:34 (WEA 1) 19 20:53 (WEA 1)
29	08:19 17:13		07:17 20:00	06:09 20:53	05:22 21:39	27	20:24 (WEA 1) 20:51 (WEA 1)	20 20:34 (WEA 1) 20 20:54 (WEA 1)
30	08:18 17:15		07:15 20:02	06:07 20:55	05:21 21:40	27	20:24 (WEA 1) 20:51 (WEA 1)	20 20:33 (WEA 1) 21 20:54 (WEA 1)
31	08:16 17:17		07:12 20:04		05:20 21:41	26	20:25 (WEA 1) 20:51 (WEA 1)	
Sonnenscheinstunden	258	277	367	416	486		500	
astr.max.mögl.Beschattung					469		627	

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	Schattenanfang (WEA mit erstem Schatten)	Schattende (WEA mit letztem Schatten)
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SHADOW - Kalender

Berechnung: Immissionspunktberechnung Zusatzbelastung durch WEA 1 Schattenrezeptor: IP 61-NW - IP 61-NW
Annahmen für Schattenwurfberechnung

- Die dargestellten Zeiten sind die astronomisch maximal mögliche Beschattungsdauer, berechnet unter folgenden Annahmen:
- Die Sonne scheint täglich von Sonnenauf- bis -untergang
- Die Rotorfläche steht immer senkrecht zur Sonneneinstrahlung
- Die Windenergieanlage/n ist/sind immer in Betrieb

	Juli		August		September Oktober		November Dezember	
1	05:16	20:34 (WEA 1)	05:53	20:44 (WEA 1)	06:43	07:32	07:26	08:18
	21:57	20:55 (WEA 1)	21:25	20:51 (WEA 1)	20:22	19:12	17:06	16:25
2	05:17	20:34 (WEA 1)	05:54		06:45	07:34	07:28	08:19
	21:56	20:55 (WEA 1)	21:23		20:20	19:10	17:04	16:25
3	05:18	20:33 (WEA 1)	05:56		06:46	07:36	07:30	08:20
	21:56	20:55 (WEA 1)	21:21		20:18	19:08	17:02	16:24
4	05:18	20:34 (WEA 1)	05:57		06:48	07:37	07:32	08:22
	21:56	20:56 (WEA 1)	21:19		20:15	19:06	17:00	16:23
5	05:19	20:34 (WEA 1)	05:59		06:49	07:39	07:34	08:23
	21:55	20:57 (WEA 1)	21:18		20:13	19:03	16:59	16:23
6	05:20	20:34 (WEA 1)	06:01		06:51	07:41	07:35	08:24
	21:55	20:57 (WEA 1)	21:16		20:11	19:01	16:57	16:22
7	05:21	20:34 (WEA 1)	06:02		06:53	07:42	07:37	08:26
	21:54	20:58 (WEA 1)	21:14		20:09	18:59	16:55	16:22
8	05:22	20:33 (WEA 1)	06:04		06:54	07:44	07:39	08:27
	21:53	20:57 (WEA 1)	21:12		20:06	18:56	16:54	16:22
9	05:23	20:33 (WEA 1)	06:05		06:56	07:46	07:41	08:28
	21:53	20:58 (WEA 1)	21:10		20:04	18:54	16:52	16:21
10	05:24	20:33 (WEA 1)	06:07		06:58	07:47	07:43	08:29
	21:52	20:58 (WEA 1)	21:09		20:02	18:52	16:50	16:21
11	05:25	20:33 (WEA 1)	06:09		06:59	07:49	07:44	08:30
	21:51	20:59 (WEA 1)	21:07		19:59	18:50	16:49	16:21
12	05:26	20:33 (WEA 1)	06:10		07:01	07:51	07:46	08:31
	21:50	20:59 (WEA 1)	21:05		19:57	18:47	16:47	16:21
13	05:27	20:33 (WEA 1)	06:12		07:03	07:53	07:48	08:32
	21:49	20:59 (WEA 1)	21:03		19:55	18:45	16:46	16:21
14	05:28	20:33 (WEA 1)	06:13		07:04	07:54	07:50	08:33
	21:48	20:59 (WEA 1)	21:01		19:52	18:43	16:44	16:21
15	05:29	20:33 (WEA 1)	06:15		07:06	07:56	07:51	08:34
	21:47	21:00 (WEA 1)	20:59		19:50	18:41	16:43	16:21
16	05:30	20:33 (WEA 1)	06:17		07:07	07:58	07:53	08:35
	21:46	21:00 (WEA 1)	20:57		19:48	18:39	16:41	16:21
17	05:32	20:33 (WEA 1)	06:18		07:09	08:00	07:55	08:36
	21:45	21:00 (WEA 1)	20:55		19:45	18:36	16:40	16:21
18	05:33	20:33 (WEA 1)	06:20		07:11	08:01	07:57	08:37
	21:44	21:00 (WEA 1)	20:53		19:43	18:34	16:39	16:21
19	05:34	20:33 (WEA 1)	06:22		07:12	08:03	07:58	08:37
	21:43	21:00 (WEA 1)	20:51		19:40	18:32	16:37	16:22
20	05:36	20:34 (WEA 1)	06:23		07:14	08:05	08:00	08:38
	21:42	21:01 (WEA 1)	20:48		19:38	18:30	16:36	16:22
21	05:37	20:34 (WEA 1)	06:25		07:16	08:07	08:02	08:39
	21:41	21:01 (WEA 1)	20:46		19:36	18:28	16:35	16:23
22	05:38	20:34 (WEA 1)	06:27		07:17	08:08	08:03	08:39
	21:39	21:00 (WEA 1)	20:44		19:33	18:26	16:34	16:23
23	05:40	20:34 (WEA 1)	06:28		07:19	08:10	08:05	08:40
	21:38	21:00 (WEA 1)	20:42		19:31	18:24	16:33	16:23
24	05:41	20:35 (WEA 1)	06:30		07:21	08:12	08:07	08:40
	21:37	21:00 (WEA 1)	20:40		19:29	18:22	16:31	16:24
25	05:42	20:35 (WEA 1)	06:31		07:22	07:14	08:08	08:41
	21:35	20:59 (WEA 1)	20:38		19:26	17:20	16:30	16:25
26	05:44	20:35 (WEA 1)	06:33		07:24	07:16	08:10	08:41
	21:34	20:59 (WEA 1)	20:36		19:24	17:18	16:29	16:25
27	05:45	20:37 (WEA 1)	06:35		07:26	07:17	08:12	08:41
	21:32	20:59 (WEA 1)	20:33		19:22	17:16	16:29	16:26
28	05:47	20:37 (WEA 1)	06:36		07:27	07:19	08:13	08:41
	21:31	20:57 (WEA 1)	20:31		19:19	17:14	16:28	16:27
29	05:48	20:38 (WEA 1)	06:38		07:29	07:21	08:15	08:41
	21:29	20:56 (WEA 1)	20:29		19:17	17:12	16:27	16:28
30	05:50	20:40 (WEA 1)	06:40		07:31	07:23	08:16	08:42
	21:28	20:55 (WEA 1)	20:27		19:15	17:10	16:26	16:29
31	05:51	20:41 (WEA 1)	06:41			07:25		08:42
	21:26	20:53 (WEA 1)	20:24			17:08		16:30
Sonnenscheinstunden	503		454		381	331	266	243
astr.max.mögl.Beschattung	735		7					

Tabellen-Layout: Die Daten für jeden Tag sind in folgender Matrix wiedergegeben (Sommerzeit wie Bezugsjahr):

Tag im Monat	Sonnenaufgang (SS:MM)	Sonnenuntergang (SS:MM)	Minuten mit Schatten	Zeitpunkt (SS:MM) Schattenanfang	Zeitpunkt (SS:MM) Schattende	(WEA mit erstem Schatten)	(WEA mit letztem Schatten)
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